

THE CONSERVATION OF NEW ZEALAND'S BIOLOGICAL HERITAGE AND THE ROLE OF ENVIRONMENTAL PLANNERS

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Introduction

Species diversity is an important aspect of ecosystem health, and a necessary condition for long-term sustainable development. However, it is widely recognised that species extinction is on the increase, as biological diversity comes under pressure from land-use activity and environmental change. Despite an active official conservation programme, the indigenous biodiversity of New Zealand is under threat.

Legislation, chiefly the Resource Management Act 1991, has empowered planners and local authorities to play an active role in the conservation of indigenous biodiversity. But, in order to be effective in the processes mandated by this Act, planners in New Zealand have to consolidate their professional skill base with greater awareness of conservation biology and landscape ecology, and with more commitment to the involvement of indigenous Maori.

As international experience elsewhere has shown, the restoration of biological heritage (in the form of biodiversity conservation) draws greatly on the commitment of local resource users and communities, rather than government intervention or planning regulations alone. Nevertheless, environmental planners can have an important role to play in this respect, because they are often experienced in mediating between the, somewhat incompatible, interests of conservationists, resource users and local communities.

The current rates of species loss, at global and regional levels, are estimated to be several times higher than they have ever been over the last 65 million years (Wilson, 1992; Barbault and Sastrapradja, 1995:198; Jeffries, 1997:37 and 113-148; Ministry for the Environment, 1997:9.6). This rate of extinction has heightened concern within the environmental planning profession about the long-term ecological consequences of biodiversity degradation. Diversity within (and between) species and ecosystems is widely recognised as a prerequisite for environmental resilience, as well as a significant source of goods and services (Mooney et al, 1995). Biodiversity loss is likely to affect directly the production of raw materials (food, fuel, building materials, fodder), biological control

of pests and diseases, water supply, waste recycling, pollution control, soil building, climate and atmospheric regulation, and recreation (Abramovitz, 1997:96; Jeffries, 1997:13-19).

Biodiversity or 'biological diversity' is the variety of life in all its forms, levels and combinations, including ecosystem diversity, species diversity and genetic diversity (IUCN, UNEP and WWF, 1991:210). In the context of particular countries, such as New Zealand or Australia, biodiversity is normally taken to mean the diversity of native species, excluding introduced species such as exotic weeds, pests and cultivars. Therefore, the conservation of biological diversity means developing ways to help native plants and animals to survive in the landscape wherever they are, and finding ways to help native ecosystems to continue to function.

The need for protecting indigenous biological diversity was articulated by the UN appointed World Commission on Environment and Development (1987:165