Boundaries of absolute protection: distribution of benefit and harm to birds through law and planning in New Zealand

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ABSTRACT

Endemic birds in New Zealand are under threat, and increasingly so, as human activity reshapes the land, reconstitutes the water, consumes space and resources and alters faunal composition. The decline of biodiversity is a pressing concern globally and the unique nature of the endemic fauna of New Zealand provides impetus for concern.

Examination of the state of birds and analysis of the response of New Zealand law to the agents of decline is the key contribution of this research. The substance and operation of New Zealand law is examined to determine its influence upon the distribution of benefit and burden to New Zealand birds. Six case study birds: the black petrel, dotterel, kokako, godwit, sooty shearwater, and the wrybill are studied to elucidate these matters.

In examining distribution of harm and benefit, a particular focus of the research is upon the degree of care that is applied to protecting birds through the law and related planning instruments. By assessing the principles, criteria and methods applied to protecting birds, the research identifies that an objective of avoidance of harm to indigenous Threatened or At Risk species, their habitats, and ecosystems upon which they depend, will benefit birds. It concludes that conservation status, as opposed to habitat or sectoral dispensation, is an important determinant for application of the standard, as this provides the most consistently protective approach. In addition, it is demonstrated that where uncertainty or ignorance arises as to existence or level of harm, the use of precaution and giving the benefit of the doubt to nature is important for enhancing protection.

New Zealand conservation law is analysed at the international level in conjunction with species and habitat protection at the domestic level. International agreements, the Wildlife Act 1953, the Conservation Act 1987, the Resource Management Act 1991 and related policy and plans are examined. Although at times strongly beneficial, the research concludes that the arrangements made by the law are wanting. An important contribution of the research is to demonstrate the deficiencies, which can be separated into three classes: the problem of standard, the problem of consistency and integration, and the problem of implementation.

These problems constrain the protective force of the law. Fragmentation and lack of a strong and consistent protective standard limit protection of birds against competing social, economic and cultural factors. The law requires revision. Species protection calls for particular attention. The Wildlife Act 1953 maintains a standard of absolute protection of birds, but the research demonstrates the many ways in which this standard is compromised. Greater strategic planning and integration is required, particularly with regard to human development. Interrelationships between the statutes, including that between the Wildlife Act 1953 and the RMA 1991, require addressing. Inadequate implementation of existing law compounds these matters, and the research identifies a range of aspects where gains for species could be made. It concludes with a series of recommendations directed at the identified problems.

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Figure 1 Dotterel chick, Opoutere sandspit 2014

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LIST OF ABBREVIATIONS

ACAP	Agreement on the Conservation of Albatrosses and Petrels
AEWA	African Eurasian Waterbirds Agreement
AMC	Argument from marginal cases
ASB	Auckland Savings Bank Trust
ASCV	Area of Significant Conservation Value
BBOP	Business and Biodiversity Offsets Programme
BLL	Bottom long line
BSA	Biosecurity Act 1993
CA	Conservation Act 1987
CBD	Convention on Biological Diversity
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CGP	Conservation General Policy
CMCA	Common marine and coastal area
CMPlan	Conservation Management Plan
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CMStrat	Conservation Management Strategy
DOC	Department of Conservation
DP	District Plan
EbyD	Energy by Design
EIA	Environmental Impact Assessment
EMU	Ecological Management Unit
FAO	Food and Agriculture Organisation of the United Nations
GIS	Geographical information systems
IAIA	International Association for Impact Assessment
IUCN	The World Conservation Union.
MOC	Minister of Conservation

NGO	Non-governmental organisation
NZCPS	New Zealand Coastal Policy Statement
PBR	Potential Biological Removal
PCE	Parliamentary Commissioner for the Environment
PMP	Population management plans
PNPSIB	Proposed National Policy Statement on Indigenous Biodiversity
PPP	The Polluter Pays Principle
RCP	Regional Coastal Plan
RFMO	Regional Fishery Management Organization
RIS	Ramsar information sheet
RP	Regional Plan
RPMP	Regional Pest Management Plans
RPS	Regional Policy Statement
SEA	Strategic Environmental Assessment
SNA	Significant Natural Area
TCDC	Thames Coromandel District Council
WA	Wildlife Act 1953
WRC	Waikato Regional Council
WRRPMP	Waikato Regional Council Regional Pest Management Plan

CHAPTER ONE: INTRODUCTION

1.1 MOTIVATION AND RESEARCH FOCUS

In discussing the conservation of endemic New Zealand birds, a visiting professor from the United Kingdom observed "What's the point? They will all be gone soon anyway". It is apparent that New Zealand is at a critical point concerning choices to be made for conservation of many endemic bird species. There is the potential that continuing with the status quo will, for some species, inevitably lead to the position divined by the Professor, particularly given the rise of exacerbating factors such as global climate change. Despite evincing an intention to turn this position around, New Zealand, in a position reproduced globally, appears to be struggling to make headway. This research examines the contribution of New Zealand law and planning to protecting birds. In particular it examines how the law operates to distribute benefit and burden to birds, whether there is opportunity to shift burden to improve the conservation status of birds and wherein justification for such a shift may lie.

The research is steeped in the New Zealand environment, law and practice. It does not pretend to be an assessment of global legal mechanisms nor comparative legal theories. Rather its focus is applied and driven by a need to understand the operation of New Zealand law and planning and its effect. Practising environmental law and then working as an academic in the environmental planning field, I was conscious of a persistent rhetoric that conservation law and planning constitute unnecessary restrictions to legitimate development and require revision. Yet at the same time species' declines continue, possibly suggesting deficiency of law, either in substance or implementation or both. Researching these areas revealed a shortfall of work investigating legal conservation of fauna in New Zealand, particularly as regards development in the environment and the interrelationships between the main statutory mechanisms protecting species. The original contribution that this research makes is to make those enquiries, and propose ways in which to strengthen legal responses.

By way of background, New Zealand's approach to the protection of avian fauna has reflected global trends.[1] Command and control mechanisms, including both species-based and area-based conservation approaches,[2] prohibited species take, protective reserves, and ecosystem protection have been applied to conserve birds.[3] Despite such protection, an underlying free market approach has tended to consider birds as free goods, for which no accounting is required when their demise is as a result of indirect take. Governments have relied on the market and economic instruments to allocate resources efficiently, an equation in which birds are frequently uncounted. Although ownership of wild birds vests in the Crown, the incidence of private property rights in land and the associated action of the free market work to obscure protection of property in birds. The position creates tension with a legislative goal of absolute protection of wildlife provided for by the Wildlife Act 1953. It also poses challenges for the promotion of sustainable management which is the statutory purpose of the Resource Management Act

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[1] For a full description of conservation policies and programmes affecting birds see Boere, GC and Rubec, CDA "Conservation Policies and Programmes Affecting Birds" in Norris, K (ed) *Conserving Bird Biodiversity: General Principles and Their Application* (Cambridge University Press, Cambridge, UK, 2002) see also Boardman, R *The International Politics of Bird Conservation: Biodiversity, Regionalism and Global Governance* (Edward Elgar, Cheltenham, 2006) chapters 3-8, Earl, G, Curtis, A and Allan, C "Towards a Duty of Care for Biodiversity" 2010 45 Environmental Management 682.

[2] Sand, PH "A Century of Green Lessons: The Contribution of Nature Conservation Regimes to Global Governance" 2001 1 International Environmental Agreements: Politics, Law and Economics 33 at 35.

[3] Wheen, NR "An (Updated) History of New Zealand Environmental Law" in Pawson, E and Brooking, T (eds) *Making a New Land : Environmental Histories of New Zealand* (Otago University Press, 2013), Nolan, D *Environmental and Resource Management Law* (4th ed, LexisNexis N.Z., Wellington, NZ, 2011) chs 1 and 15, Van Roon, M and Knight, S *Ecological Context of Development: New Zealand Perspectives* (Oxford University Press, South Melbourne, Vic., 2004) ch 2, Kennedy, ES and Perkins, HC "Protected Fauna Management in New Zealand" in Memon, PA and Perkins, HC (eds) *Environmental Planning and Management in New Zealand* (Dunmore Press, Palmerston North, NZ, 2000) ch 17, Bosselmann, K and Taylor, P "The New Zealand Law and Conservation" 1995 2 Pacific Conservation Biology 113.

1991, the principal legislation governing the use and protection of natural and physical resources.

So what is the position of New Zealand birds? To what extent does the law protect them, and in particular where are they placed as regards to development and human activity in the environment? In an effort to bring a purposeful enquiry, this research focuses upon how the law affects distribution of environmental goods (benefits) and bads (burdens) to birds. It does so principally by assessing the principles, criteria and methods that are applied in determining distribution, although other aspects are also considered. This perspective is influenced by the concept of environmental justice and the limb of distributive justice which focuses upon the environmental benefits and burdens distributed by the law.[4] It enables consideration of the many ways that law and planning operate to impact birds and extends the enquiry widely to incorporate principles such as precaution and prevention and methods such as adaptive management, biodiversity offsets and good neighbour rules.

A central consideration is the inherent degree or level of care that must be applied to the protection of birds, this being a key determinant of the extent of protection that may follow. What standards, if any, must humans adhere to when conducting activities which may potentially damage species? How much care must be applied in the consideration of birds? In an environmental justice framework this raises the issue of whether birds belong to the community of justice, and if so, to what extent.[5]

In constructing this research it took some considerable time to sieve through the multiple layers of perspectives, conflicting considerations and

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[4] Preston, BJ "The Effectiveness of the Law in Providing Access to Environmental Justice: An Introduction" (paper presented to 11th IUCN Academy of Environmental Law Colloquium, Hamilton, 2013).
[5] Preston ibid, at 10, Coeckelbergh, M "Distributive Justice and Co-Operation in a World of Humans and Non-Humans: A Contractarian Argument for Drawing Non-Humans into the Sphere of Justice" 2009 15 Res Public 68 at 71.

reams of information to locate a point from which the law could be understood and analysed, as well as offering a potential platform for effective change. Isolating the issue of degree of care secured that vantage point. Degree of care is a theme that has resonance at the international, national and local level, it applies to statute and policy and flows through to case law and conservation management. The degree of care is pivotal in the choices that are made and can be used to consider the manner in which law and policy interface with science, dealing with vexed issues such as uncertainty. By its very nature, the degree of care is a central determinant of the extent of harm and benefit distributed to birds. Examining the degree of care is a simple idea, but enables analysis across a range of disparate factors. In a contest over shared space or resourcing priorities, the treatment of birds is determined by the extent of a culture's will to constrain its own activities in favour of the birds. Not often a simple contest, but one compounded by human social, cultural, economic and environmental complexities, the standards that are elected and applied in such contests are critical to outcome. It is important, therefore, to examine contemporary approaches to valuing birds, concomitant intention to constrain human activity in favour of birds, or otherwise, and hence the extent to which birds are included in the community of justice or alternatively protected.

Scrutinising standards also provides opportunity to assess consistency. A further original contribution that this research makes is to underscore the level of inconsistency which arises in the treatment of birds. The research considers birds generally, but uses six case study species to define the enquiry further. As will be explained further in the methodology section 1.4, the black petrel, dotterel, godwit, kokako, sooty shearwater and wrybill were selected, primarily upon the grounds of representing different habitat types.

Protection of birds is not always a static matter, as the mobility and variety of avian species, requires flexible responses from the law. Use of the case study species makes evident the factors which operate to dissect consistency and these include: perceived value, ownership, the regulating statute, agency function, place, resource type, sectoral influence, and finally conservation status. It is suggested that it is the latter, conservation status, which should be the factor which most strongly influences consistency in the protection of birds. Locating measures that more consistently protect Threatened and At-Risk species is a means by which this research contributes to the body of knowledge concerning faunal protection in New Zealand.

In order to identify measures that may improve the conservation status of New Zealand birds it is necessary to understand the key agents of decline. The impacts of habitat destruction and invasive alien predators are well understood and documented in the literature, however, through a case study approach, this research brings a focus upon cumulative development and the threat of disturbance. The investigation reveals that species-specific research in relation to this is lacking and that apprehension and response to cumulative effects and disturbance at law and in planning is limited. Identification of this gap and the opportunity for response is an original product of the research and combines with other findings to better comprehend opportunities to improve the protection of birds in New Zealand.

1.2 AIM AND OBJECTIVES

The overall aim of this research is to understand **how law and planning in New Zealand affects the distribution of harm and benefit to birds.** Underpinning this aim are the following research objectives:

1. To review the state of avian biodiversity globally and in New Zealand and to identify the key agents of decline.

2. To consider, the value of birds, with a particular focus upon New Zealand birds.

3. To determine influential principles, criteria and methods applied through the action of law and planning to prevent or limit harm to species.

4. To analyse how New Zealand legal and planning responses impact the distribution of harm and benefit to birds.

5. To consider, in particular, the degree of care applied through law and planning to protecting birds.

6. To determine the opportunity to strengthen legal protection of birds in New Zealand.

1.3 RESEARCH STRUCTURE

This research consists of nine chapters composed as set out below.

Chapter 1 introduces the research and explains the related aim and objective. It describes structure and details the methodology applied.

Chapter 2 investigates birds and explains their particular characteristics and the manner in which species are differentiated. It does so in order to contextualise the law and to expose the challenges that mobility and variety present. A focus on the case study species enables species-specific consideration, which becomes an important feature in analysing the law in subsequent chapters. Conservation status of birds is also introduced at this early stage, as it is a matter which underpins contemporary approaches to protection.

Chapter 3 examines the value of birds. It considers constructs that are applied in assessing the relationships of birds to humans and identifies the value which may be ascribed to birds, as well as the potential harm which birds may cause to human interests. This enables subsequent consideration of the correlation between that benefit or harm and the strength of legal protection. It also founds justification for the strengthening of legal protection. Some of the theoretical concepts engaged with in this research are grounded in this chapter, but they are also woven through other chapters and emerge in discussion at relevant points.

Chapter 4 explores the threats to birds on global and national levels and in the instance of the case study species. The chapter exposes both generic and species-specific threats and identifies where information gaps arise in knowledge of the life cycles of the birds and the nature and extent of particular threats.

Chapter 5 builds on the combined understandings of the matters in Chapters 2-4 and turns towards responses to the problem of species decline. The focus is upon fundamental concepts and processes that influence the manner in which benefit and burden are distributed to birds and are central to construction of the degree of care applied to birds. The incidence of ownership, legal principle, scientific concepts and specific methods of implementation are assembled and analysed in this chapter to provide a foundation against which the New Zealand approach documented in Chapters 6 to 8 can be compared and contrasted.

Chapter 6 analyses international law and the New Zealand commitment to protection of birds. In particular it scrutinises the Ramsar Convention, the Convention on Biological Diversity and the Convention on Migratory Species, in principle and practice, to consider how these obligations affect the distribution of burden and benefit to birds. The chapter identifies a range of issues including inconsistency, lack of integration and implementation failure, matters which recur in the context of species and habitat in Chapters 7 and 8 respectively.

Chapter 7 then turns to domestic legislation and considers the central mechanisms applied to species protection. The Wildlife Act 1953 is the main focus for the chapter and it examines the parameters of the standard of absolute protection, the exceptions to the standard and the consequences for the case study species. Incidental species take resulting from human development and activity in the environment emerges as a problem which is not well resolved by the law. Conservation management planning for species protection is also scrutinised and consideration is given to the degree of care anticipated by conservation instruments.

Chapter 8 shifts the focus to habitat and ecosystem protection. It applies a case study approach based on place and uses the Wharekawa Harbour and environs, Coromandel Peninsular, Waikato Region to ground the research. Analysis of the Resource Management Act 1991 and associated case law and planning policy forms the basis of the chapter. Approaches to precaution and avoidance are central concerns together with consideration of the impact of innovative measures, such as biodiversity offsets, upon the exercise of care in habitat, ecosystem and species protection.

Chapter 9 summarises the research findings and synthesises these into a set of recommendations designed to strengthen protection of birds in New Zealand. Limitations of the research and areas where further research is needed are also outlined.

Appendix 2 contains a summary of the conclusions of each chapter in tabular form.

1.4 METHODOLOGY

The methodology in this research was carried out in accordance with conventional legal methods but was augmented by methods more common in social science, in recognition of the interdisciplinary nature of the research spanning law and environmental planning. The influence of science in environmental law necessitated engagement with scientific literature, but empirical natural science methods were not applied. The central methods applied were as follows:

1. Textual analysis of law and policy examining primary sources such as statute, case law and associated policy was the chief method applied. For factually based issues, or particular problems the process taken commonly involved application of the simple IRAC (issue, rule, analysis, and conclusion) method which requires identification of the legal issue, discovery of the relevant rules, analysis/connection of the rule to the facts and conclusion.[6] Where the issue was one of standard or approach initial scrutiny of the black letter law occurred without reference back to fact. In most instances online references were used, however, for statutes prior to 1953, and case law prior to 1970 hard copy versions supplemented the literature. The analysis carried out was both critical and comparative. A textual approach was taken, relying more often on words and meanings rather than statistics.[7] This approach produced significant yields of information for the research and was the most important factor in refining the enquiry and developing an original contribution. In particular the analysis of statute and case law influenced the central findings of the research.

    Initially, consideration was given to both domestic and international case law relating to protection of birds, but as the research progressed and the focus sharpened, greater attention was applied to the New Zealand position. Case law analyses were developed first, in more general terms and then for each of the Chapters 6, 7 and 8 which are focused on domestic legislation. Dual online databases (LexisNexis New Zealand and

[6] Nolasco, CARI, Vaughn, MS and del Carmen, RV "Toward a New Methodology for Legal Research in Criminal Justice" 2010 21 Journal of Criminal Justice Education 1.
[7] Valentine, G "Tell me About...: Using Interviews as a Research Methodology" in Flowerdew, R and Martin, DL (eds) *Methods in Human Geography: A Guide for Students Doing a Research Project* (Pearson Education, United Kingdom, 2005).

Brookers/Westlaw) were used to conduct the case law searches. The initial search key words were bird/s, fauna and then the names of each of the case study species in both English and Māori. These searches produced a wealth of background reading concerning the interface of New Zealand law and birds. In particular these initial searches were valuable for identifying specific development threats to the case study species as detailed in Chapter 4 and related responses.

For Chapter 6, the case law was searched for reference to the three main international treaties considered. The yield was surprisingly low (despite cross checking with a variety of key word searches) but for the Ramsar Convention, produced material which proved central to that particular analysis. Case law in connection with the Wildlife Act 1953 was searched for Chapter 7, and again the yield was low, although several of the cases were particularly influential. The position with Chapter 8 was different. The enquiry related to the treatment of birds under the Resource Management Act and this was a sustained analysis which focused upon a core set of 132 decisions, augmented by cases that arose subsequent to the search, and notified through an alert tied to the search key words. The base search was related to the section of the RMA protecting the significant habitat of indigenous fauna (s 6(c)) and the cases were then analysed for their treatment of 14 issues which were of particular significance to the enquiry, such as precaution, avoidance, lack of evidence, or use of an adaptive management approach or review condition. The cases were also coded on the same Excel spread sheet according to species, proceeding, court, judge and where resource consent was involved grant, or decline of consent. This process yielded particularly rich results and in several instances went beyond the reported case to involve an examination of statements of evidence and legal submissions filed in the proceedings. These latter searches commonly provided detail which assisted in shaping the enquiry and deepening analysis.

The case law analysed was most commonly decisions from the Environment Court and from the High Court, as this is where the greater proportion of decisions arose. The New Zealand court system has a hierarchical structure with the Supreme Court being at the apex, and the Court of Appeal, High Court and District Court sitting below in descending order. The Environment Court is a specialist court, sitting at the same level as the District Court, and has a principal function of determining appeals and related matters under the Resource Management Act 1991. Through the doctrine of precedent courts are bound by the decisions of higher courts and the Supreme Court decisions are binding on all other courts. Environment Court decision makers are not bound by decisions made by other divisions of that Court. The High Court retains appellate functions in relation to Environment Court decisions, and further, supervisory jurisdiction of the court through the process of judicial review.

Additional separate searches of the case law, (not limited by reference to s 6(c)), were made connected to a range of related matters including avoidance of adverse effects, precaution, particular habitat types, geographical areas, and forms of industry/development, offsets and adaptive management. Subsequent to these searches the research enquiries were refined to produce particular issues to be addressed not only in Chapter 8, but also extending into Chapters 6 and 7.

Analysis of New Zealand planning documents was a further important source of information. This included both statutory and non-statutory documentation. The documents were routinely sourced electronically through government websites. Particular enquiries included analysis of sets of plans including investigating treatment of animal movement, connections, ecological integrity, wind farms, avoidance, precaution, threatened species, and disturbance. Excel spreadsheets were employed in most cases to perform the analysis. Specific enquiries for the case study in Chapter 8 are further explained therein.

A further critical primary source of information reflects the grounding of this research in law and geography/environmental planning. Maps are acknowledged to be "a powerful medium for the representation of ideas and the communication of knowledge about places".[8] Maps have been invaluable in contextualising the research, explaining relationships and importantly making explicit issues that may be obscured without this form of spatial depiction. Using maps to explain the fluidity of bird movement or resource flow in the landscape, contrasts with the use of maps at law to define static boundaries of ownership or agency functions. Comparing maps and aerial photographs used for these separate purposes exposed some of the tensions between the approach of the law and planning, and the ecological and biological prerequisites of birds.

Applying maps to critically think about problems, assists in a manner similar to other depictions such as diagrams and flow charts. It brings fresh angles and aids in the ordering of information. The relatively recent innovation of Geographical Information Systems (GIS) enhances the knowledge yield from maps. In order to further this study, I acquired basic skills in this field to enable mining of spatial data layers for previously hard-to-access information and to produce maps representing specific enquiries. This was a particularly fruitful endeavour and enhanced outcomes, with particular value for the case study used in Chapter 8.

One final measure employed for its explanatory value and the provision of context is photography. Over the course of the study, I captured thousands of photographs of endemic bird species with a particular focus upon the case study species, their habitat and the threats. Partnered with

[8] Perkins, C "Cartography and Graphicacy in Clifford, NJ and Valentine, G (eds) *Key Methods in Geography* (Sage Publications Ltd, United Kingdom, 2003) 343.

maps the photographs constitute a rich factual source to inform the research. All photographic images used in this research are my own, unless otherwise acknowledged.

2. Textual analysis of secondary sources was a further key method employed. A broad variety of literature was accessed initially as background and then to shape and deepen the enquiries. The information enabled largely a qualitative approach, but the investigation also revealed quantitative information relating to the environment and in particular to the national and global status of birds in a range of respects. A wide range of search engines was used to find both online and hard copy material and subscription through alert to a significant suite of journals in relevant fields of law, science and social science was a valuable means of achieving currency in academic research. This method informed all chapters but was the dominant approach for Chapters 2-5.

3. Whilst not exactly a method, an "approach" I decided to use was to ground the research in New Zealand with a focus upon the Waikato Region. This choice was made for a number of reasons including a desire to unravel problems known to be arising in a particular area, access to information, familiarity with the region and relevance to the University of Waikato and related research and teaching programmes. In taking this approach the risk of limiting the value of research to a specific place was acknowledged and managed through a choice of a research theme which has a more universal application.

The research focuses enquiry not only by reference to place but also by reference to specific birds. This form of enquiry was influenced by a seminal article by Prof Jonas Ebbesson exploring conservation law and methodology by reference to the movements, habits and habitats of the honey buzzard bird.[9] Ebbesson identifies this method as a means of analysing the constraints of law, “square formed in the sense that they apply to several threatened species despite the different habits, habitats and living prerequisites of the species concerned, and despite the different characters of the threats against them”. Furthermore Ebbesson suggests that using the bird as a focus, enables the more ready assessment of gaps in the law, in contrast to a less applied approach. In doing so Ebbesson proposes the possibility of both an internal and external approach to the law. An internal approach to assessment enables a consideration of what the existing law requires in order to protect the given species, what must be done to comply with the law. An external approach enables a critique of the sufficiency of the law. This research uses the case studies to apply both internal and external approaches.

The law is analysed to consider what is currently required in the protection of the species and it is critiqued in terms of sufficiency as to the degree of care that is applied. This is not, however, an empirical or qualitative study that attempts to conclusively prove that species decline is caused as a result of inadequate law. The case study method reveals the many ways that loss to birds is suffered and benefits to birds are gained, and that the law is only one element in this equation. This research considers how the law and planning operate to distribute loss in these instances and where opportunity exists to redistribute or stem that loss.

In this manner insights are gained that would not have been possible without reference to discrete species. In particular the case study approach was invaluable for the purposes of understanding consistency of treatment in substance and implementation.

[9] Ebbesson, J “Lex Pernis Apivorus: An Experiment of Environmental Law Methodology” 2003 15 Journal of Environmental Law 153.

Six case study birds were chosen to illuminate life cycle requirements and to consider the protection afforded to these species via extant conservation measures. The benefit of the case study approach is seen in the collection of detailed information on a subject.[10] Yet this feature also finds criticism due to the reductionist nature of the approach. Flyvbjerg, however, takes issue with the criticism that generalising from a single case is fatal to the method. Flyvbjerg suggests that context-dependent knowledge and experience are at the very heart of expert activity, and enables researchers to shift from rule-based beginners to virtuoso experts.[11] Ruddin also disagrees with the view that a single case study cannot provide trustworthy information for a broader class and argues that without generalisation we could not interact in a coherent manner due to the need for continual repetition of the same mental procedures for each new experience.[12]

The risk of generalisation through a case study approach is acknowledged. To overcome the risk of generalisation Flyvbjerg recommends the selection of a "critical case" which permits logical deduction due to having features that are most likely to either clearly confirm of irrefutably falsify a proposition.[13] Rather than select one case, in an attempt to reap the benefits of a case study approach, but avoid gross generalisation, a choice of six case study species was employed. In an attempt to gain breadth an original choice of four case study species was made representing contrasting habitat and distribution as follows: kokako (forest species), dotterel (coastal species), black petrel (marine species) and godwit (international migrant). The wrybill was subsequently added due to part of its habitat (riverine/wetland environment) and due to its

[10] Flyvbjerg, B "Five Misunderstandings About Case-Study Research" 2006 12 Qualitative Inquiry 219 at 220.
[11] Ibid at 221-222.
[12] Ruddin, LP "You can Generalize Stupid! Social Scientists, Bent Flyvbjerg, and Case Study Methodology" 2006 12 Qualitative Inquiry 797 at 798-99.
[13] Flyvbjerg ibid, at 231.

status as an internal migrant and the sooty shearwater to include consideration of customary take. It was assumed that the range of different habitats and distribution would present different threats and legal responses, and accordingly provide a wider view of the law, than consideration of one bird alone. Given the fragmented nature of species protection in New Zealand, it is now clear that use of a single case would have produced a lopsided account of the law, and a spread has enabled the capturing of a wider range of matters. Using no birds may have thrown the net wider, but not necessarily deeper.

The choice of bird species is not without its issues and the benefit of hindsight (and a resultant better informed view) would suggest diversifying the grouping, as it transpired that five of the species fell within two orders of scientific classification (charadriiformes and procellariformes). Several other species, particularly those being threatened by intensifying agriculture, wetland drainage and water quality in New Zealand farming regions (such as the bittern, fernbird, pipit and banded rail) have offered up tantalising prospects during the course of this research, however, scale dictated a need to limit the enquiry. Documenting species accounts and scrutinising particular threats pinpointed the nature and scale of the challenge to the law in responding to different threats in a variety of habitats. The approach was not to produce a universal truth, rather to examine the operation of the law. A fundamental finding is the need for the laws to be cognisant of difference in relation to species, habitats and threats, yet consistent.

A case study approach was also applied to a place (Wharekawa Harbour/Opoutere). A key motivation for this choice stemmed from the division at law between protection of species and protection of habitat/ecosystem protection. Using a case study applied to place in contrast to species drew out the tensions which arise at law and in practice between this division, as well as providing a valuable opportunity to scrutinise operation of the law in the protection of birds. The choice of place was both instinctive and calculated. It is an area redolent in natural character, associated with all case study species, pressurised by human development and a battleground for conservation. Again, this approach may be criticised in that the enquiry is reduced and generalisation may result. Locating a "critical case" for such a purpose is close to impossible due to the wide range of variables in the enquiry. Yet for the purposes of making logical deduction the diversity of habitat, geography, natural resources and human activity makes for a valuable comparative. Use of the case study did tend to turn the focus to a particular species and discrete threats, yet, many (but not all) of the findings are applicable more generally. What the case study approach enables is criticism of law and planning based on fact and grounded in reality.

4. An ancillary method was the use of semi-structured and targeted interviews of people expert in ornithology, avian conservation and conservation policy and management. Semi-structured interviews are conversational in tone, but are also self-conscious, orderly and partially structured.[14] The purpose of this was to gain a better understanding of the subject matter, the species and of the problems in conservation, as opposed to founding an assertion. A total of eight formal interviews were conducted as follows:

Table 1 Interview participants

Interviewee	Position
John Innes	Wildlife Ecologist, Landcare Research, Kokako Expert

[14] Longhurst, R "Semi-structured Interviews and Focus Groups" in Clifford, NJ and Valentine, G (eds) *Key Methods in Geography* (Sage Publications Ltd, United Kingdom, 2003) 118.

Elizabeth Bell	Ecologist, Wildlife Management International, Blenheim, Black Petrel Expert
Dr John Dowding	Ecologist, DM Consultants, Christchurch, Dotterel and Wrybill Expert
Keith Woodley	Author, Manager of the Miranda Shorebird Centre, Shorebird Expert
Greg Martin	Former Regional Conservator, Waikato Region, Department of Conservation
Rachel Kelleher	Ecologist and ex Conservation Support Manager for the Waikato Region
Tony Roxburgh	Conservation Manager, Former Project Manager for Heritage Development and Reserves Planning Waipa District Council, Community Facilities Manager Waipa District Council, Chair of the National Wetlands Trust.
Gerry Kessels	Ecologist and Environmental Planner, Kessels Ecology, Hamilton.

A qualitative approach was taken whereby the participants were identified through the literature and through relevant contacts. All participants were interviewed at their place of work, or alternatively in close proximity to a field visit. The interviews, processed in accordance with the conditions of the Ethics Application, were recorded and transcribed. The participant responses were then analysed and coded to extract relevant information, discern themes and issues and develop ideas. The enquiries were focused upon the case study species and conservation management, but all interviews ranged widely. Some fruitful discussion was had with particular participants about the operation of the law. John Dowding, an ecologist well versed in resource management processes, provided important insight concerning his view of gaps in the law. In general the interviews yielded a rich source of information, and a key and unanticipated function, was to determine the need to narrow the enquiry in order to produce directed findings. Although many of those interviewed were strong species advocates, the private consultant and conservation managers assisted in balancing the enquiry through presenting perspectives tied to the need for development to occur in the landscape and the intricacies of co-existence of human and species.

Despite having transcribed and analysed all interview material, a choice was made not to include any direct quotes. Much of the valuable and quotable material revolved around life cycles of the birds and threats, but subsequent discussion with science experts persuaded me of the need to rely upon a robust evidence base, when describing matters of biology or ecology. Accordingly a choice was made to rely upon published material in this respect. Regardless, the value of the interviews should not be discounted as they seeded ideas, produced different angles from which to reflect upon the operation of the law and threw up problems requiring better resolution by the law and planning.

A final method was the sourcing of information from networking, and participant observation in the field, during the course of employment, through appointment to a statutory conservation board and through volunteer conservation activity. The research was conducted over a period of time spanning some six-seven years and engagement in conservation initiatives, particularly bird monitoring, was an invaluable source of knowledge. Monitoring stints banding the black petrel at Great Barrier, wrybill, godwit, red knot and dotterel at Miranda on multiple occasions, dotterel monitoring at Maketu post the Rena oil spill, monthly predator monitoring on Maungatautari and engagement with all the people connected to these activities assisted in shaping the enquiry. Tied to this was considerable networking and discussion with the environmental planning profession, developers, the judiciary, lawyers and private consultants generated through the research and my position as Convenor of the Environmental Planning Programme at Waikato University. Attendance at conferences, seminars and presentations, provision of advice, preparation of submissions on law and policy, supervision of research and preparation of lecture material each added to the rich mix.

All of these methods contributed something special to the research, but the essential backbone of the methodology and related findings is the analysis of law, the breakdown of statute and case law and consideration of this, in the context of the case study species.

1.5 CONCLUSION

This research analyses how New Zealand legal and planning responses impact the distribution of harm and benefit to birds. It reaches conclusions and makes recommendations as to opportunities to strengthen the law to better protect birds. It is therefore fitting that the first chapter introduces the reader to birds generally, and importantly, to the case study species. It is also fitting that the reader, to reach Chapter one, follows the fresh tracks of a mustelid, upon its crepuscular patrol down the public track to Opoutere Beach, whilst on the lookout for an evening meal from the wildlife refuge (Figures 2 and 3).

Figure 2 Mustelid tracks Opoutere Beach 2014

Figure 3 Site of mustelid tracks, public track to beach and refuge, Opoutere, 2014.

CHAPTER TWO: BIRDS

Kingdom *Animalia,* Phylum *Chordata*, Class *Aves*

Figure 4 Pied shag, kāruhiruhi.

2.1 BIRDS

This chapter reviews the general and specific features of birds, to better understand the nature of what the law aims to protect. It commences with the general features and then moves to the birds of New Zealand and introduces the case study species and legal protection status.

All birds share common characteristics which include being warmed blooded, bipedal vertebrates with four limbs, two of which are modified into wings.[15] The most distinguishing feature of birds from other animals is the

[15] Gill, FB *Ornithology* (3rd ed, W.H. Freeman, New York, 2007) 4-6.

possession of feathers, as demonstrated by the pied shag in Figure 4. This characteristic enables flight in many species, an adaptation which propels birds to a wider variety of habitats than other vertebrates, resulting in extensive migration patterns.[16] As the auditory range of birds is limited, and the sense of smell of most not highly developed,[17] sight is the key sense they apply when obtaining information about their environment. Bird call and song are vital means of communication for most species[18] since they help to identify location, define territory, attract mates, repel invaders, and for the young, beg for food. The term "bird-brained" is not highly apposite, as birds have well-developed brains. Specific laboratory tests show crows to have cognitive abilities matching those of dogs, both species out-performing cats, rabbits and chickens.[19] All birds lay eggs and the majority incubate the eggs. Most birds reproduce annually, displaying highly developed parental behaviour, and reproductive cycles are generally aligned with environmental conditions to ensure hatching and growth to independence coincides with the season of greatest food availability.[20] Although unified by these common characteristics, appreciable diversity of form and function is a key feature of this class.

From the covert kiwi to the flashy flamingo, birds exhibit physical divergences in many instances attributable to place. The approximately 9,700 living species of birds can be classified into approximately 30 separate orders, with the majority of species belonging to the familiar Order Passeriformes or perching birds.[21] The range of orders pertaining to the class presages a proliferation of species that occupies a diverse range of habitat.

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[16] Podulka, S, Rohrbaugh, RW and Bonney, R Handbook of Bird Biology (2nd ed, Cornell Lab of Ornithology in association with Princeton University Press, Ithaca, NY, 2004)1.67.
[17] Gill, FB above n 15 at 184, 197.
[18] Bock, WJ "Birds" in Contrafatto, G & Minelli, A (ed) *Biological Science Fundamentals and Systematics, in Encyclopedia of Life Support Systems* (EOLSS Publishers, United Kingdom, 2004) at para 2.4.
[19] Gill, FB, above n 15 at 207.
[20] Bock above n 18 at para 4.
[21] Gill, FB above n 15 at 9, 12 and Podulka above n 16 at 1.61.

The presence of birds throughout the world indicates their early origins in the evolutionary process. Although some birds travel great distances by foot, the predominant mode of passage is flight. The advantage of flight enabled birds is to colonise remote areas and gain access to resources and habitat beyond the reach of less aerially mobile creatures, some other animals have developed wings of skin to offer limited abilities of flight. More recently, humans have secured similar advantages, through technological advancements. However, the factor unique to bird flight is feathers.[22]

Feathers cover the bulk of a bird's body, with the general exceptions of feet, legs and beak, and vary considerably in form and function.[23] Individual feathers contain small hooks which interlink to form an insulating and streamlined whole. It is now contended that, in the evolutionary process, feathers developed prior to flight and their original purpose was for insulation by way of containing warm air and repelling water.[24] Wing and tail feathers are of particular assistance in flight, and in combination with a lightweight skeletal structure, enable aerial locomotion. The wing formation of different bird species is diverse and its shape dictates flight movement and pattern.[25]

Flight duration, height and speed vary widely amongst species and relate to purpose e.g. foraging, display, escape or migration. Migrating swans have been recorded at a height of 8,230 metres,[26] whereas wattlebirds may bound and levitate mere centimetres off the ground as they forage on the forest floor for food.

Migration is a cyclical phenomenon common to many birds, expressed on all continents. It is designed to maximise environmental potential in terms

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[22] Elphick, J (ed) *The Atlas of Bird Migration; Tracing the Great Journeys of the World's Birds* (Struik Publishers, South Africa, 2007)16.
[23] Podulka above n 16 at E-11.
[24] Podulka above n 16 at 1.23.
[25] Elphick above n 22 at 20.
[26] Elphick above n 22 at 22, 23.

of favourable climate, food supply and habitat availability.[27] Migration patterns vary widely and are species specific. For example, the arctic tern has a known migration route of 17,700 km from the breeding grounds in Alaska to the pack ice of the Antarctic.[28] In contrast, less ambitious creatures, such as the New Zealand wrybill, may be content with short annual migration flights within the confines of New Zealand.

The extensive variation encountered in birdlife poses significant challenges for conservation of this fauna. Protecting the basic prerequisites of life for the group is the key to success. However, these prerequisites differ markedly between species. Accordingly, both ecological and biological requirements of a species need to be understood in order to sustain life.

2.2 BIRDS – AOTEAROA NEW ZEALAND

The presence in New Zealand of a unique endemic fauna and flora is partially obscured by a shroud of introduced species. Travel the cities, towns and hinterlands and you will encounter a landscape dominated by buildings, pasture and croplands, and populated mostly by humans, cows and sheep. The evident avian fauna will be endemic, but not to New Zealand. The innumerable sparrow, thrush, pigeon and blackbird occupying the farmland and cityscapes are symbols of colonisation by a distant European nation.[29] The fact that these birds have thrived in the recently developed nation, and in many instances having displaced their indigenous counterparts, indicates species with very different evolutionary pathways. Explore further into the margins of New

[27] Podulka above n.16 at 5.57 and Gill, FB, above n 15 at 273.
[28] Podulka above n 16 at 5.53.
[29] Blackbird, starling, chaffinch, Australian magpie and house sparrow were some of the most frequently recorded taxa in the 1999-2004 Survey of the distribution of birds in New Zealand, see Robertson, C and Bull, P *Atlas of Bird Distribution in New Zealand 1999-2004* (Ornithological Society of New Zealand, New Zealand, 2007) 6.

Zealand and an astonishing, albeit winged, endemic avian fauna can be detected.

New Zealand is an archipelago of more than 330 oceanic islands, situated in the south-western Pacific Ocean.[30] The land area is approximately 270,500 km^2 with an extensive coastline of approximately 18,218 km[31] generally consisting of two-thirds rocky shore, the remaining third being soft sand silt and gravel.[32] Biogeographically, it is diverse, hosting a wide variety of land forms, climate conditions, soil types and ecology. A 2002 report indicated natural cover (including native vegetation, rivers, lakes, snow, and ice) was New Zealand's largest land cover at 50% of the total land area, the second largest was pasture at just over 39%.[33]

The islands of New Zealand, the largest and most remote of all oceanic islands have had dry land for at least 100 million years, and developed without mammals.[34] Historical biogeography reveals that, some 170 million years ago (hereafter MYA), the supercontinent of Gondwana included the forerunners of modern day South America, Africa, Arabia, Madagascar, India, Antarctica, Australia, New Guinea and an embryonic New Zealand. Approximately 80 MYA, the islands of New Zealand split away from the supercontinent as the Tasman Sea opened up.[35] New Zealand's long isolation as an island has given it the distinction of being a "centre of endemism", an area where the proportion of species unique to that area is high.[36] Although there is some debate as to why New Zealand was largely mammal free, there is consensus that "the absence of dominant grazing and predaceous land mammals had far-

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[30] Ministry for the Environment *Environment New Zealand 2007* (Ministry for the Environment, 2007).311.
[31] Melville, DS and Battley, PF "Shorebirds in New Zealand" 2006 50 The Stilt 295.269.
[32] Melville ibid.
[33] Ministry for the Environment 2007, above n 30 at 213.
[34] Hutching, G *The Penguin Natural World of New Zealand* (Penguin Books, New Zealand, 2004) 14.
[35] Gibbs, GW *Ghosts of Gondwana: the History of Life in New Zealand* (Craig Potton Pub., New Zealand, 2006) 50-51.
[36] Gill, B and Moon, G New Zealand's Unique Birds (Reed, Auckland, 1999) 11.

reaching effects on the evolutionary patterns in New Zealand."[37] It is no coincidence that the presence of mammals threatens the continued existence of what remains of New Zealand's endemic avian fauna today.

Endemism is generally higher in geographically remote areas where barriers of high mountains, arid deserts or vast oceans limit the transfer of species. In taxonomic terms, endemism can be understood at different levels, generally, order or family level endemism is more likely to exist the longer an area has been isolated from other populations.

Although New Zealand has no plant endemics at order or family level, it has produced three vertebrates at order level and nine at family level.[38] The Apterygiformes, or kiwi, are the sole extant avian endemic order.[39] Family-level endemism extends to three further extant avian groups including the Acanthisittidae (New Zealand wrens), the Turnagridae (piopios) and the Callaeidae (New Zealand wattlebirds).[40] Supplementing this group are some 37 endemic genera and 120 species-level endemics. Despite this level of endemism being high by world standards, it is a fragment of that which had existed pre-human times.[41]

Whilst New Zealand's endemic avian fauna stems from its Gondwanan origin, it has subsequently supplemented by waves of immigrants, mostly from Australia.[42] The biogeographical processes of dispersal, vicariance (separation

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[37] Gibbs above n 35 at 75.
[38] Gibbs above n 35 at 14, 18.
[39] Some commentators place Apterygiformes and Dinorthiformes as family groups of the Order Struthioniformes, containing all ratite birds, for instance Gill and Moon above n 36 at 12.
[40] Two other family level endemics now extinct include the Emeidae (emeidmoas) and the Aptornithidae (adzebills) see Gill and Moon above n 36 at 12.
[41] Holdaway, RN "New Zealand's Pre-Human Avifauna and its Vulnerability" 1989 12 New Zealand Journal of Ecology 18.
[42] Wilson, K-J *Flight of the Huia: Ecology and Conservation of New Zealand's Frogs, Reptiles, Birds and Mammals* (Canterbury University Press, Christchurch, N.Z., 2004) 49. Some species are representatives of double invasions of the same ancestral stock, occurring within significantly different time frames, such as the takahe and the pukeko, see Gill and Moon above n 36 at 15.

of communities of organisms via a barrier) and extinction, each contribute to the current make-up of fauna.[43]

Current avian fauna species is comprised equally of seabirds, terrestrial birds and wetland birds. This trend runs counter to the global composition, which is dominated by terrestrial birds, only 3.9% is allocated for seabirds.[44] Beyond composition, other defining features exist. As a result of isolation, not enjoyed to the same extent by seabirds and migratory waders, New Zealand's terrestrial birds have developed unique characteristics. Evolution free from predaceous mammals has resulted in distinctive characteristics such as flightlessness, gigantism, longevity and leisurely reproductive rates.[45] In addition to physical features, behavioural features such as naivety about mammalian predators, inappropriate defence behaviours, tameness and inquisitiveness have been well documented.[46]

In terms of biodiversity, the distribution of birds continues to alter significantly. A survey reveals the greatest changes have been among the endemic taxa with 15 species increasing, 26 showing no change and 25 decreasing in distribution. In contrast, native and introduced taxa are generally on the increase.[47]

2.2.1 PROTECTION STATUS

There are two main classification systems relevant to New Zealand fauna. (Figures 5 and 6). The first is the internationally-recognised IUCN Red List of Threatened species classification shown in Figure 5, and to be discussed with reference to each of the case study species.[48] The main purpose of the list is "to

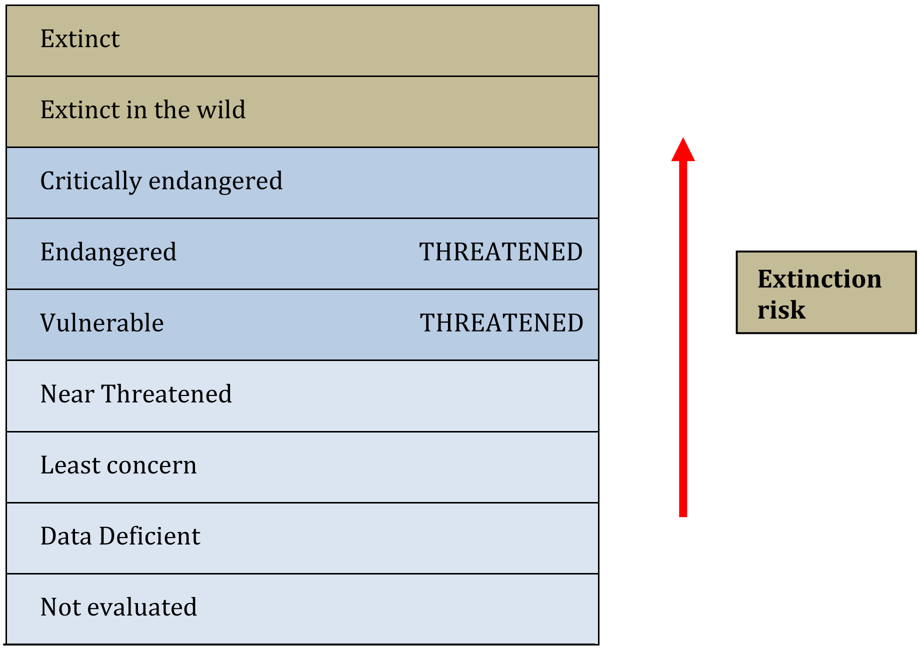
[43] Gibbs above n 35 at 46.
[44] Wilson,K-J above n 42 at 48.
[45] Ibid at 16.
[46] Innes, J, Kelly, D, Overton, J, and others "Predation and Other Factors Currently Limiting New Zealand Forest Birds" 2010 34 New Zealand Journal of Ecology 91.
[47] Robertson and Bull above n 29 at 6.
[48] IUCN *IUCN Red List Categories and Criteria: Version 3.1* (IUCN, 2012).

catalogue and highlight those plants and animals that are facing a higher risk of global extinction".[49]It differs somewhat from the New Zealand classification system, (Figure 6) in relation to the categories applied, although, as will be seen, each applies a hierarchical approach to level of endangerment.

[49] IUCN ibid.

Figure 5 The IUCN Red List

Categories: The Red List creates nine separate categories. Of these three are considered Threatened; Critically Endangered, Endangered and Vulnerable**.**



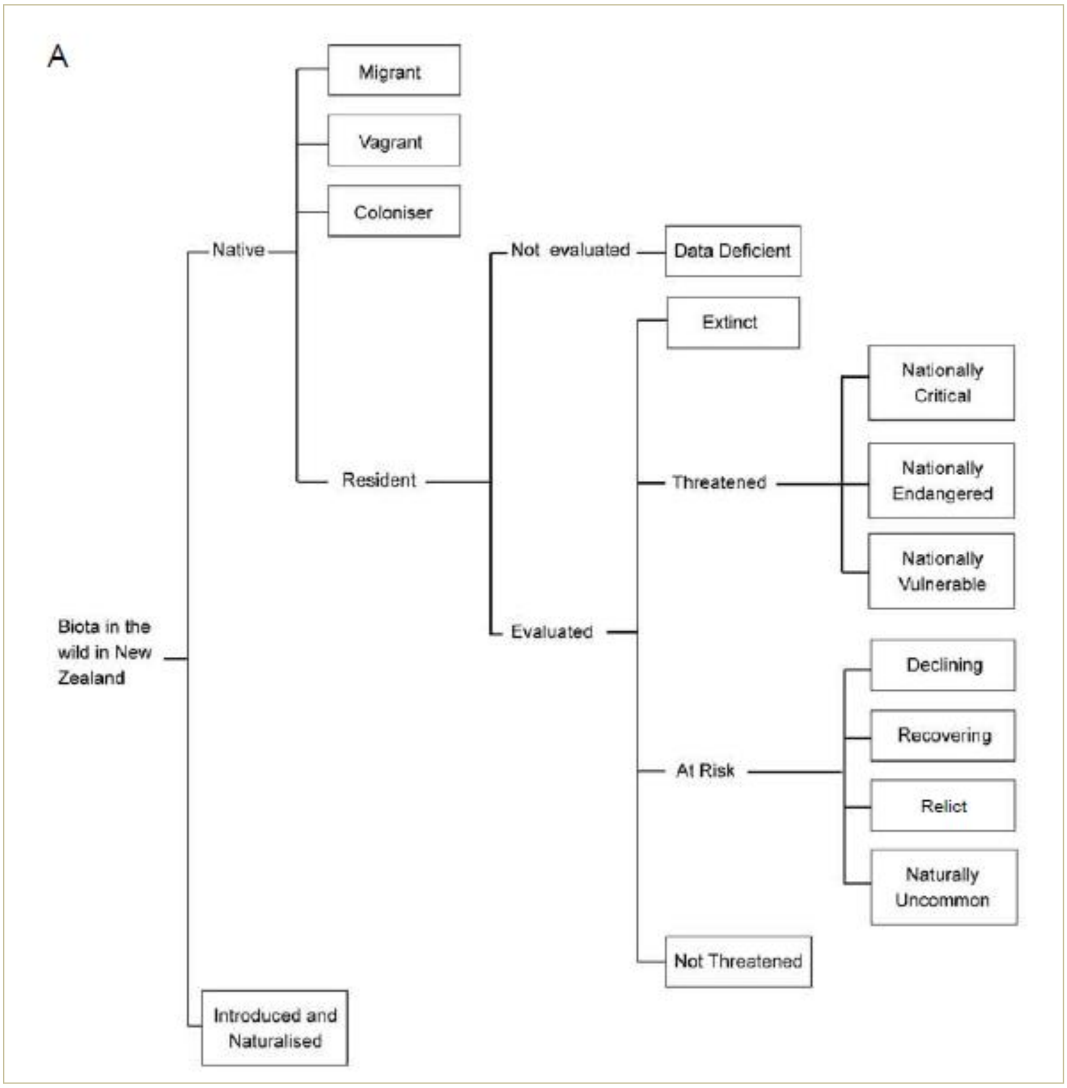
CATEGORIES
Extinct (EX): there is no reasonable doubt that the last individual has died.
Extinct in the Wild (EW): the taxon is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range.
Critically Endangered (CR): the taxon faces an extremely high risk of extinction in the wild, determined by reference to criteria.
Endangered (EN): the taxon faces a very high risk of extinction in the wild, determined by reference to criteria.
Vulnerable (VU): the taxon faces a high risk of extinction in the wild, determined by reference to criteria.
Near Threatened (NT): the taxon is close to qualifying for or is likely to qualify for a threatened category in the near future.
Least concern (LC): the taxon has been evaluated against the criteria and is not at r**isk.**
Data Deficient (DD): Insufficient information to assess risk.

CRITERIA
To categorise a taxon as a threatened species, a range of qualitative criteria exists against which to assess the species. Each taxon is assessed against all criteria which are chosen to reflect a wide range of risk factors. The criteria for each threatened category are listed A-E of which the factors below are generally representative. The greater the extinction risk of the category of threatened species, the higher the threshold is set for the criteria.
A: Reduction in population size.
B: Fragmentation of range, reduced distribution and decline or change.
C: Small population and decline/fluctuation.
D: Small/restricted population.
E: Quantitative analysis showing possibility of extinction in the wild.

Source: ***IUCN Red List Categories and Criteria: Version 3.1*** **(IUCN, 2012)**.

The second system, the New Zealand Threat Classification System (Revised 2007) is set out in Figure 6.[50]

Figure 6 New Zealand Threat Classification System revised 2007



Source: Townsend and others 2008.

The New Zealand list is intended to complement the IUCN Red List, whilst providing a greater national focus and a more sensitive classification for taxa with naturally restricted distributions and small numbers as a result of insular rarity.[51] Figure 7 details the categories and criteria of the New Zealand list and

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[50] Townsend, AJ, de Lange, PJ, Duffy, CAJ, and others *New Zealand Threat Classification System Manual* (Department of Conservation, Wellington, NZ, 2008) diagram at 11.
[51] Townsend ibid, at 25.

Table 2 lists the additional qualifiers employed to provide further information relating to the taxon.[52]

Figure 7 The New Zealand Threatened species classification system

Categories: The New Zealand system creates nine separate categories. Of these three are considered Threatened; Nationally Critically Nationally Endangered, and Nationally Vulnerable.

Classification	
Extinct	
Nationally critical	THREATENED
Nationally endangered	THREATENED
Nationally vulnerable	THREATENED
Declining	AT RISK
Recovering	AT RISK
Relict	AT RISK
Naturally uncommon	AT RISK

CATEGORIES

Extinct: There is no reasonable doubt, after repeated surveys in known or expected habitats at appropriate times (diurnal, seasonal and annual) and throughout the taxon's historic range that the last individual has died.

Extinct in the Wild (EW): The taxon is known only in cultivation or captivity.

Nationally Critical (NC): Determined by reference to criteria.

Nationally Endangered (NE): Determined by reference to criteria.

Nationally Vulnerable (NV): Determined by reference to criteria.

Declining (Dec): Taxa do not qualify as 'Threatened' as they are buffered by a large total population size and/or a slower decline rate.

Recovering (Rec): Taxa that have undergone a documented decline within the last 1000 years and now have an ongoing or predicted increase of > 10% in the total population or area of occupancy, taken over the next 10 years or three generations, whichever is longer.

Relict (Rel): Taxa that have undergone a documented decline within the last 1000 years and now occupy less than 10% of their former range and meet one of the following criteria:

A. Have 5000–20 000 mature individuals and are stable (± 10%)

B. Have more than 20 000 mature individuals and are stable or increasing at > 10%

Naturally uncommon (NU): Taxa whose distribution is naturally confined to specific substrates (e.g. ultramafic rock), habitats (e.g. high alpine fellfield, hydrothermal vents), or geographic areas (e.g. subantarctic islands, sea-mounts), or taxa that occur within naturally small and widely scattered populations.

CRITERIA

The criteria are provided to enable taxa to be categorised against a range of risk factors. Criteria are category specific, yet ordered in themes such as:

Threatened

A: Population size. (E.g. for nationally critical fewer than 250 individuals)

B: Small population associated with ongoing decline (E.g. for nationally critical fewer than 250-1000 mature individuals)

C: Any population with a very high ongoing decline (E.g. for nationally critical a predicted decline of ≥ 70% of total population during next ten years or within 3 generations.)

At Risk

The At Risk category signals that if the decline continues the taxa may become threatened in the future. Criteria to assess At Risk categories consider factors such as Population Size, Area of Occupancy and Degree of Decline. (Information sourced from: Townsend, AJ, de Lange, PJ, Duffy, CAJ, and others *New Zealand Threat Classification System Manual* (Department of Conservation, Wellington, NZ, 2008))

Table 2 Threat qualifiers

QUALIFIER	STANDS FOR
CD	Conservation Dependent
DP	Data Poor
EF	Extreme Fluctuation
EW	Extinct in the Wild
OL	One Location
RF	Recruitment Failure
SO	Secure Overseas
TO	Threatened Overseas
St	Stable
De	Designated
IE	Island Endemic
Inc	Increasing
PD	Partial Decline
RR	Range Restricted
Sp	Sparse

2.3 CASE STUDY SPECIES

This section examines the six case study species, selected to provide context in terms of considering the ways in which New Zealand law and planning affect the distribution of harm and benefit to birds. It will be seen that the different biological features, distribution, and the needs of birds significantly influences the ways in which loss to the birds falls and that the way the law responds to these different aspects results in uneven treatment. The point of this section is to highlight the importance of legal measures that are cognisant of these differences, yet consistently protective, a matter that will become more evident as this research progresses. Depicted in Figure 8 is the Wharekawa Harbour high tide roost shared by godwit, dotterel and other species which, mingled together, may appear as one. Although protecting this particular habitat may protect both godwit and dotterel, differences in breeding habitat, biology and distribution impose the need for further species specific protective measures. Table 3 summarises the contrasting aspects, which are further discussed below.

Figure 8 Wharekawa Harbour high tide roost

Table 3 Case study species comparison						
	Kokako	**Godwit**	**Dotterel**	**Black petrel**	**Sooty shear-water**	**Wrybill**
Scientific name	*Callaeas cinerea wilsoni*	*Limosa lapponica baueri*	*Charadrius obscurus*	*Procellaria parkinsoni*	*Puffinus griseus*	*Anarhynchus frontalis*
Order	Passeriformes	Charadriiformes	Charadriiformes	Procellariformes	Procellariformes	Charadriiformes
Habitat	Land bird	Shore bird	Shore bird	Seabird	Seabird	Shore/braided river bird
Length	38 cm	39-41 cm	25 cm	46cm	44cm	20cm
Weight	230g	275-400g male 325-600g female	146g	700g	800g	55g
Food	Berries and leaves	Non breeding: bivalves & crustaceans	Aquatic and terrestrial invertebrates	Squid (cephalopods) fish, crustaceans and marine invertebrates.	Fish, crustacea and cephalopods	Mayfly and caddisfly larvae & opportunistic feeding
Breeding	Sept-March	Alaska late May to August	August to February	October to June	September to mid May	August to February
Eggs in clutch	1-3	4	2-3	1	1	2
Migration	Nil	Annual Alaska via Yellow Sea Depart March Arrive September	Nil - maximum dispersal 850km round trip	Annual to North Pacific Depart March-July return September/Oct	Annual figure of 8. Depart April/May return September	Annual, Internal N to S, leave SI Nov, Dec, Jan, early Feb- bulk at Christmas time, return to SI about August.
Life span	11-20 years		32 years minimum	29 years	>25 years	22+
Chick independence	Altricial -Independent at 4 months, but can be fed to up to 12 months	Precocial-Fully developed at hatching and fledge after 28-30 days	Precocial- fledging at 35-50 days	Altricial Independent at c.3 months	Altricial Independent at c.97 days (approximately 3 months 1 week)	Precocial fledging at 28 days

	Kokako	Godwit	Dotterel	Black petrel	Sooty shear-water	Wrybill
Population	780 pairs	1,100, 000 Sub species baueri. 150,000, 90,000 in New Zealand	2175 counted 2011	5000 (1400 breeding pairs)	19-23,000,000	4500-5000 (2000 pairs)
Distribution size	6300km^2	100,000-1,000,000km^2	10,100 km^2 NI and SI	29,900,000 km^2	185,000km^2	9,500 km2
IUCN status	Endangered	Least concern	Endangered	Vulnerable	Near Threatened	Vulnerable
DOC	Recovering	Declining	Vulnerable	Vulnerable	Declining	Vulnerable
Source: As referenced in chapter supplemented from Miskelly, C.M. (ed) New Zealand Birds Online www.nzbirdsonline.org.nz (2013) and BirdLife International (2013) IUCN Red List for birds. Downloaded from http://www.birdlife.org on 04/10/2013.						

Order Passeriformes **family** callaeidae **genus** callaeas **species** cinerea wilsoni

Figure 9 Kokako, TiriTiri Matangi Island

The kokako (Figure 9) is something of a celebrity amongst New Zealand faunal species, attaining flagship status along with other low-fliers such as the kiwi, takahe and yellow eyed-penguin. It is a bird whose poor condition attracted attention in the early 1970s and which may now be considered (with limitations) a conservation success. Brilliant blue wattles and a distinctive song, appear to have captured the imagination of scientists, conservationists and the general public alike.

Family level endemism indicates an ancient presence in New Zealand, The kokako is one of three endemic wattlebird species from the family Callaeidae, order Passeriformes.[53] The tieke or saddleback and the extinct huia complete the family Callaeidae.[54] Two sub species of the bird exist, the North

[53] Heather, BD, Robertson, HA and Onley, DJ *The Field Guide to the Birds of New Zealand* (Rev. ed, Viking, Auckland, N.Z., 2005) 416.
[54] Gill and Moon above n 36 at 134.

Island kokako *wilsoni* and the South island variant *cinerea,* distinguished by the presence of orange wattles. In 2007 the South Island bird was declared extinct, but recently its status was revised to "data deficient", due to lack of complete certainty as to its demise.[55]

The kokako is essentially vegetarian enjoying a variety of leaves, fruits and berries from plants including mahoe, five finger, pigeonwood, coprosma spp, fuschia, hound's-tongue fern and hanging spleenwort.[56] Large for a native songbird, the kokako weighs on average 230g per bird for both sexes[57], and measures approximately 38cm in length. The Latin *cinerea* denotes its ashy, blue grey plumage, tinged with mushroom, which is offset by vibrant wattles, black beak and accompanying black masquerade eye markings. Buller describes the mobility of the bird thus:[58]

> Its wings are small and rounded, and its flight is consequently feeble and generally limited to very short distances. Its progression through the forest is usually performed by a succession of hops, the wings and tail being partially spread –– a movement precisely similar to the Huia (*Heteralocha acutirostris*).

The kokako is long-lived,[59] and exhibits devotion, remaining in territorial pair-bonds often for many years.[60] Breeding occurs in the period September to March, with most activity from November to January. Kokako nests are on average 16m above the ground, sometimes placed directly in an epiphyte.[61]

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[55] Robertson, HA, Dowding, JE, Elliott, GP, and others *Conservation Status of New Zealand Birds, 2012.* (Department of Conservation, 2013) 2.
[56] Flux, I and Innes, J *Kokako Management Folder* (Department of Conservation, 2001).66.
[57] Innes, J and Flux, I *North Island Kokako Recovery Plan (1999–2009)* (Department of Conservation, 1999).
[58] Buller, WL, Turbott, EG and Keulemans, JG *Buller's Birds of New Zealand; A New Edition of Sir Walter Lawry Buller's A History of the Birds of New Zealand* (1979 Fifth ed, Whitcombe & Tombs, Christchurch, 1967) at 5.
[59] The oldest known kokako is 11 years and they may live for 20 years or more– see Innes and Flux 1999 above n 57 at 11.
[60] Ibid.
[61] Flux and Innes 2001, above n 56 at 25.

The host tree species varies, but a location with dense overhead cover is preferred to conceal the eggs from overhead predators

Kokako song is long and complex with local dialects that can be distinguished even within single continuous populations. The kokako is a duetting species, a technique considered to be used for the multiple purposes of defence, maintenance of a pair bond, or mate guarding.[62]. Responsive to song played back by audio equipment, they will investigate, call and respond to such a measure.[63] Techniques to acoustically anchor the Kokako, which generally remain within their territory all year long, are being investigated as tools to enhance conservation translocations of the species.[64]

2.3.1.1 Habitat (current and historical)

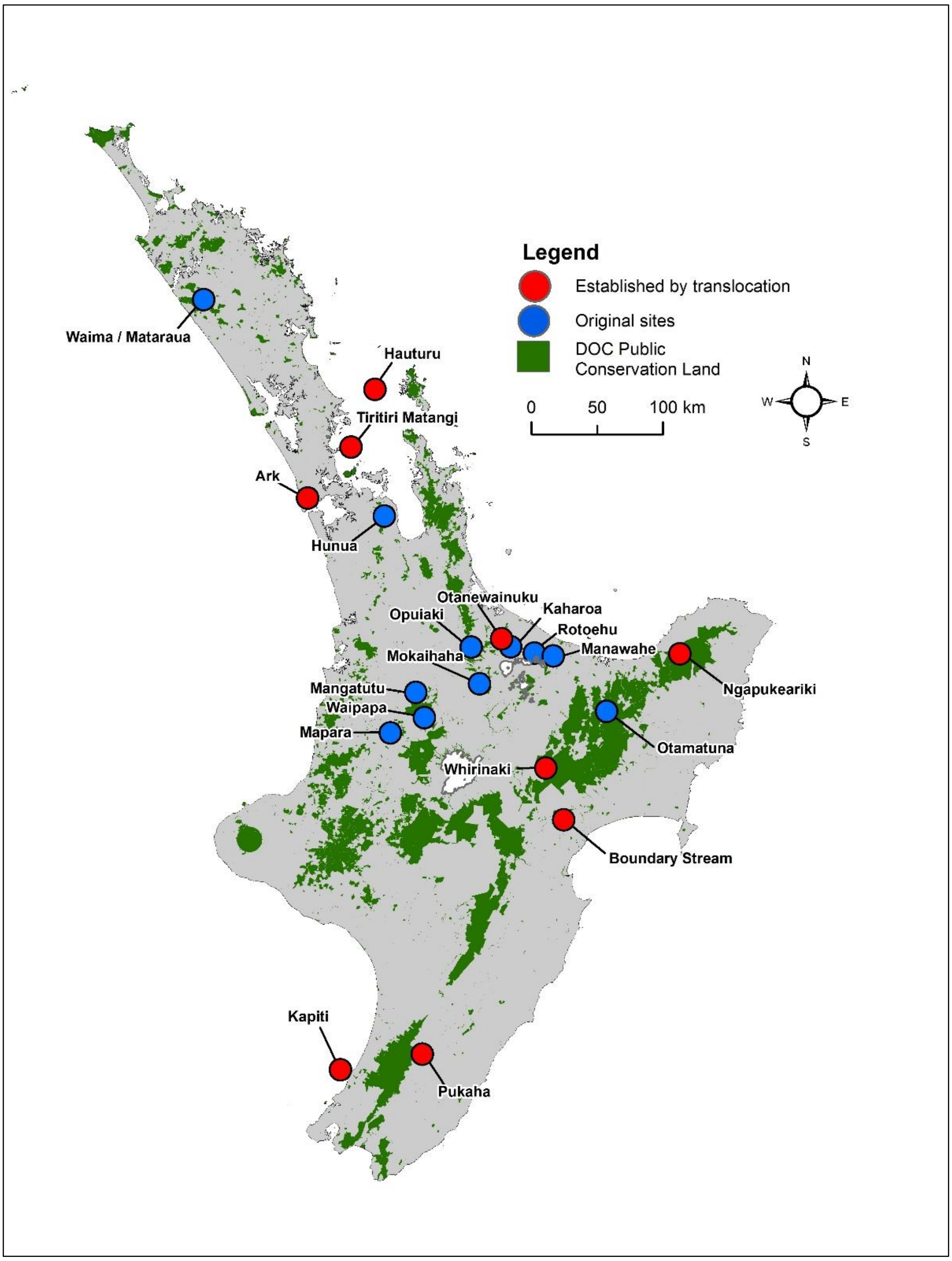
The kokako is a bird of the forest, preferring the tall mixed lowlands of podocarp and hardwoods with its high diversity of plant species.[65] Historically, kokako were found in forests throughout the North Island. Its distribution, however, has contracted as the forest habitat has shrunk.[66] Its current distribution size is estimated at 6300km^2.[67] Approximately 24 original and translocated populations currently endure, representing approximately 780 pairs. Hauturu Little Barrier Island is a stronghold containing a translocated population of approximately 200 birds, along with original populations of the birds in the central north island forest remnants. These populations are relatively small, and due to the kokako's poor flight ability are isolated from

[62] Molles, LE, Hudson, JD and Waas, JR "The Mechanics of Duetting in a New Zealand Endemic, the Kokako (Callaeas cinerea wilsoni): Song at a Snail's Pace" 2006 112 Ethology 433, Molles, LE and Waas, JR "Are Two Heads Better than One? Responses of the Duetting Kokako to One-and Two-Speaker Playback" 2006 72 Animal Behaviour, 131.
[63] Ibid, Molles and Waas 2006 at 132.
[64] Molles, LE, Calcott, A, Peters, D, and others ""Acoustic Anchoring" and the Successful Translocation of North Island Kokako (Callaeas Cinerea Wilsoni) to a New Zealand Mainland Management Site within Continuous Forest" 2008 55 Notornis 23.
[65] Heather above n 53 at 417.
[66] Flux and Innes 2001 above n 56 at 6.
[67]. BirdLife International "Species factsheet: Callaeas cinereus" (2014) <http://www.birdlife.org>

each other, thus, gene flow between populations is limited which can render them susceptible to problems associated with low genetic variability and inbreeding depression.[68] Figure 10 illustrates the distribution of known kokako populations in 2012.

[68] Hudson, QJ, Wilkins, RJ, Waas, JR, and others "Low Genetic Variability in Small Populations of New Zealand Kokako Callaeas Cinerea Wilsoni" 2000 96 Biological Conservation 105.106.

Figure 10 Kokako distribution



Source: Schematic reproduction of image supplied by John Innes, Landcare Research - Manaaki Whenua.

2.3.1.2 Threat status

The IUCN Red List of Threatened Species classifies the kokako as Endangered A2bd version3.1. This classification signifies that the kokako has suffered a reduction in population size of ≥ 50% over the last 10 years or three generations and relates to current population size. The bird's rapid decline, small population size and continued threat from predation justify the status, despite recent conservation success.[69] In New Zealand its survival status has recently been revised from Threatened (Nationally Vulnerable) to **At Risk**, **Recovering**, Criteria A (A 1000–5000 mature individuals or total area of occupancy ≤ 100 ha (1 km2), and predicted increase > 10%, with qualifiers, CD (Conservation Dependent), Inc, (Increasing) and Sp (Sparse).[70] This is the second revision since 2005 when the kokako was identified as Threat Classification 2 Nationally Endangered, with the qualifiers CD (Conservation Dependent) and RF (Recruitment Failure).[71]

[69] BirdLife International "Callaeas cinereus" (2013) IUCN Red List of Threatened Species <www.iucnredlist.org>
[70] Robertson and others 2013 above n 55 at 13.
[71] Hitchmough, R, Bull, L and Cromarty, P *New Zealand Threat Classification System lists: 2005* (Department of Conservation, 2007) at 38.

Order charadriiformes **family** scolopacidae **genus** limosa **species** lapponica baueri

Figure 11 Godwit, Opoutere Spit, Wharekawa Harbour, Coromandel

The godwit (Figure 11) is the most common Arctic wader to visit these shores during the summer season of October-March. It does not breed here, rather it refuels on marine worms and molluscs from the warm sandy shores before returning to its breeding grounds in Alaska.[72]

The godwit, of which four different species are recognised, belongs to the eastern-most and largest subspecies *Limosa laponnica baueri* which breeds predominantly in Alaska.[73] From the Order Charadriiformes, Family Scolopacidae, the migratory habits of *limosa lapponica* rule out endemic status in New Zealand. The species has a large range with an estimated global extent

[72] Gill and Moon above n 36 at 161.
[73] Battley, PF and Piersma, T "Body Composition and Flight Ranges of Bar-Tailed Godwits (Limosa lapponica baueri) from New Zealand" 2005 122 The Auk.923.

of occurrence of 100,000 to 1,000,000km^2 and a probable global population of 1,100, 000.[74] *L.l.Baueri* occurs in the Central Pacific basin along with another subspecies *Limosa laponnica menzbieri,* which is restricted to northern and western Australia. *L.l.baueri* prefers nesting grounds in western and northern Alaska whilst *L.l.menzbieri* inhabits breeding grounds in central northern Siberia from the Yana River delta east to Chaun Gulf.[75] From late May to August the birds breed, usually in solitary pairs, but sometimes flocked in small groups. Nesting grounds are usually wetland areas containing lowland moss and shrubs, but may also be in woodland close to water.[76] The species remains on the nesting grounds for some three months, raising a brood sufficiently strong to launch the massive non-stop return migration journey to New Zealand.

The location of New Zealand at the south-eastern extremity of the East Asian-Australasian flyway, limits the numbers of migrant waders visiting these shores, with the godwit, red knot and ruddy turnstone being the only visitors with internationally significant numbers.[77] Each year, approximately 85,000 to 110,000 godwit inhabit New Zealand's harbours, estuaries and mudflats. Approximately 70% of the population locate on the North Island and the remainder in the South.[78] When attempting to distinguish godwit from other waders, several key features stand out, the dusky brown plumage, the upwards curved bill and the striped formations of the bar-tail. The birds exhibit strong sexual dimorphism with the females outstripping the males in height, weight and bill length.[79] Additionally, in January, males acquire a russet plumage as

[74] BirdLife International "Limosa lapponica" (2012) IUCN Red List of Threatened Species <http:www.iucnredlist.org>
[75] Gill, RE, Piersma, T, Hufford, G, and others "Crossing the Ultimate Ecological Barrier: Evidence for an 11000-km-long Nonstop Flight from Alaska to New Zealand and Eastern Australia by Bar-Tailed Godwits" 2005 107 Condor.2.
[76] BirdLife International above n 74.
[77] Melville above n 77 at 269.
[78] Heather above n 53 at 321.
[79] Ibid. Size: male 39cm, 300g, bill 58mm; female 41cm, 350g, bill 105mm.

they moult in preparation for the northward migration, breeding plumage is age-related, and most males do not acquire it in the first two years of life.[80]

During the summer, the birds roost packed closely together, awaiting the fall of the tide before feeding on the flats in loose groups. Marine worms, molluscs and crabs are favoured and are located by probing the sand or mud with the bill.

2.3.2.1 Habitat (current and historical)

The godwit is distributed throughout coastal areas in New Zealand, inhabiting estuaries and sandy coasts with a preference for areas with broad intertidal mudflats. The species is found on both the east and west coasts of the North Island, with significant populations inhabiting the Kaipara and Manukau Harbours.[81] Other Northern harbours, such as the Firth of Thames, Kawhia and Raglan Harbours, Bay of Plenty estuaries, Mahia Peninsula and Hawkes Bay areas, carry respectable populations.[82] The South Island, home to about 30% of the national population, is less widely populated, favoured locations are Farewell Spit, Tasman Bay and coastal locations near Christchurch, Dunedin and Invercargill. A scattering of the birds can also be found along the west coast. In most of these places, a winter population indicates that not all birds make the annual migration to breed on distant shores.[83]

[80] Battley, PF "Plumage and Timing of Migration in Bar-Tailed Godwits: A Comment on Drent et al. (2003)" 2007 116 Oikos 349.
[81] Heather above n 53 at 321.
[82] Robertson and Bull above n 29 at 189.
[83] Robertson and Bull ibid, 188-189.

2.3.2.2 Protection status

Currently the Red List status of *L.lapponica* is recorded as "Least concern", due to a global population estimate of 1,100,000 individuals. Despite no quantification of global population trends, it is believed that the species does not approach the thresholds for the population decline criterion of the IUCN Red List, which does not discriminate between the sub-species. There are indications that the godwit is experiencing restriction of range and habitat loss within New Zealand and particularly at staging posts in the Yellow Sea. If these trends continue unchecked it is likely that status of the bird will require revision. The New Zealand classification of the godwit has recently changed from Migrant, to **Resident, At Risk, Declining** (B(1/1) (large population and low to moderate ongoing or predicted decline, 20 000–100 000 mature individuals, predicted decline 10–50%) TO, in recognition of the threats posed to the species overseas. The change from Migrant to Resident arises due to recognition that greater than 25% of the population spends more than 50% of their life cycle in New Zealand, despite not breeding here.[84] Specific threats to godwit and responses will be canvassed in subsequent chapters.

[84] BirdLife International "Limosa lapponica" (2012) IUCN Red List of Threatened Species <http:www.iucnredlist.org>, Robertson, and others 2013 above n 55 at 12 and 3.

2.3.3 NORTHERN NEW ZEALAND DOTTEREL, *Charadrius obscurus aquilonius* (Dotterel)

Order charadriiformes **family** charadriidae **genus** charadrius **species** obscurus aquilonius

Figure 12 Dotterel, Maketu Spit

Dotterel are found in many places throughout the world, yet the tuturiwhatu, the endemic New Zealand dotterel (Figure 12), is a now a rare sight on beaches. Distinguished from its more common cousin, the banded dotterel *Charadrius bicinctus*, the endemic species is one of the largest and rarest[85] with a population of approximately 2175 individuals.[86] Two subspecies have recently been described, *aquilonius,* the smaller northern New Zealand dotterel and the endangered *obscurus,* a tiny population confined to breeding

[85] Heather above n 53 at 302.
[86] Dowding, J "New Zealand Dotterel" in Miskelly, CM (ed) *New Zealand Birds Online* <www.nzbirdsonline.org.nz> (2013).

on Rakiura Stewart Island, with a limited winter range in coastal South Island areas.[87]

The plumage of the dotterel is variable with brown upperparts and whitish breast, which turns red in the male during the breeding season from August to February. Its sturdy beak is employed to capture an assortment of aquatic and terrestrial invertebrates. Small fish and crabs are also commonly eaten. Foraging habitat, therefore, includes tidal estuaries, stream mouths and sandy beaches.[88]

Nesting requirements are simple, a mere scrape in the sand proving sufficient. As such, dotterel are not usually found on rocky shores, but have been known to nest on grass in urban areas and upon shingle and bare earth in developed areas.[89] Occurrences have also been noted at freshwater wetlands.[90] The ground laying habit of these birds exposes the nests to many threats, but the use of camouflage offers some protection. Each breeding season, the female dotterel will lay 2 to 3 pale olive to buff brown eggs, well-toned to the colours of sand and shingle. The eggs are incubated by both sexes for 28 to 32 days with nestlings fledging at 6-7 weeks and will, in turn, typically breed in their second year.[91]

Dotterel chicks are precocial (independent at birth) and nidifugous which means they are covered in down and capable of locomotion, leaving the nest soon after hatching. The parents will lead the birds to suitable foraging grounds and the chicks fend for themselves.[92] Dotterel are relatively tame, yet they will call and alert when the presence of an intruder is noted. A perceived

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87 Dowding, JE and Moore, SJ *Habitat Networks of Indigenous Shorebirds in New Zealand* (Department of Conservation, 2006) 30.
88 Heather above n 53 at 302-3.
89 Dowding and Moore above n 87 at 30-31.
90 Robertson, and Bull above n 29 at 467.
91 Heather above n 53 at 301.
92 Lord, A, Waas, JR and Innes, J "Effects of Human Activity on the Behaviour of Northern New Zealand Dotterel Charadrius Obscurus Aquilonius Chicks" 1997 82 Biological Conservation 16.

threat will cause adults to leave nests and commonly produce a skilled repertoire of distraction techniques.[93]

2.3.3.1 Habitat (current and historical)

Buller records that the birds were more plentiful on the mud-flats and sand-banks of the Kaipara basin and Manukau Harbour than in any other part of the colony. Interestingly upon a report from Major Mair, Buller reports that the birds were even observed at Te Arikiroa, a bay in Lake Rotorua, where "he observed numbers of these birds running about among the warm springs and along the sulphur-crusted pans, where they appeared to be catching insects".[94]

Today, the range of the dotterel has contracted significantly. A nationwide census indicates distribution that is "widely and thinly spread around the coast of the North Island, mainly north of a line between Taranaki and northern Hawke's Bay."[95] Occurrences are noted below those points, but the bulk of the population is found on the east coast from Coromandel northwards.[96] In recent years, populations in all areas on the west coast have declined. Key breeding locations include Kokota Spit/Parengarenga Harbour, Waipu Estuary, Mangawhai, Omaha Spit/Whangateau Estuary, South Kaipara Head, Whangapoua Beach Great Barrier Island, Waikawau Bay, Opoutere and Matakana Island.[97]

Dotterel are relatively sedentary with most making predictable movements between breeding and flocking sites, the distance between which is not usually greater than 50km, and often considerably less. Important wintering flocking sites include Mangawhai Estuary, Mid-south Kaipara

[93] Lord, A, Waas, JR, Innes, J, and others "Effects of Human Approaches to Nests of Northern New Zealand Dotterels" 2001 98 Biological Conservation 233.
[94] Buller above n 58 at 126.
[95] Dowding and Moore above n 87 at 31.
[96] Robertson, and Bull above n 29 at 169.
[97] Dowding and Moore above n 87 at 33.

Harbour, Tauranga Harbour, Matarangi Spit, Ohiwa Harbour, Kokota Spit/Parengarenga, Omaha Spit, Whangarei Harbour, Maketu/Pukehina and Rangaunu Harbour. Juvenile birds have a greater range than adult birds although most birds breed within 70km of their natal site.[98] Foraging occurs both at day and night, and may see the birds travel distance of up to approximately eight km where food supplies may be in abundance.[99] Flocking and breeding grounds, along with foraging habitats, extensively overlap with that of other species, particularly arctic waders. Regional sub-populations have been identified between which there may be little or no gene flow. The Northland and Auckland populations are effectively isolated from the Coromandel/Great Barrier populations.[100]

2.3.3.2 Protection status

The dotterel has an IUCN Red list status of **Endangered** C2a (i) Version 3.1, which indicates continuing decline in numbers of mature individuals together with a population structure where no subpopulation is estimated to contain more than 250 mature individuals.[101] At a national level dotterel has been listed Threat Classification Nationally **Vulnerable**, Criterion (B1/1) Qualifier (CD) Conservation Dependent.[102]

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[98] Dowding and Moore above n 87 at 34.

[99] Statement of Evidence by Dowding, J on behalf of the Director-General of Conservation In the matter of an application to the Waikato Regional Council and Waitomo District Council by the Proprietors of Taharoa C Incorporation for Resource Consent to Build and Operate a wind farm at Taharoa, 22 June 2006.

[100] Dowding, JE *Management of Northern New Zealand Dotterels on Coromandel Peninsula* (Department of Conservation, 2006) 6.

[101] BirdLife International *Species Fact Sheet: Charadrius obscurus* (BirdLife International, 2008), BirdLife International "Charadrius obscurus" (2012) IUCN Red List of Threatened Species <http:www.iucnredlist.org>

[102] Miskelly, CM, Dowding, JE, Elliott, GP, and others "Conservation Status of New Zealand Birds, 2008" 2008 55 Notornis.128.

Order procellariformes **family** procellariidae **genus** procellaria **species** parkinsoni

Figure 13 Black petrel, Aotea Great Barrier Island

Today, encountering the black petrel (Figure 13) at Lake Taupo, in the Central North Island of New Zealand, is unlikely. Yet a small island in the lake, Motutaiko (Taiko Island), bears witness to a defining past presence, confirmed by extant burrows and archaeological investigations.[103]

The black petrel is a medium-sized, endemic seabird with striking chocolate black plumage, a yellow/bluish horn bill with a dark spot at the tip, and black feet. Five species of procellaria are currently recognised, with black petrel being the smallest and most northerly breeding of the genus.[104] At sea, it can be confused with the endemic Westland petrel and the flesh footed shearwater. Petrels, and other procellariformes such as albatrosses and

[103] Holdaway, above n 41 at 12.
[104] Hunter, C, Fletcher, DJ and Scofield, RP *Preliminary Modelling of Black Petrels (Procellaria parkinsoni) to Assess Population Status* (Department of Conservation, 2004) 5.

shearwaters, are tubenose birds, an adaptation of which enables an acute sense of smell and the excretion of excess salt garnered from life at sea.[105] The bird measures 46 cm in length and weighs a meaty 700g.[106] The black petrel has delayed maturity, low reproduction rates and high adult survivorship.[107]

The species breed annually in colonial nesting burrows on Aotea Great Barrier Island and Hauturu Little Barrier Island in the Hauraki Gulf, north eastern New Zealand. The burrows are typically between one and three metres long, either dug into the soil at the top of ridges or in cavities created under overhanging tree roots.[108] The breeding season begins in October and sees the birds arrive at the burrows in to prepare for nesting and mating. They then return to the burrows in late November to lay a single egg which is incubated for about 57 days.[109] The female incubates the egg for the first 0-4 days with the male taking a longer shift of 4-17 days. After that period, the birds alternate in shifts that get shorter towards hatching. This occurs in late January and February. The chicks are altricial and for the first few days of life are rarely left unattended. Later, they are left to fend alone, with a parent returning from a foraging trip every two to three nights to tend to its young. An absence of this length would result in chick mortality in many species. In petrels, however, extensive foraging flights are supported by an adaptation which enables conversion of food into a light-weight, energy-rich oil, which provides sustenance for the chicks.[110] The chicks remain in the burrows until approximately ten days prior to fledging, when they leave the burrows on

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[105] Hutching, above n 34 at 198.
[106] Heather above n 53 at 186, 189,198.
[107] Bell, EA, Sim, J and Scofield, P *Demographic Parameters of the Black Petrel (Procellaria parkinsoni)* (Department of Conservation, 273, 2007) 26.
[108] Robertson, CJR Reader's Digest Complete Book of New Zealand Birds (Reader's Digest, 1985) 90.
[109] Bell, EA, Sim, JL, Scofield, P, and others "At-sea Distribution and Population Dynamics of Black Petrel, Procellaria parkinsoni, on Great Barrier Island, Hauraki Gulf, New Zealand" (2008) <http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/twg/csp-twg-12-sept-08-black-petrels-bell.pdf>
[110] Wilson, K-J above n 42 at 216.

occasion to investigate the surroundings and prepare for flight.[111] Fledging occurs from mid-April to June, the end of the breeding season, when the chicks are about three months old.[112]

During the nine month breeding season, black petrel undertake extensive foraging flights throughout the subtropical waters surrounding north eastern New Zealand.[113] Recent research revealed that the majority of trips occur to the east and west of North Island, but with some birds foraging on occasion to eastern Australia, the Chatham Rise, around Puyseger Point, Fiordland and Fiji.[114] Black petrel feed mainly on squid, supplemented by fish, crustaceans and other marine invertebrates.[115] Opportunistic scavenging is well documented, and black petrel are known to associate with fishing vessels and cetacean mammals. Flocks of black petrel, numbering up to 300, have been recorded in the Eastern Pacific taking advantage of the remnants of dolphin kill. It is estimated that black petrel can dive to depths of at least 10m, but it is doubted that the dive is used to chase live prey.[116] Whilst extensive feeding with mammals has been recorded during the day in the Eastern Pacific, it is likely that the black petrel also feeds at night, the presence of luminescent squid has been identified in the stomach content analysis of chicks.[117] Insufficient research exists to establish whether the feeding practices of black petrel vary according to migrational habitat. The onset of the New Zealand winter is the catalyst for change, and the species depart for warmer climes, migrating in "March-July to the eastern tropical Pacific Ocean from the west of

[111] Heather above n 53 at 198.
[112] Bell and Sim 2008 above n 109.
[113] Heather above n 53 at 198.
[114] Agreement on the Conservation of Albatrosses and Petrels "Species assessments: Black Petrel Procellaria parkinsoni" (2009) <http://www.acap.aq > 6.
[115] Heather above n 53 at 198.
[116] Pitman, RL and Ballance, L "Parkinson's Petrel Distribution and Foraging Ecology in the Eastern Pacific: Aspects of an Exclusive Feeding Relationship with Dolphins" 1992 94 Condor 524-527.
[117] ACAP above n 114 at 6.

the Galapagos Islands to southern Mexico (15°N) and northern Peru (5°)."[118] Some of the younger non-breeders, however, will remain.

2.3.4.1 Habitat (current and historical)

Distribution of the black petrel has altered significantly as a result of human induced change. Black petrel breeding colonies were once widespread on mountains and hills throughout the country.[119] Now, only the offshore islands of Hauturu and Aotea offer accommodation. Aotea supports the larger colony with 2009 census data recording approximately 1300 breeding pairs in the surveyed area.[120] On Hauturu, the latest census data from 1987 indicates a population of 100 breeding pairs.[121] Little information exists in terms of foraging and migratory habitat. Both the Bell and ACAP reports state the need for further investigation, particularly in relation to foraging distances and locations in both breeding and non-breeding habitat, water temperature and flight patterns.[122]

2.3.4.2 Protection status

Since 2004 the IUCN Red list has classified the black petrel as Vulnerable D2 (ver 3.1), which indicates Vulnerable status due to the species breeding "*on just two very small islands where introduced predators are a potential threat.*"[123] The most recent New Zealand Threat Classification classes the black petrel as **Nationally Vulnerable,** Criterion (C1/11000–5000 mature individuals,

[118] Heather above n 53 at 198.
[119] Taylor, GA *Action Plan for Seabird Conservation in New Zealand. Part A: Threatened Seabirds* (Department of Conservation, 2000) 120. It is considered that most of the colonies were lost before the 1950s, although a few pairs may continue to nest on the mainland.
[120] Bell, EA, Sim, JL and Scofield, P *Population Parameters and Distribution of the Black Petrel (Procellaria parkinsoni), 2005/06* (Department of Conservation, 2009) 32. Total population estimate is 5000 see BirdLife International "Procellaria parkinsoni" (2012) IUCN Red List of Threatened Species. <www.iucnredlist.org>
[121] ACAP, above n 114 at 2.
[122] Bell 2009 above n 120 at 27, ACAP above n 114 at 7.
[123] BirdLife International above n 120.

predicted decline 10–50%), Qualifier (RR) Range Restricted.[124] A range of protection programmes apply which will be discussed in further detail in Chapter 6.

2.3.5 SOOTY SHEARWATER/TĪTĪ, *Puffinus griseus* (Sooty shearwater)

Order procellariformes **family** procellariidae **genus** puffinus **species** griseus

Figure 14 Sooty shearwater

Source: Dave Boyle Wildlife Management International Ltd

Unlike the less common black petrel, the sooty shearwater (Figure 14) is a bird familiar to many New Zealanders due, in part, to its relative abundance and, in addition, to its status as the tasty muttonbird. The sooty shearwater is one of the most abundant seabirds in the world[125] and a common native of New Zealand.[126]

[124] Robertson, and others 2013 above n 55 at 11.
[125] Brooke, M and Cox, J *Albatrosses and Petrels Across the World* (Oxford University Press, Oxford, 2004).
[126] Heather above n 53 at 32.

A medium-sized tube-nose seabird, the sooty shearwater resembles the black petrel, but can be distinguished by its dark bill and silvery-grey under wing. In length, the sooty shearwater is shorter by 2cm than the black petrel, but is slightly heavier.[127] The sooty shearwater is powerful in flight and when swimming in pursuit of prey, but is less agile on land. Sooty shearwaters are long-lived, late-maturing and slow reproducers.[128]

The bird breeds annually, mainly on islands off the North and South Islands of New Zealand and on some mainland headlands around Banks and Otago headlands.[129] Numbers are low at the remaining mainland sites, and extinction from the mainland is likely unless further protective measures are employed.[130] Why coloniality arises in birds such as petrels is the subject of debate, with varying theories advanced including benefits gained from information centres arising from aggregation, from mutual stimulation and from safety in numbers by swamping predators such as the Arctic skua.[131] Substantial populations can be found on islands such as Codfish, Big South Cape, Auckland, Campbell, Chatham and, particularly, The Snares which are populated by an estimated five million sooty shearwaters in the summer months.[132]

Sooty shearwater is a trans-equatorial migrant who enjoys "an endless summer"[133] arriving in New Zealand to begin the annual breeding cycle

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127 Ibid.

128 Uhlmann, S, Fletcher, D and Moller, H "Estimating Incidental Takes of Shearwaters in Driftnet Fisheries: Lessons for the Conservation of Seabirds" 2005 123 Biological Conservation 152.

129 Robertson 1985 above n 108 at 96.

130 Wilson, KJ *Status and Conservation of the Sooty Shearwater Colony at Mt Oneone, Wanganui River, Westland* (Department of Conservation, 1999). 1.

131 Warham, J *The Behaviour, Population Biology and Physiology of the Petrels* (Academic Press, London, 1996) at 7.

132 Mattern, T, Houston, D and Davis, L "The Snares Islands Project, The Snares Islands" (2014) <http://www.eudyptes.net/english/snares.html>Note, estimated by Heather to be 2.75 million above n 53 at 189.

133 Shaffer, SA, Tremblay, Y, Weimerskirch, H, and others "Migratory Shearwaters Integrate Oceanic Resources Across the Pacific Ocean in an Endless Summer" 2006 103 Proceedings of the National Academy of Sciences 12800.

running from September to mid-May. Nesting habits are similar to the black petrel, the sooty shearwater nests in burrows 0.5 to 3 metres long, but, where burrows are at a premium, cavities in trees, amongst boulders or surface laying may occur, burrows are reused each year. A single egg, laid in late November, is incubated by both sexes in shifts from three to more than twelve days at a time, hatching after approximately 53 days. Brooded by the parents for the first day, the young are then left for increasingly long intervals. In late April to mid-May the chicks fledge at an average age of 97 days.[134]

During the breeding season, adult birds will disperse widely throughout New Zealand waters, returning to land as the needs of the family dictate. The flight capabilities and dispersion rates of sooty shearwater have been the subject of recent investigation with geolocating archival tags being fitted to sooty shearwater from two different breeding colonies in New Zealand (Mana and Codfish Island). The research established that during the breeding season, sooty shearwater predominantly travel to cold Antarctic waters. Here, the species engages in intense diving activity, indicative of foraging.[135] Plunging and diving by flexing powerful wings is the main mode used to take food, with dives of up to 68.2m recorded.[136] Diet consists largely of squid, krill, fish and other small crustaceans.[137] Similar to black petrel, the sooty shearwater is also known to associate with fishing boats and cetaceans, and commonly aggregate in flocks where food is abundant.[138] At sea, sooty shearwaters are a gregarious species creating huge flocks of up to 500,000 birds as they forage and migrate.[139]

Food availability/abundance would appear to be the driving force behind the migrational strategy of the sooty shearwater. Chicks hatch in the

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134 Heather above n 53 at189 and Robertson 1985 above n 108 at 96.
135 Shaffer, above n 133 at 12800.
136 Ibid.
137 Warham above n 131 at 157.
138 Warham above n 131 at 143 and 133.
139 Heather, above n 53 at 190.

austral summer when productivity becomes higher in the South Pacific than the North Pacific.[140] Once the breeding cycle is complete, the sooty shearwaters begin to leave New Zealand in early April, eventually navigating the entire Pacific Ocean in a rough figure of eight route. Initially the birds head east towards South America, taking advantage of the prevailing winds. Flight is then diverted north, with the birds eventually reaching one of three potential wintering grounds in Japan, California or Alaska. Wintering over in these areas, the birds take advantage of the northern summer and increased productivity in the waters of the North Pacific. The birds stay in these discrete areas for prolonged periods before making the return trip to New Zealand. The entire trip equates to approximately 60,000 km and is the longest recorded migratory trip of any animal to date.[141] Unlike the godwit, however, the trips are not completed non-stop, the fortunate sooty shearwater can feed on the wing. Procellariformes generally return to land only to breed, spending most of its life at sea.[142]

2.3.5.1. Habitat (current and historical)

In New Zealand, the sooty shearwater has, historically, bred both on mainland sites and off-shore islands. Populations are, however, now in decline, and few viable mainland populations remain. It is considered that New Zealand breeding colonies support at least half of the world population of the species, estimated at 20 million birds.[143] Other significant breeding populations are located in sub-Antarctic and temperate zones including islands off the coast of Chile, the Falkland Islands, islands off the coasts of Tasmania and New South

[140] Schaffer above n 133 at 12801.
[141] Ibid.
[142] Williams, M *Migrations and Movements of Birds to New Zealand and Surrounding Sea* (Department of Conservation, 2006) 16.
[143] BirdLife International "Puffinus griseus" (2013) IUCN Red List of Threatened Species. <www.iucnredlist.org>

Wales and on Macquarie Island.[144] In terms of range, the birds occupy most of the world's open sea extensively utilising the Pacific, Southern and Atlantic oceans.[145]

2.3.5.2 Protection status

In 2004, the IUCN upgraded its threat status from Least Concern to Near Threatened. Despite the evident worldwide abundance of the bird, studies have concluded that the bird is experiencing a steady, and in some cases, dramatic decline, the population in the California Current, west coast, North America has been assessed as declining by 90% in the past twenty years.[146] The 2012 New Zealand classification records the bird as **At Risk, Declining**, Criterion (C1/1) Qualifier (SO) Stable Overseas. The classification indicates a very large population and low to high ongoing or predicted decline. The sooty shearwater qualifies through meeting the C1/1 criterion of a total population size is > 100 000 mature individuals, predicted decline 10–70%.[147]

[144] Heather above n 53 at 189.
[145] Birdlife, above n 143.
[146] Birdlife, above n 143.
[147] Robertson and others 2013 above n 55 at 12.

Order charadriiformes **family** charadriidae **genus** anarhynchus **species** frontalis

Figure 15 Wrybill, Firth of Thames, Ramsar site

A bill gone awry is not necessarily a symptom of a disorder, rather in the case of the wrybill (Figure 15), a resourceful adaptation to augment feeding strategies. This laterally curved bill, a feature which distinguishes the bird from other shore plovers, was noted by Buller as yet another instance of the very distinctive characteristic of the New Zealand avifauna.[148] Commonly seen standing on one leg, it is 20cm long with a weight of 55g.[149] The breed shows some sexual dimorphism in breeding plumage, the male exhibits a narrow black frontal bar between the forehead and crown which the females lack.[150]

[148] Buller above n 58 at 130.
[149] Heather, above n 53 at plate 45.
[150] Riegen, AC and Dowding, JE "The Wrybill Anarhynchus Frontalis: A Brief Review of Status, Threats and Work in Progress" 2003 100 Wader Study Group Bulletin 20.

During the breeding season the birds are solitary and secretive, yet otherwise they are happy to roost in groups.[151] Birds within a flock can, on occasion, show aggression towards each other, but generally they are tame and confiding birds, remain stationary when approached or hop as opposed to flying away.[152]

The species are internal migrants, and their feeding habits alter in accordance with habitat. Breeding occurs in Canterbury and inland Otago between latitudes of 42°S and 45°S with the birds largely inhabiting the braided river systems east of the main divide.[153] It is in these shingle rivers where they employ the unique beak with finesse, twisting and poking it in and under stones as they search opportunistically for aquatic insect larvae, fish eggs, beetles, bugs and flies. Mayfly and Caddisfly larvae are considered to be dominant in terms of dietary composition, and this implies a greater time is spent feeding in water than on land. However, dietary composition changes with weather-related events such as floods, whereby birds that are pushed to the margins of the river will turn their focus to beetles, spiders and flies.[154]

Wrybill flocks return to their southern breeding grounds around August each year. Birds pair off and nest on the greywacke shingle river beds to which the birds appear well adapted due to the colouring of both adult and chick plumage and the egg.[155] The birds "prefer areas free of plants, close to the water, preferably on the high points of bare islands or banks".[156] Annual site fidelity is common, and birds will usually nest several hundred metres part although nests have been recorded within 40m proximity. Territorial displays

[151] Heather above n 53 at 307.
[152] Robertson 1985 above n 108 at 189.
[153] Robertson ibid.
[154] Hughey, KFD "The Diet of the Wrybill (Anarhynchus frontalis) and the Banded Dotterel (Charadrius bicinctus) on two Braided Rivers in Canterbury, New Zealand" 1997 44 Notornis 191-2.
[155] Riegen and Dowding above n 150 at 20.
[156] Robertson 1985 above n 108 at 189.

are employed to maintain resident space and may involve direct aggressive action.[157]

The male create the nest by bulldozing a hollow in the shingle with his breast,[158] which is then lined with several hundred small pebbles.[159] Usually, two eggs are laid 48 hours apart with incubation beginning when the second egg is laid. When eggs are lost, replacement clutches are laid and double brooding is not uncommon.[160] The eggs are incubated by both sexes for approximately 30 days. Hatching is relatively synchronous and the chicks are precocial. Adult birds lead the chicks away to a suitable feeding area where the chicks feed themselves whilst guarded by the adult.[161] When a predator threatens, the adult bird will warn with a loud call in response to which the chick will freeze as the adult moves rapidly away. As with the dotterel, the cryptic plumage of the chick, combined with the rapid distraction of the adult, creates an effective protective strategy. Fledging occurs at approximately 28 days and, when the younger birds move off in groups, adults may then take the opportunity to establish another brood. Wrybill breed at approximately two years old and have been recorded as living up to 16 years of age.[162]

Migration commences in late November with the earliest fledglings and failed breeders heading northward to their wintering grounds about one month later. The bulk of the populations will migrate in late December to early January, with the latest breeders and their young leaving early February.[163] Their target destinations are the large northern harbours such as the Manukau, the Kaipara and the Firth of Thames. Migration is known to occur along both the east and west coast of the North Island with the majority using

157 Robertson ibid.
158 Heather above 53 at 308.
159 Robertson 1985 above n 108 at 189.
160 Riegen and Dowding above n 150 at 20
161 Robertson 1985 above n 108 at 189.
162 Heather, above 53 at 307.
163 Heather above n 53 at 307.

the west coast.[164] It is likely that the majority of the wrybills migrate north without pausing.[165]

For the next six to eight months, the wrybill enjoy muddy estuarine flats and seashore. Polychaete worms, small bivalves and crabs form the bulk of their diet at this point. Foraging mechanisms are altered to suit the prey. Small crustaceans will be slurped up and sieved, with the wrybills wading through the tidal mud and shallow waters sweeping their bills down and to the right. The bill will also be used to probe for prey in the mud.[166] After growing fat on this fare, the birds make the return journey to the breeding grounds in August, with a second smaller departure of birds presumed to be juvenile non-breeders occurring in October. The exact route of the birds is unknown, and it is not clear whether the majority fly direct, although there is evidence of many birds pausing in estuaries on the South Island east coast.[167]

2.3.6.1 Habitat (current and historical)

The breeding population is spread over 26 eastern South Island riverbeds, of which it is common on only ten.[168] The main breeding rivers are the Rakaia, Rangitata, Waimakariri and the upper Waitaki.[169] Due to the cryptic nature of the species and the widely spread habitat, reliable population estimates are difficult to conclude, but are estimated to be in region of 4,500 to 5,000 birds. Although detection of an overall trend is difficult,[170] population analyses suggest a slow decline.[171] Research indicates clear that the breeding range of

[164] Statement of Evidence by Dowding, J In the matter of an application to the Waikato Regional Council and the Waikato District Council by Taharoa C Incorporation to build and operate a wind farm at Taharoa 2007.
[165] Dowding ibid.
[166] Heather, above 53 at 307.
[167] Dowding, JE and Moore, SJ *Habitat Networks of Indigenous Shorebirds in New Zealand* (Department of Conservation, 2006) 46.
[168] BirdLife International "Species factsheet: Anarhynchus Frontalis" (2014) <http://www.birdlife.org>
[169] Heather above 53 at 307.
[170] Riegen and Dowding above n 150 at 22-23.
[171] Birdlife above n 168.

the bird has contracted in the past 100 years, with some recent examples of the bird disappearing or becoming scarce.[172] Populations at the wintering grounds tend to centre on the large northern harbours, Dowding and Moore identify the Manukau Harbour and the Firth of Thames as areas of outstanding importance to the wrybill as these two sites are estimated to hold c. 85% of the total population. Parengarenga, Whangarei, South Kaipara, Waitemata and Tauranga Harbours, each accommodating 100 to 300 birds, are considered sites of significance. Divergences to these general trends can be noted. Some birds never reach the North Island on the northward migration, opting instead for more northern South Island locations, including Motueka Sandspit, Waimea Inlet and Lake Ellesmere.[173] In addition, small numbers of birds may not initiate the northwards migration whilst approximately 5-10% of the northern population remains in the north throughout the summer.[174]

2.3.6.2 Protection status

The wrybill is listed on the IUCN Red List as Vulnerable C2a(i) ver 3.1, with justification for the classification being due to "a small population, in a single subpopulation, which is undergoing a continuing decline owing to habitat degradation and the impacts of introduced predators".[175] The New Zealand Threat classification list identifies the wrybill as Threat Classification **Nationally Vulnerable**, Criterion (C1/1), Qualifier (RR) Range Restricted, which is the same classification as received by the black petrel.[176]

[172] Dowding and Moore, above n 86 at 33.
[173] Dowding and Moore above n 87 at 45.
[174] Heather above n 53 at 307. This remnant population is attributed by Riegen and Dowding above n 150 at 20, to be largely first year birds.
[175] BirdLife International "Anarhynchus frontalis" (2012) IUCN Red List of Threatened Species <www.iucnredlist.org>
[176] Robertson and others 2013 above n 55 at 11.

2.4 CONCLUSION

This chapter has introduced birds generally and more specifically, the case study species. Amongst other things it has examined their characteristics and reviewed the protection status of the birds. The different habitats and distribution of the case study birds have been outlined. These aspects will be seen to be of significance in later chapters which examine the application of the law to these areas.

From the summary review it is evident that the prospect of each of the case study species is compromised to some extent, potentially indicating a failure to stem harm suffered by the birds. This sets the scene for subsequent enquiries related to the reach of the law and the degree of care employed. The nature and effect of the forces that have rendered the birds Threatened or At Risk will be the central topic of Chapter 4. Prior to an examination of those threats, Chapter 3 will consider the character and relationships of values that are impinged by the threats. An understanding of the relative values of the birds, and the forces which threaten them, provides context necessary to assessing conservation responses.

CHAPTER THREE: BIRDS AND EXISTENCE

A lone dotterel forages on the sandspit at the mouth of the Wharekawa Harbour in Coromandel (Figure 16). The critical issue for threatened birds is whether New Zealanders will take sufficient action and make sufficient change to provide bird species with a more positive future. A real possibility is that the problem is thought to be too difficult to address either because of the social and economic impacts upon human interests and the extent of the effort, or because some question the difference between a common house sparrow and a dotterel. These are largely value choices and this chapter, in consideration of research objective 1.2.2, focuses upon what influences those choices.

Figure 16 Wharekawa sandspit

The chapter begins by examining perceptions of harm and benefit which underpin an anthropocentric approach. It then investigates alternative perspectives and considers how the approaches can be seen in the New Zealand context and, in particular, concerning the case study species. The point of doing so is to reflect upon the relationship of perceptions of value to the construction of conservation responses at law and concomitant distribution of benefit and harm.

3.1 THE VALUE OF BIRDS

In contemporary law and policy the drivers for either protection or control of birds reveal an anthropocentric focus derived from the benefits from, or the harm caused by a given species.[177] This appears to be the single-most influential factor in determining the degree of care that humans apply to birds, and thus the way in which benefit and burden is allocated according to the law. Recognition of value (including intrinsic) also supports concern for endangerment, a further important factor influencing conservation policy and discussed in section 3.1.4. Yet how and why we protect birds are also influenced by alternative perspectives examined in 3.1.5.

Birds are not generally accorded equal rights to justice as are humans, and Rawls notes the failure of the theory of justice to provide an account of the right conduct as regards to animals and the rest of nature. Rawls takes the view that although humans are not required to give strict justice to creatures lacking the capacity for a sense of justice that does not means that there are no requirements at all in regard to them. He states:[178]

> Certainly it is wrong to be cruel to animals and the destruction of a whole species can be a great evil.

The focus of this research is upon the problem of destruction of biodiversity and the manner in which the law extends and withholds protection of birds. Some of the perspectives traversed support full inclusion of animals in the community of justice through rights and duty based arguments, but more

[177] Gillespie, A "Animals, Ethics & International Law " in Sankoff, P & White, S *Animal Law in Australasia* (Australia: The Federation Press 2009) 333.
[178] Rawls, J *A Theory of Justice* (Revised 1999 ed, Belknap Press, 1971) 448.

commonly anthropocentric based considerations suggest limiting harm to birds upon the grounds of self-interest. Those grounds will now be explored.

3.1.1 Benefits from birds

The relationship of humans to animals is the key to understanding the anthropocentric perspective. Humans have long used animals for food, resources, transport, cultural and religious purposes.[179] These benefits can represent sufficient theoretical justification for species protection based on purely economic self-interest, religious and utilitarian rationales.

The close spatial connections between birds and humans, the wide distribution of birds enabled by flight[180] and the diversity of avian species intensify the relationships between birds and humans, thus contributing to perceptions of value. This is revealed culturally, history and folklore are redolent with examples of mythical and literal human/bird relationships.[181] Cave paintings, made by the Cro-Magnon people in France 17,000 years ago, depict birds in a way that experts consider to be suggestive of sacred or ritualistic purposes as opposed to mere decoration.[182] Many religions and most cultures feature birds as symbols of ideology and inspiration.[183] A recipe for medieval magic encapsulates this intrigue: by placing a hoopoe's heart or a kite's tongue, marinated in honey, under a human tongue was to grant the recipient with a power to understand the language of birds.[184] Throughout the ages, omen, augury and portent reference birds. Global literature abounds

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[179] For a full examination of the foundations of anthropocentrism see Gillespie, A *International Environmental Law, Policy, and Ethics* (Clarendon Press, Oxford, 1997) chapter I.
[180] Birds are found everywhere on earth from the poles to the equator: BirdLife International *State of the World's Birds 2004: Indicators for our Changing World* (BirdLife International, 2004) 7.
[181] Gill, FB above n 15 at xxii.
[182] Podulka above n 16 at H.6.
[183] Gill, FB above n 15 at xxii.
[184] Page, S *Magic in Medieval Manuscripts* (The British Library, United Kingdom, 2004) 27.

with representations of birds, as does music and dance.[185] A search of art archives[186] reveals a rich association between artist and bird life, visual records which illuminate both the spiritual and the physical connection, as demonstrated by Figure 17.

Figure 17 Woman thinking of a Loon Bird

Source: Bridgeman Art Library, reproduced with permission

Beyond the metaphysical, tangible human interconnections with birdlife are perhaps even more prominent. Domesticated for food production at least 5,000 years ago,[187] human appetite for birds has in modern times reached staggering proportions. In 2003, it was estimated that the planet held 24 billion chickens in any one day and in 2004 the human species ate over 70 million tonnes of chicken meat and over 57 million tonnes of hens' eggs.[188] Modern day populations rely upon domestication and farming of birds to

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185 Collar, NJ and Gil, PR *Birds and People: Bonds in a Timeless Journey* (CEMEX-Agrupacion Sierra Madre-Birdlife International, 2007) chapters 2 and 3.

186 For example, The Louvre <http://www.louvre.fr/llv/musee/alaune.jsp?bmLocale=en>, The Bridgeman Art Library <http://www.bridgemanart.com/?lang=en-gb>, the Tate Modern http://www.tate.org.uk/servlet/WorksList?searchid=14888&page=1.

187 Red Jungle Fowl by Peoples of the Indus Plains: Collar, above n 185 at 113.

188 Collar above n 185 at 113.

sustain these levels of consumption. In the past, wild populations were also harvested in vast numbers, which exacted heavy tolls on the targeted populations. Few birds were exempt from human appetite: from the smallest lark taken annually in the millions in France to vast populations of seabirds that are favoured for their eggs.[189]

Culinary values aside, birds proffer other resource opportunities for humans. From fancy, feathered, frocks to guano for the garden, the broad range of purposes to which birds can be put, demonstrate their extensive value to humans.[190] Beyond the material, humans have derived recreational and commercial value from birds: falconry, cock fighting, song contests and pigeon post have received widespread recognition.[191] Zoos and aviaries worldwide attract hordes of visitors keen to observe birds. Meanwhile, bird watching and nature tourism have recently been identified as activities capable of delivering significant financial benefits to a national economy.[192]

3.1.2 Harm from birds

A *lack* of value, based upon the perceived harm caused by a species, not only impacts conservation priorities, but in some cases may lead to significant efforts to extirpate a species. Species deemed harmful to human interests are not generally accorded the same privileges as beneficial birds, as will be seen in the context of New Zealand and the case study species in Chapter 7 relating to species protection. In contemporary global biodiversity politics, however, the threatened status of a bird may serve to counter situations where the bird provides a disbenefit to humans, although the degree of disbenefit may be relevant.

[189] Collar above n 185 at 119 & 123.
[190] See Collar above n 185 at 113 onwards.
[191] See Collar above n 185 at 163-180.
[192] Connell, J "Birdwatching, Twitching and Tourism: Towards an Australian Perspective" 2009 40 Australian Geographer 212.

Figure 18 Testing godwit for avian virus, Miranda 2009

3.1.3 Ecosystem services

In order to assess significant benefit, recent attention has turned to the benefits that humans derive from biodiversity as a whole. This is partly driven by global population growth and associated urban development which have intensified human demands upon nature and, in doing so, have elevated human wellbeing and economic development to a place unparalleled in human history.[193] This intensification has exacted a heavy toll upon nature, evidenced by extensive and largely irreversible reduction in biodiversity and significant degradation of the benefits humans derive from nature.[194]

In recognition of this problem, and in an attempt to address it, the term "ecosystem services" is promoted with a view to enhancing human efforts to

[193] Millennium Ecosystem Assessment (Program) *Ecosystems and Human Well-Being* (Island Press, Washington, DC, 2005) 15.
[194] MEA, ibid.

conserve nature, through recognition of role and value. Ecosystem services are defined by the Millennium Ecosystem Assessment as:[195]

> … the benefits people obtain from ecosystems. These include *provisioning services* such as food, water, timber, and fiber; *regulating services* that affect climate, floods, disease, wastes, and water quality; *cultural services* that provide recreational, aesthetic, and spiritual benefits; and *supporting services* such as soil formation, photosynthesis, and nutrient cycling (…) The human species, while buffered against environmental changes by culture and technology, is fundamentally dependent on the flow of ecosystem services.

The difficulty is in trying to gain consensus over quantifying the value of ecosystem services and developing a robust framework for evaluation.[196] Sceptics argue that it is impossible to put any price on nature, due to the complexity of the benefits derived, the lack of information and the risk of trivializing the environment.[197] Nevertheless, it is clear that the benefit to humans is substantial: one study estimates that the annual global value of ecosystem services to be US$33 trillion (range 16-54). Comparatively, the world's gross national product (GNP) is estimated at approximately US$18 trillion.[198]

Moreover, the role of biodiversity in ecosystem services is not entirely clear.[199] In some situations, the diversity of species is irrelevant to the service

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[195] MEA ibid.

[196] For example see generally European Commission and the German Ministry for the Environment *The Economics of Ecosystems and Biodiversity; an interim report* (European Commission and the German Ministry for the Environment, 2008).

[197] For example, Cameron, J "Valuing the Environment: A Social Ecological Perspective" in Lockwood, M and DeLacy, T (eds) *Valuing Natural Areas: Applications and Problems of the Contingent Valuation Method,* (Charles Stuart University, Australia, 1992) 159.

[198] Bibby, C "Why Conserve Bird Biodiversity" in Norris, Ken and Pain, Deborah J (eds) *Conserving Bird Biodiversity: General Principles and their Application* (Cambridge University Press, United Kingdom, 2002) 26.

[199] Insufficient data currently exists to fully quantify the links between biodiversity and ecosystem services, for discussion see McAlpine, K and Wotton, D *Conservation and the Delivery of Ecosystem Services; a Literature Review* (Department of Conservation, 2009).44.

provided where a monocultural approach would provide the same benefit.[200] However, many of the complex interactions from which ecosystem services are derived rely upon the actions of a single species. The kereru/kukupa, New Zealand pigeon (Figure 20), for example, plays a key ecological role in the regeneration of forests by dispersing the seeds of large fruiting trees, some of which are too large to be dispersed by other birds.[201] Birds also play an important role in terms of providing pollination services. Figure 19 evidences this through showing the pollen-dusted crown of the tahou, acquired as it feeds upon flax flower nectar. Bird species extinction and the concomitant loss of pollination and guano fertilisation services are believed to have led to the extinction of several plant species in the Pacific Islands.[202]

Figure 19 Waxeye/Silvereye, Tahou

New research and technology advances are reforming understandings. Recently, it was determined that the spread of the West Nile virus was low in areas where bird biodiversity was high. Although not fully understood, it is

[200] Bibby above n 198 at 27. The author provides the examples of flood protection or carbon sequestration where biomass rather than biodiversity is the key factor.
[201] Heather above n 53 at 349.
[202] Collar above n 185 at 160.

thought that high biodiversity produces a "dilution effect" through reducing the proportion of suitable hosts for a disease and, therefore, reducing transmission rates.[203] Natural equilibriums or balance in the environment are reached through a series of interactions of different agents, the removal, reduction or addition of any agent thus creates change. Sharp lessons have been learned by those who have interfered with the role of birds in controlling insect populations, with the resultant costs outweighing gains in provisioning or crop production.[204] The notion of ecosystem services therefore illuminates the value of birds. In all aspects of the Millennium Ecosystem Assessment's definition, the presence of birds can be detected: they are a major presence in terms of provisioning and cultural services and also make important contributions by way of regulating and supporting services.

In assessing these services, it is apparent that it is not only humans who benefit from the presence of birds but many other life forms as well. Specific examples of symbiotic or mutualistic relationships enjoyed by birds provide further evidence of birds conferring benefits upon other non-human animals. The name of the African oxpecker alludes to the bird's habit of riding African mammals whilst removing ticks, insect and scabs from their host's wounds. Similarly baboons, honey badgers (and humans) are guided by honeyguide birds to the nests of bees whereupon the birds enjoy the by-products of the other animals' discoveries.[205]

Arguably, the role that birds play as an indicator of environmental health is a cultural ecosystem service. Compared to other animals, birds are reasonably well-studied, their important habitats known and well-

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[203] Birdlife International "Birds Buffer Against Virus " (2009) <http://www.birdlife.org/news/news/2009/02/west_nile_virus.html>

[204] Collar above n 185 at 146 and 151, for example the insect crop plague in China in 1958 following Chairman Mao's direction to reduce the Eurasian Tree Sparrow and the American corn worm plague in 1749 arising from the reduction in game birds.

[205] Podulka above n 16 at 1-87.

monitored.[206] An understanding of populations and agents that threaten or change these populations enables assessment of the threat and the ability to predict future change and implement responses. The agents of change can be natural or human-induced, and it is the impact of human-induced change upon birds which provides an opportunity to assess the impact of that change upon other species. The accuracy of such an assessment cannot be determined empirically, however, it is clear that the opportunity enables threats to be divined and trends detected.[207] The impact of the chemical DDT upon bird species was a clear early warning sign of persistent and deadly wider ecosystem effects. Since then declining bird health has implicated many environmental pollutants as deleterious to a variety of life forms.[208] More recently, the patterns of migrant birds have been studied to understand the impact of habitat and climate change:[209] migrant birds may serve as integrative sentinels of global environmental change.[210] Such a view recognises that agents of global environmental change are complex and interconnected with few simple answers that can address the problems, nevertheless, a careful study of migrant birds can illuminate the character of these agents. This section has looked at how bird species are valued from anthropocentric points of view. Table 4 summarises this and demonstrates the value of birds and reveals the breadth of their utility.[211]

[206] Bibby above n 198 at 31.
[207] For discussion of the role of seabirds in indicating global warming see Gill, FB above n 15 at 564.
[208] Collar above n 185 at 199, Gill, FB above n 15 at 562.
[209] Collar above n 185 at 193.
[210] Piersma, T and Lindström, Å "Migrating Shorebirds as Integrative Sentinels of Global Environmental Change" 2004 146 Ibis 61.
[211] Information extracted from Collar, above n 185, Gill, FB, above n 15 at xxi to xxvi and Podulka above n 16 at H.1 to H.32.

Table 4 Bird values

Value	Description
Food	• Eggs • Meat • Oil • Nests
Resources	• Feathers, skins and sinew for clothing • Skins and feathers for bedding • Bones and sinew for utensils • Bones for musical instruments • Beaks and horns for utensils and ornamentation • Skin, feathers, beaks and feet for ornamentation • Feathers and quills for writing • Oils and fat extracted for industrial processes • Bird nests for food and ornamentation • Guano deposits for fertiliser • Bird offal/carcasses for fertiliser • Medicinal properties
For food and resource capture purposes	• Trained birds of prey • Trained seabirds such as cormorants • Honey eaters
Religion	• Common symbols in wide variety of cultures
Art, literature, folklore/magic, music and dance	• Pervasive representations throughout the ages
Recreation	• Recreational hunting • Falconry • Cock fighting • Bird racing • Song competitions • Zoos • Bird watching
Services	• Postal e.g. carrier pigeons
Companion animals	• Pets • For song
Ecosystem services	• Provisioning (food, materials) • Regulating (pollination, seed dispersal, Biological control, carrion disposal) • Cultural • Supporting (active agent in the food web)
Environmental indicators	• To predict weather • To predict environmental change • To predict prey presence e.g. schools of fish • Security alarms

3.1.4 Degree of benefit and conservation prioritisation

In terms of protection, the scale of the biodiversity crisis means that humans need to make choices between the birds they choose to protect.[212] Birds that are owned, farmed or traded (excluding trade in endangered species) generally do not require conservation as human breeding techniques ensure proliferation. It is the wild species, constituting common property, that tend to deplete and disappear due to a lack of human interest or effect in species and habitat protection.

Prioritising between species is a contested notion in current conservation policy debate.[213] Conservation choices seem to be typically anthropocentric since the choices derive from human utility, religious rationale, existence/intrinsic values or the regulation and support of ecosystem services.[214] Status, such as whether a bird is native, exotic or endemic, is also a factor relevant to choice. Overlaying this, and in recognition of a range of values, numbers are currently key to determining conservation choice, represented by notions of scarcity, vulnerability and excess. Endangerment or extinction risk has become a clear primary driver for conservation efforts.[215] Prioritising conservation actions relative to extinction risk is a quintessential conservation method, epitomised by the influence of ranking systems such as the IUCN Redlist in conservation policy and implementation throughout the world.[216] In addition, other value-related

[212] The cost of maintaining global biological diversity far exceeds the available financial and human resources. Mace, GM, Possingham, HP, Leader-Williams, N, and others "Prioritizing Choices in Conservation" in MacDonald, D and Service, K (eds) *Key Topics in Conservation Biology* (Blackwell Publishing, United Kingdom, 2007) 17.

[213] Mace ibid.

[214] Boardman, above n 1 at 65.

[215] Gillespie, A "Animal Ethics and International Law" in Sankoff, PJ and White, SW (ed) *Animal Law in Australasia: A New Dialogue* (Federation Press, Annandale, NSW, 2009) 352, Boardman, above n 1 at 64, Balmford, A "Selecting Sites for Conservation?" in Norris, K and Pain, DJ (eds) *Conserving Bird Biodiversity: General Principles and Their Application* (Cambridge University Press, Cambridge, UK, 2002) 74, Podulka, above n 16 at 10.5, Mace above n 212 at 22.

[216] In terms of classification systems, risk of endangerment may be combined with other factors such as evolutionary distinctiveness, sociopolitical significance, ecological

concepts are recognised as useful in terms of discerning conservation priorities, particularly in a situation where global biodiversity loss has increased sharply and conservation resources fail to match this pressure.[217] Some commentators consider this to be extreme and as "deathbed conservation". This criticism means that taking a reactive approach by focusing upon species whose populations have fallen to dangerous levels, conservationists are administering little more than palliative care.[218]

The value of particular species to act as indicators of population trends for other species and, more generally, of environmental health has been recognised by conservation managers as a rationale for priority.[219] North American legislation, for example, has extended to naming particular species as an "indicator species".[220] Relying upon indicator species for prioritisation has, however, recognised shortcomings associated with the identification of indicator species, data availability and the extent of the relevance of indication in terms of species with dissimilar habitat requirements.[221] Alternative value-related rationales have evolved to support conservation choices. The term "flagship species" was attached to animals that, due to their charismatic qualities, can mobilise public support for conservation effort. Classic examples are the black panther,[222] the Australian spotted tailed quoll,[223] the albatross and the kiwi. Similarly, species that make an outstanding contribution to an ecosystem's functioning, known as "keystone species",[224] can also influence

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importance and potential for recovery – for discussion see Joseph, LN, Maloney, RF and Possingham, HP "Optimal Allocation of Resources among Threatened Species: a Project Prioritization Protocol" 2009 23 Conservation Biology 328.

[217] Simberloff, D "Flagships, Umbrellas, and Keystones: is Single-Species Management Passé in the Landscape Era?" 1998 83 Biological Conservation 247, Balmford above n 215 at 75.

[218] Trouwborst, A "Seabird Bycatch—Deathbed Conservation or a Precautionary and Holistic Approach." Journal of International Wildlife & Policy, 11:4, 293-333 at 295.

[219] Simberloff ibid, at 217.

[220] Simberloff above n 217 at 249.

[221] Simberloff above n 217 at 248.

[222] Simberloff above n 217 at 250.

[223] World Wildlife Fund Australia, "The Flagship Species Approach" <http://wwf.org.au/ourwork/species/flagship-species, Access date 28.10.09>

[224] Podulka above n 16 at 9-126

priority of conservation choices.[225] Another group whose conservation may enhance that of others are termed "umbrella species": *those whose requirements for areas or management are so demanding that if met, they would underpin the simultaneous conservation of most sympatric species.*[226]

In general terms these notions have been applied to support single species management approaches. It is now recognised, however, that identifying area priorities for broad regions based solely on the distribution of particularly significant species may lead to large gaps in overall representation.[227] Simberloff identifies a range of limitations in applying single species management approaches such as the lack of certainty when applying benefits to other species, lack of information, disagreements over the methodology for species choice, cost/benefit issues in relation to flagship species, and the potential for conflict when there are different management regimes for distinct flagship species.[228]

Ecosystem management approaches have developed which respond to the limitations in ascertaining conservation priorities and responses. Often, conservation efforts that reference biological factors such as levels of endemism, biological richness, ecological and evolutionary processes are prioritised and include a consideration of the importance/value of single species in the ecosystem.[229] Prioritisation thereby reaches out to include both species and habitat. Human factors such as financial cost, threats, existing reserves and local support are also factored into the equation.[230] The specific values attributed to birds continue to be represented as rationales for

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[225] Balmford above n 215 at 88.
[226] Balmford above n 215 at 88, Seddon, PJ and Leech, T "Conservation Short Cut, or Long And Winding Road? A Critique of Umbrella Species Criteria" 2008 42 Oryx, 240.
[227] Balmford above n 215 at 88.
[228] Simberloff above n 217 at 247.
[229] For detailed discussion, particularly in terms of the role of vulnerability and irreplaceability in setting conservation priorities see Langhammer, PF, Bakarr, MI, Bennun, LA, and others Identification and Gap Analysis of Key Biodiversity Areas: Targets for Comprehensive Protected Area Systems (IUCN, 2007) 24.
[230] Balmford above n 215 at 79-95.

conservation choices, however, they are united with other factors to achieve a more comprehensive result. The treatment of the case study birds and their habitat will be examined in Chapters 6, 7 and 8 in the New Zealand legal context.

3.1.5 Alternative perspectives

Beyond anthropocentrism are alternative ways by which to frame the relationship between birds and humans.[231]

Ecocentrism

Ecocentrism transports the environment to the centre of concern, valuing the intrinsic and giving weight to existence as opposed to human benefit. Scholars and activists with values aligned to ecocentric ethics have long advocated a change of approach from those described in previous sections.[232] The principles constituting the basis of an ecocentric approach include the concern that present human interference with the natural world is excessive, and the situation is rapidly worsening. Ecocentrism identifies the need for significant change of life conditions for the better and thus requires policy changes.[233] The deepening biodiversity crisis sharpens this focus, continuous population and material growth are identified as factors which run counter to conservation of biodiversity. Ban Ki Moon,[234] in his 2011 address to the General Assembly of the United Nations, takes a lead from ecocentrism by speaking of the need to transform society into one in which *all* forms of life are revered. Moon considers that while wealth, knowledge and technology make valuable

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231 For a brief summary of the different responses and approaches to environmental ethics see Horsley, P "Property Rights Viewed from Emerging Relational Perspectives" in Grinlinton, D A and Taylor, P (eds) *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges* (Martinus Nijhoff Publishers,The Netherlands, 2011) 103.

232 For discussion see Dryzek, JS *The Politics of the Earth: Environmental Discourses* (2nd ed, Oxford University Press, Oxford, 2005) ch 9.

233 Curry, P *Ecological Ethics* (2nd ed, Polity Press, Cambridge, 2011) 101.

234 United Nations General Assembly *Harmony with Nature; Report of the Secretary-General* (United Nations General Assembly, Sixty-sixth session, Item 19 (h) of the provisional agenda, A/66/302*, 2011) 16.

contributions, they cannot save humankind from its deleterious impact on Earth. While revering other species is ecocentric, Moon's espoused purpose remains human-centred and tied to the survival of humans. Regardless, it departs from traditional anthropocentric perspectives by developing a notion of care and an awareness of interconnection.

Agency

Other perspectives go further. Māori culture, whilst appreciating the significant resource values of birds, reveals a relationship of interconnection and reciprocity not so evident in western perspectives. This will be examined in Section 3.2 below in relation to the case study species.[235] Similarly, scholars studying animal geography encourage an examination of the interactions between human and other animals with a view to determining the role of animals as active agents who fashion the environment and impact upon social relationships.[236] This moves beyond an assessment of ecological interactions, benefits and ecosystem services provided by animals to examine the impact of animal agency upon the human environment. An animal geography focus enables a consideration of animals' role in the social construction of culture and individual human subjects.[237]

Actor-network theory (ANT) also recognises that both humans and non-humans may have agency and be able to affect outcomes and the behaviour of others. ANT challenges the notion that a 'thing' can be given specific and objective attributes. Instead, such capacities are distributed across many different kinds of things associated with different orders of reality such as the natural, the cultural, the economic and the psychological.[238] It is

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[235] Tomas, N "Maori Concepts" in Grinlinton, D A and Taylor, P (eds) *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges* (Martinus Nijhoff Publishers, 2011) 222.
[236] Campbell, MO "An Animal Geography of Avian Ecology in Glasgow" 2007 27 Applied Geography 79.
[237] Emel, J, Wilbert, C and Wolch, J "Animal Geographies" 2002 10 Society and Animals 408.
[238] Philo, C and Wilbert, C Animal Spaces, Beastly Places (Routledge, United Kingdom, 2000) 16.

the groupings of these things, their interconnections and the way they reconfigure which give meaning. For instance, a human strolling in a park may be influenced to leave or change position for a number of reasons: punctuality for an appointment, hunger, a change in the weather, fatigue or the unwanted presence of wildlife, domesticated animals or human strangers. These are factors that many social scientific accounts fail to take account of as variables.

Enabling agency in non-human objects to be recognised, challenges social constructs in which human species are rigidly separated from others to encourage a perspective where all relative interactions are considered. This is partly driven by growing public awareness of the plight of animals relating to issues such as the use of animals in intensive food production and biotechnology, loss of habitat and pollution.[239] The fluidity introduced by ANT would, however, also break down those dualities where nature and biodiversity were seen as sacred and humans as profane and which suggest that the only way to save nature is for humans not to be a part of it.[240]

Rights based justifications

Animal welfare rights issues developed prominence in the latter half of the 20th century resulting in philosophical approaches to animal protection being developed.[241] Key concepts include: speciesism, the principle of equal consideration and the argument from marginal cases (AMC). These concepts, discussed below, underpin theories relating to the moral status of animals and theories of the legal status of animals.[242]

Speciesism, like racism, sexism and ageism rests on the principle of equality: no one species should be accorded innate superiority over another.

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[239] Wolch, J "Anima Urbis" 2002 26 Progress in Human Geography 722, 725.
[240] Talen, E and Brody, J "Human vs. Nature Duality in Metropolitan Planning" 2005 26 Urban Geography 685.
[241] White, SW "Exploring Different Philosophical Approaches to Animal Protection in Law" in Sankoff, PJ and White, SW (eds) *Animal Law in Australasia: A New Dialogue* (Federation Press, Australia, 2009) 80.
[242] White ibid, at 82.

The principle of equal consideration works along similar lines to ensure that species are accorded consideration on the basis of underlying characteristics such as sentiency, as opposed to simple species classification. AMC is used to deflect argument that humans have higher powers than other species, by underscoring the point that many basic human rights are accorded to infants or severely intellectually impaired humans, these capacities being similar to some sentient animals.[243] In practical terms these concepts are supported by debates relating to species similarity[244] and investigations into the extent of intelligence, awareness and consciousness of non-human animals. In relation to birds there is a diverse range of accounts documenting the intellectual capacity of birds as diverse as the grey parrot, the crow and the kea.[245]

Practical approaches have emerged which, when applied, result in very different outcomes for animals. Theorists such as Tom Regan advocate an animal rights approach. Here, humans and animals receive equal treatment because they both possess the "subject of a life" revealing inherent value. This approach circumscribes almost all of the prevailing exploitation of animals including killing and eating animals for food and carrying out laboratory experiments.[246]

Such a position contrasts strongly with an anthropocentric utilitarian focus upon actions that produce the greatest human happiness or benefit. Therefore, if experimenting upon one animal brought significant advances for modern medicine and treatment for many people, the act could be justified. Meanwhile, an eco-feminist critique propounds an 'ethic of care', in which the relationship between humans and animals is built on empathy.[247]

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[243] White ibid, at 82-85.
[244] Gillespie, A "Animal Ethics and International Law" in Sankoff, PJ and White, SW (eds) *Animal Law in Australasia: A New Dialogue* (Federation Press, Australia, 2009) 334.
[245] See for example, Pepperberg, IM *Alex and Me* (Harper Collins, United States of America, 2008).
[246] White above n 241 at 91.
[247] White above n 241 at 95.

The expression of animal rights fails to register in conservation law, which instead focuses on endangerment, ecosystem services and to limited degree intrinsic values, as will be discussed in context in Chapters 6-8. The degree to which modern New Zealand animal welfare law reflects an animal rights perspective or a feminist ethic of care is also limited. Animals under human control are classified as the property of humans and are required to be treated according to regulatory codes aimed at enhancing the welfare of animals.[248] Animal rights activists strive for changes in the law to prevent practices such as battery hen operations, the fur trade and intensive pig farming. Widespread social acceptance of these practices, often based on utilitarian grounds, tends to frustrate such efforts, although there are signs that the tides of public opinion may be turning.[249] Property rights and any corresponding duties in terms of wild animals are not so clear cut, and will be the subject of consideration in Chapters 5 and 8. The next section considers the value of birds in New Zealand.

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[248] Sankoff, PJ "The Welfare Paradigm: Making the World a Better Place for Animals" in Sankoff, PJ and White, SW (eds) *Animal Law in Australasia* (Federation Press, Australia, 2009) 7.
[249] Sankoff ibid, at 9, referring to opinion poll showing that 79% of New Zealanders supported the banning of battery cages and would be willing to pay more for eggs as a result.

3.2.1 Benefits

The values derived from birds in New Zealand are discussed below, firstly by examining the relationships of birds to Māori and then more generally. The particular values of the case study species are summarised in Table 5.[250] It will be demonstrated that the birds are beneficial to humans and wider ecosystems. These benefits, partnered by intrinsic value and levels of endangerment, provide context to discussion related to approaches to harm and the degree of care applied to the protection birds, to be considered in chapters 5 to 8.

Figure 20 Kereru provides the benefits of seed dispersal

[250] The information included in this table is derived from a number of sources, with particular reference to Orbell, MR *Birds of Aotearoa: A Natural and Cultural History* (Reed, Auckland, 2003), Riley, M *Maori Bird Lore, an Introduction* (New Zealand: Viking Sevenseas New Zealand Ltd: 2001), Mead, SM *Traditional Maori Clothing : a Study of Technological and Functional Change* (Reed, New Zealand, 1969), Buller above n 58, E G above n 99, Robertson 1985 above n 108, Heather above n 53).

Māori

Māori have valued birds, particularly as a provisioning resource as well as for less tangible cultural/social reasons.[251] For the case study species the historical food values are significant, particularly in the case of the procellaria species and the godwit. No doubt, part of the attraction was that in ranging between 300 and 800g in weight and being present in vast quantities, these birds represented an opportunity to provision in an energy efficient manner.

Tītī (sooty shearwater), have been considered as probably the most important of New Zealand's seabirds in terms of ecological[252] and cultural significance.[253] Sooty shearwater chicks have been taken by Rakiura Māori (Ngai Tahu) for generations and produced valuable resources for consumption, use and trading purposes.[254] Archaeological records suggest that shearwaters were the most common muttonbird taken on the mainland, although this exploitation took place within a broader strategy of coastal fowling, with birds such as the little blue penguin being recorded as 'very common' at some archaeological sites. Of the shearwaters, the Hutton's shearwater is the bird found at the most number of sites, whereas the remains of sooty shearwater indicate that it was the most abundant shearwater.[255]

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[251] Orbell above n 250, Riley, above n 250, Mead, above n 250, Wilson, K J above n 42 at 127, Bellich, J *Making Peoples. A History of the New Zealanders: From Polynesian Settlement to the end of The Nineteenth Century* (Penguin Books Auckland, NZ, 1996) 34, 50, 68-72, King, M *The Penguin History of New Zealand* (Penguin Books, New Zealand, 2003) 63-65, Diamond, JM and Veitch, CR "Extinctions and Introductions in the New Zealand Avifauna: Cause and Effect?" 1981 211 Science 499, Holdaway, above n 41 at 11-25.

[252] Uhlmann 2005 above n 128 at 151.

[253] Lyver, POB, Moller, H and Thompson, C "Changes in Sooty Shearwater Puffinus Griseus Chick Production and Harvest Precede Enso Events" 1999 188 Marine Ecology Progress Series 280, Kitson, JC and Moller, H "Looking After your Ground: Resource Management Practice by Rakiura Maori Titi Harvesters" 2008 142 Papers and Proceedings of the Royal Society of Tasmania 162 and Anderson, A "Historical and Archaeological Aspects of Muttonbirding in New Zealand" " 1997 17 New Zealand Journal of Archaeology 17, 35.

[254] Ngāi Tahu Claims Settlement Act 1998 Schedule 104 Statutory acknowledgement for Rakiura/Te Ara a Kiwa (Rakiura/Foveaux Strait Coastal Marine Area), Lyver and Moller 1999 above n 254 at 237, Anderson ibid, at 40.

[255] Anderson above n 253 at 39-43.

Although not as bountiful as the sooty shearwater, and unsupported by archaeological evidence on the same scale, the black petrel was also taken as a muttonbird on Hauturu, Little Barrier Island.[256] The godwit, abundant during the non-breeding season of late September to April was also relished. It is further likely that as opportunity was presented, that the kokako, dotterel and the wrybill also made their way into the pot or clay bake, although perhaps without the same momentum accompanying this take. Contemporary debates relating to such takes witness resource values, cultural and economic interests pitted against existence values. Enabling sustainable cultural harvesting of species such as the godwit is a matter which some would like to see more widely debated amongst conservationists.[257] It is argued that greater inclusion of Māori in processes relating to sustainable cultural harvesting and reconstitution of the right to guardianship would "greatly alleviate the existing problem of illegal harvest by Māori of some protected species and would therefore produce a net conservation benefit".[258]

Māori traditions consider people, birds and trees to be distantly related through their common descent from Tane, god of forest and birds. Accordingly the taking of birds required propitiation to Tane and other ancestral figures.[259] Well-established rituals involved communication with the originators and guardians[260] and birds were considered to be imbued with special powers. The dawn chorus was associated with arriving at daybreak into the light: safe, secure and successful.[261] It was also believed that birds could convey messages of warning or reassurance. The sooty shearwater provides an example of the strength and depth of such relationships, some of which prevail today. Kitson

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[256] Anderson, referring to Reishek 1885a, above n 253 at 39.
[257] Skinner, M "Crossing the Tribal Divide" *Forest & Bird* (Wellington, May 2009) 26.
[258] Wright, SD, Nugent, G and Parata, HG "Customary Management of Indigenous Species: A Maori Perspective" 1995 19 New Zealand Journal of Ecology 84.
[259] Orbell above n 250 at 9.
[260] Riley above n 250 at 13.
[261] Orbell above n 250 at 9 &15.

and Moller[262] document that a number of Rakiura Māori birders consider that sooty shearwater have their own feelings and agency in a relationship of reciprocity between the birds and iwi. Some Rakiura Māori consider that the birds themselves called researchers to the islands to help arrest declining bird numbers and that the birds will leave the islands if they, or their habits, are disrespected. The application of traditional ecological knowledge to sustain a population is therefore seen by some as an appropriate mechanism to manage a resource, which should also acknowledge this unique relationship.[263] The inability of science and science-based conservation methods to reflect the metaphysical aspects of the relationship can be viewed as a limitation. Clearly, the resource values provided by the birds are extensive and measurable. However, it has also been postulated that greater resilience of the bird populations may be achieved through density dependence regulation which is the main ecological mechanism by which harvest off-take could be compensated.[264]

Reciprocal relationships between humans and animals, as shown by the Rakiura Māori, disturb paradigms that maintain a strict human-animal divide, where one species presumes innate superiority over another. For Maori recognition of mauri or life force extends beyond animals and to natural resources such as rivers, culminating in the recent recognition of the Whanganui River as a legal entity.[265] Recognising the interconnections within the environment, whether via traditional ecological knowledge, science or the metaphysical can encourage an ethic of care supported by an ethic of stewardship inherent in notions such as "kaitiakitanga".[266] In this situation, the

[262] Kitson, and Moller above n 253 at 173.
[263] Kitson and Moller ibid.
[264] Moller, H "Are Current Harvests of Seabirds Sustainable" 2006 52 Acta Zoologica Sinica 649-652.
[265] Finlayson, C "Whanganui River Agreement signed" (2012) <http://www.beehive.govt.nz/release/whanganui-river-agreement-signed>
[266] As defined by s 7(a) RMA: kaitiakitanga means: *the exercise of guardianship by the tangata whenua of an area in accordance with tikanga Māori in relation to natural and physical resources; and includes the ethic of stewardship.*

agency of an animal, combined with human respect and gratitude for the life form and fear of its loss, can be seen as moderating forces which may potentially limit cultural take. As bird populations dwindle the strength of such measures to hold up against economic imperatives is likely to be questioned and tested. There will be some who argue that any relationship which involves a hefty take of one of the agents fails to adequately respect the existence values of that species. The position of the law in enabling traditional take will be examined in Chapter 7 the subject of which is species protection.

General

The perceived benefits of birds have changed across the course of history. Settlers, largely European, trickled into Aotearoa from the late 18th century, by 1881 the non-Māori population exceeded the Māori population tenfold.[267] It is clear that non-Māori valued the extant avian resource encountered in Aotearoa: Buller's records demonstrate his appreciation of this fauna for its unique intrinsic qualities[268] and as a culinary resource. In the earlier years of European settlement, native birds were hunted primarily for food and often the take was in very large quantities.[269] In times of hunger, explorers even ate tiny birds such as robins and wrens.[270]

Perhaps not displaying the same zeal for the muttonbird, the settlers certainly took to the godwit with relish. Godwits congregate in hordes on shoals and sandbanks which meant that they presented an easy target for hunters.[271] Abundance and delectability also ensured that the godwit

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[267] King above n 251 at 251. By 1881 the non- population had reached 470,000 whilst the population had dropped to 46,000.
[268] Wilson, above n 42 at 159 discusses the role of a professional bird collector in the 1870s.
[269] McDowall, RM *Gamekeepers for the Nation: the Story of New Zealand's Acclimatisation Societies, 1861-1990* (Canterbury University Press New Zealand, 1994) at 293 makes reference to "massive bags" and to the ease with which a single sportsman could bring in fifty or sixty birds in the course of a morning, citing "Anglo- New Zealander", 1872.
[270] McDowall ibid.
[271] Barlow, PW "Godwit Shooting " (1888) Kaipara <http://www.enzb.auckland.ac.nz.ezproxy.waikato.ac.nz/document/1888>

remained legitimately on the plates of New Zealanders for longer than many other native or endemic species.

Hunting was also driven, to a lesser degree, by shooting for recreation and leisure and to produce specimens and skins for sale to museums and collectors. Kaka, it is documented, sold for £25.00 per head in London,[272] which illustrates how rarity is a value that may influence market forces which in turn influence supply. Not only were birds targeted, but eggs were also an eagerly consumed resource. Buller cites the example of the crew of the *Hinemoa* landing at the Taranaki Sugar Loaf islands to collect bucketfuls of eggs from a white fronted tern colony.[273]

Despite resourceful appreciation of this environment, the settlers not only colonised the land, but effected ecological imperialism by way of self-introduction and introduction of other biota.[274] Acclimatisation societies were formed in the 1860s,[275] to introduce species missed from the settlers' homelands. These introductions include many varieties of bird now common in New Zealand, such as starlings, blackbirds, thrushes, skylarks and sparrows.[276]

Early wildlife legislation in the 19th century encouraged the introduction of foreign birds and plants and the protection of native birds from poaching. Commentators detected the distinct irony in the competing goals of the Animals Protection Act 1867. The legislation aimed to place some constraints on the destruction of native birds and to protect their population. At the same time, it encouraged the formation of acclimatisation societies

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272 McDowall above n 269 at 293 citing "Anglo- New Zealander", 1872.
273 Buller above n 58 at 152.
274 King above n 251 at 194.
275 Wilson, above n 42 at 158, Isern, TD "Companions, Stowaways, Imperialists, Invaders; Pests and Weeds in New Zealand" in Isern, T "Companions, Stowaways, Imperialists, Invaders; Pests and Weeds in New Zealand" in Pawson, E and Brooking, T (eds) *Environmental Histories of New Zealand* (Oxford University Pres, United Kingdom, 2002) 233-4.
276 King above n 251 at 196, Wilson, above n 42 at 159.

which could introduce new fauna and flora to the countryside. Subsequently these introductions were responsible for significant declines in native and endemic bird populations.[277] Early legislation provided only limited protection for native species such as native pigeons and native ducks. The relative values of the birds, to those creating the law, is expressed by the fact that the fine for taking out of season, an introduced bird was £20, yet for a native species was a mere £1.[278] The Animals Protection Act 1908 provided an opportunity for the Governor to exercise a previously granted power to list species so as to absolutely protect specific indigenous birds. Objections to this protection, however, meant that the godwit was legally hunted for game until 1941, when the species finally became totally protected.[279] A principle of absolute protection of most native avian species was not evident until the passage of the Animals Protection and Game Act of 1921–22.[280]

The provision of absolute protection to most endemic species and native species (such as the self-introduced white faced heron Figure 21) signifies a sea-change in values, between those held by settlers in the mid-19th century and those held in the mid-20th century and beyond. As the nation has matured, the unique and distinctive qualities of New Zealand avian fauna have been recognised and valued more widely. Contemporary legal approaches to species protection will be the subject of Chapter 7.

New Zealanders have come to culturally identify with several species of birds, particularly the kiwi, but also the kakapo, black robin, tui, yellow eyed penguin and kokako. They are symbols of conservation campaigns, emblems of sport and commerce, legends of folklore, subjects of art and literature and

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277 McDowall above n 269 at 294.

278 "Wildlife Legislation" in McLintock, AH (ed) An Encyclopaedia of New Zealand (originally published in 1966. Te Ara - the Encyclopedia of New Zealand, updated 22-Apr-09)http://www.TeAra.govt.nz/en/1966/acclimatisation-of-animals/6> updated 22-Apr-09 26.08.2009.

279 McDowall above n 269 at 293.

280 Ibid.

even paragons of ugliness,[281] and these modern-day representations drive a degree of recognition of avian species. A recent report that researched values attributed by people in the Waikato Region to native birds found that 97% of respondents enjoy having birds in their area, they particularly appreciated listening to and watching birds and believed that they are part of nature.[282] Most of the respondents in the study indicated a willingness to pay an extra amount in their rates annually to support a native bird project within the Waikato Region. Lack of awareness is not something that affects the next group. Nature tourism, bird watching, birding and twitching[283] have burgeoned, with a particular attraction being off-shore island bird sanctuaries accessible to tourists, such as Kapiti and Tiritiri Matangi. Internationally, bird watching is the most rapidly growing and environmentally conscious of all forms of eco-tourism. Particular attention is reserved for those countries with a distinct endemic fauna, such as New Zealand.[284]

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281 New Zealand Herald "Ugly Campaign may turn out to be Kakapo's Saviour" (2013) <http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11115945>

282 Kaval, P and Roskruge, M *The Value of Native Birds in New Zealand: Results of a Waikato Survey* (Waikato University, Department of Economics, Working Paper in Economics 06/08, 2008) 26.

283 For a definition of these terms see Connell above n 192 at 204.

284 Collar above n 185 at 180.

Figure 21 White-faced heron, matuku

The sum of these relationships would suggest that many New Zealanders value endemic birds and wish to see birds endure and flourish, but the strength of this attachment, as demonstrated by associated legal protections, will in later chapters reveal the many ways in which value can be compromised or weakened by competing values. The next section considers how the perceived harm of species has been considered in the New Zealand context.

Table 5 Case study bird values						
Key: [√ Yes] [X No] ? Unknown	**Kokako**	**Godwit**	**Dotterel**	**Black Petrel**	**Tītī**	**Wrybill**
Food - eggs	X	X	?	X	X	X
Food - meat	√ [285]	√	√[286]	√	√	√[287]
Food- oil	X	?	X	√	√	X
Resources (R)feathers, skins and sinew for clothing	X [288]	?	X	√	√[289]	X
(R) Skins and feathers for bedding	?	?	X	√	√	X
(R) Bones and sinew for utensils	?	?	√ [290,291]	?	?	?
(R) Beaks and horns for utensils and ornamentation	?	?	X	X	X	X
(R) Skin, feathers, beaks and feet for ornamentation	?	?	X	X	X	X
(R) Feathers and quills for writing	?	?	X	X	X	X
(R) Oils extracted for industrial processes	X	X	X	X	√	X
(R) Guano deposits for fertiliser	X	X	X	X	X	X
(R) Bird offal/ carcasses for fertiliser	X	X	X	X	X	X

[285] The kokako was not highly favoured for meat, being bitter, although it was more palatable when steeped in water prior to cooking: Riley above n 250 at 143, reference to consumption McDowall above n 269 at 293.

[286] The Animals Protection Act 1880 identified pied stilts, black stilts and the dotterel as 'native game', which could be hunted, as did The Animals Protection Act 1908. The situation changed with the introduction of the Animals Protection and Game Act 1921-22, which included those birds in the First Schedule list of absolutely protected birds. See also McDowall, above n 269 at 296, inference Riley, above n 250 at 66.

[287] Inference Buller shooting reference, Buller above n 58 at 130.

[288] The kokako was not hunted for plumage, an advantage it held over its wattlebird cousin the Huia: Orbell above n 250 at 61.

[289] The fat of the birds was extracted for soap-making, lubricating oil and other purposes. Feathers are sold to Europeans: Robertson 1985 above n 108 at 97.

[290] Bones used as tattooing needles.

[291] Riley, above n 250 at 66.

	Kokako	Godwit	Dotterel	B Petrel	Tītī	Wrybill
(R) Medicinal properties	X	X	X	X	X	X
Religion	√	√	√	?	?	X
Art	√	√	√	√	√	√
Literature	√	√	√	√	√	√
Folklore/magic	√	√	√	√	√	?
Music and dance	X	X	√	√	?	X
Recreation	√	√	√	√	√	√
Intrinsic	√	√	√	√	√	√
Companion animals	√ [292]	X	X	X	X	X
Ecosystem services	√ [293]	√ [294]	√[295]	√[296]	√[297]	√[298]
Environmental indicators	√[299]	√[300]	√[301]	√[302]	√[303]	√[304]

3.2.2 Harm

The shifting influences of perspective, place and position influence the value of species. The opossum in its homeland and established niche is viewed as benign and worthy of protection, whereas, in New Zealand, as an introduced

[292] Buller records the keeping of kokako for observational and companion purposes: Buller above n 58 at 6.
[293] Provisioning and cultural.
[294] Provisioning and cultural.
[295] Provisioning and cultural.
[296] Provisioning, cultural and supporting.
[297] Provisioning, cultural and supporting. Sooty shearwaters are a keystone species that impact on soil aeration, nutrification and plant regeneration: Uhlmann 2005 above n 128 at 152.
[298] Ibid.
[299] Avian population numbers and fitness are general indicators of ecosystem health and state of the environment.
[300] Migrating birds are used to indicate climate change, see Piersma above n 210.
[301] Avian population numbers and fitness are general indicators of ecosystem health and state of the environment.
[302] Ibid.
[303] Ibid.
[304] Ibid.

species which threatens native species and production interests, it is treated as a pest. Similar treatment is handed out to birds such as the rainbow lorikeet and even the peacock. Causing harm to people and their interests, including endemic species, relegates the "harmful species" beyond provision of protection.

Although some non-native birds remain valued because they are considered to be game, the perceived value of others waned dramatically as it became clear that prolific numbers of the birds could constitute a threat to other interests, such as cropping.[305] The Birds Nuisance Act of 1891[306] and its predecessor the Small-birds Nuisance Act 1882 indicate a change in prevailing attitudes in the late 19th century. The Birds Nuisance Act provided for the destruction of any injurious bird (not being a protected bird) and s 5 enabled laying poison on public roads and reserves and upon private roads with the consent of adjoining land owners. Injurious is not defined in the Act, but section 3 refers to becoming injurious through "habits" or "excessive increase". It can be inferred that the legislation was aimed at those species that were interfering with agricultural or horticultural production, but could also cover issues arising from public health or safety.

These measures indicate that this was deemed to be a significant issue which, in several respects, continues unabated today with problems routinely reported in the media. For example, local headlines refer to non-native pigeons as "the rats of the sky".[307] Other reports evidence that peafowl have been irritating farmers in the Eastern Bay of Plenty and starlings have reached nuisance proportions in the Greater Wellington and Hawkes Bay Regions, such that some farmers are resorting to enclosing extensive areas of cropping fruit trees to avoid damage by starlings. It is estimated that up to 30 % of a wheat

[305] Isern above n 275 at 233.
[306] No. 37. 54 & 55 Vict. This Act repealed its predecessor The Small-birds Nuisance Act, 1882.
[307] Anonymous "Rats of the sky" *Cambridge Edition* (March 19 2008), 5.

crop and one-fifth of grape crops can be eaten by birds.[308] Regional Pest Management Strategies, created under the Biosecurity Act 1993, routinely target non-native birds for eradication, progressive control, population control or regional surveillance, dependent upon the extent of the problem and regional priorities.

Some endemic and native species are also recognised to be damaging production interests, but the levels of damage do not appear to reach the same "pest proportions" as with the non-native species. The treatment levelled at these birds has become controversial as the rising importance of existence and conservation values, together with human attachment, compete with economic interests. Chapter 7 will examine how propensity to harm impacts the legal protection status accorded to the Australasian harrier and several shags, including the Threatened pied shag.

In terms of the case study species, none are documented as predating other endemic species, although it is likely that all compete with other species for resources and habitat. All migrating species which pass part of their life cycle beyond New Zealand waters present the risk of introducing unwanted organisms upon their return. The spectre of avian influenza has heightened concern in terms of the vulnerability of endemic species and humans to such an introduction and the prospect of concomitant economic loss. This has prompted investigation into the habitat networks of New Zealand shorebirds to assess degrees of associated risk.[309] In terms of conservation choices, faced with a lethal pandemic it seems unlikely that the threatened status of a bird will override the threat to human health and well-being.

At times each of the birds may interfere to some degree with human activity and interests. Black petrel and sooty shearwater are documented as

[308] Wilson above n 42 at 161.
[309] Dowding and Moore above n 87 at 7.

accompanying fishing expeditions and are known to take bait and foul lines. Choices imposed in a democratic society to protect species and regulate human activity may also create change unwanted by some members of society. Development opportunities may be restricted by the presence of the species or the incompatibility with the species' habitats. Restrictions upon activities within and/or upon access to protected areas are common. Other government or private actions, such as the broad scale application of chemicals including 1080 and brodifacoum, contain the threat of invasive mammalian predators are considered by some to curtail hunting and recreational opportunities and/or to pose a threat to the environment. On a scale of value, however, the transgressions of these species is out-weighed by the benefits. When compared to the risks posed to other species by humans, the risk of harm posed by the case study species, if not by all birds, is negligible.

Building upon an understanding of the value of birds, the following chapter will now examine the factors which threaten birds with a focus upon those to which the case study species are exposed. This examination will make explicit the human practices and modes of production which cause particular damage to birds. It will also throw into sharp relief the competing tensions of economy and the conservation of environmental values, so as to enable consideration in subsequent chapters of legal approaches to this problem.

CHAPTER FOUR: THREATS

The Upper Rakaia River (Figure 22) is breeding habitat of considerable significance to the wrybill. Empty though it may seem, it is contested land and water subject to a range of threats both natural and non-natural which render the status of the bird as vulnerable. Literature relating to bird threat is extensive.[310] This chapter will review and summarise these whilst using the case studies described in Chapter 2 to elucidate limiting factors associated with these species.

Figure 22 Upper Rakaia River

Source: John Dowding

[310] A selection reviewed include Boardman above n 1 at Ch 2, Gill FB above n 15 at Ch 21, Podulka above n.16 at Ch 10, Collar, above n 185, Caughley, G "Directions in Conservation Biology" 1994 63 Journal of Animal Ecology 215, Nebel, S, Porter, JL and Kingsford, RT "Long-Term Trends of Shorebird Populations in Eastern Australia and Impacts of Freshwater Extraction" 2008 141 Biological Conservation 971, Bell, B and Merton, D "Management of Critically Endangered Populations" in Norris, K and Pain, D (eds) *Conserving Bird Biodiversity: General Principles and Their Application* (Cambridge University Press, Cambridge, United Kingdom, 2002).

4.1 GLOBAL

In 2013, Birdlife International (BIL) updated its report, *State of the World's Birds.*[311] Whilst noting some conservation successes, a global situation of continuing species extinction is highlighted. It is assessed that 1,313 species (one in eight of the total) were considered threatened with extinction.[312] Although species extinction is a natural process,[313] the rate at which birds are being lost is higher than at any other time in the evolutionary history of the group.[314]

It is indisputable that anthropogenic change of the environment is the key driver for a continuing decline of bird species. The global spread of human beings with associated activities including forest clearance, cropping, construction of towns, draining and filling of areas of marshlands and swamp lands, suppression of fire in some places and increased frequency of fire in others, hunting and introduction of diseases and predators, have all impacted upon species extinction.[315] In some circumstances, human-induced change may also be an important factor for gain of species. The scale of gain, however, is dwarfed by the scale of loss almost seven fold.

Boardman catalogues anthropogenic effects into three categories, direct (e.g. hunting), indirect (e.g. habitat fragmentation or introduced

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311 BirdLife International *State of the World's Birds 2013: Indicators for our Changing World* (2013).

312 Ibid, at 7.

313 Stattersfield, A, Bennun, L and Jenkins, M (eds) *State of the World's Birds: Indicators for our Changing World* (BirdLife International, Cambridge, UK, 2008)15.

314 Norris, K and Pain, DJ (eds) *Conserving Bird Biodiversity: General Principles and their Application* (Cambridge University Press, Cambridge, U.K., 2002) at ix referring to F.D.M. Smith et al. 1993; Pimm et al. 1995.

315 Podulka, above n 16 at 10.5, United Nations General Assembly *Harmony with Nature; Report of the Secretary-General* (United Nations General Assembly, Sixty-sixth session, Item 19 (h) of the provisional agenda, A/66/302*, 2011), Kiesecker and others "Making Mitigation Work for Conservation and Development" in Naugle, D E (ed) *Energy Development and Wildlife Conservation in Western North America* (Island Press, Washington, DC, 2011), Barnosky, AD, Matzke, N, Tomiya, S, and others "Has the Earth's Sixth Mass Extinction Already Arrived?" 2011 471 Nature 51-57, Rahbek, C and Colwell, RK "Biodiversity: Species Loss Revisited" 2011 473 Nature 288-289.

predators) and adaptation effects (e.g. adaptation to the human environment).[316] It can be difficult to delimit the actual causes of decline, as different agents may combine to threaten a species. There are, however, several key threats that can be identified.[317] A 2008 BIL report ranked the main threats to globally threatened birds worldwide and cited human use of biological resources, invasive species, hunting and trapping and residential/ commercial development at the top of the list.[318] Climate change in its many manifestations is also revealing a range of significant threats to avian species.[319]

In terms of risk, species are not evenly impacted with certain species more susceptible to a given threat,[320] larger-bodied birds with low reproductive rates (due to clutch size), such as albatrosses, are predisposed to harm from direct persecution and introduced predators.[321] Whereas extinction risk derived from habitat loss is related to habitat specialisation and small body size.[322] Where a suite of taxa is prevalent in a geographical area, the key drivers for extinction may be altered by that prevalence. For island nations which host endemic species with small ranges and/or a prevalence of

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[316] Boardman, above n 1 at 14.
[317] Diamond, JM "Overview of Recent Extinctions " in Western, D and Pearl, M (eds) *Conservation for the Twenty-first Century* (Oxford University Press, United Kingdom, 1989) 37.
[318] BirdLife International *State of the World's Birds: Indicators for our Changing World* (BirdLife International, 2008).at 10.
[319] See generally Sutherland, WJ "Climate Change and Coastal Birds: Research Questions and Policy Responses" 2004 146 Ibis 120.120-124, Trouwborst, A "International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: A Mismatch?" 2009 21 Journal of Environmental Law 421-2, Warnock, C and Wheen, N "Climate Change, Wildlife Movement and the Law: A Case Study from New Zealand" 2008 34 Commonwealth Law Bulletin 527. Conversely, there is also potential for some beneficial consequences of climate change, such as surface sea warming: Hamer, KC "The Search For Winners and Losers in a Sea of Climate Change" 2010 152 Ibis 3.
[320] See Clavero, M, Brotons, L, Pons, P, and others "Prominent Role of Invasive Species in Avian Biodiversity Loss" 2009 142 Biological Conservation 2043, who document that the risk of extinction associated with particular extinction drivers varies across taxa in a non-random fashion, referring to previous work of Hughes 1999 and Owen and Bennet, 2000,
[321] BirdLife 2008 above n 318 at 5.
[322] Clavero above n 320 at 2043 referring to Owens and Bennett, 2000.

long lived and slow reproducing seabirds, invasive mammals may act as a greater extinction driver than habitat loss or fragmentation.[323]

The 2008 BIL report maintains that the threats create stresses on bird populations in a number of different ways, identified thus:[324]

1. Ecosystem conversion/degradation
2. Direct mortality
3. Reduced reproductive success
4. Disturbance
5. Competition
6. Indirect ecosystem effects
7. Hybridisation.

The stresses may present individually or in combination, and capturing the source threat and quantifying the impact is complex. Although all stresses are relevant to this research, the issues of disturbance and indirect ecosystem effects will feature, largely due to the current challenge faced by the law in adequately managing these problems. Disturbance is the behavioural or physiological response of birds to the presence of a stimulus, such as a potential predator or a human.[325] Figure 23 summarises the four different types of effects of human disturbance on animal populations and the information provided by measures of the effect.

[323] Clavero above n 320 at 2047-8 and Innes, J, Kelly, D, Overton, J, and others "Predation and Other Factors Currently Limiting New Zealand Forest Birds" 2010 34 New Zealand Journal of Ecology 86 at 87, Birdlife 2013 above n 311 at 13.
[324] BirdLife International 2008 above n 318 at 10.
[325] Weston, MA, McLeod, EM, Blumstein, DT, and others "A Review of Flight-Initiation Distances and their Application to Managing Disturbance to Australian Birds" 2012 Emu 269 referring to VanDer Zande and Verstrael 1985 and Fox and Madsen 1997.

Figure 23 Measures of animal disturbance

Table 1. Examples of typical measures of four different types of effect of human disturbance on animal populations, and the information that each measure provides.

Effect of disturbance	Information provided
Change in distribution	
• Long-term avoidance of areas with high levels of human activity	Site-based issues, e.g. reduced numbers on a site designated for a species
• Short-term movement in response to human presence	Could indicate a site-based effect if movement is repeated or prolonged
Change in behaviour	
• Flight response • Increased vigilance • Altered incubation pattern	Could indicate *either* potential demographic costs or that individuals are responding because they can afford to, rather than because they are vulnerable
Change in demography	
• Reduced fecundity in disturbed areas • Reduced survival in disturbed areas	Reduced fitness of a particular group of individuals, e.g. may be important for species of conservation concern
Change in population size	
• Severe demographic changes causing population decline	Effect of disturbance on population status – may be most relevant for small populations
• Population decline as a result of density-dependent changes to mortality or fecundity following redistribution in response to disturbance	Effect of disturbance on population size and status Ability to predict population-scale responses to altered disturbance regimes

Source: Gill, JA "Approaches to Measuring the Effects of Human Disturbance on Birds" 2007 149 Ibis 10, reproduced with permission.

Although disturbance is established as a key stress, particularly to shorebirds, evidence is lacking as to when, and at what levels, it becomes adverse.[326] Establishing and managing disturbance is made more complex by the species-specific nature of the stress.[327] A study in England of ringed plover, a member of the Charadriidae family (as are the dotterel and wrybill) concluded that disturbance has a major impact on the bird's population size. The study recorded that breeding birds did not tend to use highly disturbed sites, and large increases to previously undisturbed sites would adversely affect

[326] Liley, D and Sutherland, WJ "Predicting the Population Consequences of Human Disturbance for Ringed Plovers Charadrius hiaticula: A Game Theory Approach" 2007 149 Ibis 82, Blumstein, DT, Anthony, LL, Harcourt, R, and others "Testing a key Assumption of Wildlife Buffer Zones: is Flight Initiation Distance a Species-Specific Trait?" 2003 110 Biological Conservation 99, Navedo, JG and Herrera, AG "Effects of Recreational Disturbance on Tidal Wetlands: Supporting the Importance of Undisturbed Roosting Sites for Waterbird Conservation" 2012 16 Journal of Coastal Conservation 373, Glover, HK, Weston, MA, Maguire, GS, and others "Towards Ecologically Meaningful and Socially Acceptable Buffers: Response Distances of Shorebirds in Victoria, Australia, to Human Disturbance" 2011 103 Landscape and Urban Planning 326.

[327] Blumstein above n 326 at 99, Schlacher, TA, Weston, MA, Lynn, D, and others "Setback Distances as a Conservation Tool in Wildlife-Human Interactions: Testing Their Efficacy for Birds Affected by Vehicles on Open-Coast Sandy Beaches" 2013 8 PloS one 2.

population size, as the sites would no longer be used by breeding pairs. Keeping access points away from undisturbed areas of beach where birds breed was a management measure recognised to limit impacts upon populations.[328] Reduction in disturbance is indicated in contributing to increases in the number of migratory shorebirds that will use a site, especially for roosting.[329] Human activity is not alone in causing stress, as disturbance may also arise from animals and from the use of vehicles, boats, aeroplanes and other machinery.[330] A recent Australian study concluded that vehicles driven on sandy shores frequently and intensely disturb birds on open-coast beaches.

In terms of physical structures, birds are known to collide with buildings, structures, and machines, collisions generally occur in flight.[331] The proliferation of wind farms has been identified as a hazard for many species in flight,[332] and detailed species assessments need to be undertaken to assess the level of risk.[333] Collisions are not the only concern in terms of structures, displacement from habitat can also occur coupled with increased energetic costs.

Human impacts, such as exploitation of prey food, pollution, introduction of infectious vectors and invasive predators may also combine to weaken a population making it more susceptible to natural events. Natural forces alone may also have significant direct and indirect impacts.[334] Inclement

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[328] Liley ibid, at 326.

[329] Tarr, NM, Simons, TR and Pollock, KH "An Experimental Assessment of Vehicle Disturbance Effects on Migratory Shorebirds" 2010 74 The Journal of Wildlife Management 1782.

[330] Tarr ibid.

[331] de Lucas, M, Janss, GFE and Ferrer, M "The Effects of a Wind Farm on Birds in a Migration Point: The Strait of Gibraltar" 2004 13 Biodiversity and Conservation 395.

[332] For further discussion see Everaert, J and Stienen, E "Impact of Wind Turbines on Birds in Zeebrugge (Belgium)" 2008 Biodiversity and Conservation in Europe 103.

[333] Desholm, M "Avian Sensitivity to Mortality: Prioritising Migratory Bird Species for Assessment at Proposed Wind Farms" 2009 90 Journal of Environmental Management 2672.

[334] Boardman above n 1 at 12, Finkelstein, ME, Wolf, S, Goldman, M, and others "The Anatomy of a (Potential) Disaster: Volcanoes, Behaviour, and Population Viability of the Short-Tailed Albatross (Phoebastria albatrus)" 2010 143 Biological Conservation 321.

weather patterns are known to cause mass mortality[335] and may be characterised by the forces of flood, high seas, hurricane, cyclone, drought, and extreme fluctuations in temperature. These events may, in turn, induce habitat destruction or modification such as vegetative change, desertification, and redefinition of river courses and sea and lake margins.[336] Events, such as earthquakes, volcanic activity[337] and associated tsunami, may have catastrophic implications for avian populations, particularly for limited or geographically constrained populations. In addition, infectious disease can affect any population,[338] as can any number of naturally arising predators. Starvation is a common cause of death in birds,[339] yet teasing out the tangled agents of hunger is a vexed issue.

In summary, the greatest threats globally stem from human use of natural resources such as water and land for agricultural purposes and vegetation for logging. Damage from invasive species also ranks highly, although it becomes apparent that this force gathers momentum and lethality in particular landscapes, ecosystems and cultural constructs. This will be evident in the context of New Zealand, explored below. Specific reference to the case study species will reveal a number of significant emerging threats such as climate change, reduced genetic variability, disturbance and pollution.

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335 Rain, hail, lightning strikes, extreme heat or cold and mist are documented as causing mortality in migrating birds, with particular events being responsible for mass deaths in excess of one million birds, for discussion see Newton, I “Weather-Related Mass-Mortality Events in Migrants” 2007 149 Ibis 453.
336 Boardman above n 1 at 12.
337 Finkelstein, above n 334 at 8-10.
338 Boardman above n 1 at 12.
339 Newton, I and Little, B “Assessment of Wind-Farm and other Bird Casualties from Carcasses Found on a Northumbrian Beach over an 11-Year Period” 2009 56 Bird Study 158 at 166.

4.2 NEW ZEALAND

4.2.1 STATE OF THE ENVIRONMENT/STATE OF BIRDS

In terms of current threats, it is clear that New Zealand avian fauna is vulnerable to the range of threats identified in the 2013 BIL report. The causes of extinction and loss have been widely debated.[340] Wilson contrasts the island experience of New Zealand, where birds evolved independent of mammalian predators and competitors, with a continental situation. She emphatically concludes that "[i]n New Zealand, introduced mammals pose a much greater and more immediate threat to most native birds than even habitat loss".[341]

A report concerning major conservation policy issues for biodiversity in Oceania revealed a marked contrast between New Zealand and continental Australia. Whereas 80% of the assessed threatened species in Australia were threatened by habitat loss and 40% by invasive species, in New Zealand the situation was reversed. Here, 46% were threatened by habitat loss and 69% by invasive species. Interestingly, the majority of other oceanic island nations recorded higher levels of threat from habitat loss than New Zealand, together with, in most cases, significant threat from invasive species.[342]

In 2008, Miskelly and others produced a report (the 2008 report) assessing the conservation status of New Zealand birds[343] and applied the revised 2008 New Zealand Threat Classification System.[344] The 2008 report

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[340] See generally Diamond, JM and Veitch, CR "Extinctions and Introductions in the New Zealand Avifauna: Cause and Effect?" 1981 211 Science.499.
[341] Wilson, KJ *The State of New Zealand's Birds 2008; Special Report; Conservation of Birds on the Mainland* (OSNZ, 2008). Innes 2010 above n 323 at 2, notes the presence of 14 widely distributed pest mammals, identifying that some are associated with limiting avian food supply and discusses the potential for predation and competition to combine in terms of impact.
[342] Kingsford, RT, Watson, JEM, Lundquist, CJ, and others "Major Conservation Policy Issues for Biodiversity in Oceania" 2009 23 Conservation Biology 834 at 837.
[343] Miskelly 2008 above n 102 at 118.
[344] Miskelly, ibid, and as summarised in Hitchmough, R *Summary of Changes to the Conservation Status of Taxa in the 2008–11 New Zealand Threat Classification System Listing Cycle* (Department of Conservation, 2013).

identified that, of the taxa assessed, 19 had improved in status. Eradication of predators on off-shore islands and species management programmes were identifed as contributing to the gains. The conservation status of 13 taxa deteriorated with the main causes of this thought to be changes in land-use, particularly conversion of sheep farming to dairy farming, changes in oceanic productivity, possibly linked with global warming, fisheries bycatch and predation, or a combination of those named.[345]

In terms of patterns of extinction, rarity or threat, the 2008 report identified several trends. Firstly, that species with higher levels of endemism are at greater risk of extinction than those at lower levels or species that have breeding distributions in other countries. Secondly, in terms of habitat groupings the report identified that:

> Land birds were most likely to have become extinct (36%), followed by freshwater birds (27%) and oceanic birds (5%). However, no coastal taxa are known to have become extinct (Table 4). By contrast, 63% of the 32 coastal taxa are ranked as threatened, along with 27% of freshwater birds, 24% of land birds, and 21% of oceanic birds.

Finally the report assesses, in broad scale geographical terms, that birds confined to one of the two main islands of New Zealand had a higher risk of extinction that those which were not. Being confined to the Chatham Islands was the next most problematic, followed by being confined to both the main islands. The threat classifications have been subject to recent revision (the 2012 report) and the updated conservation status is detailed in Table 6. The 2012 report documents the deterioration in status of six birds (all marine or partially marine), which have shifted to the nationally critical category. The reasons for the shift have yet to be summarised elsewhere. The report also documents eight improvements in status, including the kokako, the gains being

[345] Miskelly, ibid, at 123.

largely attributed to successful conservation management. At the same time five species have been added to the list as Threatened for the first time.[346]

Table 6 Conservation status of New Zealand birds

Classification	Threat level	Number of species
Extinct		56
Data Deficient		2
Nationally critical	Threatened	25
Nationally endangered	Threatened	18
Nationally vulnerable	Threatened	34
Declining	At Risk	17
Recovering	At Risk	13
Relict	At Risk	17
Naturally uncommon	At Risk	45
Migrant		24
Vagrant		138
Coloniser		9
Not Threatened (native and resident)		38
Introduced and Naturalised		37
Total		473

Source: Information derived from Robertson, HA, Dowding, JE, Elliott, GP, and others *Conservation Status of New Zealand birds, 2012.* (Department of Conservation, 2013) 4.

Extrinsic factors which threaten bird populations are compounded by intrinsic limiting factors including evolved species-specific attributes such as behaviour and demography. Examples affecting endemic New Zealand avian fauna include physical attributes such as flightlessness and slow reproductive cycles, and behavioural characteristics such as naivety of mammalian predators and

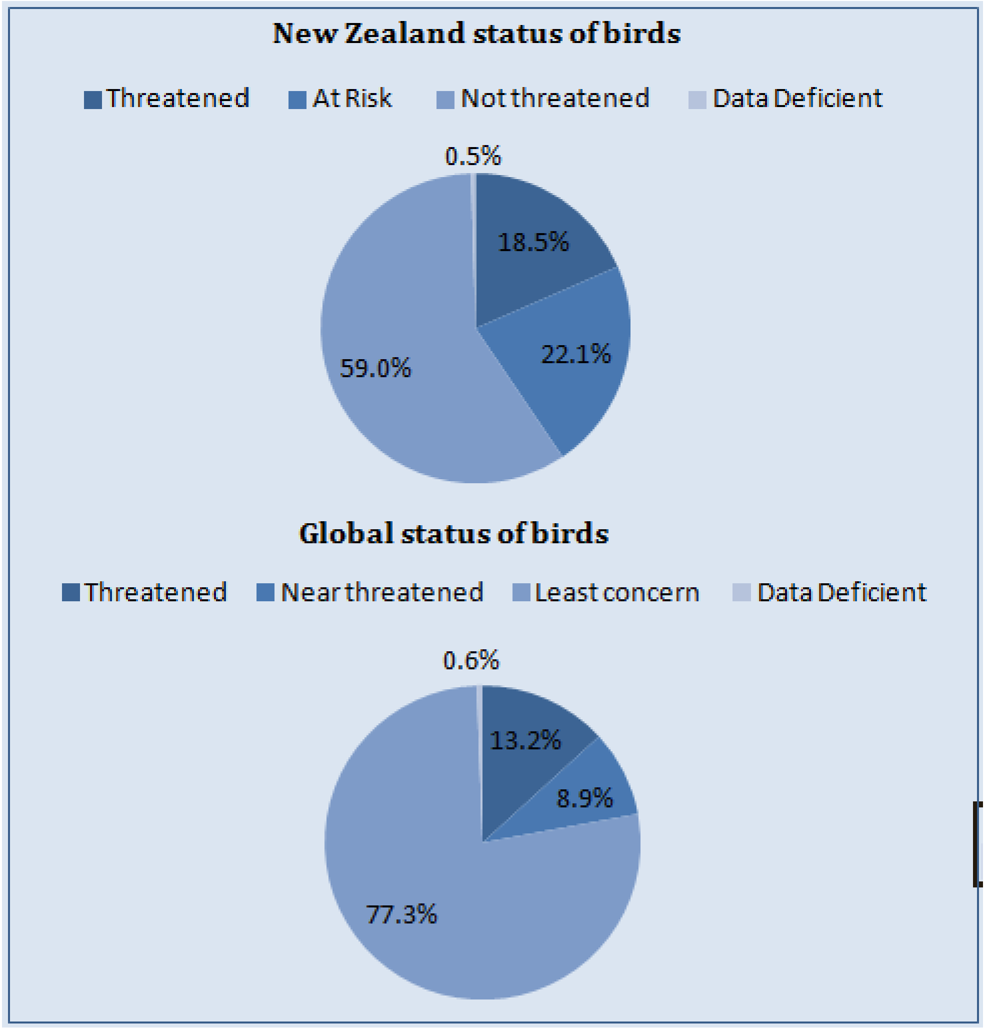
[346] Robertson and others 2013 above n 55 at 4.

inappropriate defence behaviours.[347] In addition, species and sub-population loss of genetic diversity is an intrinsic limiting factor which has more recently been recognised as a factor contributing to population declines.[348]

In summary, it is clear that there is a range of anthropogenic threats and pressures applied to New Zealand avifauna which cause direct mortality or induce vulnerability. At the generic level, compared with global statistics, New Zealand has a higher percentage of Threatened or At Risk species. Of 417 New Zealand species, 77 (18.5%) are Threatened and 92 (22.1%) are At Risk. In 2013 the global figures were 1,313 (13.2%) Threatened and 880 (8.9%) near Threatened (Figure 24). Particular threats will now be considered in the context of the case study species.

[347] See infra ch 2 section 2.2.
[348] Jamieson, IG *Loss of Genetic Diversity and Inbreeding in New Zealand's Threatened Bird Species* (Department of Conservation, 2009) 48.

Figure 24 Comparison of Conservation Status of New Zealand and Global Birds



Source: Information derived from Robertson and others 2013 above n 55, and Birdlife International 2013 above n 311 at 7.

4.3.1 KOKAKO

IUCN status Endangered NZ status At Risk Recovering Population approximately 780 pairs

The North Island Kokako Recovery Plans[349] detail factors leading to decline of the species. The plans identify that historical declines arose largely from loss of habitat (Figure 25) due to forest clearances and the introduction of mammalian predators and browsers. Loss to the bird continues, largely due to the sustained impact of the widespread presence of mammalian predators, and all current populations require continual management against the introduced mammals.[350] Ship rats and possums represent significant threats,[351] as do stoats.[352] Researchers rank ship rats and possums as equal in terms of threat, as although possums may cause more rapid declines, there is the example of Aotea Great Barrier Island where the kokako population was extirpated in the presence of ship rats, but not possums.[353] Food competition by browsing introduced mammals, such as the goat and deer, is viewed as a secondary limiting factor.[354]

Small populations are more vulnerable to stochastic environmental and demographic processes which can affect reproduction, mortality and sex

[349] Rasch, G *Recovery Plan for North Island Kokako* (Department of Conservation, 1992). 12, Innes, J and Flux, I *North Island Kokako Recovery Plan (1999–2009)* (Department of Conservation, 1999) 6-12.

[350] Innes, J, Hay, R, Flux, I, and others "Successful Recovery of North Island Kokako Callaeas Cinerea Wilsoni Populations, by Adaptive Management" 1999 87 Biological Conservation 201. at 209, Basse, B, Flux, I and Innes, J "Recovery and Maintenance of North Island Kokako (Callaeas Cinerea Wilsoni) Populations Through Pulsed Pest Control" 2003 109 Biological Conservation 259, Innes, J "North Island Kokako" in Miskelly, CM (ed.) (ed) *New Zealand Birds Online <www.nzbirdsonline.org.nz>* (2013).

[351] Innes, Hay and Flux above n 350 at 209. The taking was recorded on sites monitored by time-lapse video cameras.

[352] BirdLife International "Callaeas cinereus" (2009) IUCN Red List of Threatened Species <www.iucnredlist.org>

[353] Innes, Hay and Flux above n 350 at 210.

[354] Innes, Hay and Flux ibid, at 209.

ratio.[355] Furthermore low genetic variability is a further outcome of small fragmented populations.[356]

Figure 25 Kokako habitat Mapara, King Country

The threats described represent those which pose the greatest to the kokako. Due to the small, isolated and fragmented nature of the populations, threats from human development and activity in landscape are now less significant than predation. This fact is reflected in case law, where consideration of impacts upon kokako is very limited, and restricted to consideration, in the early 1990s, of impacts of mineral prospecting upon kokako habitat.[357]

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[355] Hudson, QJ, Wilkins, RJ, Waas, JR, and others "Low Genetic Variability in Small Populations of New Zealand Kokako Callaeas Cinerea Wilsoni" 2000 96 Biological Conservation 105. referring to R. CR Frankham, R "Do Island Populations Have Less Genetic Variation than Mainland Populations?" (1997) 78(3) Heredity 311-3, and Lacy, RC "Importance of genetic Variation to the Viability of Mammalian Populations" (1997) 78(2) Journal of Mammalogy 320-335.

[356] Hudson ibid, at 111.

[357] *In re an Application by Blackhill Minerals Ltd*, Planning Tribunal, Auckland, A10/90 14 March 1990, *In re an Application by Puckey*, Planning Tribunal, Auckland, A140/92, 1992, *Tasman Gold Developments Ltd v Minister of Energy* HC Auckland M831/92 1 September 1992.

The kokako, was once found across New Zealand, is now extinct on the South Island, although the North Island subspecies has been translocated. Although regional extinctions are being held off, and managed populations in the North Island are increasing, as reflected in its recent reclassification to "At Risk, Recovering", restoration to its previous range is unlikely (Figure 26).

The kokako sits apart from the other case study species. With the lowest population, it is now largely confined to small isolated and fragmented populations located in North Island forests/forest remnants. With limited mobility the bird is confined to relatively discrete spaces, and does not tend to move beyond managed areas.[358] The majority of these remaining populations are managed and thus less exposed to habitat modification and predation.

Figure 26 Kokako –Significant Threat Summary
PREDATION BY INVASIVE MAMMALIAN SPECIES: POSSUMS AND SHIP RATS
PREDATION BY OTHER AGENTS SUCH AS STOATS AND OTHER MUSTELIDS, CATS AND HARRIER
HABITAT LOSS THROUGH FOREST CLEARANCE AND INTRODUCTION OF MAMMALIAN PREDATORS AND BROWSERS

[358] Estimates are that kokako are managed in only 2.3% of the available suitable contiguous (ie accessible) estate. No populations are so healthy that limited flight is actually a limiting factor on either population size or distribution. Innes, J 2010 above n 323 at 100.

IUCN status Least Concern New Zealand status Resident, At Risk, Declining (TO) Population 1,100,000

The extensive international range of the godwit arguably predisposes it to a greater variety of threats than non-migrant species and, therefore, habitat modification weighs more heavily than for other species.

Leg one of the journey

For the godwit the spotlight has fallen upon the extensive habitat modification occurring at its staging posts in the Yellow Sea Region, on the East Asian-Australasian flyway. The godwit population as a whole is almost entirely dependent upon the extensive mudflats in the Yellow Sea Region to forage and refuel during the annual return trip to breeding grounds in Alaska.[359] Significant human development and activity[360] in this vicinity is incrementally threatening the species, large scale reclamation presents potentially catastrophic results for migrant wader populations.[361] Direct take is an additional, significant threat posed to the godwit which is harvested for subsistence in the region.[362]

[359] Kelin, C and Qiang, X "Conserving Migrating Shorebirds in the Yellow Sea Region" in Boere, GC, Galbraith, C A and Stroud, D A (eds) *Waterbirds Around the World: A Global Overview of The Conservation, Management and Research of The World's Waterbird Flyways* (Stationery Office, Edinburgh, 2006) 319.

[360] For discussion see Rogers, D, Moores, N and Battley, PF "Northwards Migration of Shorebirds through Saemangeum, the Geum Estuary and Gomso Bay, South Korea In 2006" 2006 50 The Stilt 62, Kelin ibid, Barter, M, Riegen, A and Xu, Q "Shorebird Numbers in Bohai Wan During Northward Migration" 2003 44 Stilt 4, Yang, HYAN, Chen, B, Barter, M, and others "Impacts of Tidal Land Reclamation in Bohai Bay, China: Ongoing Losses of Critical Yellow Sea Waterbird Staging and Wintering Sites" 2011 21 Bird Conservation International 241.

[361] Woodley, K *Godwits: Long-Haul Champions* (Penguin Group (NZ) North Shore, N.Z, 2009) 113.

[362] Woodley ibid, at 129.

The breeding grounds

Habitat modification does not, as yet, present a significant a problem for the bird on its breeding grounds in Alaska. Much of the area is remote with low levels of human activity. On the breeding grounds, the birds are exposed to legalised takes for subsistence purposes,[363] and the presence of a broad range of predators including rodents, foxes, minks and skuas.[364] The location of the breeding grounds in the vicinity of the Arctic Circle, although enjoyed by the bird in "summer time", entails the risk that adverse weather conditions will threaten adult birds and breeding success.[365] The existence and extent of threats to this species, beyond the jurisdiction of New Zealand, underscores the importance of International Agreements.

New Zealand

Shorebird census data in New Zealand indicates decline for the sub-species, although accurate population estimates are difficult.[366] Attribution of decline is also contested, but predation by introduced mammals and habitat modification and disturbance are recognised as considerable threats.[367] During the course of this research concern for the bird has been growing, resulting in its recent threat classification revision to "At Risk, Declining", with a qualifier recognising that it is "Threatened Overseas".

Indirect modification, characterised by loss of feeding and roosting grounds, is a common feature in New Zealand harbours, estuaries and coastal locations. Activities in the catchment, such as removal of indigenous vegetation for farming and forestry, have generated externalities which

[363] Woodley ibid, at 129.
[364] Woodley ibid, at 217.
[365] Woodley ibid, at 217.
[366] Woodley ibid, at 216.
[367] Melville and Battley 2006 above n 77 at 271.

modify, and threaten, biodiversity dependent upon intertidal mudflats.[368] Significant habitat modification can also enable access to previously inaccessible areas by predators.[369] Additional drivers of habitat loss and degradation include invasive alien species, human recreation and disturbance, climate change, drainage, infilling and associated land uses, and fishing/aquaculture.[370] Characteristics of shorebirds, such as high site fidelity, tendency to aggregate, very high energy demands, and habitat networks containing both roosting and foraging sites, make the birds sensitive to habitat modification and loss.[371] In terms of the impact of development in the landscape, there is growing recognition in case law of the presence of godwit in the landscape, but little indication of any significant judicial concern relating to impacts of that development on the species.[372]

As with all shorebirds, the impact of human disturbance is a factor of increasing concern.[373] Population growth, combined with advances in technology and escalating population mobility, have result in increased interaction between humans and other species. Innovative coastal marine recreational activities such as the use of jets skis[374] and kite surfing[375] have created controversy in relation to their impact upon godwits (Figure 27) and

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368 Brownell, B, Dahm, J and Graeme, M *Priorities and Related Actions for the Sustainable Management of the Firth of Thames Ramsar site Muddy Feet Phase II: Keep the Birds Coming* (Environment Waikato, 2008) 6.
369 Battley, PF "Trans-equatorial Migratory Waders" in K-J, Wilson (ed) *The State of New Zealand's Birds 2009; Conservation of Migrant Birds* (OSNZ, New Zealand, 2009) 5.
370 Brownell above n 368 at 6.
371 Department of the Environment Water Heritage and the Arts Commonwealth of Australia *Draft EPBC Act Policy Statement 3.21 – Significant Impact Guidelines for 36 Migratory Shorebird Species* (DEWHA, 2009) 12.
372 *Kotuku Parks Ltd v Kapiti Coast District Council Environment Court Auckland A73/2000, 13 June 2000*, *Hapu Kotare Ltd v Manukau City Council* Environment Court Auckland A133/0515, August 2005, *Tairua Marine Ltd v Waikato Regional Council* [2010] NZEnvC 398, *Lower Waitaki River Management Society Inc v Canterbury Regional Council* Environment Court Christchurch C080/09,June 2009 *MacPherson v Otorohanga District Council* Environment Court Wellington W025/07 23 April 2007, wind farm cases will be discussed separately.
373 Melville and Battley above n 77 at 271, Wilson, KJ *The State of New Zealand's Birds 2009* (Ornithological Society of New Zealand, 2009) 4.
374 DEWHA above n 371 at 13.
375 Marks, K "Kiteboarders Threat to Godwit Sanctuary" New Zealand Herald, 16 March 2009 http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10561823.

other shorebirds that are susceptible sudden loud noise.[376] Further research in the New Zealand environment is required to understand the full impact of such threats.

Figure 27 Godwit at non breeding grounds, Miranda foreshore

Physical structures in the land and seascape also pose risk. Applying an Environmental Sensitivity Index, a recent European study concluded that the godwit was a medium-priority species in terms of risk of collision at a marine wind farm site in the Baltic Sea.[377] In the New Zealand context, Powlesland observes:[378]

> The routes and flight altitudes of godwits moving within New Zealand are poorly known, but both overland and coastal movements have been recorded.

A Board of Inquiry decision in relation to the Hauāuru mā raki wind farm proposal planned for land on the west coast of the North Island accepted,

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[376] DEWHA above n 371at 13.
[377] Desholm above n 333 at 2674, see also Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011, 150.
[378] Powlesland, R *Bird Species of Concern at Wind Farms in New Zealand* (Department of Conservation, Wellington, NZ, 2009) 29.

with reservations about the estimates from risk modelling, a collision mortality estimate of two godwit per year, this in the context of a New Zealand population of some 89,000.[379] This is not a significant threat to the species, although the estimate is site specific and additional research is required to understand the full extent of the threat to all species.[380] In addition to direct mortality, wind farms may create barriers to movement and cause displacement from ideal feeding distribution, as well as cause direct destruction of feeding habitats.[381]

A range of potential impacts upon the species, concomitant with global warming, has been identified, but the extent of these impacts is as yet unclear,[382] changes in sea level is a potential cause of future displacement of the species. Additionally, there is a risk of cross–infection through disease due to migratory habits and close association with other species on its foraging grounds.[383]

Direct take by humans, although now illegal, remains a persistent and very real threat. A 2011 incident saw more than 100 godwits taken in an unsanctioned harvest,[384] and there is a degree of interest from some Māori[385]

[379] Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011, 150.
[380] Powlesland, above n 378 at 49.
[381] Fox, AD, Desholm, M, Kahlert, J, and others "Information Needs to Support Environmental Impact Assessment of the Effects of European Marine Offshore Wind Farms on Birds" 2006 148 Ibis 131.
[382] Woodley 2009 above n 361 at 223, Battley 2009 above n 369 at 5, identifies rising sea levels, northward shift in tundra vegetation and advances in spring phenology as potential adverse effects.
[383] See generally Dowding, JE and Moore, SJ "Habitat networks of indigenous shorebirds in New Zealand" (2006) 261 Science for conservation.
[384] Anon. "Shorebirds slaughtered on Kaipara Harbour" New Zealand Herald, 13 March 2011 http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10712152
[385] Infra, Chapter 7 at section 7.2.1 for further discussion.

and farmers[386] to remove the absolutely protected status currently accorded to the godwit pursuant to the Wildlife Act 1953.

Figure 28 Godwit –Significant Threat Summary
HABITAT LOSS AND MODIFICATION IN YELLOW SEA
HABITAT LOSS AND MODIFICATION IN NZ NON-BREEDING GROUNDS
PREDATION BY INTRODUCED MAMMALIAN SPECIES
CUMULATIVE EFFECTS OF HUMAN DEVELOPMENT AND ACTIVITY IN THE LANDSCAPE

[386] Atkinson, K "Some animals and birds could lose protected status" 31 July 2006, New Zealand Herald http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10393829.

IUCN Status Endangered NZ Status Vulnerable Population 2175 individuals

Ground nesting habits on open sandy spits or beaches, frequented by people and introduced animals, immediately reveal the vulnerability of this species (Figure 29).[387] Exposed and seemingly defenceless, if unmanaged its survival would appear unlikely. The most recent recovery plan for the species[388] identifies that predation, mainly of eggs and chicks, is the major threat to the northern subspecies. Losses are caused by mammalian predators such as stoats, cats, hedgehogs and avian predators.[389]

Figure 29 Opoutere Spit, Wharekawa Harbour, dotterel breeding ground

[387] Classified Threatened species, nationally vulnerable, northern subspecies numbered c.2175 individuals (2011) see infra chapter 2, see also Dowding, JE and Davis, AM *New Zealand Dotterel (Charadrius Obscurus) Recovery Plan, 2004-14* (Department of Conservation, Wellington, NZ, 2007)1.
[388] Dowding, Recovery Plan ibid, at 8.
[389] Dowding Recovery Plan ibid.

The populations of Northern New Zealand dotterels are widely and thinly spread, with the majority to be found on the east coast of New Zealand, an area experiencing significant coastal development intensification.[390] Property development may modify habitat, and brings increased activity in the landscape thus threatening the dotterel.[391] Several key breeding sites[392] such as those at Waipu, Mangawhai, and Opoutere (Figures 29 and 30) are located in areas of high recreational demand regularly exposing populations to the presence of humans. Where inadequately managed, activities involving vehicles, dogs, stock and water craft have impacted negatively with nests particularly vulnerable to destruction. Disturbance is considered a main threat and during breeding is indicated in lower productivity and at the chick raising stage in reduced fledgling success.[393] Further studies are required to better understand the nature and extent of the problem.

The issue is well established in case law. Earlier decisions recognised the effects of specific activities, such as camping grounds and tourist lodges, on the birds.[394] More recent decisions tend to consider the generic threat posed by resource consent applications for subdivisions and private plan changes, which enable closer settlement of areas proximate to the habitat of the dotterel. Potential threats to dotterel have been traversed in various hearings: the establishment of wind farms on the west coast,[395] subdivision in

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390 Dowding Recovery Plan above n 387at 15.
391 Dowding Recovery Plan above n 387 at 6.
392 Dowding and Moore above n 87 at Table 6 and 82, Table A52.1.
393 Dowding, JE and Murphy, EC "The Impact of Predation by Introduced Mammals on Endemic Shorebirds in New Zealand: A Conservation Perspective" 2001 99 Biological Conservation 53, Lord, A, Waas, JR and Innes, J "Effects of Human Activity on the Behaviour of Northern New Zealand Dotterel Charadrius Obscurus Aquilonius Chicks" 1997 82 Biological Conservation 18, Lord, A, Waas, JR, Innes, J, and others "Effects of Human Approaches to Nests of Northern New Zealand Dotterels" 2001 98 Biological Conservation 237, Woodley, K *Shorebirds of New Zealand; Sharing the Margins* (Penguin Books (NZ) Ltd, New Zealand, 2012) 233.
394 *Opoutere Residents and Ratepayers Association v Planning Tribunal* (1989) 13 NZTPA 446 and *Environmental Defence Society v Mangonui County Council* [1989] 3 NZLR 257; (1989) 13 NZTPA 197.
395 For example; In the matter of an application to the Waikato Regional Council and the Waikato District Council by Taharoa C Incorporation to build and operate a wind farm at Taharoa 2007, andIn the matter of a Board of Inquiry appointed under section 146 of the

the Rodney District,[396] Aotea Great Barrier Island,[397] Coromandel,[398] Kawhia Harbour,[399] and Waikanae,[400] marinas in Coromandel,[401] sand extraction in Rodney and the Bay of Plenty,[402] and a camping ground at Waipu.[403] In relation to another species, the brown teal, the court recognised that numbers on Aotea Great Barrier Island were inversely related to the density of human habitation in the vicinity.[404]

Determining threat level is difficult, compounded by factors such as ecological complexity, synergistic impacts of threats, species mobility, and inadequate levels of species data. In addition, research is sparse in terms of the impact of cumulative effects. For dotterel, the Recovery Plan identifies that "in the medium to long term the cumulative impact on a few pairs at many sites will inevitably have an adverse effect on the taxon as a whole, by reducing numbers and range".[405]

In addition to the threats described above, loss of nests and habitat, due to flood events and high tides, reduce breeding success. Sea level rises consequent upon global warming could also increase any such loss. As with

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Resource Management Act 1991 to consider resource consent applications by Contact Wind Limited in respect of the Hauāuru mā raki wind farm proposal.

396 *Stillwater Ratepayers and Residents Association v Rodney District Council* Environment Court Christchurch, C048/97, 6 June 1997, In the matter of a request pursuant to Part 2 of the First Schedule of the Resource Management Act 1991 to the Rodney District Council for Proposed Plan Change No.105 and in the matter of Variation 62 to the Rodney District Plan 2000 (Te Arai Private Plan change), Decision Report Number PC105/V62/2000, 2 July 2009.

397 *O'Shea v Auckland City Council* [2002] NZRMA 117.

398 *Mygind v Thames-Coromandel District Council* [2010] NZEnvC 34.

399 *MacPherson v Otorohanga District Council* Environment Court Wellington W025/07, 23 April 2007.

400 *Kotuku Parks Ltd v Kapiti Coast District Council* Environment Court Auckland A73/2000, 13 June 2000.

401 *Tairua Marine Ltd v Waikato Regional Council* [2010] NZEnvC 398, *Whangamata Marina Society Inc v Attorney-General* [2007] 1 NZLR 252.

402 *J W Paterson & Sons Ltd v Bay of Plenty Regional Council* Environment Court Auckland, A135/2000 27 November 2000, *Sea-Tow Ltd v Auckland Regional Council* Environment Court Auckland, A066/06, 30 May 2006.

403 *Minister of Conservation v Whangarei District Council* Environment Court Auckland, A131/97 12 November 1997.

404 *O'Shea v Auckland City Council* [2002] NZRMA 117 at [108].

405 Dowding Recovery Plan above n 387 at 15.

other species, dotterel are vulnerable to catastrophic natural events such as fire, storms and volcanic activity.

The risk of cross-infection from disease, carried by international migrant avian species, is a further potential threat, heightened by an extensive spatial overlap between dotterel and Arctic migrants (Figure 18).[406]

Figure 30 Dotterel, Opoutere

Inbreeding depression, although not yet documented in dotterel, is another potential threat increased by the fact that the dotterel population consists of at least two sub-populations that are currently effectively isolated from each other with little or no gene flow between them.[407] The range of the dotterel has contracted significantly, and there is a real risk that remnant populations on the west coast of the North Island will presently be extirpated. Management of the remaining populations is seen as the key to preventing further declines.

[406] Dowding and Moore above n 87 at 34.
[407] Dowding, JE *Management of Northern New Zealand Dotterels on Coromandel Peninsula* (Department of Conservation, 2006) 6, Dowding and Moore above n 87 at 34.

Figure 31 Dotterel –Significant Threat Summary
PREDATION BY INTRODUCED MAMMALIAN SPECIES: STOATS, CATS, HEDGEHOGS
HABITAT LOSS AND MODIFICATION
CUMULATIVE EFFECTS OF HUMAN DEVELOPMENT AND ACTIVITY IN THE LANDSCAPE

IUCN status Vulnerable NZ status Vulnerable Population c.5000 individuals c. 1400 breeding pairs

The black petrel is absent from the case law. This is not to suggest that it is not Threatened, or alternatively well protected. Its absence can be explained by its spatially constrained breeding habits, and by the fact that a significant threat posed to the species by fisheries bycatch is not an extensively litigated issue.

From October to June, black petrel return to breeding colonies and associated foraging grounds, located to the East and West of the North Island.[408] The foraging grounds intersect with the extensive inshore fishery (as well as off-shore) and the birds associate with a range of commercial fishing enterprises.[409] The potential risk to the black petrel from fisheries by-catch has recently been assessed in several reports. In 2011, it was found that the black petrel was, of 64 species studied, "the species most at risk from commercial fishing activities".[410] Factors that led to the high-risk ratio for the bird included a high potential vulnerability to capture due to the bird's foraging distribution, the extent of fishing effort within that distribution, and the observed bird captures. It appears that black petrel are particularly vulnerable to bottom long line (BLL) capture, as used in snapper/bluenose fisheries, with the inshore snapper fisheries accounting for the majority of observed captures.[411] The 2011 report concluded that, from the 27 observed captures, it could be estimated that "between 725 and 1,524 birds may have potentially been killed

[408] Infra ch 2 section 2.3.4.
[409] Richard, Y, Abraham, ER and Filippi, D *Assessment of the Risk to Seabird Populations from New Zealand Commercial Fisheries* (Ministry of Fisheries, Final Research Report for projects IPA2009/19 and IPA2009/20 and draft Aquatic Environment and Biodiversity Report, 2011).
[410] Richard 2011 ibid, at 31.
[411] Richard 2011 ibid, at 22 and 31.

each year in the period 2003 to 2009".[412] This position has since been confirmed by a further study carried out in 2013.[413]

These estimates do not correlate with long-term demographic studies carried out on segments of the population at breeding colonies at Hirakimata, Mt Hobson whereby small increases in population were observed.[414] Without the presence of observers on all fishing boats for the entire fishing effort, and a complete census of the entire breeding population, estimates of black petrel bycatch will remain model-dependent and subject to uncertainty. Bell and Francis[415] were unprepared to find that there is no risk from bycatch and, given the strong conclusions of the 2011 report, it is clear that bycatch represents a significant threat, about which more information is required.

Lack of certainty surrounding levels of bycatch is further heightened by the parameters of the 2011 report, which was limited to direct mortality in New Zealand commercial trawl and long line fisheries. Accordingly, loss caused by other fishing methods, recreational fishing,[416] and fisheries beyond the Exclusive Economic Zone remain unassessed.[417] The black petrel winters in the seas of the Eastern Pacific Ocean between southern Mexico and Northern Peru, at times quite close to shore. Although commonly seen associating with herds of marine mammals, the birds have adapted to following boats scavenging garbage, bait and fish offal, with these interactions increasing in intensity near shore.[418] These scavenging habits present a dual

412 Richard 2011 ibid, at 31.
413 Richard, Y and Abraham, ER "Risk of Commercial Fisheries to New Zealand Seabird Populations, 2006–07 to 2010–11" 2013 New Zealand Aquatic Environment and Biodiversity Report No. 109, 23.
414 Francis, R and Bell, EA *Fisheries Risks to the Population Viability of Black Petrel (Procellaria parkinsoni)* (2010) 43.
415 Ibid.
416 These losses are estimated to be around 10,000 birds (of all species) annually in the north-eastern New Zealand region alone –Richard 2013 above n 413 at 38.
417 Richard 2011 above n 409 at 6.
418 Pitman, RL and Ballance, L "Parkinson's Petrel Distribution and Foraging Ecology in the Eastern Pacific: Aspects of an Exclusive Feeding Relationship with Dolphins" 1992 94 Condor 832.

threat. Firstly, the direct threat of bycatch in both summer and winter foraging habitats and secondly, an indirect threat due to its preferential association with rare marine mammals to underpin foraging success. Secondly the marine mammals associated with are themselves subject to fisheries bycatch. Although the impact upon the mammals may be known and managed, the potentially significant indirect impact upon the black petrel is not.[419]

In addition to bycatch, fisheries deplete fish stocks thus limiting food availability whilst at sea, and marine pollution also threatens the black petrel. Ingestion of or contact with substances such as oil are known causes of mortality along with entanglement with debris such as plastic or nets. [420]

Increased activity and development in the marine and coastal environment brings with it increased disturbance and collision risk. Wind farms, both on and off shore, present a potential threat to the bird and its breeding colonies.[421] Again, detecting the level of risk is difficult, studies are sparse, and the likelihood of carcass retrieval at sea is low. Powlesland, however, in a review of wind farm impacts on birds in New Zealand concluded:[422]

> Procellariiformes, particularly the larger species, may be just as vulnerable to turbine collision fatalities as soaring raptors, because these seabirds are adapted to sustained high-speed flight with slow manoeuvrability in unobstructed environments. In addition, many have delayed maturity and low productivity, making their populations sensitive to increased mortality.

[419] Ballance, LT "Understanding Seabirds at Sea: Why and How" 2007 35 Marine Ornithology 133.
[420] Le Corre, M, Jaeger, A, Pinet, P, and others "Tracking Seabirds to Identify Potential Marine Protected Areas in the Tropical Western Indian Ocean" 2012 156 Biological Conservation 83, Rogowska, J and Namieśnik, J "Environmental Implications of Oil Spills from Shipping Accidents" 2010 Reviews of Environmental Contamination and Toxicology Volume 206.
[421] Powlesland, RG *Impacts of Wind Farms on Birds: A Review* (Department of Conservation, 2009).24.
[422] Powlesland, RG ibid at 24.

If bycatch presents the most significant threat at sea, habitat loss and modification and predation by introduced mammals pose the main threat on land.[423]

Figure 32 Black petrel habitat at the summit of Hirakimata Mt Hobson

The breeding range of the black petrel has contracted significantly, such that an animal formerly widespread in New Zealand is now largely confined to two off-shore islands.[424] The largest breeding colony of the black petrel is found around the summit of Hirakimata Mt Hobson (Figures 32 and 33).[425] A long-term study has assessed the breeding success and causes of mortality in the black petrel in a 35ha area on the summit of Hirakimata.[426] In the 2005/2006 season, of the 257 eggs laid in the study burrows, 15 eggs (6% of all breeding

[423] Feral cat, rats, stray dogs and feral pigs are present on the Aotea Great Barrier Island and feral cats, pigs and rats are present at the breeding site: Agreement on the Conservation of Albatrosses and Petrels "Species Assessments: Black Petrel *Procellaria parkinsoni*" (2009) <http://www.acap.aq >5.
[424] See Francis and Bell, above n 414 at 4:"The black petrel was once the dominant mutton-bird of North Island Māori, being found on most North Island ranges over 400m (Scofield 1989) and also in the northern South Island (Imber 1987)".
[425] Bell, EA, Sim, JL and Scofield, P *Population parameters and distribution of the black petrel* (DOC Research & Development Series 307, 2009) 6.
[426] Bell 2009 ibid.

attempts) were either predated or scavenged by rats.[427] Rats and cats will also predate chicks, and feral cats have been implicated in the loss of adult birds.[428] In contrast to Great Barrier, the recent eradication of feral cats and kiore from Hauturu Little Barrier concluded its current status as free from introduced mammalian species.[429]

Figure 33 Black petrel egg, Hirakimata 2009 (abandoned)

Due to its status as a nature reserve, entry to Hauturu Little Barrier is restricted to conservation management purposes. In contrast, Hirakimata has the status of forest reserve and remains open to the public. Researchers in the long-term study concluded that human visitation has "little or no impact on the breeding success of the black petrel".[430] It asserts that raised walkways have assisted in decreasing damage to the overall environment in the areas in which they have been constructed.[431]

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[427] Bell 2009 ibid, at 29.
[428] Bell 2009 ibid, at 29.
[429] ACAP species account above n 423 at 5.
[430] Bell, EA, Sim, J and Scofield, P *Demographic Parameters of the Black Petrel (Procellaria parkinsoni)* (Department of Conservation, 273, 2007) 33.
[431] Bell 2007 ibid, at 34.

Regarding other threats, there is currently no evidence to suggest that disease presents a significant threat to the species, or that it is limited by lack of genetic variability. Although the bird was historically taken by humans for food purposes, there is no evidence to suggest that this is a current threat.

Figure 34 Black Petrel –Significant Threat Summary
FISHERIES BYCATCH, PARTICULARLY BOTTOM LONG LINE INSHORE SNAPPER FISHERY
PREDATION BY INTRODUCED MAMMALIAN SPECIES: SHIP RAT, KIORE, CAT, MUSTELID WHERE CO-HABITANT
HABITAT LOSS AND MODIFICATION

IUCN status Near Threatened NZ status At Risk Declining Population 19-23,000,000

As a fellow muttonbird, sooty shearwater exhibit a threat profile similar to black petrel. A seabird with an extensive annual migration, the threats it is exposed to include fisheries bycatch, introduced predators in its breeding grounds, and habitat modification and loss. The key differentials from the black petrel are that it has a larger population, its breeding grounds are not confined to New Zealand off-shore islands and the species continues to be the subject of legalised human consumption.[432]

Debate[433] exists as to the extent of decline of this significant population of some 19-23 million,[434] with the most recent study concluding that there appears to be no strong evidence for the continuation of the significant decline in the population indicated during the late 1980s and early 1990s.[435]

Notwithstanding this lack of clarity, what is uncontroverted is that sooty shearwater populations, having once been abundant, have now significantly contracted or largely disappeared from mainland New Zealand.[436]

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[432] Infra Chapters 2 and 3.

[433] Scott, D, Scofield, P, Hunter, C, and others Decline of Sooty Shearwaters, Puffinus Griseus, on the Snares, New Zealand Papers and Proceedings of the Royal Society of Tasmania 185 referring to Lyver, POB, Moller, H and Thompson, C "Changes in Sooty Shearwater Puffinus Griseus Chick Production and Harvest Precede Enso Events" 1999 188 Marine Ecology Progress Series 237, Scofield, RP and Christie, D "Beach Patrol Records Indicate a Substantial Decline in Sooty Shearwater (Puffinus Griseus) Numbers" 2002 49 Notornis 158 and Veit, R, McGowan, J, Ainley, D, and others "Apex Marine Predator Declines Ninety Percent in Association with Changing Oceanic Climate" 1997 3 Global Change Biology 23.

[434] The total population size of individuals over one year old within the New Zealand Exclusive Economic Zone was recently estimated as in excess of 12 million, see Richard 2013 above n 413 at 20.

[435] McKechnie, S, Bragg, C, Newman, J, and others "Assessing the Monitoring of Sooty Shearwater (Puffinus Griseus) Abundance in Southern New Zealand" 2009 36 Wildlife Research 550.

[436] Lyver, PO, Moller, H and Robertson, CJ "Predation of Sooty Shearwater Puffinus Griseus Colonies on the New Zealand Mainland: is There Safety In Numbers?" 2000 5 Pacific Conservation Biology 347, Clucas, RJ, Fletcher, DJ and Moller, H "Estimates of Adult Survival Rate for Three Colonies of Sooty Shearwater (Puffinus griseus) in New Zealand" 2008 108 Emu

In terms of decline, fisheries bycatch has been identified as a significant threat. Sooty shearwater exhibit similar characteristics to the black petrel in terms of offal take and ship following. Their diving habits are, however, more likely to expose them to additional interaction with fisheries.[437] Unlike some other species, sooty shearwater are predisposed to becoming bycatch in several different fisheries,[438] including both bottom and surface long line fisheries, with the greatest threat now stemming from trawl fisheries.[439]

Richard and others estimate a mean annual loss of 3,540 birds to the New Zealand fisheries (95% confidence interval c.i 3,150 - 4,110). Although a significant loss, well in excess of the estimated annual mean take for black petrel of 1,060, the more forgiving population size of the sooty shearwater buffers the impact on the Potential Biological Removal (PBR) index. The bird falls within the lower risk range indicating that potential fatalities are between 1 and 50% of the PBR. In terms of estimated numbers of fatalities, the sooty shearwater is outstripped only by the white-capped albatross which sits at 5,123. No doubt this dubious position can be attributed to its considerable population size, however, it also suggests behavioural characteristic which predisposes it to harm. Of the 64 species assessed, the sooty shearwater was ranked as the 38th species most at risk.

To this assessment must be added the additional fisheries pressures placed upon the species within other jurisdictions where it breeds and migrates. Breeding grounds beyond New Zealand include islands off the coasts of Chile and Cape Horn, on Kidney Island Falklands, on Tristan de Cunha, on islands off Tasmania and New South Wales and on Macquarie Island.[440] The

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237, Wilson, K-J *Status and Conservation of the Sooty Shearwater Colony at Mt Oneone, Wanganui River, Westland* (Department of Conservation, 1999) 1.

437 Uhlmann, S *Fisheries Bycatch Mortalities of Sooty Shearwaters (Puffinus Griseus) and Short-Tailed Shearwaters (P. tenuirostris)* (Department of Conservation, 2003) 8.

438 Richard 2011 above n 409 at 28.

439 Richard ibid, Table A10, at 50.

440 Heather, above n 53 at 189.

60,000 kilometre figure of eight migration route, described in Chapter 2, provides extensive exposure to fisheries. It is well documented that large numbers of sooty shearwater have been taken by North Pacific driftnet fisheries contributing massive losses. Estimates of sooty shearwater bycatch for the driftnet fisheries are estimated at 1.2 million per year.[441] Losses of this size attracted international attention and drift netting has since been prohibited,[442] hence removing the largest known bycatch risk to sooty shearwater.[443] Potential losses caused by extant fisheries, such as long line, gillnet and trawl, is under researched with some suggestion that they may be insignificant.[444]

As with bycatch, assessing the impact of human take upon a numerous species, which may alter its nesting habits in response to environmental conditions, is prone to uncertainty.[445] The sooty shearwater, however, occupies a unique position in New Zealand being one of a handful of birds, identified in the Wildlife Act 1953, that may be hunted or killed pursuant to ministerial notice and being subject to customary harvest.[446] In 1994, Rakiura Māori established the *Kia Mau Te Tītī Mo Ake Tonu Atu* "Keep the Tītī forever" research program to ensure the continuation of a sustainable harvest for future generations. There was significant concern that additional pressures, such as commercial exploitation, introduced predators, global climatic change, and new capture and processing technologies, could be impacting adversely on previously sustainable customary uses.[447]

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441 Uhlmann 2003 above n 437 at 8.
442 Caddell, R "Caught in the Net: Driftnet Fishing Restrictions and the European Court of Justice" 2010 22 Journal of Environmental Law 303.
443 Uhlmann 2003 above n 437 at 43.
444 Uhlmann ibid.
445 McKechnie, S, Fletcher, D, Moller, H, and others "Estimating and Correcting for Bias in Population Assessments of Sooty Shearwaters" 2007 71 The Journal of Wildlife Management 1325.
446 Customary take is permitted on some islands in Foveaux Strait and around Stewart Island and protected elsewhere in New Zealand: see Heather above n 53 at 189.
447 Kitson, JC "What Limits the Number of Titi (Puffinus griseus) Harvested by Rakiura Maori?" 2002 30 Human Ecology 504, referring to Berkes, 1999, Lyver 2000a; Lyver and Moller 1999a.

A significantly deeper understanding of the bird's habits and ecological and biological prerequisites has been detailed in a proliferation of reports, which have applied both scientific techniques and traditional ecological knowledge. Researchers have tentatively concluded "The current level of overall harvest intensity across all Tītī Islands appears sustainable based on a preliminary assessment, however harvesting could be depressing breeding density on a few manu where some birders exert much higher than average harvest pressure."[448] These preliminary conclusions are accompanied by recommendations for ongoing monitoring of the threat of climate change and further monitoring for the ongoing assessment of harvest sustainability.[449]

One of the particularly interesting findings of the research was that, in some areas, decline was faster in un-harvested areas as opposed to those exposed to the customary take[450] suggesting alternative causes of decline.[451]

The mainland/island dichotomy immediately raises the spectre of predators, as this is a key differential between mainland and some island communities. However, this ready conclusion must be treated with caution, as predator free islands, such as the main Snares Island, have been subject to population declines also.[452] Separating the tangled agents of decline appears particularly difficult for this populous and highly mobile species, yet it is clear that pressure continues, and in terms of mainland species, it is considered

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[448] Newman, J, Scott, D, Bragg, C, and others "Estimating Regional Population Size and Annual Harvest Intensity of the Sooty Shearwater in New Zealand" 2009 36 New Zealand Journal of Zoology 319.
[449] Newman, ibid.
[450] Moller, H, Fletcher, D, Johnson, PN, and others "Changes in Sooty Shearwater (Puffinus Griseus) Abundance and Harvesting on the Rakiura Titi Islands" 2009 36 New Zealand Journal of Zoology 325.
[451] Newman above n 448 at 319.
[452] For discussion see Newman ibid, at 317.

likely that the species will be extirpated in these areas unless action is taken.[453] Action against predators is seen as a key management tool.[454]

The predators implicated in the decline are ship rats, Norway rats, stoats, ferrets, feral cats[455] and weka, an endemic rail introduced to the Tītī Islands by the tītī harvesters for food.[456] Predation episodes have been known to obliterate entire annual breeding attempts and, when combined with adult mortality, significantly threaten populations due to the species' characteristics of being long-lived seabirds with delayed maturity and low productivity.[457]

Additional known agents of decline are common to most seabirds and include[458] overfishing of important seabird prey species by commercial fishers,[459] climate change/climatic anomalies such as El Niño which disrupt marine food webs,[460] pollutants[461] and debris,[462] habitat alteration[463]

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453 Wilson 1999 above n 436 at 1, Hamilton, S and Moller, H "Can PVA Models Using Computer Packages Offer Useful Conservation Advice? Sooty Shearwaters Puffinus Griseus in New Zealand as a Case Study" 1995 73 Biological Conservation 114, Hamilton, S "Determining Burrow Occupancy, Fledging Success and Land-Based Threats to Mainland and Near-Shore Island Sooty Shearwater (Puffinus Griseus) Colonies" 1998 25 New Zealand Journal of Zoology 451, Lyver, Moller and Robertson 2000 above n 435 at 355.

454 Wilson, ibid, and Newman above n 448 at 317.

455 Lyver, Moller and Robertson 2000 above n 436 at 347, Scofield, RP and Christie, D "Beach Patrol Records Indicate a Substantial Decline in Sooty Shearwater (Puffinus Griseus) Numbers" 2002 49 Notornis 162, Hamilton, 1998 above n 453 at 449-451.

456 Kitson, JC and Moller, H "Looking After your Ground: Resource Management Practice by Rakiura Maori Titi Harvesters" 2008 142 Papers and Proceedings of the Royal Society of Tasmania 162, Towns, D "Eradications as Reverse Invasions: Lessons From Pacific Rat (Rattus Exulans) Removals on New Zealand Islands" 2009 11 Biological Invasions 1722.

457 Hamilton 1998, above n 453 at 450.

458 See generally Lyver, POB, Moller, H and Thompson, C "Changes in Sooty Shearwater Puffinus Griseus Chick Production and Harvest Precede Enso Events" 1999 188 Marine Ecology Progress Series 237-248.

459 Baker, GB, Gales, R, Hamilton, S, and others "Albatrosses and Petrels in Australia: A Review of their Conservation and Management" 2002 102 Emu 84.

460 Ainley, DG, Spear, LB, Tynan, CT, and others "Physical and Biological Variables Affecting Seabird Distributions During the Upwelling Season of the Northern California Current" 2005 52 Deep Sea Research Part II: Topical Studies in Oceanography 123, Clucas, RJ, Fletcher, DJ and Moller, H "Estimates of Adult Survival Rate for Three Colonies of Sooty Shearwater (Puffinus griseus) in New Zealand" 2008 108 Emu 237, 248, Lyver, POB, Moller, H and Thompson, C "Changes in Sooty Shearwater Puffinus Griseus Chick Production and Harvest Precede Enso Events" 1999 188 Marine Ecology Progress Series 237, Scofield above n 455 at 164.

461 Baker above n 459 at 84.

462 Baker above n 459 at 87.

463 Lyver, Moller and Robertson 2000 above n 436 at 347.

including burrow collapse by humans and stock,[464] and avian parasites and disease.[465] These agents of decline are all potentially cumulative impacts which can combine to impact seabird populations.[466] The contest between the bird and these threats does not feature in case law which exhibits limited reference to historical occurrence and cultural relationships[467] or, alternatively, relates to disputes in the regulation of customary take.[468]

Figure 35 Sooty shear water habitat Rakiura Stewart Island

Source: Christina Hanna

Despite these threats, recent survival estimates for the species are generally positive due to a perceived reduction in "effects of anthropogenic and climatic factors".[469] Intensive predator control has also succeeded in securing rat-free status for 90% (by area) of the Tītī Islands. Further, weka controls are

[464] Hamilton 1998 above n 453 at 451.
[465] Baker above n 459 at 87.
[466] Lyver 1999 above n 460 at 237.
[467] *Unison Networks Ltd v Hastings District Council* Environment Court Wellington W058/06, 17 July 2006, *Outstanding Landscape Protection Society Inc v Hastings District Council* [2008] NZRMA 8.
[468] *Reihana v Director-General of Conservation* HC Christchurch CIV-2002-409-755, 1 March 2004.
[469] Clucas above n 460 at 248.

proposed.[470] Such positivity, however, can only extend to those populations located on islands and/or subject to intensive predator control.[471] Therefore, it would appear unlikely that viable populations of the species will be restored across its natural range.

Figure 36 Sooty Shearwater –Significant Threat Summary
FISHERIES BYCATCH, TRAWL, BOTTOM AND SURFACE LONG LINE
PREDATION BY INTRODUCED MAMMALIAN SPECIES: SHIP RAT, KIORE, CAT, MUSTELID WHERE CO-HABITANT
CUSTOMARY TAKE
HABITAT LOSS AND MODIFICATION

[470] Newman above n 448 at 317.
[471] See generally, Wilson 1999 above n 436, Hamilton 1995 above n 453.

IUCN status Vulnerable NZ status Vulnerable Population 4500-5000 individuals

The threat profile of the wrybill is similar to that of the dotterel, excepting those agents of decline arising from its internal migrant status.

Figure 37 Wrybill roosting on non-breeding grounds, Miranda, Firth of Thames

Predation

Predation is rated as a considerable current threat to the species,[472] with studies showing that survival rates for adults are "significantly higher in areas with predator control".[473] Key predator species are introduced mammalians,

[472] *Lower Waitaki River Management Society Inc v Canterbury Regional Council* [2010] NZEnvC 257 at [28].
[473] Dowding, JE and Murphy, EC "The Impact of Predation by Introduced Mammals on Endemic Shorebirds in New Zealand: A Conservation Perspective" 2001 99 Biological Conservation 55.

such as cats[474] and stoats,[475] to which the species is exposed to throughout its range. Further, anthropogenic threats such as habitat modification and loss, and natural threats such as flooding,[476] have reduced the wrybill to its current threat status of nationally vulnerable. With a contracted breeding range, the species now has a total effective population size of 2,000 pairs.[477]

The wrybill shares much of its non-breeding habitat (Figure 37) with the dotterel and experiences similar impacts arising from land use in the catchment. Formerly safe wrybill roosts have become accessible to predators as sedimentation and concomitant mangrove advance (Figure 38), creating gangways which breach tidal defences.[478] Similarly, in its breeding habitat in the river beds, exotic weeds have encroached,[479] reducing habitat quantity and quality,[480] whilst delivering cover for predation attempts and introducing new predation access routes to previously safe zones.[481]

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[474] Battley, PF and Moore, SJ "Predation on Non-Breeding Wrybills In the Firth of Thames" 2004 51 Notornis 233.
[475] Riegen, AC and Dowding, JE "The Wrybill Anarhynchus Frontalis: A Brief Review of Status, Threats and Work in Progress" 2003 100 Wader Study Group Bulletin 22.
[476] Flooding causes losts of nests and eggs, but also leads to a "temporary but spectacular decline in available food" see Hughey, KFD "The Relationship Between Riverbed Flooding and Non-Breeding Wrybills on Northern Feeding Grounds in Summer" 1985 32 Notornis 44.
[477] Dowding and Moore2006 above n 87 at 43.
[478] Battley and Moore above n 474 at 234.
[479] Hughey, KFD "The Diet of the Wrybill (Anarhynchus frontalis) and the Banded Dotterel (Charadrius bicinctus) on two Braided Rivers in Canterbury, New Zealand" 1997 44 Notornis 185.
[480] Maloney, R "Bird Populations in Nine Braided Rivers of the Upper Waitaki Basin South Island. New Zealand: Changes After 30 Years" 1999 46 Notornis 243.
[481] Dowding and Murphy above n 473 at 55.

Figure 38 Mangrove advance on wrybill habitat

The alluvial braided rivers[482] run from the Southern Alps to the ocean and contain the most important wrybill breeding habitat.[483] Although critical to the survival of wrybill and other species, the braided river habitat is highly valued and exploited by humans for its water and gravel resources[484] as well as fine recreational attributes. The power of the waters in flood is also feared by humans for the potential damage to life and property. The intersection of these interests is placing pressure on the species which inhabit these areas, and flood control measures are common.[485] Flood control activities change the course of the river, stabilise river beds and assist the spread of weeds.[486]

482 The rivers which predominantly support wrybill populations are the Rakaia, Waimakariri, Ashurton, Rangitata and Waitaki Rivers see Dowding and Moore 2006 above n 87 at 44.
483 Hughey, KFD "Nesting Home Range Sizes of Wrybill (Anarhynchus Frontalis) and Banded Dotterel (Charadrius Bicinctus) in Relation to Braided Riverbed Characteristics" 1998 45 Notornis 104-105.
484 Hughey, KFD Protecting a Representative Habitat of a Braided River: the Ashley River Example. In Proceedings of a Symposium of the N.Z. Ecological Society held at the University of Otago, Dunedin, 22-25 August 1988 19-22. For discussion of factors contributing to lack of breeding success or maintenance of population in braided river birds see *Lower Waitaki River Management Society Inc v Canterbury Regional Council,* Environment Court Christchurch, C080/09, 21 September 2009 [92]-[94].
485 For discussion of the effects of human actions on the Waitaki river see *Lower Waitaki River Management Society Inc v Canterbury Regional Council,* Environment Court Christchurch C080/09, 21 September 2009 at para [19]-[25].
486 Dowding and Murphy above n 473 at 55.

Water extraction, diversion, flow change or damming presents an additional threat to the species due to the potential for significant habitat loss.[487] Vegetation encroachment, increased predator presence, human and stock access, and a possible decrease in aquatic foraging habitat were each recognised as potentially adverse effects in relation to a hydro flow regime proposed for Waitaki River.[488] Conversely, hydro-electric schemes have also seen the loss of habitat due to inundation.[489] Water pollution, largely due to agricultural activities in the catchment is an additional negative factor.[490]

The resource pressure does not arise from water alone. Gravel extraction can potentially adversely modify wrybill habitat, yet is a politically favoured activity due to the need for extraction of the resource in construction. Accounts of birds' nests being trampled on by people, vehicles, dogs and stock are well established anecdotally yet the impact of disturbance on the species is not well documented. A wide range of human recreational activities can potentially impact wetland avian fauna.[491] As discussed elsewhere, activities such as those associated with jet boats have a detrimental impact on the birds.[492] The courts have, however, shown reluctance to recognise this impact without empirical evidence.[493] Female wrybill are particularly vulnerable to this threat due to constraints on foraging time arising from lengthy periods of

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[487] Hughey 1998, above n 483 at 109, O'Donnell, CFJ River Bird Communities Freshwaters of New Zealand. New Zealand Hydrological Society Inc. & New Zealand Limnological Society Inc., Christchurch, New Zealand 2004,18.1-18.19, *Ashburton Acclimatisation Society v Federated Farmers of New Zealand Inc* [1988] 1 NZLR 78.

[488] *Lower Waitaki River Management Society Inc v Canterbury Regional Council* Environment Court Christchurch C080/09, 21 September 2009 at [332]-[333].

[489] Riegen and Dowding above n 475 at 23.

[490] Riegen and Dowding ibid, at 23.

[491] For a detailed description of activities and impacts see Walls, G *Visitor Impacts on Freshwater Avifauna in New Zealand* (Department of Conservation, 1999).

[492] McKinlay, B and Smale, A "The Effect of Jetboat Wake on Braided Riverbed Birds on the Dart River" 2001 48 Notornis 72, Harbrow, MA, R, CG and Kazmierow, BJ *The Impact of Noise on Recreationists and Wildlife in New Zealand's Natural Areas: A Literature Review* (Department of Conservation, 2011)52.

[493] *Kemp & Billoud v Queenstown Lakes District Council* [2000] NZRMA 289 at [67] followed in *New Zealand Jet Boat Association - Otago Branch v Queenstown Lakes District Council* Environment Court, Christchurch C109/200313 August 2003 at 25.

nest incubation.[494] Further studies are required at species, and/or population level, to understand this threat.

Figure 39 Wrybill in flight (near-view), Miranda

Other physical encounters with human activity are also documented as potentially threatening to the species (wrybills flocked and in flight Figures 39 and 40). Accounts of collisions with power lines and aircraft have been recorded with two significant encounters being responsible for the approximately 100-200 birds, significant losses for a population of around 5,000 individuals.[495] The internal migrant status of the wrybill intensifies the likelihood of collisions, as does the naïve and confiding nature of the bird.[496] As with other species, a relatively new collision risk in the landscape is that of wind farms. Likelihood of wrybill collision was traversed in detail by experts in relation to the Hauāuru mā raki wind farm proposal, but the final decision

[494] McKinlay, above n 492 at 74.
[495] Evidence of John Dowding In the matter of a Board of Inquiry appointed under section 146 of the Resource Management Act 1991 to consider resource consent applications by Contact Wind Limited in respect of the Hauāuru mā raki wind farm proposal at [90].
[496] Dowding ibid, at [89] and Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011 at [513], Riegen and Dowding above n 475 at 22.

records that experts were unable to agree the collision risk for the bird.[497] Despite this, it was accepted by the Board that there would be fatalities, but on a scale that could be adequately mitigated by offset mitigation measures, including predator control programmes.[498]

Figure 40 Wrybill in flight (far-view), Miranda

An additional threat intensified by mobility is the risk of infectious disease due to habitat overlap with arctic migrants (for instance, see shared habitat Figure 41).[499]

[497] Final Decision of the Board of Inquiry ibid, at [504].
[498] Board of Inquiry above n 496 at 494 at [506].
[499] Dowding and Moore above n 87 at 48.

Figure 41 Foraging and roosting ground on the Firth of Thames

Figure 42 Wrybill –Significant Threat Summary
PREDATION BY INTRODUCED MAMMALIAN SPECIES: SHIP RAT, KIORE, CAT, MUSTELID WHERE CO-HABITANT
HABITAT LOSS AND MODIFICATION THOUGH WATER AND GRAVEL EXTRACTION, WATER FLOW AND CHANNEL CHANGE, DRAINAGE, AGRICULTURE, VEGETATION CLEARANCE, SEDIMENTATION
CUMULATIVE EFFECTS OF HUMAN DEVELOPMENT AND ACTIVITY IN THE LANDSCAPE

4.4 CONCLUSION

This review of threats reveals the precarious position of many endemic avian species and the position of the case study species is summarised in Figures 26, 28, 31, 34, 36, 42, and compared and contrasted in Table 7. New Zealand birds face similar threats to birds on a global scale but are particularly threatened by invasive mammalian predators.

Three of the six case study species are considered Threatened under the New Zealand classification system, each with a listing of Vulnerable (black petrel, dotterel and wrybill).The other three fall within the At Risk category, although the qualifier of "conservation dependent" for the kokako indicates that where intensive conservation management of this bird fails, the bird is also likely to fail. The godwit and the sooty shearwater are buffered by their significantly largely populations but despite this are suffering significant losses within their ranges.

This chapter shows that birds face species specific threats meaning that conservation responses must be well tuned to the particular pressure. In some cases this is made difficult by a lack of knowledge concerning aspects of life cycles and the impact of threats. Information that is lacking, includes a complete estimate of populations and regular census (godwit, dotterel, black petrel, sooty shearwater), range and migrational movements (godwit, black petrel, sooty shearwater, wrybill) foraging grounds (godwit, black petrel, sooty shearwater), life span and genetic variability of populations.

In consideration of the nature and extent of threats and pressures, significant gaps arise regarding the effects of climate change, bycatch, water extraction, impact of human disturbance and human development in the landscape. This creates reliance upon predictive scientific models and raises levels of uncertainty in some instances. Cumulative effects are a particular problem that are difficult to identify and respond to, matters that will be considered further in Chapters 5 and 8.

By contrasting the position of the case study species, it becomes clear that mobility in the landscape (which in evolutionary terms has been a survival strategy) may now be a factor that increases the threats that birds are exposed to and limits the reach of conservation management and protection. The kokako currently benefits from its limited mobility and intensive management applied to discrete protected sites. This speaks of a need to consider the strength and effectiveness of protection that travels with a bird and to consider how protective responses can be used beyond "reserves". This issue will be considered in depth, particularly in Chapters 7 and 8. The achievement of consistent protection in "working lands" will become an important focus of the research.

Although the clearance of indigenous vegetation may threaten each of the case study birds, it is by no means the only form of habitat loss. Areas important to the birds may be lost or compromised by a very wide range of activities in the landscape such as wetland drainage, reclamation, water level change, spatial occupation through development of structures and obstacles, presence of machinery, pollution, and human disturbance. The very wide range of threats to all elements of habitat of birds points to the need to develop comprehensive responses capturing this range.

The example of the dotterel demonstrates the pressured state of coastal spaces and provides some explanation for why the greatest number of threatened species is found in the ranks of coastal birds. The problem of disturbance makes evident the need to understand the limits of co-existence, as well as the benefits to both birds and humans. The insidious impact of mammalian predators is ever present and creates a need for sustained pest eradication and control.

For seabirds an even greater risk is the loss through fisheries bycatch. Both the black petrel and the sooty shearwater suffer significant loss from this activity, and it is unlikely that the black petrel can sustain loss on this scale. Urgent action is required to stem this threat. In addition it is likely that marine food sources for seabirds are diminishing, causing harm yet to be fully understood. Cultural harvest of the sooty shearwater further limits the species.

It is clear that migrant species are dependent upon conservation actions across their ranges, and that for all birds, loss of habitat is cumulative across their ranges. For international migrants particular difficulties are encountered in limiting threats across a range due to jurisdictional issues. Chapter 6 will consider international obligations in this respect.

From this review it is evident that for endemic New Zealand birds to flourish considerable effort is required to stem the flow of threats. In order to subsequently critique contemporary legal responses to these threats the following chapter will consider, in a generic manner, concepts and measures identified as relevant to the distribution of harm or benefit to birds.

Table 7 Comparison of threats to case study species						
	Kokako	**Godwit**	**Dotterel**	**Black Petrel**	**Sooty shearwater**	**Wrybill**
Habitat	Land bird	Shore bird	Shore bird	Seabird	Seabird	Shore/braided river bird
NZ Threat status	At Risk	At Risk	Vulnerable	Vulnerable	At Risk	Vulnerable
Indirect threat						
Habitat Loss and Change						
Loss of area						
Loss of vegetation						
Global warming						
Disturbance						
Inbreeding depression						
Direct threat						
Predation						
Hunting						
Structure Collision mortality						
By catch						
Cross Infection of disease by migrants/ or as migrant						
Catastrophic natural events						

Key:	Significant threat	Threat	Minor Threat	Unknown	Subcategory

CHAPTER FIVE: DISTRIBUTION OF HARM AND BENEFIT TO BIRDS THROUGH LAW AND PLANNING – A REVIEW OF INFLUENTIAL FACTORS

Introduction

Part way up the flank of Maungatautari, a fence abruptly dissects the farm pasture from the bush. (Figure 43). This is no ordinary fence, but one designed to protect species and habitat within, from invasive alien predators. This is a rare sanctuary in a landscape of production. Looking back down the mountain, it is not hard to see why this costly and politically fraught fence was required. The landscape of the rural Waikato is heavily modified for agricultural and horticultural purposes (Figure 44). Lowland indigenous forest has been replaced by clover/rye grass pasture, the odd barberry shelter belt and exotic trees. Wetlands have been drained and modified, streams and rivers diverted and dammed.

Figure 43 Maungatautari pest proof fence, Waikato, New Zealand

Figure 44 View north from Maungatautari

The point of introducing the fence at this stage is to ask the provocative question: does the future of New Zealand bird species depend upon a fence? Much good can be said about the fence and its outcomes, yet its presence signifies a loss of balance in the landscape. From the previous chapter a clear picture emerges of the contemporary threats to birds, and the point of this chapter is to reflect on the threats and consider legal and scientific factors which are particularly influential in addressing those threats and improving prospects for a future beyond the fence for New Zealand birds.

Examining legal aspects that influence distribution of harm to species is a vast remit, made more complex by the intermingling of law and science in the field of environmental law.[500] Accordingly the analysis which follows is selective. Its main focus is upon resource use competition and tends to centre on matters which are particularly relevant to birds, and have become evident through my practice of law, teaching and research in the area and as a result of engagement in conservation initiatives. The analysis can be divided into four

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[500] For a comprehensive review of contemporary environmental law see Benidickson, J, Boer, B, Benjamin, A, and others (eds) *Environmental Law and Sustainability after Rio* (Edward Elgar, Cheltenham, U.K., 2011).

categories. The first section briefly examines the nature of environmental law and how property affects consequences for bird. The second considers legal principles of international law, such as the preventive principle, with a view to understanding the principles' operation and application in relation to distribution of benefit and harm to birds.

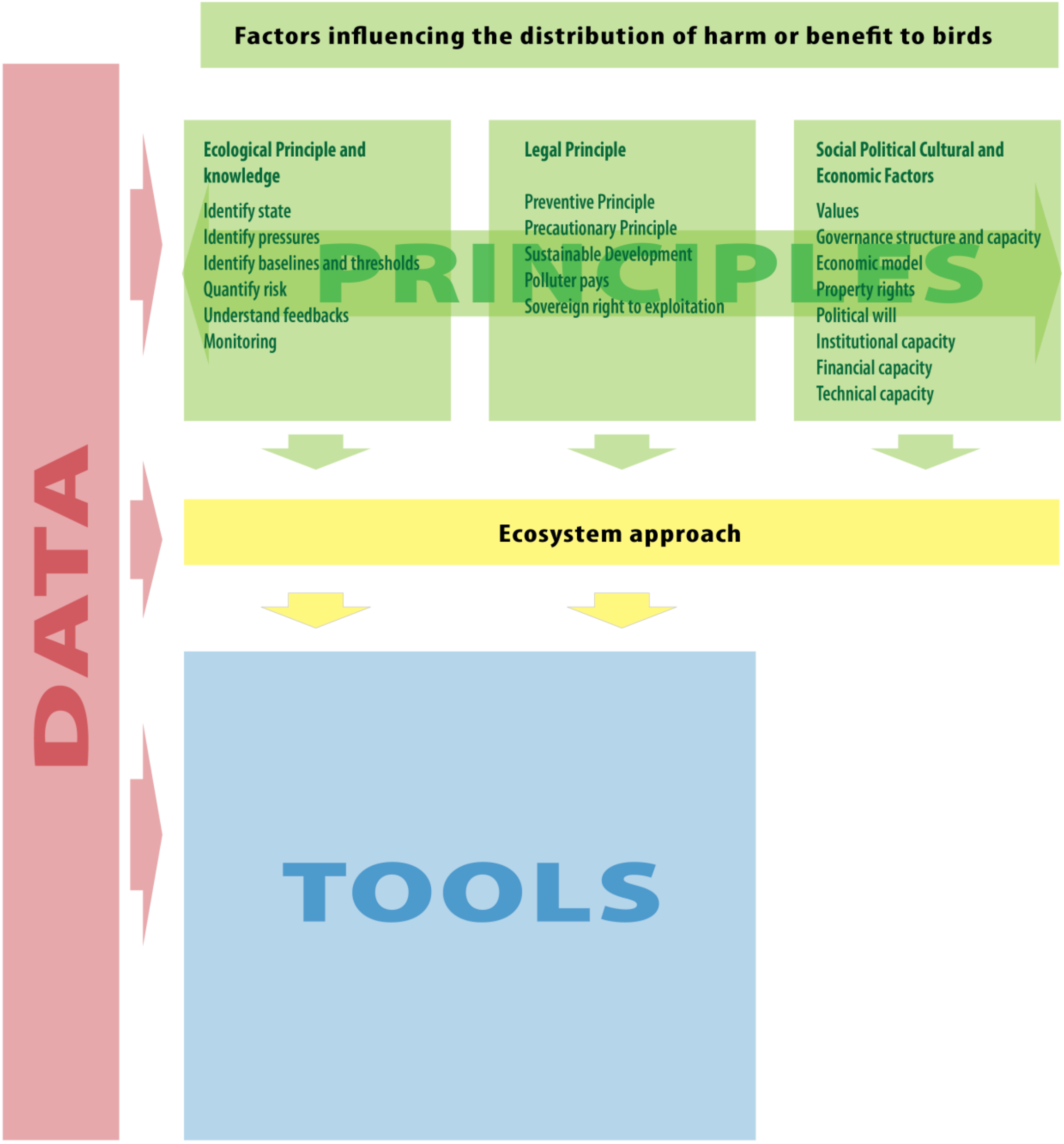
Thirdly, the analysis extends to the operation of scientific principle and policy approaches applying science, to examine the influence of these aspects. Environmental law and policy increasingly rely upon science, particularly the science of ecology,[501] to identify, assess and respond to damage to the environment. Science plays a critical role in leading the development of environmental policy and regulation and, conversely, is applied in response to problems identified through the policy making process.[502] However, the reflection of ecological concepts in policy and law can be uneven and may determine the distribution of benefits and burdens to species.[503] The analysis will identify key concepts which are important to bird conservation and that when incorporated in conservation policy provide benefit to species and the opportunity to limit harm.

Finally, is a focus on implementation methods and the analysis will focus on those methods which provide particular opportunity to address the threats identified to the case study species and enable provision for essential ecological prerequisites as discussed above. For example, the practices of impact assessment and that of spatial planning at the landscape level will be considered to understand contribution and potential in terms of the position

[501] Brooks, RO, Jones, R and Virginia, RA *Law and Ecology: The Rise of the Ecosystem Regime* (Ashgate, Burlington, VT, 2002).
[502] Parliamentary Commissioner for the Environment *Missing Links: Connecting Science with Environmental Policy* (Parliamentary Commissioner for the Environment, 2004) 20.
[503] de Nooij, RJW, Leuven, RSEW, Lenders, HJR, and others "Relating the Ecological and Legal Framework for Nature Conservation in Europe" 2008 11 Journal of International Wildlife Law & Policy 259-292, Ebbesson, J "Lex Pernis Apivorus: An Experiment of Environmental Law Methodology" 2003 15 Journal of Environmental Law 153, Trouwborst, A "Seabird Bycatch—Deathbed Conservation or a Precautionary and Holistic Approach?" 2008 11 Journal of International Wildlife Law & Policy 293.

of birds. Figure 45 shows the relationships between the principles, concepts and methods to be discussed.

Figure 45 Diagram of factors influencing distribution of harm and benefit



The point of carrying out this exercise is to be then able, in subsequent chapters, to examine New Zealand law and policy in order to understand the choices made about or that affect birds. A primary focus will be upon the degree of care that the concepts, criteria and methods may apply, as this is a key determinant of the level of protection that may follow. An example is whether, when and to what extent the law creates an expectation that harm to species is avoided, remedied or mitigated harm. The focus borrows in part from the tortious "standard of care" applied to assess what is reasonable behaviour in the discharge of a duty of care. For the purposes of this research the term is simply used as an opportunity to assess where (if at all) expectations are set in terms of loss to birds and to consider opportunity to raise the degree of care adopted.

Under careful consideration will be the place of avoidance of harm to species. Avoiding harm to species is not new: protected conservation areas are an example where avoiding harm to species is accepted. When applied to environmental management, avoidance relates to certain actions, such as not proceeding with a project or choosing alternative sites or methods to prevent a particular effect from occurring.[504] In policy and literature there is considerable support for avoidance to be the first choice in terms of selecting remedial actions, particularly where the impacts relate to threatened species and habitats and where effects could be irreversible.[505] But the concept is also associated with preservationist ethics, often considered to be unrealistic and utopian in environments extensively modified by humans. An important

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[504] Glasson, J, Therivel, R and Chadwick, A *Introduction to Environmental Impact Assessment* (3rd ed, Routledge, London, 2005) 149, Wood, C *Environmental Impact Assessment: A Comparative Review* (2nd ed, Prentice Hall, Harlow, UK, 2003) 259.

[505] Morris, P and Therivel, R *Methods of Environmental Impact Assessment* (3rd ed, Routledge, London, 2009) 347, Institute of Ecology and Environmental Management *Guidelines for Ecological Impact Assessment in the United Kingdom* (IEEM, 2006) 47, McKenney, B and Kiesecker, J "Policy Development for Biodiversity Offsets: A Review of Offset Frameworks" 2010 45 Environmental Management 167, US Environmental Protection Agency & US Department of the Army (US EPA and DA) *Memorandum of Agreement Between the Environmental Protection Agency and The Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(B)(1) Guidelines* (1990) cl II (C), Norton, DA "Biodiversity Offsets: Two New Zealand Case Studies and an Assessment Framework" 2009 43 Environmental Management 702, Wood above n 503 at 258, Treweek, J *Ecological Impact Assessment* (Wiley-Blackwell, Oxford, 1999) 16.

enquiry for this research is in what circumstances should a strong protective standard requiring avoidance of harm to species be employed, and what are the mechanisms to achieve this?

But this cannot be the only focus, as a raft of important additional matters surface throughout the discussion, but the intent of this chapter is to examine in principle the ways in which harm and benefit can be distributed to species through the action of law and planning.

5.1 ENVIRONMENTAL LAW AND OWNERSHIP

If human activity in the environment is causing harm to species, to what extent can that activity be limited? Can rights attached to private property vitiate rights to existence? Does a farmer's right to drain a wetland override loss of birds and habitat? Barton, in a careful exposition, describes the fundamental legal, constitutional, principled and ethical reasons which support regulatory schemes which restrict the exercise of property rights for "public good" purposes such as the retention of ecological integrity and sustainability.[506]

The whole point of environmental law is to address the relationship between human activity and harm to the environment and identify the limits attaching to resource use entitlements.[507] This extends beyond land use to include limitation upon exercise of rights in relation to common property. For birds, the complicating issue is that wild birds are generally not privately owned, unless lawfully captured, but they will commonly (although increasingly less so) inhabit areas that are privately owned.[508] Historically rights to fauna may have run with ownership of lands, but more recently such

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[506] Barton, B "The Legitimacy of Regulation" 2003 20(3), New Zealand Universities Law Review 364-401.

[507] Taylor, P and Grinlinton, DA "Property Rights and Sustainability: Toward a New Vision of Property" in Grinlinton, DA and Taylor, P (eds) *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges* (Martinus Nijhoff Publishers, The Netherlands, 2011) 16.

[508] Freyfogle, E "Taking Property Seriously" in Grinlinton, D A and Taylor, P (eds) *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges* (Martinus Nijhoff Publishers, The Netherlands, 2011) 25.

rights have been overridden by state interests in environmental protection.[509] Collective ownership of wildlife is a model which now sits uneasily with ownership of private land, due to the impacts that the use of private land may inflict upon that collective resource. Bosselmann argues that the "present" definition of property rights as an individual entitlement is detached from collective responsibilities, and as such a number of dichotomies arise: "individual versus community, private versus public law, rights versus responsibilities, privatization of profits versus socialization of costs".[510]

It is these dichotomies that must be wrestled with in order to address the distribution of harm to species. It is argued that the model is deficient in that it has enabled biodiversity to decrease to a critical point due to insufficient restraint on the entitlements attached to private property use. Taylor and Grinlinton summarise the position "... despite more than 40 years of environmental law development the strength of legal protection afforded to property rights continues to facilitate and incentivize forms of economic activity that cause widespread ecological harm."[511] The need to gather species into fenced sanctuaries to enable persistence in the locale, points also to this fact.

Where the State owns wildlife, frameworks of protection may be established, but it is the "absolute" nature of the protection or otherwise that is at the heart of this research. Wherever there are gaps in a protective shield, loss to species will follow. Direct take of species is commonly regulated, with sanctioned direct takes, such as for the sooty shearwater enabled in particular circumstances. The greater problems for birds arise in two other ways, first incidentally through activities such as fishing bycatch and collision with structures and second, by failure to control introduced predators. Where the State owns birds but fails to assert any right in terms of protecting its property,

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509 Grinlinton, D "Evolution, Adaptation and Invention "in Grinlinton, D and Taylor, P (eds) *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges* (Martinus Nijhoff Publishers, The Netherlands, 2011) 282.

510 Bosselmann, K "Property Rights and Sustainability: Can they be Reconciled" in Grinlinton, DA and Taylor, P (eds) *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges* (Martinus Nijhoff Publishing: Leiden, The Netherlands, 2011 25.

511 Taylor and Grinlinton above n 507 at 9.

or any corresponding duty upon those causing the loss, then those who cause the damage to the species will bear no responsibility for the loss which will be socialised, whether the loss arises on private or public property. Freyfogle asserts "If the public own wildlife, even on private land, then presumably it has a legitimate claim that land uses make room for that wildlife". The extent to which this claim is applied in the New Zealand environment is considered in Chapters 7 and 8, where it will be argued that greater recognition of this right and corresponding duty in both law and culture would reduce the harm to species.

Yet it is not only about making room for wildlife on private land and preventing incidental take. The second form of loss arises through damage caused to species and habitat through modification of ecological resources upon which the birds depend, such as water pollution, wetland drainage, sedimentation, vegetative removal and other forms of intrusive human activity. Sometimes this loss will arise on the property of the party creating the damage, and at other times it will be trans-boundary loss that moves into the wider environment, even into protected areas, and mingles with other components of loss. To the species inhabiting that space, this is irrelevant. Both forms of loss and damage arise as a negative externality, a form of loss socialised to the wider environment through the failure of the resource user to internalise and adequately manage the negative consequences of the activity. Biodiversity externalities are challenging due to spatial and temporal qualities which may dislocate the damage from the source of the damage in space and time.[512] Climate change is a clear example of this problem. In addition the cumulative nature of "socially acceptable" modification of the environment may be difficult to identify and capture, such as vehicle use on beaches and human disturbance.

[512] Rands, MRW, Adams, WM, Bennun, L, and others "Biodiversity Conservation: Challenges Beyond 2010" 2010 329 Science 1301, Brownlie, S, King, N and Treweek, J "Biodiversity Tradeoffs and Offsets in Impact Assessment and Decision Making: can we Stop the Loss?" 2012 31 Impact Assessment and Project Appraisal 25-26.

In an economic sense, property rights have been championed as enabling allocative efficiency. Relying on the Coase theorem, the provision of a property right enables a bargain to be struck regardless of which way the right falls.[513] Yet any such result is dependent upon well-defined property rights and a market[514] with identifiable parties to a transaction[515] and where those fail, or are not asserted, allocative efficiency remains a theory. For the birds and the public good in whose name they are held, this also means a failure of distributive justice, a lack of equity, in that those who are responsible for the damage have not been held to account.

It may be that a society chooses to enable this inequitable distribution driven by other social, cultural and economic imperatives. It is argued, however, that the intensifying global biodiversity crisis creates an imperative to revisit such arrangements and give closer consideration to the structure and effect of private property. Freyfogle suggests removing the right to harmful development unless a community benefit can be proven,[516] Bosselmann advocates greater recognition of inherent limitations to property rights to enable ecological protection of common resources,[517] and Grinlinton argues for supplementary regulatory protective mechanisms and that sustainable use of resources must be accepted as an inherent internalised obligation of property ownership.[518] In a similar vein, Earl propounds the idea of a statutory duty of care to avoid or minimise harm to biodiversity.[519] The following chapters will focus upon the existence and extent of obligation to birds, both

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513 Coase, R "The Problem of Social Cost (1960)" in Percival, R and Alevizatos, D (eds) *Law and the Environment* (Temple University Press, 1997) 44.
514 Godden, L "Communal Governance of Land Resources as a Sustainable Property Institution" in Grinlinton, DA and Taylor, P (eds) *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges* (Martinus Nijhoff Publishers,The Netherlands, 2011) 258.
515 Rands above n 512 at 1301.
516 Freyfogle above n 508 at 60.
517 Bosselmann 2011 above n 510 at 42.
518 Grinlinton above n 509 at 304.
519 Earl, G, Curtis, A and Allan, C "Towards a Duty of Care for Biodiversity" 2010 45 Environmental Management 682, see also Lausche, B, Farrier, D, Verschuuren, J, and others *The Legal Aspects of Connectivity Conservation: A Concept Paper* (IUCN, IUCN Environmental Policy and Law Paper No. 85, 2013) 43-44.

on private land and upon the commons, in order to consider how the law shapes the distribution of harm and benefit.

Figure 46 Forestry harvesting with wetland, inhabited by threatened bird species in foreground, Wharekawa Harbour, Coromandel

5.2 LEGAL PRINCIPLES GUIDING RELATIONSHIPS BETWEEN BIRDS AND HUMAN ACTIVITY IN THE ENVIRONMENT.

Chapter 3 established that approaches to respecting and protecting species vary according to different societal values, and that contemporary western approaches are dominated by human centred values revolving around notions of benefit and harm. This section looks at how those values translate into legal principles which underpin lawful action.

An examination of contemporary global environmental policy reveals general and increasing, apprehension for the state of the environment, however, this is largely characterised (or limited) by anthropocentric concern to protect the interests, particularly the economic interests, of humans.[520]

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[520] Gillespie, A *International Environmental Law, Policy, and Ethics* (Clarendon Press, Oxford, 1997) 258.

Many iterations of global environmental policy recognise the need for change and identify, in particular, the imperative of limits to growth and the need for constraints upon human activity in the environment to ensure resource sustainability and species persistence.[521] Therefore, this section examines the degree to which principles of international law influence the distribution of environmental benefits and burdens, with a particular focus upon the degree of care taken with regard to species. The level of international law was elected to achieve global perspective in principle, but where necessary that principle will be translated to the national level.

Sands and Peel[522] discern seven principles from an analysis of international agreements and acts which have broad support and are frequently endorsed in practice. Of these principles, five have particular relevance to enhancing outcomes for species:

1. The Sovereign Right to Exploitation
2. The Principle of Preventive Action
3. The Principle of Sustainable Development
4. The Precautionary Principle
5. The Polluter Pays Principle

A degree of argument exists over the interpretation of the principles. For example, some assert that that sustainable development is not a principle in itself, but rather an approach constituted by a wide array of both substantive and procedural principles including some of those on Sands and Peel's list. Therefore, the representations and meanings of the principles are unravelled below in order to understand whether they have significant implications for New Zealand law.

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[521] Barrow, C *Environmental Management for Sustainable Development* (2nd ed, Routledge, New York, NY, 2006) 26, Nolan, D *Environmental and Resource Management Law* (4th ed, LexisNexis N.Z., Wellington, NZ, 2011) 14, Roberts, J *Environmental Policy* (Routledge, New York, 2004) 72.

[522] Sands, P and Peel, J *Principles of International Environmental Law* (3rd ed, Cambridge University Press, Cambridge, 2012) 187.

5.2.1 SOVEREIGN RIGHT TO EXPLOITATION

The obligation[523] that States have sovereignty over their natural resources and the responsibility not to cause trans-boundary environmental damage has attained the status of an international customary legal obligation. The right to exploit is inherently inimical to avoiding harm to species, but Sands and Peel identify potential for a softening of the principle, in some instances, in terms of migratory and endangered species, such as to enable other States to claim an interest in conservation. It is argued that modern conceptions of an ecologically interdependent world do not sit easily with the traditional and absolute prohibition of interference with sovereign rights.[524] This international principle has parallels in the national context to property rights, and the tensions that exist in terms of regulation of private interests to confer a "public good". In terms of wild birds, ownership or lack thereof raises fundamental issues in relation to rights to exploit and duties to conserve. This issue will be considered further in the context The Polluter Pays Principle in section 5.2.5.

5.2.2 THE PREVENTIVE PRINCIPLE

Although often conflated with the Precautionary Principle, the Preventive Principle can be considered as analytically separate.[525] It creates an obligation upon a state to prevent damage to the environment prior to it being caused or, otherwise, to reduce, limit or control activities that might cause or risk such damage within its jurisdiction. Clearly stated in relation to trans-boundary harm, Sands and Peel consider the Principle extends well beyond this subject area and point to a wide range of international treaties aiming to prevent matters including the extinction of fauna and flora, adverse effects of activities

[523] As reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, see Sands and Peel above n 522 at 187.
[524] Sands and Peel above n 522 at 192.
[525] Sands and Peel above n 522 at 201.

that prevent the migration of species, degradation of the natural environment, significant adverse environmental impacts[526] and loss of biodiversity.

The potential for irreversible damage to the environment to be caused by human actions is the imperative for the Preventative Principle and supports actions to be taken at an early stage,[527] preferably before damage is caused. Sands and Peel[528] rely upon dicta from the *Gabcikovo-Nagymaros* decision where the International Court of Justice observed that it was:[529]

> mindful that, in the field of environmental protection, vigilance and protection are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage.

Extensive environmental regulation on the domestic scale, including authorisation procedures, environmental standards, impact assessment and enforcement mechanisms, are thought to support the principle.

Even so, there are debates over the existence, reach and status of the Preventative Principle. Although recognising the imperative that a preventative logic compels across various fields of international law, Trouwborst[530] casts doubt on the existence of a broad customary obligation to prevent environmental harm in areas beyond and within national jurisdiction. While Trouwborst accepts the use of the Preventative Principle when applied to trans-boundary pollution, the lack of codification means that it cannot be

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[526] 1991 Espoo Convention, Preamble and Art. 2(1); 2003 Revised African Nature Convention, Art.4; and 2008 Bucharest Agreement to the 1991 Espoo Convention, Preamble.
[527] Atapattu distinguishes the Preventive Principle from the Precautionary on the basis that the former requires prevention of foreseeable harm, whereas the latter mandates action at an earlier stage where a potential hazard exists but scientific uncertainty means that a proper prediction of environmental impact cannot be made: Atapattu, SA *Emerging Principles of International Environmental Law* (Transnational Publishers, Ardsley, NY, 2006) 206.
[528] Sands and Peel above n 522 at 201.
[529] (1997) ICJ Reports 7 at 78, [140].
[530] Trouwborst, A "Prevention, Precaution, Logic and Law - The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions" 2009 2 Erasmus L. Rev.105.

considered as a more general principle. Instead, Trouwborst advocates relying upon the Precautionary Principle to fulfil such a function.

The development of a general Preventative Principle can support a requirement to avoid harm to species. It appears, however, to be circumscribed by considerations of how severe or irreversible the harm is and, alternatively, opportunities to mitigate or reduce harm. Irreversible and serious harm may be considered to constitute a higher threshold than significant or adverse harm,[531] although the terminology and its application vary in different iterations. Moreover, the Preventative Principle tends to be anthropocentrically situated, stemming from consideration of harm to States' interests as opposed to harm to the interests of non-human animals, although there is recognition of intrinsic values in the agreements cited.[532] Additional impetus may also be secured from the moral responsibility of humans to protect other species from human induced harm.[533] Full codification of the Preventive Principle represents a significant opportunity to change the manner in which harm to species is distributed. The influence of the Principle will be scrutinised more closely in the context of New Zealand's international obligations.

5.2.3 SUSTAINABLE DEVELOPMENT

Policy makers have embraced sustainable development in international management frameworks.[534] The assumption is that the environment and economic development can co-exist, however, limits to development, the

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[531] Trouwborst, A *Precautionary Rights and Duties of States* (Martinus Nijhoff, Leiden, 2006) 290. See further discussion on irreversible harm, infra at section 5.4.2.1.
[532] For instance The 1992 Convention on Biological Diversity. UNEP/BioDiv/Conf 12 (1992) Preamble.
[533] As recognised by the Preamble of the 1979 Convention on the Conservation of Migratory Species. British Command Paper Cmnd.Misc 11 (1980) (Bonn Covention).
[534] United Nations General Assembly *Harmony with Nature; Report of the Secretary-General* (United Nations General Assembly,Sixty-sixth session, Item 19 (h) of the provisional agenda, A/66/302*, 2011) 16, Nolan above n 521 at 14, Brooks above n at 501, Sands and Peel above n 522 at 206, Atapattu above n 527 at 77, 90, Roberts above n 521 at 73.

recognition of bio-physical bottom lines and the need for humans to make "painful choices" underpin its implementation.[535]

Two separate theoretical positions that of Ecological Modernisation and Risk Society can be discerned within the rhetoric of Sustainable Development.[536] Different iterations will be influenced by the respective positions, each producing different results for the non-human environment. Ecological modernisation suggests that the economy and the environment are not in conflict and that economic prosperity is essential for achieving environmental improvement. Coined "weak sustainability", this form assumes substitutability of different forms of capital and enables natural capital to be traded off against other forms of capital including financial and social.[537] Conversely, proponents of Risk Society identify an irreconcilable conflict between contemporary modes of production and ecological needs. The Risk Society position endows sustainability with a more radical approach whereby protection of ecosystems had the highest priority, whereas in contrast Ecological Modernisation enables development and relies upon science, technology and the market to determine sustainable outcomes.[538]

Commonly in a sustainable development approach exploitation is supported although reliant upon caveats such as "rational", "wise", "sound" and "appropriate" use.[539] Decisions in terms of acceptable harm are accordingly made on a case-by-case basis within a framework of domestic legislation and are dependent upon the underlying theoretical persuasion and policy direction, definitions of harm, and the evidence base in terms of the impact of development upon the receiving environment.

Given the prominence of sustainable development at a time when global biodiversity continues to decrease, significant concern exists that the

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535 Brundtland, GH and World Commission on Environment and Development. *Our Common Future* (Oxford University Press, Oxford; New York, 1987) 9.
536 Layard, A, Davoudi, S and Batty, S *Planning for a Sustainable Future* (Spon Press, New York, 2001) 87.
537 Brownlie 2012 above n 512 at 24.
538 Layard above n 536 at 89.
539 Sands and Peel above n 522 at 213.

Principle is insufficiently robust to adequately protect the environment from development, and that too many trade-offs are made that relegate environmental concerns.[540] A shift to accord higher priority to the environment would produce stronger gains for species. The extent of threat and decline canvassed in chapters 2 and 4, presents good reason to argue that damage to indigenous, threatened or declining species, their habitats and ecosystems should be proceeded with only in exceptional circumstances. Setting the bar to a higher level and visibly elevating protection of species to priority by methods to be considered in section 5.4 is a means to limit harm distributed to birds. Indigenous is elected as the standard as opposed to endemic, which excludes international migrants which breed elsewhere, such as the bar-tailed godwit, and self-introduced species.

Since approaches to risk and the place of precaution are very much at the heart of the theoretical divergence identified, the Precautionary Principle will be considered next.

5.2.4 THE PRECAUTIONARY PRINCIPLE

In identifying risks and thresholds, defining policy, developing standards and imposing restrictions relating to human activity in the environment and the impact on threatened species, considerable scientific uncertainty, risk and ignorance exists.[541] Forward planning for the environment inevitably involves assessments where not all variables will be fully understood. Uncertainty is different from risk and ignorance, as Rabinovich[542] states:

> Risk is associated with an event with a known probability, while true uncertainty is associated with an event of unknown probability. In both

[540] Brownlie 2012 above n 512 at 24-33, and see Pardy for the failure of the concept to state environmental bottom lines: Pardy, B "In Search of the Holy Grail of Environmental Law: A Rule to Solve the Problem" 2005 1 McGill Int'l J. Sust. Dev. L. & Pol'y 32, Robinson, N "Reflecting on Rio: Environmental law in the Coming Decades" in Benidickson, J, Boer, B, Benjamin, A, and others (eds) *Environmental law and Sustainability after Rio* (Edward Elgar Publishing Ltd, United Kingdom, 2011) 23-25.

[541] Cooney, R "From Promise to Practicalities" in Cooney, R and Dickson, B (eds) *Biodiversity and the Precautionary Principle: Risk and Uncertainty in Conservation and Sustainable Use* (Earthscan, James and James, London, 2005) 3.

[542] Rabinovich, J "Parrots, Precaution and Project Ele: Management in the Face of Multiple Uncertainties" in Cooney and Dickson above n 541 at 177 referring to Faber and others 1992.

instances the various possible events/outcomes are known. However, when the possible events or outcomes are not known, then we are faced with ignorance.

The calculation of the imperfectly known is made more difficult by the dynamic qualities of the environment. These qualities are translated into the resource management arena in the form of uncertainty and surprise. The variability of biological systems and process complexity of ecological systems drive unexpected behaviour in ecosystems, unforeseen response of population and unpredicted results of human intervention.[543] This ontological or variable uncertainty can be contrasted with epistemic or knowledge uncertainty which arises through missing or inadequate data.[544] Both are common problems to be wrestled with in terms of the development of policy, and will often present together as evident with the challenges represented by global climate change.[545]

The Precautionary Principle is intended to address these issues and has been explicitly identified as a means to tackle uncertainty and achieve sustainable development.[546] However, the value of the Principle in terms of biodiversity conservation is dependent upon its expression in policy and adoption within a regulatory framework. The Principle is expressed in different forms and context, but fundamentally reverses a presumption that activities should proceed unless there is clear evidence that they are harmful.[547] Situated as a temporary measure,[548] the Principle supports taking preventative measures despite lack of full scientific certainty of damage. This form of the Principle is demonstrated in the Rio Declaration on Environment and Development (1992):

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543 Rabinovich ibid.
544 Gillespie, A "Precautionary New Zealand" 2011 24 New Zealand Universities Law Review 365.
545 De Sadeleer, N "The Precautionary Principle as a Device for Greater Environmental Protection: Lessons from EC Courts" 2009 18 Review of European Community & International Environmental Law 4.
546 Sands and Peel above n 522 at 219, Atapattu above n 527at 222.
547 Cooney, R "From Promise to Practicalities" in Cooney and Dickson above n 541 at 4.
548 Gillespie 2011 above n 544 at 366.

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

This formulation is directed at the issue of uncertainty and does not contain a positive obligation or direct any particular response in terms of protective measures for species in the face of threats of serious or irreversible damage. The requirement is that any measures should be cost-effective. Consequently, this rendering of the Principle has limited impact in shaping response frameworks. Additionally, relying upon a threshold of serious or irreversible damage sets a high bar in terms of harm and, thus, application of the Principle can be further moderated in terms of burden and standard of proof.[549]

Commentators have identified stronger and more active formulations of the Principle whereby actions must be restricted if by nature or context they appear likely to be harmful,[550] and instances where anticipation, prevention and attack of environmental degradation are required regardless of uncertainty.[551] An example provided by Trouwborst is the formulation contained in the *ILA New Delhi Declaration on Sustainable Development* (2002), which specifies that the Precautionary Principle commits nation-states to avoid human activity which may cause significant harm to human health, natural resources or ecosystems, including in the face of scientific uncertainty.[552] Trouwborst concludes that the Precautionary Principle has absorbed the Preventive Principle, or alternatively represents the Preventive Principle in its most developed form. Although noting the theoretical distinction between the two, Trouwborst argues for the adoption of the Precautionary Principle as the sufficient and sole basis for prevention of certain and uncertain harm alike.[553]

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[549] Gillespie 2011 above n 544 at 372.
[550] Cooney, R "From Promise to Practicalities" in Cooney and Dickson above n 541 at 6.
[551] Trouwborst 2009 above n 530 at 123.
[552] Trouwborst 2009 above n 530 at 123.
[553] Trouwborst 2009 above n 530 at 126.

Liberal or "strong" versions of the Precautionary Principle shift the burden of proof so that those carrying out the action will need to prove that it will not result in harm. This may alter thresholds of harm, such that minor damage is sufficient to invoke the principle.[554] As an alternative, variations to the standard of proof of harm can be manipulated to cast greater or lesser onus on the proponent or objector, for instance requiring an objector to prove only a possibility of damage.[555]

Debate exists as to when it may be appropriate to apply the strong version of the precautionary principle, due to concerns related to delay in action due to uncertainty and resultant "paralysis by precaution".[556] Yet, in terms of actions which may impact vulnerable species, such as a wrybill, or ecosystems, there appears to be acceptance that application of the strong version of the Principle is appropriate.[557]

The vulnerability of many species and ecosystems redoubles the need for heightened care. However, the Principle may be complex in practice and needs to anticipate wider social and environmental conditions.[558] Consequently, guidance has developed to consider the costs and benefits involved in applying the principle: equity in terms of who bears the costs or gains the benefits, alternatives, proportionality of response to threat, whether implementation is open, transparent and non-arbitrary and without

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[554] Gillespie 2011 above n 544 at 371-373.

[555] Peel, J "Interpretation and Application of the Precautionary Principle: Australia's Contribution" 2009 18 Review of European Community & International Environmental Law 11, 24, Salafsky, N and Redford, KH "Defining the Burden of Proof in Conservation" 2013 166 Biological Conservation 247.

[556] Cooney, R "From Promise to Practicalities" in Cooney and Dickson above n 541 at 8, Fisher, E, Jones, J and Von Schomberg, R *Implementing the Precautionary Principle: Perspectives and Prospects* (Edward Elgar Publishing, United Kingdom, 2006) 238, Sunstein, CR "The Paralyzing Principle" 2002 25 Regulation.

[557] Cooney, R "Precaution from principle to practice in biodiversity conservation" in Fisher and others 2006 ibid at 238, Moyle, B "Making the precautionary principle work for biodiversity: avoiding perverse outcomes in decision-making under uncertainty'" in Cooney, R and Dickson, B (eds) *Biodiversity and the Precautionary Principle: Risk and Uncertainty in Conservation and Sustainable Use,* (Earthscan, London, 2005) 190.

[558] Cooney 2006 above n 557 at 190.

discrimination and an expectation that precautionary measures are temporary until scientific evidence is resolved.[559]

Specific concern exists in terms of biodiversity where it is feared that applying a strong version of the Precautionary Principle exclusively focuses on risk aversion and avoidance of harm, therefore limiting opportunities for conservation gains[560] and potentially causing unanticipated adverse ecological consequences as a result of "locking up a resource".[561] The potential exists to lose the benefits of "co-existence" arising from public education, interest and investment. At the same time, it is accepted that some risk aversion is warranted, particularly in the presence of irreversibility. To address this conundrum, commentators recommend adopting an adaptive management approach as a means to tackle uncertainty and dynamism in complex systems, yet sufficiently precautious to avoid irreversible mistakes.[562] This approach will be discussed in section 5.4.5. Moyle argues for a decision rule that copies the Precautionary Principle's avoidance of irreversible outcomes but also considers potential benefits as relevant. This is a pragmatic approach but runs the risk of diluting a strong principle, in the same way that a mitigation alternative may weaken an avoidance approach. The potency of a strong principle could be safeguarded by narrow delimitation of 'exception to the rule' and by ensuring that the exceptions proposed produce a clear and measurable "net gain" to the species. Theory aside, all decisions related to the application of the Precautionary Principle are likely to be nuanced and subject to discretion. Chapters 6-8 will include consideration of the use of the Principle in relation to the New Zealand context and case study species to explore these nuances.

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[559] Gillespie 2011 above n 544 at 373-4.
[560] Moyle above n 557 at 166.
[561] Mealey, SP, Thomas, JW, Salwasser, HJ, and others "Precaution in the American Endangered Species Act as a Precursor to Environmental Decline: The Case of the Northwest Forest Plan" in Cooney, R and Dickson, B (eds) *Biodiversity and the Precautionary Principle: Risk and Uncertainty in Conservation and Sustainable Use* (Earthscan, London, 2005) 189.
[562] Cooney, 2006 above n 557 at 238, Moyle above n 557 at 166, Peel above n 555 at 23, Rabinovich above n 542 at 180.

It is apparent that applying precaution and prevention to create gains for species inevitably raise the issue of whether or not harm (generally significant or irreversible harm) will be caused to the environment/species. A more transformative approach would be to consider whether decisions that alternatively relied on the maxim *in dubio pro natura* (giving the benefit of doubt to nature) would cause irreversible harm to humans.

5.2.5 THE POLLUTER PAYS PRINCIPLE (PPP)

The Polluter Pays Principle (PPP) is relevant to the protection of birds as it focuses on attributing the cost of pollution of the environment to the person who caused the pollution. Stated in a range of different formulations,[563] the Rio Declaration contains a relatively weak version:[564]

> National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting public interest.

As with all principles, the impact will be determined by the mode of operationalisation. Applied in a stronger form, PPP could allocate economic obligations in terms of preventing and repairing environmental damaging activities, including liability, the use of economic instruments and the application of rules relating to competition and subsidies.[565] PPP is useful in terms of supporting internalising costs that may otherwise be socialised such as water pollution and sedimentation, identified as threats to the case study species in Chapter 5. Originally conceived as relating to pollution, the Principle is now understood to apply to any activity which causes deterioration to the environment and, in some instances, simply to resource use.[566] Wild birds, incapable of private ownership and not attracting financial value, are disadvantaged through inhabiting private land, where their presence and

[563] Beyerlin, U and Marauhn, T *International Environmental Law* (Hart Publishing Ltd, Oxford, 2011) 58, Sands and Peel above n 522 at 228.
[564] Principle 16, *Rio Declaration, UN.Doc* A/Conf 151/5.1992, 7 May.
[565] Sands and Peel above n 522 at 229.
[566] Coffey, C and Newcombe, J *The Polluter Pays Principle and Fisheries: The Role of Taxes and Charges* (Institute for European Environmental Policy, 2000), 3.

habitat may run counter to economic development utilising private property for commercial gain.

PPP offers the opportunity to capture externalities in ways that may not have been traditionally contemplated, such as incidental loss and damage of all kinds. In theory the Principle could be extended through the use of taxes and charges to require internalisation of all costs suffered by birds such as fisheries industry bycatch,[567] or disturbance factors created by cumulative human development. A controversial extension of this principle would be to require internalisation of invasive alien species, so as to support casting a duty upon land owners to control all alien predators.[568] In terms of loss distribution controversy is heightened due to difficulty in identifying an immediate "polluter" and the social/cultural acceptability of constructing cats and dogs as pollutants. A set of rules and regulations may, however, constitute a more efficient route to internalisation,[569] as well as providing a stronger platform to prevent pollution/damage as opposed to paying for it after the fact.

Figure 47 Little egret and variable oystercatcher, Wharekawa Harbour

[567] Coffey ibid, at 8.
[568] Hellstrom, J, Moore, D and Black, M *Think Piece on the Future of Pest Management in New Zealand Main Report* (LECG, 2008) 40.
[569] Coffey above n 567 at 8.

5.3 DETERMINING AND DISTRIBUTING BENEFIT AND BURDEN - ECOLOGICAL CONCEPTS AND RELATIONSHIPS TO PRINCIPLES

The science of ecology is employed in conservation policy and law to apprehend and manage harm to species and ecosystems. Brooks et al[570] identify that, in general terms, in the United States a "regime of ecosystemic law" has been underway for at least the past half-century. The term is used to describe a system *in which law and ecology mutually inform each other's content method and purpose.*[571] The concepts underlying this system are defined thus:[572]

> … By "regime" we mean the cluster of rules and roles, which govern our practices in regard to a given ecosystem. By "ecology" we mean the scientific study of the systematic interdependencies of the biotic and abiotic environment. By "ecosystemic laws" is meant those laws which seem to regulate human activities with explicit awareness of the structure, function and integrity of ecosystems and the biodiversity within those systems affected by those activities.[7] It is our contention that ecology is the central discipline for understanding both a viable environment and the modern threats to that environment.

The ecological framework upon which conservation policy and law currently relies is comprehensively discussed[573] and shows that biodiversity may be assessed on three levels: genetic, species and ecosystem. Each level is comprised of four components: [574]

> (1) composition: what is there and how much; (2) structure in space: spatial distribution of, and spatial relations between, for example, species and areas; (3) structure in time: e.g., seasonal and diurnal cycles; and (4) processes: physical, chemical and biological processes.

Harm to species can generally be evaluated by reference to adverse change in these components, for example reduction of particular habitat, species

[570] Brooks above n 501 at 3.
[571] Brooks, ibid, at 2.
[572] Brooks ibid.
[573] de Nooij above n 503 at 259.
[574] de Nooij ibid, at 270, referring to Noss, RF "Indicators for Monitoring Biodiversity: A Hierarchical Approach" 1990 4 Conservation Biology.

numbers, or quality of water or soil structure. In addition to ecology, other biological disciplines such as biogeography, population dynamics, population genetics, and ecotoxicology are also relevant.[575] The purpose of this section is to explore ecological concepts and approaches that are applied in conservation management, policy and law and to identify their relationships to and consideration of distribution of benefit and burden.

5.3.1 ECOSYSTEM APPROACH

Modern environmental and conservation regimes have adopted the "ecosystem approach" in response to lessons learned from ecology. The approach is a holistic response that is cognisant of ecosystem relationships and interconnections as well as accounting for the dynamism of the environment and knowledge limitations. Debate exists as to its exact formulation, but Trouwborst[576] identifies three core elements upon which there appears to be substantial agreement: the holistic management of human activities, based on the best available knowledge of components, structure and dynamics of ecosystems, and aimed at satisfying human needs in a way that does not compromise the integrity, or health, of ecosystems. The approach is a management tool designed to enable the provision of ecosystem services to humans. As such, there are evident limitations in any intention to avoid harm to other species, although a strong interpretation of not compromising/protecting integrity of ecosystems would potentially avoid harm to species.

Specific applications seem to take a more traditional definition. For example, decisions of the Parties to the Convention on Biological Diversity (CBD) state that "ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems"[577] and that "conservation of ecosystem structure and functioning, in order to maintain

[575] de Nooij above n 503 at 270.
[576] Trouwborst, A "The Precautionary Principle and the Ecosystem Approach in International Law: Differences, Similarities and Linkages" (2009b) 18(1) Review of European Community and International Environmental Law 28.
[577] (2000) "Ecosystem approach" Decision V.6. Principle 3.

ecosystem services, should be a priority target of the ecosystem approach".[578] Consideration of effects and conservation of structure and function do not constitute particularly onerous directives to land managers. "Consideration" does not necessarily imply action and conservation can be contrasted with preservation. In addition the approach adopted by the CBD seeks to achieve a balance between, and integration of, conservation and use of biological diversity[579] which potentially requires the weighing up of species' interests against human interests in the use of the resource, an approach in keeping with the Principle of Sustainable Development.

The main merits of the approach are that it is designed to enable proactive and comprehensive responses to environmental problems, it does, however, add complexity to the issues. In working within a framework which takes a holistic approach to the environment there are several concepts which are critical to birds and they will be discussed below.

5.3.1.1 Interconnection of environment and relationship to integrated resource management

Birds are bound up in complex interrelationships with other components of an ecosystem and the wider environment. Changing a species or a process can have unexpected results and this understanding has driven support for the ecosystem approach.[580] It is well understood that focusing on specific species recovery without addressing underlying problems with the ecosystem may not enable that recovery for individual species and communities.[581] Not surprisingly this understanding has resonated in conservation policy and law, such that integrated environmental management is recognised as critical to

[578] (2000) "Ecosystem approach" Decision V.6. Principle 5.
[579] (2000) "Ecosystem approach" Decision V.6. Principle10.
[580] Saunders, A and Norton, DA "Ecological Restoration at Mainland Islands in New Zealand" 2001 99 Biological Conservation, 115.
[581] Saunders 2001 ibid.

species recovery. Integration is seen as necessary across resources together as well as across government.[582]

5.3.1.2 Ecological integrity

In the endeavour to develop a more holistic approach to ecosystems, scholars and practitioners employ the concept of integrity.[583] However, the meaning and utility of the concept are contested.[584] Ecological integrity may be employed as an approach to environmental management, a hortatory goal, or as a baseline indicator from which to assess harm.

Ecological integrity has been defined as: "the capacity of an ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity and functional organization comparable to that of similar, undisturbed ecosystems in the region." Important aspects are the self-organising capacity to sustain, adapt and evolve over time at a specific location, and demonstrate resilience and the ability to function at optimum capacity.[585]

A key element of ecological integrity is connectivity whereby dynamic interactions are maintained within and between habitats. Connectivity is also

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[582] Klein, U "Integrated Resource Management in New Zealand-a Juridical Analysis of Policy, Plan and Rule Making under the RMA" 2001 5 NZJ Envtl. L. 5.

[583] Leopold, A *A Sand County Almanac and Sketches Here and There* (Oxford University Press, New York, 1949) 224, Turner, K and Beazley, K "An Exploration of Issues and Values Inherent in the Concept of Ecological Integrity" 2004 32 Environments 43, Fischman, RL "The Meanings of Biological Integrity, Diversity, and Environmental Health," 2004 44 Nat. Resources J, 989, Manuel-Navarrete, D, Kay, JJ and Dolderman, D "Ecological Integrity Discourses: Linking Ecology with Cultural Transformation" 2004 11 Human Ecology Review 215, Westra, L "Ecological Integrity: Its History, Its Future and the Development of the Global Ecological Integrity Group" in Bosselmann, Klaus, Westra, Laura and Westra, Richard (eds) *Reconciling Human Existence with Ecological Integrity: Science, Ethics, Economics and Law* (Earthscan, London, 2008), Fluker, S "Ecological Integrity in Canada's National Parks: The False Promise of the Law" 2010 29 Windsor Rev. Legal & Soc. Issues 4, Karr, JR "Ecological Integrity" in Bosselmann, K, Westra, L and Soskolne, C (eds) *Globalisation and Ecological Integrity in Science and International Law* (Cambridge Scholars, Cambridge, 2011) 17.

[584] Turner ibid.

[585] Westra, L "Ecological Integrity" in Mitcham, Carl (ed) *Encyclopedia of Science, Technology, and Ethics* (Macmillan Reference USA, Detroit, 2005) 574 and Westra, L *An Environmental Proposal for Ethics: The Principle of Integrity* (Rowman & Littlefield Lanham, MD, 1994) 41.

thought to promote ecosystem resilience.[586] Unlike discrete site or species protection, the concept can be applied to capture vital ecological prerequisites of species. Therefore, the comprehensive and holistic nature of the concept renders it a valuable standard for conservation purposes, with a particular benefit for mobile species such as birds. Natural distribution of animals in space and time is a key concern of ecology and one which also represents a significant challenge to an effective legal regime.[587]

Retention of ecological integrity is a recognised indicator of ecosystem conservation partially because of its comprehensive nature, this includes indicators that trace physical, chemical and biological processes as well as counting the numbers of species and determining the threats to them.[588] Ecosystem integrity can establish baselines against which anthropogenic change can be measured. The attributes of a site possessing ecological integrity[589] can be contrasted with existing or potential conditions and deviations from this standard measured.[590] It is in the construction of such attributes that ecological integrity is keenly contested. Two separate interpretations are apparent: depending upon whether human presence and ecological integrity are mutually exclusive.[591]

The concept of ecological integrity is important in order to prevent and limit harm to species. Harm will be equated to loss of integrity, and this loss can be measured in a variety of ways, commonly by reliance upon a series of indicators that define integrity, or lack thereof, relative to the components

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586 Schallenberg, M, Kelly, D, Clapcott, J, and others *Approaches to Assessing Ecological Integrity of New Zealand Freshwaters* (Department of Conservation, 2011) 11 and see generally Lausche, B, Farrier, D, Verschuuren, J, and others *The Legal Aspects of Connectivity Conservation: A Concept Paper* (IUCN, 2013) 15-20.
587 For further discussion see Wallace, PJ "Integrated Conservation Management; Spatial Planning for the Movement of Species in the Landscape" 2011 15 NZJ Envtl. L. 185.
588 Angelo, M J "Embracing Uncertainty, Complexity, and Change: An Eco-pragmatic Reinvention of a First-Generation Environmental Law" 2006 33 Ecology L.Q,105, 11.
589 Described by Karr as "The term most appropriately refers to the condition at sites with little or no influence from human actions; the organisms living there are the products of evolutionary and biogeographic processes influencing that site." Karr above n 583 at 17.
590 Angelo 2006 above n 588 at 11.
591 Fluker above n 583, Manuel-Navarrete and others further divide these categories so as to identify four perspectives, each which differ in terms of the conceptual definition of ecological integrity, the role of science, and the assumptions regarding human-ecosystem relationships: Manuel-Navarrete, above n 583 at 216.

considered to constitute integrity such as nativeness, pristineness, diversity and resilience.[592] The indicators will frequently make reference to a threshold, which once crossed will indicate loss of integrity and potential harm. A focus upon ecological integrity involves considering aspects such as whether the site or ecosystem processes will be removed or changed as a result of activity.[593] Thus, considerations of the effect on the nature, extent, structure and function of component habitats and further, the nature of the effect upon average population size and the viability of the population are brought into view. A further issue is whether the activity under consideration will move the condition of the ecosystem/site towards or away from favourable conditions.[594]

The often vexed question of establishing existence and degree of harm will be evidence based and subject to limiting factors such as ontological and epistemic uncertainty. Acceptability of harm in a democratic system will be approached by decision-makers employing discretion and dependent upon the prevailing construct of the concept and the application of legal principle such as precaution. A "natural ecological integrity" interpretation would prevent the consideration of competing human social, cultural and economic concerns, thus potentially constituting a stronger standard, but impossible to achieve in working landscapes.

Ecological integrity's value can be found in its breadth and pervasiveness.[595] It is a comprehensive standard which enables consideration of ecological prerequisites of a species throughout its range. Difficulties remain, however, in terms of its application particularly in resolving situations where a competing concern provides both benefits and disadvantages for ecological integrity. For instance, a wind turbine development that is designed to reduce greenhouse gas emissions could be located in the pathway of a

[592] Schallenberg above n 58 at 11.
[593] Angelo 2006 above n 588 at 11.
[594] Institute of Ecology and Environmental Management above n 505 at 36.
[595] For a discussion on the value of pervasiveness, see Reid, CT "Towards a Biodiversity Law: The Changing Nature of Wildlife Law in Scotland" 2012 15 Journal of International Wildlife Law & Policy 202.

migrating species. In considering the issue of trade-offs in the environment and impact upon ecological integrity, Gibson in recognition of deepening unsustainability, argues that planning that encourages invidious trade-offs from the outset must be avoided and encourages the better use of strategic planning enabling consideration of alternatives and environmental enhancement.[596] This issue will be amongst those considered further in section 5.4.6 and then within the New Zealand context, as illustrated in Figure 48, in subsequent chapters.

Figure 48 New Zealand production landscape

5.3.1.3 Resilience

Resilience is identified as a key component of ecological integrity, yet an entire perspective has developed around the insight that there is more than one alternative stable state for ecosystems as opposed to a single equilibrium thus warranting its consideration.[597] Resilience acknowledges ecosystem dynamism, the capacity of an ecosystem to withstand disturbance and maintain the same basic processes and structure.[598] Where ecological

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596 Gibson, RB "Avoiding Sustainability Trade-Offs in Environmental Assessment" 2013 31 Impact Assessment and Project Appraisal 4.
597 Allen, CR Fontaine, JJ Pope, KL and others"Adaptive Management for a Turbulent Future" 2011 92 Journal of Environmental Management 1339, Folke, C "Resilience: The Emergence of a Perspective for Social-Ecological Systems Analyses" 2006 16 Global Environmental Change 254.
598 Holling, CS "Resilience and Stability of Ecological Systems" 1973 4 Annu. Rev. Ecol. Syst. 1.

resilience is eroded by natural or anthropogenic change, critical thresholds may be crossed such that the regime shifts and self-organises into an alternate regime, characterised by a different set of processes and structures.[599] The change in state of a water body from non-eutrophic to eutrophic due to excessive nutrient loads provides an instructive example. The new eutrophic regime will then develop its own resilience, which can be problematic for those managing restoration efforts as the different critical thresholds will need to be passed to revert to non-eutrophic.[600] The example also demonstrates that resilience is not always "good" and undesirable states may possess considerable resilience.[601] Furthermore, resilience does not necessarily coincide with ecological integrity: a system may persist without possessing full integrity, for example, a landscape colonised by multiple alien species with depauperate endemic populations.

Nevertheless, a resilience focus can provide the opportunity to focus on those attributes of a system which enable its persistence. For instance, environmental managers can identify those characteristics of a water body which must be maintained to protect the desired state, and identify the drivers of adverse change which must be managed to maintain or reach that state. This will require, amongst other things, an understanding of complex adaptive systems, the role of inherent self-organisation and the relevant thresholds beyond which an undesired regime shift will occur.

Human activity can impact ecosystem resilience by three key means: the removal of functional groups of species, the impact on ecosystems through emissions of contaminants and climate change, and alteration of the magnitude, frequency, and duration of disturbance regimes to which the biota

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[599] Benson, MH and Garmestani, AS "Can we Manage for Resilience? The Integration of Resilience Thinking into Natural Resource Management in The United States" 2011a 48 Environmental Management 392 at 393, Green, OO and Garmestani, AS "Adaptive Management to Protect Biodiversity: Best Available Science and the Endangered Species Act" 2012 4 Diversity 164 at 165, Walker, B and Salt, D *Resilience Practice: Building Capacity to Absorb Disturbance and Maintain Function* (Island Press, Washington, 2012) ch 1.
[600] Angelo, MJ "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience" 2009 87 Nebraska Law Review 950 at 964.
[601] Walker 2012 above n 599 at 20.

is adapted.[602] Thresholds occur in both ecological and social systems, and in social systems have become known as "tipping points" with examples in the areas of fashion, markets, voting patterns and riot behaviour.[603] Resilience perspectives may also be applied to systems of governments and institutions: the concept of adaptive governance is an emergent framework for the management of complex environmental issues in both theory and practice.[604]

Inherent in the concept of resilience are the notions of dynamism and variability and the importance of being able to respond and adapt. In recognition of the need for responsiveness, the concept of resilience is steadily being built into social-ecological policy discourses with some viewing resilience of ecological systems as a primary basis for sustainability and human wellbeing.[605] The concept is seen as a key to managing environmental change, something keenly sought in the scramble to develop responses to climate change. Natural resource managers rely on the concept to build on the capacity of ecosystems to persist in the face of change, whilst social care aspects such as bridging and bonding social capital are recognised as important to constructing resilient communities.[606]

But where does the concept leave the protection of threatened species? Could a brave new resilient world turn its back on those weak and struggling, rare and endangered species, writing them off as relics of the past? On the journey to survival of the fittest, could they be jettisoned as costly excess baggage? The issue is that biodiversity is an important factor that contributes to ecosystem stability: a wider range of species provides greater functional

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602 Folke, C, Carpenter, S, Walker, B, and others "Resilience Thinking: Integrating Resilience, Adaptability and Transformability" 2004 15 Ecology and Society, 575, for application to Pacific Island see: Boer, B and Clarke, P "Legal Frameworks for Ecosystem-Based Adaptation to Climate Change in the Pacific Islands" (2012) <http://www.sprep.org/attachmens/Publications/Legal_frameworks_EBA_PICs.pdf. > 7-8 and chapter 3.

603 Walker 2012 above n 599 at 6.

604 Gunderson, L and Light, SS "Adaptive Management and Adaptive Governance in the Everglades Ecosystem" 2006 39 Policy Sciences 323 at 325.

605 Walker, B, Carpenter, S, Anderies, J, and others "Resilience Management in Social-Ecological Systems: A Working Hypothesis for a Participatory Approach" 2002 6 Conservation Ecology 14 1, Walker 2012 above n 599 at 198, Benson and Garmestani 2011a above n 599 at 394.

606 Walker 2012 above n 599 at 194.

diversity and may promote resilience.[607] The exact influence of species richness to resilience is subject to different hypotheses, but species' numbers and roles are indicated as influential.[608] Accordingly the loss of species can render an ecosystem vulnerable to crossing a threshold and cause a regime shift. Therefore systems should maintain sufficient resilience, to enable unexpected disturbance to be absorbed by the system.[609]

This need for a resilience buffer suggests application of a precautious approach due to imperfect knowledge[610] in relation to ecosystem function, in particular the role and function of all species and further due to uncertainty of future natural and anthropogenic effects. That aside, in relation to a mandate for species protection, resilience raises the issue of replaceability. If one species could be replaced in terms of number and function/role by other more common species, then a resilience perspective may not engender concern for the loss of that species. In contrast to ecological integrity, resilience is a less comprehensive concept, identified as an essential component of the former, but focusing more on persistence than holism.

The "rate" of loss of biodiversity on a global scale also looms large for a resilience perspective. A recent study has identified nine essential planetary boundaries which represent critical transition points beyond which human induced change could push the Earth system outside of the stable environmental state of the Holocene period.[611] Three of the nine boundary points are identified as currently exceeded, one of which is the rate of biodiversity loss. Although uncertainty exists as to quantifying how much and what kinds of biodiversity can be lost before resilience is eroded, the authors concluded "with some confidence that Earth cannot sustain the current rate of loss without significant erosion of ecosystem resilience".[612] Coupled with the

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[607] Brownlie 2012 above n 512 at 28 referring to Carpenter and others 2006 and Elmqvist and others 2003.
[608] Angelo 2009 above n 600 at 961-962.
[609] Angelo ibid, at 962, Rockstrom, J, Steffen, W, Noone, K, and others "A Safe Operating Space for Humanity" 2009 461 Nature 472 at 473.
[610] Rockstrom ibid, at 473.
[611] Walker 2012 above n 599 at 186, Rockstrom above n 609 at 472.
[612] Rockstrom above n 609 at 474.

potential for synergistic reaction with other critical transition points,[613] this indicates the need for a drastic reduction in the rate of loss, signifying the need to redouble efforts in extinction prevention. Although, as established in Chapter 4, extinction rates are actually increasing.

For the purpose of this research the important understanding is that for threatened species a resilience perspective brings a sharpened focus on system thresholds and the need for greater recognition of "tipping points" in protective schemes. To achieve resilience a solution proposed by Benson is adopted which requires "A more preventative strategy requiring greater proactivity in management efforts and support of function of system processes prior to species becoming endangered and on the brink of a regime change. This would include viewing species recovery as a continuum as opposed to a "recovered/not recovered" dichotomy. It would also bring a greater focus on recovery planning."[614]

The concept of resilience indicates a need to err on the cautious side, retaining a buffer to cope with the unexpected. It also indicates the need for a strong evidence base upon which to identify necessary thresholds. For birds these could be very wide ranging including more typical aspects such as water and air quality, but also extending to measures such as breeding tolerance to human or vehicle disturbance. Without comprehensive identification of all necessary thresholds (which may be species-specific), application of a resilience approach for birds cannot be recommended as a substitute for the more traditional goals of preservation and restoration, although as a complementary measure it provides benefit.

Others have questioned the legal system's ability to respond adaptively to the complex systems issues presented by resilience, because of a requirement for certainty and a lack of institutional and regulatory

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[613] Rockstrom above n 609 at 472.
[614] Benson, MH "Intelligent Tinkering: the Endangered Species Act and Resilience" 2012 17 Ecology and Society 28.

flexibility.[615] Adaptive Management has emerged as a key method of promoting resilience in species protection, which will be considered in section 5.4.3 as will the relationship of this method to the avoidance of harm.

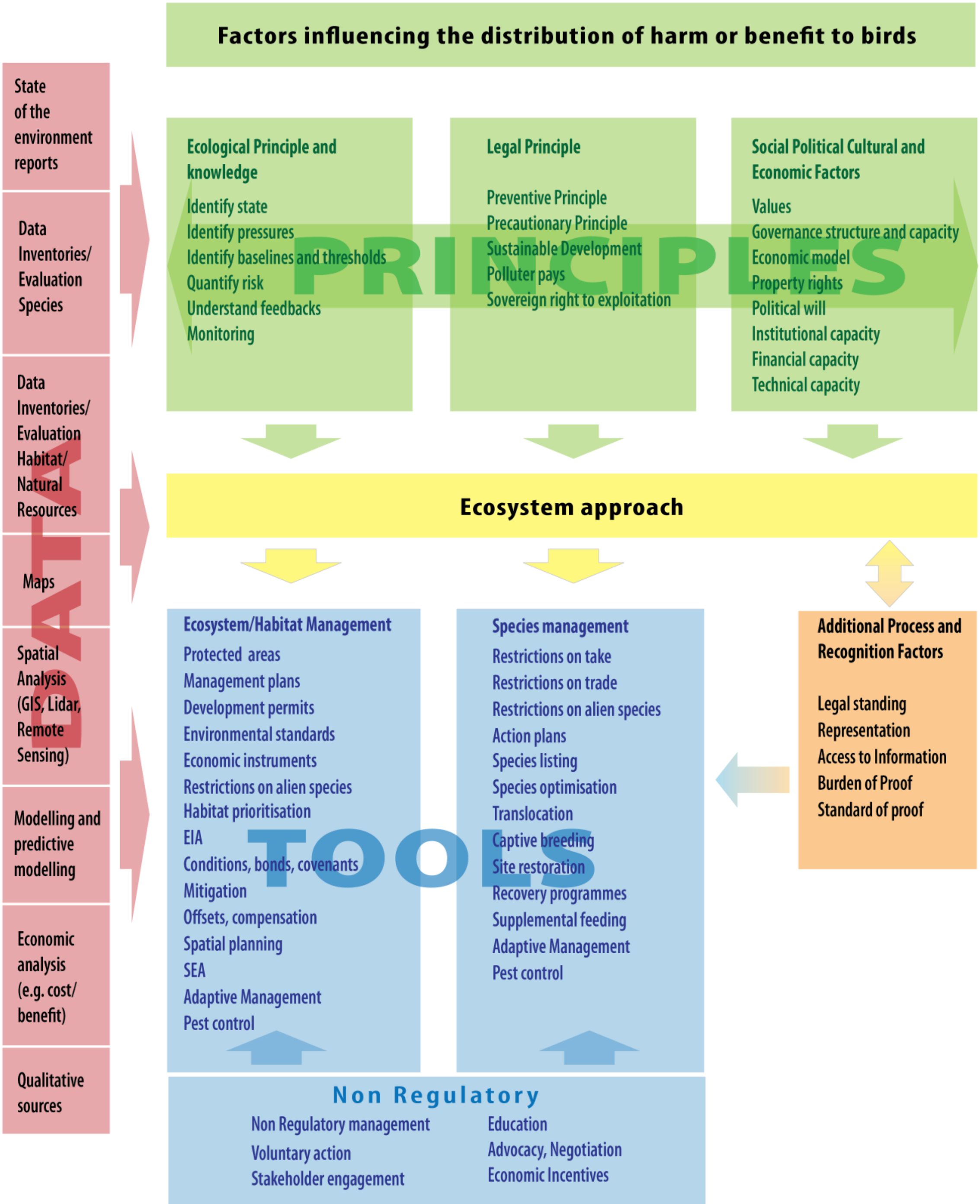
5.4 METHODS FOR PROTECTING BIODIVERSITY AND RELATIONSHIP TO AVOIDANCE

The final matter to consider is the role of methods in influencing distribution of harm to birds. No matter what principles, criteria and concepts exist, it is how something is put into effect through regulatory or non-regulatory method which determines outcomes for birds.

The wide range of methods available is set out in Figure 49. This section focuses upon the following four key regulatory methods applied to manage harm to species and ecosystems: 1) environmental standards, 2) EIA, 3) adaptive management and 4) landscape level conservation planning. The respective capacity of the methods to influence distribution of harm to species will be assessed with a particular focus on the relationship to degree of care. The methods are selected due to prevalence in contemporary management of human activity in the land and seascape. That is not to say that other methods are not important, but that for the purpose of this research, these particular methods provide fertile ground for analysis and opportunity to shift or reshape how that loss falls.

[615] Ruhl, JB and Fischman, RL "Adaptive Management in the Courts" 2010 95 Minn. L. Rev, 424, Folke, C, Pritchard, L, Berkes, F, and others "The Problem of Fit Between Ecosystems and Institutions: Ten Years Later" 2007 12 Ecology and Society, Ruhl, JB "Panarchy and the Law" 2012 17 Ecology and Society Art 31, Benson, MH and Garmestani, AS "Embracing Panarchy, Building Resilience and Integrating Adaptive Management Through a Rebirth of the National Environmental Policy Act" 2011b 92 Journal of Environmental Management 1420.

Figure 49 Factors influencing harm and benefits to birds, detailing methods



Regulatory standards reflect underlying social, cultural, environmental and economic expectations in relation to resources and can strongly influence outcomes for species. Regulations will be made in accordance with statutory mandate, can have wide application and importantly in terms of the threats faced by the case study species, and may require internalisation of externalities. Water quality and quantity, air quality and soil quality and retention are classic areas where protective regulatory standards influence beneficial outcomes for species. Yet standards can also be extended to more controversial areas such as the control of invasive mammalian predators, a matter which currently constitutes the number one threat to New Zealand birds. Standards that are informed by strong principles of precaution and prevention of significant harm and incorporate objectives and methods aligned to retain ecological integrity and resilience, enhance protective capacity.

Despite the clear benefits which birds can derive from robust standards, Preston points out the potential for bias towards consuming uses and the resultant distributional inequity inherent in the permitting regimes associated with such standards.[616] That is, permitting consuming uses, imposing burdens of proof, lack of holistic determination of competing claims, and failure to fully capture externalities may contribute to loading non-consuming uses with greater burdens than those applying to consumption. Associated with regulatory standards and permitting regimes is the practice of EIA, designed to assess impacts of potential permitted activity.

[616] Preston, BJ "The Effectiveness of the Law in Providing Access to Environmental Justice: An Introduction" (paper presented to 11th IUCN Academy of Environmental Law Colloquium, Hamilton, 2013) 4.

5.4.2 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Environmental Impact Assessment (EIA) is undertaken at a project level and informs decisions over development permits. Most countries now legislate for EIA and assessment of ecological impacts is fundamental to this process.[617] It is highly influential in defining any burden that may be cast upon species and identifies the potential for avoidance and mitigation. Avoidance of harm to species is not a new concept, in fact for threatened species and special conservation areas there is apparent acceptance that this is the standard to reach.[618] Yet concern exists that insufficient attention has been directed at securing the standard, with attention being diverted to lesser protective standards.[619] Avoidance can be obscured by the lesser protective standard of mitigation. Some jurisdictions even enshrine avoidance within the definition of mitigation.[620] However, a rising tide of cumulative effects[621] speaks of the need to separate these concepts and promote a standard of avoidance.

5.4.3 THE MITIGATION HIERARCHY

Mitigation is viewed as being "at the heart of the EIA process".[622] Avoidance can be regarded as the highest-ranking option in a 'mitigation hierarchy' a concept that has developed in tandem with requirements for Environmental Impact Assessment (EIA) at both the project and strategic level. Figures 50 and 51 explain each measure in the mitigation hierarchy and give examples

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617 Treweek, J and Thompson, S "A Review of Ecological Mitigation Measures in UK Environmental Statements with Respect to Sustainable Development" 1997 4 International Journal of Sustainable Development & World Ecology 40, Fischer, TB, Gazzola, P, Jha-Thakur, U, and others *Environmental Assessment Lecturer's Handbook* (Road Bratislava Press, 2008) 167, Gillespie, A "Environmental Impact Assessments in International Law" 2008 17 Review of European Community & International Environmental Law 221.

618 See infra at section 5.0.

619 Brownlie 2012 above n 512 at 27 referring to Walker (2009) and Clare (2011).

620 For example, see definition of mitigation, Council of Environmental Quality CEQ Regulations for Implementing NEPA (1978) Sec.1508.20.

621 Johnson, CJ "Regulating and Planning for Cumulative Effects, the Canadian Experience" in Krausman, P R and Harris, L K (eds) *Cumulative Effects in Wildlife Management: Impact Mitigation* (CRC Press, Boca Raton, FL, 2011) 31.

622 Wood above n 504 at 258.

relating to New Zealand avian fauna. Not included in the hierarchy is the "do nothing" alternative as it contains no mitigating features, although in some regimes this will be an option.

Figure 50 The mitigation hierarchy as applied to wind turbine collision mortality and avian fauna on a project level

Avoidance	Impacting activities do not occur-project does not proceed Avoid by design-activity is designed so that impacts to species do not arise Avoid through technology Avoid through alternatives	e.g. wind farm does not proceed e.g. wind farm is designed to be sited out of flight path, with height of turbines modified to avoid collision e.g. technology applied which reroutes birds so as to avoid impact e.g. alternative site preferred
Mitigation: reduce alleviate minimise abate	Mitigate through design Mitigate through technology Mitigate through alternatives	e.g. turbines sited where less likely to cause harm e.g. turbines automatically switch off when technology apprehends flock of birds approaching e.g. turbines sited where less likely to cause harm
Repair/ remedy	Restore the environment, fix up the impact	e.g. once damage/mortality has occurred, assess and find ways to make up for the loss (similar to compensation)
Compensate in kind	On site or off site compensation to achieve no net loss	e.g. undertake species/habitat protection and or management on or off site that compensates for loss to the extent that no net loss of species occurs
Other compensation	Any form of compensation used to offset residual impacts	e.g. undertake species/habitat protection and or management on or off site that compensates for loss by providing unspecified biodiversity benefits
Enhancement	Measures to achieve net positive gain	e.g. biodiversity measures on and off site to improve habitat, protect species and provide species net gain which exceed loss suffered

Downwards facing arrow denotes decreasing effect in addressing impact

Source: Modified from Rajvanshi, A "Mitigation and compensation in environmental assessment" (2008) Environmental Assessment Lecturer's Handbook <http://twoeam-eu.net/>

Figure 51 The mitigation hierarchy as applied to the fishing industry and the impact of fisheries bycatch on avian fauna on a strategic level

Avoidance	Impacting activities do not occur- project does not proceed Avoid by design- activity is designed so that impacts to species do not arise Avoid through technology Avoid through alternatives	e.g. impacting fishery/ies do not occur in bird's habitat e.g. fishery method designed and carried out so as prevent impact, for instance change the way hooks are set to avoid damage e.g. technology applied to fishery method which reroutes birds so as to avoid impact e.g. alternative area fished or alternative fishing method applied
Mitigation: reduce alleviate minimise abate	Mitigate through design Mitigate through technology Mitigate through alternatives	e.g. lines designed to be weighted to minimise surface attraction e.g. bird scaring devices applied to lessen likelihood of catch e.g. areas fished where less likely to cause harm
Repair/remedy	Restore the environment, fix up the impact	e.g. once damage/mortality has occurred, assess and find ways to make up for the loss (in real terms no different from compensation)
Compensate in kind	On site or off site compensation to achieve no net loss	e.g. undertake species/habitat protection and or management on or off site that compensates for loss to the extent that no net loss of species occurs
Other compensation	Any form of compensation used to offset residual impacts	e.g. undertake species/habitat protection and or management on or off site that compensates for loss by providing unspecified biodiversity benefits
Enhancement	Measures to achieve net positive gain	e.g. biodiversity measures on and off site to improve habitat and provide species net gain which exceed loss suffered

Downwards facing arrow denotes decreasing effect in addressing impact

Source: Modified from Rajvanshi, A "Mitigation and compensation in environmental assessment" (2008) Environmental Assessment Lecturer's Handbook <http://twoeam-eu.net/>

Diluting the standard of avoidance

Although avoidance is held up as the standard to achieve when considering impacts on threatened species and habitats and where effects could be irreversible, development proponents will commonly have strong economic reasons to argue for replacements by lesser standards of mitigation or compensation. Where a regime ostensibly supports avoidance, but enables mitigation as an alternative, without additional directive policy guidance, potential exists to weaken the standard of avoidance. It also creates a comparative vacuum in terms of selecting alternatives.[623] Deciding where to set this threshold is considerably influential in terms of distributing harm to species.

This research argues that mitigation and compensation should generally not be viewed as alternatives to avoidance, rather that, for threatened and At Risk species, their habitat and ecosystems upon which they rely, avoidance of all but minor effects should be installed in policy as the clear preference. A similar position applies to irreversible effects to all biodiversity. International agreements relevant to birds do not tend to take this approach, enabling flexibility through alternatives.[624] However, support for this position is growing. The Convention on Biological Diversity's (CBD) Decision IV.10c on impact assessment and minimising adverse effects specifically encourages collaboration between the Convention on Biological Diversity, the Ramsar Convention, the Convention on Migratory Species (CMS), the International Association for Impact Assessment (IAIA), and IUCN, The World Conservation Union. Advice prepared by the IAIA develops guiding principles for the

[623] Kiesecker and others "Making Mitigation Work for Conservation and Development" in Naugle, D E (ed) *Energy Development and Wildlife Conservation in Western North America* (Island Press, Washington, DC, 2011) 163.

[624] For example, the approach of the CBD see (2002) "Identification, Monitoring, Indicators and Assessments" Decision VI.7, Annex iv. Guidelines for Incorporating Biodiversity-Related Issues into Environmental Impact Assessment Legislation and/or Process and in Strategic Environmental Assessment.

managing the impact of human activities on biodiversity.[625] With a primary aim for conservation and "no net loss" of biodiversity, the following approach is endorsed to help achieve "no net loss" of biodiversity:[626]

> 1. Avoid irreversible losses of biodiversity.
>
> 2. Seek alternative solutions that minimize biodiversity losses.
>
> 3. Use mitigation to restore biodiversity resources.
>
> 4. Compensate for unavoidable loss by providing substitutes of at least similar biodiversity value.
>
> 5. Seek opportunities for enhancement.

The guidance shows strong support for an avoidance approach in terms of irreversible losses including damage to unique, endemic, Threatened or declining species, their habitats and ecosystems. The lack of qualification in terms of degree of damage tends to suggest that any damage to Threatened and At Risk species could potentially constitute an irreversible loss.

Irreversible harm is not well defined,[627] but signifies serious, adverse and permanent damage or alteration of environmental conditions. Assessment of future impact is a calculation of risk based on scientific evidence, whereas an assessment of an existing impact is a matter of evidence. Prediction of the impact can be made by a wide variety of methods including mathematical and computer based models, physical models and experimental models, expert judgements and analogue models.[628] Prediction of risk is followed by an evaluation of the significance of the risk. Glasson identifies criteria for significance as including the magnitude and likelihood of the impact, its spatial

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[625] International Association for Impact Assessment *Biodiversity in Impact Assessment* (International Association for Impact Assessment, 2005).
[626] IAIA ibid, at 2.
[627] Sunstein, C "Two Conceptions of Irreversible Environmental Harm" 2008 U of Chicago Law & Economics, Olin Working Paper No 407, 8. In this article Sunstein explores two separate approaches to irreversibility, one grounded in economics and the other in environmental ethics.
[628] Glasson above n 504 at 130.

and temporal extent, the likely degree of the affected environment's recovery, the level of public concern and political repercussions.[629] Morris and Therivel view impact significance as a function of impact magnitude (severity) and the conservation value, sensitivity and resilience of the ecological receptors.[630]

Ecological assessment is concerned with establishing the state of the environment and the impact assessment will focus on predicted and actual effects of change. In line with contemporary environmental management practice, assessment (and thus outcomes) will be influenced by the ecological concepts discussed in section 5.3.1. In terms of ecological significance, the concept of ecological integrity can be applied not only to ecosystems but to distinct sites since they "can reasonably be considered to represent an ecosystem".[631] The next matter to consider is the trading off of a requirement for avoidance of in favour of a biodiversity offset/compensation.

Biodiversity offsets and net gain

Varying terminology is applied to compensation and offsets as they become firmer features of the policy and practice of conservation planning. The Business and Biodiversity Offsets Programme (BBOP), an international collaboration between companies, financial institutions, government agencies and civil society organisations provides the following definition of an offset nested within the mitigation hierarchy:[632]

> Offset: measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and / or rehabilitated or restored, in order to achieve no net loss or a net gain of biodiversity. Offsets can take the form of positive management interventions such as restoration of

[629] Glasson above n 504 at 137.
[630] Morris above n 505 at 136.
[631] For example, Institute of Ecology and Environmental Management *Guidelines for Ecological Impact Assessment in the United Kingdom* (IEEM, 2006) 56 at 36.
[632] Business and Biodiversity Offsets Programme *Glossary* (BBOP, 2012) 29.

> degraded habitat, arrested degradation or averted risk, protecting areas where there is imminent or projected loss of biodiversity.

The use of biodiversity offsets and other forms of compensation has seen widespread growth and it is anticipated that this practice is likely to continue due to the current emphasis on global development and economic growth.[633] Despite offsets presenting positive opportunities for conservation,[634] commentators raise concerns about offset design, accounting, governance and compliance.[635] Moilanen discusses the concern that biodiversity offsets "exchange certain losses for uncertain gains, and that in some cases, it is implausible that losses can truly be recovered" and suggests the application of spatial conservation-prioritisation tools to improve allocation of both impact avoidance and offsetting.[636] The importance of assessing impacts and offsets at the landscape scale (as opposed to the project site) is underscored by the BBOP which supports the "taking into account available information on the full range of biological, social and cultural values of biodiversity and supporting an ecosystem approach".[637]

Issues with implementation and compliance have been demonstrated to be a problem in the use of offsets.[638] Walker asserts that biodiversity offsets facilitate development whilst perpetuating biodiversity loss.[639] The IAIA

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633 ten Kate, K, Bishop, J and Bayon, R *Biodiversity Offsets: Views, Experience and the Business Case* (IUCN, 2004) 9, Moilanen, A "Planning Impact Avoidance and Biodiversity Offsetting Using Software for Spatial Conservation Prioritisation" 2012 40 Wildlife Research B, Madsen, B, Carroll, N and Moore Brands, K *State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide* (2010) vii.

634 Gillespie, A *A Missing Piece of the Conservation Puzzle: Biodiversity Offsets* (Department of Conservation, 2012) 8.

635 Moilanen 2012 above n 633 at B, referring to Harper and Quigley 2005; Gibbons and Lindenmayer 2007; Walker and others 2009 and Bekessy and others 2010, Norton 2009 above n 505 at 699.

636 Moilanen 2012 above n 633 at B.

637 The Biodiversity Consultancy Ltd *Biodiversity Offsets: Appropriate Limits and Thresholds* (Department of Conservation, 2011).5.

638 Brown, MA, Clarkson, BD, Barton, BJ, and others "Ecological Compensation: an Evaluation of Regulatory Compliance in New Zealand" 2013 31 Impact Assessment and Project Appraisal 34-44.

639 Walker, S, Brower, AL, Stephens, RT, and others "Why Bartering Biodiversity Fails" 2009 2 Conservation Letters 149.

Guidance implicitly recognises these concerns, as does the BBOP, through recognition of the mitigation hierarchy, thus giving avoidance priority and using compensation as a last resort. The guidance adopts a no net-loss approach and compensation for unavoidable loss by providing substitutes of at least similar biodiversity value.

A stronger approach, and one that may assist in overcoming some of the limitations of offsetting, is to require compensation to the standard of "net gain". BBOP provides a definition of the respective terms:[640] [641]

> No net loss: A target for a development project in which the impacts on biodiversity caused by the project are balanced or outweighed by measures taken to avoid and minimise the project's impacts, to undertake on-site restoration and finally to offset the residual impacts, so that no loss remains. Where the gain exceeds the loss, the term 'net gain' may be used instead of no net loss. No net loss (or net gain) of biodiversity is a policy goal in several countries, and is also the goal of voluntary biodiversity offsets.

The BBOP adopts this approach and Brownlie and others document that the no net loss, preferably net gain goal of biodiversity offsets is supported by many voluntary and professional organisations, some countries, such as the USA and reflected in the performance standards of major financial institutions and multinational companies.[642] Gibson in the construction of a sustainability framework advocates maximising net gains and avoiding any significant adverse effects unless the alternative means accepting even more significant effects.[643]

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[640] Business and Biodiversity Offsets Programme *Glossary* (BBOP, 2012) 30.
[641] Further explained in: Rajvanshi, A, Brownlie, S, Slootweg, R, and others "Maximizing Benefits for Biodiversity: The Potential of Enhancement Strategies in Impact Assessment" 2011 29 Impact Assessment & Project Appraisal 183.
[642] Business and Biodiversity Offsets Programme *Biodiversity Offset Design Handbook-Updated* (BBOP, 2012) 9 and Brownlie 2012 above n 512.
[643] Gibson above n 596 at 3.

It is recognised that the achievement of both no net loss and net gain may be extremely challenging,[644] a position which suggests caution in application of the approach in enabling development which may harm Threatened and At Risk species. A net gain approach is to be preferred over no net loss in that it may create a buffer in the event of the unexpected. For protection of species a critical issue is the determination of the point at which avoidance should give way to an offset, as opposed to declining consent and accordingly the next section considers approaches to that problem, which will also be further examined in the New Zealand context in Chapter 8.

Thresholds of harm and significance

The concept of ecological integrity enables identification of the nature of the impact. Biodiversity offset programmes apply the measures of conservation status (vulnerability) and irreplaceability (limited distribution) to identify the limits or upper thresholds in terms of offsetability.[645] In a recent review, which includes Australian and South African approaches, the authors identify adoption of a tiered approach where higher-priority areas are considered less offsetable. The review determined that examples of an explicit quantitative upper threshold level rarely existed, but that exceptions to upper threshold limits did, including that "no practical alternatives exist" or that "overwhelming socio-economic benefits occur". In addition the review identified that in a number of the most developed programs, the principle does exist that some biodiversity values are not feasible to offset, although specifics were not usually provided, only examples. The authors conclude that the lack of upper thresholds, and when they do occur, the prevalence of exceptions

[644] Brownlie 2012 above n 512 at 25.
[645] The Biodiversity Consultancy Ltd above n 637 at 5, Business and Biodiversity Offsets Programme (BBOP) "Resource Paper: Limits to What Can Be Offset." (2012) http://www.forest-trends.org/documents/files/doc_3128.pdf 5.

based on social, economic and political grounds as opposed to ecological realities, will inevitably lead to irreplaceable biodiversity loss.[646]

Treating the habitat of a threatened species as a high priority area with limited opportunity to offset constitutes a strong protective standard for birds. The same reasoning applies to greater than minor damage to the ecological integrity of a system upon which a bird relies. Providing limited exceptions such as Gibson's "unless the alternative means accepting even more significant effects", provides a degree of flexibility, whilst maintaining a firmly protective stance. The value of setting upper thresholds will become more apparent through a case study used in Chapter 8, where it will be argued that lack of evidence clearly identifying upper thresholds provides a reason for a precautious approach and a limitation upon the use of offsets.

Additional measures

Additional planning methods may supplement EIA procedures. Biodiversity screening maps indicate important biodiversity values and ecosystem services. Such an activity could be integrated with the development of a National Biodiversity Strategy and Action Plan and/or biodiversity planning at sub-national levels to identify conservation priorities and targets.[647] Additional spatial conservation measures are considered at section 5.4.6.

5.4.4 STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

SEA shares many of the characteristics and procedures of EIA but extends its reach by application to policies, plans and programmes. It is increasingly recognized, and used, as an important tool for ensuring that conservation and

[646] The Biodiversity Consultancy Ltd ibid, at 13, BBOP ibid, at 11.
[647] International Association for Impact Assessment above n 625 at 3.

sustainable use of biodiversity are pursued as fundamental objectives of strategic decision-making.[648]

Impact assessment at a strategic level expands the tool by its capacity to address cumulative impacts of projects, the issue of induced impacts (where one project stimulates other development), synergistic impacts (where the impact of several projects exceeds the sum of the individual project impacts), and global impacts such as biodiversity loss.[649] SEA is also understood as a proactive process with sustainability goals contrasted to the more reactive EIA procedure.[650] In contrast to EIA, it provides a greater opportunity to match distributions and patterns of diversity than a site specific EIA and engage with biodiversity studies, that amongst other things, capture or explain longer term trends and ecosystem processes and interactions and provide monitoring data needed to understand baseline trends or predict impacts.[651]

In terms of biodiversity and approaches to avoidance the IAIA guidance traversed in relation to EIA is equally intended to apply to SEA.[652] In the context of SEA, Treweek identifies the limited effectiveness of many ecological restoration measures for the reason “that every effort should be made to avoid significant adverse impacts on biodiversity before resorting to other measures”.[653] Accordingly the conclusions reached in relation to EIA are adopted in relation to SEA. This potentially represents a further significant opportunity to address distribution of harm to species. Following on from impact assessment, the next method to be considered operates at a similar

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648 Treweek, J, Therivel, R, Thompson, S, and others “Principles for the use of Strategic Environmental Assessment as a Tool for Promoting the Conservation and Sustainable use of Biodiversity” 2005 7 Journal of Environmental Assessment Policy & Management 175.
649 Athanas, A and Vorhies, F *The Ramsar Convention and Impact Assessment* (IUCN Economic Service Unit, 1999).
650 Ramsar Convention Secretariat *Impact Assessment: Guidelines on Biodiversity-inclusive Environmental Impact Assessment and Strategic Environmental Assessment. Ramsar Handbooks for the Wise use of Wetlands* (4th ed, Ramsar Convention Secretariat, Gland Switzerland, 2010) vol. 16. 41.
651 Treweek,Therivel and Thompson above n 648 at 175.
652 International Association for Impact Assessment above n 625 at 1.
653 Treweek,Therivel and Thompson above n 648 at 175.

level to impact assessment, and may activate during assessment of an impact or subsequently as a management response to the impact.

5.4.5 ADAPTIVE MANAGEMENT

As with the Principle of precaution, awareness of the limits of human understanding of the natural environment is at the heart of adaptive environmental management. Adaptive management, simply known as "learning by doing", is a management method developed in the 1970s that applies a structured and iterative approach to environmental management. As a process, its key features are:[654]

> Explicitly stated goals and measurable indicators of progress toward those goals;
>
> An iterative approach to decision-making, providing the opportunity to adjust decisions in light of subsequent learning;
>
> Systematic monitoring of outcomes and impacts;
>
> Feedback loops so that monitoring and assessment produce continuous and systematic learning that in turn is incorporated into subsequent rounds of decision-making.

Recognition of complex and dynamic systems, the concomitant move away from the environment in equilibrium paradigm and the development of a resilience perspective drove the need for a management method responsive to these challenges.[655] Adaptive management principles and associated methods are designed to enable a cautious pathway in the face of uncertainty and provide scope for adjustment of management actions as knowledge is gained. Unlike the requirement for firm standard setting applied by comprehensive

[654] Doremus, H, Andreen, W, Camacho, A, and others *Making Good use of Adaptive Management* (Center for Progressive Reform, White Paper 1104, 2011a) 2.
[655] Allen 2011 above n 597 at 1339, Benson and Garmestani 2011a above n 599 at 394, Gunderson and Light above n 604 at 324, Ruhl and Fischman 2010 above n 615 at 428, Green and Garmestani, 2012 above n 599 at 165.

rational planning theory and its associated methods, adaptive management relies upon experimentation.[656] The methods are to be distinguished from a "trial and error" approach due to the requirement for statement of goals and the systematic monitoring and feedback loops established by the procedure.[657] Within the adaptive management approach, further distinction can be drawn between active and passive adaptive management, where the active form is differentiated by a rigorous and structured scientific approach involving the testing of multiple hypotheses about system management at the same time.[658] Through this approach a variety of policies are put "at risk" and a subsequent assessment of success or otherwise of each of the policies generates learning in terms of appropriate courses of action.[659] In contrast passive adaptive management is characterised by a method where there is no deliberate attempt to learn from the process, rather learning is a "by-product" of optimal decision making.[660] A watered-down version, cast as "contingency planning" entails the use of pre-specified contingency measures to be applied if the original method fails to produce expected results.[661]

The benefits of the adaptive management are widely acclaimed by scientists and natural resource managers as providing flexibility, reducing paralysis of action through uncertainty and an opportunity to gain knowledge and improve outcomes for species in a carefully managed and controlled manner.[662] The pace of uptake of the method has been fuelled in recognition of these benefits, however, in practice interpretation of the method and success varies widely.

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[656] Ruhl and Fischman 2010 above n 615 at 428.
[657] Gunderson and Light above n 604 at 326-7.
[658] Benson and Garmestani 2011b above n 615 at 1422.
[659] Garmestani, AS, Allen, CR and Cabezas, H "Panarchy, Adaptive Management and Governance: Policy Options for Building Resilience" 2008 87 Neb. L. Rev. 1036 at 1047.
[660] Garmestani and others 2008 ibid.
[661] Karkkainen, BC "Panarchy and Adaptive Change: Around the Loop and Back Again" 2005 7 Minn. JL Sci. & Tech.71.
[662] Cooney 2006 above n 557 at 238.

There is a sense that adaptive management is the contemporary brave new way forward and in tune with the realities of the environment. The approach is championed as a contrast to a risk averse and static approach, where precaution and prevention may impede progress and beneficial results for species.[663] The example of the New Zealand black robin is held up as a circumstance where, had a novel adaptive management approach involving cross-fostering of species not been applied, the species would have gone extinct.[664] Despite this, there is a degree of disquiet in terms of suitability of the method to all situations, and important issues arise in relation to avoidance of harm.[665]

5.4.5.1 Adaptive management and irreversibility

It is widely accepted that the method will not be appropriate where irreversible harm could be caused to species or ecosystems.[666] Permanent damage may be considered to include damage that is extremely expensive and time consuming to reverse. In addition the concept of irreversibility carries with it the idea that the loss is incommensurable and cannot be substituted.[667] The implication is that experimentation should be avoided when the stakes are too high, for instance where potential burdens may be too great.

Exceptional circumstances may arise, as with the case of the black robin, where inaction will lead to extinction and crisis management by intervention is required. In general terms, however, where the status quo poses little risk but proposed action constitutes a high risk to an endangered

[663] Moyle above n 557 at 166.
[664] Moyle above n 557 at 166.
[665] Doremus and others 2011a above n 654 at 1.
[666] Moyle above n 557 at 166, Doremus, H "Adaptive Management as an Information Problem" 2011b 89 North Carolina Law Review 1455 at 1476, Cooney 2006 above n 557 at 238.
[667] Sunstein, C *Two Conceptions of Irreversible Environmental Harm* (University of Chicago, 407, 2008)15-16.

species, avoidance should be the preferred choice.[668] It is recommended that adaptive management not be used 1) to delay or evade legal requirements, 2) where no opportunity exists to revise or re-evaluate regulatory decisions and 3) where learning is unlikely on the relevant time scale.[669] Furthermore, it is suggested that when uncertainty is high, but controllability of outcomes is low, developing and analysing scenarios, should be the preferred approach.[670]

In terms of irreversibility, it can be argued that a system must have sufficient resilience before experimentation occurs in order to withstand inevitable mistakes or unintended consequences, which can be expected when proceeding with uncertainty.[671] When a species is listed as Threatened this must indicate weakened resilience and vulnerability to disturbance. Indicators of threatened status are commonly factors such as declining population and range restriction[672] that, unsurprisingly, may correlate to a lessening of system resilience. It has been suggested that by the time a species reaches endangered status, self-organisation is either at risk or already lost.[673] These are important matters to reflect upon in the New Zealand context where adaptive management is being vigorously pursued in the context of development permits (see Chapter 8).

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[668] Angelo 2009 above n 600 at 1001 referring to Doremus, H "Adaptive Management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection" 2001 41 Washburn LJ 71.
[669] Doremus and others 2011a above n 654 at 1.
[670] Allen 2011 above n 597 at 1343.
[671] Angelo 2009 above n 600 at 965.
[672] IUCN Standards and Petitions Subcommittee *Guidelines for Using the IUCN Red List Categories and Criteria.* (Prepared by the Standards and Petitions Subcommittee in March 2010) 12.
[673] Benson 2012 above n 614 at 28.

5.4.5.2 Context: experimental species management or development permit

This leads to consideration of the different contexts within which adaptive management may (or may not) be used. When considering the distribution of burdens, adaptive management of a threatened or near-threatened species applied for a species recovery or management purpose (experimental approach), can be distinguished from an adaptive management regime sought in conjunction with development permits (development application). Each has separate objectives: the former can be pursued solely for the benefit of the species while the latter may intend consenting to development, presumably with an associated intention to mitigate impacts on species.

Justification for an experimental approach can be found in the urgency of a recovery programme implemented to prevent threatened extinction. Whereas, in the context of a development application, opportunities may exist to delay the activity whilst more evidence is collected to increase understanding of the risk of impact. The potential distinction to be drawn relates to the consideration of the status quo. In a development consent example, the status quo may be potentially benign to the environment, whereas in a recovery context it is likely that the status quo is harmful.[674] With development there is also the potential to explore alternative sites and methods, a luxury not always available in a recovery crisis. It is accepted that when delaying development there may be economic and other environmental justifications to proceed with the development. In contrast, however, to threatened species, development opportunities are not currently under threat of extinction.

Angelo[675] considers the context of permits for indirect takes under the Endangered Species Act. She recommends the imposition of different

[674] Doremus 2011b above n 666 at 1463.
[675] Angelo 2009 above n 600 at 1002.

standards contingent upon the purpose for which the take is sought. If the primary purpose is for environmental restoration, a lower standard could be applied than if the purpose was, for example, for construction of a highway. Conclusions in terms of the appropriateness of adaptive management can be formed in a similar manner, with a reluctance to apply techniques that may further endanger vulnerable populations. Application of both the precautionary and preventive principle at this point is apposite.

It is accepted that there will be many instances where adaptive management principles will be of value both in the construction of impact assessment evaluations[676] and the issuance of subsequent permits, the caution here applies to appropriateness in the context of threatened or near threatened species. Other issues to consider in terms of application of the approach are the potential for increased costs to stakeholders consequent upon increased monitoring and compliance requirements,[677] excessive discretion and reduced accountability for managers,[678] lack of finality for stakeholders in the face of continual reassessment,[679] increased institutional space and support for learning and experimentation,[680] difficulties of applying the approach where stakeholder consensus must be obtained,[681] poor implementation in practice[682] and problems associated with legal certainty.[683]

In order to protect species in the context of development consents, enforceable standards must be directed through development conditions, which are a key method, applied to define distribution and management of the impacts and associated costs of development. To be enforceable the

[676] Noble, BF "Strengthening EIA Through Adaptive Management: A Systems Perspective" 2000 20 Environmental Impact Assessment Review 97.
[677] Doremus 2011b above n 666 at 1460, Doremus and others 2011a above n 654 at 5.
[678] Doremus and others 2011a above n 654 at 4.
[679] Ruhl and Fischman 2010 above n 615 at 477.
[680] Gunderson and Light, above n 604 at 328.
[681] Doremus and others 2011a above n 654 at 3.
[682] Ruhl and Fischman 2010 above n 615 at 441.
[683] Ruhl and Fischman 2010 above n 615 at 464, Benson and Garmestani 2011a above n 599 at 396, Allen 2011 above n 597 at 1343.

conditions, amongst other things, will need to be measurable, specific and certain. Application of an adaptive management approach premised on experimentation and experiential learning represents an essential challenge to certainty and as such to the enforceability of any condition. In practice this challenge is manoeuvred around by setting parameters or 'envelopes' of acceptable limits and applying strict monitoring and review requirements, which reinforces the importance of effective review mechanisms.

In terms of the relationship to avoiding harm to threatened species an essential understanding is that in some contexts adaptive management is simply inappropriate.[684] Doremus cautions that: "promises of future adaptive management cannot justify authorizing environmentally damaging activities unless those harms will in fact be reversible." A better approach may be to delay the development so that clear standards can be set or alternative sites sought. (See Chapter 8 which considers adaptive management in relation to case study species in New Zealand.)

So far, this chapter has mainly looked at methods applying to site or project specific issues. Moving to a different spatial scale that of the landscape level, may yield further insights into the avoiding harm to birds.

5.4.6 LANDSCAPE LEVEL CONSERVATION PLANNING

Doremus[685] argues that humans should reconceive current spatial configurations of the environment given the pressing uncertainty of the impacts of global climate change. Rather than animals being constrained to inviolate patches of the land and seascape, harmful activities should be confined, at least until the full implications of climate change and other

[684] Doremus and others 2011a above n 654 at 14.
[685] Doremus, H "The Endangered Species Act: Static Law Meets Dynamic World" 2010 32 Journal of Law & Policy 175 at 233.

anthropogenic forces are understood. This would necessitate a move away from the notion that a perfect balance between economic development and nature can be struck, as assumed by the Principle of Sustainable Development and instead would rely on a more comprehensive understanding of the dynamics of the environment and the impacts of development. In fisheries management, Thorne-Miller[686] echoes such a vision, whereby the current zoning system would be flipped on its head such that protection of fisheries became the default position and fishing the exception. While such a radical repositioning has significant practical and economic limitations, nevertheless it provides an opportunity to reflect upon the current balance and consider protective alternatives. This chapter introduces opportunity to reposition, which will subsequently be further considered in the New Zealand context.

Traditionally, protected areas were the prime measure applied in conservation planning, however, issues of lack of scale, fragmentation and lack of representativeness in terms of ecosystems and species presence have driven the need for the approach to be supplemented.[687] In seeking solutions to this problem Opdam and Wiens[688] urge the construction of an approach whereby "habitat" versus "non habitat" view of the world is moved away from and replaced by one that recognises the compositional and structural heterogeneity of entire landscapes. They argue that the ability to understand the consequences of human actions requires a consideration of the spatial

[686] Thorne-Miller, B "Setting the Right Goals: Marine Fisheries and Sustainability in Large Ecosystems" in Meyers, NJ and Raffensperger, C (eds) *Precautionary Tools for Reshaping Environmental Policy* (MIT Press, Cambridge, MA, 2006) 188-9.
[687] Polasky, S, Nelson, E, Camm, J, and others "Where to Put Things? Spatial Land Management to Sustain Biodiversity and Economic Returns" 2008 141 Biological Conservation 1506, Visconti, P, Pressey, RL, Segan, DB, and others "Conservation Planning with Dynamic Threats: The Role of Spatial Design and Priority Setting for Species' Persistence" 2010 143 Biological Conservation 756, Butchart, SHM, Scharlemann, JPW, Evans, MI, and others "Protecting Important Sites for Biodiversity Contributes to Meeting Global Conservation Targets" 2012 7 PloS one 2, Selman, P *Planning at the Landscape Scale* (Routledge, 2006), 39.
[688] Opdam, P and Wiens, JA "Fragmentation, Habitat Loss and Landscape Management" in Norris, K and Pain, D J (eds) *Conserving Bird Biodiversity: General Principles and their Application* (Cambridge University Press, Cambridge, UK, 2002).

texture of habitats, of thresholds in landscape structure, and of the ecological and behavioural characteristics of the species of interest. This points to the need to blend conservation planning with development planning. Taking a landscape scale makes it clear how the spaces used by animals do not respect the arbitrary lines drawn by humans designating ownership or regulating activities.

Ecological sustainability can be better achieved when the landscape structure supports those ecological processes required for the landscape to deliver biodiversity services.[689] The importance of conservation planning in "working lands" beyond protected areas is increasingly recognised and new spatial planning methods are evolving to cater for this need.[690] Developing pervasive responses that correspond to the distribution of species in time and space strengthens protection in contrast to the silos of protected areas, or the bounded concerns of a development permit.

Landscape level conservation planning sits closely with an ecosystem focus and presents an opportunity to buffer the reactive elements of EIA and further, to manage cumulative effects in a more integrated and holistic manner.[691] Cumulative effects, defined by Johnson as "the synergistic, interactive or unpredictable outcomes of multiple land-use practices or development that aggregate over time and space, and have significant impacts for valued components of the environment"[692] are as demonstrated in Chapter

[689] Opdam, P, Steingröver, E and van Rooij, S "Ecological Networks: A Spatial Concept for Multi-Actor Planning of Sustainable Landscapes" 2006 75 Landscape and Urban Planning 322.
[690] Polasky above n 687 at 1506 referring to Franklin, 1993; Hansen and others, 1993; Miller, 1996; Reid, 1996; Wear and others, 1996; Daily and others, 2001, 2003; Rosenzweig, 2003; Polasky and others, 2005; and Pereira and Daily, 2006, Visconti, P, and others above n 687 Pressey, RL and Bottrill, MC "Approaches to Landscape- And Seascape-scale Conservation Planning: Convergence, Contrasts and Challenges" 2009 43 Oryx 464, Lausche, B, Farrier, D, Verschuuren, J, and others *The Legal Aspects of Connectivity Conservation: A Concept Paper* (IUCN, IUCN Environmental Policy and Law Paper No. 85, 2013) 114-115. This latter article notes inter alia the use of biodiversity certification of land use plans in New South Wales, Australia applied to give priority. to nature conservation in land use planning processes.
[691] Johnson above n 621 at 31.
[692] Johnson above n 621 at 30, referring to Ross 1998 and Harriman and Noble 2008.

4 a significant problem for birds. Adopting a landscape perspective may also overcome criticisms of the mitigation hierarchy, discussed in section 5.4.3, for its inadequacy in leaving a comparative vacuum when quantifying whether avoidance, remediation, mitigation or compensation is the appropriate technique.[693] In addition taking the focus to the strategic level enables better opportunity to scrutinise alternatives not so visible at the project level as well as well as identifying opportunities for positive outcomes for species as opposed to a narrow project level considerations of the degree of significance of damage.[694] Furthermore it provides an opportunity to make visible priorities that are considered non-negotiable in terms of trade-offs, such as protection of threatened species.

While general planning on a landscape scale is well advanced, extending a strategic spatial approach to consider mobile species and their respective habitats and development in the landscape is less so. Significant work has been undertaken identifying national and international flyways and connection routes, and methods are evolving to use this knowledge to manage the effects of human development.[695] A recent advance has been made in the field of energy planning through a four step framework coined "Energy by Design (EByD)" which involves the development of a landscape level conservation plan blended with the mitigation hierarchy to "identify situations where development plans and conservation outcomes may be in conflict".[696]

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693 Kiesecker above n 623 at 163.
694 Gibson above n 596 at 5.
695 Boere, GC and Piersma, T "Flyway Protection and the Predicament of our Migrant Birds: a Critical Look at International Conservation Policies and The Dutch Wadden Sea" 2012 68 Ocean & Coastal Management 157, Boere, GC and Stroud, DA "The Flyway Concept: What it Is and What it Isn't" in Boere, G C, Galbraith, C A and Stroud, D A (eds) *Waterbirds Around the World: A Global Overview of the Conservation, Management and Research of the World's Waterbird Flyways* (The Stationery Office, Edinburgh, 2006), Kirby, JS, Stattersfield, AJ, Butchart, SHM, and others "Key Conservation Issues for Migratory Land-and Waterbird Species on the World's Major Flyways" 2008 18 Bird Conservation International 49, Australian Government *National Wildlife Corridors Plan: A Framework for Landscape-scale Conservation* (Department of Sustainability, Environment, Water, Population and Communities, 2012).
696 Kiesecker above n 623 at 162.

EbyD uses landscape level conservation plans to locate and configure areas that can be managed to maintain viability of biodiversity and other natural features as well as formulating forward-looking visions that include biological features, their distribution and what they need to persist.[697] The EByD process entails an analysis of conservation plans in the context of future development. It militates against conflict between potential development and areas critical for biodiversity and provides structure for decision making in terms of the mitigation hierarchy.[698] For example, the recount of mitigation for the greater sage-grouse depicts black areas where risk must be avoided and negated, dark grey areas where damage can be avoided and offset and medium gray areas where impacts are restored and offset.[699] Applying a similar method in a different context, researchers prepared a bird sensitivity map to help plan onshore wind farms in Scotland and created a spatial model at landscape scale designed to predict areas of greatest sensitivity for birds.[700] Other recent innovations include computer programmes designed to enable spatial conservation-prioritisation programmes to prioritise locations to protect species, habitats, ecosystem services, or any other desired features.[701]

The preparation of landscape level conservation plans corresponding to development and the mitigation hierarchy is an intensive and data-hungry exercise, necessitating comprehensive data describing the impacts of specific development and the characteristics of the receiving environment.[702] In terms of impacts upon avian species, data for particular species is thought to be deficient in areas such as species distributions, patterns of movement, connections between habitat and the nature and effect of new and existing

[697] Kiesecker above n 623 at 163.
[698] Kiesecker above n 623 at 164.
[699] Kiesecker above n 623 at 167.
[700] Bright, J, Langston, R, Bullman, R, and others "Map of Bird Sensitivities to Wind Farms in Scotland: A Tool to Aid Planning and Conservation" 2008 141 Biological Conservation 2342.
[701] See for example Moilanen 2012 above n 633 and discussion of the Zonation software at B.
[702] Moilanen 2012 above n 633 at B.

technology and development upon species.[703] The example of avian sensitivity to human disturbance in the landscape is instructive. The effect is widely acknowledged, but varies between species, and there is insufficient species-specific evidence as to when it will be a serious problem and what levels might cause the problem.[704] Scholars underscore the importance of integrating the geographical approach, whereby landscapes are studied by pattern, and the ecological approach, whereby landscapes are studied by process.[705]

Accordingly to be comprehensive, landscape level conservation plans should incorporate both geographical and ecological information. This raises the problem of insufficient connection between both researchers and policy makers and recommends the integration of policy and decision making within research projects.[706]

Collaboration between policy, industry and research also assists in strategically understanding the requirements of particular industry and potential impacts on biodiversity. There is, however, a need for improvement in forecasting tools,[707] and also for the rigorous validation of predictive models to improve accuracy in prediction.[708] Although there are reports of weak

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703 Bennett, AF *Linkages in the Landscape; The Role of Corridors and Connectivity in Wildlife Conservation* (2nd ed, IUCN, Gland, Switzerland, 2003) 5, Bouwma, IM, Jongman, RHG and Butovsky, RO *Indicative Map of the Pan-European Ecological Network for Central and Eastern Europe: Technical Background Document* (European Centre for Nature Conservation (ECNC), 2002) 130, Boardman above n 1 at 214, 161 and 217-218, Boere, GC and Rubec, CDA "Conservation Policies and Programmes Affecting Birds" in Norris, K (ed) *Conserving Bird Biodiversity: General Principles and Their Application* (Cambridge University Press, Cambridge, UK, 2002) 249.

704 Liley, D and Sutherland, WJ "Predicting the Population Consequences of Human Disturbance for Ringed Plovers Charadrius hiaticula: A Game Theory Approach" 2007 149 Ibis 82.

705 Opdam above n 688 at 767.

706 Sutherland, WJ "Predicting the Ecological Consequences of Environmental Change: A Review of the Methods" 2006 43 Journal of Applied Ecology 613.

707 Doremus above n 685 at 234, Norris, K and Stillman, R "Predicting the Impact of Environmental Change" in Norris, K and Pain, D J (eds) *Conserving Bird Biodiversity: General Principles and their Application* (Cambridge University Press, Cambridge, UK, 2002) 180, Sutherland above n 706 at 600.

708 Bellard, C, Bertelsmeier, C, Leadley, P, and others "Impacts of Climate Change on the Future of Biodiversity" 2012 15 Ecology Letters 375.

relationships between risk assessment and subsequent outcomes, this underscores the need for precaution particularly when dealing with vulnerable species and ecosystems.[709] Yet, the examples provided above suggest that the approach provides clear benefits by improving certainty for development. Moreover, detailed landscape level conservation plans may indicate the most beneficial places for intensive pest management to occur, while at the same time providing considered opportunities for environmental enhancement as part of the mitigation hierarchy. There is also an opportunity to extend the application of the mitigation hierarchy to the seascape.[710]

5.5 CONCLUSION

In determining the distribution of burden to birds, the incidence of ownership may correlate to the detriment of birds, including loss and degradation of habitat and resources upon which they depend. To counter this, convincing arguments exist to revisit the structure and effect of private property to make explicit inherent limitations upon private property rights, to enable ecological protection.

Avoiding irreversible losses to biodiversity is a position widely supported in principle. The discussion in section 5.2.4 demonstrated that, when compared to other principles, the Precautionary Principle in active form provides the soundest foundation for alleviating the extent of the environmental burden taken by birds. Avoidance of significant harm to all biodiversity is also endorsed. It also demonstrated that strong versions of either the Precautionary Principle or the Preventive Principle support an aim of avoidance of harm to Threatened and At Risk species and ecosystems,

[709] Ferrer, M, de Lucas, M, Janss, GFE, and others "Weak Relationship Between Risk Assessment Studies and Recorded Mortality in Wind Farms" 2012 49 Journal of Applied Ecology 38.
[710] Donlan, C and Wilcox, C "Integrating Invasive Mammal Eradications and Biodiversity Offsets for Fisheries Bycatch: Conservation Opportunities and Challenges for Seabirds and Sea Turtles" 2008 10 Biological Invasions 1053.

including ecosystem processes, based upon the requirement to prevent irreversible loss of biodiversity.

However, the potential drawbacks to economic development through strengthening the requirements for precaution and prevention pose concerns. A method to prevent further biodiversity losses in a determined manner, but continue to enable appropriate development, is to provide an exception via conservation "net gain" where the costs of avoidance are grossly disproportionate to the benefit. Constituting the habitats of Threatened and At Risk birds as areas where prima facie avoidance of all but minor harm is required, strengthens protection as would avoidance of all irreversible harm to birds.

The discussion of scientific methods that operationalise the Principles, showed that applying an ecosystem approach and supporting both ecological integrity and resilience in conservation planning promotes clear benefits for whole system wellness. In particular iterations, this will also support an avoidance of harm to species approach. The protection of ecological integrity is particularly valuable in protecting mobile species in the land and seascape.

The discussion on methods in section 5.4.5 highlights that the responsiveness of active adaptive management methods is helpful in reversing biodiversity declines where carefully implemented. Application of any method premised on experimentation and experiential learning may not be appropriate in the management of Threatened or At Risk species. In this respect the use of adaptive management in species recovery programmes should be distinguished from the use of the method in the context of development permits.

Section 5.4.6 introduced the notion of scale and argues that there is an opportunity to promote avoidance of harm in the development of landscape level conservation plans tied to the mitigation hierarchy, with capacity to extend the concept to the seascape. Effectiveness of such plans is reliant upon adequate data and reliable predictive models. Where upper thresholds are unknown a precautious approach of avoidance should be applied.

With these matters in mind the following chapters will now consider how the construction of New Zealand law influences distribution of harm to birds, and discuss constraints and opportunities associated with effecting any redistribution.

CHAPTER SIX: DISTRIBUTION OF BENEFIT AND HARM TO SPECIES THROUGH LAW AND PLANNING IN NEW ZEALAND - INTERNATIONAL OBLIGATIONS

RECOGNIZING that the States are and must be the protectors of the migratory species of wild animals that live within or pass through their national jurisdictional boundaries

Preamble, Convention on the Conservation of Migratory Species of Wild Animals

6.1 INTRODUCTION

The Preamble of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) recognises that migratory species are in need of protection and that humans have the power to provide that protection. But to what extent is this rhetoric that can be manipulated to allow competing interests to prevail? The continuing biodiversity loss documented in the preceding chapter suggests that the biodiversity conservation aims of international law are failing to produce the desired results. Reasons for this include: ineffective implementation at the national scale, lack of political will, inertia, insufficient technical knowledge and capacity, limited stakeholder collaboration, legal and juridical impediments, natural phenomena including climate change, lack of integration across sectors, the primacy of economic development and a failure to mainstream.[711]

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[711] Shearing, S "Biodiversity" in Leary, DK and Pisupati, B (eds) *The Future of International Environmental Law* (United Nations University, New York, 2010) 42 at 48, Herkenrath, P "Birds and the Convention on Biological Diversity: can Ornithologists and Bird Conservationists make a Difference?" 2001 12 Bird Conservation International 99, Harrop, SR "Living In Harmony with Nature? Outcomes of the 2010 Nagoya Conference of the Convention on Biological Diversity" 2011 23 Journal of Environmental Law 117, Harrop, SR and Pritchard, DJ "A Hard Instrument Goes Soft: The Implications of the Convention on Biological Diversity's Current Trajectory" 2011 21 Global Environmental Change 474, Robinson, N "Reflecting on Rio: Environmental law in the Coming Decades" in Benidickson, J, Boer, B, Benjamin, A, and others (eds) *Environmental law and Sustainability after Rio* (Edward Elgar Publishing Ltd, United Kingdom, 2011) 24-26, Bowman, M J "International Treaties and the Global Protection of Birds Part II" 1999 11, Environmental Law 281 at 298, Morgera, E and Tsioumani, E

This chapter examines the international law relating to the protection of birds in New Zealand. In particular, this will consider the extent to which international law influences the distribution of harm and benefit to the case study species in view of the threats identified in Chapter 4, drawing on other species where relevant. This will identify the intention of international instruments as they relate to protective principles and mechanisms and consider the benefit (or otherwise) that international instruments provide for the case study species. To this end, the chapter begins by considering the role of international law before detailing the features of three conventions. The chapter considers the potential benefits and limitations to the case study species provided by such international instruments. Chapters 7 and 8 will then consider related issues in the context of domestic law and policy.

Yesterday, Today and Tomorrow: Looking Afresh at the Convention on Biological Diversity (University of Edinburgh, 2011) referring to Chandler, M "The Biodiversity Convention: Selected Issues of Interest to the International Lawyer," 1993 4 Colo. J. Int'l Envtl. L. & Pol'y, Noss, RF, Dobson, AP, Baldwin, R, and others "Bolder Thinking for Conservation" 2011 26 Conservation Biology 1, Sand, PH "A Century of Green Lessons: The Contribution of Nature Conservation Regimes to Global Governance" 2001 1 International Environmental Agreements: Politics, Law and Economics 33, Boardman above n 1 at chapter 8, Rands, MRW, Adams, WM, Bennun, L, and others "Biodiversity Conservation: Challenges Beyond 2010" 2010 329 Science 1298, Waldron, A, Mooers, AO, Miller, DC, and others "Targeting Global Conservation Funding to Limit Immediate Biodiversity Declines"2013 110 Proceedings of the National Academy of Sciences 12144, McCarthy, DP, Donald, PF, Scharlemann, JPW, and others "Financial Costs of Meeting Global Biodiversity Conservation Targets: Current Spending and Unmet Needs" 2012 338 Science 946, Chandra, A and Idrisova, A "Convention on Biological Diversity: a Review of National Challenges and Opportunities for Implementation" 2011 20 Biodiversity and Conservation 3295.

6.2 INTERNATIONAL LAW

6.2.1 POSITIONING INTERNATIONAL ENVIRONMENTAL LAW

Framed on a global basis, international law is typically comprised of broad principles that can be refined and applied to particular local conditions. This position reflects the realities of global governance and accords with the principle of subsidiarity, which encourages local-level decision making. Despite this, international law becomes increasingly complex, as multiple layers of decisions of the Parties are tagged onto original agreements, responding to the exigencies of a rapidly changing global environment. There is no singular agreement relating to the protection of animals, rather numerous instruments deal with the protection of animals. This chapter considers how the interests of birds are positioned within a system where the dominant paradigm of anthropocentrism protects sovereign rights to exploitation and in the face of "sectoral and demand driven"[712] economic imperatives.

6.2.2 THE NEW ZEALAND OBLIGATIONS

New Zealand is party to a wide range of international agreements, including a significant number relating to environmental matters. As such, New Zealand must comply with the agreements and where necessary, give full effect to them in domestic law.[713] A review of all international agreements identified three that are particularly relevant to the case study species, which are the

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[712] Convention on Wetlands of International Importance especially as Waterfowl Habitat. Ramsar (Iran), 2 February 1971. UN Treaty Series No. 14583. As amended by the Paris Protocol, 3 December 1982, and Regina Amendments, 28 May 1987, Ramsar Convention Secretariat *The Ramsar Strategic Plan 2009-2015: Goals, Strategies, and Expectations for the Ramsar Convention's Implementation for the Period 2009 to 2015* (Ramsar Convention Secretariat, 2010a) 10.

[713] Ministry for the Environment "Multilateral Environmental Agreements" http://www.mfe.govt.nz/laws/meas/, Law Commission *A New Zealand Guide to International Law and its Sources* (Law Commission, NZLC R34, 1996) 2.

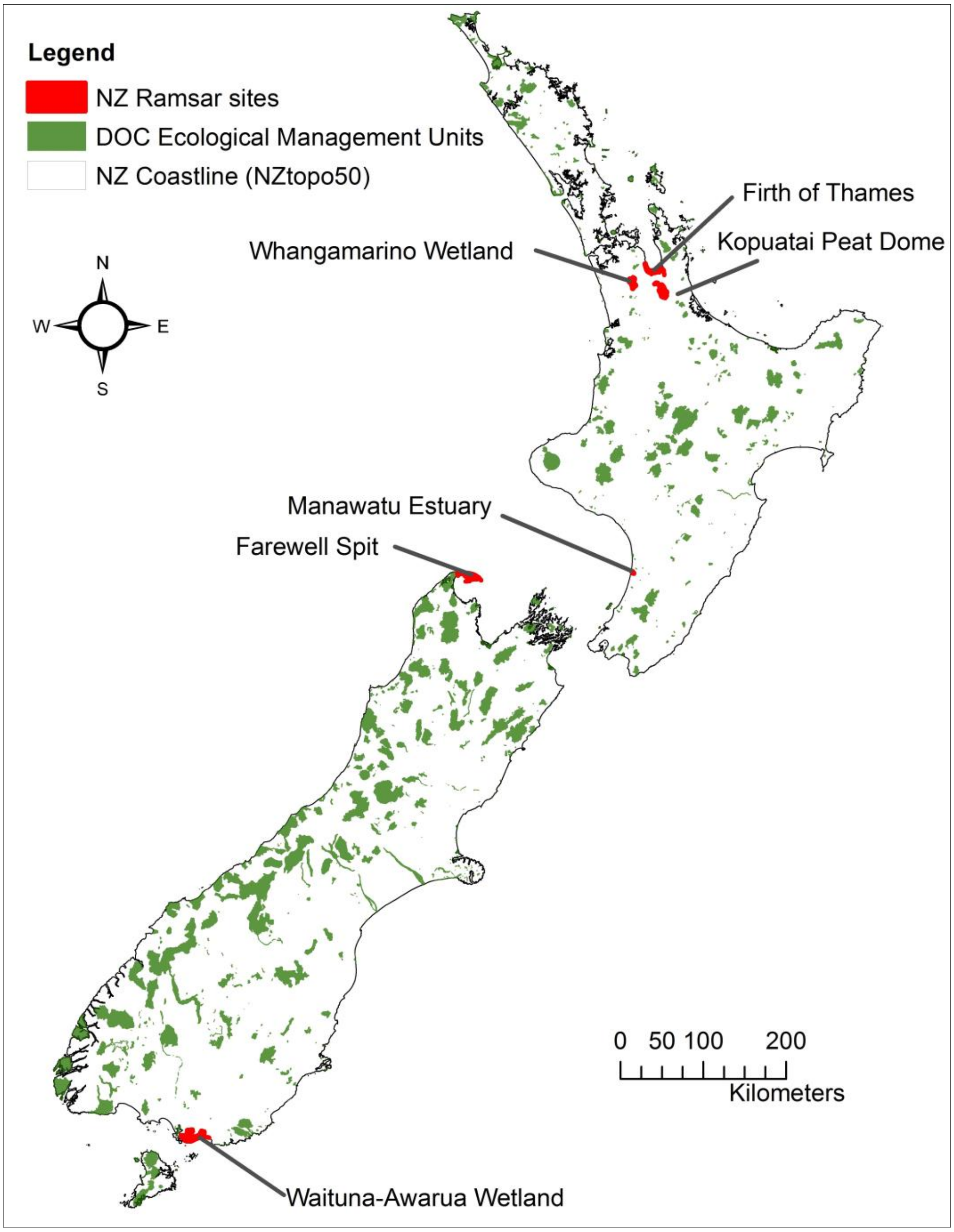
Convention on Wetlands of International Importance (Ramsar) (Section 6.3), the Convention on Biodiversity (CBD) (Section 6.4) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS) (Section 6.5).

6.3 CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE (RAMSAR)

The Convention on Wetlands of International Importance has significant potential for protecting the wetland habitat of avian species in New Zealand. Directed towards wetlands at an ecosystem level, Ramsar affords protection to five major wetland types: coastal marine, estuarine, those associated with lakes, the riverine and marshy areas.[714] Ramsar was initiated in 1971 and New Zealand became a Party in 1976. Acceding Parties are obliged to designate at least one wetland that is of international importance. As at 2014, New Zealand has designated six wetlands (Figure 52 and Table 8). In addition to the conservation of listed sites pursuant to Article 1, Ramsar creates additional obligations to promote wise use of all wetlands (Article 2), and to establish nature reserves in wetlands regardless of international importance (Article 3). International cooperation is fostered by Article 5, of particular value to New Zealand migratory species such as the bar-tailed godwit, black petrel and sooty shearwater.

[714] Ramsar Convention Secretariat *The Ramsar Convention Manual, A Guide to the Convention on Wetlands (Ramsar, Iran, 1971)* (Ramsar Convention Secretariat, Gland, Switzerland, 2013) 7.

Figure 52 Map of New Zealand Ramsar sites



Source: Coastline is LINZ NZTopo50 Coastline, Ecological Management Units and Ramsar site boundaries sourced from Department of Conservation.

Table 8 New Zealand Ramsar site descriptions. Bird species in bold indicate the case study species.

Date listed	Site	Area(ha)	Description and relevance to case study species
1976	Awarua Wetland with Waituna Lagoon	18,900	One of the largest wetland complexes in New Zealand (NZ). High bird diversity with 81 bird species recorded present including **wrybill**, southern NZ dotterel, and **eastern bar-tailed godwit**.
1976	Farewell Spit	11,400	A sandspit with extensive tidal mudflats and associated sand dunes. High bird diversity with 95 bird species recorded including southern NZ dotterel. A strong -hold for the **eastern bar-tailed godwit**, **wrybill** an occasional visitor.
1989	Whangamarino wetland	5,900	Extensive peat bog and mineralised swamp. Important habitat for a range of bird species. **No case study species** present.
1989	Kopuatai Peat Dome	10,200	Largest raised peat dome in natural condition remaining in NZ. High bird diversity with 54 species recorded present, **no case study species**.
1990	Firth of Thames	7,800	Extensive shallow tidal flats and shell banks constituting an internationally important feeding ground large numbers of birds (up to 40,000). Seventy four bird species recorded. The most important wintering ground for the **wrybill**, a strong hold for the **eastern bar-tailed godwit** and small numbers of **NZ dotterel** visit regularly and are known to nest at Miranda.
2005	Manawatu river mouth and estuary	200	Moderately sized estuary with high degree of naturalness and diversity. High bird diversity and an important feeding ground for international migrants including the **eastern bar-tailed godwit**. Supports more than 1% of global population of **wrybill** during migration passage and as a wintering site.

Source: Ramsar Wetlands International, Ramsar Information Sheets http://ramsar.wetlands.org/Database/SearchforRamsarsites/tabid/765/Default.aspx access date August 2013.

Ramsar is premised upon the concept of "wise use", a notion that emerged in the 1970s. The Ramsar text recognises the interdependence of humans and the environment and underscores the economic, cultural, scientific, and recreational value of wetlands to humans. More recent interpretations[715] equate "wise" with "sustainable", which means that those countries that contracting to it focus upon sustainable utilisation defined as "human use of a wetland so that it may yield the greatest continuous benefit to present generations while the [the wetland] maintains its potential to meet the need and aspirations of future generations".[716] Although explicitly positioned within the context of sustainable development, a 2005 redefinition of "wise" use engages more overtly with ecological approaches: "Wise use of wetlands is the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development."[717]

Such a redefinition signifies the evolution of Ramsar, the text is explained and modified by resolutions and guidance materials in light of increasing environmental pressures and scientific and cultural insight. Incremental modifications are not, however, legally binding and can be readily lost from sight when appended as a long list of interpretative materials. Ramsar was initiated before the principles of prevention and precaution were fully developed and subsequent resolutions seek to incorporate them.[718]

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[715] (2005) "Additional Scientific and Technical guidance for Implementing the Ramsar wise Use concept" Resolution IX.1, Annex A, Para.22, (2002) "Principles for Incorporating Wetland Issues into Integrated Coastal Management" Resolution VIII.47, (1993) "Wise Use of Wetlands "Resolution V.6, (1990) "Guidelines for the Implementation of the Wise Use Concept" Recommendation 4.10, Annex, (1987) "Wise Use of Wetlands. Annex. Definition of Wise Use" Recommendation 3.3; Ramsar Art.3.1.

[716] Gillespie, A *Conservation, Biodiversity and International Law* (Edward Elgar Pub, Cheltenham, 2011) 42.

[717] Resolution IX.1 (2005) "Ecological "outcome-oriented" Indicators for Assessing the Implementation Effectiveness of the Ramsar Convention" Resolution IX.1.

[718] (2002) "New Guidelines for Management Planning of Ramsar Sites" Resolution VIII.14, ch VI, (2002) Guidelines on the Management and Allocation of Water" Resolution VIII.1.

Parties are invited to take the Principle into consideration when implementing a wetland management planning process.[719] Later guidance considers that "enshrining the principles of prevention, precaution and 'the polluter pays' into decision-making on activities affecting wetlands" are key factors to enhance the effectiveness of regulatory measures.[720]

The concept of wise use is also further explained and associated measures to achieve the standard are recommended. Fundamental recommendations include: the preparation of a national wetland policy, the development of programmes for wetland inventory, monitoring, research and education, and the development of integrated management plans for all aspects of the wetlands and their relationships to the catchment.[721]

The Ramsar guidance also suggests an extensive range of integrated catchment and coastal zone measures to regulate water quality and quantity, preserve flood control and natural resource production functions, minimize erosion, achieve sustainable use of natural resources and regulate/manage a range of sectoral activities including agriculture, forestry and fisheries. In addition it supports the development of regulatory measures which extend to wetland threats not routinely captured in contemporary systems, such as the prohibition or restriction of fertilisers and biocides, and upon activities that modify the soil so as to cause erosion or degradation of water sheds.[722]

Associated with regulatory measures, Ramsar Parties have long supported requirements for Environmental Impact Assessment (EIA) in conjunction with large-scale wetland transformation and for wetlands that

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719 Resolution VIII.14, ch VI, 40 ibid.
720 Ramsar Convention Secretariat *Laws and Institutions: Reviewing Laws and Institutions to Promote the Conservation and Wise use of Wetlands* (4th ed, Ramsar Convention Secretariat, Gland, Switzerland, 2010b) 3, 38.
721 Ramsar Convention Secretariat 2010a above n 712 at 46.
722 Ramsar Convention Secretariat 2010b above n 720 at 37.

may be threatened by proposed developments.[723] The guidance also summarises decisions suggesting that Parties should ensure that under relevant legislation EIA processes extend into project implementation to enable monitoring of predicted effects and that EIA not be restricted to the site of proposed development but address influences and interactions of water systems at the catchment level. Extending EIA to the strategic level of addressing cumulative effects of several projects and of plans projects and policies is also recommended.[724] Chapter 4 highlighted the problem of cumulative effects for the case study birds, and the following section will now consider Ramsar in the New Zealand context.

6.3.2 RAMSAR IN CONTEXT

Turning to the case study species, the focus question is how does Ramsar influence the position of the case study species? In New Zealand's case, Ramsar's reach seems limited in certain respects. Using the Firth of Thames as an example, but drawing heavily on parallels from Kopuatai, Whangamarino and Waituna Lagoon, it is apparent that designated sites suffer a plight relatively similar to unprotected lands and water. At the sites, birds are exposed to a range of threats caused, inter alia, by development and activity in the catchment from sectors such agriculture and forestry. Habitat loss and modification due to degradation of water quality, sedimentation, vegetative change, drainage, flood protection works, mammalian predators and pollution threaten the wrybill, dotterel and godwit.[725]

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[723] As summarised in (1996) Relevant Resolutions and Recommendations, Recommendation 6.2 (adopted by the 6th Conference of the Contracting Parties, Brisbane, Australia, 1996), Gillespie, A *Conservation, Biodiversity and International Law* (Edward Elgar Pub, Cheltenham, 2011) 476.
[724] Ramsar Convention Secretariat 2010b above n 720 at 39.
[725] For description at Firth of Thames site see: Brownell above n 367 at 14.

The situation at Waituna Lagoon is so serious that scientists warn of the real risk of a catastrophic change in state, due to excessive nutrient loads[726] exacerbated by a significant rate of conversion to dairy farming in the southland Region. The *National Report on the Implementation of the Ramsar Convention on Wetlands by New Zealand* described these potential threats to ecological character as "an emerging challenge".[727] Therefore, analysing the state and vulnerability of these sites provides insight into the reach of protective mechanisms.

Ramsar raises the profile of wetlands as ecosystems under pressure and has produced extensive guidance for wetland conservation and restoration.[728] Raising the profile of designated sites can increase governmental and community support. The Arawai Kakariki programme, established by the Department of Conservation, aims to enhance the ecological restoration of three of New Zealand's foremost wetlands, two of the three chosen sites (Whangamarino and Awarua) are Ramsar sites. Moreover, sites are more likely to attract visitors, other income generating sources and international status is also useful to support specific funding applications.[729]

Site designation may provide better protection. Designation as internationally important implies a site of national and regional significance, potentially supporting inclusion in national, regional and local protection schemes. In New Zealand, the sites gain additional protection from impacts from mining developments through specific inclusion within Schedule 4 of the Crown Minerals Act 1991 (as amended by s 61 of the Crown Minerals Amendment Act 2013).

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[726] Scanes, P *Nutrient Loads to Protect Environmental Values in Waituna Lagoon, Southland NZ* (Environment Southland, 2012) 1.
[727] Department of Conservation National Report on the Implementation of the Ramsar Convention on Wetlands by New Zealand (Department of Conservation, 2012) 9.
[728] For a full list of resolutions and recommendations see Appendix 2 of The Ramsar Convention Manual above n 714.
[729] Woodley, K pers.comm. August 2013.

Ramsar also brings a focus on ecological character, which is vital for protecting the integrity of the site. By Article 3.2 of the Convention, Parties commit themselves to informing the Ramsar secretariat if there are changes or imminent threats to the ecological character of a site on the Ramsar list.[730] This commitment has led to the adoption of a working definition of ecological character together with guidelines for describing and maintaining the ecological character of listed sites[731] and the development of a framework for processes of detecting, reporting and responding to change in wetland ecological character.[732] In addition, it requires that reports on sites should be filed by the administering agency for each Convention of the Parties, held every three to four years, thus ensuring that checks are routinely made on the threats to wetland sites and changes in their condition.

6.3.3 LIMITATIONS

Though Ramsar creates a strong foundation upon which to build wetland protection, it cannot solely resolve wider problems in the environment and, in New Zealand, there are problems trying to translate the approach into practice. The issues can be divided into four categories:

1) Limitations of generic site based legal protection,
2) Lack of force and influence,
3) Lack of agency integration,
4) Lack of sites designated in New Zealand.

Each of these will now be considered.

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[730] Ramsar Convention Secretariat 2013 above n 714 at 52.

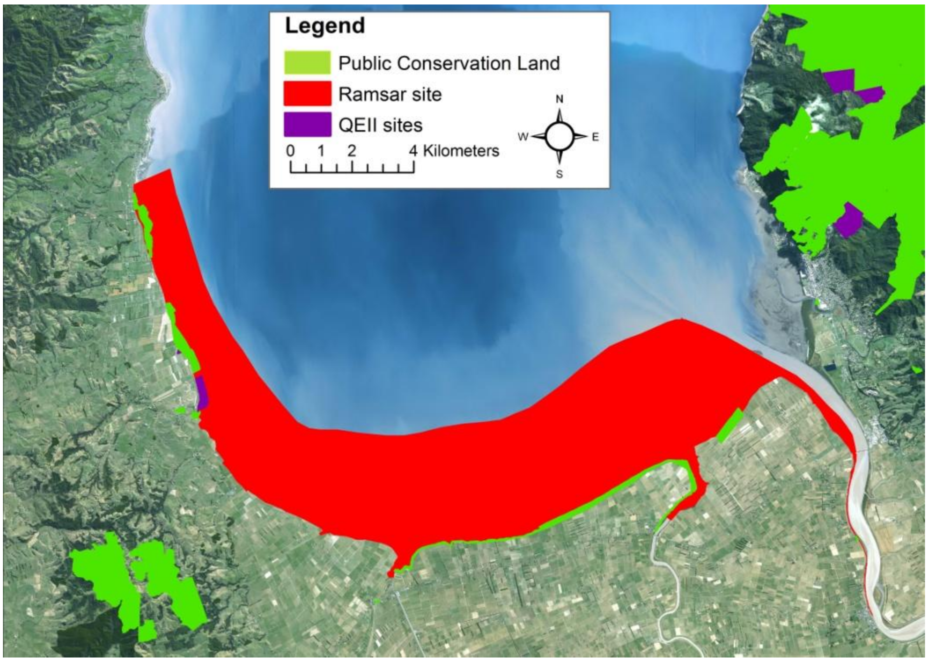
[731] (1996) "Working definitions of ecological character, guidelines for describing and maintaining the ecological character of listed sites, and guidelines for operation of the Montreux Record" Resolution VI.1, , Ramsar Convention Secretariat 2013 above n 714 at 25.

[732] (2002) Assessing and Reporting the Status and Trends of Wetlands, and the Implementation of Article 3.2 of the Convention Resolution VIII.8, (2008) "A Framework for processes of detecting, reporting and responding to change in wetland ecological character" Resolution X.16, Ramsar Convention Secretariat 2013 above n 714 at 31.

6.3.3.1 Limitations of generic site based legal protection

The greatest problem is the inability of site-based legal protection to extend to limiting the impacts of activities beyond the site. Figure 53 shows a map of the Firth of Thames Ramsar site, 8927 ha in area and situated almost exclusively within the coastal marine area.

Figure 53 Map of Firth of Thames Ramsar site



Source: Ramsar and Public Conservation Lands layers sourced from Department of Conservation. QEII layer sourced from the Queen Elizabeth II Trust covenant GIS layer. Background imagery sourced from SPOTmaps natural colour satellite imagery 2008/2009 (SPOT-5)

The main impacts to the site are external: private land activities occur directly on (and some within)[733] the boundaries of the site. The land bounding the coastal marine area is heavily modified by the presence of flood protection works, drainage channels and vegetation clearance, stock grazing and other farming activities (Figures 54, 55 and 56). There is no buffer zone to protect

[733] For instance the grazing of stock, reclamation, drainage works, vehicle access and rubbish disposal, see for example Waikato Regional Council Abatement Notice issued to Flint Farms Ltd pursuant to s 324 RMA 16 August 2013 DOC#2800980.

the site, as is recommended in Ramsar guidance and for contemporary legislative schemes.[734]

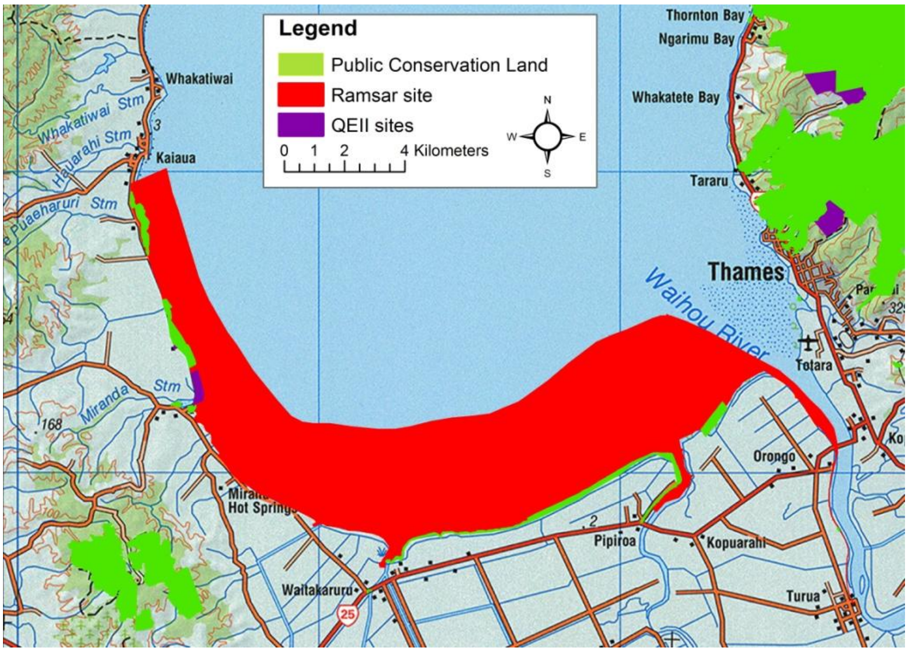
Figure 54 Firth of Thames site wrybill with farmland to the south in the background

Figure 55 Firth of Thames site, wrybill and surrounding land use

[734] (2002) "New Guidelines for Management Planning of Ramsar Sites" Resolution VIII.14, ch VI, Annex, X, Lausche, B, Farrier, D, Verschuuren, J, and others *The Legal Aspects of Connectivity Conservation: A Concept Paper* (IUCN, 2013) 92.

An additional problem arises due to the rigid boundaries of the site-based protection, which fail to reflect the flow of ecological processes and the movement of species, thus creating a further vulnerability in protective effect. The Firth of Thames site is situated largely below mean high water springs and, thus, fails to incorporate much of the landward margins which species such as the wrybill, godwit and dotterel make use of. Additional protection has been tacked onto some of these margins, and included within the Ramsar site, through the employment of Taramaire Government Purpose Coastal Reserve for wildlife management on public land under s 22 Reserves Act 1977 and through the employment of a covenant on private land under the Queen Elizabeth II National Trust Act 1977 (Figure 56). Yet in practice, the protection afforded to such reserves amounts to little more than the ability to shepherd the public through the use of fences and gates. For the Taramaire reserve, the Department of Conservation as the administering body is empowered to prepare a conservation management plan pursuant to s 40B of the Reserves Act 1977 and to carry out species management, but, as discussed later, scarce government management is evident at the site.

Figure 56 Map of Firth of Thames Ramsar site and associated reserves



Source: Ramsar and Public Conservation Lands layers sourced from Department of Conservation. QEII layer sourced from the Queen Elizabeth II Trust covenant GIS layer. Background imagery sourced from TOPO50 Imagery 1:50,000 series (Land Information New Zealand).

An additional issue occurs when recognising particular values within site. The boundaries of Ramsar site protection fail to recognise or spatially differentiate between particular values within that area. Whilst the feeding grounds at the Firth of Thames site are very important, the presence of closely associated effective roosting sites (Figure 57) on the shell banks and landward margins are also critical to the value of the area as shorebird habitat.[735] The blanket character of the protection does not alert external agencies or resource users to areas within the site that may require particular protection.

As to the site itself, effective protection is dependent upon how well the values of the site are recognised and protected pursuant to the Resource Management Act 1991 (RMA), the Hauraki Gulf Marine Park 2000 and the Conservation Act 1987(CA), being the domestic legislation having primary effect in this area. The effect of this legislation will be more closely considered

[735]Woodley above n 392 at 231.

in Chapter 8, and it will be seen that particular difficulties arise in securely protecting the habitat of Threatened and At Risk birds.

Figure 57 Firth of Thames high tide roost site

6.3.3.2 Lack of force and influence

Ramsar's lack of impact is evident on a range of levels. The value of Ramsar to shift or lessen harmful influences to the site is weakened by its failure to adopt active precautionary and preventive language, and by its employment of the "wise use". Balancing development with protection and promoting wise use "as far as possible", is a potential contributing factor to the failure of New Zealand to effectively limit wetland degradation, failure to achieve this balance is exacerbated by the lack of clear guidance in the implementing legislation and associated policy.[736]

As discussed the Ramsar guidance material provides extensive direction relating to management of a range of issues impacting the site, but the failure of New Zealand to revise the outdated National Wetland Policy 1986

[736] Controller and Auditor-General *Department of Conservation Prioritising and Partnering to Manage Biodiversity* (Office of the Auditor-General, 2012) 43.

to reflect this material, or replace it with another more effective and contemporary policy approach specifically aimed at wetlands, significantly limits potential for robust uptake of the guidance. This is a key result area identified by the Contracting Parties to COP10 (Conference of the Parties 10), to be implemented alongside strategic and holistic planning processes.[737]

The lack of reach of the Convention is indicated through the approach of the New Zealand courts. While a search for the term "wetland" in case law produces 1492 matching terms (between 1985 and 2013), refining the same search using the key word "Ramsar" generates only 32, represented by 16 cases decided between 2001 and 2013.[738] This may suggest that Ramsar's obligations do not feature strongly in decision making concerning general wetland protection and underscores the need to ensure those obligations are reflected adequately in implementing legislation and policy.

Of the 16 decisions that mention the Convention, the proceedings were almost evenly divided between prosecution under the RMA,[739] appeal on a resource management plan under the First Schedule of the RMA[740] and resource consent appeal.[741] The dominant reasons for mentioning Ramsar

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[737] Dean-Speirs, T, Scott, N, Robertson, H, and others *Analysis of Decisions from the 10th Meeting of Contracting Parties (COP10) to the Ramsar Convention* (Department of Conversation, 2011)1.3.1, 14.

[738] Thomson Reuters Westlaw NZ database, Cases, Practice Area Environmental & Resources http://www.westlaw.co.nz.ezproxy.waikato.ac.nz/maf/wlnz/app/search/subsearch 22 August 2013, and a repeat search of RAMSAR through all practice areas.

[739]*Canterbury Regional Council v Lister* DC Timaru CRN070765600233 21 August 2008, *Waikato Regional Council v Cookson* [2009] DCR 827, CRI-2007-039-927 27 May 2009, *Waikato Regional Council v Burr* DC Hamilton CRN-0807300043-54, CRN-0807300055-65, CRN-0807300068-79 23 December 2011, *Southland Regional Council v Belling* DC Invercargill CRI-2010-025-004368, CRI-2010-025-004366 10 June 2011 and *Southland Regional Council v Pantas Corporation* DC Invercargill CRI-2007-025-3342.

[740] *Mighty River Power Ltd v Waikato Regional Council* EC Christchurch, A146/2001 14 December 2001, *Haka International NZ Ltd v Auckland Regional Council (No 1)* EC Auckland, A097/07 13 December 2007, *Kana Holdings Ltd v Franklin District Council* EC Auckland W048/07 1 June 2007, *Newbury Holdings Ltd v Auckland Council* [2011] NZEnvC 364, *Friends of Shearer Swamp Inc v West Coast Regional Council* [2010] NZEnvC 345 and *Friends of Shearer Swamp Inc v West Coast Regional Council* [2012] NZEnvC 6.

[741] *Land Air Water Association v Waikato Regional Council* EC Auckland, A110/01 23 October 2001, *Auckland/Waikato Fish and Game Council v Waikato Regional Council* EC Auckland, A85/2002 26 April 2002, Final Report and Decision of the Board of Inquiry into the Hauāuru

were to highlight the 'at risk' nature of wetland ecosystems generally[742] or to reflect upon the sensitive nature of the environment affected for the purpose of sentencing concerning illegal activity in an area bordering a Ramsar site.[743] One decision referenced the role of the Convention in retaining ecological character, and two decisions made reference to evidence correlating unprotected sites with values similar to that protected through Ramsar site criteria. The Environment Court in a recent West Coast decision[744] dealt with such a suggestion by noting the ecological function and importance of the Plateau in question, but stating that it is not the Court's place to rule on matters such as Ramsar eligibility or status.

These findings again reinforce the need for mechanisms that adequately identify, recognise and appropriately protect high value sites, whether through additional Ramsar designation or plans under the RMA. Designation as a Ramsar site is a common factor which triggers protective provisions in plans, but clearly if there are many examples which sit outside of Ramsar whilst evincing similar qualities, Ramsar designation should only be one of many criteria to be assessed. In the alternative it is also a good reason for listing more sites to ensure that international level importance is properly recognised and distinguished.

The value of protecting Ramsar sites and neighbouring areas through RMA plan provisions was evident through the case law, where it was reiterated that "Although legislation must be read consistently with NZ's international obligations where possible, such obligations are not legally binding unless

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mā Raki wind farm and Infrastructure Connection to Grid, May 2011, *Carter Holt Harvey HBU Ltd v Tasman District Council* [2013] NZRMA 143, *West Coast Environmental Network Inc v West Coast Regional Council and Buller District Council* [2013] NZEnvC 47.

742 *Auckland/Waikato Fish and Game Council* above n 741, *Waikato Regional Council v Burr* above n 739, *Newbury Holdings Ltd v Auckland Council* above n 740.

743 *Waikato Regional Council v Cookson* (Kopuatai) above n 739, *Southland Regional Council v Belling* (Awarua/Waituna) above n 7399, *Southland Regional Council v Pantas Corporation* (Awarua/Waituna) above n 739.

744 *West Coast Environmental Network Inc* above n 741 at 33.

incorporated expressly into domestic legislation".[745] Inclusion of neighbouring areas within protective mechanisms is a key method to provide enhanced protection of the sites. The case law and the examples of Firth of Thames and Whangamarino demonstrate that in many instances human activity and development occurs intensively on the boundaries of the Ramsar sites[746] and that often there is lack of clear definition of where the Ramsar site begins and ends. In addition the ecosystem and habitat values protected by site designation may extend beyond the boundaries of the protected site and onto private land.[747] In the case of Whangamarino, parcels of private land sit at the heart of the wetland. The case law demonstrates the importance of clear demarcation of the sites, the need for interpretation on the actual sites, education of landowners bounding the site and within the catchment, and the value that protective buffer zones would have in reducing the impacts from adjoining activities.[748]

Successful prosecutions may send clear messages to those acting illegally at sites, particularly the farming sector, that their activities need to be managed to avoid breaches of plans and permits. However, the continued deterioration of the condition of the Ramsar sites combined with the limited reference to the Convention in case law potentially suggests two things. Either the pressures to the wetlands arise as externalities of activities in the catchment that are insufficiently captured by protective mechanisms or that there is inadequate monitoring and enforcement of illegal activities. It also evidences the uneasy balance between protecting both environmental and economic interests. This is corroborated by recent research in Wadden Sea in the Netherlands, where a raft of protective measures, including Ramsar designation and nomination for inscription as a World Heritage site, where

[745] *Mighty River Power Ltd v Waikato Regional Council* above n 740 at 10.
[746] *Waikato Regional Council v Cookson* (Kopuatai) *Southland Regional Council v Belling* (Awarua/Waituna) and *Southland Regional Council v Pantas Corporation* (Awarua/Waituna) above n 739.
[747] For example *Waikato Regional Council v Cookson* (Kopuatai) above n 739.
[748] For example *Waikato Regional Council v Cookson* (Kopuatai) above n 739.

scientific data relating to adverse activities were not accorded the same prominence in decision-making as short-term concerns that favoured on-going economic exploitation.[749]

Policy and regulatory failure to limit ecological damage to wetland ecosystems in New Zealand's agricultural landscapes is also documented by research, which noted a failure to meet Ramsar objectives to prevent further wetland loss.[750] In addition, rules in regional plans were uneven in strength: less than half had strong regulation and monitoring, hence implementation was sparse.[751] The Firth of Thames site provides a clear example, where although situated within a sensitive area where livestock presence is a prohibited activity and vehicle use discretionary requiring resource consent under the Regional Coastal Plan,[752] it is evident that illegal grazing and reclamation and vehicle use has been occurring within the boundaries of the site for many years.[753] Furthermore, although the Regional Plan applies priority stock exclusion rules to a number of priority water courses entering the site, the coverage is not entirely comprehensive and the area is lacking supporting buffer zones.[754] The policy review documents ongoing loss of wetlands and makes a number of recommendations including integrating and strengthening national legislation and policy direction, preparation of strong national policy statements which direct bottom lines for protecting wetlands and stronger rules in regional and district plans to protect wetlands, coupled

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749 Boere, GC and Piersma, T "Flyway Protection and the Predicament of our Migrant Birds: a Critical Look at International Conservation Policies and The Dutch Wadden Sea" 2012 68 Ocean & Coastal Management 165.
750 Myers, SC, Clarkson, BR, Reeves, PN, and others "Wetland Management in New Zealand: Are Current Approaches and Policies Sustaining Wetland Ecosystems in Agricultural Landscapes?" 2013 56 Ecological Engineering 107.
751 Myers ibid.
752 Waikato Regional Council *Regional Coastal Plan* (Waikato Regional Council, 2005). Rules 16.2.9 and 16.6.3.
753 Waikato Regional Council 2013 (abatement notice) above n 733.
754 Waikato Regional Council *Waikato Regional Plan* (Waikato Regional Council, 2007) Rule 4.3.5.4 and Waikato Regional Plan Priority Catchments for Stock Exclusion - GIS Layer, the spatial data representing Priority Catchments for Stock, Exclusion Data was derived by Waikato Regional Council from LINZ and NIWA/MFE data.

with more effective monitoring and enforcement.[755] Since the release of the policy review, proposals to amend the National Policy Statement for Freshwater Management 2011 have been introduced and are currently in the public submission phase.[756] The proposals are intended to strengthen protection of freshwater and include provision for "bottom lines" for ecosystem health. Whilst widely recognised as a necessary initiative,[757] early concerns have been expressed including over omission of limits for nitrogen and phosphorous nutrients in rivers to prevent nuisance algae, lack of coverage for wetlands and estuaries and the provision of exceptions to bottom lines for significant existing infrastructure.[758]

Deterioration in ecological character and the ongoing impact of illegal activities also suggest a failure to follow the extensive Ramsar guidance prepared to assess and monitor sites, as well as sufficiently applying guidance as to ecological outcome indicators to assess the implementation effectiveness of the Convention.[759]

New Zealand is insufficiently reporting changes to ecological character, and resultant management responses, as required by the Convention. Further, there is a need to assess the adequacy of monitoring currently being conducted at the sites, and for updated information sheets (RIS) to be filed for the respective sites.[760]

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[755] Myers above n 750 at 117.
[756] Ministry for the Environment *Proposed Amendments to the National Policy Statement for Freshwater Management 2011: A Discussion Document* (Ministry for the Environment, 2013).
[757] And recommended by the Land and Water Forum 2012: Land and Water Forum *Report of the Land and Water Forum: A Fresh Start for Fresh Water* (2010), Land and Water Forum *Second Report of the Land and Water Forum: Setting Limits for Water Quality and Quantity, and Freshwater Policy- and Plan-Making Through Collaboration* (2012).
[758] New Zealand Freshwater Sciences Society "Media Statement from the New Zealand Freshwater Sciences Society: Response to the Proposed Amendments to the National Policy Statement for Freshwater Management"2013.
[759] (2005) Resolution "An Integrated Framework for Wetland Inventory, Assessment and Monitoring" IX.1 Annex E. (2005) "Ecological "outcome-oriented" Indicators for Assessing the Implementation Effectiveness of the Ramsar Convention" Resolution IX.1 Annex D.
[760] Article 3.2, (2008) "The status of sites in the Ramsar List of Wetlands of International Importance" Resolution X.13, 18, 19 and Annex 1, Dean-Speirs above n 737 at 40.

These are largely matters which may also be the subject of a management plan, valuable tools for defining the characteristics of a site, identifying the pressures upon that site, developing responses, allocating roles and assessing funding needs and arrangements. Such plans are recognised in the Ramsar Convention guidance as fundamental to achieving wise use and are intended to be integrated into the public development planning system at local, regional or national level.[761] The Ramsar Convention does not, however, require their preparation. Consequently the Manawatu Ramsar site is the only one in New Zealand to have a current management plan, although as part of the Department of Conservation's Arawai Kakariki wetland restorations programme, the Waituna and Whangamarino sites are earmarked for development of management strategies. Important opportunities are lost to put into force a Ramsar Convention resolution that "recognize that site-based management planning should be one element of a multi-scalar approach to wise use planning and management and should be linked with broad-scale landscape and ecosystem planning..."[762]

Insufficient comprehensive management planning has knock-on effects for the day-to-day management of sites because of precarious funding situations. At the Firth of Thames site, this task largely falls to the Miranda Naturalist's Trust, a non-governmental organisation (NGO) which runs the Shorebird Centre adjacent to the site. Although receiving technical guidance from the Department of Conservation regarding pest and weed management, the Trust undertakes the physical work of removing exotic weed pests from the shell banks and associated landward margins. The Trust depends on annual grants from funding agencies for trapping and management of mammalian predators. For the last four years the ASB Trust has supported this programme.[763] It sources further financial and voluntary support through

761 (2002) "New Guidelines for Management Planning of Ramsar Sites" Resolution VIII.14, ch VI, Annex, 19.
762 Resolution VIII.14, ch VI above n 761 at Annex, 20.
763 Pers.comm. Woodley, K August 2013.

collaboration with business interests and the community is increasingly relied upon as a means to fund and manage the widespread problem of pest management, at the same time as engaging the community in a civic activity.[764] Nevertheless, for a site of international importance, this form of hand-to-mouth existence has limitations in terms of reliability and certainty for the future. The need to address the impacts of alien invasive species is a recognised goal of the Ramsar Parties.[765]

The Department of Conservation (DOC) is the government agency tasked with implementing Ramsar. It has, however, been subject to significant restructuring and budget cuts and it is currently recognised that the job of managing biodiversity on conservation land is far greater than the resources available.[766] This means that approximately seven-eighths of the conservation estate under DOC's jurisdiction will not receive active management, nor will 2,600 of the 2,800 threatened species.[767] The DOC has thus adopted a business model which recommends partnering with communities and businesses to gain benefits for conservation.

As part of its Natural Heritage Management System, DOC has developed new tools to optimise the management of threatened species and to prioritise the management of ecosystems by grouping them into "Ecosystem Management Units".[768] The definition and ranking of the units will impact upon the extent of active management conducted on each site, and DOC plans to manage 400 of the 1,000 or more prioritised clusters within the next four

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[764] Controller and Auditor-General 2012 above n 736 at 26.
[765] (1999) "Invasive Species and Wetlands" Resolution VII.14, (2002) "Invasive Species and Wetlands" Resolution VIII.18, (2005) "Streamlining the Implementation of the Strategic Plan of the Convention 2003-2008", Resolution IX.8, Strategy 1.6, (2002) "The Ramsar Strategic Plan 2003-2008" Resolution VIII.25, Annex, Operational Objective 5.
[766] Controller and Auditor-General 2012 above n 736 at 10.
[767] Controller and Auditor-General 2012 above n 736 at 10.
[768] Leathwick, J, Wright, E and Cox, A *Prioritisation of Ecosystem Management* (Department of Conservation, 2012) Leathwick, J and Wright, E *Integrated Prioritisation of Ecosystems and Species* (Department of Conservation, 2012).

years.[769] In terms of ranking, a 2013 GIS dataset indicates[770] that Kopuatai, Farewell Spit and Manawatu are Ramsar sites that will receive priority within the next four years, although the presence of threatened species at these sites may yet act as an additional ground for prioritisation. The prioritisation system is in its infancy and it is recognised that it will be subject to ongoing refinement in consultation with stakeholders and experts. Species information has recently been blended with the original assessment and the rankings refined in the 2013 layer. Currently, however, the rankings demonstrate that designation as a site of international importance may not be particularly important in setting management priorities.

6.3.3.3 Lack of agency integration

The position of the Firth of Thames, at the interface of land and water and the public and private domains, draws into sharp focus the amalgam of agency responsibility for the site and associated values. Implementation of Ramsar is the responsibility of DOC, as is species management at the site, pursuant to the Wildlife Act 1953 and the Conservation Act 1987. Yet a large proportion of the site lies within the coastal marine area, administered by the Regional Council through the Waikato Regional Coastal Plan prepared under the RMA. Likewise, integrated management of the catchment is the responsibility of the Regional Council and managed through the Regional Policy Statement and Regional Plan. The River and Catchment Services arm of the Regional Council is also responsible for flood control in the catchment, creating a dual role and, at times, conflicting objectives pertaining to preserving biodiversity and managing flood waters.

[769] Controller and Auditor-General 2012 above n 736 at 32.
[770] Department of Conservation, Management Units_PublicViewOnly_Extract7Aug2013, 2013.

In terms of land use, and the associated method of subdivision, the site is dissected by a boundary line such that both Hauraki and Franklin District Councils have control over land bordering the site. In addition the Hauraki Gulf Marine Park Act 2000 provides for special recognition of the area, and the Hauraki Gulf Forum is tasked with managing the gulf and its catchments. Chapters 7 and 8 will analyse relevant implications of these multiple responsibilities and divisions, but it is noted that recent analysis of implementation of Ramsar notes both the need to refine administrative arrangement to implement it and to improve the level of coordination amongst wetland managers, government agencies and stakeholders.[771] The lack of national direction in the form of a national wetlands policy, or national Wetlands Action Plan is also criticised as limiting an effective shared responsibility approach.[772]

6.3.3.4 Lack of sites designated in New Zealand

New Zealand has few Ramsar designated sites – only six compared with 169 in the United Kingdom, 64 in Australia and 45 in Ireland.[773] In consideration of area, the six New Zealand sites, encompassing approximately 54,400 ha, are dwarfed in comparison to Canada with 13,066,675 ha, Australia with 8,117,145 ha[774] and the United Kingdom with 785,361 ha.[775]

The Department of Conservation is currently in the process of establishing further criteria for prioritising Ramsar site nominations including the preparation of an Internal Standard Operating Procedure for nominations, identified as a high priority in the analysis of decisions arising from the 10th

771 Controller and Auditor-General *Report of the Controller and Auditor-General, Tumuaki o te Mana Arotake: Meeting International Environmental Obligations* (Audit Office, Wellington, NZ, 2001) 58, Dean-Speirs above n 737 at 6, Controller and Auditor-General 2012 above n 736 at 42.
772 Controller and Auditor-General 2001 above n 771 at 57.
773 Ramsar Convention Secretariat 2013 above n 714 at 101.
774 Ramsar 2013 ibid.
775 Joint Nature Conservation Committee "UK Ramsar Sites" (2013) <http://jncc.defra.gov.uk/page-1388>

meeting of the Contracting Parties (COP10).[776] A 2013 amendment to the Conservation Act 1987 has changed the manner in which Ramsar wetlands will be classified. Previously classified by the Minister of Conservation by notice, s 18AB now provides that such decisions will be made by the Executive Council which will engage all Cabinet members in the classification. Dilution of the power of the Minister of Conservation in this manner could potentially have a chilling effect upon further Ramsar designations particularly where the areas are mineral rich or similarly suitable for exploitive purposes.

Designation of the six current sites arose through ad hoc responses to local applications and with no strategic prioritisation. Encouragement by the DOC of new Ramsar site nominations that fulfil national objectives is a medium priority implementation action arising from COP10.[777] It is accepted that sites exist that could meet the designation criteria. A sample of some of those important[778] to the shorebird members of the case study species are detailed in Table 9.

[776] Dean-Speirs above n 737 at 8, see also (2008) "The Ramsar Strategic Plan 2009-2015" Resolution X.1 Strategy 2.1 Ramsar site designation.
[777] Dean-Speirs above n 737 at 80.
[778] Dowding, JE and Moore, SJ *Habitat Networks of Indigenous Shorebirds in New Zealand* (Department of Conservation, 2006) 10, Woodley, K pers. comm. August 2013.

Table 9 Ecological Management Unit rankings of selected sites

Site	Management Unit Number	Ranking
Estuary of the Heathcote and Avon rivers	796	497
Lake Ellesmere	389	477
Lower Rakaia Bed	388	346
Kaipara South Head/Papakanui	596	360
North Manukau Heads (no harbour)	237	454
Ohiwa Harbour	190	274
Parengarenga Harbour	Not identified	No rank
Rangaunu Harbour	274	<null>
Wainono Lagoon	407	247
Whangarei Harbour	Not identified	No rank

Source: Department of Conservation, ManagementUnits_2013Rankings_PublicViewOnly, 2013

Table 9 demonstrates that several sites not currently designated as Ramsar sites effectively "pull rank" on the Ramsar sites in according to the recent prioritisation exercise, suggesting that sites such as Ohiwa Harbour (important for dotterel, godwit and other migratory shorebirds) deserve greater recognition.

From this summary it is clear that a number of factors influence the strength of protection provided by Ramsar to New Zealand birds and any concomitant loss, with force, effect and implementation being important contributors. Despite the good intention of the Convention and the significant body of supporting work and guidance generated through Ramsar, it would appear that its impact in New Zealand is insignificant. The problems that arise in New Zealand are well understood at the International level and measures are recommended in response. However, the New Zealand response falls short, a problem that can be largely attributed to the failure to adequately manage factors external to the Ramsar sites, such as farming and water quality loss. Ecological character of the key sites continues to degrade, and the failure to effectively address this loss evidences a lack of commitment on the part of New Zealand. The limited number of designated sites suggests a further lack of enthusiasm for engagement with Ramsar. Significantly more could be made of this Convention to benefit birds in New Zealand, through greater engagement, implementation and integration across the landscape. Having identified that the Ramsar approach is weakened by its lack of force including its failure to adopt active precautionary and preventive language, attention now turns to the impact of the Convention on Biological Diversity.1

6.4 THE CONVENTION ON BIODIVERSITY (CBD)

Similar to Ramsar, the Convention on Biological Diversity[779] (CBD) has considerable potential for delivering benefits to the case study species. As a framework convention, it provides significant guidance and leadership in developing a global approach to the conservation of biodiversity. In line with the CBD, New Zealand agreed to numerous progressive protective measures directed at both species and habitat protection. CBD obligations include the development and integration of plans and strategies for conservation and sustainable use of biodiversity,[780] identification and monitoring of particular classes (including Threatened) of ecosystems, habitats, species and communities,[781] establishment of protected areas,[782] rehabilitation of

[779] The 1992 Convention on Biological Diversity. UNEP/BioDiv/Conf 12 (1992).31(2002). ILM.954, Article 8.
[780] Article 6(a) and (b).
[781] Article 7 and Annex 1.
[782] Article 8(a).

degraded areas and promotion of recovery of threatened species,[783] prevention of the introduction of, control or eradicate alien species,[784] regulation of significant adverse effects,[785] and the development of legislation directed to the protection of threatened species.[786] These broad obligations contemplate the full range of threats faced by the case study species and directed global attention to the need to better conserve and protect biodiversity.

Originating principles have been augmented by subsequent decisions of the Parties, including the adoption of the ecosystem approach and encouragement of other Governments and international organisations to apply an ecosystem approach.[787] As identified in Chapter 5, the approach is characterised by a focus upon structure, processes, functions and interactions among organisms, [788] in contrast to a particular spatial unit or scale as is the case with the CBD definition of habitat. The ecosystem approach is a holistic one which protects ecosystem integrity, including component species.[789] Decision V.6 of the CBD explicitly acknowledges the "complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning".[790] It concludes that the approach requires adaptive management techniques involving elements of "learning by doing" to respond to the uncertainty.[791] Requiring adaptive management does not necessarily exclude other methods, such as protected reserves and single species conservation programmes, rather the decision conceives an integrated

[783] Article 8(f).
[784] Article 8(h).
[785] Article 8(h).
[786]Article 8(k).
[787] (2000) "Ecosystem approach" Decision V.6, Herkenrath, P "The Implementation of the Convention on Biological Diversity; A Non-Government Perspective Ten Years On" 2002 11 Review of European Community & International Environmental Law 29 at 32.
[788] Decision V.6. cl(A)(3) ibid.
[789] Trouwborst, A "International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: A Mismatch?" 2009 21 Journal of Environmental Law 419 at 425.
[790] Decision V.6 cl (A)(3) above n 80.
[791] Decision V.6 cl (A)(4) above n 80.

approach applying mixed methods as appropriate.[792] The approach has been further developed in programmes of work and the Parties to the CBD have developed principles to help apply the approach to conservation concerns.[793]

The CBD measures are extensive and directed at critical problems to achieve the reduction of biodiversity decline. Despite this direction, the targets set pursuant to CBD have not been met globally.[794] New Zealand's latest report on meeting the obligations produces mixed results, with clear under-performance regarding species protection including failing to achieve the global targets related to threatened species status and, in terms of the trends in abundance and distribution of selected species. For example, the wrybill (Figure 58) is used as an indicator species for CBD purposes but is identified as showing a contraction of range.[795] Offered at the outset of this chapter was a range of reasons for the failure to achieve reduction in biodiversity loss. In keeping with the theme related to degree of care, and conscious of space constraints, this section will largely focus upon the force and effect of the CBD as formed through the obligations it creates and standards it imposes.

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792 Decision V.6 cl (A)(5) above n 80.

793 Gillespie, A *Conservation, Biodiversity and International Law* (Edward Elgar Pub, Cheltenham, 2011) 484-5.

794 Refer above n 711 and for discussion of reasons for the failure to meet the 2010 CBD biodiversity target see United Nations Environment Programme *GEO5 Global Environment Outlook: Environment for the Future we Want* (United Nations Environment Programme, 2012) 83.

795 New Zealand Government "New Zealand's Fourth National Report to the United Nations Convention on Biological Diversity" (2010) <http: //www.cbd.int/doc/world/nz/nz-nr-04-en.pdf.> at 57-58.

Figure 58 Wrybill at Firth of Thames

6.4.1 LIMITATIONS OF THE CBD

CBD obligations are cast on a more general level enabling a degree of autonomy and allowing for varying capacity of implementing nations.[796] The words used are general and enabling as opposed to applying any prescriptive standard of care. Cast as loose obligations such as "to promote" protection, rehabilitation or recovery, or to "regulate" or "manage" processes and activities, the wording gives no real indication of the strength or intended efficacy of the measures exhorted.[797] The lack of direction pertaining to degree of care leaves the choice about the level of protection open to the implementing organisation and, perhaps, provides a partial explanation[798] for why Parties struggle to prevent further decline in biodiversity even with CBD. It can be concluded that the obligations are tentative with respect to actively

[796] Harrop above n 711 at 119-120.
[797] For example Articles 8 (d) and (f).
[798] For discussion of reasons for the failure to meet the 2010 CBD biodiversity target see United Nations Environment Programme *GEO5 Global Environment Outlook: Environment for the future we want* (United Nations Environment Programme, 2012) 83.

protecting species. Moreover, the CBD is limiting in the extent to which it utilises the principles of precaution, prevention and avoidance, which influences the degree of care to be applied.

6.4.1.1 Precaution

The CBD does little to support a strong, active precautionary approach to loss of threatened species. Although noting the Principle in its preamble, the CBD applies a weak and non-active version which seeks to prevent lack of full scientific certainty being used as a reason to postpone measures to avoid or minimize a threat of significant reduction or loss of biodiversity. No binding articles drive precautionary action. As the CBD has developed, the Precautionary Principle has been in applied in a range of additional decisions including marine and coastal biodiversity,[799] invasive alien species,[800] the ecosystem approach[801] and guidelines on sustainable use.[802]

6.4.1.2 Prevention

Similarly, no principle of prevention figures strongly in the CBD. The Preamble identifies the critical need to "anticipate, prevent and attack the causes of significant reduction or loss of biodiversity at source". However, the prevention of harm to species is a goal that is not explicitly stated in the Articles. The obligations tend to extend to the regulation and management of activities, although Article 10(b) requires Parties to "[a]dopt measures relating to the use of biological resources to avoid or minimize adverse impact on biological diversity".

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799 (1995) "Conservation and Sustainable use of Marine and Coastal Biological Diversity" Decision II.10, SBSTTA I.8.
800 (2002) "Alien Species that Threaten Ecosystems, Habitats or Species" Annex, Decision VI.23 and (2000) "Alien Species that Threaten Ecosystems, Habitats or Species" Decision V.8.
801 (2000) "Ecosystem Approach" Decision V.6.
802 (2004) "Sustainable Use" Decision VII.12.

6.4.1.3 Avoidance

In addition to specific conservation measures, the CBD obliges contracting Parties to institute EIA procedures where their proposed projects are likely to have significant adverse effects on biological diversity with a view to avoiding or minimising such effects.[803] Although guidelines for incorporating biodiversity-related issues into EIA recognise avoidance as an option, no particular precedence is applied over mitigation options.[804] However, voluntary guidelines on biodiversity-inclusive EIA recommend that "a 'positive planning approach' should be used, where avoidance has priority and compensation is used as a last resort measure".[805] The guidelines also acknowledge that compensation will not always be possible as there are cases where it is appropriate to reject a development proposal on grounds of irreversible damage to, or irreplaceable loss of, biodiversity.

6.4.1.4 International integration

The CBD provides New Zealand with a clear mandate to apply an ecosystems approach and to use adaptive management techniques, the application of which will be considered more closely in the context of habitat protection in Chapter 8. Yet, the problems identified in the Firth of Thames site in section 6.3.3 suggest that there are limitations to achieving a holistic approach in protecting ecological integrity and potentially, the inability to secure an ecosystems approach that can be incorporated in the definition of "wise use". Bringing this problem back to the parent Conventions is illuminating. Despite some significant attempts at integrating the CBD and Ramsar, a recent commentator notes that that there is "remarkably little linkage on common

803 Article 14 (1)(a).
804 (2002) "Identification, Monitoring, Indicators and Assessment" Decision VI.7, Annex, 25.
805 (2006) "Impact Assessment: Voluntary Guidelines on Biodiversity-inclusive Impact Assessment" Decision VIII.28 Annex, 23.

issues across the two programmes".[806] A failure to achieve cross-sectoral and integrated approaches in landscape and seascapes runs counter to the overarching ecosystem approach. Furthermore, unsystematic use of the ecosystem approach, and not programmes of work, as the entry point for implementation with only selective cross-referencing to the Ramsar Convention further exacerbates the situation.[807]

6.4.2. CBD BENEFITS - THE AICHI TARGETS

To resolve the deepening biodiversity crisis, and strengthen approaches to sustainable use, the 10th meeting of the Conference of Parties to the CBD identified an updated set of targets (the Aichi biodiversity targets) and approved a revised strategic plan for biodiversity, for the 2011–2020 period.[808] Parties are obliged to translate this strategic plan into national biodiversity strategy and action plans prepared pursuant to Article 6 of the CBD. The targets were prepared in recognition of continued decline of global biodiversity and constant or intensified pressures on biodiversity, mainly resultant from human actions.[809] Responses to previous targets[810] were recognised as being inadequate due to an insufficient scale upon which to address the pressures and insufficient integration of biodiversity issues into broader policies, strategies, programmes and actions to enable the underlying drivers to be adequately addressed.[811] Lack of financial, human and technical resources were also identified as limiting implementation of the convention.[812]

806 Davidson, N and Coates, D "The Ramsar Convention and Synergies for Operationalizing the Convention on Biological Diversity's Ecosystem Approach for Wetland Conservation and Wise Use" 2011 14 Journal of International Wildlife Law & Policy 204.
807 Davidson ibid.
808 (2010) "Strategic Plan for Biodiversity 2011-2020" Decision X.2.
809 Decision X.2 ibid, at cl (I)(7).
810 Specifically the 2010 biodiversity target, see Decision X.2 above n 808 at cl (I)(7).
811 Decision X.2 above n 808 at cl (I)(5).
812 Decision X.2 above n 808 at cl (I)(5) & (6).

6.4.2.1 Aichi and direction

The Aichi targets are more directive as to the degree of care required than the parent Convention, however, they remain relatively general. The targets are aspirational and flexible, reliant upon the establishment of national or regional targets for their implementation.[813] Strategic Goal A (Targets 1-4) approaches the issue of "mainstreaming biodiversity" with a view to elevating the degree of care that "people" attach to biodiversity. This is to be achieved by increasing the understanding of biodiversity value and the need to conserve, and by integrating biodiversity values into development strategies and planning processes. Targets 3 and 4 promote the use of positive incentives for conservation and sustainable use of biodiversity and the implementation of plans for sustainable production and consumption. By 2020, governments, businesses and stakeholders at all levels will have kept the impacts of use of natural resources well within "safe ecological levels".[814]

The question must be asked, how likely is it that these targets will be met?[815] For a country, achieving Targets 3 and 4 are significant tasks, with delivery arguably dependent upon how "safe ecological levels" are defined, which is the key to how responses to levels of harm are constructed. The decision of the Parties employs the concept of resilience[816] in its discussion of risk and response, and refers to "thresholds", "tipping points" and the concept of "over the edge".[817] It is currently unclear how New Zealand intends to proceed on this issue, as a revised National Biodiversity Strategy is yet to be released.

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813 Decision X.2 above n 808 at cl (IV)(13). For discussion on the failure of the CBD to apply binding legal obligations as opposed to targets see Harrop and Pritchard above n 711 at 474.
814 Decision X.2 above n 808 at cl (IV) (13) Strategic Goal A, Target 4.
815 For discussion on failure to meet CBD biodiversity targets see: Harrop and Pritchard 2011 above n 711, Harrop 2011 above n 711 at 117, Noss 2011 above n 711, Chandra 2011 above n 711, Herkenrath 2002 above n 789.
816 Decision X.2 above n 808 at cl (I) (9), cl (III)(12) and Target 15.
817 Decision X.2 above n 808 at cl (I) (7).

6.4.2.2 Aichi and habitat protection

CBD Strategic Goal B has associated targets 5-10, which are designed to reduce the direct pressures on biodiversity and promote sustainable use. These targets are more directive and if implemented, could provide significant gains for several of the case study species. Target 5 includes the requirement that the rate of loss of all natural habitats, including forests, be at least halved by 2020 and "where feasible" brought close to zero. The technical rationale associated with the target recommends that "The emphasis of this target should be on preventing the loss of high-biodiversity value habitats, such as primary forests and many wetlands".[818] This target ostensibly directs a significant change in resource use, as for the case study species, habitat may constitute terrestrial, oceanic, riverine, estuarine, coastal, aerial or subterranean areas.

A significant issue for New Zealand is not the loss of primary forests, rather the need for intensive management of the species within those forests. In the rhetoric of habitat protection and associated action it is vital that this important factor is not lost sight of. Greater protection of wetlands, coastal areas and lowland forest areas is, however, identified as important for the purposes of securing biodiversity goals and halving the rate of loss, or preventing any further loss of these areas could have significant impacts for the case study species.[819] The New Zealand dotterel habitat is threatened by the extension of coastal development and associated disturbance, the wrybill,

[818] Decision X.2 above n 808 Annex, IV.

[819] Ministry for the Environment *Protecting our Places: Information About the Statement of National Priorities for Protecting Rare and Threatened Native Biodiversity on Private Land* (Ministry for the Environment, 2007) 3, Green, W and Clarkson, B *Turning the Tide: A Review of the First Five Years of the New Zealand Biodiversity Strategy – The Synthesis Report* (Department of Conservation, 2005) 20.

likewise through the loss of aerial, coastal and riverine habitat.[820] Stronger provisions in domestic legislation and policy to prevent the loss of further habitat would be of benefit to these species. Yet, there are two clear limitations in stemming from the CBD target. The first is the lack of full ability to measure the rate and extent of habitat loss and the second is the use of the exceptional words "where feasible".

The total rate of habitat loss for some threatened species in New Zealand is unknown, and affected by many variables. The first problem is that not all habitat is known, nationwide species inventory reports are not complete,[821] neither as concerns fixed habitat nor for habitat that represents the connecting pathways utilised by mobile species. Aerial migration routes for birds may constitute significant habitat when considering life cycle, but only recently have some of the more important routes become known, as is the instance of the wrybill, and even then the picture remains incomplete. Similar concerns would apply to temporal dispersal. Identification and protection of a defined site may be insufficient if that identification fails to recognise areas beyond the site that are critical to the species' survival. Although the monitoring of bird species has a higher profile relative to other species, the task is constrained by various factors including scarcity, difficulty of terrain, nocturnal habits, small population size and extent of conservation funding and priority.[822] This is problematic as it is not possible to measure the loss of something that is not known to exist.

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[820] Woodley, K *Shorebirds of New Zealand; Sharing the Margins* (Penguin Books (NZ) Ltd, New Zealand, 2012) 191.

[821] Lee, W, McGlone, M and Wright, E *Biodiversity Inventory and Monitoring: A Review of National and International Systems and a Proposed Framework for Future Biodiversity Monitoring by the Department of Conservation* (Landcare Research Contract Report LC0405/122 (unpublished), 2005) 50 and 54, MacLeod, CJ, Greene, T, MacKenzie, DI, and others "Monitoring Widespread and Common Bird Species on New Zealand's Conservation Lands: A Pilot Study" 2012 36 New Zealand Journal of Ecology 300-301.

[822] Lee ibid, at 41 and 48.

In addition, the measurement of habitat loss may extend to other insidious forms of damage and incidental loss. Though not a complete loss, habitat modification through human activity, and disturbances, such as sporadic temporary displacement in the environment, threatens species but this is not well-understood or measured. This form of loss, which coastal development in New Zealand is an example of, occurs on an incremental basis and builds cumulative effects over time.[823] This problem will be discussed further in the context of dotterel populations on the east coast of New Zealand in Chapter 8. While the area of land incrementally lost can be measured, loss arising from the introduction to the area of human activity and associated cargo such as machines, infrastructure and pets is not so readily captured, and accordingly less readily stemmed. Policy directed at habitat loss and threats to species needs to be underpinned by stronger evidence as to the consequences of human activity on species. For some species the impacts will be much less than others, for instance the pukeko flourishes, but the bittern and dotterel fade in the presence of human modification of the environment. These concerns are more finely grained than habitat loss, less easy to measure, but deserve consideration as to potential harm.

As well as habitat loss, the Aichi targets address specific sectoral damage and modification to the environment. Target 6 requires that "fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits."[824] Achieving this target would dramatically improve the success of the black petrel and sooty shearwater, given the significant pressures upon the species arising from fisheries by-catch. Target 8 requires that: "By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and

823 Woodley, K *Shorebirds of New Zealand; Sharing the Margins* (Penguin Books (NZ) Ltd, New Zealand, 2012) at 191.
824 Decision X.2 above n 808 at cl (IV) (13) Strategic Goal B, Target 6.

biodiversity".[825] This target produces benefits to all case study species, but it would particularly counter the damage currently suffered by wetland and marine species.

6.4.2.3 Aichi and invasive alien predators

Target 9 deals with invasive alien predators and directs that: "By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment."[826] This strengthens the original obligation contained in Article 8(h) of the CBD and is supported by a programme of work and guiding principles, which include the adoption of a precautionary approach, the pursuit of a hierarchical approach of prevention, eradication and containment, and for all measures to be based on the ecosystem approach.[827]

The key determinant for benefit to the case study species in implementing this target will be the interpretation of "priority species" and the level of eradication and control applied. Due to the pressures of alien invasive species, it is projected that: "few of the current indigenous New Zealand forest birds will persist on the mainland without predator control on a vastly larger scale than currently undertaken."[828]

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[825]Decision X.2 above n 808 at cl (IV) (13) Strategic Goal B, Target 8.
[826] Decision X.2 above n 808 at cl (IV) (13) Strategic Goal B, Target 9.
[827] Decision VI.23 above n 800, Annex, Principles 1-3, (1998) "Report and recommendations of the third meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, and instructions by the Conference of the Parties to the Subsidiary Body on Scientific, Technical and Technological Advice" Decision IV.1 C, (2000) "Alien species that threaten ecosystems, habitats or species" Decision V.8, (2002) "Alien species that threaten ecosystems, habitats or species" Decision VI.23 1, (2004) "Alien species that threaten ecosystems, habitats or species (Article 8 (h))" Decision VII.13, (2006) "Alien species that threaten ecosystems, habitats or species (Article 8 (h)): further consideration of gaps and inconsistencies in the international regulatory framework" Decision VIII.27, (2008) "In-depth review of ongoing work on alien species that threaten ecosystems, habitats or species" Decision IX.4, (2010) "Invasive Alien Species" Decision X.38, (2012) "Invasive Alien Species" Decision XI.28.
[828] Innes, J, Kelly, D, Overton, J, and others "Predation and Other Factors Currently Limiting New Zealand Forest Birds" 2010 34 New Zealand Journal of Ecology 86 at 105.

Chapter 4 identified that non-forest birds are similarly threatened. Alien species are considered to constitute the primary threat to avian species. Several interviewees asserted that, in New Zealand, it is not sufficient to legally protect areas as such protection must be coupled with intensive and sustained management, including pest control. The kokako is a classic example of a conservation dependant species, reliant upon sustained and active pest management throughout its range. Pertaining to extinction, the level of control of alien species is critical to this bird's existence.[829] Large areas of habitat remain unmanaged for pest species. A DOC report in 2011 states that: "Less than 25% of the conservation estate receives interventions on key threats, with around 8% receiving possum, rat and stoat control." [830]

Accordingly, the focus falls upon the intent of the CBD obligation and subsequent target, the strength of which tends to fall away somewhat on closer investigation. Guiding principle 13 (Eradication) provides "Where it is feasible, eradication is often the best course of action to deal with the introduction and establishment of invasive alien species".[831] When eradication is not feasible, principle 15 supports control measures that focus on reducing the damage caused as well as reducing the number of the invasive alien species.

Guiding principle 2 associates feasibility with availability of resources and, thus, cost-benefit analysis may impact determinants for feasibility. In addition, equating damage reduction with control is not particularly directive, since sufficient control need not necessarily be associated with abatement of threat. A stronger and more effective obligation pertaining to the degree of care would assert a requirement for the control of alien species to levels compatible with increasing populations and range of threatened species, and to prevent additional species being classed as Threatened.

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[829] Innes, J pers.comm., 2010, Dowding, J.pers.comm. 2010, Innes and others ibid, at 100.
[830] Department of Conservation *Briefing to the Incoming Minister of Conservation 2011* (Department of Conservation, 2011) 7.
[831] Decision VI.23 above n 800, Annex.

6.4.2.4 Aichi and the prevention of extinction of threatened species

Target 12 is arguably the target that would produce the greatest gains for the dotterel, black petrel (Figure 59) and wrybill as it provides "By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained."[832] Due to its recent revision to "At Risk", the kokako no longer belongs to this select group, although its current status as "Conservation Dependent" recognises the critical importance of species management to enable persistence. Technically, however, it falls outside the target.

Figure 59 Black Petrel, Aotea, Great Barrier

In summary, it is clear that despite extensive guidance in principle, weak directive obligations inhibit the force of the CBD. Nevertheless, a significant impact of the CBD arises from the binding obligation upon Parties to produce national biodiversity strategies and action plans.[833] This produces a strong

[832] Decision X.2 above n 808 at cl (IV) (13) Strategic Goal C, Target 12.
[833] Article 6.

national focus regarding implementation of the CBD. Case law citing the Convention is slight, but where it does occur it is generally in reference to the relationship of the CBD with the national biodiversity strategies. New Zealand, overdue in its obligation to review its national biodiversity strategy and action plans, is also required to file its CBD national report by March 2014, which should identify progress achieved towards implementation of the Aichi biodiversity targets at the national level.[834] Preparation of this documentation may render more visible the Government's action plan for meeting the targets.

834 Department of Conservation *Briefing to the Incoming Minister of Conservation 2013* (Department of Conservation, 2013) 5.

6.5 THE CONVENTION ON CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS (CMS)

Protecting endangered migratory species is the focus of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), which came into force in 2000.[835] The CMS enables States to work together to protect migratory routes that extend beyond a nation's borders. With regard to the case study species, the black petrel, sooty shearwater and the bar-tailed godwit (Figure 60) qualify as migratory species,[836] although none are sufficiently endangered to warrant high-grade protection.

Figure 60 Bar-tailed Godwit in flight, Miranda

The most critical feature of CMS, for the case study species, lies in its structure which provides for binding obligations through the development of subsidiary agreements, and the development of action plans and memoranda of understanding. This is critical in view of species-specific threats, for example,

[835] The 1979 Convention on the Conservation of Migratory Species. British Command Paper Cmnd.Misc 11 (1980) and Cm.1332 TS 87 (1990).15.
[836] Article 1 of the CMS defines migratory species as *the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries*.

the black petrel is significantly threatened by incidental take through fisheries bycatch which could be improved by specific adjustments, such as the manner in which a fishing line is weighted, or the time that it is cast.

The CMS has 119 Parties and covers more than 500 species in Appendices I and II. Consequently, individually crafted responses tuned to spatial and temporal needs will be required for many species. Whilst CMS indicates that this is the responsibility of the implementing nations, CMS's structure enables some direction to be given at the international level, thus creating species specific obligations on a wider level.[837] As will be examined, a sharpened focus potentially delivers greater benefits for those species within this frame, yet may also cause a degree of uneven treatment for those species without.

Figure 61 shows that the CMS enables a stepped approach to species protection, providing the strongest protection for endangered species listed in Appendix I, but using Appendix II to enable the provision of binding agreements for those species considered to have unfavourable conservation status as defined by Article I.[838]

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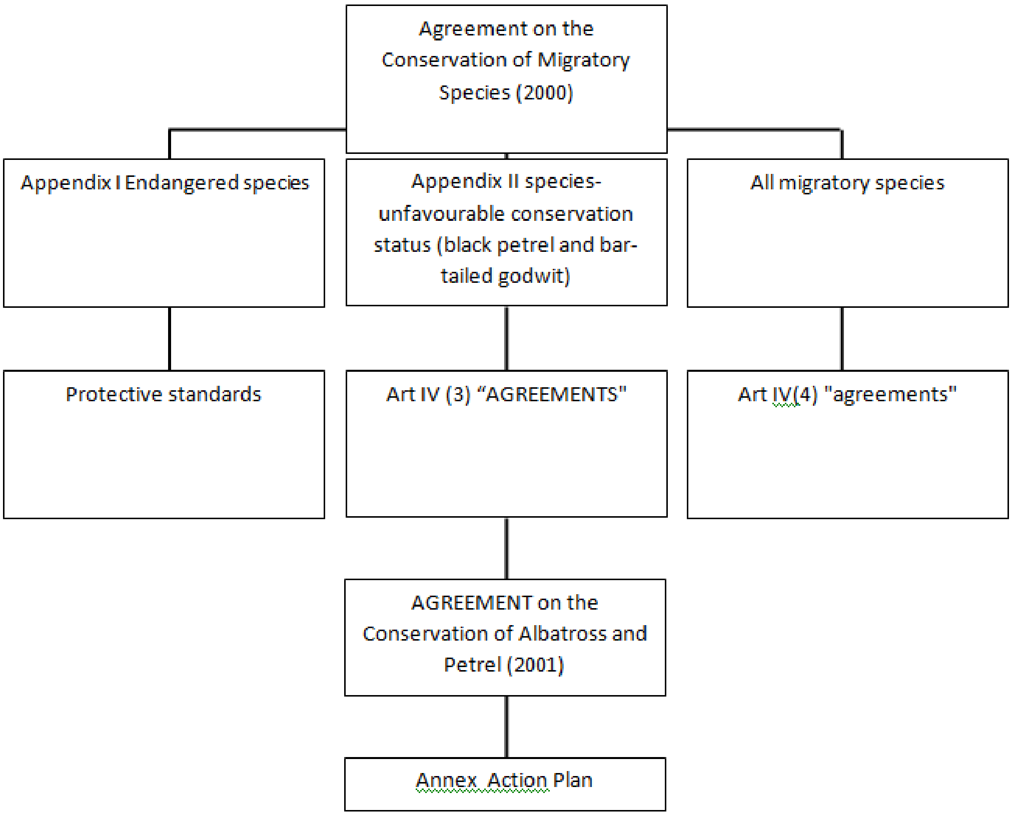
[837] Caddell, R "International Law and the Protection of Migratory Wildlife: An Appraisal of Twenty-five years of the Bonn Convention" 2005 16 Colo. J. Int'l Envtl. L. & Pol'y 113 at 122 and 126.

[838] Caddell, 2005 ibid, at 128, Cooper, J, Baker, GB, Double, MC, and others "The Agreement on the Conservation of Albatrosses and Petrels: Rationale, History, Progress and The Way Forward" 2006 34 Marine Ornithology 1-5.

Figure 61 Structure of the CMS arrangements



Classification as an endangered species entails that the species be “in danger of extinction throughout all or a significant portion of its range”.[839] The black petrel’s (Figure 62) vulnerable status is insufficient for Appendix I classification, yet a lesser form of protection is extended via classification in Appendix II, due to its “unfavourable conservation status”.[840] An Appendix II listing is also available where the conservation status of a species would significantly benefit from the international cooperation that could be achieved through an international agreement,[841] and the bar-tailed godwit (Figure 63), not classified as Threatened in New Zealand, receives Appendix II status,

839 Article I (1)(e).
840 The black petrel was added to Appendix II through amendment via COP6, Secretariat of the Convention on Migratory Species “Annotated Appendices to the Convention” http://www.cms.int/documents/appendix/additions_table1.pdf.
841 Article IV (1).

which is extended to the entire scolopacidae family. In contrast, the sooty shearwater is unlisted.

Figure 62 Black petrel (juvenile) Appendix II CMS

Figure 63 Bar-tailed godwit, Opoutere 2013.

Article II of the CMS confirms the fundamental principle to conserve migratory species and their habitats, whenever possible and appropriate, and includes acknowledgment by the Parties of "the need to take action to avoid any migratory species becoming endangered". Parties should promote research, provide immediate protection for Appendix I species and endeavour to conclude agreements for the conservation and management of species listed in Appendix II.[842]

Article III of the CMS, providing for the listing in Appendix I of endangered species, creates measures which states within the range of the species (Range States) must implement to protect the species. The restrictions include:[843]

> a) to conserve and, where feasible and appropriate, restore those habitats of the species which are of importance in removing the species from danger of extinction;
>
> b) to prevent, remove, compensate for or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species; and
>
> c) to the extent feasible and appropriate, to prevent, reduce or control factors that are endangering or are likely to further endanger the species, including strictly controlling the introduction of, or controlling or eliminating, already introduced exotic species.

The CMS also prohibits taking of the endangered species, excepting a limited range of conditions.[844]

The CMS creates relatively strong obligations, but is tempered by words and phrases such as "whenever possible and appropriate", "promote", "endeavour", "to the extent feasible and appropriate" which are open to

[842] Article II (2) and (3)(a),(b) and (c).
[843] Article III (4) (b) & (c) CMS.
[844] Article III (5) CMS.

interpretation.[845] Moreover, enabling minimisation as an alternative to avoidance, regarding activities and obstacles that seriously impact migration, reduces the strength of any obligation. The restrictions listed in Article III apply to Appendix I species alone and do not benefitting any of the case study species considered in this research. The CMS applies neither the precautionary nor the preventive principle.

CMS operates through a Secretariat and the decision-making process occurs principally through the Conference of the Parties.[846] A Scientific Council provides advice on scientific matters.[847] The scope and intent of the CMS has expanded and been augmented by an eclectic series of resolutions, which incorporate an ecosystem approach and simultaneously seek to address a range of issues threatening migratory species, including the significant impact of fisheries bycatch.[848] More recently, CMS's *Draft Strategic Plan 2015 - 2023*[849] adopts the CBD Aichi Targets, which drives a heightened intention to deliver, in principle, comprehensive protection on a range of fronts. Decision X.20 of the Conference of the Parties to the CBD recognises CMS as the lead partner in

845 Caddell 2005 above n 837 at 117.
846 Article VII (CMS).
847 Article VIII (CMS).
848 Caddell 2005 above n 837 at 146. For examples of resolutions relevant to the case study species see (1999) "By-catch" Resolution VI.2, (2002) "Implementation of Resolution 6.2 on By-Catch" Recommendation VI.2, (2002) "Impact Assessment and Migratory Species" Resolution VII.2, (2002) "Oil Pollution and Migratory Species" Resolution VII.3, (2002) "Electrocution of Migratory Birds" Resolution VII.4, (2002) "Wind Turbines and Migratory Species" Resolution VII.5, (2002) "Implications for CMS of the World Summit on Sustainable Development Resolution" VII.10, (2005) Climate Change and Migratory Species Resolution VIII.13, (2005) "Bycatch" Resolution VIII.14, (2005) "Migratory Species and Highly Pathogenic Avian Influenza" Resolution 8.27, (2008) "Bycatch" Decision IX.18, (2008) "Climate Change Impacts on Migratory Species" Resolution IX.7, (2008) Responding to the Challenge of emerging and re-emerging diseases in Migratory Species, including Highly Pathogenic Avian Influenza H5. Resolution IX.8, (2011) "The Role of Ecological Networks in the Conservation of Migratory Species" Decision X.3, (2011) Guidance on Global Flyway Conservation and Options for Policy Arrangements Resolution X.10, (2011) "Power Lines and Migratory Birds" Decision X.11, (2011) "Guidelines on the Integration of Migratory Species into National Biodiversity Strategies and Action Plans (NBSAPs) and Other Outcomes from CBD COP10" Resolution X.18, (2011) "Migratory Species Conservation in the Light of Climate Change" Resolution X.19, (2011) "Minimizing the Risk of Poisoning to Migratory Birds" Resolution X.26.
849 CMS Inter-sessional Strategic Plan Working Group *The Strategic Plan for Migratory Species 2015-2023 Draft Skeleton for Consultation* (UNEP, CMS, 2013) 3.

the conservation and sustainable use of migratory species over their entire range and the *Draft Strategic Plan* incorporates this partnership approach. [850]

If the targets proposed in the CMS's *Draft Strategic Plan 2015 – 2023* are comprehensively implemented, they could offer considerable protection. The targets are broad and include mainstreaming of awareness of values of migratory species and conservation,[851] elimination or reform of harmful incentives and development of incentives to conserve,[852] protection of all sites defined as being of critical importance for migratory species by 2020,[853] measures developed to minimise genetic erosion,[854] inclusion of priorities for conservation and management of migratory species in national biodiversity plans and strategies,[855] adoption of traditional knowledge and knowledge improvements,[856] and mobilisation of resources.[857] All are of value to the case study species, but the targets listed below are of particular relevance:

> Target 5: By 2023, at the latest, Governments, key sectors and stakeholders at all levels have kept the impacts of use of natural resources well within safe ecological limits to promote the favorable conservation status of migratory species and maintain the integrity, resilience, and connectivity of their habitats.
>
> Target 6: By 2023, at the latest, key habitats, sites and corridors for migratory species are protected, restored and effectively managed to maintain their integrity, resilience, and functioning.
>
> Target 7: By 2023, at the latest, fisheries have no significant adverse impacts on migratory species and their migration routes, and impacts of fisheries are within safe ecological limits. Migratory fish are managed and harvested

[850] (2010) "Cooperation with other conventions and international organizations and initiatives" Decision X.20, cl 13 recalling Decision VI.20, CMS Working Group 2013 ibid, at 1.
[851] Targets 1 and 2.
[852] Target 3.
[853] Target 10.
[854] Target 12.
[855] Target 13.
[856] Targets 14 and 15.
[857] Target 16.

> sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided and recovery plans and measures are in place for all depleted species.
>
> Target 8: By 2023, multiple anthropogenic pressures – for example those relating to climate change, renewable energy developments, power lines, by-catch, poisoning, pollution, disease, invasive species, illegal and unsustainable take, and marine debris – have been brought to levels that are not significantly detrimental to migratory species or to the functioning, integrity, ecological connectivity and resilience of their habitats.
>
> Target 9: By 2023, at the latest, the conservation status of all known threatened migratory species has considerably improved throughout their range, and no species is in immediate threat of extinction.

Achieving these targets would effectively eliminate most of the main pressures on the case study species. For example, Targets 5 and 6 would address the impacts arising from farming and forestry at Waituna Lagoon or the Firth of Thames, being favoured habitat of the godwit. Restoration and retention of ecological integrity, resilience and functioning of habitat would ensure water quality and sedimentation management and restrict pollution. For the black petrel and the sooty shearwater, Target 7 would remove the most significant threat to the species being fisheries bycatch. Target 8, relying on a standard of "not significantly detrimental", aims to address the most pressing anthropogenic impacts including alien predators and climate change. Target 8 also addresses unsustainable take, which could be applied to the sooty shearwater if that take becomes unsustainable. Finally, Target 9 could provide a change in fortunes for all migratory species and ensure that no species is in immediate threat of extinction.

Though these targets address the range of threats to the species identified in Chapter 4, success will be measured through implementation. In consideration of the threats posed to the black petrel and the sooty shearwater there appears to be a considerable gap between the current position of the birds and the targets proposed. Chapter 7 will further elucidate the work that is needed in order to protect the species. The greatest benefit from the CMS for the case study species derives from the focus on migratory species and acknowledgment of the need to avoid endangering such species. More direct protection, however, is left to the action of Appendix II agreements or more general Memoranda of Understanding. The next section considers the impact of those agreements.

6.5.1.1 Agreements

The CMS provides for two separate types of agreements, "AGREEMENTS" created pursuant to Article IV (3) concerning Appendix II species and "agreements" pursuant to Article IV (4) for any migratory population.[858] Guidelines for AGREEMENTS are set out in Article 5 of the CMS and provide for extensive measures to be applied to the conservation of the species the subject of the agreement. The obligation on parties in respect of AGREEMENTS is to "endeavour to conclude" where they would be of benefit and to give priority in creation to species with unfavourable conservation status.[859] This explains why the black petrel is the sole case study species to be the subject of an AGREEMENT, to which New Zealand is a party, which will be discussed in the following section. The bar-tailed godwit is subject to an AGREEMENT for part of its range through inclusion in the African Eurasian Waterbirds Agreement (AEWA),[860] but New Zealand godwits are not within this range and therefore do not receive the additional protection of a binding agreement. For godwits in the South Pacific any coverage is pursuant to the non-binding flyways

[858] Caddell 2005 above n 837 at 119.
[859] Article IV(3).
[860] UNEP/CMS Secretariat *The Agreement on the Conservation of African-Eurasian Waterbirds Agreement* (1995).

agreement of the Partnership for the East-Asian Australasian Flyway[861] which sits outside the CMS.

6.5.1.2 Agreement on the Conservation of Albatrosses and Petrels

New Zealand is a party to the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and the black petrel is listed pursuant to Annex 1 as one of the 30 species to which the Agreement applies.[862] ACAP creates important binding obligations that elevate protective requirements for this species above and beyond more general protective measures created at international level for the remaining case study species.

ACAP's objective is to achieve and maintain a favourable conservation status for albatross and petrel.[863] ACAP details a range of species protection measures in conjunction with other methods employed to protect and restore habitat. Parties are required to apply a precautionary approach and, where there are threats of serious or irreversible adverse impacts or damage, lack of full scientific certainty should not be used as a reason for postponing measures to enhance the conservation status of albatrosses and petrels.[864]

Elimination or control of non-native species detrimental to albatrosses and petrel is identified as a priority, as is the requirement to develop and implement measures to prevent, remove, minimise or mitigate the adverse effects of activities that may influence the conservation status of albatrosses and petrels.[865] Enabling mitigation as an alternative to prevention, removal and minimisation somewhat lessens the strength of this obligation and

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[861] Partnership for the Conservation of Migratory Waterbirds and the Sustainable Use of their Habitats in the East Asian – Australasian Flyway "Partnership Document" (2006) <http://www.eaaflyway.net/documents/key/eaafp-partnership-doc-v13.pdf.>
[862] UNEP/CMS Secretariat *The Agreement on the Conservation of Albatross and Petrel* (2001) as Amended by the Fourth Session of the Meeting of the Parties, Lima, Peru, 23 - 27 April 2012.
[863] Article II (1).
[864] Article II (3).
[865] Article III (1)(b)&(c).

potentially explains New Zealand's failure to stem the extent of incidental loss through bycatch to the black petrel. ACAP also provides explicit support for implementation of the actions elaborated in the FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries. [866] Furthermore, considerable associated work is carried out with agencies such as the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

Annex 2 of ACAP constitutes an Action Plan: in terms of species conservation, it prohibits the use of and trade in albatross and petrel, or their eggs, and fosters the development and implementation of conservation strategies for particular species or groups.[867] ACAP further supports the control and, where possible, eradication of non-native taxa detrimental to petrel populations.[868] To manage human activities, ACAP requires an impact assessment where policies, plans, programmes and projects are likely to affect the conservation of albatross and petrel.[869] Incidental bycatch is also targeted and Parties to ACAP are obliged to take appropriate measures to reduce or eliminate the mortality of albatrosses and petrels resulting incidentally from fishing activities.[870] The obligation to reduce, in contrast to elimination, potentially provides an insufficient standard to relieve the black petrel of the current burden arising through incidental mortality. Although New Zealand's success in meeting this obligation will be considered in Chapter 7, it is worth noting concern that this obligation is not yet effectively implemented.

The Annex to ACAP contains important habitat protection measures. In particular, management plans for protected areas are encouraged, with a view to preventing habitat degradation and managing disturbance to habitat and

[866] Article III (1).
[867] Annex 2, cl 1.1.1 and 1.1.3.
[868] Annex 2, cl 1.4.2.
[869] Annex 2, cl 3.1.
[870] Annex 2, cl 3.2.1.

the impact of alien species.[871] For marine habitats, ACAP places obligations to manage them to ensure the sustainability of marine living resources and to avoid harmful pollution.[872] More importantly, ACAP obliges Parties to try to develop management plans for the most important foraging and migratory habitats, in accordance with clause 2.3.1, which potentially limits the scope of such a plan to pollution avoidance and sustainable marine living resources.[873] The need for management plans in the New Zealand context, for the case study species, will be addressed in Chapter 7.

Clause 2.3.3 requires Parties to take special measures to conserve those marine areas which they consider critical to the survival and/or restoration of species which have unfavourable conservation status. Where damaging fishing practices are occurring in specific marine areas and critically impacting on a species, this obligation supports a spatial and/or temporal zoning restriction upon those fishing practices. Any such measure is bolstered by the requirement in Annex 1 cl. 3.2.1 for Parties to take appropriate measures to reduce or eliminate incidental mortality in fisheries. Conservation priorities have also been identified in reliance of a recently developed prioritisation framework, designed to enable conservation effort to be directed at land-based and at-sea threats that are considered to warrant conservation management priority. Several fisheries that impact on the black petrel are identified as priority threats,[874] although a recent report suggests that the assessment has excluded a fishery generating the highest proportion of risk to the bird.[875] Implementation of spatial and temporal zones are identified in Chapter 7 are identified as measures which if implemented would significantly

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871 Annex 2, cl 2.2.1.
872 Annex 2, cl 2.3.1.
873 Annex 2, cl 2.3.2.
874 Agreement on the Conservation of Albatrosses and Petrels *ACAP Conservation Priorities, MoP4 Doc 17 Agenda Item 7.4* (2012).
875 Baird, K and Bell, B *Bycatch of Black Petrel in New Zealand Fisheries* (Fifth Meeting of the Seabird Bycatch Working Group, Agreement for the Conservation of Albatrosses and Petrel, SBWG5 Doc 37 Agenda Item 10, 2013) 1.

benefit the black petrel. Greater visibility and implementation of clause 2.3.3 and Annex 1 cl 3.2.1 is needed.

ACAP's Annex is one of few international instruments that specifically considers the issue of disturbance, creating clear obligations to minimise disturbance and to keep some areas in both marine and terrestrial habitats free of disturbance.[876] In consideration of tourism, particularly in relation to proximity to breeding sites, the stronger standard of avoidance is adopted as an alternative to just minimising the impacts of disturbance. It should be noted that minimisation is distinct from mitigation, and is not a lesser measure.[877]

6.5.2 BENEFITS OF THE CMS AND ACAP

CMS and ACAP instruments can significantly benefit the case study species because they have a range of well-targeted protective measures to be applied across Range States, they create species-specific agreements, they raise the profile for listed species which induces heightened protection and potential funding, they contain obligations regarding research and monitoring, and they focus on specific threats such as bycatch and disturbance. For the black petrel and the sooty shearwater the focus on bycatch is of critical importance. The CMS applies measures pertaining to bycatch and ACAP was developed largely as a response to this particular issue.[878] Of particular importance is the decision made to "commence engagements with a number of Regional Fishery Management Organizations (RFMOs), which manage high-seas fisheries affecting southern seabird".[879]Nevertheless, CMS and ACAP also have some limitations, discussed below, which have significant consequences for the birds.

[876] Annex 2 cl 3.4.1.
[877] Annex 2 cl 3.4.2.
[878] Cooper above n 838 at 2.
[879] Cooper above n 838 at 3.

6.5.3.1 Lack of force and influence

As with Ramsar, CMS and ACAP are limited by a lack force and influence. The directive force of the CMS is eroded by the loose nature of the obligations it casts. ACAP, conversely, creates more specific obligations but still provides considerable leeway in implementation by Parties. The instruments could be considerably strengthened by applying an active precautionary principle, strengthening the requirements for prevention of harm and requiring avoidance of adverse effects.

The lack of influence can be measured in New Zealand by the current level of threat suffered by the black petrel from fisheries bycatch. Stronger measures are required, in particular spatial zoning measures creating temporary fishing restrictions.

6.5.3.2 Unevenness of reach

The CMS is uneven in reach because selectivity is premised on endangerment. Accordingly, only those species that are critically placed receive the benefit of Appendix I listing. Prioritising species protection on endangerment is the foremost contemporary approach,[880] however, this poses risks for those species outside of this category. The intent of the CMS and related agreements is to ensure that species are protected as they pass through other jurisdictions and to achieve a degree of consistency in the protective measures applied across the range. Yet, seeking this consistency between migratory species unwittingly creates inconsistencies with species that do not migrate.

In principle, through the action of the CMS and ACAP, the black petrel is privileged in contrast to the other case study species. As a result of ACAP,

[880] Gillespie, A "Animal Ethics and International Law" in Sankoff, PJ and White, SW (eds) *Animal Law in Australasia: A New Dialogue* (Federation Press, Annandale, NSW, 2009) 352.

the black petrel has been the subject of a species assessment,[881] which includes consideration of conservation status, breeding biology, conservation listings and plans, population trends, threats, distribution and, importantly, key gaps in the species assessment. Accurate estimates of breeding population and distribution together with details of foraging range are highlighted as areas to augment understanding to enable better protection of the species. The assessment provides a valuable focus particularly where a recovery plan pursuant to the Wildlife Act 1953 is not in place, as is the case of the black petrel.

That aside, the black petrel population has been decimated to such an extent that it now only survives on two offshore islands and within very specific locations. The population has dropped to perhaps 1400 breeding pairs. It is a Threatened species, and classed as vulnerable. Why, then, would a restriction “to prevent, remove, compensate for or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species”[882] not apply to that species? An argument can be made that the Appendix 1 standards should be extended to all Threatened species, as a measure to strengthen the effect of the CMS. Given that the standards already provide “leeway” for implementing nations (for instance “minimise as appropriate”), such a measure would not be unduly onerous.

While the black petrel has the benefit of ACAP, this agreement covers all albatross but does not cover all petrel[883] or other migrating New Zealand species. The sooty shearwater and the bar-tailed godwit are excluded from consideration despite threat assessments revealing significant potential for loss on migration routes. The sooty shearwater may be a populous species, but

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[881] “Agreement on the Conservation of Albatrosses and Petrels, ACAP Species Assessment: Black Petrel Procellaria Parkinsonii” (2009) http://www.acap.aq/acap-species.
[882] CMS Article III (4) (b).
[883] CMS Scientific Council Flyways Working Group *A Review of CMS and Non-CMS Existing Administrative/Management Instruments for Migratory Birds Globally* (2010) 46.

it suffers one of the highest rates of bycatch in New Zealand fisheries.[884] The bar-tailed godwit, within the New Zealand range, is not covered by binding flyways protection despite development activity occurring along its migration routes, particularly staging posts in the Yellow Sea, of a scale which significantly threatens the species.

On a side note, the position of the wrybill deserves consideration. The wrybill is not contemplated by the CMS because it is an internal migrant so, despite facing many similar obstacles, it cannot gain additional protection from this international source. While the wrybill enjoys the more general protection of the CBD, it lacks the protective focus regarding migration impediments and a species assessment, made all the more valuable in the absence of a recovery plan under the Wildlife Act 1953. Effort needs to be applied to ensure domestic law adequately covers the threats faced by internal migrants and reflects, if not strengthens, measures available under CMS and ACAP.

6.5.3.3 Membership

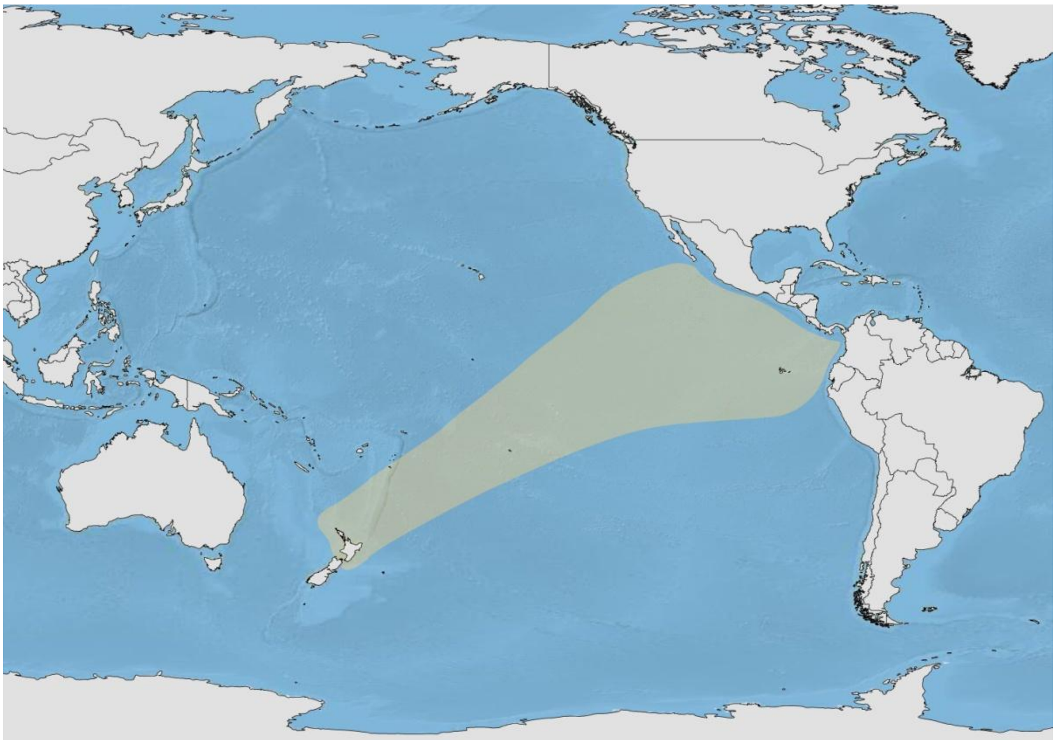
Although there are 119 Parties to the CMS, membership is not universal, and neither the People's Republic of China nor the Republic of Korea is a member.[885] This is significant for the godwit, given the extent of habitat loss arising through reclamation and development at key staging posts in these countries, as examined in Chapter 4.

Similarly with ACAP, only 45% of the Range States are party to the Agreement, and eight of the Range States are not party to the CMS including the People's Republic of China, the Russian Federation and the United States

[884] Richard, Y and Abraham, ER "Risk of commercial fisheries to New Zealand seabird populations, 2006–07 to 2010–11" 2013 New Zealand Aquatic Environment and Biodiversity Report No. 109, 18.
[885] Parties to the Convention on the Conservation of Migratory Species of Wild Animals and its Agreements as at 1 April 2013 <http://www.cms.int/about/partylist_e.pdf>

of America.[886] Coverage for the black petrel, though, is reasonable. Figure 64 demonstrates the approximate range of the black petrel, the knowledge of which is continually improving due to techniques such as data logging.[887] New Zealand (its only known breeding ground) is a Party as are Australia, Equador and Peru, which are known as foraging Range States. The bird is, however, also known to forage within the Exclusive Economic Zones of Columbia, El Salvador, Guatemala, Mexico, Panama and the United States, none of which are Parties to ACAP.[888]

Figure 64 Approximate range of black petrel



Source: Adapted from NatureServe and IUCN (International Union for Conservation of Nature) 2007. *Procellaria parkinsoni* In: IUCN 2012. *IUCN Red List of Threatened Species. Version 2012.1*. http://www.iucnredlist.org. Downloaded October 2013.

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[886] CMS Scientific Council Flyways (2010) above n 883 at 50.
[887] For a description of foraging range and at-sea distribution see Agreement on the Conservation of Albatrosses and Petrels "Species assessments: Black Petrel Procellaria parkinsoni"(2009) <http://www.acap.aq 6>
[888] ACAP Species assessment ibid.

This lack of universal membership of Range States creates an immediate problem as regards compliance and migratory species, but a second issue is that of scale. The foraging range of the black petrel is extensive, reaching west to Australia and east to South and Central America, but also incorporates the vast tracts of ocean in between. The characterisation of compliance with international agreements as "paper compliance" in contrast to actual compliance is a further issue limiting treaty effectiveness.[889]

6.5.3.4 Inaction

Analysis of interview material identified a theme of "lack of action". Concern exists that scientists have identified the problems, are identifying methods to fix them and that although the international instruments define the problem they do not require sufficiently agile and effective responses, and populations continue to decline.

6.. CONCLUSION

Ramsar, the CBD, the CMS and ACAP each canvass a range of important issues and related responses which impact on the case study species. The Conventions are well informed and directed, and propose and drive a wide range of important measures. Despite this, the evidence presented in Chapter 4, suggests that the instruments and their implementation are currently insufficient to stem biodiversity loss. There are three main points to conclude from the review.

First, the examination shows that the agreements are focused upon the most significant threats that face the case study species, but that the measures of themselves are not particularly compelling. A failure to adopt a strong active stance to precaution and prevention in the management of threats to species

[889] Caddell 2005 above n 837 at 143.

weakens the rigour of measures applied. Moreover, considerable leeway is left for any implementing nation, thus impacting on the extent of burden distributed to species. The example of degraded Ramsar sites demonstrates this problem as does the very limited number of sites nominated for Ramsar protection. Significantly more could be made of Ramsar to benefit birds in New Zealand, through greater engagement, and implementation. For species protection, the current threat posed to the black petrel through fisheries bycatch provides evidence of ineffectual instruments, and will be more closely examined in Chapter 7. Active implementation of the Aichi targets would benefit all case study species.

Secondly, the review illustrates the inconsistency and fragmentation in approach to threatened species. An examination across the three instruments displays the unevenness of approach. Ramsar is focused upon a specific ecosystem type, and protecting the values within it, but site selection and implementation produce a somewhat ad hoc approach to protecting the site values, and the species for which the site provides habitat. Insufficient management of external influences results in the persistence of a range of threats to the case study species and, potentially, the same can be said for insufficient on-site management.

CMS and ACAP elevate standards of protection for particular species, according to remit and premised upon endangerment. While it is acknowledged that this is the intention and purpose of the agreement, it nevertheless creates a separate and fragmented layer of protection. For the black petrel it is clearly vital that threats such as bycatch are addressed quickly and with priority and ACAP provides welcome support. Yet just because the sooty shearwater is a numerous species does not seem a sufficient reason for it to be excluded from Appendix II, particularly where it is a species of significant cultural importance. In the same vein the godwit and the black petrel arguably deserve protection from obstacles that prevent or hinder migration and other related intentions, yet this protection is reserved for international migrant species whose plight is critical. The management of disturbance is another example which receives uneven treatment. Due to its lack of immediate endangerment the godwit found on New Zealand shores, misses out on a protective agreement, despite being a migrant suffering considerable loss at its international staging posts. Of concern are the scale of this loss and the potential agility of an international agreement to respond to this. In addition lack of universal membership of both ACAP and CMS limits reach and consistency of approach.

Thirdly, there is a lack of integration across the agreements. Although, measures are in place to increase harmonisation, the ad hoc development of treaties, related institutional frameworks and extensive guidance material underscore the need for implementing nations to introduce universal and integrated approaches to protecting threatened species otherwise certain species may slip between the cracks of protection.

Subsequent chapters will examine what New Zealand does to implement the agreements, together with additional species and habitat protection responses.

CHAPTER SEVEN - DISTRIBUTION OF HARM AND BENEFIT TO BIRDS - SPECIES PROTECTION AND MANAGMENT IN NEW ZEALAND

Introduction

In recent years, the decimated populations of North Island kokako (Figure 65) have been recovering, suggesting the species will not suffer the fate of its South Island cousin: is this gain due to legal measures, or should it be attributed to the persistence, insight and skill of those scientists and managers engaged in conserving the species? As seen in the last chapter, species protection, including prevention of extinction, is an international goal, expressed most recently through the Aichi targets. This chapter will examine the contribution of New Zealand law to species protection, and will highlight its effectiveness through the examples of the case study species.

Figure 65 Kokako, Tiritiri Matangi

The focus will be upon the Wildlife Act 1953 (WA) and species protection and management provided through conservation legislation. Chapter 8 will consider the law in terms of habitat and ecosystem protection, with a particular focus upon the Resource Management Act 1991 (RMA). The division between the two chapters does not represent a rigid dichotomy between species and habitat, as law and policy directed at conservation may at times blend these aspects.

The variety, mobility and natural pervasiveness of birds, situated in a complex and dynamic environment, challenges the flexibility, reach, and effect of government structure and law in providing the consistent and comprehensive protection needed to limit the range of threats identified in Chapter 4. The law must anticipate and provide for geographical shifts such as ownership and resource variation in the landscape, organisational shifts related to agency boundary and function, and ecological process shifts impacting the varying biological and ecological prerequisites of birds. Chapters 6, 7 and 8 identify inconsistencies and limitations in the treatment of birds on these accounts.

In analysing the effect of species protection in New Zealand, this chapter suggests that its value is compromised by place, ownership of species, degree of protection, lack of reach, extensive statutory exception, inadequate implementation, and being overwhelmed by the RMA. Some of the failings can be attributed to a lack of implementation and resourcing, others to the structure of the law and government.

7.1 GOVERNMENT STRUCTURE AND BIRDS

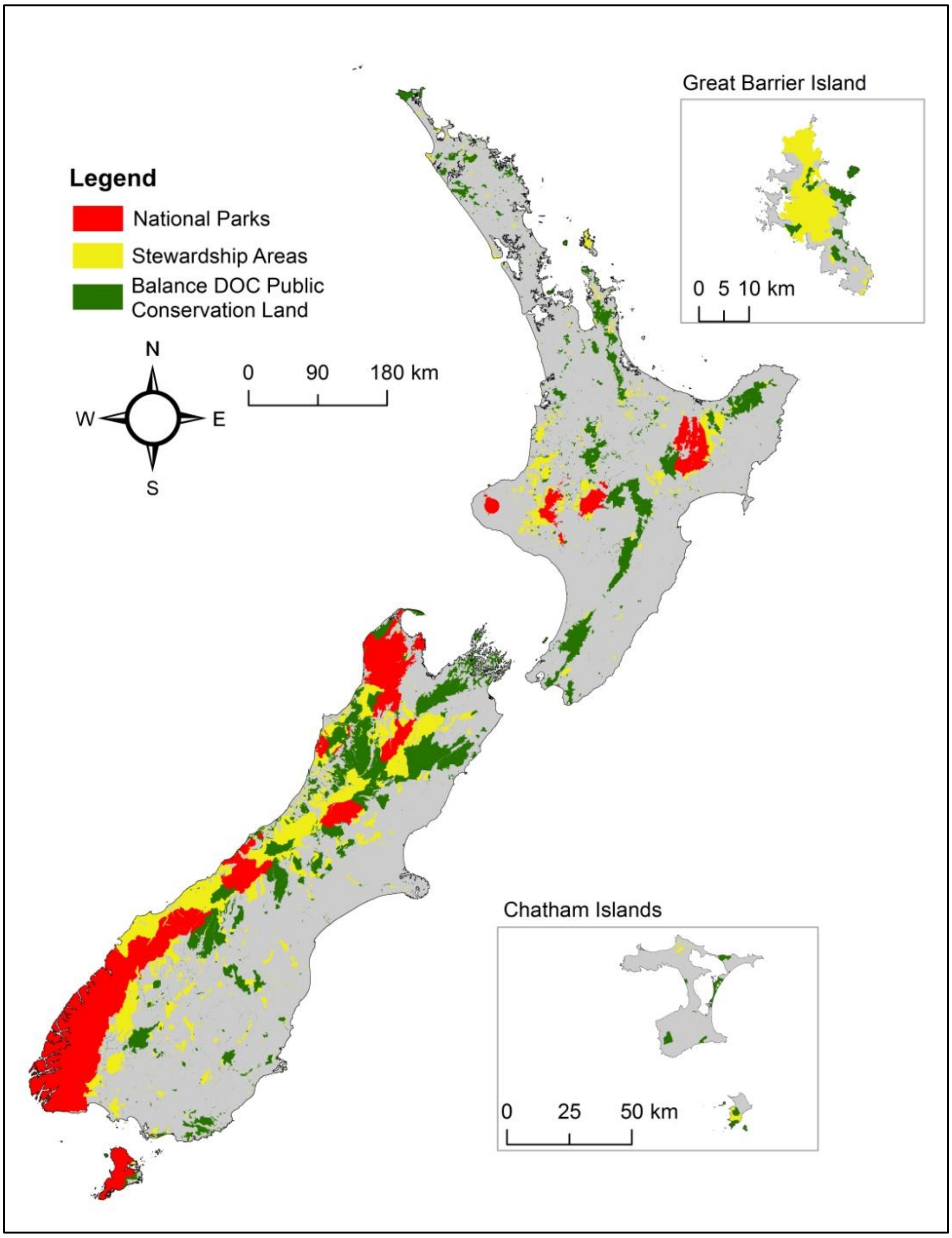
The Department of Conservation (DOC) is the agency tasked pursuant to s 6(a) of the Conservation Act 1987 with the responsibility to manage for conservation purposes, all land, and all other natural and historic resources, for the time being held under the Act, and all other land and natural and historic resources whose owner agrees with the Minister that they should be managed by DOC. Conservation is defined by s 2 to include “the preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values”. Natural resource is defined by s 2 to include plants and animals of all kinds, the air, water, and soil in or on which any plant or animal lives or may live, and systems of interacting living organisms, and their environment.

Birds are not "held under" the Act in the same way as land, wildlife protection is the province of the Wildlife Act 1953 (WA - section 7.2). For the purposes of the Conservation Act 1987, s 6(a) limits the conservation management functions of DOC to land or resources held under the Act, thus constraining activity for conservation purposes upon private land without agreement of the land owner. But does this mean that birds miss out on management for conservation purposes when on private land? This is a matter to be returned to shortly when considering the ambit of the WA.

As shown in Figure 66 overleaf, approximately one third of the land in New Zealand is public conservation estate administered by DOC, and the balance of the land is in private ownership or public ownership for purposes other than conservation. For areas beyond the public conservation estate, s 6(b) Conservation Act 1987 confers an advocacy role upon DOC to conserve natural and historic resources. The spatial division between the public conservation estate and private land is significant in many ways, but particularly so in the case of survival rates of populations and species, the public estate produces fewer species declines than private land.[890]

[890] Miskelly, CM, Dowding, JE, Elliott, GP, and others "Conservation Status of New Zealand Birds, 2008" 2008 55 Notornis 123.

Figure 66 Map of Public Conservation land 2013



Source: Coastline is LINZ NZtopo50 Coastline
Boundaries of public conservation land sourced from Department of Conservation 2013

Chapters 2 and 4 identified that the case study birds are distributed throughout a variety of New Zealand environments. For kokako and black petrel, breeding habitat is now largely confined to land in the public conservation estate, but the black petrel, like the sooty shearwater ranges widely in marine areas. Most kokako have life-cycles fully confined to protected forest areas whilst shorebirds such as the dotterel make use of both public and privately owned habitat with much activity centred upon the public coastal marine area. Godwit and wrybill also make extensive use of these areas, with the wrybill extending its range to include breeding habitat in the South Island braided rivers and environs.

The river areas, in particular the beds of navigable rivers, are generally public estate, apart from marginal strips vested in the Crown. The land surrounding these areas is potentially private land.[891] The beds of non - navigable rivers generally vest in the adjoining landowner up to the centreline of the river (ad medium filum aquae), subject to a rebuttable presumption.[892] The water flowing within the rivers is managed under the Resource Management Act 1991 (RMA), and does not gain particular protection if, for instance, it flows through a protected public reserve such as a National Park.[893] Where beds of lakes are wholly within the boundaries of a piece of land, the bed of the lake vests in the registered proprietor of the land.[894] A water conservation order obtained pursuant to Part 9 of the RMA is a mechanism through which waters with outstanding qualities, including provision of habitat, may gain legal protection.

As the birds move around these areas a key enquiry is to what extent do these protection measures travel with them, and what is the expected

[891] Section 261 Crown Mines Act 1979 continued by 354(1) RMA.
[892] *Re the Bed of the Wanganui River* [1962] NZLR 600 (CA), 609.
[893] New Zealand Conservation Authority *Protecting New Zealand's Rivers* (New Zealand Conservation Authority, 2011) 19.
[894] Espie, S, Howes, L, Palmer, KA, and others *Land Law* (online looseleaf ed, Brookers) at [6A.10].

degree of care to be exercised in the interaction with human activity and development? Species protection can, on this account, be distinguished from habitat or ecosystem protection, although a universal standard of protection (such as avoidance of harm to birds) applied to resource use in all relevant habitats and ecosystem processes could technically achieve the same result.

Whilst the Wildlife Act 1953 (WA) administered by DOC governs species protection and is the central focus of this chapter, the contribution of the RMA to species protection, and its intersection with the WA, will also be considered. The RMA, reflecting its impact upon all New Zealand natural and physical resources, rests upon a different institutional framework to the WA. A three tier structure comprised of central government and two levels of local government, regional and territorial, anchors the operation of the RMA, and provision is made for the sustainable management of resources, including biodiversity, principally through the creation of resource management policy and plans. The purpose and effect of the RMA will be considered in detail in Chapter 8 which focuses upon habitat protection.

7.2. THE WILDLIFE ACT 1953

The intent of the WA is the protection and control of wild animals and birds, the regulation of game shooting seasons, and provision for the constitution and powers of acclimatisation societies. Part 1 identifies wildlife species to be protected,[895] and enables the establishment of protected areas such as sanctuaries and wildlife refuges.[896] Additionally, it provides for management planning to be carried out by the Department of Conservation (DOC)[897], and for the preparation of policy and plans including general policy,[898]

[895] Sections 3-7C.
[896] Sections 9-14AA.
[897] Section 14B.
[898] Section 14C.

conservation management strategies (CMStrat)[899] and conservation management plans.[900] Part 2 regulates the hunting of game, and is supported by administrative provisions contained in Part 3. The management of injurious species was previously covered by Part 4, but was repealed by s 91(2) of the Biosecurity Law Reform Act 2012, which will be discussed in Chapter 8. Part 5 is of relevance to this chapter due to the enabling of statutory authorisation of species take,[901] vesting of species ownership in the Crown,[902] and the provision of offences and penalties.[903] Finally, the Schedules to the WA relate back to Part 1 and assign varying grades of protective status to listed animals.

The WA has been subject to sustained criticism on a range of fronts including its central role in a fragmented and aged legislative approach,[904] lack of direction and effect of recovery and management of species,[905] lack of integration with legislation controlling development in the environment including the RMA,[906] limited focus upon species take and lack of relationship to habitat,[907] legitimisation of take through statutory exceptions[908] and failure to require positive action to manage most significant threats such as

[899] Section14D.
[900] Section 14E.
[901] Sections 53-54.
[902] Section 57.
[903] Sections 62-70.
[904] Waitangi Tribunal *Ko Aotearoa Tēnei: A Report into Claims Concerning New Zealand Law and Policy Affecting Māori Culture and Identity* (Waitangi Tribunal, 2010) 299.
[905] Seabrook-Davison, MNH, Ji, W and Brunton, DH "New Zealand Lacks Comprehensive Threatened Species Legislation: Comparison with Legislation in Australia and the USA" 2010 16 Pacific Conservation Biology 54.
[906] Seabrook-Davison 2010 ibid, Wallace, PJ "Where the Wild Things Are: Examining the Intersection Between the RMA 1991 and the Wildlife Act 1953" 2009 Resource Management Journal 21.
[907] Warnock, C and Wheen, N "Climate Change, Wildlife Movement and the Law: A Case Study from New Zealand" 2008 34 Commonwealth Law Bulletin 527 at 533, Blue, L and Blunden, G "(Re)making Space for Kiwi: Beyond 'Fortress Conservation' in Northland" 2010 66 New Zealand Geographer 105 at 112, Round, DJ "The Lion, the Nurse and the Weasel: Law and Policy Concerning Endangered Species in New Zealand" 2011 15 NZJ Envtl. L. 154.
[908] Warnock and Wheen ibid, at 534, Bosselmann, K and Taylor, P "The New Zealand Law and Conservation" 1995 2 Pacific Conservation Biology 113 at 114.

mammalian predators.[909] In addition, species management under the WA and Conservation Act 1987 has been criticised as being inconsistent and alarmingly under-resourced,[910] as well as lacking conservation plans and strategies with a clear guiding philosophy.[911] These criticisms are not without foundation as will be evidenced in the balance of this chapter.

7.2.1 PROTECTION

7.2.1.1 Schedules – Exceptions to absolute protection

Section 3 of the WA provides for the absolute protection of all wildlife[912] throughout New Zealand and its fisheries waters (Exclusive Economic Zone). Absolute protection is the default position for all wildlife pursuant to s 3, with exceptions set out in Schedules to the Act. The context and meaning of the term "absolute" are examined in this section. The Schedules are the key to ascertaining levels of protection ascribed to species within and between classes of animals, and are adjusted according to perceived value and or risk. Table 10 demonstrates species' classification and defines the limits to absolute protection for particular species. As will be seen, each of the case study species is accorded absolute protection barring the sooty shearwater.

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[909] Round above n 907 at 112, Clout, M "Where Protection is not Enough: Active Conservation in New Zealand" 2001 16 Trends in Ecology & Evolution 415, referring to Towns and others 2001.

[910] Joseph, LN, Maloney, RF, O'Connor, SM, and others "Improving Methods for Allocating Resources Among Threatened Species: The Case for a new National Approach in New Zealand" 2008 14 Pacific Conservation Biology 154 at 155.

[911] Clout, MN and Saunders, AJ "Conservation and Ecological Restoration in New Zealand" 1995 2 Pacific Conservation Biology 94.

[912] **Wildlife** is defined by s 2 WA as: *means any animal that is living in a wild state; and includes any such animal or egg or offspring of any such animal held or hatched or born in captivity, whether pursuant to an authority granted under this Act or otherwise; but does not include any animals of any species specified in Schedule 6 (being animals that are wild animals subject to the Wild Animals Control Act 1977).* ***Animal*** *means any mammal (not being a domestic animal or a rabbit or a hare or a seal or other marine mammal), any bird(not being a domestic bird), any reptile, or any amphibian; and includes any terrestrial or freshwater invertebrate declared to be an animal under section 7B and any marine species declared to be an animal under section 7BA; and also includes the dead body or any part of the dead body of any animal.*

<table>
<tr><th colspan="4">Table 10 Exceptions to absolute protection under the Wildlife Act 1953</th></tr>
<tr><th colspan="4">Schedule 1 Wildlife declared to be game</th></tr>
<tr><td>Black swan
Chukar
Australasian shoveler
Grey duck</td><td>Mallard duck
Paradise shelduck
Grey Partridge
Red-legged partridge</td><td>Pheasant
Pukeko
Bobwhite quail</td><td>Brown quail
Californian quail</td></tr>
<tr><th colspan="4">Schedule 2 Partially protected wildlife</th></tr>
<tr><td colspan="2">Brown skua (on Chatham Islands only).
Little owl</td><td colspan="2">Silvereye</td></tr>
<tr><th colspan="4">Schedule 3 Wildlife that may be hunted or killed subject to Minister's notification</th></tr>
<tr><td colspan="2">Australasian harrier (harrier hawk)
Black swan (on Chatham Islands only).
Grey duck
Grey teal
Mallard duck
Grey-faced petrel.
Mute swan
Grey Partridge (on Chatham Islands only)
Red-legged partridge (on Chatham Islands only)</td><td colspan="2">Pheasant (on Chatham Islands only)
Pukeko (on Chatham Islands only)
Bobwhite quail (on Chatham Islands only)
Brown quail (on Chatham Islands only)
Californian quail (on Chatham Islands only)
Black shag
Little shag
Pied shag
Sooty shearwater Muttonbird (Puffinus griseus).
South Island weka (on Chatham Islands only).
Stewart Island weka (on islets off Stewart Island and in Foveaux Strait only).</td></tr>
<tr><th colspan="4">Schedule 5 Wildlife not protected</th></tr>
<tr><td>Mammals
Cat
Cattle
Dog
Ferret
Hedgehog
Horse
Mouse
Polecat
Possum
Rat
Sheep
Stoat
Weasel</td><td>Birds
Blackbird
Red-vented bulbul
Cirl bunting
Cape Barren goose
Chicken
Indian (or Malayan) Dove
Chaffinch
Goldfinch
Greenfinch
Lesser redpoll
Goose
Canada Goose
Guineafowl
Black-backed gull
Kookaburra
Black backed magpie</td><td>White backed magpie
Muscovy duck
Mynah
Budgerigar
Crimson rosella
Eastern rosella
Galah
Rainbow lorikeet
Ring-necked parakeet
White (or sulphur crested) cockatoo
Peafowl
Rock pigeon
Rook
Skylark
Song thrush</td><td>Hedge sparrow
House sparrow
Spur-winged plover
Starling
Turkey
Yellow hammer

Amphibians
Green and golden bell frog
Southern bell frog
Whistling frog
Reptiles
Rainbow skink
Red-eared slider turtle</td></tr>
<tr><th colspan="4">Schedule 6 Noxious animals</th></tr>
<tr><td>Axis deer
Fallow deer
Japanese deer
Javan rusa deer</td><td>Moose
Red deer
Sambar deer
Virginian deer</td><td>Wapiti
Any other member of family Cervidae
Chamois</td><td>Goat
Himalayan tahr
Pig</td></tr>
</table>

7.2.1.2 Schedule 5 – Wildlife not protected

Contests between human interests and intrinsic values are played out in the Schedules. Schedule 5 lists those birds which are excluded from absolute protection, and does not include any endemic species. Two native species, the black-backed gull and the spur-winged plover, are included, the spur winged plover being added in 2010 having once been a fully protected self-introduced native.[913] Protection is lost due to ready adaptation to the New Zealand environment and the potential to cause harm to human interests.[914] Canada goose and peafowl have also been recently relegated to this rank owing largely to the risk they pose to agriculture.

7.2.1.3 Schedule 3 – Wildlife that may be hunted or killed subject to Minister's notification[915] and Schedule 2 Partially protected wildlife

Damage to human interests remains a ground for listing in Schedule 3, and enables those birds to be hunted subject to notification of the Minister. Section 6(1) provides:

> **6 Certain wildlife may be hunted subject to conditions imposed by the Minister**
>
> (1) The Minister may from time to time in his discretion, by notification, declare that any wildlife for the time being specified in Schedule 3 may be hunted or killed or had in possession subject to such conditions as he prescribes, and any such wildlife may be hunted or killed or had in possession accordingly.

[913] Woodley, K "Spur-winged plover" in Miskelly, CM (ed) (2013) New Zealand Birds Online <www.nzbirdsonline.org.nz>
[914] Department of Conservation *Review of Level of Protection for Some New Zealand Wildlife - Public Discussion Document* (Department of Conservation, 2006) 16, Heather above n 53 at 333.
[915] No animals are currently listed under Schedule 4 (s 7(1) "Wildlife not protected, except in areas and during periods specified in Minister's notification".

The notification aspect distinguishes Schedule 3 from Schedule 2 "Partially Protected Wildlife" which protects birds only insofar as their presence does not cause damage to property or land. Where such damage arises, s 5(2) authorises the occupier of the land to hunt or kill the bird, subject to regulation in force under the WA, without notification. Section 5(1)-(2) provides:

> **5 Certain wildlife partially protected**
>
> (1) The wildlife for the time being specified in Schedule 2 is hereby declared to be partially protected, and that protection shall apply throughout New Zealand, except where that schedule otherwise provides.
>
> (2) Notwithstanding anything to the contrary in this Act, when any injury or damage to any land or to any property on any land has arisen owing to the presence on the land of any wildlife for the time being specified in Schedule 2, the occupier of the land or any other person with the authority of the occupier may hunt or kill on the land any such wildlife, subject to any regulations for the time being in force under this Act: provided that nothing in this subsection shall authorise the hunting or killing of any wildlife in a wildlife sanctuary or wildlife refuge except pursuant to an authority granted under section 11 or section 14 or section 54.

Recent upgrades from Schedule 2 to Schedule 3 include birds such as the Australasian harrier and the black shag. Also included in Schedule 3 is the pied shag, a bird with a threat status of vulnerable. In recognition of the harrier's contribution to the functioning of New Zealand ecosystems, and the fact that shags are listed due to limited potential to harm trout fishing interests, debate exists as whether the birds should be scheduled at all.[916] An alternative approach would be to accord absolute protection, and place the onus on those attempting to protect economic interests to employ bird aversion measures.

Similar considerations apply to the grey duck and pied shag (Figure 67), still listed in Schedule 3 despite recent threat status reclassification to

[916] Department of Conservation 2006 above n 914 at 20-21 and Wildlife (Black Shag and Little Shag) Notice 2012.

nationally critical and vulnerable respectively.[917] Pursuant to s 8 WA, alteration to the Schedules requires an Order in Council, which is usually preceded by stakeholder consultation. Where a bird is reclassified from a status of not Threatened to Threatened, a more agile and protective response would be to amend the WA to enable absolute protection to be triggered upon reclassification.

Figure 67 Pied shag Maketu Spit

[917] Hitchmough, R *Summary of Changes to the Conservation Status of Taxa in the 2008–11 New Zealand Threat Classification System Listing Cycle* (Department of Conservation, 2013). Note also that hybridisation of the grey duck with the mallard presents management difficulties in terms of a schedule change.

7.2.1.4 Schedule 3 - Customary take

Schedule 3 does not only deal with birds causing damage to human interests. It also caters to provisioning humans, and this is where relevance to a case study species arises, Section 6 enables customary takes of sooty shearwater and grey faced petrel.[918] In this way the section operates to recognise the value of the birds as traditional kai (food), and limits takes to this purpose.

The passage of history has influenced the outcomes of specific contemporary rights to take. Like the godwit, abundance and delectability were factors which made fit the sooty shearwater for harvest by humans. Entrenchment of cultural interests via legislation has, however, ensured that, for sooty shearwater and grey faced petrel, some of these rights persist.[919] Had the godwit been present and taken in large numbers on the Tītī Islands at the time the Deed of Cession was signed,[920] it may well have been that these birds, and the manu grounds associated with them, would have been included in a recognised usufructuary right to harvest. Enabling sustainable cultural harvesting of species such as godwit is a matter which some would like to see more widely debated amongst conservationists.[921] It is argued that greater

[918] The Tītī (Muttonbird) Notice 2005 (SR 2005/21) issued pursuant to this section, provides that from 5 March 2005 tītī may be hunted, killed, or had in possession in accordance with specific legislation.

[919] The rights of Rakiura to 36 Tītī islands are guaranteed under 1864 Deed of Cession of Stewart Island and further provided for by the Tītī (Muttonbird) Islands Regulations 1978 SR 1978/59, Tītī (Muttonbird) Notice 2005 and the Rakiura Tītī Islands Bylaw 2005. In 1998, the ownership of the Crown Tītī Islands and statutory responsibility for managing the Islands and the tītī was vested in Ngāi Tahu by the Ngāi Tahu Claims Settlement Act 1998 and these islands were renamed the Rakiura Tītī Islands: see Kitson, JC and Moller, H "Looking After your Ground: Resource Management Practice by Rakiura Maori Titi Harvesters" 2008 142 Papers and Proceedings of the Royal Society of Tasmania 162 and Wheen, NR "Legislating for Indigenous Peoples' Ownership and Management of Minerals: A New Zealand Case Study on Pounamu" 2009 20 Management of Environmental Quality: An International Journal 558. Small numbers of northern muttonbirds or grey-faced petrel continue to be taken from islands offshore of the North Island of New Zealand, including the Aldermen (Ruamāhua) Group off the Coromandel Peninsula, pursuant to the Grey-faced Petrel (Northern Muttonbird) Notice 1979.

[920] For discussion of the context surrounding the Deed of Cession in relation to tītī and the manu grounds see: Wilson, E *Tītī Heritage: the story of the Muttonbird Islands* 1979 (New Zealand: Craig Printing Co Ltd.) chapters 1-10.

[921] Skinner, M "Crossing the Tribal Divide" Forest & Bird, May 2009, Vol 332, 26.

inclusion of Māori in processes relating to sustainable cultural harvesting, and the reconstitution of the right to guardianship, would "greatly alleviate the existing problem of illegal harvest by Māori of some protected species and would therefore produce a net conservation benefit".[922] In these particular geographical circumstances, however, it was the sooty shearwater which was the revered resource and the species to which a cultural right to harvest was attached.

The Treaty of Waitangi *(Te Tiriti o Waitangi)* guarantees rights to take in terms of lands, estates, forests, and fisheries over which Māori exercised dominion,[923] yet the lack of specificity concerning chieftainship or domain *(rangatiratanga)* over particular species in a given geographical location may limit recognition of specific rights. The WA, in vesting ownership in the Crown of all species except those listed in Schedule 5 (not protected), further impacts upon the ability to sustain such a right.[924] The contemporary mechanism available to identify and protect a cultural right to harvest is by way of claim to the Waitangi Tribunal, pursuant to the Treaty of Waitangi Act 1975.

For sooty shearwater harvest (Figure 68 Muttonbird), the rights protect not only takes for subsistence purposes, but also support the ability to harvest for commercial gain. As a traditional take, the right to harvest sooty shearwater is unlimited and currently restricted by measures of customary practice. Section 336 of the Ngāi Tahu Claims Settlement Act 1998, provides for the control and management of Crown Tītī Islands. The Act requires that a Committee appointed to manage the islands and the tītī resource, must manage the islands as if they were a nature reserve subject to the customary rights of Rakiura Māori to take tītī on a sustainable basis (s336(2) and (3)).

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[922] Wright, SD Nugent, G & Parata, HG "Customary management of indigenous species: a Maori perspective" New Zealand Journal of Ecology 1995 19 (1): 84.
[923] Article the second, Treaty of Waitangi, 1840 guarantees to the Chiefs and Tribes of New Zealand the full exclusive and undisturbed possession of their Lands and Estates Forests Fisheries and other properties.
[924] Section 57(3) Wildlife Act 1953.

Figure 68 Muttonbird

Source: http://www.hawkesbayseafoods.co.nz/webapps/p/85795/192665/ Muttonbirds reproduced with permission

Some controversy exist as to whether traditional ecological knowledge is a sufficient basis upon which to found a sustainable harvest, although in the case of the sooty shearwater, Rakiura Māori have established, and been actively involved in, projects designed to investigate and support the sustainability of the cultural harvest.[925] Currently measures employed do not limit the numbers of birds to be taken on a given day, time or place. Rather, traditional measures employed to sustain the population include minimising damage to the breeding grounds, limiting take to numbers which can be processed, temporal restrictions in the form of *rahui,* and protecting breeding stock by restricting takes of adult birds.[926]

The current New Zealand population of sooty shearwater is estimated to be 19-23 million,[927] and it is thought that New Zealand breeding colonies support

[925] Kitson 2008, above n 919 at 162.
[926] Kitson 2008, above n 919 at 169, 170, 172.
[927] Scott, D, Scofield, P, Hunter, C, and others Decline of Sooty Shearwaters, Puffinus Griseus, on the Snares, New Zealand Papers and Proceedings of the Royal Society of Tasmania 185.

approximately half of the total global population.[928] Although exact harvest numbers are unknown, it is estimated that approximately 360,000 chicks have been harvested annually in recent years.[929] The scale of the harvest reflects the abundance of population, the intensity of occurrence on several small offshore islands, and the relative ease of accessibility of a burrow or ground take. The ability to continue a take on this scale needs to be monitored to assess the biological constraints of the species and the impact of environmental change. As discussed in Chapter 4 a lack of clarity exists in terms of the extent of decline of the sooty shearwater (Figure 69) and the reasons for this. Serious concern exists that long-term oceanic changes have occurred causing prolonged decline to species including the sooty shearwater and that long-term sustainability of muttonbirding is in doubt.[930]

Figure 69 Sooty shearwater

Source: Dave Boyle Wildlife Management International Ltd

Similar rights applied to other case study species would lead to their rapid demise. Even the global population of the godwit of 1.1 million, and a New

[928] Infra chapter 2 at section 2.3.5.
[929] Scott above n 919 at 185 referencing Newman *et al.* unpublished data.
[930] Clucas, R "Long-term Population Trends of Sooty Shearwater (Puffinus griseus) Revealed by Hunt Success" 2011 21 Ecological Applications 1308.

Zealand seasonal population of approximately 85,000 to 110,000,[931] is dwarfed by such a tally. Debates relating to takes see resource values and cultural and economic interests pitted against existence values. A system regulating these issues usually determines at which point one set of values outweighs another. Typically the notion of endangerment is employed and backed by science to determine that point. In New Zealand, the development of the Schedules applies such logic. However, where a historical right to cultural take exists, the WA applies the system of Ministerial notice. The WA does not contain guidance in principle or practice on the point at which a guaranteed cultural right to take could be diminished through impact upon the species' threat status.

Contemporary cultural rights of Māori are, understandably, fiercely guarded by the holders particularly given the context of loss through colonisation. The situation is made more complex in that it is suggested that competition from the fishing industry is a factor limiting the success of the bird, and thus indirectly impacting the harvest.[932] Addressing the sustainability of fisheries catch is beyond the scope of this research. However, a recommendation to limit customary take to levels compatible with arrest (or if not possible, reduction) of decline, sits uneasily while the fishing issue remains unresolved. Yet if nothing is done to address these pressures, then the birds' decline will continue. This problem needs to be attacked on all fronts, but in the interim, it may be necessary to consider measures to limit harvest to ensure long term sustainability of the species. Although, Moller cautions that the imposition of restrictions imposed from outside may be ineffective and serve to alienate bird harvesters.[933]

The Waitangi Tribunal WAI262 Report recommends extensive changes to legislation structure and policy concerning conservation and customary use

[931] Heather, above n 53 at 322.
[932] Clucas above n 930 at 1308.
[933] Moller 2006 above n 264 at 652 and discussed in Wheen above n 918 at 559.

which is designed to bring about responsible power-sharing and partnership with Maori.[934] In recommending provision for full statutory co-management of customary use, the Tribunal offers two principles upon which joint decisions would be made: that survival of the species is paramount, and that iwi (tribe) have a right to exercise kaitiakitanga, and maintain their culture. A recommendation is also made that the WA should be amended so that nobody has ownership of protected wildlife.[935] The full implications of any such change cannot be assessed without greater detail. "Survival" is not, however, a high standard, and does not imply enhancement nor even maintenance of populations, although pairing with "kaitiakitanga" (the obligation to nurture and care for the mauri of a taonga, ethic of guardianship, protection) implies a sustainable take.[936] Enabling customary take of threatened species would be difficult to justify as species that are either conservation dependant, or in decline, will likely be imperilled by any take. Yet even the godwit is facing increasing threats to survival: its migratory habit means that significant threats are faced offshore at its migratory staging posts. In addition its breeding ground is removed. The opportunity to practice kaitiakitanga has temporal and spatial limitations, and disconnections in terms of knowledge and response. Knowing the odds stacking up against these birds it is difficult to recommend further take.

[934] Waitangi Tribunal *Ko Aotearoa Tēnei: A Report into Claims Concerning New Zealand Law and Policy Affecting Māori Culture and Identity* (Waitangi Tribunal, 2010) 706-708.
[935] Waitangi Tribunal ibid at 707.
[936] Waitangi Tribunal above n 933 at 745.

7.2.1.5 Schedule 1 - Game

Schedule 1 is the remaining effective exception to absolute protection, and provides for those birds included to be taken as game. The birds listed in this Schedule are generally those birds introduced into New Zealand for game purposes such as the mallard duck and the pheasant. The list, however, also contains one endemic bird, Paradise duck, and three natives, Grey duck, the Australasian shoveler, and Pukeko. Paradise duck takes are controlled by regional bag limits, and the game seasons are now closely linked to the productivity and movement of birds in each part of the country.[937] Controls of the other native species are also applied through hunting licenses and daily bag limits during the game season.[938]

The Schedules are relatively blunt instruments applied to regulate competition on the basis of value, and have attracted criticism for creating unfair cultural biases in the regulation of native game. This is on the basis that the Schedules enable the two native duck species to be taken as game, whereas cultural takes of the endemic pigeon kereru/kukupa are prohibited despite claims that the populations are similarly vulnerable.[939] For the case study species, all but the sooty shearwater are absolutely protected, and the breadth of this protection will shortly be examined.

7.2.2 THE EXTENT OF PROTECTION

7.2.2.1 The role of the Crown

Pursuant to s 57(3) WA, all wildlife is vested in the Crown barring unprotected species. It is clear that the Crown is facing considerable difficulty in managing and protecting its property on the public conservation estate, with the size of the task of conserving species being beyond the scope of the resources

[937] Heather above n 53.at 263.
[938] Heather above n 53 at 268, 271 & 289.
[939] Wright above n 922 at 84.

allocated.[940] This is due partly to the numbers of threatened species, and the need to actively manage species against the threat of alien predators. The existence and extent of any duty upon the Crown to protect the species "owned" is not specifically described at law apart from the general requirements of the WA and requirements under Biosecurity legislation which will be considered in Chapter 8.

The next issue is what is the right of the Crown as owner of species to protect wildlife? Section 41(1)(fa) in describing the general powers of the Minister of Conservation, provides that he or she may from time to time "protect and preserve wildlife that are absolutely protected under this Act". The limits of this discretionary power are unclear. Protect and preserve are undefined by the WA, although definitions of both protection and preservation are included in s 2 of the Conservation Act 1987.[941] Does this power extend to enabling access to private land without agreement in order to protect and preserve species? As discussed, DOC is limited in its right to do so under the CA, but no such limitation is expressed in the WA, which empowers the Minister for a separate purpose. Limitation upon the power described in the WA relates not to access but to works on private land. Section 41(2)(g) provides:

> (2) In the exercise of the powers conferred on him by subsection (1), the Minister may from time to time—
>
> (g) with the written consent of the occupier, and subject to the provisions of any other Act, construct and maintain on any land any roads, roadways,

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[940] Controller and Auditor-General *Department of Conservation Prioritising and Partnering to Manage Biodiversity* (Office of the Auditor-General, 2012) 10, Joseph and others 2008 above n 910 at 329.

[941] Section 2 provides the following definitions: "**Preservation**, in relation to a resource, means the maintenance, so far as is practicable, of its intrinsic values:" and "**Protection**, in relation to a resource, means its maintenance, so far as is practicable, in its current state; but includes—
(a) Its restoration to some former state; and
(b) Its augmentation, enhancement, or expansion:"

> tracks, paths, bridges, culverts, ferries, and other means of access necessary for the purposes of this Act:

Authority or discussion on the subject cannot readily be located.[942] Regardless of the extent of the power, it is apparent that protection of wildlife by the Crown on private land is low in comparison to that on public land. Assertion of the right to protect and preserve wildlife by the Crown on private land is not particularly visible, a matter that will be further underscored in the context of permitted taking under the WA in section 7.2.2.3. In a situation where government agencies are not fully resourced to protect species on public land, this result on private land can be expected.

Significant positive gains for conservation are made by way of agreement with private landowners to protect and manage species and habitat on private land. Furthermore, examples abound of remarkable voluntary efforts by landowners to protect species and habitat. But the fact remains that species declines continue on private land and that protection of birds in all areas requires strengthening.

A protection role is assumed to some extent by district and regional councils, under the RMA, but is characterised by a focus on habitat protection as mandated by s 6(c) rather than species protection or conservation management. It commonly manifests in the form of restrictions upon vegetation clearance (see Chapter 8). Chapter 8 will also demonstrate that an active management obligation to protect species from predators on private land is constrained in several important respects.

In this way the incidence of Crown ownership of birds, and potential associated protection, is compromised by place given that species survival is improved on public conservation estate, a matter that will be further examined in the contexts of incidental take and of management. The failure to allocate

[942] Searches of the case law and several legal databases relating to the WA and land law failed to produce commentary.

sufficient resources for protection also means that absolute protection is compromised by ownership and related government prioritisation. Greater engagement by the Crown, as owner of species, to preserve, conserve and protect on both public and private land would alter distribution of harm to birds beneficially.

7.2.2.2 Hunting or killing

In general terms, is absolute protection a standard that can counter little more than direct take through illegal hunting, or can its reach be extended to cover a broader class of activity threatening birds? The extent of absolute protection is contained in s 63(1) WA which provides:

> **63. Taking protected wildlife or game, etc**
> (1) No person may, without lawful authority,—
> (a) hunt or kill any absolutely protected or partially protected wildlife or any game:
> (b) buy, sell, or otherwise dispose of, or have in his or her possession any absolutely protected or partially protected wildlife or any game or any skin, feathers, or other portion, or any egg of any absolutely protected or partially protected wildlife or of any game:
> (c) rob, disturb, or destroy, or have in his or her possession the nest of any absolutely protected or partially protected wildlife or of any game.

Section 63(1) WA restricts hunting or killing of absolutely or partially protected wildlife without lawful authority. Where the absolutely or partially protected status applies, permission must be obtained from DOC in order to hunt or kill the animal pursuant to s 53. Pursuant to s 2, to hunt or kill wildlife includes the hunting, killing, taking, trapping, or capturing of any wildlife by any means. This includes loss arising incidentally, where it is known that actions may interfere with the natural and ordinary activities of the wildlife and may harm the wildlife.[943] Pursuing, disturbing, or molesting wildlife, taking or using firearms, dog or like-methods to hunt or kill are also forbidden. Inclusion of the terms “taking” and “disturbing” potentially widens the breadth of protection.

[943] *Solid Energy New Zealand Ltd v Minister of Energy* [2009] NZRMA [86].

Habitat destruction

Royal Forest and Bird Protection Society v Minister of Conservation[944] established that habitat destruction resulting in incidental killing may equate to a breach of the Act, constituting hunting or killing as defined by s 2 of the Act, but would require fact specific consideration. This is an important extension of the law as it means that acts such as clearance of vegetation and drainage of wetlands, causing mortality to species, may trigger liability under the WA. Greater clarification of the circumstances constituting liability would be of benefit to birds, particularly for loss suffered on private land not currently captured pursuant to the RMA.

Disturbance

From habitat destruction, the focus now shifts to disturbance of birds. The inclusion of the term "disturbing" in the definition of "hunt or kill" provides further expansion and potentially moves beyond considerations of mortality, but just how far, requires consideration. Does harassment of birds fall within this definition of "disturbing or molesting", or are the words limited by the umbrella terms "hunt or kill"? The scope of the term "disturb" was considered by Mallon J in *Solid Energy New Zealand Ltd v Minister of Energy,*[945] where it was argued by the plaintiff, relying upon *Kirkby v Ngamoki,* that a broad definition of the term "disturb", unconfined by the terms hunt or kill, would result in liability for unintentional disturbance when a person walks through the bush and startles wildlife such that it moves.[946] Mallon J held:

> Interpreting the words in the definition in light of their purpose the wildlife is not "disturbed" so as to be "hunting or killing" in this example in my view because the person took no action at all directed at the wildlife and the wildlife took action in response to changes in its environment (i.e. the

[944] *Royal Forest and Bird Protection Society v Minister of Conservation* [2006] NZAR 265 at paras 21-22.
[945] *Solid Energy New Zealand Ltd v Minister of Energy* [2009] NZRMA 145 at [83].
[946] *Kirkby v Ngamoki,* HC Rotorua M172/84 11 July 1985 at 3.

> presence of a person) of its own volition using its natural responses. Once disturbed in this incidental way it remains free to return to its original place or not as it chooses. It would be stretching the ordinary meaning of disturbance under a definition of "hunt or kill", and in the context of an offence provision aimed at protecting wildlife, for this kind of disturbance to be captured.

Similar reasoning was also applied to watching and following an animal in its natural state. This finding sensibly limits the reach of s 63(1) in order to avoid interpretations where protective responses may not be necessary and could create absurdity. It fails to recognise, however, that there may be situations where disturbance in an incidental manner causes harm to species, the potential for damage of this kind is recognised in the context of "wildlife refuges" constituted under the WA. Pursuant to s 14(3) "hunt or kill" is positioned disjunctively with other acts which include to "disturb, harry, or worry any wildlife" or "to do anything likely to cause any wildlife to leave the wildlife refuge". Section 14(1A) also enables restrictions to be imposed in a wildlife refuge upon a range of boats including crafts whether propelled by mechanical power or not.

Accordingly, an offence of unintentional disturbance of birds is limited to activities in areas reserved as "wildlife refuges" pursuant to the WA. A key limitation to this provision is the restriction of refuges to less than one % of the public conservation estate.[947] A more proactive approach is the education of the public in the use of sensitive areas (see the example of Maketu Spit in Figures 70 and 71) and greater use of rangers in high disturbance areas and seasons. Options also exist for protection pursuant to the RMA which will be considered in Chapter 8.

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[947] Controller and Auditor General *Department of Conservation: Planning for and Managing Publicly Owned Land* (Audit Office, Wellington, NZ, 2006) 17.

Figure 70 Roped off dotterel nesting area and red billed gull colony, Maketu Spit

Figure 71 Interpretative signage at Maketu Spit

Penalties

For an individual, an offence pursuant to s 63(1) in relation to hunting or killing absolutely protected wildlife, carries the maximum penalty of 2 years imprisonment or a fine of $100,000 pursuant to s 67A(1)(a).[948] A body corporate may receive a fine of up to $200,000 (s 67A(1)(b)).

Separate offences for taking marine wildlife arise pursuant to s 63(A), and include robbing, disturbing or destroying a nest. Marine wildlife is defined by s 2 to include species inhabiting or found in or on the sea or foreshore. Each of the case study species, bar the kokako, potentially fall within this broad definition, either through use of the foreshore or due to immersion in the ocean to take prey. The definition of marine wildlife is, however, restricted to occurrence in marine environments. In *Parlane v Department of Conservation* a white faced heron, (which may occur in marine areas) taken on an inland freshwater lake, was accordingly excluded from the definition of marine wildlife.[949] A rationale for the decision was that the separate and more extensive defences which arise for marine wildlife were directed to the quite different situation, of fisheries bycatch. Enabling the defence in this case would be inconsistent with the protection provided for absolutely protected wildlife.[950] Although reasonable, this interpretation produces anomalies. When a heron or a godwit is taken on the foreshore, they become marine wildlife, but on a lake they are not. This is the nature of the problem which arises when the law is directed at a particular sector or spatially defined area, as it fails to take account of species movement. The matter of specific sectoral defences is discussed in section 7.2.2.3.

For marine wildlife a fine for taking may be increased to $250,000 for an individual. The term of imprisonment of 2 years was formerly more

[948]As amended by s 29 of the Conservation (Natural Heritage Protection) Act 2013.
[949] *Parlane v Department of Conservation* HC Hamilton CRI 2005-419-174, 10 May 2006 at [60].
[950] *Parlane v Department of Conservation* ibid, at [62].

substantial than a six month term for non-marine wildlife, but a recent amendment has brought parity.[951] A difference continues to exist in terms of level of fine, and a better approach would be consistency reflecting the status of absolute protection where conferred on the birds.

A recent amendment also provides increased penalties where offences against the WA have been committed for potential gain or reward. Section 67I provides:[952]

> 67I Penalties for offences committed for commercial gain or reward
> (1) If a person is convicted of an offence against this Act and, on sentencing for that offence, the Court is satisfied beyond reasonable doubt that the offence was committed for the purpose of commercial gain or reward (whether or not any gain or reward is realised), the person is liable instead of any penalty otherwise prescribed to,—
> (a) in the case of an individual, imprisonment for a term not exceeding 5 years or a fine not exceeding $300,000, or both:
> (b) in the case of a body corporate, a fine not exceeding $300,000.
> (2) Subsection (1) overrides every other provision of this Act to the contrary."

This change is beneficial for birds and has implications for unauthorised incidental take. The inclusion of habitat destruction within the interpretation of hunting or killing may result in farmers who drain wetlands or remove vegetation for pasture facing increased penalties.

7.2.2.3 Strict liability and statutory defences

The requirement of intention in the commission of an offence under the WA is significant to the extent of absolute protection. Strict liability is imposed by s 68AB WA for offences against s 63, but the provision of statutory defences considerably limits the imposition of liability. Defences to strict liability for hunting and killing are available pursuant to s 68AB(3) on the basis that the

[951] As amended by s 29 of the Conservation (Natural Heritage Protection) Act 2013.
[952] As amended by s 33 of the Conservation (Natural Heritage Protection) Act 2013.

defendant did not intend to commit the offence, and that all obligations surrounding the take were complied with:

> (3) It is a defence in any prosecution for an offence not listed in subsection (5) if the defendant proves—
> (a) that the defendant did not intend to commit the offence; and
> (b) that,—
> (i) in any case where it is alleged that anything required to be done was not done, the defendant took all reasonable steps to ensure that it was done:
> (ii) in any case where it is alleged that anything prohibited was done, that the defendant took all reasonable steps to ensure that it was not done.

Such a limitation on liability for unintended harm is important given that birds die in alarming numbers from prosaic factors such as collisions with cars and aeroplanes. Where loss is avoidable, however, considerable care should be taken in providing statutory defences.

Incidental loss and intention

Hunting and killing may include loss to species which arises in a manner incidental to another activity. Where a person conducts an activity and has knowledge that harm to animals may result, intention may be constituted (section 7.2.2.2). This position needs to be distinguished from loss which arises in an incidental manner, but without intention, which may be termed "accidental". The WA does not define these terms but introduces the terms as alternatives in the context of specific fisheries defences discussed below. Whether the two positions can be defined in these terms is unclear. A dictionary definition gives "accidental" two potential definitions. The first refers to an unintentional aspect, the second to being incidental or subsidiary:[953]

> accidental
> **1.** happening by chance, unintentionally, or unexpectedly: *a verdict of accidental death | the damage might have been accidental*.
> **2. i**ncidental; subsidiary: *the location is accidental and contributes nothing to the poem*.

[953] Stevenson, A (ed) *Oxford Dictionary of English (3 ed.)* (Oxford University Press, Current Online Version: 2013, 2010).

Relying upon definition (1) the two terms may be used alternatively, however, definition (2) suggests the term may be used interchangeably. Despite lack of clarity in terminology, the distinction is important, in terms of capturing incidental loss where it is known that such activity may produce loss. Thus operation of a wind farm, with knowledge that harm to birds could result, prevents a defence pursuant to s 68AB(3). These circumstances should also compel the obtaining of an authorisation permit, pursuant to s 53 (section 7.2.2.4.), which if not obtained would suggest that necessary obligations had not been fulfilled (s 68AB(3)) and would thus also nullify the defence.

Currently significant incidental loss arises in the environment unregulated, for instance collisions with reflective buildings and power lines. Where this loss is avoidable, birds would benefit from greater regulation and management of the aspects causing loss. It is accepted that any controls would need to be reasonable, but it seems anomalous to require wind farms to mitigate damage, but not tower blocks.

Regarding intention, difficulty arises where knowledge is limited in terms of the presence of a species. Ignorance of species presence can currently be used to avoid liability. This is not unreasonable in many instances of unintentional harm, but the inability of the WA to compel enquiry in terms of species presence prior to damaging actions being undertaken is a limiting factor in terms of protection. The lack of linkage between absolute protection and the control of development in the WA weakens the strength of the standard. The matter falls to be resolved under the RMA and underscores the necessity of ensuring that comprehensive provisions in RMA plans capture important habitat, and require fauna surveys prior to development which may damage absolutely protected species. It is accepted that maintaining a perfect standard of absolute protection of birds in the face of human development is unrealistic, however the importance of maintenance of a high standard is vital.

Measures of avoidance of effects to Threatened species and At Risk species more closely approximate a standard of absolute protection than mere mitigation. This matter will be considered further in the context of dual permitting in section 7.2.2.5.

Section 68B – Defence for marine wildlife and incidental fisheries loss

As with the imposition of separate penalties for take of marine wildlife, separate defences are also enabled. Pursuant to s 68B(3), a defence is available if the offence took place "in circumstances of stress or emergency and was necessary for the preservation, protection, or maintenance of human life". Therefore one can arguably roast a black petrel when marooned on a desert island, but a fern root should be preferred to a kokako if one is in a forest. A second and no doubt more regularly applied defence arises pursuant to s 68B(4)(a) which excuses all forms of accidental or incidental take provided reporting requirements were complied with. This is an extensive exception which reduces protection for all marine birds. Where the loss arises as part of a fishing operation, s 68B(4)(b) operates as a defence provided all necessary reporting requirements were fulfilled, a measure which has significant ramifications for the pelagic case study species, and is examined in section 7.2.2.6.

7.2.2.4 Permitted taking - s 53 Director-General may authorise taking or killing of wildlife for certain purposes

The absolute nature of protection afforded to wildlife is further circumscribed by s 53. This provides that the Director-General may periodically authorise, in writing, a specified person to catch alive or kill any absolutely protected or partially protected wildlife or game. Where "absolute" protection exists, it is only reasonable that exceptions be provided to provide a degree of flexibility.

To retain sufficient protective force, however, clear statutory and associated policy parameters should be set to guide decision making in this context.

DOC requires permits for incidental loss to be applied for. Despite this, interview subjects assert that the requirement is not uniformly applied, and treatment can be uneven.[954] There is a lack of clarity surrounding the nature of activities which trigger the requirement for permits, the process to be followed, and the decision-making principles to be applied. No apparent mechanism exists for the general public, or other interest groups, to participate and readily challenge any such decisions. Table 11 documents all permits applied for, pursuant to s 53 WA, in relation to the take of wildlife, and those issued in the Waikato Conservancy in the five years preceding October 2013.[955]

Table 11 Authorisation pursuant to s 53 WA issued by Waikato Conservancy in the period October 2008-October 2013, in relation to human activity in the environment (excluding for scientific purposes).

Applicant	Date issued	Purpose	Approved
Earnslaw One Ltd WK291117	20 April 2012	Permit for incidental loss of protected wildlife. Production Forestry, Whangapoua Forest	√
Titoki Sands Ltd WK32730	1 December 2011	Authority to disturb long-tailed bats, through the removal of potential roost trees	√
Transfield Services NZ BP25230	22 April 2009	Authority to disturb protected wildlife, for the purposes of removal of heron nests from the Waipapa and Maraetai dams causing a hazard	√
Whangamata Marina WK24506	9 June 2009	Incidental loss of absolutely protected wildlife	√

954 Kessels, G, pers.comm.2011.
955 Information obtained by request pursuant to the Official Information Act 1982.

Given the number and scale of production activities and developments in the Waikato Conservancy, it seems likely that WA permits are often not applied for. A specific request in relation to the Te Uku wind farm (Figure 72) in Raglan confirmed that no permit under the WA was sought for incidental loss arising from that development.[956] For such projects, the RMA will be "filling the gap", to an extent, through the use of EIA in permitting processes. Statutory focus will, however, be upon sustainable management of natural and physical resources as opposed to absolute protection. Losing sight of the WA mandate and deferring to the RMA mandate increases the risk of harm to the case study species. Section 7.2.2.5 further examines the matter of dual permitting under separate statutes.

Figure 72 Te Uku wind farm, Waikato west coast (no record of authorisation for take pursuant to s 53 WA)

Source: Christina Hanna

Why the WA mandate of absolute protection and associated requirement for permit is not asserted more strongly is an issue which warrants further consideration. In analysing the effect of a regulatory system, a useful concept

[956] Ibid.

is that of the "regulatory community" developed by Meidinger which comprises of interacting agents such as a regulator, a regulatee, specialist personnel, and public interest groups.[957] While a detailed analysis of the concept as it affects the situation at hand is beyond the scope of this research, initial observations suggest that the respective regulatory communities influence outcomes.

In contrast to the WA, the RMA is a more modern and sophisticated statute, surrounded by an active and vocal regulatory community, which appears to have a clear sense of authority and understanding of way forward. On a government level, the RMA regulators are located at central, regional and local level. Funding derives from central government and through rating of local government constituents. The interests of private property are strongly represented, particularly in local authorities.[958] Comprehensive processes for resource development and protection are outlined in the RMA and resource management specialists and professionals abound. In contrast, the regulatory community of the WA is much smaller and less visible. The chief regulator (DOC) has a barely visible profile regulating WA matters on private land, has been subject to funding cuts, and changes in operational approach give greater priority to developing business opportunities to increase economic prosperity (see 7.3.2.6). Under the WA processes are undefined, public participation in permitting is not provided for and WA specialists are themselves At Risk species. It seems likely that that these matters influence the impact of the WA but further research is required.

It is likely that considerable damage and disturbance to birds occurs unregulated, largely due to the lack of agency involvement on private land, a lack of understanding of species distribution, a failure of landowners to

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[957] Meidinger, E "Regulatory Culture: A Theoretical Outline" 1987 9 Law & Policy 356, Barton, B, Lucas, A, Barrera-Hernandez, L, and others *Regulating Energy and Natural Resources* (Oxford University Press, 2006) 27.

[958] McNeill, JK "The public value of regional government: how New Zealand's regional councils manage the environment" (Massey University, 2008), 143, 243, Table 6-3.

apprehend legal obligations, and a lack of regulation. Case law shows that there is confusion as to agency mandate on private land, and landowners are sometimes unaware of obligations, under the WA, to protect species on private land and associated permitting requirements.[959]

Revision of policy and practice is required to create greater clarity as to the circumstances when permits pursuant to s 53 are required and to deliver greater rigour in terms of process and implementation. Emphasis is required as to the application of precaution where species knowledge is uncertain and the importance of avoidance of effects to At Risk and threatened species when it is certain. A consistent national direction on permitting species take, set through revision of Conservation General Policy and further elaborated upon on a regional basis through Conservation Management Strategies (CMStrat), would be of benefit. Such an approach would provide greater consistency, and enable public comment by submission to the CMStrat, the procedural aspects of this will be discussed in section 7. 3.

7.2.2.5 Dual permitting

Activities that require permission under s 53 of the WA may also require resource consent under the RMA where the activity triggers RMA regulation. Issues have arisen in relation to the need for dual permitting under the RMA and the WA where resource consent for habitat destruction or modification, under the RMA, contains conditions relating to managing the adverse effects to wildlife.

In *Solid Energy New Zealand Ltd v Minister of Energy*,[960] it was argued by the plaintiff that having obtained detailed permission under the RMA to deal with the wildlife and take steps to protect it by translocation, further

[959] *Waikato Regional Council v Burr* DC, Hamilton, CRN-0807300043-54, 23 December 2011.
[960] *Solid Energy New Zealand Ltd v Minister of Energy* [2009] NZRMA 145.

permits under the WA should not be required. The Court was not convinced by this argument, particularly as the existing RMA consents required as a condition that any necessary WA permits be obtained. The Court, however, did leave open the possibility that in certain circumstances, RMA consent could constitute lawful authority for the purposes of the WA statutory mandate.

In relation to dual permitting, the court stated, "Whether this dual purpose serves any useful purpose when all relevant interests are taken into account by the consenting authority under the RMA process, or merely serves to add to the time and cost for the applicant for consent, is a matter for Parliament." Sympathy can be felt for a conscientious applicant, however, retaining a dual process may be more protective for species in preventing the dilution of statutory mandate to protect species as opposed to sustainable management under the RMA.

In complex regulatory frameworks it is not uncommon for statutes to overlap, producing the need to comply with different sets of rules and/or obtain separate authorisations.[961] Section 23(1) of the RMA specifically provides that compliance with the RMA does not remove the need to comply with other Acts. Unless inconsistent in an irreconcilable manner, courts will endeavour to construe the statutes in a manner to enable them to be read together.[962] When the provision of one statute is general and the other is specific, the general provision will not derogate from the specific.[963]

The provisions of the RMA and the WA are not inconsistent, nor is one Act necessarily specific and the other general, rather, permits are required for similar but not identical purposes. Under the WA, permits authorise take of absolutely protected animal, whilst the RMA permits enable consideration of

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[961] Burrows, JF and Carter, RI *Statute Law in New Zealand* (4th ed, LexisNexis, Wellington, [N.Z.], 2009) 449, Barton, B "A Warm and Dry Place to Live: Energy Efficiency and Rental Accommodation" 2014 in press Canta LR.

[962] Burrows ibid.

[963] *McDonald v Australian Guarantee Corporation (NZ) Ltd* [1990] 1 NZLR 21 at 245(HC) per Wallace J.

whether an activity meets the statutory purpose of sustainable management. In many ways the WA process, as discussed in 7.2.3.4, is a less rigorous process than the resource consent process under the RMA owing to the lack of a mandatory impact assessment and the lack of a clear, open and participatory process. The RMA is a more sophisticated system with elaborate processes and it is apparent that the WA has failed to keep pace with modern times. Regardless, the WA offers considerable benefit for species protection, and pursuant to s 3 the requirement for absolute protection is asserted. Section 7.2.1 has traversed the ways in which the absolute nature of this protection is diminished, but it remains a singular species focused standard with greater statutory force than mere mitigation pursuant to s 5 of the RMA. The ambivalence of the Environment Court in *Solid Energy New Zealand Ltd v Minister of Energy* appears to be unfounded. Allowing this standard to be supplanted or replaced by RMA processes potentially distributes greater levels of harm to birds. Such a change could not be recommended unless the standard of care applied to the protection of Threatened and At Risk species by the RMA was increased. In that way birds would retain a strong protective focus but also benefit from the elements of the RMA process engaging EIA and public participation.

7.2.2.6 Fishing and harm to birds

The provision of specific statutory defences for fishing (7.2.2.3) significantly diminishes the protective effect of the WA and heavily skews the distribution of harm to species in favour of human economic interests. For the black petrel, this statutory arrangement enables the lawful perpetuation of fishing practices known to significantly damage the species in areas that it frequents. The sooty shearwater also suffers considerable loss through bycatch.

Despite the statutory defences, separate powers exist to limit fishing related mortality, including setting mortality limits and creating sanctuaries and reserves, to avoid or mitigate those effects pursuant to the Fisheries Act 1996, the CA, the Marine Mammals Protection Act 1978, the WA, and the Marine Reserves Act 1971.[964] But, it is argued by Wheen, the failure to implement sufficiently robust measures is due to three causes:

1) Failure to use available tools effectively, due to procedural and political reasons.

2) The management of fishing-related mortality as a fisheries issue, separate from the wider conservation management of the mammals and birds affected, and the associated enabling of decision-making dominated by fisheries interests.

3) The application and framing of the Precautionary Principle pursuant to s 10 Fisheries Act 1996 in a manner which compromises the very policy preference for environmental conservation that the Principle was designed and adopted to secure.[965]

It is apparent that dealing with fisheries bycatch is a complex problem, and is beyond just the province of the WA. Bycatch will now be considered in relation to current legal responses.

Bycatch management

New Zealand as a coastal State has obligations, pursuant to Article 61(4) of the United Nations Convention on the Law of the Sea 1982 (UNCLOS), to ensure

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[964] Wheen, NR “How the Law Lets Down the 'Down-Under Dolphin' - Fishing-Related Mortality of Marine Animals and the Law in New Zealand” 2012 24 Journal of Environmental Law 477 at 478.

[965] Ibid. For further criticism of the approach to precaution in the Fisheries Act 1996 see Modeste, D “The Precautionary Principle and the Fisheries Act” 2011 NZLJ 179 and Iorns Magallanes, CJ “The Precautionary Principle in the New Zealand Fisheries Act: Challenges in the New Zealand Court of Appeal” 2005 Available at SSRN:<http://ssrn.com/abstract=2079837>

that conservation and management measures in the Exclusive Economic Zone (EEZ) take into account the effects on species that are associated with, or dependent upon, harvested species so as to maintain or restore their populations above levels at which their reproduction may become seriously threatened. In addition, obligations arise pursuant to the CBD, the CMS and ACAP as described in Chapter 6.

In response to these obligations, and the statutory requirements to limit fishing related mortality[966] referred to in section 7.2.2.6, New Zealand has developed a range of measures. The focus of this section is to examine the adequacy of these measures using the example of the black petrel. It is recognised that responses to bycatch need to be species specific due to the great variation in species' distribution, interaction in space and time with fishing activity, and the particular behaviours of the bird which characterise the interaction.[967]

The 2013 *National Plan of Action to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries* (NPOA)[968] describes historical and contemporary approaches to the problem of bycatch. The Plan, taking into account international best practice technical guidelines, establishes New Zealand's approach to reducing incidental mortality, and seeks to ensure that:[969]

> i) awareness of the problem and the known methods of reducing it is heightened both domestically and internationally;
>
> ii) relevant effective mitigation methods are applied in all New Zealand fisheries and by New Zealand vessels on the high seas;

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966 In particular s 15 Fisheries Act 1996.

967 Baird, K and Bell, B *Bycatch of Black Petrel in New Zealand Fisheries* (Fifth Meeting of the Seabird Bycatch Working Group, Agreement for the Conservation of Albatrosses and Petrel, SBWG5 Doc 37 Agenda Item 10, 2013) 6.

968 Ministry for Primary Industries *National Plan of Action – 2013 to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries* (Ministry for Primary Industries, 2013)(NPOA).

969 NPOA ibid, at 4.

> iii) capture rates are reducing towards negligible levels in all New Zealand fisheries;
>
> iv) the development of new mitigation measures, new observation and monitoring methods, and relevant research are encouraged and resourced;
>
> v) priority for the application of existing mitigation measures, the development of new mitigation measures and the introduction of other relevant actions are determined in accordance with the level of risk faced by particular seabird species; and
>
> vi) active co-operation is established with other countries whose vessels have interactions with seabirds, particularly those that breed in New Zealand, including through relevant RFMOs and through bilateral information sharing and assistance where relevant.

The long term objective of the plan envisages a New Zealand where "seabirds thrive without pressure from fishing related mortalities", and where fishers "avoid or mitigate against seabird captures".[970] The enabling of mitigation, as an alternative to avoidance, limits the strength of the objective and the achievement of a state "without pressure". The focus of the NPOA is upon mitigation, but there is no acknowledgment of a mitigation hierarchy, or a preference for avoiding damage to threatened species. Avoidance is mentioned twice in the context of the threat of incidental capture, once as per the objective, and secondly, in connection with the summary of mitigation measures.[971]

Although it is suggested that the purpose of the measures is to avoid incidental seabird captures, current measures fall short of avoiding impacts upon species such as the black petrel. A range of mitigation measures can be applied to fishing practices to limit seabird bycatch, and the industry has both voluntarily[972], and as a result of Government regulation, adopted the practices

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[970] NPOA above n 967 at 17, [73].
[971] NPOA above n 967, Annex III.
[972] Significant efforts have been applied to creating effective solutions to the problem of by-catch and the work of the Southern Seabirds Solutions Trust <http://southernseabirds.org>

set out in Figure 73.[973] Advocates for the black petrel, although welcoming all measures which operate to reduce bycatch, have some specific criticisms of these measures which will be discussed further.

with fishers, governments, agencies and individuals worldwide provides a good example of change through cooperative action.

[973] Pursuant to s 58A Fisheries (Commercial Fishing) Regulations 2001 (SR 2001/253) as amended by the Fisheries (Commercial Fishing) Amendment Regulations (No 2) 2009 (SR 2009/243) circulars may be issues to authorise or require seabird mitigation measures, see for example Fisheries (Seabird Sustainability Measures—Bottom Longlines) Circular 2010 (No. F541.)

Figure 73 Summary of mitigation measures in place in NZ waters

Mitigation Measure	*Surface longline*		*Bottom longline*			*Trawl*		*Set net*
	Large-vessel	*Small-vessel*	*Vessels >20m*	*Vessels 7-20m*	*Vessels <7m*	*Large-vessel*	*Small-vessel*	
Net sonde cable prohibition						R (1992)	R (1992)	
Seabird scaring device	R (Streamer line)	R (Streamer line)	R (Streamer line)	R (Streamer line)		R (2006)	V	
Additional seabird scaring device			V (second streamer line, gas cannon)			SM (2008)*	V	
Night setting	R (or line weighting)	R (or line weighting)	R (or line weighting)	R (or line weighting)	R (or line weighting)			
Line weighting	R (or night setting)	R (or night setting)	R (or night setting)	R (or night setting)	R (or night setting)			
Dyed bait	V	V						
Offal management	V	V	R	R	R	SM (2008)*		
Vessel-specific seabird risk management plans						SM (2008)	V	
Code of Practice	V	V	V			SM (Vessel-specific seabird risk manageme nt plans)		

Within cells in the table:
- R = regulated;
- SM = required via a self-managed regime (non-regulatory, but required by industry organisation and audited independently by Government);
- V = voluntary with at least some use known;
- Cells blacked out indicate that the measure is not relevant in a particular fishery;
- A year in ( ) indicates the year of implementation;
- Measures annotated with * are part of a vessel-specific seabird risk management plan; and
- Large vessels are those 28m and greater in length.

Source: Ministry for Primary Industries *National Plan of Action – 2013 to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries* (Ministry for Primary Industries, 2013) Annex III

The NPOA relies upon "comprehensive risk assessment", as described in Annex II, to determine which seabirds and fisheries require the greatest attention. As established in Chapter 4, it was subsequent to two such assessments, in 2011 and 2013, that black petrels were identified as the species most at risk from commercial fishing activities within the New Zealand

EEZ.[974] The data for the assessment is collected by observers on vessels as part of the Conservation Services Programme partially funded by levying the commercial fishing industry under the Fisheries Act 1996.[975] Observer coverage is not comprehensive, but data is extrapolated to determine relative risk for seabirds in specific fisheries. Through analysis of this data, the black petrel assessments showed the bird is vulnerable to inshore bottom longline vessels targeting snapper, ling, bluenose and hāpuku.[976] The observed captures of the birds were all concentrated in the north-east region of the North Island by vessels targeting snapper. Loss also occurs through surface long line fisheries, again in the north-east region of the North Island, by vessels targeting big-eye tuna, and by scampi and inshore trawlers.[977]

The collations of scientific data, and the growing understanding of the nature and extent of risk to the black petrel, have provided some impetus to a response by government and industry. Recent funding and efforts targeted at reducing bycatch rates of the black petrel, including a focus upon greater observer coverage, research into improvement of mitigation measures, and a research project investigating at sea distribution and population estimate, are welcome.[978] Nevertheless, the measures lack urgency, direction, and force in responding to the very high level of assessed risk to the species. A submission to the draft Conservation Services Programme Strategic and Research Plan: 2012-17 suggests the development of a specific Black Petrel Bycatch Mitigation Project to integrate and direct initiatives which may affect the bird. A range of mitigatory improvements, such as changes to fishing practice, are

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[974] NPOA above n 967.at Table A5, Figure A2, Richard, Y and Abraham, ER "Risk of Commercial Fisheries to New Zealand Seabird Populations, 2006–07 to 2010–11" 2013 New Zealand Aquatic Environment and Biodiversity Report No. 109, 23.

[975] Conservation Services Progamme (CSP) *Conservation Services Programme Annual Plan 2012/13* (Department of Conservation, 2013) 5 and NPOA above n 967 at 31.

[976] Richard 2013 above n 973 and Richard, Y, Abraham, ER and Filippi, D *Assessment of the Risk to Seabird Populations from New Zealand Commercial Fisheries* (Ministry of Fisheries, Final Research Report for projects IPA2009/19 and IPA2009/20 and draft Aquatic Environment and Biodiversity Report, 2011).

[977] Baird and Bell above n 966 at 3-4.

[978] CSP 2013 above n 974, see Appendix 1 for cost allocation to projects.

also suggested.[979] The problem of "one size does not fit all" arises in regulating mitigation with regards to the black petrel. It is argued by scientists, and advocates for the species, that the measures applied are not adequately tailored to the foraging habits of the species to be fully protective.[980] The submission seeks additional research which could be used to support an approach of avoidance such as restricting night setting in longline fisheries around the Great Barrier breeding colony at peak breeding periods.

Defence to a prosecution for illegal take may be secured through compliance with regulatory mitigatory and reporting measures. This is problematic where those measures are not well targeted at the species nor particularly effective, which given the rate of capture of the black petrel seems likely in that instance. In permitting regimes under the RMA, conditions upon resource consent will be targeted to the particular operation. The lack of a permitting regime lessens the degree of scrutiny and rigour applied in the fisheries context to the adverse effects of the fisheries operation upon particular bird species.

Although the WA legitimises incidental capture where correct procedures are followed, the legislation is not inert in providing proactive responses to the issues. Population management plans (PMP) are enabled pursuant to s 14F WA, and could be used to great effect in the case of the black petrel. These plans can be applied to set a maximum allowable level of fishing-related mortality for the species in New Zealand fisheries waters,[981] and in specified areas within those waters.[982] The point of determining a maximum allowable level is to allows a threatened species to achieve non-threatened status as soon as reasonably practicable, and within a period not exceeding 20

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[979] Black Petrel Action Group "Submission to Conservation Services Strategic & Research Plan 2012-2017" 2012.
[980] Baird and Bell above n 966 at 6, referring to Melvin 2004.
[981] Section 14(F)(f).
[982] Section 14(F)(g).

years.[983] Maximum levels may also be applied to species not yet threatened, such as the sooty shearwater, with a view to not causing a net reduction in the size of the population or seriously threatening the reproductive capacity of the species.[984] A location specific limit must be set in accordance with s 14H, and restricted to populations of threatened species that are geographically or genetically discrete, and for specifically defined fisheries management areas.

Figure 74 Black Petrel population monitoring, Aotea Great Barrier Island

The black petrel (Figure 74) would benefit from a population management plan, and particularly from one which spatially restricted fishing activity in key foraging areas during crucial breeding periods. Advocates for the bird, in seeking a range of measures to improve its conservation status, have lobbied for a population management plan, and "the trial of a temporary exclusion zone in February and March 2014 (critical chick rearing time) – specific limited geographic areas within FMA1 to be defined in consultation with Elizabeth Bell (black petrel expert) and technical advisors based on foraging

[983] Section 14(G)(a).
[984] Section 14(G)(b).

and fishing effort data that is currently being analysed".[985] Exclusion zones work to avoid the damage from bycatch, as opposed to reducing it, producing a potentially stronger gain for the species, but they are more restrictive upon the industry. Limiting the time of exclusion to key breeding times, and the area to known spaces of interaction, is a sensible method to reduce economic impact upon fisheries. Where mitigation measures have been applied, but fail to prevent the losses or where the measures have not been applied or enforced, an argument for avoidance gains greater force.

Securing a population management plan, however, is evidently difficult. None currently exist, and Wheen, in acknowledging the benefits of a PMP, identifies a significant issue relating to complex statutory procedures and the need to obtain the "concurrence" of the Minister of Fisheries in order to make the plan.[986] Wheen explores the tensions between statutory mandates for protection and conservation and that of the Fisheries Act's balancing approach to provide for the utilisation of fisheries resources whilst ensuring sustainability. Wheen recommends changes in order to "equalise the statutory positions and influence of the two ministers involved in fishing-related mortality and strengthen the role of the Minister of Conservation by releasing this minister from the obligation to seek the consent or concurrence of the Minister of Fisheries to any measures he or she proposes to protect marine animals from fishing".[987]

As a further measure to strengthen bycatch reduction, Wheen recommends the introduction of mandatory measures, such as maximum

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[985] Black Petrel Action Group *Black Petrel Briefing Note: Ministers and Advisors* (2013). The benefits of effective marine spatial planning are also recognised by the Parties to the CBD, see for example: (2012) "Marine and coastal biodiversity: sustainable fisheries and addressing adverse impacts of human activities, voluntary guidelines for environmental assessment, and marine spatial planning" Decision XI.18. Note also that fishing is excluded from restriction under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 by s 20(5)(a) of that Act.
[986] Section 14I(m) WA and Wheen above n 963 at 10.
[987] Wheen above n 963 at 21.

allowable levels, determined by virtue of the threat status of the species taken. In taking this stance, Wheen adopts the thinking behind reforms proposed in the now defunct Marine Animals Protection Law Reform Bill, here bycatch is treated as a conservation of threatened species issue with reasonable measures being applied on a precautionary basis as opposed to being managed as a fisheries issue.[988] This change in approach could elicit a significant shift in the distribution of harm to seabirds through bycatch, but the political reality of such a shift is unlikely. In addition, achieving compliance with measures restricting fisheries' activity, as discussed in Chapter 6, is problematic and limited by restricted observer coverage.[989]

In summary, it can be argued that species protection from bycatch, as exemplified by the black petrel, is currently inadequate. In Chapter 6, the lack of force and effect of the international agreements were highlighted, and the failure to list the key fishery impacting the bird in the recent ACAP At-Sea Conservation Priorities tabled at MoP4 in 2012 was identified as weakening protective effect for the species. In the domestic context, stronger approaches to the avoidance of effect upon the species, and the creation of exclusionary zones through the application of a PMP, represent key methods to secure greater gains for the species. The specific defences in the WA places the fisheries industry in a privileged position compared to other industry. Where industry specific protection is inadequate, it works against an equitable and robust approach to the treatment of threatened species.

There is potential to approach the problem of bycatch through alternative routes, and it has been argued that biodiversity offsets may represent a more efficient and effective methods than fisheries closure.[990] Critics of this approach argue that offsets fail to adequately protect species by

988 Wheen above n 963 at 21.
989 Wheen above n 963 at 5.
990 Pascoe, S, Wilcox, C and Donlan, CJ "Biodiversity Offsets: a Cost-Effective Interim Solution to Seabird Bycatch in Fisheries?" 2011 6 PloS ONE 6(10): e25762.

addressing the real cause of the problem, and thus enable the perpetuation of damaging practices.[991]

7.2.3 LIMITATIONS IN THE PROVISION OF ABSOLUTE PROTECTION

In analysing the manner in which the WA determines loss and benefit to species, it is clear that the absolute protection extended by s 3, and the manner of its implementation, constitutes a lesser standard than prevention or avoidance of harm. This is of particular concern for Threatened and At Risk species. The term "absolute" suggests complete protection, but the standard is whittled away through poor definition and a failure to implement the standard, particularly in the instance of incidental loss. In this vacuum, the RMA becomes the default standard for protection, or in the instances of loss through bycatch, the Fisheries Act 1996. The failure to definitively capture harm caused through habitat modification and disturbance further weakens the standard, a weakening that is increased by the provision of broad statutory defences to unintentional take.

It is not unreasonable to create an exception to protection in support of human development interests. New Zealand species would, however, benefit from a principled, transparent and equitable approach to such decisions. In limiting harm to birds, the WA is deficient in one further critical respect: the statute fails to effectively require proactive protection of New Zealand wildlife. In particular, it does not provide a defence to or assert any requirement in respect of contemporary threat to the case studies species or invasive alien species - a subject which will be further explored in Chapter 8. This chapter will now examine species conservation and management, aspects that are critical adjuncts to protection.

[991] Pascoe, ibid.

7.3 SPECIES PROTECTION AND MANAGEMENT UNDER CONSERVATION LAW AND POLICY

7.3.1 SPECIES PROTECTION AND MANAGEMENT - LAW

Augmenting protection under the WA is species protection and management mandated through conservation legislation. These obligations to manage and protect species are frequently conditioned by place or habitat. Law and policy which upon first glance would appear to be for habitat protection may also have a significant bearing upon the level of species protection and management required. Accordingly at this stage the matters are investigated in relation to their impact upon species, although the habitat obligations will be returned to again, in some instances, in Chapter 8.

Management of species and areas, under the WA, is carried out in conjunction with conservation management by DOC under the Conservation Act 1987, the Marine Reserves Act 1971, the National Parks Act 1980, the Queen Elizabeth the Second National Trust Act 1977, and the Reserves Act 1977. A vacuum tends to exist around species management on private land, falling back on either WA protection, or the RMA and the Biosecurity Act 1993, matters to be examined in Chapter 8.

As discussed in section 7.1 DOC is mandated to manage the preservation and protection of natural resources held for conservation purposes. For national parks, s 4(2)(b) requires that native plants and animals of the parks shall, as far as possible be preserved, and introduced plants and animals shall, as far as possible, be exterminated. These requirements elevate protection of species within the parks by the requirement for preservation, albeit limited by the caveat of “as far as possible”. In addition, s 5(2) prohibits disturbing, trapping, taking, hunting, or killing of any indigenous animal found within a National Park.

Marine life is to be protected and preserved "as far as possible" under s 3(2) of the Marine Reserves Act 1971. The Reserves Act 1977 provides for the development of a network of seven different types of reserves throughout the country. Although primarily directed at habitat protection, s 3(1)(b) of the Act states a purpose of "ensuring, as far as possible, the survival of all indigenous species of flora and fauna, both rare and commonplace, in their natural communities and habitats." For species protection, the general requirement is that fauna or wildlife shall be managed and protected to the extent compatible with the principal or primary purpose of the reserve.[992]

Some reserve types, such as nature reserves (s 20(2)(a-c)), provide a higher degree of protection for fauna and ecological associations, restricting public access and requiring preservation, as far as possible, of the natural state. Preservation of natural state is also an obligation for wilderness areas created pursuant to s 47 of the Reserves Act 1977, s 14 of the National Parks Act, and s 20 of the Conservation Act 1987. As with a nature reserve, human activity may be restricted in these areas. Current gazetted wilderness areas do not generally coincide with the habitats of the case study species. A small collection of nature reserves protect the case study species including Hauturu Little Barrier (black petrel and kokako), Kapiti Island (kokako), Farewell Spit (wrybill and godwit), Taiaroa Heads and Whenua Hou (sooty shearwater).[993]

These requirements are limited to the public conservation estate or reserved areas, and provide little benefit to species outside of those areas.

7.3.2 SPECIES MANAGEMENT AND PROTECTION - POLICY

Policy to guide the management and protection of species exists, but the collective force of the instruments falls short of directing rigorous protection. For the protection of birds, the most pertinent statutory instruments are

[992] See for example, recreation reserves s 17(2)(b).
[993] Department of Conservation *Gazetted Wilderness Areas – some key Questions* (Department of Conservation, 2011).

Conservation General Policy (7.3.2.1) and Conservation Management Strategies (7.3.2.2).

7.3.2.1 Conservation General Policy (CGP)

Prepared pursuant to s 17B and s 17C of the Conservation Act 1987, the Conservation General Policy (CGP) provides guidance for the administration and management of all lands and waters and all natural and historic resources managed for the purposes of conservation legislation, including the WA, but excluding reserves administered by other agencies under the Reserves Act 1977.[994] It also guides conservation planning including conservation management strategies (CMStrat) and plans (CMPlan) neither of which must derogate from other legislation, including the Conservation Act 1987, the WA, or the CGP.[995]

For species, the key significance of the policy is the direction given in the preparation of CMStrat and CMPlan. The CGP, cl 4(1)(b) (i), (iii) and (iv), directs the establishment of management objectives for indigenous species and their habitats and ecosystems to prevent the loss of indigenous species, habitat and ecosystems, the maintenance of populations of indigenous species, habitats and ecosystems with unique or distinctive values, and the recovery of threatened indigenous species (including their genetic integrity and diversity), and restoration of their habitats where necessary. In addition cl 4.2 (a) requires that CMStrat and CMPlan identify and, where possible, prioritise the threats posed by pests to indigenous species, habitats and ecosystems.

CGP - Degree of care - avoidance, mitigation and precaution

In consideration of the degree of care, vagaries in the policy direction exist. When managing activities on conservation land affecting indigenous species, stipulations tends to focus on DOC managing activities “to avoid or otherwise

[994] Department of Conservation *Conservation General Policy* (2005) 3.
[995] Section 17D(4)(a) and (b).

minimise adverse effects".[996] However, in respect of the grant of concessions to carry out activities not permitted as of right, the requirement to minimise is removed and substituted by mitigate and remedy:

> 11.1 (b) All activities on public conservation lands and waters which require a concession or other authorisation should, where relevant, avoid, remedy or mitigate any adverse effects (including cumulative effects) and maximise any positive effects on natural resources and historical and cultural heritage, and on the benefit and enjoyment of the public, including public access.

Accordingly, there is a difference in the degree of care expected at a general level, and it will be seen that this produces a somewhat inconsistent approach at the more specific level of the CMStrat. No clear statement of the need to avoid irreversible effects on threatened species, or any indication that a precautionary approach should be applied, exists. A requirement to mitigate effects potentially obscures the general direction, contained in cl 4 CPG that loss to species is to be prevented.

In summary, the CGP says little about the protection and management of Threatened or At Risk species. It creates policy to avoid or minimise adverse effects of human interactions on populations and individuals, but this is limited to marine protected species which, for the purposes of the CGP, is undefined. The CGP has policy directed at the customary use of indigenous species such as requiring that the preservation of indigenous species is not affected,[997] restricting the holding in captivity of absolutely protected wildlife to circumstances where a clear benefit to conservation is provided,[998] and it also creates policy to restrict changes to public conservation land in circumstances where, for example, land is important for the survival of any threatened indigenous species.[999] The latter policy to guide changes to Public Conservation Lands has recently been criticised as being inadequate,

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[996] Policies 9.1(f) (recreational opportunities), 10 (e)(accommodation facilities) 11.2(a)(iv).
[997] Policy 2(g)(iii).
[998] Policy 4.(1)(d).
[999] Policy 6(d)(ii).

particularly in relation to conservation losses in a complex analysis of net conservation benefit.[1000]

In addition to its failure to strongly direct prevention of harm to species, the CGP is further limited in the following respects. For New Zealand birds which inhabit private land, the failure of the CGP to create policy requiring greater protection of species in these areas is significant. CGP is largely limited to public conservation lands and waters, and not directed at wildlife owned by the Crown outside of that estate. A stronger position would entail directive policy concerning intervention, beyond advocacy and cooperating with others, for threatened species. Section 41(1)(fa) WA grants discretionary power to the Minister to preserve and protect wildlife, yet CGP has little to guide such action.

The creation of clear and protective policy to guide authorisation for take, under s 53, is needed to provide rigorous, and transparent, accountability. As covered in section 7.2.2.4, if, for instance, a wind energy generator seeks an authority to take wrybill as a consequence of erection of turbines, a consistent, open, and principled approach in terms of that take should be evident in conservation legislation or policy. In particular, it should be recommended that the Principles of Prevention and Precaution be applied, and that an approach of avoidance of harm to threatened species be employed.

The advocacy role itself, defined in Policy 7, relates to threatened or declining species and ecosystems,[1001] and provides an important platform for the protection of species outside of the public conservation estate. It is considered, however, to be limited in effect due to budget constraints and lack of a strategic approach, although a prioritisation tool is now in operation.[1002]

[1000] Parliamentary Commissioner for the Environment *Investigating the Future Of Conservation: the Case of Stewardship Land* (Parliamentary Commissioner for the Environment, 2013).
[1001] Policy 7(d)(ii) and (iii).
[1002] Controller and Auditor-General 2012 above n 736 at 36.

An additional problem for species is that the main approach for species protection is to require the establishment of objectives in CMStrat and CMPlan to prevent the loss of species, to maintain populations, and recover threatened species. Prevention of loss is potentially a strong protective driver, but the force of protection is dependent upon subsidiary strategies stating aims as opposed to implementing methods. Objectives, if not strongly stated, may be forgotten where exploitation of the public conservation estate for economic return is politically favoured. The situation is exacerbated where the instruments intended to implement this policy are outdated, and lack protective force as will be established in the case of CMStrat in the following section.

Furthermore, the CGP is out of date in stating policy in respect of the ecosystem and species prioritisation exercises which will now guide DOC's management work, these are discussed in section 7.3.2.6 below. Finally, there is a lack of integrated strategic management of biodiversity, particularly for relationships with local authorities, and the CGP should be revised to provide greater direction to this effect.

7.3.2.2 Conservation Management Strategies

Conservation management strategies and plans are designed to be tools central to the achievement of integrated conservation management on land and water. In practice CMStrat have fallen short of this goal, limited significantly by obsolescence, associated lack of relevance, lack of force, and failure to adequately address wider ecosystem processes or engage with the intentions of other statutory agencies tasked with the management of biodiversity, outside of the public conservation estate.

The Office of the Auditor General 2012 Report criticises the approach taken by DOC in the preparation and implementation of conservation management strategies, and the failure to adopt a robust long-term strategic approach to planning.[1003] This echoed similar findings by the Office six years previously. In relation to the failure to heed the earlier recommendations, the report reiterates:[1004]

> They are important documents and required by law. DOC is supposed to take conservation management strategies into account when making decisions about activities on conservation land, and local authorities are supposed to take conservation management strategies into account when planning, and when making decisions under the Resource Management Act.

The interests of birds in the Waikato Conservancy are currently under-protected by the failure to have a comprehensive and up to date CMStrat. The current Waikato Conservancy CMStrat was approved in 1993, and pursuant to s 17H(4)(b) required revision no later than 10 years after the date of its approval: it has now lacked relevance for a considerable period of time. This position is repeated across the country with the Report identifying that most CMStrat had expired four to eight years ago with main stakeholders expressing a concern for the lack of timeliness in renewal.[1005] This situation is now being remedied with action being taken to update the CMStrat in a centralised programme of work underpinned by a nationwide "template" approach. The template applies a "place-based" approach to conservation, an approach designed to concentrate conservation direction, and achieve integrated management.[1006] The approach has been subject to criticism for its lack of guidance in the definition of place.[1007]

[1003] Controller and Auditor-General 2012 above n 736 at 41.
[1004] Controller and Auditor-General 2012 above n 736 at 41.
[1005] Controller and Auditor-General 2012 above n 736 at 41.
[1006] Department of Conservation *Revised Draft Waikato Conservation Management Strategy* (Department of Conservation, September 2013) 5.
[1007] Brown, G and Weber, D "A Place-Based Approach to Conservation Management Using Public Participation GIS (PPGIS)" 2012 56 Journal of Environmental Planning and Management 456.

CMStrat - Degree of care - avoidance, mitigation and precaution

Analysis of the draft Waikato CMStrat will largely focus upon the degree of care applied and management of effects to threatened species. The draft Waikato CMStrat develops policy responses, as required by the CGP, to a variety of situations which may present adverse effects to species. An analysis of the approach reveals a significant degree of inconsistency, and a lack of coherence in the required degree of care to be applied to categories of threatened species, place of occurrence, and/or activity. Appendix 1 contains the most relevant examples extracted from the draft Waikato CMStrat. As discussed in 7.3.2.1, the CGP does not approach the degree of care with particular clarity. It sets a standard of avoidance or minimisation for some situations and a different standard of avoiding, remedying and mitigating for concession applications. Even within that framework, the draft Waikato CMStrat is inconsistent. In addition, there is little recognition that minimisation and mitigation are different concepts, no recognition that serious or irreversible effects may require different treatment, scant guidance to distinguish between the need to avoid or mitigate, and no consideration of a precautionary approach.

Moreover, as a result of the manner in which the draft Waikato CMStrat is constructed, the policy is not universal, but compartmentalised in respect of identified "places". As such, in some cases, policy that could be extended to all areas is limited to one of the eight identified places. An instructive example is Policy 2.4.11, the treatment of the "Firth of Thames Place" and the development of new recreational opportunities, where particular impacts on birds are to be avoided. Why such a Policy should be limited to the Firth of Thames Place and only to recreational opportunities is unclear. This inconsistency reveals a clear failing in species protection. Place-based protection will fail where standards are not applied uniformly (excepting examples where the context is unique). This matter requires addressing through more explicit Conservation General Policy, and a stronger, more universal approach in the CMStrat. The limitations of a place-based approach are further deepened by failure of the CMStrat to achieve any strategic integration with local authority plans and the protection of species. Although there is some integration at an operational level, for effective protection of species greater strategic integration at policy level is required.

Accentuating an inconsistency of approach is the legislation associated with the Waikato River Treaty settlement agreements,[1008] a primary component of which is the Vision and Strategy for the Waikato River accorded (amongst other things) the status of conservation general policy approved under s 17B of the Conservation Act 1987.[1009] Conservation objectives under the Vision and Strategy are considerably stronger for the river than those for the general conservation estate. These include requiring recognition and avoidance of adverse cumulative effects, and the adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River, particularly those which threaten serious or irreversible damage to the Waikato River.[1010]

It is accepted that the Waikato River is accorded special significance by iwi, but so too are threatened species[1011] and it is anomalous that these preferences are compartmentalised into area-based concerns, albeit as part of a Treaty Settlement. Uneven treatment could be remedied by adoption of a consistent approach through revision of the CGP, or by amendment to the Conservation Act 1987, both of which would have a significant impact in how loss to species is distributed in the Conservancy. Applying a principled approach to the management of adverse effects to all threatened species would improve integrated management beyond the public conservation estate,

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1008 The Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010, The Ngati Tuwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010 and The Nga Wai o Maniapoto (Waipa River) Act 2012.

1009 Section 16 (2) The Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010.

1010 Objectives f and g.

1011 Waitangi Tribunal *Ko Aotearoa Tēnei: A Report into Claims Concerning New Zealand Law and Policy Affecting Māori Culture and Identity* (Waitangi Tribunal, 2010).

where currently treatment varies in a wide number of respects. Managing the adverse effects to species, contingent upon the species and vulnerability, produces a more consistent approach than managing it according to place, a matter which is further underscored in sections 7.3.2.6. Currently the interplay between instruments prepared under the Conservation Act 1987 and those under the RMA is significantly limited (as exhibited by the draft Waikato CMStrat), and a top down approach to managing effects on threatened species would produce a more coherent approach. The protective force of plans for the conservation estate should at least be equal to, if not stronger, than that required by resource management plans. These matters will be explored further in the next chapter.

7.3.2.3 National parks policy

Pursuant to s 44 NPA, General Policy for National Parks was created in 2005[1012] and is implemented by national park management plans (NPMP).[1013] In keeping with the strong preservationist focus of the Act, both policy and plans tend to require a higher degree of care in the case of human activity in the environment and harm to species than CGP or CMStrat.[1014] The NPMP may not derogate from the CMStrat, but they are not restricted from creating a higher standard.[1015] Despite this stronger focus, the requirement for concession to carry out activities in a National Park enables mitigation as an alternative, and creates no differentiation for threatened species or scale of threat. Any grant of concession, however, must be consistent with principles stated in s 4 of the Act.[1016]

1012 New Zealand Conservation Authority *General Policy for National Parks* (Department of Conservation, 2005).
1013 Sections 45-48 National Parks Act 1980.
1014 Policy 4(1)(b), Policy 9(e) *General Policy for National Parks* above n 1009, and for example Department of Conservation *Tongariro National Park Management Plan Te Kaupapa Whakahaere mo Te Papa Rēhia oTongariro 2006 – 2016* (Department of Conservation, 2006) Objective 4.2.2 (c),
1015 Section 44A(2) National Parks Act 1980.
1016 Section 49(2)(b).

As would be expected, an animal will be better protected from the impact of human activity within a national park. Figure 66 shows extensive tracts of land are included in the 14 national parks, but the greatest problem with this form of protection is that it is not particularly representative of New Zealand. The impact upon the case study species makes this apparent with only the kokako (Te Urewera National Park), the sooty shearwater (Rakiura National Park) and the godwit (Kahurangi National Park and Abel Tasman National Park) benefitting. Little coastline in the North Island, and none of the eastern coast of the South Island, are included in national parks significantly limiting representation and protection of coastal species. This situation is perhaps explained, and certainly exacerbated, by the predominance of people living by the coast, a trend which is continuing.[1017] Given that a very high proportion of the bird species in the coastal zone in New Zealand are classified as Threatened or At Risk,[1018] it is clear that these species are in need of robust protection. Rather than suggest that further National Parks are required, a better approach may be the strengthening of standards under the RMA to manage the impacts of human activity in the environment. This will be discussed further in Chapter 8.

7.3.2.4 New Zealand Biodiversity Strategy 2000 (NZBS)

The NZBS supports precautionary approaches to decision making in the form of not postponing management actions to conserve biodiversity, especially where significant or irreversible damage to ecosystems can occur or where species are at risk of extinction.[1019] This is a weak and inactive approach to precaution, and is rendered less influential by the lack of statutory weight of the document and a lack of recent revision. In general terms, the NZBS

[1017] Statistics New Zealand "Are New Zealanders Living Closer to the Coast?" (2013) <http://www.stats.govt.nz/browse_for_stats/population/Migration/internal-migration/are-nzs-living-closer-to-coast.aspx>
[1018] Dowding, JE *Sites of Importance to Coastal and Estuarine Birds on the East Coast of the Waikato Region* (Waikato Regional Council, 2013) 2.
[1019] Principle 12, Theme 9,

provides little guidance concerning the application of the mitigation hierarchy, and impacts upon threatened species. It is understood that the Strategy is currently under revision.

7.3.2.5 Prioritisation- systematic conservation planning

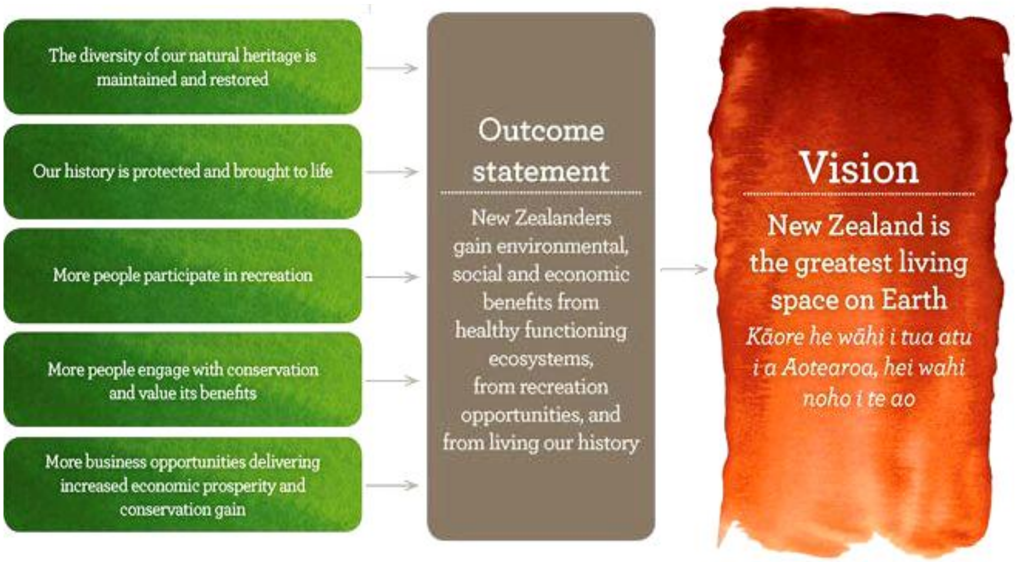
In New Zealand species management is a vital adjunct to protection due to the impact of invasive mammalian predators. This section will consider the current approach of DOC to prioritising species management mandated through the WA and conservation legislation. In contrast chapter 8, in the context of habitat and a case study will explore the requirement for pest control under the Biosecurity Act 1993, applying to both the Crown and private land owners.

The current management approach driving Departmental operations within the public conservation estate is set out in the Statement of Intent 2012-2017, and is based on the Outcomes model shown in Figure 75.[1020]

[1020] Department of Conservation *Department of Conservation Statement of Intent 2012–2017* (Department of Conservation, 2012). Edited to improve visual quality.

Figure 75 The Department of Conservation Outcomes Model

Intermediate outcomes



Well served Government and citizens

Tangata whenua exercise their cultural relationship with their natural and historic heritage

Capable Department of Conservation

Source: Department of Conservation *Department of Conservation Statement of Intent 2012–2017* (Department of Conservation, 2012) 11.

As a model for conservation, the paradigm moves away from the "protection and preservation" approach of the Conservation Act 1987, and, as an approach "adopted in response to its operating environment",[1021] delivers a stronger focus on developing business opportunities to increase economic prosperity firstly, and conservation gain secondly. The focus drifts to "what New Zealanders gain" as opposed to, for instance, the intrinsic values of ecosystems.

[1021] Department of Conservation 2012 ibid, at 10.

Pragmatic though it may be, this change in approach, coupled with significant restructuring and staff loss in DOC, delivers a sense of disquiet as to the prospect of enhancing outcomes for species.

The approach that is championed for species is a new prioritisation system. Objective 1.1 aims to ensure that "Nationally threatened species are conserved to ensure their persistence." Natural Heritage Target 1.2 then aims to undertake operational activities to conserve more than 100 nationally threatened species to ensure their persistence in 2012-13, and to cover 300 species by 2016-2017. Systematic conservation planning, including prioritisation of conservation effort is widely recognised as an important and valuable tool to manage biodiversity loss in a cost constrained environment.[1022] Prioritisation is underpinned by a management principle based upon efficiency, usually measured in resource expenditure.[1023]

The New Zealand approach, as carefully explained in publications by Leathwick and others[1024] and summarised in a recent report,[1025] is focused upon ecosystem prioritisation to systematically identify a set of places and associated management actions that will achieve the conservation of a full

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[1022] Margules, CR and Pressey, RL "Systematic Conservation Planning" 2000 405 Nature 243, Margules, CR, Pressey, R and Williams, P "Representing Biodiversity: Data and Procedures for Identifying Priority Areas for Conservation" 2002 27 Journal of Biosciences 309, Redford, KH, Coppolillo, P, Sanderson, EW, and others "Mapping the Conservation Landscape" 2003 17 Conservation Biology 116, Joseph, LN, Maloney, RF and Possingham, HP "Optimal Allocation of Resources among Threatened Species: a Project Prioritization Protocol" 2009 23 Conservation Biology 328, Norton, DA and Overmars, FB "Ecological Areas - Premier Protected Natural Areas" 2012 36 New Zealand Journal of Ecology 108, Pressey, RL and Bottrill, MC "Approaches to Landscape- And Seascape-scale Conservation Planning: Convergence, Contrasts and Challenges" 2009 43 Oryx 464, Walker, S, Stephens, RT and Overton, JM "A Unified Approach to Conservation Prioritisation, Reporting and Information Gathering in New Zealand" 2012 36 New Zealand Journal of Ecology

[1023] Redford and others ibid, at 125.

[1024] Leathwick, J and Wright, E *Towards a Vision for the Optimisation of Ecosystem Management in New Zealand – Core Concepts, Definitions And Practicalities* (Department of Conservation, DM-736661, 2011), Leathwick, J and Wright, E *Integrated Prioritisation of Ecosystems and Species* (Department of Conservation, 2012), Leathwick, J, Wright, E and Cox, A *Prioritisation of Ecosystem Management* (Department of Conservation, 2012).

[1025] Controller and Auditor-General 2012 above n 736.

range of New Zealand's ecosystems in a cost-effective manner.[1026] Subsequent to the ecosystem prioritisation assessment, information about the distributions of threatened species is also contributed to influence selection of priority ecosystem management units.[1027] The prioritisation scheme will be influential for species persistence in the New Zealand context due to the significant dependence upon management actions in mitigating pests. Setting aside protected habitat is insufficient in the face of such threats, and those areas which are prioritised for management actions, including intensive pest control, receive a marked benefit.

The system as currently devised does not generate lists indicating prioritisation of particular species, rather the information is combined in relation to Ecological Management Units as examined in Chapter 6.

7.3.2.6 Recovery plans and listing of species

In contrast to priority schemes, single species recovery plans are the "old-fashioned", and more cost intensive, approach to species conservation and management. Recovery plans, intended to be based on robust science, are valued by the scientists and managers responsible for the species due to the detailed management prescriptions created, these enable closer scrutiny of threats and responses together with the ability to monitor and adapt management methods.[1028] Recovery plans in New Zealand have no explicit statutory genesis,[1029] nor do the recovery groups made up of species experts

[1026] Leathwick, J and Wright, E *Integrated Prioritisation of Ecosystems and Species* (Department of Conservation, 2012) at 3.
[1027] Leathwick, J, Wright, E and Cox, A *Prioritisation of Ecosystem Management* (Department of Conservation, 2012) at 15.
[1028] Ewen, JG, Adams, L and Renwick, R "New Zealand Species Recovery Groups and their Role in Evidence-Based Conservation" 2013 50 Journal of Applied Ecology 281, Seabrook-Davison, MNH, Ji, W and Brunton, DH "New Zealand Lacks Comprehensive Threatened Species Legislation: Comparison with Legislation in Australia and the USA" 2010 16 Pacific Conservation Biology 54, Dr. John Innes, Kokako Recovery Group, pers.comm. 2011, John Dowding, Dotterel Recovery Group, pers.comm.2011.
[1029] Section 41(e) Wildlife Act 1953 enables, amongst other things, preparation of plans for the advancement, conservation, management and control of wildlife.

who advise on management. The New Zealand approach has been subject to criticism due to its failure to provide guidance for the recovery of threatened species and implement greater numbers of recovery plans. Also it has failed to provide the plans, and threatened species lists upon which they are based, with greater statutory force and effect.[1030] Funding direction, driven by regional priorities, has also been identified as leading to piecemeal implementation of the plans.[1031] The lack of statutory force and effect and the lack of connection between the recovery plans and protection of habitat become evident in Chapter 8. The position of threatened birds would be improved if a statutory response mechanism existed to enable protection through prohibition or limitation of particular activities identified in the recovery plan where a threshold was triggered.

A recent Australian review of the benefits of recovery plans was unable to identify a statistically significant impact in improving the threat status of species, but the authors noted that a lack of basic reporting on outcomes made it impossible to confirm or refute the value of recovery plans.[1032]

Of the 170 New Zealand bird species that are Threatened or At Risk, 27 are covered by recovery plans and 12 of those by active recovery groups.[1033] For the case study species, the kokako and dotterel have recovery plans,[1034] but the kokako alone is the subject of an active recovery group as a result of the dotterel not being prioritised (Figure 76).[1035]

[1030] Seabrook-Davison 2010 above n 1027 at 56, Seabrook-Davison, MNH, Ji, WJ and Brunton, DH "Survey of New Zealand Department of Conservation Staff Involved in the Management and Recovery of Threatened Species" 2010 143 Biological Conservation 216.
[1031] Ewen, above n 1027 at 281.
[1032] Bottrill, MC, Walsh, JC, Watson, JEM, and others "Does Recovery Planning Improve the Status of Threatened Species?" 2011 144 Biological Conservation 1600.
[1033] Ewen and others above n 1027 at 281.
[1034] Dowding, JE and Davis, AM *New Zealand Dotterel (Charadrius Obscurus) Recovery Plan, 2004-14* (Department of Conservation, Wellington, NZ, 2007), Innes, J and Flux, I *North Island Kokako Recovery Plan (1999–2009)* (Department of Conservation, 1999).
[1035] Dr John Dowding, Dotterel Recovery Group, pers.comm 2011.

Figure 76 Comparison of case study birds and recovery plans

Species and threat status	Recovery plan and date	Last meeting of recovery group	Species protection through management of habitat for invasive species
Dotterel (Vulnerable)	√ 1. (1993) 2. (2007) for period 2004-2014	2005	c.20 % of breeding pairs at 5 core sites and several smaller sites[1036]
Godwit (At Risk, Declining)	X	NA	Unknown
Kokako (At Risk Recovering)	√ 1.1991(revised 1992) 2. (1999)	2013	21 sites managed during period 2000-2012, total 23,246 ha- not all sites managed every year[1037]
Black petrel (Vulnerable)	X	NA	Cat trapping Hirakimata Mt Hobson
Sooty Shearwater (At Risk, Declining)	X	NA	Large breeding populations are now restricted to predator-free offshore islands[1038]
Wrybill (Vulnerable)	X	NA	A small proportion of the population is managed through predator control programmes[1039]

The recovery plans prepared for the dotterel and kokako contain extensive information about the species, and set targeted long and short term management goals with carefully detailed implementation actions covering matters such as threat management, monitoring, legal protection, community relations, advocacy and research (see Figure 77 for dotterel monitoring). The dotterel plan defines "effective management" in terms of outcome monitoring of site productivity, creating measurable targets to gauge success.[1040] Amongst

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[1036] Dowding, JE and Davis, AM *New Zealand Dotterel (Charadrius Obscurus) Recovery Plan, 2004-14* (Department of Conservation, Wellington, NZ, 2007) at 13.
[1037] Dr John Innes, unpublished data, October 2013.
[1038] Sagar, P "Sooty shearwater" in Miskelly, CM (ed) *New Zealand Birds Online. www.nzbirdsonline.org.nz* (2013).
[1039] Dowding, J "Wrybill" in Miskelly, CM (ed) *New Zealand Birds Online. www.nzbirdsonline.org.nz* (2013).
[1040] Dowding, 2007 above n 1035 at 24.

other things, the kokako plan targets whether intensive pest-mammal control at a range of mainland sites meet stated post control pest indices.[1041] The preparation of the plans applies an evidence-based approach to planning, drawing on the extensive expertise of science advisors and those responsible for species management.[1042]

There is no empirical evidence as to whether the presence of the plans privilege the dotterel and kokako, although an observation can be made that both have enjoyed documented conservation success, underpinned by the actions outlined in recovery plans, which has not been similarly documented for the other case study species.[1043] A case that the kokako has benefitted from the active recovery group can be found in its recent shift in status to not Threatened (At Risk- Recovering).[1044]

[1041] Innes, J and Flux, I *North Island Kokako Recovery Plan (1999–2009)* (Department of Conservation, 1999).at 22.

[1042] Ewen above n 1027 at 281.

[1043] Dowding, JE *Management of Northern New Zealand Dotterels on Coromandel Peninsula* (Department of Conservation, 2006), Innes, J, Molles, LE and Speed, H "Translocations of North Island kokako, 1981-2011" 2013 60 Notornis 107.

[1044] Robertson, HA Dowding, JE Elliott, GP and others *Conservation Status of New Zealand birds, 2012.* (Department of Conservation, 2013) 13.

Figure 77 Dotterel leg banding Maketu spit

Approaches to species-focused recovery plans and groups are set to change due to reduction in technical capacity arising from funding cuts and restructuring. As a result, new groups are expected to develop based on broader associations of ecosystem or multi-species groups.[1045] This change coincides with the stated intentions of DOC to increase engagement with community and business in managing conservation efforts.[1046]

The Report of the Office of the Auditor General 2012 makes a number of recommendations concerning these shifts to strengthen the arrangements including providing staff with sufficient skills and support to successfully use the prioritisation process, adequate consultation with communities, stakeholders and partners, and effective long-term monitoring and reporting of the effects of biodiversity management.[1047]

[1045] Ewen above n 1027 at 281.
[1046] Department of Conservation *Department of Conservation Statement of Intent 2012–2017* (Department of Conservation, 2012) at 32.
[1047] Controller and Auditor-General 2012 above n 736 at 13.

7.3.3 CONCLUSION

The central finding of this chapter is that absolute protection under the WA is diminished on a range of fronts, and that opportunity to strengthen species protection exists. Applying a higher degree of care and employing conservation status as the primary determinant of standard, represents a significant opportunity to lessen distribution of harm to birds.

A goal of absolute protection of animals without exception is unrealistic, but the current system provides exceptions which perpetuate significant damage to species. Bycatch and the impact on the black petrel is the most pressing example. Statutory defences which promote species decline require revision. Protection falls well below a standard of avoiding irreversible harm to a threatened species. Current mitigation measures are inadequate. Urgent species-specific measures are required in response to this problem, and exclusionary zones through the use of Population Management Plans are recommended in the interim.

It is not only defences which create exceptions, the Schedules of the WA also operate to enable greater harm to some species than others. Currently customary take is enabled, without restriction at law, in the case of the sooty shearwater. Concern exists as to the sustainability of mutton-birding when a species is facing prolonged declined.

The relationship between absolute protection and development, particularly as it concerns incidental loss (excluding bycatch) is not well articulated in the WA or subordinate documents. A lack of clarity surrounds the constitution of habitat destruction and modification as “hunting or killing” pursuant to s 63(1) WA. Clear inclusion of this activity within the purview of s 63(1) would benefit birds, as would a stronger approach to regulating disturbance under the Act.

Practice surrounding permitted taking pursuant to s 53 requires greater guidance and clarification, particularly in relation to incidental take. Conservation General Policy requires revision in this regard or the WA could be amended to clarify. Enforcement of the standard of absolute protection through the obtaining of permits is scarcely visible, and the process is overshadowed by the RMA. This has the impact of diminishing the effect of the WA and rendering the standard of absolute protection silent.

Although combining the processes of the RMA and WA to prevent duplication of process has potential benefits for birds in terms of RMA processes requiring EIA and public participation, the RMA mandate of sustainable management is potentially a less protective standard for birds than absolute protection. Therefore combination of process can only be recommended in the event of strengthened provisions in the RMA to protect Threatened and At Risk species.

The degree of care applied in the protection of birds should be advanced by revision of Conservation General Policy and associated strategies and plans. Applying a consistent approach to protection of birds promoting avoidance of effects to Threatened and At Risk species would benefit birds. Policy approaches are currently inconsistent and fail to demonstrate a rigorous approach to securing protection to birds. Applying protection in accordance to place or in defence of sectors, results in uneven treatment for species. A better approach is to enable conservation status as the baseline. Birds would also benefit from the requirement for precaution, where knowledge is uncertain.

The Office of the Auditor General 2012 Report underscores the key concern that greater strategic and operational integration is required between those involved in the conservation effort. To achieve this, the Office of the Auditor General recommends timely renewal of CMStrat, working agreements with local authorities for biodiversity management, long terms plans with partners detailing resourcing commitments, and regional leadership and coordination of effort led by Department national office for biodiversity of national significance at risk.[1048] Such measures are sensible and will advance species and habitat protection.

Greater engagement by the Crown, as owner of the species, to preserve and protect species from harm both on public and private land would alter distribution of harm to birds to their benefit. The degree of care applied in policy directing species management in New Zealand requires strengthening, but management is also profoundly affected by resourcing. Systematic conservation planning may assist in directing resources where the greatest results can be achieved, but should be backed by consistent and strongly protective policy. Failure to do so may mean that not only are "lesser" areas not prioritised, but the strength of legal protection in priority areas is also insufficient. Furthermore, prioritisation of areas should not be confused with protection of threatened species, such that birds residing outside of these areas receive a lesser form of legal protection. A consistent universal standard of protection is required. Absolute protection under the WA should be partnered, and strengthened, in policy by a requirement for avoidance of harm to Threatened and At Risk species.

Species-based recovery plans provide the detailed guidance essential to halting the decline of threatened species. This level of information is key to informing the response to particular threats faced by species. In the assessment of direct and incidental loss, recovery plans may support decision-making, and have shown clear benefits in the case of the kokako and dotterel. In Chapter 8, it will become evident that recovery plans could usefully be woven into landscape-level conservation plans which better direct development which affects birds. The lack of statutory force and effect and the lack of connection between the recovery plans and protection of habitat are

[1048] Controller and Auditor-General 2012 above n 736 at 13.

problematic. The position of threatened birds would be improved if a statutory response mechanism existed to enable protection through prohibition or limitation of particular activities identified in the recovery plan where a threshold was triggered.

CHAPTER 8 - THE PROTECTION OF PLACE, SPACE AND ECOSYSTEM PROCESSES

8.1 THE NATURE OF THE PROBLEM

The focus of this chapter is upon the protection of the environment inhabited by the species. The central consideration will be the approach to the management of human activity in relation to species habitat. Habitat protection is unlike species protection in that it is usually place specific, or tied to a particular resource. As habitat protection differs according to ownership and statutory purpose, this chapter will examine protection of areas under conservation legislation, consider protection through pest management, and assess the protection available to birds under the RMA.

Reiterated throughout this research is the degree of care applied through the law to the case study species. The chapter considers the constraints affecting delivery of a consistent protective approach. It analyses the imposition of limits upon the use and development of resources to benefit birds whilst a critical tension is explored between preservation and development of habitat. It has been argued that "The conservation ethic becomes unskilful when its sole focus is defence of the existing without allowing other possibilities including innovative mitigation".[1049] There is merit in this argument, but this chapter will examine the continued importance of a strong defence of the existing, despite the tide of innovation. Developing the arguments made in Chapters 6 and 7, this chapter will show that there are significant gaps and inconsistencies in the current defence. Moreover, "innovative mitigation" presents its own challenges. Chapter 5 examined characteristics of law and planning, which present stronger outcomes for

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[1049] Maassen, J *"Synopsis for Manawatu-Whanganui Regional Council on the Topic of Biodiversity" legal submission for Respondent in Day v Manawatu-Wanganui Regional Council [2012] NZEnvC 182* (2012).

species and New Zealand law will be analysed with these characteristics in mind.

8.2 CASE STUDY - OPOUTERE, OHUI AND WHAREKAWA HARBOUR (THE OPOUTERE AREA)

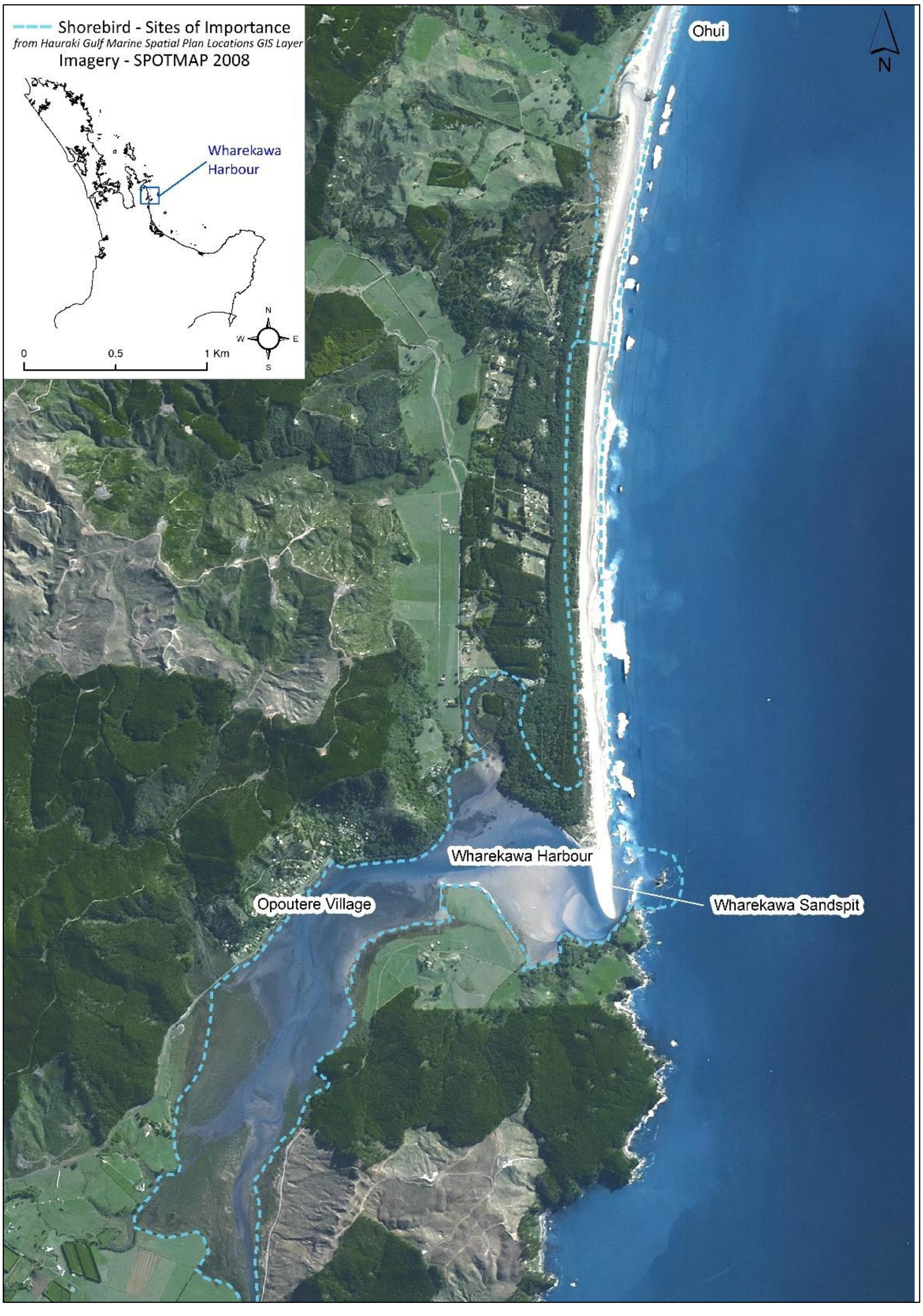
Introduction and features

Figure 78 Wharekawa Harbour and bird foraging ground

Wharekawa Harbour and its environs are a stronghold for the New Zealand dotterel, the godwit, and an occasional home to the wrybill and a likely historical habitat of each of the remaining case study species (Figures 78 and 79). This case study of the area will illustrate several key issues: it will show how the area is divided in terms of ownership, and the consequences for legal protection, it will document the manner in which place, space and discrete resources are regulated through different agencies and the outcomes which thereby arise, further, it will document both historic and current approaches to planning for development in the area, and provide context in relation to the cumulative development in the coastal environment.

Figure 79 contrasts aerial photographs from 2008 and 2012, and overviews the natural and physical features of the area and resource use. At first glance the photographs appear very similar, but a closer examination reveals the extent of change in the production forestry surrounding the harbour and the removal of vegetation from land adjacent to the beach front.

Figure 79 The Opoutere area: a) 2008 and b) 2012
a) 2008



Source: Shorebird boundary sourced from Hauraki Gulf Marine Spatial Plan Locations – GIS Layer. Background imagery sourced from a) SPOTmaps natural colour satellite imagery 2008/2009 (SPOT-5).

b) 2012

Source: Shorebird boundary sourced from Hauraki Gulf Marine Spatial Plan Locations – GIS Layer. Background imagery sourced from b) WRAPS 2012 aerial photography (NZ Aerial Mapping).

The Wharekawa/Opoutere sandspit is a breeding ground for dotterel and variable oystercatcher, and is also used by various shorebird species as a high tide roost.[1050] Dividing the rich shorebird foraging grounds of the lower Wharekawa Harbour from the Pacific Ocean, the sandspit combines with the Opoutere beach and the northern Ohui breeding grounds to represent the most significant sites for New Zealand dotterel in the Waikato region, and one of the most important globally. A 2011 census recorded 57 dotterel including 24 breeding pairs in the area, and the site has been recognised for many years as a vital source population for the region whilst contributing to populations as distant as Great Barrier Island and the central Bay of Plenty.[1051] The importance of protecting such sites is increasing as human activity continues to exert pressure on the quality and availability of habitat. A report quantifying the ecological values of the Opoutere area states:[1052]

> High quality, undisturbed breeding habitat for dotterels is now very limited on the North Island east coast, and my banding studies have shown clearly that dotterels persist at sites for many years in the face of chronic disturbance and low breeding success.

This comment indicates that the mere presence of birds is not a sound indicator of successful co-existence with humans. Planning for increased human activity must recognise the long term effects on population levels and distribution.

The Wharekawa Harbour is considered to be one of the more ecologically significant harbours of the Coromandel, especially for shorebirds,[1053] the associated high-tide roost provided by the sandspit

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[1050] Dowding, JE *Sites of Importance to Coastal and Estuarine Birds on the East Coast of the Waikato Region (Draft)* (Waikato Regional Council, 2013) Map 29-1.
[1051] Dowding, JE *Significance of the Ohui-Opoutere-Wharekawa Harbour area with respect to Native Birds* (2012) 2-5.
[1052] Dowding, JE *Potential Impacts on Endemic Shorebirds of the Operation of a Private Campground at Wahitapu Lane, Opoutere Beach* (2010) 4.
[1053] Waikato Regional Council *Wharekawa Harbour and Catchment Management Plan* (Waikato Regional Council, 2009) 18.

increases this value. This area as a whole is known to support at least 41 native bird species,[1054] of which 46% are currently considered Threatened or At Risk. This is habitat of outstanding value to birds, but it is also valued by people and as such subject to the range of threats documented in Chapter 4.

For shorebird habitat, the greatest risk comes from predation by mammalian predators. Despite this, nest damage or disturbance by people, vehicles and dogs renders chicks susceptible to predation from both avian and mammalian predators.[1055] Problems also arise through sedimentation of the harbour caused by production activities in the catchment, activities such as farming and forestry contribute to disturbing land, making it vulnerable to erosion.[1056] The incursion of mangroves into the harbour, along with the loss of coastal wetland from drainage and reclamation of the harbour edge, are also problematic,[1057] wetland birds present in the harbour suffer from the latter. Deforestation of plantation forest, and the clearance of indigenous vegetation, have affected forest dwellers such as the kokako in the past, and continue to affect kaka, kiwi and kereru. Other activities in the catchment area, such as agriculture, horticulture and residential development, also contribute to habitat loss and modification for those present species. Due to variations in the landscape, the scope of human activity, and a broad bird assemblage, the Opoutere area is highlights the plethora of threats generic to the New Zealand environment.

In contrast to the nearby settlements of Whangamata and Tairua, residential development in Opoutere is limited, and is located away from the beachfront and sandspit.[1058] The lack of public road access to the beach

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[1054] Dowding 2012 above n 1051 at 4.
[1055] Dowding 2010 above n 1052 at 4.
[1056] Gibbs, M and Bremner, D *Wharekawa Estuary Sediment Sources* (Environment Waikato Technical Report 2008/07, 2008) 360.
[1057] Waikato Regional Council 2009 above n 1053 at 32.
[1058] Identified as "one of only two major beaches in the Coromandel area which do not have close settlement immediately behind them" in *Opoutere Residents and Ratepayers Association v Planning Tribunal* (1989) 13 NZTPA 446 CA.

reduces human pressure on the wildlife refuge, producing a site of outstanding habitat quality, there is, consequently, greater potential to protect that quality than at other more compromised sites.[1059]

8.3 HABITAT PROTECTION - CONSERVATION AREAS - (CONSERVATION ACT 1987, RESERVES ACT 1977, WILDLIFE ACT 1953)

The main subject of this chapter is the RMA, but consideration of habitat protection requires an examination of the protection of conservation areas through legislation also. As expected, bird habitat located on land reserved for conservation purposes is subject to tighter controls upon human activity than that occurring on private land.[1060] Despite this, the protection is not comprehensive in view of the threats faced by the birds.

Areas may be reserved for conservation purposes under several statutes. Section 2 of the Conservation Act 1987 (CA), defines "conservation area" to include land or foreshore held under the Act for conservation purposes. All activities within a conservation area will be prescribed according to conservation status, and development is subject to the grant of concession under the CA, a general requirement is that activities are not contrary to the provisions of the Act, or the purposes for which the land concerned is held.[1061] Similar restrictions apply to habitat protected under the Wildlife Act 1953 (WA)[1062] and the National Parks Acts 1980.[1063] Land reserved under the

[1059] Dowding 2012 above n 1051 at 10.
[1060] Tonkin and Taylor Ltd and Covec Ltd *Barriers to No Net Loss Biodiversity Offsets Research report* (Department of Conservation, 2012) 15.
[1061] Section 17U(3). Mining is an exception, being subject to an access arrangement as opposed to a concession pursuant to s 61 Crown Minerals Act 1991.
[1062] Section 14AA Wildlife Act 1953.
[1063] Section 49 National Parks Act 1980.

Reserves Act 1977, which may include private land,[1064] for the purpose of concessions is treated as if it is a conservation area under the CA.[1065]

Stewardship land, a particular class of land under the CA, is considered more vulnerable to development activity than other conservation areas due to not being held for any particular purpose, and thus limiting its protective force. In addition, very little stewardship land is listed in Schedule 4 of the Crown Minerals Act which limits access for mining.[1066] This is relevant to the protection of the black petrel's habitat, Great Barrier Island, which is largely stewardship land. It is worth noting, however, that the government has an intention to reclassify land on the island as Conservation Park.

Habitat protection and management of conservation areas are guided by Conservation General Policy and Conservation Management Strategies and Plans. As described in the previous chapter, the limitations described relating to degree of care, consistency, and lack of integration in the context of species protection are equally apposite for habitat, the concluding remarks of Chapter 7 are equally applicable habitat protection and repetition is not necessary.

The Opoutere area is, as Figure 80 illustrates, a complex mixture of public and private space, and is typical of many New Zealand coastal locations. The sandspit, harbour, beach, rocky outcrops, and the airspace above are each situated within the common marine and coastal area (CMCA) as defined by s 9 of the Marine and Coastal Area (Takutai Moana) Act 2011. As such, ownership is not possible pursuant to s 11(2). Conservation areas, national parks, and reserves owned by the Crown are, however, excluded from inclusion within the CMCA by s 9(b)(i-iii). Accordingly, the sandspit, as a local purpose reserve (burial ground) under s 23 of the Reserves Act 1977, and the area forming the

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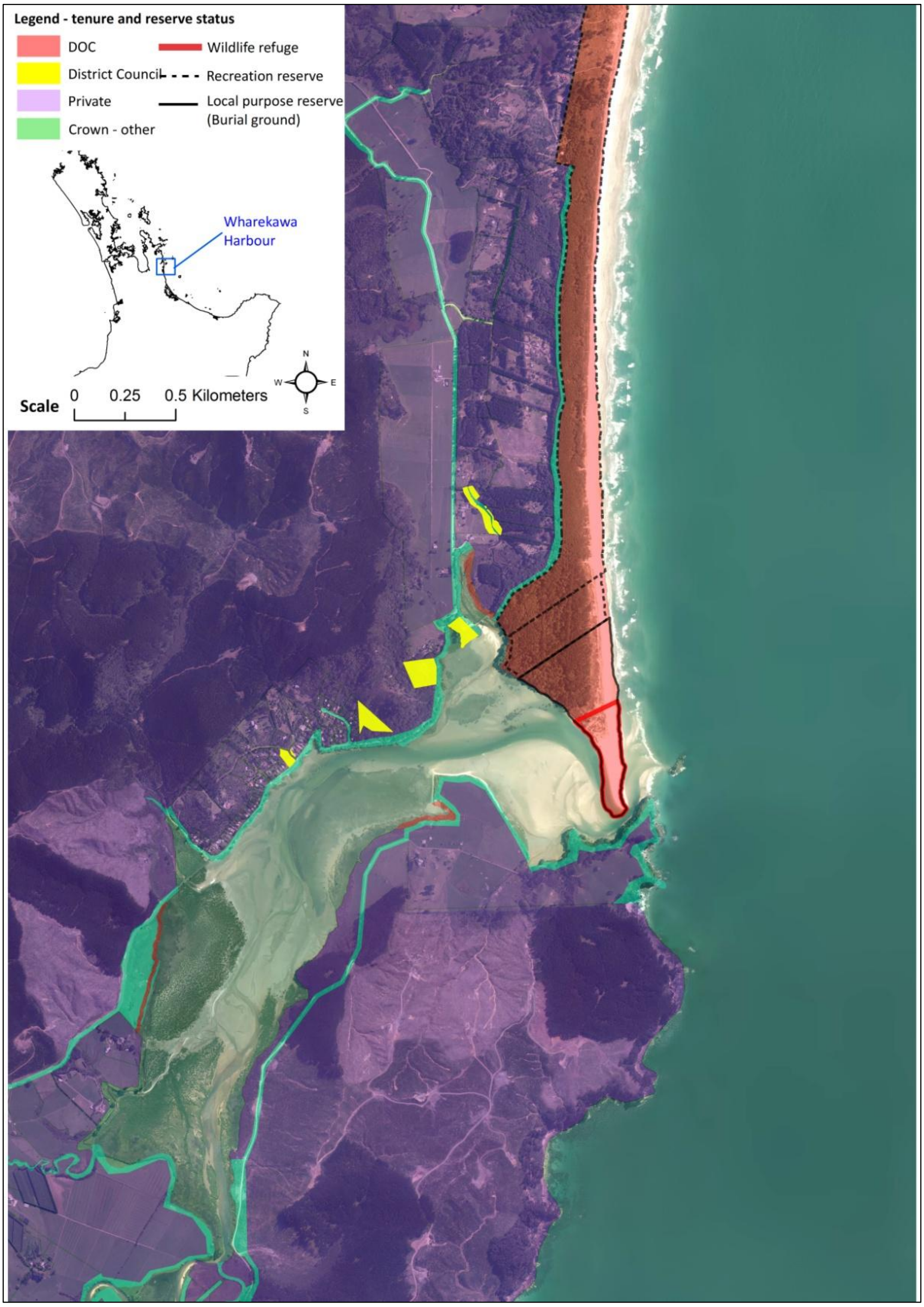
[1064] Section 76 Reserves Act 1977.
[1065] Section 59A Reserves Act 1977.
[1066] Parliamentary Commissioner for the Environment *Investigating the Future Of Conservation: the Case of Stewardship Land* (Parliamentary Commissioner for the Environment, 2013) 34.

Opoutere Beach Recreation Reserve, as a recreation reserve under s 17 of the Reserves Act 1977, continue to be vested in the Crown.

In both cases the reserved land vested in the Crown extends beyond the mean high water mark and encroaches into the terrestrial area. The balance of the area to be considered is largely private land, with portions vested in the Crown, the Thames Coromandel District Council, in connection with Mangaruawahine Ecological Covenant, and the Mangaruawahine Recreation Reserve. The conservation arrangements allowed by the law are complex, and expose the possibility of fragmentation: this is confirmed in the case of Opoutere.

Figure 80: The Opoutere area tenure and reserve status



Source: DOC, Thames Coromandel District Council, Private and Crown boundaries derived from Land Information New Zealand property boundaries. Wildlife refuge and reserve boundaries sourced from DOC Public Conservation Land layer. Background image sourced from WRAPS 2012 aerial photography (NZ Aerial Mapping).

At the Opoutere sandspit, specific site protection is extended by the two reserve designations, and the sandspit accrues additional protection in the form of overlaying wildlife refuge status applied in 1967 pursuant to s 14 of the Wildlife Act 1953.[1067] For the birds, the main benefits of reserve status are the limitations placed upon development and activity. Designation as a wildlife area requires that the area be managed by the Department of Conservation (DOC), in accordance with Conservation General Policy and Conservation Management Strategies.[1068] The revised draft Conservation Management Strategy for the Waikato Conservancy (draft CMStrat) recognises the significant ecosystem values of Opoutere Spit and Wharekawa Harbour, and while it restricts the construction of structures on undeveloped coastal public conservation land to protect high natural character and scenic values pursuant to cl 2.2.9, it fails to specify objectives for the management of the wildlife refuge as required by s 14D(1) WA.[1069] Vehicle use is restricted on public conservation land through Conservation General Policy, the Waikato Conservation Management Strategy,[1070] at wildlife refuges[1071] and pursuant to the Reserves Act 1977. Bylaws commonly provide implementing mechanisms,[1072] as does the Waikato Regional Coastal Plan for the coastal marine area.[1073] Dogs are excluded from the refuge, but refuge status does not enable the prohibition of people from the area, as would a wildlife sanctuary which pursuant to s 9 WA provides more extensive protection.

Status as a wildlife refuge is insufficient to elevate the site to priority for conservation management purposes, and despite obvious value, none of

[1067] *Opoutere Residents and Ratepayers Association v Planning Tribunal* (1989) 13 NZTPA 446 CA, 448.
[1068] Section 14B WA.
[1069] Department of Conservation Revised Draft Waikato Conservation Management Strategy (Department of Conservation, September 2013) cl 2.2 and Appendix 9.
[1070] Ibid at 3.2.1.
[1071] Section 14(1A) WA.
[1072] See for example cl 1707 Thames Coromandel District Consolidated Bylaw Part 17 - Parks and Reserves 2008.
[1073] Rule 16.6.2.

the sites in the area are identified as priority Ecological Management Units for the purpose of DOC's Prioritisation of Ecosystem Management.[1074] Active management of the site is essential to counter significant pest threats, and to manage impacts from human disturbance around breeding areas. The wildlife refuge has been managed since the 1986/87 breeding season, and more recently Ohui has been managed as well.[1075] It is currently unclear what the impact of the prioritisation exercise will be, although assurances have been provided that existing managed areas will continue in the short term. This particular site has an uncommon degree of insurance due to the New Zealand Dotterel Watch Programme, a partnership between Newmont Waihi Gold and DOC, which provides for a full time (seasonal) dotterel ranger at Opoutere and an additional ranger who covers the entire Coromandel Peninsula.[1076] Ranger reports document compliance issues, but whilst the presence of a ranger reduces such issues it does not eliminate them. However, they contribute to vital pest management at the refuge environs and the Ohui site.[1077]

An additional protective layer is provided through the area's inclusion within the catchment of the Hauraki Gulf pursuant to the Hauraki Gulf Marine Park Act 2000.[1078] The Act recognises the national significance of the area and provides management objectives which include protection of the life supporting capacity of the Gulf environment and the protection of natural resources.[1079] A non-statutory marine spatial plan is currently in preparation, and it is intended that the plan will be used to modify resource management plans upon completion. A recently released data layer prepared for the plan denotes a range of bird values for the area, and accords "Site of Importance

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[1074] Department of Conservation, GIS Data Layer "NewManagementUnits_2013Rankings_PublicViewOnly", October 2013.
[1075] Dowding 2010 above n 1052 at 6.
[1076] Department of Conservation "Regional Partnerships New Zealand Dotterel Watch Programme" (2013) <http://www.doc.govt.nz/getting-involved/partnerships-and-donations/regional-partnerships/nz-dotterel-watch-programme/>
[1077] Dowding 2010 above n 1052 at 7.
[1078] Schedule 3 Hauraki Gulf Marine Park Act 2000.
[1079] Sections 8(a) and (b).

Priority One" status to the sandspit, Wharekawa Harbour and Opoutere Beach and dunes, with Priority Two status being accorded to the Ohui breeding grounds.[1080] The plan is not sufficiently advanced to offer an assessment, but its key value for birds would be a recognition of interconnections within a given environment, and identification of important bird areas to promote strengthened protection. Restriction to the catchment area, however, limits full integration with the terrestrial.

In summary, conservation legislation provides discrete site protection to reserved areas. Figure 80 demonstrates a collection of fixed protection applied to some of the remaining habitat important to birds. Forest birds such as the kaka and kereru benefit from the District Council reserves (as would kokako if not extirpated from the area), wetland birds, and shorebirds (to a more limited degree) benefit from the wetland reserve and shorebirds such as the dotterel, wrybill, and godwit benefit from the beach reserves. But the reserves are not comprehensive, they cannot cover all habitats of mobile species, nor resist many threats to which the birds are exposed. To be more effective the beach reserve status requires the regular presence of a ranger, and the presence of voluntary minders at the height of summer. This presence reduces but does not eliminate pressure upon the birds. The status of the sandspit reserve may influence decisions in the general environment, but cannot control that activity beyond the site.

On the Coromandel peninsula and in other New Zealand coastal areas, bird habitat is compromised and/or threatened by activities such as farming, forestry, marina developments, aquaculture, residential development, camping grounds, tourist accommodation, and recreational activities. This activity is managed under the RMA, and accordingly consideration will shortly be given to the protective effect of that Act. But first, separate consideration

[1080] Waikato Regional Council "Hauraki Gulf Marine Spatial Plan Locations – GIS Layer GIS_ALL.HGMSP_SHOREBIRD_SOI" 201.3.

will be given to the control and inflow of pest species to the habitats of the birds. Although more typically considered as species protection, pest management is included here as its purpose is to create a protected space, and its delivery is affected by both place and the presence of species.

8.4 PEST MANAGEMENT

The Biosecurity Act 1993 (BSA), amended by the Biosecurity Law Reform Act 2012, regulates pest management in New Zealand. The BSA governs both pests and unwanted organisms, and was enacted to restate and reform the law relating to the exclusion, eradication, and effective management of these. Most relevant to this research is the manner in which it governs the management of the predators that threaten the case study species.

The Ministry for Primary Industries is responsible for Biosecurity, and is supported by the Ministry of Health, the Ministry of Māori Development (Te Puni Kōkiri), and the Department of Conservation. The duties of the responsible Minister are set out in sections 8 and 9 of the BSA. Pursuant to s 9(1)(cb), the Minister is responsible for recommending to the Governor-General approval of national policy concerning pest management under section 57. Section 10 outlines the functions of the Minister in relation to pest management, these include the development and approval of national pest management plans, and defined by s 2(1) as follows:

> **pest management plan** means a plan to which the following
> apply:
> (a) it is for the eradication or effective management of a particular pest or pests:
> (b) it is made under Part 5:
> (c) it is a national pest management plan or a regional pest management plan

Local authorities, particularly regional councils, have a significant role in pest management. Section 12B states that regional councils should provide leadership regionally by facilitating the development and alignment of regional pest management plans, in accordance with the powers provided in s 13. Pursuant to s 14(b), territorial authorities may act as a management agency under a pest management plan. Provision for a territorial authority to contribute to the cost of pest management plan implementation through increased rates is provided for by s 14(da) and (db), but limited to the extent provided for in a national pest management plan. Part 5 provides the detailed machinery for pest management, s 54 describes its purpose as follows:

> **54 Purpose of this Part**
> The purpose of this Part is to provide for the eradication or effective management of harmful organisms that are present in New Zealand by providing for—
> (a) the development of effective and efficient instruments and measures that prevent, reduce, or eliminate the adverse effects of harmful organisms on economic wellbeing, the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, and their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga; and
> (b) the appropriate distribution of costs associated with the instruments and measures.

In terms of policy direction, s 56 provides that the responsible Minister must formulate national policy direction, the purpose of which is to ensure that activities under Part 5 provide the best use of available resources to serve New Zealand's best interests and to contribute to the achievement of the purpose of this Part. For the purposes of this research, a significant requirement contained in s 56 (3) is the requirement that national policy direction must contain directions on the setting of good neighbour rules in regional pest management plans.

Regional Pest Management Plans (RPMP) are prepared pursuant to ss 68-78 of the BSA, in accordance with any national policy direction[1081] or national pest pathway management plan. By way of example, Waikato Regional Council manages pest plants and animals through the Waikato

[1081] A draft has been prepared with which the WRRPMP is aligned: Ministry for Primary Industries *Proposed National Policy Direction for Pest Management Plans and Programmes* (Ministry for Primary Industries, 2013).

Regional Pest Management Plan 2013-2023 (WRRPMP) which sets out objectives, methods and rules that are specific to plant and animal species declared to be 'pests' in the plan.[1082]

Land occupiers may be required to take responsibility for pests on their land, and in some instances carry out control measures pursuant to the rules set out in Part 2 of the Plan. In high priority areas pest control will be mandatory, and will be undertaken through direct control by council contractors. Ratepayers contribute to this latter work through a biosecurity rate, either general or targeted.[1083] Failure to comply may result in prosecution. As a result of the 2012 reform, the Crown is now required, pursuant to s 69(5), to comply with good neighbour rules applied through RPMP. The Crown, however, is not rated in terms of a contribution to the Waikato Regional Council funded high priority control work.[1084] Including the Crown within the purview of the good neighbour rules is seen as a significant improvement for pest management in the region by the Regional Council.[1085]

Good neighbour rules are designed to manage pests that cause external costs to other land holders.[1086] Section 2(1) BSA defines a good neighbour rule as follows:

> **good neighbour rule** means a rule to which the following apply:
> (a) it applies to an occupier of land and to a pest or pest agent that is present on the land; and
> (b) it seeks to manage the spread of a pest that would cause costs to occupiers of land that is adjacent or nearby; and
> (c) it is identified in a regional pest management plan as a good neighbour rule; and
> (d) it complies with the directions in the national policy direction relating to the setting of good neighbour rules.

[1082] Waikato Regional Council *Waikato Regional Pest Management Plan 2013-2023* (Waikato Regional Council, 2013a) 22.
[1083] WRC 2013a ibid at 37, Waikato Regional Council *Waikato Regional Pest Management Strategy 2013/14 Operational Plan* (Waikato Regional Council, 2013b) Appendix 2.
[1084] WRC 2013a above n 1082 at 37.
[1085] WRC 2013a above n 1082 at 37. Note that the Operational Plan (WRC 2013b above n 1083) also records that the Crown currently makes a contribution to the WRC to support funding of pest control on Crown land.
[1086] New Zealand Government *Pest Management National Plan of Action* (New Zealand Government, 2011) 14.

Whilst such rules are important for abatement of the flow of pests, they are limited in application. Cl 10 of the draft National Policy Direction details the requirements for good neighbour rules, and provides the following explanation: [1087]

> Good neighbour rules are not about eradicating a pest or managing its spread throughout a region. Rather, the proposed national policy direction on setting good neighbour rules explains that good neighbour rules focus on managing any costs caused to neighbours by the spread of pests. Land occupiers do not have an absolute right to impose impacts on their neighbours; nor do they have an absolute obligation to prevent all pest spread off their land. A reasonable balance of property rights between the two extremes needs to be determined, and good neighbour rules seek to establish this balance

This provides recognition of a duty attached to property rights, although the foundation of the duty appears to rest upon stemming the economic effects to other property owners, as opposed to a duty to reduce harm to other species. The achievement of a "reasonable balance" suggests mitigation of the problem as opposed to avoidance, and will be a determinant in the level of gains distributed to species, rules focused upon the lessening of externalities imposed to neighbours may not be well targeted to the needs of species.

The approach described in cl 10 is interpreted through the RPMP to define the extent to which pests must be controlled as a good neighbour, or be subject to direct control by the Council. The RPMP prioritises pest management through the identification of high value sites defined as "either a high value biodiversity site or a high value catchment site". Such sites will be identified in consultation with landowners, and it is likely that an area, such as Opoutere, will have aspects of such high value, particularly those areas designated as significant natural areas pursuant to the Regional Policy Statement.[1088] The requirements of the plan for control are set out in Table 12.

[1087] Ibid at 9 and 37.
[1088] WRC 2013a above n 1082 at 239.

Table 12 Waikato Regional Pest Management Plan pest control provisions		
	Good neighbour rule applies	**Council may direct control at high value sites**
Rule 6.6 - **Feral cats**	×	✓
Rule 6.11 - **Mustelids**	×	✓As appropriate, research dependent
Rule 6.12 - **Possums**	✓In defined circumstances and subject to an area limitation (500m from boundary of affected land)	✓Wide powers of control, particularly related to priority possum control areas
Rule 6.15 - **Rats**	✓ In defined circumstances and subject to an area limitation (200m from boundary of affected land)	✓

Source: Waikato Regional Council *Waikato Regional Pest Management Plan 2013-2023* (Waikato Regional Council, 2013).

Application to the Opoutere area provides further context and meaning. For the birds at Opoutere, the development of good neighbour rules potentially strengthens opportunities to reduce distribution of harm by requiring landowners to effect control of a significant threat. Limitations of the RPMP provisions, described in Table 12 are evident, neither feral cats nor mustelids are subject to the good neighbour rule, area limitations apply for control of possums and rats, and activation of the good neighbour rule is complaint driven.[1089] Moreover, the extent of the obligation on landowners is less than clear due to the desire to balance property rights and obligations. This may be a reasonable way to limit the cost of comprehensive control upon the landowner, but its effect is to impose the burden upon the affected species. Furthermore, control by the Council will be subject to funding within the limits

[1089] Domestic cats are not considered a pest, but live catch traps are employed in the vicinity of the dotterel breeding areas, to limit the damage caused by cats in a socially acceptable manner.

of any available annual budget,[1090] and is potentially vulnerable to both ideologically or fiscally driven political factions.

The Opoutere area is subject to a persistent pest threat. The Waikato Regional Council provides support for small scale community biodiversity enhancement programmes and discretionary funds for a pest contractor to liaise with landowner groups and provide some discretionary control where a group no longer exists.[1091] A pest contractor, funded by both the Thames Coromandel District Council (TCDC) and the Regional Council, services bait stations and traps in the Opoutere area, including DOC and TCDC reserves and upon some areas of private land, together with the Opoutere Residents and Ratepayers Association and landowners. Although a valuable initiative, the operation is vulnerable in terms of security of contract, coordinated management, limited budget size, and the continued good will of interested landowners.

As a whole, the approach to pest management on the Coromandel Peninsula is subject of considerable division in the community. DOC applies aerial 1080 (the pesticide form of Sodium fluoroacetate) as a measure of broad scale pest control, a method employed due to the scale of the problem and the cost of treating it. This approach is vigorously opposed by groups who criticise the use of broad scale toxins in relation to biodiversity health and impact upon hunting. Opponents favour trapping and, in some situations, the use of toxins applied through bait stations. A 2011 report from the Parliamentary Commissioner for the Environment[1092] supported the approach of DOC, and recently an additional report has been released urging more strenuous

[1090] WRC 2013a above n 1082 at 238.
[1091] Waikato Regional Council *Notice of Agenda for the Coromandel Liaison Subcommittee of the Waikato Regional Council to be held at the Thames Civic Centre, 200 Mary Street, Thames on Tuesday 27 August 2013 commencing at 10.00am.* (Waikato Regional Council, 2013c).
[1092] Parliamentary Commissioner for the Environment *Evaluating the use of 1080: Predators, Poisons and Silent Forests* (Parliamentary Commissioner for the Environment, 2011).

responses to combat the problem.[1093] This report criticizes the fact that only on one-eighth of conservation land are populations of possums, rats and stoats controlled to any extent, and that in 2012/2013 DOC allocated more funding to research on 1080 and its alternatives than it did to 1080 pest control operations. Concerns also exist related to a reduction in Animal Health Board funding for possum control, a particular concern for the Waikato region where bovine tuberculosis has been significantly reduced consequent to possum control. [1094] The RPMP notes that once AHB withdraws, further prioritisation of key areas will be required as it is unlikely that all areas currently covered can continue to be funded.[1095] The RMPP also records concern that budget pressures facing the DOC may curtail its pest control operation in the region thus adding further pressure to the Regional Council control efforts.[1096]

In summary, pest control on the Coromandel Peninsula is problematic. Further resourcing and control is required, and birds would benefit from a stronger obligation being placed on landowners to control pests on their land. Justification for placing stronger obligations upon landowners can be found in Decision VI.23. of the CBD, and Aichi Target 9 (discussed in section 6.4.2.3) which targets control and eradication of priority invasive alien predators by 2020. This is further supported by Aichi Target 12 directed at prevention of extinction and the improvement in conservation status of threatened species by 2020 (section 6.4.2.4). In several respects the Opoutere bird populations are better protected than many due to a strong community of interest (both residential and commercial). Retention of this focus and community of interest is critical as current protection efforts have produced vital gains for Opoutere birds.

[1093] Parliamentary Commissioner for the Environment *Evaluating the use of 1080: Predators, Poisons and Silent Forests (Update Report on the Original Investigation)* (Parliamentary Commissioner for the Environment, 2013).
[1094] PCE 2013 ibid at 12-13.
[1095] WRC 2013a above n 1082 at 26.
[1096] WRC 2013a above n 1082 at 204.

8.5 THE RMA

Introduction

The Resource Management Act 1991 (RMA) influences outcomes for birds due to its focus upon the sustainable management of natural and physical resources in New Zealand.[1097] Governing activities within terrestrial and coastal marine areas,[1098] the RMA provides mechanisms to protect biodiversity including purpose and principle clauses,[1099] resource use restrictions,[1100] the preparation of extensive resource management standards, policies and plans,[1101] and development permitting procedures with mandatory EIA requirements.[1102]

Although the RMA is directed at integrated management of natural resources including animals,[1103] integrated management of indigenous species and their habitat is complicated by divisions created through ownership and control of resources and insufficient unifying or integrating policy.

The RMA brings an emphasis upon the management activities intended "to encourage people to internalise the cost of addressing the effects of their activity by investing in technology, designs or procedures that will reduce adverse environmental effects to an acceptable level".[1104] But how does the RMA resolves the issue of "acceptable level" of effect, and the consequences of this approach for the protection of birds?

1097 As defined by s 5 and see for discussion Wheen, NR "An (Updated) History of New Zealand Environmental Law" in Pawson, E and Brooking, T (eds) *Making a New Land : Environmental Histories of New Zealand* (Otago University Press, 2013) 287, 290-293.
1098 As defined by s 2.
1099 Sections 5-8, s 17
1100 Sections 9-17.
1101 Part 5, ss 43-86G.
1102 Part 6, ss 87AA-139A.
1103 Section 2.
1104 Makgill, RA and Rennie, HG "A Model for Integrated Coastal Management Legislation: A Principled Analysis of New Zealand's Resource Management Act 1991 "2012 27, 135 at 153.

Section 5 of the RMA states the purpose of the Act as follows:

> (1) The purpose of this Act is to promote the sustainable management of natural and physical resources.
> (2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—
> (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
> (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
> (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Focussing on both development and protection, section 5 envisages a balance whereby development is promoted whilst the natural environment is sustained through recognition of environmental limits.[1105] The concept of resilience, also explored in Chapter 5, underscores the importance of thresholds and the need for buffers in the system to cope with the unexpected. Valid concern exists that the implementation of s 5 currently fails to adequately protect environmental limits,[1106] and that New Zealand has not succeeded in decoupling environmental pressures from economic growth.[1107] As will be seen in this chapter the approach does not tend to produce strongly protective results for birds, particularly in terms of decline of consent. This issue is a matter of contemporary importance, as the Government has recently proposed amendments to the statute to further strengthen provision for development.[1108]

[1105] Palmer, G "The Resource Management Act - How we got it and what Changes are Being made to it" (paper presented to Address to Resource Management Law Association, New Plymouth, 2013a) 10.
[1106] Palmer, G *Protecting New Zealand's Environment - an Analysis of the Government's Proposed Freshwater Management and Resource Management Act 1991 Reforms* (A report prepared for the New Zealand Fish and Game Council 2013b) 29.
[1107] OECD *OECD Environmental Performance Reviews: New Zealand 2007* (OECD, 2007) 23.
[1108] Ministry for the Environment *Improving our Resource Management System: A Discussion Document* (Ministry for the Environment, 2013).

An integrated approach is vital to capture a full range of threats to birds, and produce consistent protective outcomes. Enacted in 1991, the RMA was innovative in its approach to the environment, particularly in its integrated approach to resource management which recognised the interconnected nature of the environment. Requiring integration across media and agencies, the Act transformed planning and decision-making in relation to the environment.[1109]

Espousing the fundamentals of an ecosystem approach (section 5.3.1 and 6.4) the Act defines the environment to include ecosystems and their constituent parts.[1110] It provides for the safeguarding the life-supporting capacity of air, water, soil, and ecosystems[1111] and for the avoiding, remedying, or mitigating any adverse effects of activities on the environment.[1112] Provision for intrinsic values[1113] includes by definition biological and genetic diversity and the essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience.[1114] This is a broad approach that looks well beyond site based habitat protection and the control of effects and aims to preserve the prerequisites of life including those self-organising systems that engender resilience.

On conservation land development is constrained by both the RMA and the conservation legislation, as discussed in section 8.3. The RMA includes conservation areas, although a limited exemption applies to the Crown for

[1109] Makgill above n 1104 at 145, Klein, U "Integrated Resource Management in New Zealand-a Juridical Analysis of Policy, Plan and Rule Making under the RMA" 2001 5 NZJ Envtl. L., 1, Klein, U "Assessment of New Zealand's Environmental Planning Model" 2005 9 NZJ Envtl. L.,287, McNeill, J, Cheyne, C and Summers, R "Spatial dimensions of New Zealand's Environmental Management" 2013 69 New Zealand Geographer 136.
[1110] Section 2.
[1111] Section 5(2)(b).
[1112] Section 5(2)(c).
[1113] Section 7(d).
[1114] Section 2.

land-use activities controlled by territorial authorities where that use is consistent with a Conservation Management Strategy or plan.[1115]

On private land, however, the protection of species habitat is the remit of the RMA alone, the role of DOC diminishes to advocacy except, as discussed in Chapter 7, the discretionary power of the Minister of Conservation to preserve and protect absolutely protected species. Protection of species by the Crown, by virtue of ownership and protection through the WA, tends to be overshadowed, also discussed in Chapter 7. The RMA provides for the protection of species, but unlike the mandate of absolute protection afforded under the WA, decisions are made to a level consistent with the promotion of sustainable management. Habitat not species protection is emphasised. Arguments can be made for a limitation of responsibility for species protection upon individual property owners, but the consequence of this arrangement can mean loss to species, and is an obvious contributing factor to the loss of biodiversity in New Zealand.

Resource management functions are divided between regional and district councils, pursuant to ss 30 and 31 of the RMA, whilst the Regional Policy Statement is, pursuant to s 59, directed at achieving integrated management of all natural and physical resources of the entire region. These documents can be supplemented by technical standards known as National Environmental Standards,[1116] and must give effect to National Policy Statements, both are prepared by central government, and designed to provide nation-wide consistency and effect.[1117]

Under the RMA, biodiversity is a concern of both regional and territorial authorities.[1118] Respectively, they have the responsibilities to create Regional and District plans to regulate activity in the environment. Regions encompass

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[1115] Section 4(3).
[1116] Sections 43-44A.
[1117] Sections 45-58A.
[1118] Sections 30(1)(ga) and 31(1)(b)(3).

larger areas than districts, and have boundaries drawn aligned to watersheds.[1119] Regional focus tends to be upon water and air quality, and the coastal marine area as defined by statutory function. Territorial authority is largely concerned with land use and subdivision. In terms of biodiversity, pursuant to s 30(1)(ga), regional councils are responsible for:

> (ga) the establishment, implementation, and review of objectives, policies, and methods for maintaining indigenous biological diversity:

In contrast, territorial authorities have responsibility for the control of the effects of land use for the maintenance of indigenous biodiversity.[1120] Accordingly a functional overlap exists for biodiversity responsibility, and allocation of roles between agencies varies widely according to direction from the Regional Policy Statement pursuant to s 62(1)(i)(iii) RMA.[1121] Lack of clarity and consistency in function facilitates the potential for gaps in protection and public confusion related to roles. Benefits exist from the regional council taking the lead role, along the lines of the Horizons Proposed One Plan due to issues of scale, administrative boundaries of regional council's having closer alignment with ecological boundaries territorial, and financial and technical capacity.[1122]

Federated Farmers of New Zealand v Manawatu Regional Council provides some clarity by confirming that regional councils are authorised to make rules for control of land for the purposes of maintaining indigenous biodiversity.[1123] Judge Thompson observed that in this case each of the seven affected territorial authorities demonstrated a complete absence of opposition

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[1119] McNeill 2013 above n 1109 at 136.
[1120] Section 31.
[1121] Contrast Policy 7.4 Horizons Regional Council *Proposed One Plan* (Decisions version 2010).and Methods 11.1.1 and 11.2.2. Waikato Regional Council *Proposed Waikato Regional Policy Statement,* (Decisions version 2012).
[1122] *Property Rights in NZ Inc v Manawatu-Wanganui RC* [2012] NZHC 1272 at [8].
[1123] *Federated Farmers of New Zealand v Manawatu Regional Council* [2011] NZEnvC 403 at [14].The decision was upheld in the High Court: *Property Rights in NZ Inc v Manawatu-Wanganui RC* [2012] NZHC 1272.

to regional council taking a lead role.[1124] Most likely, a fiscal benefit accrues to territorial authorities through this apportionment, but for threatened species, in addition to consistency, a further benefit potentially accrues: existing use rights, arising under Regional Plan rules, are constrained by associated requirements for resource consents within a six month period, this in contrast to the district plan regime where no such constraint arises.[1125]

Through the functions described, both the territorial authority and the regional council have the power to make rules in plans for the maintenance of indigenous biodiversity.[1126] Taken literally, in the context of vegetation clearance and loss of habitat, this could mean a halt to such activity and capping loss at current levels.[1127] It could also mean something more than "no net loss" on the basis that substitution does not necessarily equate with maintenance. That aside, interpretation of the term remains subject to the constraints of s 5, as the functions are conferred with a view to giving effect to the Act.[1128] For protection of Threatened and At Risk species, the casting of a stronger and more active obligation than maintenance would be beneficial, and would assist in filling a gap that central government (DOC) is not currently resourced to meet. Applying increased obligations, through the RMA, represents a key opportunity to better protect birds on private land.

The existence of political will to strengthen protection of birds in a manner that constrains development activity is a potential barrier to change at the local government level. The legitimacy and funding base for local

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1124 *Federated Farmers of New Zealand v Manawatu Regional Council* [2011] NZEnvC 403 at [10].
1125 Sections 10 and 20A(2)(c) RMA.
1126 Methods are defined to include rules, and regional council powers in terms of biodiversity are not to be read down so as to include every relevant function apart from controls over the use of land *Property Rights in NZ Inc v Manawatu-Wanganui RC* [2012] NZHC 1272 at [31] – [32].
1127 Walker, SF, Brower, AL, Clarkson, BD, and others "Halting Indigenous Biodiversity Decline: Ambiguity, Equity, and Outcomes in RMA Assessment of Significance" 2008 32(2) New Zealand Journal of Ecology10.
1128 Sections 30(1) and 31(1).

government derives from private landholder constituents. In regional councils, where councillors are predominantly farmers, McNeill suggests that this creates "a potential for decision-making to support the interests of the rural sector".[1129] Similarly, small territorial authorities commonly have a strong focus upon stimulating economic development, and it is well understood that the imperative in industrialised countries to promote economic development works against sustainable development.[1130]

In relation to ecosystems in water bodies and coastal waters, pursuant to section 30(1)(c)(iiia) the function of regional councils includes controlling the use of land to "maintain and enhance" these aspects, a requirement more closely aligned with the concept of "net gain". Applying this approach to all resource use would be beneficial, although it is noted that the degraded state of many of New Zealand's water bodies suggests that implementation of this function is compromised.

Policy and rules in plans made pursuant to these functions are a chief determinant of the extent of protection provided to birds, and a sample relevant to this research will be examined in section 8.5.6. The rules' construction[1131] and expression, through the resource consent decision-making process,[1132] must be in accordance with the purpose and principles of the Act, accordingly, attention now turns to Part 2 of the Act.

1129 McNeill, JK "The public value of regional government: how New Zealand's regional councils manage the environment" (Massey University, 2008), 143, 243, Table 6-3.
1130 Burby, R, Dixon, J, Ericksen, N, and others *Environmental Management and Governance: Intergovernmental Approaches to Hazards and Sustainability* (Routledge, 2013) 1, see also the strong position of Thames-Coromandel District Council upon economic stimulation and the District: Thames-Coromandel District Council "Economic Development" (2014) http://www.tcdc.govt.nz/business/>
1131 Sections 66(1) and 74(1).
1132 Section 104(1).

A review of case law relating to the RMA and its predecessor, the Town and Country Planning Act 1977, documents the ongoing competition between resource use and resource protection for the purposes of habitat and species protection. Decisions are resolved on a case by case basis as a result of resource management plans which employ techniques of discretionary consent relating to the effects of activities. It is not uncommon for the Courts to consider these contests finely balanced.[1133] What is less common is decline of consent.[1134] Effects may be conditioned and mitigating techniques employed such that the statutory tests are satisfied. This is discussed further below. For birds, this is critical, because New Zealand does not have dedicated threatened species legislation, and, as seen in Chapter 7, the absolute protection extended to birds through the WA is reduced by statutory exception and a lack of implementation.

Decisions made about protecting birds rely on the purpose and principles of the RMA described in ss 5-8. In achieving the purpose of the Act, decision makers must recognise and make provision for matters of national importance (s 6), give particular regard to those factors in s 7, and take into account the principles of the Treaty of Waitangi (s 8). When considering a hierarchy between ss 6-8, s 7 is seen as less influential, and an inbuilt preference is given to those matters in ss 6 and 8, but only in proportion to the weight of evidence.[1135]

[1133] *Lower Waitaki River Management Society Inc v Canterbury Regional Council* [2010] NZEnvC 257 at [554], *Director-General of Conservation v Marlborough District Council* [2010] NZEnvC 403 at [765], *West Coast Environmental Network Inc v West Coast Regional Council* [2013] NZEnvC 47 at [335], *West Coast Environmental Network Inc v West Coast Regional Council* [2013] NZEnvC 178 at [327], Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011 at [1108].
[1134] Consent was granted in each of the applications referred to above.
[1135] *Ngati Maru Iwi Authority Inc v Auckland CC* HC Auckland AP18-SW01, 24 October 2002 at [20] and [22], *Long Bay-Okura Great Park Society Inc v North Shore City* Council [2011] NZEnvC 204 at [282].

The provisions of Part 2 are considered to be fully or principally anthropocentric due to the value of resources to humans on a shallow ecological view.[1136] This includes s 6(c) which requires, as a matter of national importance, that decision makers recognise and provide for areas of significant indigenous vegetation and significant habitats of indigenous fauna. Section s 7(d) alone, which requires particular regard to be given to intrinsic values of ecosystems, is the sole biocentric factor and not one that features highly in the case law being overshadowed by other factors with greater dominance in the hierarchy.

It is common for the ecological factors protected by s 5(2)(a)-(c) to compete with the resource use and development factors enabled by s 5(2). The current approach of the courts is to resolve this competition through the adoption of an overall broad judgment approach. This enables consideration of all conflicting issues with respect to scale and effect.[1137] Debate exists as to whether this approach sufficiently protects environmental limits, with Wheen describing a balancing approach to sustainability in these terms:[1138]

> The balancing approach is ecologically derelict in its failure to provide uncompromising environmental standards, and the statutory definitions of sustainability are so wide they can support almost any decision on a given set of facts.

[1136] *Long Bay-Okura Great Park Society Inc v North Shore City Council* [2011] NZEnvC 204 at [281].
[1137] *NZ Rail Ltd v Marlborough District Council* [1994] NZRMA 70 at 86*, North Shore City Council v Auckland Regional Council* [1997] NZRMA 59 at 94.
[1138] Wheen 2013 above n 1097 at 291, and see for discussion: Pardy, B "In Search of the Holy Grail of Environmental Law: A Rule to Solve the Problem" 2005 1 McGill Int'l J. Sust. Dev. L. & Pol'y 29, Skelton, P and Memon, A "Adopting Sustainability as an Overarching Environmental Policy: a Review of section 5 of the RMA" 2002 X Resource Management Journal 1, Upton, S, Atkin, H and Willis, G "Sections 5 re-visited: A Critique of Skelton and Memon's Analysis." 2002 X Resource Management Journal 10. Robinson discusses how the balancing of environment and development almost always favours development interests in Robinson, N "Reflecting on Rio: Environmental law in the Coming Decades" in Benidickson, J, Boer, B, Benjamin, A, and others (eds) *Environmental law and Sustainability after Rio* (Edward Elgar Publishing Ltd, United Kingdom, 2011) 25.

What is clear from case law is that, in the application of Part 2, s 5 and the consideration of whether adverse effects on the environment have been adequately avoided, remedied or mitigated dominate.[1139] The process is described by Judge Jackson:

> The scheme of Part 2 of the RMA includes various feedback or reiteration loops. They derive from the fact that section 5(2)(c) refers to "avoiding, remedying or mitigating adverse effects of activities on the environment … "; and section 7(b) requires "efficient use of … resources". We infer that in coming to a decision under the Act local authorities must identify all the relevant facts and factors, give weight to them under Part 2 (and any other relevant instruments) and come to a provisional view as to the outcome; then look at whether each of the predicted adverse effects are sufficiently avoided, remedied or mitigated, or over-zealously so and finally reweigh the factors and re-assess the overall outcome.

Thus, the focus upon the protection of birds is commonly reduced to a consideration of the sufficiency of mitigation in the context of the protection of significant habitat of indigenous fauna. Protection is not considered absolute,[1140] and where there are other competing factors, such as human economic wellbeing, mere mitigation of effects to birds may suffice to promote the overall purpose of sustainable management.[1141] As recently reiterated by French J:[1142]

> It is clear that Parliament did not intend the RMA to be a zero sum game, in the sense that all adverse effects which were unavoidable had to be mitigated or compensated.

The point at which human interests overwhelm the need to protect biodiversity, or vice versa, is undefined by statute, and is resolved on a case by

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[1139] Principles set out in ss 6-8 are subordinate to the primary purpose of the promotion of sustainable management: *NZ Rail Ltd v Marlborough District Council* [1994] NZRMA 70 at 85.
[1140] *Transwaste Canterbury Ltd v Canterbury Regional Council* Environment Court Christchurch C29/2004, 19 March 2004.
[1141] *Trio Holdings v Marlborough District Council* [1997] NZRMA 97.
[1142] *Royal Forest and Bird Protection Society of New Zealand Inc v Buller District Council* [2013] NZHC 1346 at [52].

case basis with direction from policy instruments prepared pursuant to the Act.[1143] Lack of clear direction concerning the level of protection for Threatened and At Risk species constrains the force and effect of the statute in protecting the interests of birds.

The distribution of harm to birds is also influenced by habitat significance, a determinative factor for protection of nationally important matters pursuant to s 6(c). The Courts have established that significance should not be determined by reference to numbers or class size, but rather by value and a consideration of expert evidence relating to factors such as (i) ecological context, (ii) representativeness, (iii) rarity, and (iv) distinctiveness.[1144] It is not necessary for the term significant to be elevated to "very" or "highly" significant, as moderate sites may still be considered to warrant protection by the ecological experts.[1145] This approach is more inclusive in its protective reach, and does not limit itself to indigenous habitat. Accordingly, where habitat of the case study species is exotic vegetation, or even physical structures, there is potential to class that as significant.

Developing criteria to define the habitat of all Threatened and At Risk species as significant,[1146] or all Threatened and At Risk habitat per se as significant,[1147] are valuable measures for the protection of Threatened species where it is not a matter of national importance. The former automatically incorporates all habitat types regardless of quality or status which is an important holistic mechanism. The approach is not without pragmatic issues,

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[1143] *Federated Farmers of NZ Inc v Queenstown Lakes District Council* [2010] NZEnvC 109.
[1144] *West Coast Regional Council v Friends of Shearer Swamp Inc* [2012] NZRMA 45 at [68] and *Minister of Conservation v Western Bay of Plenty District Council* Environment Court Auckland, A071/01, 3 August 2001.
[1145] *West Coast Regional Council v Friends of Shearer Swamp Inc* [2012] NZRMA 45 at [76b].
[1146] This reflects the approach of the draft New Zealand Policy Statement (Policy 2e) and that of the Waikato Regional Council *Proposed Waikato Regional Policy Statement* (Decisions version 2012) (Table 11-1 subject to appeal).
[1147] This reflects the approach of the Horizons Regional Council *Proposed One Plan* (Decisions version 2010) as discussed in *Day v Manawatu-Wanganui Regional Council* [2012] NZEnvC 182 at[334] referring to Policy 7-2A and Schedule E.

for example kiwi in plantation forest, however, the incorporation of all habitat of Threatened and At Risk species, with resultant issues being the subject of resolution through the resource consent process, is beneficial for birds.[1148] Questions of sustainability and social and economic interests are more appropriately considered at the consent stage, as opposed to the point at which significance criteria is developed in plans, to avoid confusion of ecological values with planning and management considerations.[1149]

The failure of Part 2 to make explicit provision for Threatened or At Risk species is a factor which limits the benefit to this vulnerable class. This approach is countered by policy which defines habitat of Threatened and/or At Risk species as significant. An issue to consider is whether the habitat of At Risk species should receive the same treatment as Threatened species. The wisdom of the inclusion of the habitat of At Risk species can be demonstrated by the example of the kokako. The bird, as a result of conservation success, has recently been given At Risk status. This bird is in need of continued habitat protection, and criticism of excessive protection can be countered on the basis that such protection remains subordinate to the operation of s 5.

Additional aspects of Part 2 indirectly provide protection for birds. This includes s 6(a) which is directed at preservation of the natural character[1150] of the coastal environment, wetlands, lakes and rivers, it also offers protection from inappropriate subdivision, use, and development. Further, s 6(e) allows for the relationship of the Māori with their ancestral lands, water, sites, waahi tapu, and other taonga. Māori are strong advocates for the environment in New Zealand resource management, and active in seeking to prevent damage. In

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1148 In addition, in the New Zealand environment innovative forest stewardship plans have contributed to protection of birds.

1149 *Friends of Shearer Swamp Inc v West Coast Regional Council* [2010] NZEnvC 345 at [103] upheld in *West Coast Regional Council v Friends of Shearer Swamp Inc* [2012] NZRMA 45 at [76d].

1150 The term natural character includes wildlife, both feral and domestic: *Harrison v Tasman District Council* [1994] NZRMA 193 (PT).

considering the application of matters of national importance, unlike the reference to inappropriate development in ss 6(a) and (b), protection of the significant in s 6(c) is not qualified by reference to inappropriate use or development. The obligation is simply "protection", and thus a higher threshold such as exclusion of all but necessary use and development could potentially be applied to protect vulnerable species.

Prospective changes to Part 2, announced by the government in 2013, would further weaken its protective force.[1151] The key changes identified as problematic include merging the concerns of ss 6 and 7 into a single set of considerations, providing economic considerations greater force so as to now compete with s 6(c), and introducing reference to the overall broad judgment under section 5, thus shifting the focus of the RMA away from "environmental bottom lines".[1152] It is unclear whether these changes will proceed.

8.5.4 PRINCIPLES IN CONTEXT

For birds of the Opoutere area, the key issues are limiting the impact of people and related human development, retention of habitat, retention of habitat quality, and limitation of dogs and mammalian predators. A central matter for consideration is the extent to which preservation of natural resources is provided for under the RMA, and the role of the statute in limiting habitat displacement and disturbance of birds. This is a particularly controversial issue in an area like the Coromandel, renowned for its scenery and recreational assets. The problem of disturbance can be placed into two categories. The first is the management of existing disturbance, and the second to control future development and limit intensification of stress. Both matters are subject to a

[1151] Ministry for the Environment *Improving our Resource Management System: A Discussíon Document* (Ministry for the Environment, 2013).
[1152] Palmer 2013b above n 1106 at 49.

lack of species-specific research to adequately understand and respond.[1153] A better understanding of the thresholds at which disturbance constrains populations is vital for future planning. So too is a better understanding of the benefits to birds that arise by virtue of co-existence with humans.[1154]

Identifying thresholds for behavioural responses enables the use of techniques such as spatial buffer zones and access limitations to be considered for existing and future responses.[1155] It may also indicate the limitations of a mitigation approach, and the point at which an avoidance approach is required. An Australian study examining management options for vehicles on beaches showed that distance set-backs and speed limits can reduce disturbance to birds, but will not eliminate it. The authors concluded that such measures can be effective conservation tools, but are not as effective as the creation of spatial refuges, and should be regarded as complementary to permanent or temporary beach closures.[1156]

In addition to these requirements, a wider understanding is called for when determining the impact of cumulative development in the environment, and the vexed question of limiting that intensification in favour of the birds. In 1988, the Court of Appeal ruled on a campground development in Opoutere in relation to the protection of dotterel.[1157] At first instance, the Planning Tribunal took the view that planning powers should not be used in a way to restrict the number of people who take holidays at Opoutere. Further, they should not be prevented from enjoying the beauty of Opoutere. Although

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[1153] Glover, HK, Weston, MA, Maguire, GS, and others "Towards Ecologically Meaningful and Socially Acceptable Buffers: Response Distances of Shorebirds in Victoria, Australia, to Human Disturbance" 2011 103 Landscape and Urban Planning 326.
[1154] Weston, MA, McLeod, EM, Blumstein, DT, and others "A Review of Flight-Initiation Distances and their Application to Managing Disturbance to Australian Birds" 2012 Emu 276.
[1155] Glover above n 1153 at 326.
[1156] Schlacher, TA, Weston, MA, Lynn, D, and others "Setback Distances as a Conservation Tool in Wildlife-Human Interactions: Testing Their Efficacy for Birds Affected by Vehicles on Open-Coast Sandy Beaches" 2013 8 PloS one 13.
[1157] *Opoutere Residents and Ratepayers Association v Planning Tribunal* (1989) 13 NZTPA 446 CA.

expressing considerable sympathy for the Wildlife Service fighting a "rearguard action to protect Threatened species", the Tribunal determined that there was adequate land for both bird and human to each occupy an undisturbed area, and that, if necessary, the Wildlife Service should take stronger measures to prevent the public entering the refuge[1158]: the Court of Appeal disagreed.

The evidence established that, some 25 years ago, management measures in the form of a temporary fence and warden patrol had been established, but these were not wholly effective and risks to the birds continued. Pursuant to s 3(c) under the Town and Country Planning Act 1977(TCPA), the predecessor of the RMA, the natural character of the coastal environment was to be protected against unnecessary development. Somers J held:

> It is for a developer to show a necessity sufficient to override those national interests. I doubt whether that could be achieved by demonstrating that many people wish to camp or stay in a comparatively undeveloped part of the coast when many other parts of the same coast afford all types of accommodation. One of the objects of para (c) must be to prevent that happening.

The Court applied an avoidance approach to managing the impacts of development which was contrary to national interests in protecting the coastal environment. Under the RMA, the degree of protection provided by s 3(c) TCPA was reduced in ss 6(a) and (b) to refer to "appropriate development", a test without the same definitive lines as "necessary" or "unnecessary". As discussed, s 6(c) is not limited by such restraint, although all matters of national importance are now subject to s 5 which focuses upon the mitigation. In this way the lines of protection soften, and there is potential for effects of activities which may appear appropriate or adequately addressed to accumulate. This is of particular concern for Threatened and At Risk species.

[1158] Ibid, at 8-9.

Coromandel marina applications at Tairua and Whangamata, 26 km north and 13 km south of Opoutere respectively, have attracted controversy with consents being granted to both developments despite the loss of habitat and increased disturbance to dotterel and other bird species. This is due to adequacy of mitigation measures when weighed against social and economic benefits. Yet the differences in judicial and ministerial opinions concerning these developments suggest a lack of clarity in these cases.[1159] Whilst mitigation may be satisfactory in certain circumstances, there remains a concern regarding the lack of comprehensive statutory protection for Threatened and At Risk species, and the potential for cumulative losses to be perpetuated. Dotterel populations, for example, are thinly and widely spread. As such isolated impacts are difficult to quantify and assess in both the immediate and wider context, particularly where research in the locale and related to the species is lacking. The problem is described by Judge Newhook in the context of mangrove clearance at Mangawhai:

> [83] We have no doubt that human disturbance of birds feeding, roosting and nesting within the estuary, on the harbour fringes and on the sandspit, is of serious concern. The evidence is clear that such disturbance is occurring, and we find that it would increase as a result of this proposal, even though we do not have a quantitative measure of the effects at any given population level. The displacement of birds from other more popular (for recreation) coastal areas constitutes quite compelling evidence of the seriousness of that effect.

In his 2005 Tairua Marina decision, which declined consent, Judge Sheppard held: "We accept that the loss of significant habitat of indigenous birds is cumulative on losses of their habitat elsewhere within their range."[1160] This point needs to be emphasised in considering development in relation to

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[1159] *Tairua Marine Ltd v Waikato Regional Council* [2010] NZEnvC 398, *Whangamata Marina Society Inc v Attorney-General* [2007] 1 NZLR 252, *Whangamata Maori Committee v Waikato Regional Council* Environment Court Auckland A173/0526 October 2005, *Tairua Marine Ltd v Waikato Regional Council* Environment Court Auckland, A108/05 1 July 2005.
[1160] *Tairua Marine Ltd v Waikato Regional Council* Environment Court Auckland, A108/05 1 July 2005, at [488].

threatened species. A 2011 grant of consent by Thames Coromandel District Council (TCDC) to an additional camping ground proposal at Opoutere adds weight to these concerns.[1161] Similarly, a 2013 approval to enable coastal development in the vicinity of dotterel breeding ground at Te Arai/Mangawhai is of concern.[1162] Sir Geoffrey Palmer, original architect of the RMA, in analysing the effect of the Act, has recently advocated a need for greater caution in the face of uncertain adverse effects. Further, he has criticised the lack of effective environmental indicators to assist in this task.[1163] Consideration will now be given to provision for precaution and avoidance by the law.

8.5.5. PRECAUTION AND AVOIDANCE

Precaution and avoidance were explored in Chapter 5, where it was found that application of the Precautionary Principle in strong and active form produces benefits for species. Where uncertainty exists concerning the existence or level of harm, protection is enhanced when nature is privileged. Furthermore, the statement of an objective of avoidance of harm to indigenous Threatened or At Risk species, along with the habitats and ecosystems upon which they depend, will benefit birds.

[1161] In the matter of an application to the Thames Coromandel District Council by Opoutere Tree Farms Ltd for a Retrospective Resource Consent to Establish a Private Campground at 62 Wahitapu Lane, Opoutere, 3 August 2010.
[1162] In the matter of a request to Auckland Council by Te Arai Coastal Lands Trust for a change to the Auckland District Plan: Rodney Section at Te Arai, 4 November 2013.
[1163] Palmer 2013a above n 1105 at 15.

8.5.5.1 Precaution

Although precaution is not explicit in the RMA, the Act has been described as "preventive, precautionary and proactive",[1164] due to the definition of "effect" in s 3 and from ss 104(1)(a) and s 105.[1165] Despite being said to be inherent in the statute,[1166] the Principle is not particularly visible in case law with only 20 of 140 decisions analysed in relation to s 6(c) mentioning precaution.[1167] Application of the Principle rarely resulted in the decline of consent, but perhaps this is to be expected given that the statute does not explicitly restate the Principle in either the weak or strong form.[1168] From the case law it is not apparent whether the use of the Principle contributes to encouraging unreasonable inaction by decision-makers, or if it is a barrier to scientific progress necessitating the introduction of a "Principle of Reasonableness".[1169] In addition, the low annual rate of decline of resources consent (0.56%) suggests no unnecessary impedance of development, if anything, it is reason for concern.[1170] Despite a regime designed to be open and participatory, public participation occurs at a very low level, with 6% of resource consents being notified, a figure which includes limited notification.[1171]

[1164] *Shirley Primary School v Christchurch City Council* [1999] NZRMA 66.

[1165] *Re Meridian Energy Ltd* [2013] NZEnvC 59 at [58] and Gillespie, A "Precautionary New Zealand" 2011 24 New Zealand Universities Law Review 375.

[1166] *Friends of Nelson Haven and Tasman Bay v Marlborough District Council* Environment Court Wellington W036/06, 16 May 2006 at [18].

[1167] *Director-General of Conservation v Marlborough District Council* [2010] NZEnvC 403and *Moturoa Island Ltd v Northland Regional Council* [2013] NZEnvC 227 at [16].

[1168] Rare examples are *Stillwater Ratepayers and Residents Association v Rodney District Council* Environment Court Christchurch C048/97, 6 June 1997, 18, *Kuku Mara Partnership (Admiralty Bay West) v Marlborough District Council* Environment Court Wellington W037/05, 27 April 2004.

[1169] Rouse, H and Norton, N "Managing Scientific Uncertainty for Resource Management Planning in New Zealand" 2010 17 Australasian Journal of Environmental Management, 69.

[1170] Ministry for the Environment *Key Facts about Local Authorities and RMA Processes in 2010/2011* (Ministry for the Environment, 2011).

[1171] MFE 2011 ibid.

Knowledge gaps

The point of the Precautionary Principle is to take care when assessing a situation where the outcome is uncertain. The point at which uncertainty should trigger decline of consent or a request for amendments, as opposed to an adaptive approach, is a matter of some controversy, arguments revolve around requisite levels of precaution in the face of the unknown.[1172] Assessment of resource consent often requires a prospective evaluation, rather than a retrospective evaluation, as witnesses and decision makers look ahead to appraise the implications of the matters proposed.[1173] These decisions are commonly the product of sustained interplay between the decision makers and the expert witnesses, whilst the court determines the value of the evidence proffered.

As discussed in Chapter 5, science relating to the impacts of human activities upon birds continues to develop, and requires continual revision with the advent of new technology and new problems. Knowledge gaps exist concerning distribution of species and the impact of activities upon species including cumulative impacts and synergistic responses. These gaps potentially increase distribution of harm to birds. It has been suggested that, given the scale of the task, responsibility for obtaining data on bird distribution should be collective.[1174] Difficulties can, however, arise with the evidential weight of such data due to lack of expertise. As seen throughout case law relating to bird protection, it is often environmental groups and Māori acting as the champions of the birds, with a reducing presence from DOC in recent years. In contrast to those engaged in resource use and development, this is a limited community of interest. Opportunity to scrutinise impacts of development on birds are impacted by resourcing, access to expertise, access

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[1172] *Environmental Defence Society Incorporated v New Zealand King Salmon Company Ltd* [2013] NZHC 1992 [2013] NZRMA 371 at [83].
[1173] *Long Bay-Okura Great Park Society Inc v North Shore City Council* Environment Court Auckland A078/08, 16 July 2008 at [315].
[1174] *Re Meridian Energy Ltd* [2013] NZEnvC 59 at [410].

to private property to carry out the research, and time constraints upon collecting reliable data.[1175]

These limitations are compounded by the fact that many activities that impact birds may not be the subject of regulatory scrutiny, either being activities to which the permissive presumption applies pursuant to the RMA,[1176] or permitted pursuant to a resource management plan or existing use right under s 10. Where subject to the RMA resource consent process, an AEE is mandatory,[1177] despite this, decisions affecting birds and species are frequently made where knowledge relating to species distribution and/or adverse effect is incomplete. A review of decisions considering s 6(c) produced a long list of examples where such information was lacking.[1178]

[1175] *Forest & Bird Protection Society of New Zealand Inc v Manawatu-Wanganui Regional Council* [1996] NZRMA 241,Environmental Defence Society "EPA Tukituki / Ruataniwha hearing process stacked " (October 2013). http://www.scoop.co.nz/stories/PO1310/S00109/epa-tukituki-ruataniwha-hearing-process-stacked.htm, Salmon, P "Access to Environmental Justice" 1998 2 NZJEL, Preston, BJ "The Effectiveness of the Law in Providing Access to Environmental Justice: An Introduction" (paper presented to 11th IUCN Academy of Environmental Law Colloquium, Hamilton, 2013) 38.

[1176] For example land use pursuant to s 9 RMA.

[1177] Section 88(2) RMA.

[1178] For example: Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011 at [525] (wind farm collision risk), *Hapu Kotare Ltd v Manukau City Council* Environment Court Auckland A133/0515, August 2005 at [60] (bird distribution), *New Zealand Jet Boat Association - Otago Branch v Queenstown Lakes District Council* Environment Court Christchurch C109/200313, August 2003 at [25](bird distribution and impact), *Lower Waitaki River Management Society Inc v Canterbury Regional Council* [2010] NZEnvC 257 at [28] (bird distribution), *Southern Alps Air Ltd v Queenstown Lakes District Council* [2010] NZEnvC 132 at [67](impact on birds), *West Coast Environmental Network Inc v West Coast Regional Council* [2013] NZEnvC 253 at [43](ecosystem constitution and impact), *Mangawhai Harbour Restoration Society Inc v Northland Regional Council* [2012] NZEnvC 232 at [83] (impacts of bird disturbance), *Sandspit Yacht Club Marina Soc Inc v Auckland Council* [2012] NZEnvC 196 at [107] (impact on birds), *Mainpower NZ Ltd v Hurunui District Council* [2011] NZEnvC 384 at [199] (wind farm collision risk), *Director-General of Conservation v Marlborough District Council* [2010] NZEnvC 403 at [489] (impact on birds), *Ernslaw One Ltd v Waikato Regional Council* Environment Court Wellington W009/07, 19 February 2007 at [40] (use of riparian corridors by birds), *Save Happy Valley Coalition Inc v Solid Energy New Zealand Ltd* Environment Court Christchurch C170/06, 14 December 2006 at [35] (impact of snail translocation), *Friends of Nelson Haven and Tasman Bay v Marlborough District Council* Environment Court Wellington, W036/06, 16 May 2006 at [14] (impact on dusky dolphin), *Kuku Mara Partnership (Admiralty Bay West) v Marlborough District Council* (2005) 11 ELRNZ 466 at [16] (impact on dusky dolphin), *Ngataki v Auckland Regional Council* Environment Court Auckland, A093/2004, 22 July 2004 at

The problem was described for dusky dolphin habitat in Nelson:[1179]

> [15]Professor Wursig and Dr du Fresne agree that there will come a point when the increasing coverage of the waters of the bay by marine farms will cause a measurable effect on the habitat and the fauna which rely upon it. The problem is that no one knows what extent of coverage will bring us to that point, or what the effect will actually be.

Risk assessment and burden of proof

Predictive modelling, scientific hypothesis based upon observation, comparison and experiment, and probabilistic risk assessment, are each used to accurately project outcomes,[1180] but none is failsafe.[1181] Hence, Courts classify and weigh the effects upon the evidence in accordance with the statute:[1182]

> [489] We share the concern of the ecologists that there is some uncertainty with respect to the outcomes for the black-fronted tern population at the lower flows associated with the scheme. We acknowledge the considerable research that has been undertaken and accept that this demonstrates that adverse effects are unlikely. However, any adverse effect would have a high potential impact given the importance of the black-fronted tern population on the Wairau. In accordance with the meaning of effect in s 3(f) of the Act we find that there is a potential adverse effect on the black-fronted tern population although acknowledge that this is a low probability.

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[50](lack of bird baseline study), *Kuku Mara Partnership (Forsyth Bay) v Marlborough District Council* Environment Court Wellington, W025/02, 16 July 2002, (causation, baseline study and bird disturbance), *Royal Forest & Bird Protection Society of New Zealand Inc v Manawatu-Wanganui Regional Council* [1996] NZRMA 241, (lack of fauna survey), *Environmental Defence Society Incorporated v New Zealand King Salmon Company Ltd* [2013] NZHC 1992 [2013] NZRMA 371at [97].

[1179] *Friends of Nelson Haven and Tasman Bay v Marlborough District Council* Environment Court Wellington, W036/06, 16 May 2006.

[1180] *Long Bay-Okura Great Park Society Inc v North Shore City Council* Environment Court Auckland A078/08, 16 July 2008 at [315].

[1181] Freeman, M “The Resource Consent Process: Environmental Models and Uncertainty” 2011 Resource Management Journal, 2, *Director-General of Conservation v Marlborough District Council* [2010] NZEnvC 403 at [414].

[1182] *Director-General of Conservation v Marlborough District Council* [2010] NZEnvC 403 at [489].

Assessing risk as to probability of occurrence, likely degree of impact, and the potential benefits accruing from mitigation and offsets is a matter of judgement.[1183] As discussed in Chapter 5, in cases where knowledge is incomplete, the burden of proof in resource consent applications can be of significant influence. Case law establishes a legal burden of proof upon an applicant to comply with s 5, but a swinging evidentiary burden rests on a party who makes an allegation to present evidence tending to support that allegation.[1184] The burden may, in this way, shift to a submitter in opposition once discharged by an applicant. As opposed to accepting a separate standard of proof, somewhere between civil and criminal for situations where serious damage to biodiversity is alleged, the Environment Court has, in adopting dicta from the House of Lords, preferred the view that built into the civil standard of proof is a generous degree of flexibility in respect of the seriousness of the allegation.[1185] This should mean that the greater the potential damage to birds, the higher the standard of proof. For future effects and predictions of risk, it is considered that applying a set standard of proof is not appropriate, and that it is better to give weight to relative likelihood as a matter of judgment.[1186]

When considering a new development application, Courts approach the issue of predicting risk as follows:[1187]

> [323] There are at least [451] three steps when predicting the risk of any proposed activity affecting natural and physical resources under the RMA. They are to assess:

[1183] *Long Bay-Okura Great Park Society Inc v North Shore City Council* Environment Court Auckland A078/08, 16 July 2008 at [314].

[1184] *Re Meridian Energy Ltd* [2013] NZEnvC 59 at [56] relying on *Shirley Primary School v Christchurch City Council* [1999] NZRMA 66.

[1185] *Royal Forest and Bird Protection Society of New Zealand Inc v Buller District Council* [2006] NZRMA 193 referring to *In Re H (Minors)* [1996] AC 563 per Lord Nicholls at 586.

[1186] *Long Bay-Okura Great Park Society Inc v North Shore City Council* Environment Court Auckland A078/08, 16 July 2008 at [315] referring to *Commissioner of Police v The Ombudsman [1988]* 1 NZLR 385 at 391, CA per Cooke P.

[1187] *Long Bay-Okura Great Park Society Inc v North Shore City Council* Environment Court Auckland A078/08, 16 July 2008at [323].

(1) the nature of the proposed or existing activity and its context. This usually needs to be analysed in terms of spatial extent, intensity, and duration (all of which are obviously easier to assess for an existing activity than for a proposed one);

(2) whether there *is* a causal relationship between the activity and its "effects" (and, often, the existence of confounding causes of the same sort of effect); and

(3) the risk of the effect, which also consists of three components —

(a) the probability of the effect;

(b) its consequences (its costs and benefits); and

(c) the relevant policy or objective which the risk impinges upon.

Point 3(c) indicates that an important way to influence the assessment of risk is to create strong protective policy for birds which requires an avoidance of effect to threatened species or habitat. Although, as will be seen, such policy is subject to the operation of s 5 and the persuasive influence of mitigation, offset and compensation.

Birds and application of precaution

For birds, overt employment of precaution to prevent development is uncommon. In a rare instance Judge Jackson in *Stillwater Ratepayers and Residents Association v Rodney District Council,*[1188] relating to a re-zoning which would intensify urban development potentially impacting dotterel habitat, concluded: "Secondly we consider the precautionary principle should apply here: it might take only one predator on one occasion to wipe out the breeding colony on the sandspit". In contrast, Judge Sheppard in considering a proposal for the development of a camping ground in the vicinity of the Waipu

[1188] *Stillwater Ratepayers and Residents Association v Rodney District Council* Environment Court Christchurch C048/97, 6 June 1997 at [23].

River mouth, a designated a wildlife refuge recognised as outstanding habitat for threatened species including fairy tern and dotterel, took the position:[1189]

> The part of the proposed regional policy statement about coastal management is subject to appeals and has not yet been settled. However, we note that the resource management directions included in section 9 of the proposed instrument include the precautionary approach.
>
> The Minister of Conservation made submissions on this point and referred to a recent decision of the Environment Court in which the Court adopted the precautionary approach in relation to the effects of a subdivision on New Zealand dotterel nesting sites at Stillwater.
>
> It was the Minister's submission that there is a plausible risk that increased public pressure could lead to increased risks, particularly at breeding time, to the endangered birds, which would have a possible high impact within this environment.
>
> As we have already noted, the management of public access is controlled through the appropriate statutory bodies, operating under the relevant Acts. That is a somewhat different situation to the one in Stillwater, which concerned access to a breeding colony by domestic cats.
>
> We note that the Minister's assertion that no risk to the endangered birds is acceptable, is in tension with the national importance of assuring public access which is set out in section 6(d) of the Resource Management Act and also in the New Zealand Coastal Policy Statement 10.

In this instance, the need for precaution was diluted by competing aspects of public interest (fauna protection v public access), consideration that the Minister of Conservation could manage public access around the refuge, and also from the fact that a degree of disturbance pre-existed. Rather than controlling increased development and the associated influx of people, the protection of the refuge was considered to be the responsibility of the Minister of Conservation. Where the habitat is open beach, nesting habits cryptic not

[1189] *Minister of Conservation v Whangarei District Council* Environment Court Auckland A131/97, 12 November 1997 12-13.

static, and the ability to control people and animals limited through compliance issues and resourcing, approving consent increases likelihood of harm to species, albeit an acceptable risk on the facts weighed by this Court. This case illustrates the competing factors limiting protection. It also demonstrates the opportunity for incremental harm to species. And it illustrates an expectation that DOC will have the capacity to adequately protect fauna at wildlife reserves.

Although approval of applications for consent dominates, case law demonstrates several examples of protective and precautionary outcomes for birds achieved through the decline of consent under the RMA. Several factors are influential in producing this result: these include strong protective direction in policy and plans,[1190] (in particular the position of the New Zealand Coastal Policy Statement),[1191] good quality species evidence and interpretation of effects,[1192] the concerns of Part 2 (in particular s 5(2)(c) and s 6(c),[1193] the additional weight of Māori interests,[1194] application of the precautionary principle,[1195] and the application of an approach of avoidance. All have contributed to the limitation of proposals damaging to birds.[1196]

[1190] *O'Shea v Auckland City Council* [2002] NZRMA 117, *Mangawhai Harbour Restoration Society Inc v Northland Regional Council* [2012] NZEnvC 232 at [139].

[1191] *Blakeley Pacific Ltd v Western Bay of Plenty District Council* [2011] NZEnvC 354 at [181], *Kotuku Parks Ltd v Kapiti Coast District Council* Environment Court Auckland A73/2000, 13 June 2000 at [122], *Stillwater Ratepayers and Residents Association v Rodney District Council Environment* Court Christchurch, C048/97, 6 June 1997 at 23.

[1192] *O'Shea v Auckland City Council* [2002] NZRMA 117.

[1193] *O'Shea v Auckland City Council* [2002] NZRMA at 117, *Kotuku Parks Ltd v Kapiti Coast District Council* Environment Court Auckland A73/2000, 13 June 2000 at [78].

[1194] *Blakeley Pacific Ltd v Western Bay of Plenty District Council* [2011] NZEnvC at 354.

[1195] *Stillwater Ratepayers and Residents Association v Rodney District Council* Environment Court Christchurch, C048/97, 6 June 1997 at 18, *Kuku Mara Partnership (Admiralty Bay West) v Marlborough District* Council Environment Court Wellington W037/05, 27 April 2004, at [68].

[1196] *Stillwater Ratepayers and Residents Association v Rodney District Council* Environment Court Christchurch, C048/97, 6 June 1997 at 23.

8.5.5.2 Avoidance

Courts tend to take a conservative approach to avoidance of effects, particularly where the interests of the economy weigh heavily. Applying precaution is not necessarily equated with total risk avoidance.[1197] Where a Regional Fresh Water Plan required avoidance of certain adverse effects on fresh water bodies, the High Court, on an appeal to a plan change request, upheld the Board of Inquiry's view that avoidance was not the only appropriate method for achieving sustainable management of natural resources, and that these may be substituted by appropriate mitigation techniques or biodiversity offset where consistent with s 5.[1198]

Enabling mitigation as an alternative to avoiding or remedying effects, pursuant to s 5(2)(c) the RMA, means that as a matter of judgment mitigation may be employed where the costs of internalising the effects through avoidance techniques are not reasonable in the circumstances.[1199] By definition, avoidance is considered to be a step short of prohibition, although a requirement for avoidance sets a presumption that the activity will be inappropriate in the particular context.[1200] Despite this, application of the prohibited category of activity, for which no resource consent may be granted,[1201] is considered an appropriate method to achieve avoidance.[1202] Moreover, in requiring avoidance it is appropriate for policy instruments prepared pursuant to the RMA to adopt a more stringent requirement than the

[1197] *Oruawharo Marae Trust v Auckland Regional Council* Environment Court Auckland A083/06, 23 June 2006 at [91], *Golden Bay Marine Farmers v Tasman District Council* Environment Court Wellington W19/2003, 27 March 2003 at [425].
[1198] *Rational Transport Society Inc v New Zealand Transport Agency* [2012] NZRMA 298 at [8].
[1199] *Winstone Aggregates Ltd v Papakura District Counci*l Environment Court Auckland A049/2002 26 February 2002 at [33].
[1200] *Wairoa River Canal Partnership v Auckland Regional Council* [2010] 16 ELRNZ at [15-16], [2013]NZHC 19 *Stillwater Ratepayers and Residents Association v Rodney District Council* Environment Court Christchurch, C048/97, 6 June 1997 at [143], *Man O'War Station Ltd v Auckland Council* [2013] NZEnvC 233 at [48].
[1201] Section 87A(6) RMA.
[1202] *Day v Manawatu-Wanganui Regional Council* [2012] NZEnvC 182 at [2-39].

general statement of position in s 6, provided it is to ultimately achieve the purpose of the Act, and is consistent with relevant plan-making mandates.[1203]

The decision of the Board of Inquiry in the Hauāuru mā Raki wind farm application is instructive as to contemporary approaches to birds and avoidance. This related to the effects of a coastal wind farm on shorebirds, including wrybill and dotterel,[1204] with debates focussed on collision risk modelling, a matter of considerable dispute between expert ecologists. Divisions existed concerning the applicability of risk models derived from Scotland: these showed insufficient evidence concerning the flight path and height travelled by the wrybill owing to limitations in radar technology, the small size of the bird, and "scant information on the impact of turbines in a flyway on New Zealand birds".[1205] The Board concluded:[1206]

> [506] The Board accepted that the models of collision risk and predicted mortality of SIPO and wrybill may provide a guide to possible outcomes, but they were estimates only and were not a sound basis for robust decision-making on mitigation or other actions to respond to shorebird collisions. The difficulty is that such modelling is dependent on a series of assumptions, most of which are highly debatable given there is a lack of sound data. There is no evidence that the wrybill, for example, will behave in the same way as Scottish migratory birds. The Board accepts evidence from the avifauna experts that there would be bird fatalities, but despite expected losses, offset mitigation measures could be put in place. Nevertheless, we have concluded that robust review measures need to be in place in case fatalities are more significant than anticipated.

With the windfarm sited along the main annual migratory route of the wrybill, and the prospect of uncertain bi-annual fatalities on a population of birds who number c5000 worldwide, the dispute was not surprising. The Board itself

[1203] *Man O'War Station Ltd v Auckland Council* [2013] NZEnvC 233 at [50].
[1204] Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011.
[1205] Ibid at [525].
[1206] Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011 at [502].

expressed discomfort related to bird losses. It accepted that the aerial flight path constituted significant habitat for the birds in terms of s 6(c), but eventually declared itself "just" satisfied that the flight path habitat would be protected, persuaded by the positive aspects of the renewable energy development, and extensive mitigatory, compensatory and monitoring conditions.[1207]

Windfarm developments, typically backed by significant capital and hence expertise, have much to be recommended in the context of global climate change, a recessionary economy, and a Government intent upon the use of natural resources to boost the economy.[1208] In addition, applicants for development have become significantly more strategic in designing packages to manage effects and increase the likelihood of consent. This approach, which will be examined in section 8.5.7.2, has merit, but a concern is whether it produces an environment whereby the interests of humans in developing the environment are given priority over nature. An additional concern is whether the failure of landowners and Government to control predators facilitates development which may threaten species. The issue is whether the operation of the RMA is currently delivering sufficient defence of existing habitat in the face of increasing development pressure and strategic approaches.

Resource management plans are intended to reflect and implement the matters discussed so far. Consideration will now be given to the approach of the RMA plans in securing a consistent degree of care for the birds of Opoutere. The enquiry will target two areas: the first is the integration and consistency of protection, the second is the precaution and avoidance of effects to birds. Due to the interrelationships of these matters they are considered together.

[1207] Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011 at [1108b].
[1208] Palmer 2013a above n 1105 at 16.

The term "silo effect" is "frequently used to describe the separation of responsibilities among resource-management agencies, as well as their inability or unwillingness to consider their mandate relative to those of other organizations".[1209] In the context of integrated water management, Mitchell describes two forms of the effect. The first, "vertical fragmentation" of responsibilities from one level of government to another (local, to provincial/state, national, or international), may arise. The second form referred to as "horizontal fragmentation" occurs among different agencies of a government such as agriculture, forestry, fisheries, water, mining, municipal affairs, or economic development.[1210] The problem of the silo effect is well understood in New Zealand. As discussed in 8.5.1, achieving integration in terms of resources and agencies was a focus of the introduction of the RMA. Yet problems with fragmentation are known to persist, and have been identified as a continuing problem in achieving Integrated Catchment Management.[1211] The division between regional council water allocation and quality functions, and the regional and district council shared function concerning land use, was identified as particularly important to the problem of fragmentation.[1212] This research will show how the silo effect also arises in the context of bird conservation in New Zealand. The Opoutere case study will document vertical fragmentation arising largely between the regional and

1209 Mitchell, B "Integrated Water Resource Management, Institutional Arrangements, and Land-Use Planning" 2005 37 Environment and Planning A 1335 at 1340 and referring to Serageldin 1995. Further discussed in Brown, RR "Local Institutional Development and Organizational Change for Advancing Sustainable Urban Water Futures" 2008 41 Environmental Management 221 at 222, Selman, P "Centenary Paper: Landscape Planning–Preservation, Conservation And Sustainable Development" 2010 81 Town Planning Review and Carter, JG and White, I "Environmental: Planning and Management in an age of Uncertainty: The case of the Water Framework Directive" 2012 113 Journal of Environmental Management 228 at 234.

1210 Mitchell ibid.

1211 Memon, A, Painter, B and Weber, E "Enhancing Potential for Integrated Catchment Management in New Zealand: A Multi-Scalar, Strategic Perspective" 2010 17 Australasian Journal of Environmental Management 35 at 38-39.

1212 Memon ibid.

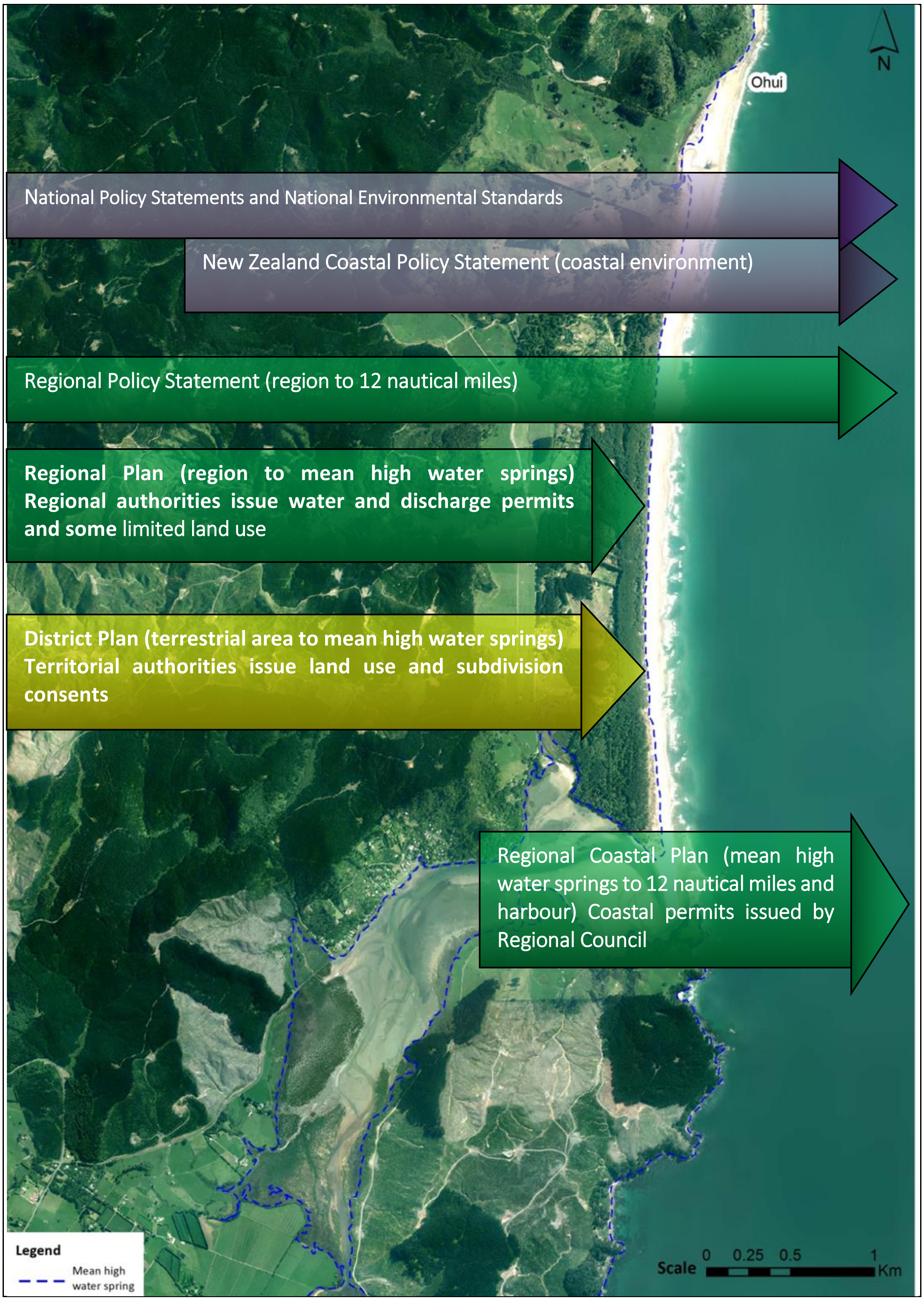
territorial government, and horizontal fragmentation arising between local authorities tasked under the RMA with biodiversity functions and the Department of Conservation's functions under conservation legislation. The constitution of protection dependent upon place will be identified as key driver in this fragmentation.

8.5.6.1 Opoutere plans

Under the RMA, protection of indigenous fauna in the Opoutere area is managed through a proliferation of management plans (Figure 81). These plans have the effect of dissecting the area into regulatory packages according to resource type and agency function. The Regional Policy Statement, through provision of an overview of issues and statement of policy and methods for the entire Region (including the coastal marine area), is the key means by which integrated management is to be secured.[1213] Table 13 lists the various site protections and notations that apply pursuant to the RMA and the conservation legislation traversed in section 8.3. The assorted plans reflect the ownership and function divisions discussed in section 8.5.1. Figure 81 and Table 13 underscore the complexity and fragmentation which results from the arrangements, and will be further analysed for its impacts upon the birds.

[1213] Section 59.

Figure 81 Schematic of RMA Instruments applied to managing the area



Source: Mean high water boundary data sourced from Bronwen Gibberd, 4D Environmental Limited, and Mark Williams, Spatial Environments Limited Background imagery sourced from SPOTmaps natural colour satellite imagery 2008/2009 (SPOT-5).

Table 13 Measures applying to the area					
	Wharekawa Harbour	Opoutere/Wharekawa sandspit	Ohui Breeding ground	Opoutere Beach and dunes	Opoutere Village and environs
Wildlife refuge pursuant to s 14 of the Wildlife Act 1953 (18 October 1967).	✗	✓	✗	✗	✗
Local purpose reserve pursuant to s 23 Reserves Act 1977 (Maori burial ground)	✗	✓	✗	✗	✗
Recreation reserve pursuant to s 17 Reserves Act 1977(Opoutere Beach Recreation Reserve)	✗	✗	✓ partial	✓ partial	✗
Located within the common marine and coastal area under the Marine and Coastal Area (Takutai Moana) Act 2011	✓	✓	✓	✓	✗
Located within coastal marine area (RMA)	✓	✓	✓	✓	✗
Located within the coastal environment (RMA)	✓	✓	✓	✓	✓
ASCV - Area of Significant Conservation Value pursuant to Regional Coastal Plan (ASCV24) Opoutere sandspit and Wharekawa Harbour)	✓	✓	✗	✗	N/A
SNA - Significant Natural Area, SNA_TC_2007_Provisional (Waikato Regional Council)	✗	✓ (N)	✓(N)	✓(N)	✓(R) partial

Important Ecological Area pursuant to Regional Policy Statement (3.11.2)	✓	✓	×	×	×
Priority Ecosystem Management Unit (EMU)	×	×	×	×	×
Priority Stock Exclusion Zone	×	×	×	×	×
Hauraki Gulf Marine Park 2000 – defined as park or catchment pursuant to Schedule 3	✓	✓	✓	✓	✓
Hauraki Gulf Marine Spatial Plan Locations-GIS Layer-Shorebird site of importance – priority one (WRC:GIS_ALL.HGMSP_SHOREBIRD_SOI)	✓	✓	×	✓	×
Hauraki Gulf Marine Spatial Plan Locations-GIS Layer-Shorebird site of importance – priority two (WRC:GIS_ALL.HGMSP_SHOREBIRD_SOI)	×	×	✓	×	×

Key: N National, R Regional

It is not unusual, or unreasonable, that multiple legislative measures are applied to a particular area. This is commonly due to factors such as history, statutory function and purpose, and related incrementalism. The coherence of the arrangements, and the potential to compound inconsistency in protective approaches identified in Chapters 6 and 7 are, however, of concern. Table 13 illustrates that place is an important determinant in the application of measures of protection. The problem for the birds is that they are not necessarily bound to one place and may inhabit several of the places named in Table 13 at once or over time. Figure 81 and Table 13 demonstrate the potential for inconsistency, and the following section examines the RMA plans to assess how they approach protection through the application of standards of avoidance and precaution. These are used as an indicator for both degrees of protection and consistency.

8.5.6.2 Avoidance and precaution

The New Zealand Coastal Policy Statement 2010 (NZCPS), which applies to the coastal marine area and coastal environment as illustrated in Figure 81, takes a strong position on avoidance with two policies having particular resonance for the birds of Opoutere.[1214]

Policy 3 requires the adoption of a precautionary approach towards proposed activities where effects on the coastal environment are uncertain, but potentially significantly adverse. The guidance note prepared for the NZCPS suggests that when the risk of adverse or irreversible environmental effects cannot be adequately assessed due to uncertainty about human induced impacts then a precautionary approach becomes appropriate. A prudent avoidance approach and adaptive management are recognised as ways of implementing a precautionary approach.[1215]

Policy 11(a) directs avoidance of the effects of activities on specific groupings in the receiving coastal environment, these include Threatened or At Risk taxa. Policy 11(b) directs avoidance of significant effects on areas, habitats and ecosystems, these include migratory routes and ecological corridors which, whilst not threatened to the same extent as those listed in 11(a), are sufficiently vulnerable to require particular attention. In thus stating it is clear that Policy 11(a) is directed at avoidance of all effects, not just the significant. Strongly stated and partnered by the precautionary approach, this Policy must be given effect to by Regional Policy Statements (RPS), Regional Plans (RP) (including Regional Coastal Plans (RCP))[1216] and District Plans

[1214] Policy 3 and 11. In addition, Policy 13 relating to the preservation of natural character requires avoidance of adverse effects from inappropriate subdivision use and development in coastal areas with outstanding natural character, which given the important wildlife values and ecological sequences may also apply to the Opoutere area.
[1215] Department of Conservation *NZCPS 2010 Guidance note Policy 3: Precautionary Approach* (Department of Conservation, 2010) 6.
[1216] Section 43AA.

(DP).[1217] The NZCPS is, however, limited by its application only to the coastal environment.[1218] Furthermore all final decisions will be subject to s5 of the RMA and the exercise of the overall broad judgment approach. Table 14 details the various approaches to avoidance and precaution in the context of the Opoutere area.

Table 14 Plan approaches to avoidance and precaution

	RMA	NZCPS	Proposed NPSIB	WRC RPS 2000	WRC Proposed RPS 2012	WRC Regional Plan	WRC R Coastal Plan	TCDC District Plan	TCDC Proposed DP
Precaution- Asserts a general requirement for precaution where effects of an activity are unknown or uncertain	×	✓	×	×	✓*	×	✓	×	×
Precaution - Asserts a specific requirement for precaution where managing effects to **threatened species**	×	×	×	×	×	×	×	×	×

[1217] Sections 62(3), 67(3)(b) and 75(3)(b).
[1218] NZCPS Preamble, and as defined by Policy 1 and ss 56-58 RMA.

Precaution - Asserts a specific requirement for precaution where managing effects to **threatened or At Risk species**	✗	✗	✗	✗	✗	✗	✗	✗	✗
Precaution - Asserts a specific requirement for precaution where managing effects to related to a **coastal area**	✗	✓	✗	✓	✓*	✗	✓	✗	✗
Recommends the use of adaptive management in support of a precautionary approach	✗	✗	✗	✗	✓	✗	✗	✗	✗
Avoidance- requires avoidance of effects in specific circumstances	✗	✓	✗	✗	✓*	✓	✓	✓**	✓
Avoidance – requires avoidance of effects upon **Threatened species**	✗	✓	✗	✗	✓**	✗	✗	✗	✓**
Avoidance – requires avoidance of effects upon	✗	✓	✗	✗	✓**	✗	✗	✗	✓**

Threatened species or At Risk species									
Avoidance- requires avoidance of adverse effects of activities on significant habitat of indigenous fauna	✗	✗	✗	✗	✗	✓***	✓	✗	✗
Avoidance- states a **preference** for activities to avoid loss or damage of areas of significant indigenous biodiversity	✗	✗	✓	✗	✓	✗	✗	✗	✗
Enables avoidance of effects as an option	✓	✓	✓	✓	✓	✓	✓	✓	✓
No net loss- specifically applies an approach of no net loss in the context of the mitigation hierarchy	✗	✗	✓	✗	✓*	✗	✗	✗	✗
Applies avoidance of effects in the context of the mitigation hierarchy	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Under appeal
** Applies only to coastal environment and/or wetlands
*** Sediment infill of estuaries, harbours and wetlands only or wetlands only
Acronym TCDC – Thames Coromandel District Council
WRC – Waikato Regional Council

The plans analysed shown in Table 14 tend to take a conservative approach to the avoidance of effects on indigenous biodiversity. The operative and proposed Regional Policy Statements, along with the Regional Coastal Plan, reflect this approach in various ways, but they are largely limited to coastal areas. The Proposed National Policy Statement on Indigenous Biodiversity 2011 (PNPSIB) has not adopted a position which matches the stringency of the NZCPS.[1219] Therefore, certain threatened species are privileged due to place rather than vulnerability, hence dotterel breeding at Opoutere can potentially receive a higher degree of protection from development impacts than one nesting in Waihi township, 45 km south and some 15 km inland. Similarly, bittern or banded rail breeding at the Wharekawa Harbour (Figure 82) will receive greater protection than those on an inland farm wetland. This is an important insight into the spatial constraints of protective measures.

A more consistent standard would be to apply the approach of the NZCPS to all Threatened and At Risk species. As discussed in 8.5.5, greater visibility of precaution and avoidance in policy can influence decisions relating to risk. The operation of s 5(2) would continue to enable development, although to strengthen protection a stronger threshold such as "overwhelming social/cultural/economic benefits" is desirable.

The operative Thames Coromandel District Plan takes a conservative approach to biodiversity protection, seemingly limited to the concerns of s 6(c) RMA, rather than the wider concerns of s 31(1)(b)(3) RMA, this is perhaps a reflection of the age of the plan and the concerns of private property.[1220] Precaution and avoidance receive scarce mention, although an avoidance

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[1219] The Environment Court in *Royal Forest & Bird Protection Society v Waitaki District Council* [2012] NZEnvC 252 at [15], noted the lack of statutory effect of the draft NPS, but in *Day v Manawatu - Wanganui Regional Council* [2012] NZEnvC 182 at [3]-[59] the Environment Court concluded that despite the lack of effect, the document was worthy of respect as a reflection of considered opinion, particularly as it reflects international practice.

[1220] Thames-Coromandel District Council *Thames-Coromandel District Plan* (Thames-Coromandel District Council, Operative 2010).

approach is adopted towards land use activities and development that may adversely affect ecological values of water bodies including freshwater wetlands, identified on policy maps for Opoutere and the Wharekawa estuary (not including the harbour), and waters in wildlife habitats.[1221]

The proposed District Plan notified on 13 December 2013 exhibits a restrained approach to avoidance. The strong position of the NZCPS is reflected in section 6.3 Policy1e a). This requires that subdivision, use, and development in the Coastal Environment shall avoid adverse effects on indigenous taxa listed as Threatened or At Risk in the New Zealand Threat Classification System lists or taxa listed as Threatened by the International Union of Nature and Natural Resources. This approach is not extended to areas beyond the coastal environment, and represents a rare application of an avoidance approach in the plan. Strategic planning approaches to achieving avoidance are not evident. The lack of consistency in approach suggests an uneven treatment for birds depending upon location. The following section will consider how functional boundaries further influence that position.

[1221] Ibid, Policy 219.4.

Figure 82 View southwest from Maungaruawahine over Wharekawa Harbour

8.5.6.3 Integrated approaches to protection and priority

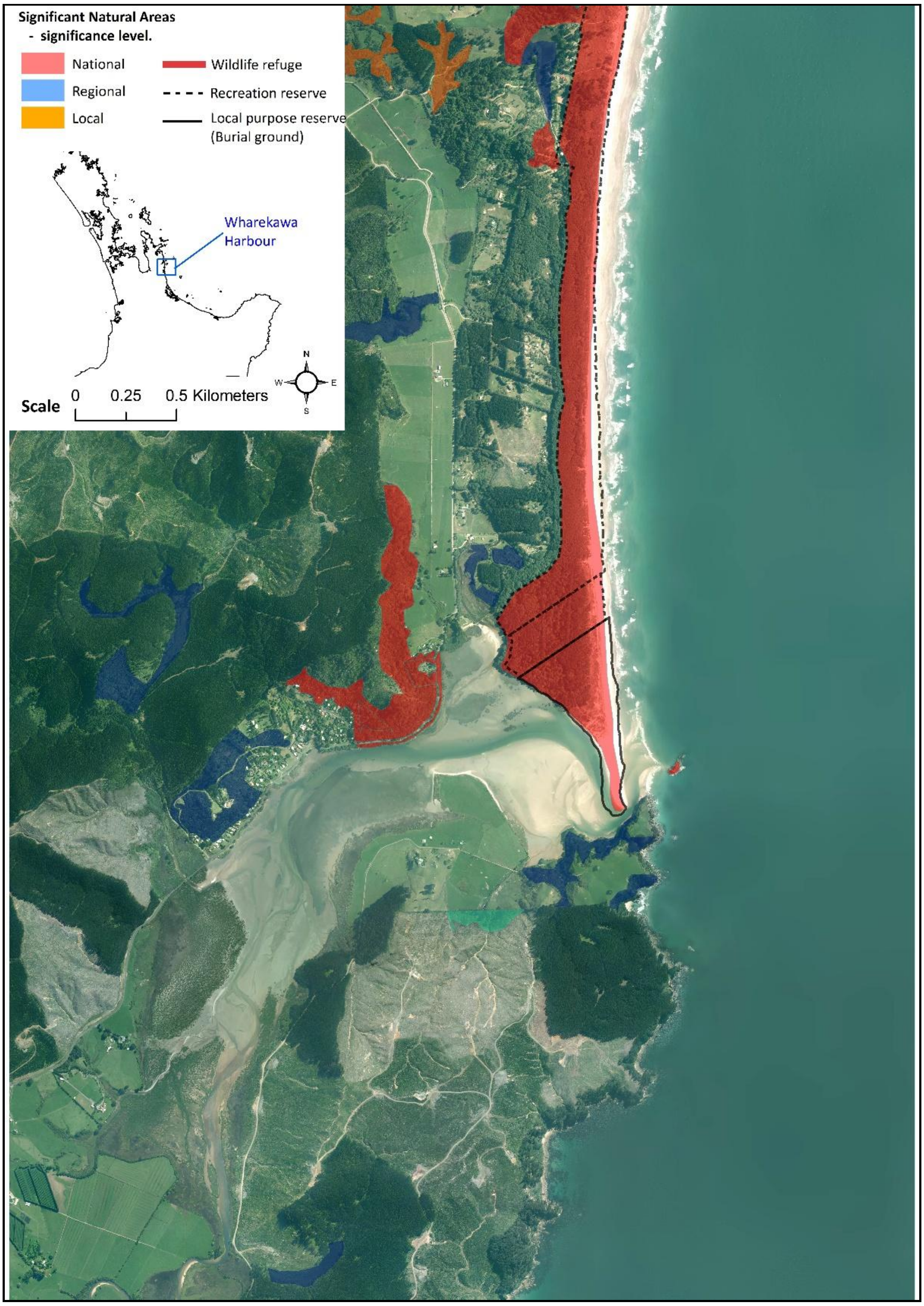
Related to the degree of care applied to birds is the issue of an integrated approach to identification and response to priority areas. The Opoutere area demonstrates differences in approach to habitat prioritisation according to agency function and boundary. For species the inconsistency is compounded by the focus of the RMA on the significant habitat of fauna, in reliance upon s 6(c). In addition a restrained approach to protection of ecological integrity further limits the comprehensiveness of protection. Each of these matters will now be considered in turn.

Conservation priority and consistency

For management of the conservation estate, Chapter 7 traversed the recent prioritisation of site through systematic conservation planning promoted by DOC. In the identification of important habitat, considerable differences exist between DOC priorities and those identified on a regional basis. The Opoutere area exemplifies both vertical and horizontal fragmentation: vertical fragmentation arises through differences in national and regional approach whilst horizontal fragmentation arises due to the fact that one agency is tasked with protecting public areas with another focussed upon private land.

No part of the Opoutere area is identified and mapped as a priority Ecological Management Unit for the purposes of DOC systematic conservation planning, although the Waikato Regional Council significant natural area database records regional, national and international values of the area (Figure 83). The definition of the areas outlined as significant natural areas, which include public conservation land, district council reserves and private land, receive no recognition as priority areas for central government conservation planning initiatives. It is to be expected that differences in priorities will exist between national and regional agencies tasked with similar functions, but the example of Opoutere raises issues in respect to integrated conservation management and the impact of site prioritisation for different statutory purposes.

Figure 83 Regional and National approaches to significance



Source: Significant Natural Area layer sourced from Waikato Regional Council. Wildlife refuge and reserve boundaries sourced from DOC Public Conservation Land layer. Background image sourced from WRAPS 2012 aerial photography (NZ Aerial Mapping).

Although some connection arises at an operational level, there is little apparent integration at the strategic level, for instance, between the Conservation General Policy/Conservation Management Strategy and the local authority planning documents. The lack of strategic planning across the public/private divide is an evident weakness in the system as it fails to comprehensively plan for the needs of species across administrative boundaries. This is compounded by lack of implementation of the WA, already discussed in section 7.2.2.4.

Better integration between DOC conservation planning and local authority efforts is required by interpreting and addressing the intersections between the two in clear and publicly accessible planning documents. It is equally important to address the difference between those priorities established for fiscal management purposes and those developed due to international, national and regional ecological values. A unified approach with compatible implementation systems would benefit species, provided that this did not entail loss of management to important sites. Systematic attention also needs to be directed on those areas, not prioritised by DOC, where local authorities and communities can provide species management. Applying a universal standard of avoidance of harm to Threatened and At Risk bird species would militate against inconsistency.

Habitat focus

Integration is hampered in several ways by the focus of the RMA upon habitat rather than upon species: plans are place bound as opposed to being species focused, where a comprehensive approach would consider both aspects. The NZCPS introduces such a shift for local authorities through Policy 11(a)(i) and (ii) requiring avoidance of effects to and protection of "taxa" in addition to habitat. As discussed, however, the area limits of the NZCPS constrain its reach. In contrast an NPS could potentially extend to all areas (including the conservation estate) as would recognition of protection of Threatened and At

Risk species as a matter of national importance under s 6. Obtaining a comprehensive approach for birds enhances protection.

Recovery plans, as considered in Chapter 7, produce a broader perspective because the bird's habitat and range, and identified pressures on populations, are considered from the position of the species looking out across the landscape. There is a need to better incorporate this knowledge into development planning. The management of human activity in the environment without adequate engagement with this perspective is thereby constrained by insufficient holism. In addition to the need for strategic conservation planning, a regulatory conservation measure is needed to react to deterioration in conservation status, and provide spatial protection to a species and its habitat in urgent situations. This is a gap in the legislation that requires filling in order to strengthen protection of threatened species. Refuges under the WA and zoning measures under the RMA are insufficiently flexible and agile and additional measures are needed.

Administrative boundaries and the delimitation of functions work to produce a silo effect in planning. A clear example is the issue of human disturbance to birds in coastal areas. Land developments impact on bird habitat at the coast is not well-described or planned for. There is a physical disconnect that leads to a strategic disconnect between district plan provision and the regional coastal plan and/or conservation management strategy in relation to the issue of bird disturbance. The Proposed District Plan[1222] recognises that increasing development also impacts the coastal environment, but the issue tends to be limited to natural character and ecology, which means that impacts upon threatened species are not explicitly connected to the problem. Policy responses are not particularly prescriptive and include intention to preserve natural character, employment of coastal setbacks to

[1222] Thames-Coromandel District Council *Proposed District Plan* (2013) Section 15, Settlement Development and Growth Policy Issue 15.2.2, Section 7 Coastal Environment 7.1.2.

protect biodiversity[1223] statements that the scale, density and design of settlement development and growth should take into account indigenous biodiversity.[1224] Furthermore, as an example, recognition of the issue is countered by the statement that confers equal importance to the social, economic and cultural wellbeing of people and communities of carrying out activities in these areas. So, whilst the plan limits further intensification of the Opoutere settlement, these restrictions are tied to the settlement's natural character, vistas and built form.[1225] This problem arises despite the requirement of the NZCPS to focus on taxa in the coastal environment, which may partially be attributed to the action of s 6(c) and the focus on habitat.

The Proposed Waikato Regional Policy Statement, a document intended to provide integration across boundaries within the region, explicitly requires that regional and district plans recognise the adverse effects of species disturbance and the potential for cumulative effects, particularly in the coastal environment.[1226] The provision, however, does not appear to have translated into the Proposed District Plan except in a general sense. This may be explained by the proposed nature of the policy statement and the fact that the provision as a whole is subject to appeal. Yet it also points to a wider problem of plan torpor in responding to pressing problems in the environment. Although s 86B(3)(c) RMA is intended to give immediate legal effect to provisions that protect natural heritage, the section is limited to rules in plans and the Proposed Policy Statement is confined to policy. In addition, the particular section giving immediate legal effect is directed at provisions that protect habitats not species, which therefore significantly weakens the rules in proposed plans directed at protecting species.[1227] Section 74(2)(a)(i) requires territorial authorities to give regard to proposed policy statements

[1223] Ibid Policy 15.3 c).
[1224] TCDC 2013 above n 1222 at Policy 6 b).
[1225] TCDC 2013 above n 1222 at Section 15 Settlement Development and Growth Policy 10 m).
[1226] Waikato Regional Council *Proposed Waikato Regional Policy Statement,* (Decisions version 2012) Policy 11.1.2.k.
[1227] Section 86B(3)(c).

when preparing district plans, the requirement to give effect to the statement does not arise until the policy statement is operative. This suggests an integration failure: a more unified approach would empower the body tasked with integrated management of resources and biodiversity protection to make rules to this effect.

The habitat focus tends to limit the scope of species protection to only considering vegetation removal. For example, the operative District Plan recognises the need to protect indigenous biodiversity but plan controls are largely limited to vegetation clearance and earthworks.[1228] Significant natural areas are not mapped in the District Plan but it recognises their value and requires permits for indigenous vegetation clearance, in this respect, it applies the non-complying category of activity to protected areas, although these areas are not defined with clarity in the plan.[1229] For subdivision and development control, the main method of biodiversity protection is enabling development in return for vegetation protection or enhancement secured by a conservation covenant.[1230] Subsequent monitoring of such covenants shows that while some biodiversity gains have been achieved via the mechanism, there is substantial room for improvement.[1231] There is no apparent recognition of the impact of intensifying development and the cumulative effect upon threatened species.

The proposed District Plan largely continues the approach of the operative Plan. For biodiversity protection, the main measures for management are the controls upon indigenous vegetation removal as well as the enabling of development in the rural area in return for protection, enhancement of ecological integrity and ongoing management of priority

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1228 Thames-Coromandel District Council *Thames-Coromandel District Plan* (Thames-Coromandel District Council, Operative 2010) Policy 211.4, and Methods 211.5.
1229 TCDC 2010 above n 1228 at 422.5 Non Complying Activities.
1230 TCDC 2010 above n 1228 at Methods 211.5.
1231 Thames Coromandel District Council "Indigenous Biodiversity- Attachment A" (undated) <http://web.tcdc.govt.nz/24DocServ/cache/2e9ecbd25f441b4e4f79fa6a5711cd3e.pdf>

conservation areas.[1232] Noted by the plan as an issue is increased loss of resilience, and increased vulnerability of ecosystems and species as a consequence of subdivision, use and development. But in responding to this the plan lacks strong methods.[1233]

Ecological integrity and resilience

The protection of ecological integrity is hindered by inconsistent standards of protection and through integrative failure. Although gaining in profile, effective protection of ecological integrity, including connectivity and the use of buffer zones to protect significant areas, is compromised by a lack of consistent strategic planning across the landscape.[1234] The District Plan recognises the value of habitat linkages, corridors and buffer zones, but this is not connected to any regulatory method.[1235] The Proposed District Plan supports integrity and connectivity, but this arises in the context of ad hoc subdivision consents, thus limiting the strategic value of such measures.[1236] The aerial migratory route of the wrybill on the west coast demonstrates why increased knowledge on how to plan for interconnections is required. In the provision of ecological integrity, it is important that plans capture *all* areas which are significant to the species. For the dotterel, godwit, wrybill and other shorebirds, mapping the prime roosting and foraging areas, as exhibited in the draft spatial layers prepared for the draft Hauraki Gulf Marine spatial plan, may provide additional protection.

A recent report on the seabirds of the Hauraki Gulf notes gaps in knowledge concerning seabirds and identifies research priorities. The report also recommends a coordinated regional approach to seabird conservation

[1232] Thames-Coromandel District Council *Proposed District Plan* (2013) Section 29 Biodiversity Overlay Rules.
[1233] Ibid, Biodiversity Issue 6.2. 1. a).
[1234] Wallace, PJ "Integrated Conservation Management; Spatial Planning for the Movement of Species in the Landscape" 2011 15 New Zealand Journal of Environmental Law 185.
[1235] Policy 211.4 (3) and Methods 211.5.
[1236] Thames-Coromandel District Council *Proposed District Plan* (2013) Section Biodiversity Policy 6.2.1 c).

management using spatial planning, with greater attention to mapping areas of prime importance to seabirds, including overland seabird passage routes.[1237] The recommendations of the report are adopted in these respects.

Regional Coastal Plans may also create rules to protect those areas from disturbance arising from a range of activities.[1238] Looking beyond discrete patches of land and/or vegetation to include the air, waters and margins, and other such valued spaces may strengthen protection. Particular issues arise for ecological connections because of a lack of integrative planning across public conservation land habitat and private land. The Firth of Thames, considered in Chapter 6, is a good example of this problem: the Ramsar site boundaries are not buffered and, thus, subject to erosion through illegal reclamation, which confounds the line of the coastal marine area.[1239]

The review above reveals that the potential protective force of legal mechanisms is weakened because of the combined force of: approaches that favour avoidance and precaution, the lack of integration across scales and a lack of focus on Threatened and At Risk species. A more strategic conservation planning approach that assists decision makers in responding comprehensively to threats and the accumulation of a range of pressures could limit the human impact on Threatened and At Risk species. A stronger focus on species protection in the RMA would improve integration and consistency, as would strategic planning that assists direction of the employment of precaution and methods of avoidance. Using conservation status as the prime indicator for protection provides a more comprehensive approach for birds.

[1237] Gaskin, C and Rayner, M *Seabirds of the Hauraki Gulf: Natural History, Research and Conservation* (Hauraki Gulf Forum, 2013) 125.

[1238] For example Rule 31.3.2.(b)(iii) Northland Regional Council *Regional Coastal Plan* (Northland Regional Council, 2004).

[1239] Pers.comm. Catharine Beard November 2013.

8.5.7 THE INDUCEMENTS FOR CONSENT

Having examined the RMA in principle, in function and as expressed through the plans, consideration now turns to three important measures that influence decisions concerning the use and development of resources. These are adaptive management,[1240] biodiversity offsets and review conditions. These can be considered as inducements for consent, that is, they are measures which avoid, remedy or mitigate the effects of activities. The measures can be employed by applicants for resource consent and/or subsequently imposed by decision makers as conditions of consent. The next section considers each of the positive and negative consequences to birds stemming from the use of such approaches.

8.5.7.1 Adaptive management

Adaptive management is applied to manage uncertainties about potential impacts in the context of resource consent applications which may affect fauna in the New Zealand environment.[1241] In a case relating to marine tidal energy, the Environment Court preferred the following definition of the concept:[1242]

> Features of adaptive management are (i) that stages of development are set out; (ii) the existing environment is established by robust baseline monitoring; (iii) there are clear and strong monitoring, reporting and checking mechanisms so that steps can be taken before significant adverse effects eventuate; (iv) these mechanisms must be supported by enforceable

[1240] Freeman above n 1181 at 5.
[1241] *Crest Energy Kaipara Ltd v Northland Regional Council* Environment Court Auckland A132/2009, 22 December 2009, *Kuku Mara Partnership v Marlborough District Council 2004,* Environment Court Wellington, W039/04, 7 May 2004, *Lower Waitaki River Management Society Inc v Canterbury Regional Council* Environment Court Christchurch, C080/09, 21 September 2009 at [381], *Golden Bay Marine Farmers v Tasman District Council* Environment Court Wellington W19/2003, 27 March2003, *Clifford Bay Marine Farms Limited v Marlborough District* Environment Court Christchurch C131/2003, 24 September, 2003.
[1242] *Crest Energy Kaipara Ltd v Northland Regional Council* Environment Court Auckland A132/2009, 22 December 2009 at [101].

resource consent conditions which require certain criteria to be met before the next stage can proceed; and (v) there is real ability to remove all or some of the development that has occurred at that time if the monitoring results warrant it.

Freeman draws a distinction between feedback control (and "trigger response") and adaptive management. The former is defined by a prescribed numerical environmental standard or outcome that triggers a control. In contrast, adaptive management arises where further investigations are needed to determine an appropriate environmental trigger. Freeman considers that such adaptive management conditions would need to be developed very carefully to ensure that all environmental outcomes would be achieved that are consistent with all applicable provisions.[1243]

It is not apparent from the case law that courts, in adopting adaptive management approaches, recognise this distinction. Even so, the authorities are clear that courts must be careful to ensure that the objectives for adaptive management are reasonably certain and enforceable. Moreover, the detail that is provided in associated management plans should be sufficient to give reasonable confidence of their success.[1244]

Although there is no obligation on an applicant to carry out all necessary research before making an application or before the consent hearing, an applicant must still satisfy a Court that the environmental management plan determining the approach will serve the purpose of the Act.[1245]

[1243] Freeman above n 1181 at 6.
[1244] *Lower Waitaki River Management Society Inc v Canterbury Regional Counc*il Environment Court Christchurch C080/09, 21 September 2009 at [381], *Crest Energy Kaipara Ltd v Northland Regional Council* Environment Court Auckland A132/2009, 22 December 2009 at [227], *Mainpower NZ Ltd v Hurunui District Council* [2011] NZEnvC 384 at [250].
[1245] *Crest Energy Kaipara Ltd v Northland Regional Council* Environment Court Auckland A132/2009, 22 December 2009 at [228]-[229].

Difficulty arises regarding secondary approvals of management plans at a date later than the consent because of the potential unlawful delegation of decision-making powers invalidating the consent.[1246] In view of the protection of birds, the lack of certainty and potential lack of scrutiny of the plan is of real concern. For a precautionary and certain approach, the management plans relating to the resolution of substantive measures should be completed in advance of the hearings and scrutinised by the Court where, if accepted, they should form part of the consent conditions or, alternatively, applied to meet the requirements of existing legitimate conditions.[1247] Case law suggests that in some circumstances there may be difficulties with this approach particularly where a management plan might benefit from future amendments to keep pace with developments in technology and science and, accordingly, may require resolution pursuant to an appropriate certification process.[1248] Where concerns exist regarding any delay between consent and project construction, a more certain and careful course of action is to require a resurvey of fauna prior to commencement of construction rather than delaying the preparation of the plan.[1249]

The Precautionary Principle partly gives rise to the adaptive management approach,[1250] but it can be argued that adaptive management is also a tool to facilitate land development which, in the face of precaution alone, would not proceed. It was established in Chapter 5 that adaptive management is not well suited to circumstances where development cannot be reversed, where effects could be irreversible and where vulnerable populations are at

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[1246] *Turner v Allison* [1971] NZLR 833 (CA).
[1247] *New Zealand Rail Ltd v Marlborough District Council* (1993) 2 NZRMA 449, Freeman above n 1181 at 7.
[1248] *Wood v West Coast Regional Council* [2000] NZRMA 193, 6 and *West Coast Environmental Network Inc v West Coast Regional Council* [2013] NZEnvC 178 at [47].
[1249] For more detailed discussion in the context of Whangamata marina see Wallace, PJ "Where the Wild Things Are: Examining the Intersection between the RMA 1991 and the Wildlife Act 1953" 2009 Resource Management Journal 21.
[1250] *Environmental Defence Society Incorporated v New Zealand King Salmon Company Ltd* [2013] NZHC 1992 [2013] NZRMA 371 at [77] – [79].

stake. Where adaptive management conditions cannot reasonably be treated as ameliorating concerns that arise from the nature and extent of unknowable adverse effects, it is expected that the precautionary approach would weigh heavily against the grant of the resource consent application.[1251] But the real problem is thus: if the effects are unknowable, how is the nature and extent to be determined?

In the Hauāuru mā Raki wind farm decision the evidence in relation to considering of alternative sites was limited and not directed at impacts in terms of s 6 of the RMA.[1252] The main approach to managing impacts upon the birds was through mitigation, biodiversity offsets, baseline and post-consent monitoring and review of conditions. The parameters for the collision mortality for wrybill were uncertain but, through the conditions of consent, were to be managed according to a bird monitoring programme, the objective of which required a "no net loss" outcome for the wrybill. This outcome was to be determined after consent through bird collision mortality monitoring and annual reporting with a review of those results in conjunction with the results from predator control programmes. Baseline monitoring for wrybill productivity was required for three years or until construction takes place, whichever is first. Mortality reviews, including an urgent review, were to be triggered when mortality numbers exceed the specified levels of loss.[1253]

Benefits accrue to the wrybill as a result of these conditions and much needed species research and predator control would be carried out in key breeding grounds. Yet for a small bird, with a Threatened status of vulnerable, there are risks. Firstly, there is the potential for irreversible loss because of uncertainty surrounding the prediction of collision mortality. Secondly,

[1251] *Environmental Defence Society Incorporated v New Zealand King Salmon Company Ltd* [2013] NZHC 1992 [2013] NZRMA 371 at [83].
[1252] Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011.at [841] – [845].
[1253] Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011 at Clause 6.27 HMR conditions schedule 1 cl 6.27.

further uncertainty arises when considering the methodology to be applied in determining mortality rates.[1254] Thirdly, there are questions over how agile any response would be in the event of mortality beyond that predicted. The impacts of the development may be reversed by turning off turbines implicated in strike during peak migration periods, but what if the birds behave differently in different weather conditions? What if the mortality effects are not immediately obvious? And how does turning off turbines mitigate against a catastrophic strike? It is not surprising that in these circumstances Judge Smith was only "just" satisfied, and largely due to the offset mitigation proposed. [1255]

For threatened birds, this is a reasonably precarious space to occupy, and it is the technique of adaptive management which enables development with uncertain, if not unknown, effects. Proceeding without an adaptive approach is clearly more damaging to birds and this is why adaptive management is hailed as innovative. The question this research poses is whether the use of the innovative technique diverts attention from defence of the existing situation in a manner that will ultimately produce further losses to species? A similar question arises with biodiversity offsets.

8.5.7.2 Biodiversity offsets

Biodiversity offsets are applied to offset damage caused to birds as a result of a proposal for resource consent and, in New Zealand, a common measure applied is predator control.[1256] The New Zealand approach to offsets is

[1254] Bull, LS, Fuller, S and Sim, D "Post-construction Avian Mortality Monitoring at Project West Wind" 2013 40 New Zealand Journal of Zoology, 28-46. This research documents the greater effectiveness of dogs in retrieving carcass, but when applied to the case in hand, the wind farm conditions do not require the use of dogs for this purpose.
[1255] Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki wind farm and Infrastructure Connection to Grid, May 2011 at [1108b].
[1256] *Upland Landscape Protection Society Inc v Clutha District Council* Environment Court Christchurch C016/09, 26 March 2009, *Royal Forest and Bird Protection Society Inc v Gisborne*

evolving with parallels to the international approaches reviewed in Chapter 5. Recent case law confirms that offsets are considered to be different to mitigation because they will be directed at other pressures affecting biodiversity so as to reduce that pressure rather than addressing an effect generated by the proposal at the point of impact.[1257] In making a decision on a resource consent, the discretion to consider offsets arises pursuant to s 104(1)(a), (c) and s 5(2), which allow courts to take into account the positive effects on the environment proffered by an applicant in consideration for allowing the activity.[1258] They cannot, however, be considered as part of the threshold test for non-complying activities pursuant to s 104(1)(D) since the focus of that section is limited to the effects generated by the proposal.[1259]

Jurisprudence has developed concerning the desirable characteristics of biodiversity offsets which include amongst others equivalency, proximity to site where effects arise, effectiveness/enforceability, opportunity for public scrutiny, application of a transparent, standard methodology, application according to the mitigation hierarchy where the development project seeks first to avoid impacts, then minimise the impacts that do occur, recognition of instances of inappropriateness due to rarity or vulnerability of habitat or species, additionality, and consideration of uncertainty tied to securing the benefit proposed and any time lag in achieving this.[1260] The need to avoid "leakage" in the form of displacing the harmful activities that impact

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District Environment Court Wellington W026/09, 7 April 2009, *Mainpower NZ Ltd v Hurunui District Council* [2011] NZEnvC 384.

[1257] *Royal Forest and Bird Protection Society of New Zealand Inc v Buller District Council* [2013] NZHC 1346 at [51], [62] and [74], *Day v Manawatu-Wanganui Regional Council* [2012] NZEnvC 182 at [3-63].

[1258] *Royal Forest and Bird Protection Society of New Zealand Inc v Buller District Council* [2013] NZHC 1346 at [60].

[1259] *West Coast Environmental Network Inc v West Coast Regional Council* [2013] NZEnvC 178 at [8].

[1260] *J F Investments Ltd v Queenstown Lakes District Council* Environment Court Christchurch C48/2006 as developed in *Director-General of Conservation v Wairoa District Council* Environment Court Wellington W81/2007, 19 September 2007 at [40-42], and *Royal Forest and Bird Protection Society Inc v Gisborne District* Environment Court Wellington W026/09, 7 April 2009 at [72].

biodiversity to another location is not included in this list, nor is the related need to consider a landscape perspective when planning for offsets. It has been argued that both should be added.[1261] The facts of a given case will accord greater importance to different aspects, and success in expressing or attaining the characteristics of the list will influence acceptability of the offset and weight to be given to it.[1262] If consented and insufficiently achieved, it will also influence the degree of harm suffered by biodiversity.

The issue of adherence to the mitigation hierarchy is one of importance to the distribution of harm to birds and to strong protective responses. The authorities suggest that biodiversity offsetting sits lower down the mitigation hierarchy than avoidance and minimisation due to the greater uncertainty associated with achieving biodiversity gains through offsetting.[1263] Policy 5 of the draft National Policy Statement on Indigenous Biodiversity, in managing the effects of activities upon significant biodiversity by way of resource management plans, applies the mitigation hierarchy through the following steps:

> a. Avoiding adverse effects;
>
> b. where adverse effects cannot be avoided, ensure remediation;
>
> c. where adverse effects cannot be remedied, ensure mitigation;
>
> d. where adverse effects cannot be adequately mitigated, ensure that any residual adverse effects that are more than minor, are offset in accordance with the principles set out in Schedule 2.

The appropriateness of a hierarchical approach was accepted in *Day v Manawatu-Wanganui Regional Council,*[1264] with avoidance being the first

[1261] Gardner, TA, von Hase, A, Brownlie, S, and others "Biodiversity Offsets and the Challenge of Achieving No Net Loss" 2013 Conservation Biology, 6.
[1262] *West Coast Environmental Network Inc v West Coast Regional Council* [2013] NZEnvC 47 at [213].
[1263] *Day v Manawatu-Wanganui Regional Council* [2012] NZEnvC 182 at [3-77].
[1264] *Day v Manawatu-Wanganui Regional Council* [2012] NZEnvC 182 at [3-65].

response, and offsets applied to manage any residual effects. In terms of birds, particularly those that are Threatened and At Risk, it is, however, important to not lose sight of that the issue that sometimes avoidance will not simply be the first response, it will also be the only response. The draft NPSIB pays heed to this by concluding that:[1265]

> For the avoidance of doubt, in accordance with the principles of Schedule 2, there are limits to what can be offset because some vegetation or habitat and associated ecosystems, is vulnerable or irreplaceable. In such circumstances off-setting will not be possible and local authorities will need to take full account of residual adverse effects in decision-making processes.

It is at this point where insufficient clarity and direction exist concerning strong and protective responses for birds, and potentially this represents an area where cumulative effects may accrue as a result of facilitating development.[1266] Even when dealing with vulnerable or irreplaceable ecosystems, the approach of the Court has not been to apply hard and fast rules, rather, the Court prefers to exercise judgment as determined by the nature and scale of the effects and the availability of a viable and appropriate offset.[1267] This is a legitimate function of a judicial system, yet it is important that such decision-making is guided by clear and consistent policy and preferably supported by spatial mechanisms capable of capturing cumulative effects upon threatened species in the environment.

The lack of clarity regarding statutory weight to be attributed to offsets[1268] represents a further potential inconsistency. Moreover, the

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[1265] Policy 5 and see also Gardner 2013 above n 1261 at 10 and Tonkin and Taylor Ltd and Covec Ltd *Barriers to No Net Loss Biodiversity Offsets Research report* (Department of Conservation, 2012) 9-10.
[1266] Christensen, M "Biodiversity Offsets- A Suggested Way Forward" 2010 Resource Management Journal 9.
[1267] *Mainpower NZ Ltd v Hurunui District Council* [2011] NZEnvC 384 at [230], Gillespie, A *A Missing Piece of the Conservation Puzzle: Biodiversity Offsets* (Department of Conservation, 2012) at 11.
[1268] Rive, V "Biodiversity Offsets and Compensation: Another Round" 2013 10 Resource Management Bulletin 44.

vulnerability of fauna increases where offset measures are inadequately implemented and enforced, and it is argued that this currently appears to be the case in New Zealand.[1269] Further debate exists over the differences between offsetting and compensation because compensation may be considered to be a lesser method, which fails to reach the standard of no-net loss to be achieved by an offset.[1270] National policy guidance and standards that are sufficiently protective of the interests of species could clarify the inconsistencies.

Additional consideration needs to be given to the outcome target for biodiversity offsets. The NPSIB applies through Policy 5 the standard of "no net loss" for significant biodiversity and, pursuant to Schedule 2, states relevant principles for offsets and suggests that they be calculated to determine "no net loss" and "preferably net gain". Given the critical state of New Zealand's biodiversity, a recognition that without a net gain, biodiversity loss will continue,[1271] combined with the lack of certainty attributed to offsets, suggests that a more protective response for species warrants a net gain approach.[1272] The approach employed by the Horizons Regional Council One Plan (Policy 12-5), referred to in *Day v Manawatu-Wanganui Regional Council*, presumes avoidance in relation to rare, Threatened and At-risk habitats which provides an exception for minor effects, and for those greater than minor, offset to a standard of net gain.[1273] This is a more promising position for threatened species, although the addition of a precautionary directive and a

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[1269] Brown, MA, Clarkson, BD, Barton, BJ, and others "Ecological Compensation: an Evaluation of Regulatory Compliance in New Zealand" 2013 31 Impact Assessment and Project Appraisal, Brown, MA, Clarkson, BD, Stephens, RT, and others "Compensating for Ecological Harm–The State of Play in New Zealand" 2014 38 New Zealand Journal of Ecology.

[1270] Christensen, M and Baker-Galloway, M "Biodiversity Offsets: the latest on the law" 2013 November Resource Management Journal 11.

[1271] *Day v Manawatu-Wanganui Regional Council* [2012] NZEnvC 182 at [3-74].

[1272] For criticism of accommodations made through biodiversity offsets to development interests providing insufficient protection to biodiversity see Allchin, R, Kirkpatrick, J and Kriwoken, L "On Not Protecting the Parrot: Impact of Conservation and Planning Legislation on an Endangered Species in Tasmania" 2013 16 Journal of International Wildlife Law & Policy 81.

[1273] For discussion see Christensen 2013 above n 1270 at 5.

requirement for measures to adequately consider cumulative effects upon the affected species would promote stronger outcomes. Spatial conservation planning tied to the mitigation hierarchy may provide opportunities for greater certainty.

A final matter to consider is the endurance of offset measures. Subdivision and land use consents are generally granted in perpetuity, and hence it can be argued that the effects (for instance loss or modification of habitat and subsequent displacement and disturbance of birds) endure for the equivalent term.[1274] A question arises over the appropriate time period for which offsets are required? When Christensen reviewed the requirements of the Business and Biodiversity Offset Programme's 2012 *Guidance Notes to the Standard on Biodiversity Offsets*[1275] with the case law, he concluded that Criterion 8.1 of the Guidance recommends that the offset outlast the impact. Accordingly, where the impact is in perpetuity the offset should also be in perpetuity. To date, no decisions have been made regarding an offset conditional upon being in perpetuity, including that in the Hauāuru mā Raki wind farm decision.

Related to endurance, and where implementation is known to be deficient, is the requirement for financial sustainability and in providing clear financial and legal mechanisms to achieve delivery long into the future.[1276]The relevance of this can be seen in the Te Arai decision[1277] (section 8.5.4). Approval of the plan change was conditional upon a number of factors relevant to impacts upon the critically threatened fairy tern and the dotterel. A conditional factor in the approval was the employment by the future landowners of a conservation ranger to implement the shorebird management

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1274 Section 123(b) RMA.
1275 Business and Biodiversity Offsets Programme *Guidance Notes to the Standard on Biodiversity Offsets* (BBOP, 2012).
1276 Christensen 2013 above n 1270 at 19-20.
1277 In the matter of a request to Auckland Council by Te Arai Coastal Lands Trust for a change to the Auckland District Plan: Rodney Section at Te Arai, 4 November 2013.

plan, which included a primary function of predator control to protect the birds. A further condition of the approval provided the legal mechanisms to ensure that the requirements of the Shorebird Management Plan, including the employment of a ranger, are binding on and funded by future landowners.[1278] Whilst, however, the decision body mentions employment of a ranger in perpetuity, the conditions refer only to "appointed and permanently employed" which leaves some doubt as to term.[1279]

In summary, cases where human disturbance is to be intensified in a comparatively undeveloped area of habitat of a nationally critical species, and where cultural, social and economic imperatives have taken precedence over preservation, particular vigilance in all aspects of mitigation and offset construction and implementation is vital. While offsets may bring benefits for threatened birds, they may equally facilitate continual development in the landscape, thus, methods are needed to capture this form of cumulative effect.

8.5.7.3 Review conditions

Once consent is granted and not appealed against, it confers a right upon the owner to carry out the consented activities. Interfering with this right is to be treated with caution. Under the RMA, the opportunity to prevent the operation of the consent is limited. Pursuant to ss 126 and 132(3) RMA, consent may be cancelled if not exercised or, upon review, where it is found that inaccuracies contained in the application materially influenced the grant of consent, which resulted in significant adverse effects.[1280] The relationship of the "predictions"

[1278] Condition g (ix).
[1279] Condition g (viii).
[1280] *Director-General of Conservation v Marlborough District Council* Environment Court Christchurch C113/04, 17 August 2004 [66] – [69], *New Zealand Windfarms Ltd v Palmerston North City Council*[2013] NZHC 1504 at [69], *Palmerston North City Council v New Zealand Windfarms Ltd* (2012) 17 ELRNZ 10 at [128].

made in an AEE to the "inaccuracies" capable of review was considered in *New Zealand Windfarms Ltd v Palmerston North City Council*. The Court took a firm view on the fact that the statements made could not be limited to "predictive" and should be considered as binding.[1281] This is an aspect that requires careful attention in condition drafting to avoid limiting the protective reach of s 132(3). Consent may also be cancelled as a penalty under s 339(5)(b) consequent upon conviction for an offence under s 338, pursuant to s 128(2) and s 132(4).

As a safeguard, where uncertainty exists and/or adaptive management-type conditions are employed, review conditions are commonly attached to consents pursuant to s 128 of the RMA. Where specified in the original consent, review conditions enable the consent authority to periodically reassess the terms of consent to deal with any adverse effect on the environment, which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage. Although this may usefully provide the flexibility to reshape conditions at a later date, there are strong reasons to treat review conditions with caution and to avoid employing them as the primary mechanism to address uncertainty.[1282]

First, s 128, and the related s 132, do not enable termination of the consent unless falling within the parameters discussed above.[1283] Furthermore, when making a decision upon the review of conditions, the consent authority is directed by s 131(1)(a) to have regard to the matters in s 104 and to whether the activity allowed by the consent will continue to be viable after the change. This direction may limit the impact of review, for instance, in cases where the viability of a wind farm is threatened by a reduction in operative wind turbines because of collision mortality. In

[1281] *New Zealand Windfarms Ltd v Palmerston North City Council* [2013] NZHC 1504 at [115]. The decision also considers the nature of a material influence at [120].
[1282] Freeman above n 1181 at 8.
[1283] *Minister of Conservation v Tasman District Council* High Court, Nelson CIV-2003-485-1072, 9 December 2003 at [73] – [74].

addition, Freeman points out that the onus is frequently upon the consent authority to identify a cause and effect relationship between an adverse effect and the exercise of resource consent before serving notice of intention to review conditions pursuant to s 128(1)(a)(i). In this exercise, the costs of investigation would normally be borne by the consent authority, a factor which may compound with the detailed nature of the investigation to limit activation of these conditions. [1284]

At Opoutere, the retrospective granting of consent for a camping ground exposed a key weakness of review conditions in protecting birds from the impacts of disturbance.[1285] Condition 21 of the consent enables a review in circumstances where adverse effects on the Opoutere sandspit Wildlife Refuge and dotterel breeding grounds arise from the consent which, if established, may require a reduction in caravans or other accommodation. To monitor the flow of disturbance effects currently occurring at the Refuge, and to establish rigorous causation of that effect from yet another source is not only a nearly impossible task, but one for which few enforcing agencies would have enthusiasm. This position is further entrenched by strenuous arguments for not interfering with vested rights.

8.5.8 CONCLUSION

Increasing development, activity and human-induced modification of the environment affect the habitat of New Zealand birds and can threaten species. Through the example of Opoutere, and others, this chapter shows that there are deficiencies in provision of comprehensive responses. The central problems are a lack of a consistent protective focus upon Threatened and At

[1284] Freeman above n 1181 at 8.

[1285] In the matter of an application to the Thames Coromandel District Council by Opoutere Tree Farms Ltd for a Retrospective Resource Consent to Establish a Private Campground at 62 Wahitapu Lane, Opoutere, 3 August 2010.

Risk species, associated vertical and horizontal fragmentation in agency responsibility, and a regulatory environment that encourages development and relies largely upon mitigation to manage the consequences without sufficiently capturing the cumulative effects of resource use.

Birds would benefit from a consistently strong, protective approach in the face of resource use which threatens their habitat and species. The importance of employing precaution and methods of avoidance to manage the potentially irreplaceable loss or harm to threatened species is not particularly evident in the approach of the RMA – either in legislation or policy. This requires addressing. A similar problem applies to conservation legislation, although a mandate more closely tied to conservation and the construction of protected areas moderates this issue. Application of a strong and more consistent degree of care is recommended.

Birds move across all environments and this chapter demonstrates that legislation and policy to control the effects of human activity are not only insufficiently integrated but can be inconsistent. This is partly a product of tying protection to habitat as opposed to habitat and species. In addition, a more strategic approach to conservation planning is called for, particularly in view of cumulative effects. Chapter 6 identified that the RMA ineffectively addresses cumulative effects, which leads to ecological degradation of wetlands. This chapter has further scrutinised habitat loss and disturbance, which is an under-recognised, under-researched and under-regulated matter.

The New Zealand Dotterel Recovery Plan identifies that "in the medium to long term the cumulative impact on a few pairs at many sites will inevitably have an adverse effect on the taxon as a whole, by reducing numbers and range".[1286] Although plans identify important habitat, through various mechanisms, they lack methods directed at capturing problems across the

[1286] Dowding, JE and Davis, AM *New Zealand Dotterel (Charadrius Obscurus) Recovery Plan, 2004-14* (Department of Conservation, Wellington, NZ, 2007) at 15.

species' ranges, including all media occupied. In particular, plans fail to explicitly identify the connection between increasing development and damage to birds or consider development/modification pressure thresholds and ways to strategically respond to this, thus enabling incremental modification. The characterisation and responses to all forms of disturbance is also limited. Addressing species protection through rules created at Regional level, as opposed to policy at Regional level, could enhance the protection for birds and provide a more consistent approach. Between the WA and the RMA a mechanism is missing that enables a rapid response to spatially protect the habitat of a Threatened species where human activity in the environment is jeopardising the species. This requires addressing.

The problem of protection is exacerbated by the RMA's focus upon habitat as opposed to making the protection of Threatened and At Risk species a matter of national importance. In addition issues tend to be viewed from the point of the development/fixed space as opposed to the needs of the species. Breaking down the silo effect and bringing the needs of the species at a landscape level into view could potentially enhance the protection of the birds at Opoutere.

The use of innovative measures to manage development impacts such as adaptive management, offsets and review conditions is increasing. Whilst beneficial in many respects, mechanisms are required to strategically consider their impact. Particular consideration needs to be given to their use as it affects vulnerable and irreplaceable species and ecosystems. Stronger planning methods are required to identify those areas where development should be resisted and those where measures such as offsets are appropriate. This chapter further identified in the lack of a strong evidence base to inform such method. The need for precaution is reinforced by this situation. Limited exceptional circumstances may exist which justify impact to Threatened and

At Risk species, however the interests of protection of species indicate the need for a net gain approach to offsets.

Birds would also benefit from increased pest control and increased obligations for control by landowners including the Crown. Increased eradication and control of pests is an intention of the Aichi targets discussed in chapter 6. A choice not to strengthen this response inevitably means further loss, unless that loss can be filled by communities of interest. Greater strategic coordination is thus required between DOC and local authorities in delivering systematic conservation management and prioritisation. Comprehensive implementation of each of the Aichi targets discussed in Chapter 6 would considerably improve the welfare of New Zealand birds

CHAPTER 9 CONCLUSIONS AND RECOMMENDATIONS

9.1 INTRODUCTION

In response to the Research Aims set out in Chapter 1, this research has investigated New Zealand law to determine its influence upon the distribution of benefit and burden to New Zealand birds. It uses six case study birds to illustrate the way that birds are valued, the threats that they face and the operation of the law and planning in responding to those threats.

A particular focus of the research is the degree of care that is applied to protecting birds through the law and related planning instruments. In assessing the principles, criteria and methods applied to protecting birds the research identifies that an objective of avoidance of harm to indigenous Threatened or At Risk species, their habitats, and ecosystems upon which they depend will benefit birds. It concludes that conservation status, (as opposed to habitat or relationship to industry sector) is the important determinant for application of the standard, as this provides the most consistently protective approach. In addition, it is demonstrated that where uncertainty or ignorance arises as to existence or level of harm, the use of precaution and giving the benefit of the doubt to nature is a means to enhancing protection.

New Zealand law and related planning instruments are critiqued in order to comparatively determine the degree of care applied to the protection of the birds. Scrutiny of the lives and habits of the black petrel, dotterel, godwit, kokako, sooty shearwater and wrybill reveal a barrage of threats, which the law and conservation planning and management struggle to avert, contain and manage. Alien predators and habitat loss and modification are unsurprisingly identified as the chief agents of decline. New Zealand law is analysed at the international level in conjunction with species and habitat protection respectively at the domestic level. Although at times legal protection is strongly beneficial, the research concludes that the arrangements made by the law in response to these threats are wanting. An important contribution of the research is to demonstrate these problems, which can be separated into three classes**: the problem of standard, the problem of consistency and integration, and the problem of implementation**.

Chapters 3, 5, 6, 7 and 8 examined the standard that is used to protect birds. Through the research it is demonstrated that the value attached to birds is an important determinant of the degree of care that a legal system applies in constructing and implementing protective measures. The case studies and analysis of case law and texts reveal the nature and extent of the social, economic and cultural factors that create competition for the resources upon which birds depend. The level of constraint applied to these competing factors will largely be determined by their importance to humans.

Similarly, implementation of protective measures and resourcing to support this is influenced by political will and concomitant public support. In demonstrating the extent of threats to birds and their particular values, this research constructs a sound platform upon which to argue that a stronger approach to protecting birds is required at law in New Zealand, including implementation of existing law. This is an additional contribution which the work makes to the research environment.

The third problem relates to consistency and integration. The mobility and variety of birds accentuates the need for integration, a theme that recurs throughout this research. In particular, Chapters 6, 7 and 8 illustrate the manner in which current law and planning responses are deficient in this respect. A focus on the case study species is one method applied to draw out inconsistency in legal protection.

Identification of these problems is followed up by a series of practical recommendations designed to strengthen the position of New Zealand birds. The recommendations are a significant contribution of the research. Prefaced by reference to value, it is recognised, however, that the decision to heighten protection is one of societal choice. A choice to strengthen the law to protect birds undoubtedly means loss of some opportunity to humans. In recognising this problem, the recommendations suggest the use of exceptions set to a high threshold. In addition they urge stronger planning methods reliant upon robust evidence bases, capable of capturing cumulative effects throughout the range of birds, to enable landscape level planning for co-existence. Where these are unavailable, the law should resort to strong, precautious and protective standards in the interim. The detail of the findings and recommendations now follows.

9.2 BACKGROUND FINDINGS

Birds in New Zealand face a wide range of threats, some generic, and some species specific. Particular species will be potentially susceptible to particular threats. Accordingly detailed knowledge of the species is required to understand the nature and extent of the threat.

The key agents of decline are introduced predators and human induced habitat loss and modification, with the former being identified as the most significant contemporary threat for several of the case study species. Significant lack of data exists in terms of the nature and extent of some threats to species e.g., climate change, bycatch, water extraction, and the impact of human disturbance and human development in the landscape.

9.3 THE PROBLEM OF STANDARD

New Zealand does not set a strong consistent approach to the protection of Threatened and At Risk species. At international law, Ramsar, the Convention on Biological Diversity (CBD) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS) are restrained in their approach to avoidance of irreversible (or any) harm to Threatened and At Risk Species. Lack of strong directive obligations weakens the force of each of the agreements. The Aichi targets are stronger and significantly more protective, although all measures are dependent upon effective operationalisation.

At the domestic level New Zealand has no dedicated threatened species legislation and species suffer loss as a result. The Wildlife Act 1953 (WA) offers up the standard of absolute protection, but in effect is compromised by statutory exception, statutory defences, lack of clarity as to the definition of hunting and killing and habitat modification, lack of clarity surrounding incidental take, lack of implementation (particularly of authorisation of take pursuant to s 53), being outdated and an associated lack of process, being overshadowed by the RMA, a weak regulatory community and being partnered by policy and plans which do not provide consistent and strongly protective policy guidance.

This lack of force impacts species in all New Zealand environments, but its lack of strength is most strongly demonstrated at sea, and as evidenced by the plight of the black petrel and the impact of bycatch. A sectoral defence applied with insufficient mitigation measures means that losses to the bird are heavy. An exception for customary take depletes the sooty shearwater and in combination with other climatic and at-sea threats, causes decline in a populous species. On land, loss is accentuated on private land due to the greater levels of development, which one would expect to see in contrast to public land. Coastal areas are particularly under-siege, and the WA fails to effectively regulate loss in these areas.

On public land loss continues, despite the valiant efforts of an under-resourced Government department and strenuous efforts by individuals, commercial entities and interest groups. Loss is largely due to the impact of alien predators and vast tracts of conservation land go unmanaged for this considerable threat. Pest management does not feature strongly within the purview of the WA, and as such the promise of absolute protection to be secured through the WA is a chimera.

Conservation legislation,[1287] protecting and managing conservation areas and natural resources, fails to apply a strong and protective standard to development activity on conservation land, and directive policy lacks strength and consistency. Protection of Threatened and At Risk species through avoidance of harm is insufficiently explicit, as is any requirement to avoid significant harm to all endemic species.

The operation of the RMA has a significant influence upon the state of birds, a role heightened by the operational failure of the WA, particularly concerning incidental loss. The effect of the RMA in delivering protection to birds is compromised by the purpose of the Act, as described in s 5 and by the Act's focus upon habitat of species as opposed to both habitat and species protection. The New Zealand Coastal Policy Statement (NZCPS) applies the strongest standard, when it recognises the need for and directs avoidance of harm to Threatened and At Risk species. Section 5, however, enables mitigation as an alternative to avoidance, as a method for managing the adverse effects of development upon birds and habitats. The promotion of sustainable management, as interpreted through application of the overall broad judgment approach, limits opportunity to recognise the standard directed by the NZCPS. Grant of resource consent is prevalent and commonly mitigation is enabled, supported by techniques such as adaptive management, offsets and conditions. These techniques assist in limiting distribution of harm

[1287] The Conservation Act 1987, the National Parks Act 1980 and the Reserves Act 1977.

to species upon consent of a development and in certain circumstances may advance the status quo in relation to protection. However, the methods facilitate development and will commonly be applied where information is lacking. Generally arising at the project level, the context in which they are employed will not always make explicit the impacts of cumulative effects to birds in the environment. Stronger planning methods to capture these effects are needed.

In addition, the focus of s6(c) upon significant habitat of indigenous species, causes protection to be place-bound, a problem which will be further discussed in the following section on integration and inconsistency. The failure of the WA to advance absolute protection in the context of human development and the impediments to securing avoidance of harm to Threatened and At Risk species and habitat observed in the RMA combine to weaken effective protection of birds.

The Biosecurity Act 1993 (BSA) has recently been strengthened through reform, in recognition of the need to better manage invasive alien predators. The BSA enables control and eradication of pests, and could potentially set through subordinate direction, strategy and plans a standard equating to avoidance. The enabling of good neighbour rules is an important measure applied to stem the threat of invasive alien predators. The draft National Direction, however, explains the rules' purpose in terms of avoiding externalities to people as opposed to species. In doing so it limits the protective force of the rules for birds.

Analysis of the degree of care extended to birds through the action of law and planning reveals limitations in the strength of the standard. The following recommendations are made with a view to enhancing protection.

9.3.1.1 Alien predators

1. **Biosecurity Act 1993:** A stronger protective standard would be achieved for birds through imposition of a duty upon landowners to control alien invasive predators upon land to a level consistent with averting species decline. This would be in addition to the good neighbour duty which currently controls externalities affecting neighbouring properties. Extension of the increased duty to the Crown is required to enable comprehensive protection.

9.3.1.2 Habitat loss and modification

1. Threatened species legislation: Birds in New Zealand would benefit from dedicated threatened species legislation directed at species protection (including both direct and incidental loss) and firm protection of significant habitat, with exception provided to a high threshold. Examples of high thresholds of exception include: "where the alternative means even greater adverse effects" and/or "overwhelming socio-economic benefits occur".

2. RMA – a requirement for avoidance: In the alternative it is recommended that the RMA is amended to introduce a higher degree of care for the protection of all Threatened and At Risk species. A direction to secure avoidance of harm to these species and avoidance of significant harm to all endemic species would benefit birds. Providing exception to a high threshold such as where the alternative means even greater adverse effects and/or overwhelming socio-economic benefits occur strengthens protection. Where exception is provided and a biodiversity offset proposed, the objective of delivery of a net conservation gain to the affected species increases the strength of protection for birds.

The most pragmatic route to achieve this would be to amend s 6 Matters of National Importance to include as a listed matter "the avoidance of harm to Threatened and At Risk species and the avoidance of significant harm to all endemic species". Employment of a national policy statement, applying to all environments and all media inhabited or used by birds, enables further policy direction. Specification of an exception directed to a high standard with a requirement for offset to the level of net gain could be achieved in this manner. Application of the standard of avoidance according to conservation status, as opposed to habitat or the requirements of a particular sector is fundamental to consistency, to be discussed below. This measure is not an absolute measure. Section 6 continues to be subordinate to the operation of s 5. But the introduction of requirements for avoidance, exception set to a high threshold and for net gain, is a means of elevating protection for Threatened species and At Risk species.

3. RMA – avoidance and ecological integrity: Employment of the concept of ecological integrity is recommended in plans as a measure to secure avoidance of the effects of development upon natural resources. The concept incorporates resilience and constitutes a stronger option than resilience alone. A resilience perspective suggests the need for precaution and the use of buffers to enable systems to cope with the unexpected. It also requires a strong evidence base to determine thresholds. The setting of clear thresholds for affected resources is recommended, where thresholds are uncertain, employment of precaution is recommended.

Securing avoidance in terms of effects upon ecological integrity requires a preventative strategy with greater proactivity in management efforts and support of function of system processes, prior to species becoming endangered and on the brink of a regime change. A stronger focus on recovery planning to achieve this is also recommended.

4. Wildlife Act 1953 and degree of care: The WA requires revision on a number of fronts. Absolute protection is an appropriate standard for direct intentional take of indigenous birds, but the standard is inapt for protection of species from incidental harm, such as habitat destruction and modification. Replacement by a direction to secure avoidance of harm to Threatened and At Risk species and avoidance of significant harm to all endemic species is recommended. The value of retention of a strong standard within the WA stems from its comprehensiveness and application to all birds regardless of place.

Statutory defences weaken the Act, and the blanket defence extended to the fishing industry requires revision. Alternatively, spatial and temporal restrictions applied through population management plans are urgently required to address the most significant effects of the industry, such as that to the black petrel. To be effective, marine spatial planning measures as urged by the CBD, should contemplate the impact of fisheries upon threatened marine species.

The Minister of Conservation has a discretionary power to preserve and protect absolutely protected species pursuant to s 41(fa). The WA requires revision to increase visibility of this power and to clarify that the right extends to private property.

5. Wildlife Act 1953 interrelationship with RMA and standard: The inter-relationship between the WA and the RMA requires revision, particularly as it relates to incidental loss through habitat destruction and modification. Combining permitting processes with the RMA can only be recommended in the event that the RMA is amended to include requirement for avoidance of harm to all Threatened and At Risk species. This is due to the potential for dilution of the standard of absolute protection through displacement by the RMA mandate of promotion of sustainable management. Retaining a separate focus upon threatened species through the WA may ensure stronger protective results for birds.

6. Conservation legislation – Conservation Act 1987, National Parks Act 1980, Reserves Act 1977: A standard of avoidance of harm is insufficiently explicit in these statutes, particularly as they relate to development impacts on the public conservation estate. The statutes require revision to include a requirement for avoidance of harm to Threatened and At Risk species and avoidance of significant harm to all endemic species. Subordinate documents such as the Conservation General Policy and Conservation Management Strategies and Plans require revision in order to direct consistent implementation of the standard.

7. Precaution: A stronger and more explicit requirement for the application of precaution when enabling development and resource use, where the effects of that use upon species, is insufficiently known is recommended. A requirement to give nature the benefit of the doubt in these instances is recommended. Revision of all legislation empowering resource use to this effect is recommended.

9.3.1.3 Customary take

1. Customary take of sooty shearwater: The status of the sooty shearwater is said to be declining on a prolonged and ongoing basis, with lack of certainty as to cause. In this context, concern exists as to the sustainability of mutton-birding. Significant work has been undertaken related to the sustainability of take. In the face of declining food sources and customary take the populations require ongoing monitoring to signal further significant declines. Where these occur it may be necessary for the managers of the cultural take to consider further limitation of the take to prevent irreversible harm to the species, even where the main cause of decline may be attributed to a separate pressure. This is due to the fact that limitation of harvest may represent an identifiable and relatively agile measure to improve the status of the bird, whereas other responses may be less clear or effective. Despite this, work should continue to better understand and address all causes of decline.

9.4. THE PROBLEM OF CONSISTENCY AND INTEGRATION

This research has demonstrated through the examples of the case study species the many ways in which protection of birds is inconsistent. The influences of place, sector, ownership and agency function have a bearing on these outcomes. Inconsistency arises between species and within species. Inconsistency and exception is not an uncommon trademark of the law, as it flexes to cater for the exigencies of resource use and development. This research demonstrates, however, that birds would benefit from a more consistently protective approach. The law is weakened when a dotterel receives a stronger degree of protection on the coast than inland, or a petrel would receive less protection in the marine environment than at an inland breeding habitat.

Tied to inconsistency is the problem of agency integration and the silo effect. This research demonstrates both vertical and horizontal fragmentation which results in uneven treatment for birds, in a manner which is difficult to justify. Areas and planning are siloed, and insufficient strategic planning for birds arises across agency boundaries and across media. The following recommendations are made with a view to enhancing protection.

9.4.1 Recommendations – integration and consistency

1. The unifying standard of avoidance: The recommendations made in section 9.2.2 represent the most immediate and effective method of securing more consistent protection for birds. Accordingly, to improve consistency, revision of the law to apply a universal standard of avoidance of harm to

Threatened and At Risk species and the avoidance of significant harm to all endemic species is recommended.

2. **Habitat and species:** The amendment to s 6(c) RMA recommended in 9.2.2.1 above to include protection of species diminishes the silo effect which arises where habitat alone is the key driver for protection.

3. Strategic conservation planning: Greater strategic integration and planning is required between the public conservation estate and private land. It is recommended that strategic conservation planning at the landscape scale, incorporating both ecological (process) and geographical (pattern) features be carried out, including within its scope the public conservation estate, the common marine and coastal areas and private land. The loss of significant habitat of indigenous birds is cumulative on losses of their habitat elsewhere within their range. Planning measures need to better assess and account for these losses.

Strategic planning for the protection of species' habitat at the landscape level is already ongoing in the New Zealand context. Planning for significant natural areas and catchment planning are building blocks in this approach. For threatened species, however, there is a lack of consistency and connection. What is missing is planning for Threatened and At Risk species that is driven by the needs of the species, as opposed to the silos of the existing plans. Articulation of the full range of biological features, distribution, and the needs of each species to persist in the long term is recommended.

For the purposes of strategic planning a need exists to distinguish between priorities established for fiscal management purposes and those developed due to international, national and regional ecological values. Priority for management purposes and priority for protection from development impacts requires better articulation. Opportunity exists to unify approaches to systematic conservation priority between the public conservation estate and those areas outside it. Unification of approach and development of compatible systems would benefit species, provided this strengthened approaches, and retained a distinction between management priority and areas of development impact priority. Without distinction important areas may not be prioritised in relation to protection from the impacts of development. Application of a comprehensive avoidance approach in relation to development impacts to Threatened and At Risk species militates against this problem.

An integrated landscape perspective on species protection and management, recovery planning and habitat protection would assist better protection of ecological integrity. Although gaining in profile, effective protection of ecological integrity, including connectivity and the use of buffer zones to protect significant areas is hindered by a lack of consistent strategic planning across the landscape. The mapping and protection of sites of importance to birds including foraging and roosting space and known migration routes would be of benefit and is recommended.

Threatened and At Risk species in New Zealand would benefit from conservation planning designed to aggregate human development in places which cause the least harm to threatened species. The construction of landscape level conservation plans tied to the mitigation hierarchy represents an opportunity to achieve this. In addition an emergency mechanism is required, in response to a change in status of a Threatened species, to provide strong and consistent spatial protection to the habitat of the species against. This measure would ideally be connected to a Recovery Plan.

A lead agency is recommended to develop mechanisms in plans which manage the effects of development consistently across all areas. Empowerment of that agency to apply methods, including rules, for this purpose is recommended. The Opoutere case study demonstrated how the intent of the Proposed Waikato Regional Policy Statement is constrained through lack of rules and concomitant immediate legal effect. A more agile response is needed to deliver effective protection to birds in a dynamic environment of change. The delay coupled with problems of translation to effective mechanisms in District Plans weakens the effect of the protection. Creating rules relating to species protection at a regional level, or alternatively a national level, would provide a more strategic approach.

9.5 THE PROBLEM OF IMPLEMENTATION.

The problems discussed thus far are problems of substance suggesting the need for a substantive change of approach. The research also elucidates that in some instances, the substance of the law is adequate, however, reduced implementation (often due to resourcing) constrains the effect of the law. This problem was particularly notable in the translation of international obligations to effective mechanisms at the domestic level. The combination of a loose obligation generated at international law, with inadequate action at the domestic level, produces some less than satisfactory outcomes for birds. In recognition of this problem the following recommendations are made.

9.5.1 RECOMMENDATIONS – IMPLEMENTATION

9.5.1.1 Alien predators

The ability of the Crown to protect and preserve birds is limited upon private land due to mandate restrictions upon its management role and lack of implementation of discretionary power to preserve and protect. In all areas, resourcing further limits protection and preservation, particularly in terms of species management. Greater resourcing for pest control is recommended to prevent continuing species declines. Greater resourcing of the Department of Conservation for the control of alien predators on public conservation land is required.

Efforts on private land require intensification. It is recommended that Regional Pest Management Plans implement stronger measures of control through imposition of responsibility on all landholders, including the Crown, to control alien predators to a level consistent with averting species declines. The cost to landholders should be subsidised through the rating system.

9.5.1.2 Habitat loss and modification

1. International law: The Ramsar Convention is insufficiently implemented in New Zealand. Ramsar sites in New Zealand are subject to detrimental change in ecological character, some of a significant nature. The damage is largely due to intensification of agricultural activity and exposes a weakness in site based legal protection in terms of control of external influences.

Bird species at Ramsar sites would benefit if New Zealand made stronger efforts to implement both the requirements of the Convention and the guidance concerning monitoring and reporting on changes in ecological character, preparation of management plans, preparation of a National Wetland Policy with strong bottom line limits for wetlands, preparation of a National Biodiversity Strategy, ensuring compliance at site level, and creation of buffer zones. A fundamental issue regarding this work is adequate resourcing of the Department of Conservation as the agency tasked with implementation.

A revised approach to appointing Ramsar sites is underway. This is a valuable initiative. There is a clear need for New Zealand to designate additional sites. Treatment of sites that meet international importance criteria under Ramsar is inconsistent. Sites such as Ohiwa Harbour are under-recognised as regards international importance and lack recognition under Ramsar. Unless, however, adequately resourced and protected from influences external to the site, protection under Ramsar is diminished.

Comprehensive implementation of the Aichi targets is recommended. Achievement of this is dependent upon increased resourcing of conservation in New Zealand. Case study species would significantly benefit from this, particularly as it relates to prevention of extinctions, reduction in natural habitat loss and the requirement to prevent significant adverse impacts of fisheries on threatened species and vulnerable ecosystem and decline, and upon fish stocks.

Greater protection of New Zealand birds such as the black petrel is required to ensure that New Zealand's obligations are fulfilled under the Convention of Migratory Species and the Agreement for the Conservation of Albatrosses and Petrels. The recommendations made in 9.3.1.2 are adopted in this respect. Use of marine spatial planning as recommended by decision XI.18 of the Parties to the CBD, should contemplate the impact of fisheries in order to enable comprehensive planning.

2. The Wildlife Act: This research shows that currently the WA requires more effective implementation in relation to the incidental take of birds. Directive guidance is required in respect of authorisation pursuant to s 53 WA. Implementation requires strengthening, particularly in view of the way in which authorisation of incidental loss appears to be overshadowed by the RMA. This is inappropriate in view of the separate statutory mandates. Revision of the Act (or alternatively of Conservation General Policy) is required to incorporate a clear, transparent and participatory process to better protect species. Strengthening of the regulatory community, through greater resourcing and empowerment through directive guidance is recommended.

In addition, the research demonstrates that implementation of a process which triggers requirement for a fauna survey in advance of development is recommended. Instances arise where control of development and resource use in the environment is unregulated by the RMA. The WA requires revision to better capture such loss to species. Comprehensive conservation planning at the landscape scale, which enhances biodiversity inventory on private land, is recommended to assist in this regard.

3. The RMA: The use of innovative measures to manage development impacts such as adaptive management, offsets and review conditions is increasing. Whilst beneficial in many respects, mechanisms are required to consider in a strategic way the impact of their use. Particular consideration needs to be given to their use as it affects vulnerable and irreplaceable species and ecosystems. Use of a tiered approach where higher priority areas are considered less offsetable is recommended. The research demonstrates that treating the habitat of a threatened species as a high priority area with limited opportunity to offset constitutes a strong protective standard for birds. The same reasoning applies to greater than minor damage to the ecological integrity of a system upon which a bird relies. It is clear from this research that further data is required related to bird distribution and impacts to birds to enable decisions to be made in a systematic manner taking account of losses across the range of species. Where insufficient data exists to assess the impacts in a strategic manner, so as to prevent cumulative effects occurring in the landscape, decline of consent represents a more precautious alternative in the interim.

4. Knowledge: Information relating to some of the case study species' life cycle habits is lacking, including complete estimates of populations and regular census (godwit, dotterel, black petrel, sooty shearwater), range and migrational movements (godwit, black petrel, sooty shearwater, wrybill) foraging grounds (godwit, black petrel, sooty shearwater), life span and genetic variability of populations. In addition a significant lack of data exists in terms of nature and extent of a series of threats on species e.g., climate change, bycatch, water extraction, impact of human disturbance and human development in the landscape, which creates reliance upon predictive scientific models. Measurement of habitat loss in New Zealand is constrained by lack of monitoring of bird species. In addition habitat loss, itself, may not adequately capture the problem of habitat modification and impacts such as disturbance

Further research in these areas is recommended in order to achieve effective implementation of the law and protection of birds. The example of Opoutere demonstrated lack of knowledge and understanding of the cumulative impacts of development and disturbance upon birds. Whilst this level of knowledge is lacking use of precaution is urged in the decisions concerning birds.

9.6 RECOMMENDATIONS FOR FUTURE RESEARCH

Future research into the state of birds and the nature extent of threats is required as referred to in 9.5. In particular, this research has identified the lack of understanding and species-specific research on the impact of disturbance, and associated methods of regulation. Further research is needed to understand the limits/thresholds of co-existence, as well as the benefits to birds of co-existence. Spatial planning methods and techniques that effectively enable co-existence require investigation. Examining the constraints of the law in these respects is needed.

The enabling at law of landscape conservation plans which encompass both public conservation estate and private land requires further investigation, as does the most effective approach to construction of such plan and its relationship to the mitigation hierarchy. This is interdisciplinary work calling upon research from lawyers, scientists, planners, social scientists and input from industry. Provision through law and planning of methods to retrofit developed areas with buffers and connections designed to enhance ecological integrity and enhance resilience requires further consideration.

9.7 FINAL WORDS

Chapter 5 raised the question of whether the future of New Zealand bird species depends upon a fence. The presence of the fence signifies a loss of balance in the landscape. This research has demonstrated the pressures exerted upon New Zealand birds and their habitat and has examined ways to restore balance back into the land and seascape, with a view to reducing current levels of harm to birds. It has identified a range of measures that, if employed, could achieve significant change.

Consideration of the action of law and planning upon particular birds and in particular places provided the perspective necessary to understand the change required to the orientation of the law. A key shift in orientation, illuminated through the research, is to apply effective protection to the species on account of conservation status as opposed to area or sector requirement. This is a simple observation, and one well understood at law. Currently, however, this research demonstrates that the complex arrangements of the law and associated planning mechanisms work against effective protection in these terms, as evidenced by the case studies. Improving integration and consistency of legal measures, as recommended by this research, is a means to lessen levels of harm distributed to birds. Another key shift identified is the need to strengthen legal protection to provide for the avoidance of harm to Threatened and At Risk species, a shift which undoubtedly further constrains human use of the environment. Success in progress towards this reorientation is likely to determine whether the future of New Zealand bird species depends upon a fence

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APPENDIX 1 EXTRACTS FROM DRAFT CMSTRAT

Table 15 extracts from Department of Conservation *Revised Draft Waikato Conservation Management Strategy* (Department of Conservation, September 2013).

Activity	Place	Degree of care
Policy 2.1.1. Building new structures	Hauraki Island Place	b) any adverse effects on island ecosystems and species are **avoided or minimised;**
Policy 2.2.6. Recreation opportunities	Hauraki-Coromandel Peninsula Place	Develop recreation opportunities and facilities that are sited in locations that are suitable and safe for the proposed activity, and **avoid or minimise** adverse effects on natural, cultural and historic values and other recreational users
Policy 2.2.10. Applications for access arrangements under the Crown Mineral Act 1991	Hauraki-Coromandel Peninsula Place	b) the activity **avoids priority ecosystem** management units and species populations, in particular habitats important for the persistence of native frogs, Coromandel brown kiwi, native bats, and other threatened and at risk species;
Policy 2.2.11.Sporting events	Hauraki-Coromandel Peninsula Place	May allow sporting events provided that: a) adverse effects on natural, cultural and historic values and other users **are avoided or minimised…** c) habitats that are important for the conservation of native frogs, Coromandel brown kiwi, native bats and other threatened and at risk fauna are avoided;
Policies 2.3.14 and 2.3.15- commercial water craft and kayak landings	Hahei Coast and Marine Reserve Place	Limit commercial watercraft landings and passenger services (number of concessions, frequency of visits, location and number of landing sites, vessel sizes, and party sizes/number of passenger movements) to ensure that actual or potential adverse effects are managed to protect reserve values and other users (including their experience) **are avoided, remedied or mitigated.** Set limits through the process specified in Policy 2.3.7. (Repeat approach for kayaks)

Policy 2.4.11. New recreation opportunities on public land	Firth of Thames/Tīkapa Moana Wetland Place	2.4.11 Consider proposals for new recreation opportunities on public conservation land, consistent with the protection of indigenous natural resources and historic and cultural heritage, and work with others to facilitate recreation opportunities, in accordance with the following criteria: a) adverse effects on ecosystems, wildlife habitat and protected species particularly birdlife, **are avoided or minimised;** b) track and facility development is **avoided at ecologically sensitive sites** including important bird feeding, breeding and roosting habitats, inter-tidal areas and beaches; c) access to beaches is by foot only, and is managed to minimise disturbance to birdlife and other sensitive values; and
2.5.20- Peat Mining	Freshwater Wetlands Place Moanatuatua Peat Scientific Reserve and Torehape Wetland Management Reserve	b) adverse effects impacts on threatened and at risk species are **avoided or minimised;**
2.8.16- Structures	Pureora Place	May allow structures, including built public accommodation, in accordance with Policy 3.9.5 in Part Three, provided that: b) they **avoid ecologically sensitive sites** (except where the structure is directly linked to the appreciation of natural values, e.g. a forest tower, in which case adverse effects impacts **are avoided or minimised**);
3.2.4 – motorised vehicle use	All conservation lands and waters	d) adverse effects (including cumulative adverse effects) on the road, route or site and surrounding natural, historic or cultural values are **avoided, or otherwise minimised**
3.3.5- mountain bikes	All conservation lands and waters	c)Adverse effects on natural and other values **avoided or otherwise mitigated**
3.4.2.- power assisted cycles	All conservation lands and waters	c)Adverse effects on natural and other values **avoided or otherwise mitigated**

3.4.1.(sic)- watercraft	All conservation lands and waters	d)Adverse effects on natural and other values avoided or otherwise minimised
3.5.2. – aircraft- criteria for assessing concession applications for aircraft landings	All conservation lands and waters	d)adverse effects on conservation values, including adverse effects on natural **quiet, are avoided, or otherwise minimised**;
3.5.6 – aircraft landings	All conservation lands and waters	b)Example of mechanism that may be used to address adverse effects...(iii) **avoiding or protecting sites with high natural** or historic values;
3.7.2- horses	Public conservation land at identified sites listed in Part Two	d) potential adverse effects on the natural, historic or cultural values **are avoided,** **or otherwise minimised;** and
3.12.1- Sand and Shingle	All conservation lands and waters	Should only allow sand and/or shingle extraction from public conservation lands and waters where adverse effects can be **avoided, remedied or mitigated,** and the resource cannot be accessed elsewhere
3.17.1- Maimai		May allow maimai, shooting stands and temporary shelters on public conservation lands within Waikato Conservancy provided that c) ecologically sensitive **sites are avoided and other adverse effects minimised**;
Visitor Management Prescriptions	All areas except Wilderness areas	Concessionaire activity may be permitted in all these visitor management zones, subject to conditions to **avoid, remedy or** **mitigate adverse effects,** including compliance with criteria within this table; the outcomes and policies for Part Two: Places and the Policies in Part Three apply
Visitor Management Prescriptions	Wilderness Areas	Concessions only granted where consistent with policies for wilderness areas.

Table 16 Summary of conclusions for Chapter 4	
Global threats	A global biodiversity crisis exists.
New Zealand threats	New Zealand birds are similarly affected by threats to their global counterparts, however are particularly susceptible to invasive mammalian predators.
Case study threats	Three of the six case study species are considered Threatened by the New Zealand classification system, each with a listing of Vulnerable. On the IUCN Red List, 2 of those are considered Endangered (kokako and dotterel) which implies that these birds face a very high risk of extinction in the wild. Similarly, the wrybill and the black petrel are considered to face a high risk of extinction in the wild, consistent with status as Vulnerable. The remaining two (godwit and sooty shearwater), are species popularly considered as inexhaustible, but are also facing considerable threat.
Threat synergy	All case study species are exposed to a synergy of threats.
Individual threats	Particular species will be potentially susceptible to particular threats. Accordingly detailed knowledge of the species is required to understand the nature and extent of the threat.
Key agents of decline	The key agents of decline are introduced predators and human induced habitat loss and modification, with the former being identified as the most significant contemporary threat for several of the case study species. Two of the species (kokako and dotterel) are qualified as “conservation dependant” by the Red List, yet it is clear that each of the threatened species benefit considerably from the absence of introduced predators or through predator control.
Migration and conservation	Migrant species are dependent on conservation actions across their entire range.
Information deficit: lifecycles	Information relating to some of the species’ life cycle habits is lacking, including complete estimate of populations and regular census (godwit, dotterel, black petrel, sooty shearwater), range and migrational movements (godwit, black petrel, sooty shearwater, wrybill) foraging grounds (godwit, black petrel, sooty shearwater), life span and genetic variability of populations.

Information deficit: threats	Significant lack of data exists in terms of nature and extent of a series of threats on species e.g., climate change, bycatch, water extraction, impact of human disturbance and human development in the landscape, which creates reliance upon predictive scientific models.
Cumulative effects	Cumulative effects of human modification of the environment are threatening the case study species. Direct loss of habitat is an issue but so too is degradation of land and water as a result of human activity impacting ecosystem processes.
Direct take	Most case study species are exposed to a minor level of direct take, with the exception of sooty shearwater harvesting for cultural purposes.
The challenge of mobility	The kokako sits apart from the other case study species. With the lowest population, it is now largely confined to small isolated and fragmented populations located in North Island forests/forest remnants. With limited mobility the bird is confined to relatively discrete spaces, and does not tend to move beyond managed areas. The majority of these remaining populations are managed and thus less exposed to habitat modification and predation. The population of the kokako is slowly but steadily rising within its confines. The other species are not showing significant increases in population. Mobility in the land and seascape creates exposure to human development and a range of threats and will often imply moving beyond protective shields.
Coastal species	Coastal species are facing new levels of threat as a result of coastal development and activity and the stress of disturbance is emerging as a key concern. The greatest number of threatened birds are coastal.
Research and management	There is a need to improve species status through research and management.
Direct impacts	There is a need to maintain and improve species status by minimising direct (lethal) impacts. Incidental fisheries bycatch of seabirds inflicts significant loss on a range of species and the black petrel is imperilled by such loss.
Habitat degradation	There is a need to maintain and improve species status by avoiding/minimising habitat degradation and the cumulative effects of human activity in the environment.

Table 17– Summary of conclusions for Chapter 5	
Property Rights	Where the State own species, assertion of a right to protect those species from direct and incidental loss and damage wherever they be located will benefit birds.
	Definition of a corresponding duty upon landowners to avoid harm to Threatened and declining species on private land, including a duty to control invasive alien predators will benefit birds.
Avoidance and trade-offs	Statement of an objective of avoidance of harm to indigenous Threatened or At Risk species their habitats and ecosystems upon which they depend will benefit birds.
	Statement of an objective of avoidance of "significant" impacts (including irreversible harm) to all indigenous biodiversity will benefit birds.
	Treating the habitat of a Threatened species as a high priority area with limited opportunity to offset constitutes a strong protective standard for birds. The same reasoning applies to greater than minor damage to the ecological integrity of a system upon which a bird relies. Providing limited exceptions such as Gibson's "unless the alternative means accepting even more significant effects", provides a degree of flexibility, whilst maintaining a firmly protective stance.
	The standard of net gain constitutes a stronger standard where offsets are provided as exceptions in relation to impacts to Threatened and At Risk species and in terms of irreversible effects to biodiversity.
	Burden of proof in terms of threshold of harm should be upon those causing harm. Standard of proof can be applied on a sliding scale, with the high standard "beyond reasonable doubt" applied to damage relating to Threatened and At Risk species, their habitats and the ecosystems upon which they rely.
Precaution	Application of the Precautionary Principle in strong and active form produces benefits for species. Where uncertainty or ignorance exists in terms of existence or level of harm, giving the benefit of the doubt to nature enhances protection.

Ecological integrity and resilience	Application of the concept of ecological integrity in law provides an opportunity to provide comprehensive protection of birds and includes a systems based approach. It is a standard particularly important to mobile species and those affected by externalities. The concept incorporates resilience and constitutes a stronger option than resilience alone. A resilience perspective suggests the need for precaution and the use of buffers to enable systems to cope with the unexpected. It also requires a strong evidence base to determine thresholds.
Proactivity	Stronger /preventative strategies for birds include taking a more proactive management approach which is effective prior to birds becoming endangered.
Interconnection	Recognition of interconnection in the environment is vital for birds, and underpins the need for integrated management of birds.
Regulation	Regulatory standards that are informed by strong principles of precaution and prevention of harm and directed at retention of ecological integrity enhance protective capacity.
Adaptive management	Adaptive management is a valuable conservation technique but should be employed with caution in the context of development permits and Threatened species.
Spatial planning	Integrated spatial planning methods at the landscape level incorporating both ecological (process) and geographical (pattern) features enables strengthened conservation of birds.
Spatial planning and mitigation hierarchy	Spatial planning applied across both the public and private estates and incorporating the mitigation hierarchy to direct development to less sensitive locations will produce benefits to birds.
Spatial planning and connectivity and buffers	Protecting ecological integrity in spatial planning for birds assists in recognition of connectivity in the landscape and in the provision of buffer areas.

Table 18 - Summary of conclusions for Chapter 6	
6.3.1 Ramsar	The Ramsar approach is characterised by "wise use", and approaches to precaution and prevention are not particularly prominent.
6.3.3.2	Ramsar obligations lack strong directive force.
6.3.2 - 3 Ramsar	Ramsar sites in New Zealand are subject to detrimental change in ecological character, some of a significant nature. The damage is largely due to intensification of agricultural activity and exposes a weakness in site based legal protection in terms of control of external influences.
6.3.3 Ramsar	Ramsar is insufficiently implemented in New Zealand. Bird species at Ramsar sites would benefit if New Zealand made stronger efforts to implement both the requirements of the Convention and the guidance concerning monitoring and reporting on changes in ecological character, preparation of management plans, preparation of a National Wetland Policy with strong bottom line limits for wetlands, preparation of a National Biodiversity Strategy, ensuring compliance at site level, and creation of buffer zones. A fundamental issue regarding this work is adequate resourcing of the Department of Conservation as the agency tasked with implementation.
6.3.3.3 Ramsar	Greater agency integration would be achieved through the preparation of a National Wetland policy
6.3.3.4 Ramsar	Important sites such as Ohiwa Harbour currently are under-recognised as regards international importance and lack recognition under Ramsar.
6.4.2 CBD	Lack of strong directive obligations weakens the force of the CBD. The CBD applies a non-active form of precaution and a not a strong preventative approach. However, more recent decisions in relation to EIA, elevate the importance of avoidance particularly in the context of irreversible harm to biodiversity.
6.4.1 CBD	The CBD adopts the ecosystems approach and acknowledges that the approach requires adaptive management.

6.4.3 CBD	Implementation of Aichi targets would significantly benefit case study species and New Zealand birds as a whole.
6.4.3.2 CBD	Measurement of habitat loss in New Zealand is constrained by lack of monitoring of bird species. In addition habitat loss may not adequately capture the problem of habitat modification and impacts such as disturbance.
6.5.3.1 CMS/ACAP	The CMS lacks force and influence and is dependent upon effective operationalisation. Birds would be benefitted by a stronger approach in terms of precaution, prevention and avoidance of effects.
6.5.3.1 CMS/ACAP	The lack of influence can be measured in New Zealand by the current level of threat suffered by the black petrel from fisheries bycatch. Stronger measures are required, in particular spatial zoning measures creating temporary fishing restrictions.
6.5.3.2.CMS/ACAP	The CMS and ACAP privilege particular migratory species, which although valuable, creates inconsistencies in comparison to other species.
6.5.3.3.CMS/ACAP	Membership, compliance and inaction are additional issues.

Table 19 – Summary of conclusions for Chapter 7	
WA 7.1-2	The ability of the Crown to protect and preserve birds is limited upon private land due to mandate restrictions upon its management role and lack of implementation of discretionary power to preserve and protect. In all areas resourcing further limits protection and preservation, particularly in terms of species management.
WA 7.2.1.4	Currently customary take is enabled, without restriction at law, in the case of the sooty shearwater. Concern exists as to the sustainability of mutton-birding when a species is facing prolonged declined.
WA 7.2.2.2	The definition of hunting or killing under the WA requires extension to more effectively include habitat destruction, modification and disturbance.
WA 7.2.2.2/7.2.2	The separate treatment of marine wildlife in terms of penalties and defences creates anomalies in terms of treatment of the case study bird, meaning that the same bird receives different treatment according to environment. A more consistent approach is to use conservation status as the key determinant for penalty and defences.
WA 7.2.2.3	The treatment of incidental loss under the WA requires greater clarity and direction. Further clarification of the difference between accidental and incidental loss is required.
WA 7.2.2.3	Measures of avoidance of effects to Threatened species and At Risk species more closely approximate a standard of absolute protection than mere mitigation
WA 7.2.2.3	Imposition of strict liability by the WA is significantly reduced by statutory defences. These defences diminish the protective effect of the WA and heavily skew the distribution of harm to species in favour of human economic interests, particularly the fishing industry, for which a specific defence operates.
WA 7.2.2.4	The standard of absolute protection is further diminished by a failure to implement requirement for authorisation of

	take of protected species. As a result the RMA becomes the de facto authority where loss is captured by the RMA, and take may go unauthorised where it is not. Directive and protective policy guidance is required in respect of authorisation pursuant to s 53 WA in relation to incidental take and human development. Adoption of the Precautionary Principle in active form would create greater protection of species from incidental take. Where approvals are allowed, harm caused should be offset to a level of net gain. Revision of General Policy is recommended. Greater integration with resource management processes is also required.
WA 7.2.2.5	Dual permitting - Allowing this standard of absolute protection to be supplanted or replaced by RMA processes potentially distributes greater levels of harm to birds. Such a change could not be recommended unless the standard of care applied to the protection of Threatened and At Risk species by the RMA was increased. In that way birds would retain a strong protective focus but also benefit from the elements of the RMA process engaging EIA and public participation
WA 7.2.2.6	Bycatch, as illustrated by the example of the black petrel is insufficiently regulated. Stronger approaches to avoidance of effect upon the species, and the creation of exclusionary zones through the application of a PMP represent key methods to secure greater gains for the species. The specific defences in the WA places the fisheries industry in a privileged position compared to other industry and activity in the environment which impacts At Risk and Threatened species. In addition, the fact that fishing sits outside of the RMA and is therefore not subject to consenting and related EIA procedures in the same way that other land based and marine based activities are, limits the degree of scrutiny and requirements imposed to limit bycatch
WA 7.2.3	Absolute protection extended by s 3 and the manner of its implementation constitutes a lesser standard than prevention or avoidance of harm. This is of particular concern for Threatened and At Risk species. The term “absolute” suggests complete protection, but the standard

	is whittled away through lack of definition of requirement for protection and a failure to implement the standard.
CGP 7.3.2.1	CGP requires revision in a number of respects in order to strengthen protection for Threatened species. In particular the CGP should set a consistent requirement for the avoidance of harm to Threatened species, creating a high threshold to any exception to this standard. The CGP should adopt the Precautionary Principle inactive form in respect of protection of Threatened species.
CMStrat 7.3.2.2	CMStrat require greater consistency in the approach to adverse effects on Threatened species and the avoidance of harm
CMStrat 7.3.2.2	CMStrat require greater integration with local authority plans. The protective force of CMStrat should at least be equal to the protective force in local authority plans and instances where resources are co-managed with iwi.
Prioritisation 7.3.2.5	The introduction of prioritisation and multi-species recovery plans and groups, may detract from existing recovery efforts to the detriment of species such as the kokako and the dotterel , if these changes resulted in current approaches to managing threats (in particular pests) being reduced at key sites. Careful change management will be needed to prevent increased loss.
Recovery Plans 7.3.2.6.	Development planning is usefully informed by effective recovery plans. Better regulatory mechanisms, tied to recovery plans are needed to respond to significant threats to species.

Table 20 Summary of conclusions for Chapter 8	
8.3 Conservation areas	A consistent and comprehensive approach to protecting Threatened and At Risk species and habitat across all areas is needed in New Zealand. Area protection under conservation legislation is insufficient in controlling development pressures and human activity external to the site. Such pressures are controlled through the RMA under a statutory mandate with less protective force for species/habitat than that of conservation legislation.
8.3	Planning for conservation areas should incorporate buffer zones to better protect the values of the conservation areas.
8.4 Pest management	Problems exist for pest control on the Coromandel Peninsula, and further resourcing and control is required. Birds would profit from more extensive and more intensively monitored good neighbour rules under the RPMP.
8.4 Pest management	Pest control in the Opoutere area and at the Firth of Thames Ramsar site (ch6) is dependent upon community effort.
8.5.1 Integration and Function	Although the RMA is directed at integrated management of natural resources, integrated management of indigenous species and their habitat is complicated by the resource ownership division, ownership of species by the Crown, divisions between local authorities and insufficient unifying or integrating policy.
8.5.1 Local authority function and biodiversity protection	For protection of Threatened and At Risk species, requirements for a stronger and more active obligation than the maintenance of biodiversity would be beneficial. This could assist in filling a gap that central government (DOC) is not currently resourced to meet. Applying an increased obligation through the RMA represents a key opportunity to better protect birds on private land.
8.5.3 RMA	Under the RMA the protection of the habitat of Threatened and At Risk species as a matter of national importance is compromised by the protection of competing interests. The protection of Threatened and At Risk species requires greater visibility and priority.
8.5.3 RMA Section 5	Due to the operation of s 5 RMA, the focus upon the protection of birds is commonly reduced to a consideration

	of the sufficiency of mitigation, in the context of the protection of significant habitat of indigenous fauna.
8.5.3 RMA Section 5	The point at which human interests overwhelm the need to protect biodiversity is undefined by statute and is resolved on a case by case basis, with direction from policy instruments prepared pursuant to the Act. Lack of clear direction concerning level of protection for Threatened and At Risk species constrains the force and effect of the statute in terms of protecting the interests of birds.
8.5.3	Legislative amendment is required in order to better protect threatened species.
8.5.3	The position of threatened species would be improved by the application of a higher threshold than that currently applied by s 5 Potential exceptions would include “Where the alternative means even greater adverse effects” and/or “Overwhelming socio-economic benefits occur would benefit species”. Achieving this elevation would require an amendment to statute, as all nationally policy is subject to the constraints of s 5.
8.5.3 RMA Section 6(c) protection of the significant	The focus of s 6(c) is on habitat not species. Developing criteria in plans that protects all habitat of Threatened and At Risk species is beneficial to birds. Where threatened species legislation is lacking, this is a vital protective measure, particularly where habitat is defined to extend to all media which species rely upon.
8.5.4 RMA Cumulative habitat loss	The loss of significant habitat of indigenous birds is cumulative on losses of their habitat elsewhere within their range. Planning measures need to better assess and account for these losses.
8.5.5 RMA Precaution	Precaution is not particularly visible in the case law in relation to adverse effects on birds, and does not constitute an unreasonable barrier to the grant of resource consent.
8.5.5 RMA Precaution	Decisions on resource consents are frequently made when information about bird distribution and nature and extent of effect are incomplete.
8.5.5 RMA Precaution	An important way in which to influence the assessment of risk is to create strong protective policy for birds, which,

	for instance, requires avoidance of effect to threatened species or habitat.
8.5.6 Silos of the Plans	The silo effect arises in the context of conservation of birds in New Zealand and is a significant problem. The Opoutere case study documents vertical fragmentation arising largely between the regional and territorial government and horizontal fragmentation arising between local authorities tasked under the RMA with biodiversity functions and the Department of Conservation’s functions under conservation legislation. The constitution of protection dependent upon place is identified as key driver in this fragmentation.
8.5.6.2 Plans precaution and avoidance	Precaution and avoidance are not strong features of the plans applying to the Opoutere area, apart from the position of the NZCPS, and to a more limited degree the PRPS.
8.5.6.2 Plans precaution and avoidance	A more consistent and protective approach is represented by the approach of the NZCPS to avoidance of effects to Threatened and At Risk species. The operation of s 5(2) would continue to enable development, although to strengthen protection a stronger threshold such as “overwhelming social/cultural/economic benefits” would strongly benefit birds.
8.5.6.3 Plan integration	There is little apparent integration at the strategic level, between conservation planning documents and the local authority planning documents. The lack of strategic planning across the public/private divide is an evident weakness in the system.
8.5.6.3 Plan integration	Key reasons for lack of integration are administrative boundaries and the focus of the RMA upon habitat rather than on species. Together these mean that plans are place bound as opposed to species focused. Recognising the protection of Threatened and At Risk species as a matter of national importance or through an NPS would improve this position of birds.
8.5.6.3 Plans	There is a need to better interpret and address the juncture between DOC conservation priorities and those of local authorities in clear and publicly accessible planning documents. It is important to address the difference between priorities established for fiscal management purposes and those developed due to international, national and regional ecological values. Unifying approaches and developing compatible systems would

	benefit species, provided important areas received protection. The response of local authorities and communities to providing species management in areas not prioritised by DOC is also a matter which requires systematic address to avoid further loss to birds
8.5.6.3	A spatial response mechanism is needed to provide urgent protection when a species suffers an adverse change in conservation status.
8.5.6.3	The Proposed Regional Policy Statement identifies problems with the protection of habitat and species and provides mechanisms to address these problems. The impact the PRPS is weakened by delay in legal effect to policy protecting natural heritage in contrast to the approach of the RMA to rules protecting natural heritage. This delay, coupled with problems of the translation into effective mechanisms in District Plans, weakens the effect of the protection. Creating rules relating to species protection at a Regional level would enhance agility in response to problems and provide a more strategic approach.
8.5.6.3 Plans	A closer focus on species protection, recovery and increased integration would also assist better protection of ecological integrity. Although gaining in profile, effective protection of ecological integrity, including connectivity and the use of buffer zones to protect significant areas, is hindered by a lack of consistent strategic planning across the landscape. The mapping and protection of sites of importance to birds including foraging and roosting space and known migration routes would be of benefit.
8.5.6 Plans and upper limits/bottom lines	The establishment of strong protective standards tied to upper limits (thresholds/bottom lines) in relation to habitat and ecosystem quality and quantity are needed to overcome issues such as sedimentation in waterways and water quality.
8.5.7.1 Adaptive management	Where risks are posed to threatened species which are uncertain and potentially significant, an avoidance approach gives the benefit of doubt to nature. Even though adaptive management is seen as a precautious approach it may enable development which would otherwise be prevented and, thus, should be treated with caution. Where applied, adaptive management must be carefully constrained through conditions of consent and

	partnered by biodiversity offsets to target to an outcome of net gain to prevent further loss to biodiversity.
8.6.7.2 Biodiversity offsets	The use of innovative measures to manage development impacts (such as adaptive management, biodiversity offsets and review conditions) is increasing. Whilst beneficial in many respects, mechanisms are required to strategically consider their impact. Particular consideration needs to be given to their use as it affects vulnerable and irreplaceable species and ecosystems. Further data is required related to bird distribution and impacts to birds to enable decisions to be made in a systematic manner taking account of losses across the range of species. Where insufficient data exists to assess the impacts in a strategic manner, so as to prevent cumulative effects occurring in the landscape, decline of consent represents a more precautious alternative in the interim.
8.5.7.3 Review conditions	Although a useful mechanism to provide flexibility and reshape conditions at a later date, reasons exist to treat review conditions with caution and to avoid employing them as the primary mechanism to address uncertainty.
8.5.7.3 Review conditions	For the purpose of review conditions, where possible, predictions made in the AEE should be treated as binding and subject to review for inaccuracy pursuant to s 132(3).
8.5.8	Threatened and At Risk species in New Zealand would benefit from conservation planning designed to aggregate human development in places which cause the least harm to threatened species. The construction of landscape level conservation plans tied to the mitigation hierarchy represents an opportunity to achieve this.
8	New Zealand birds would considerably benefit from comprehensive implementation of the Aichi targets.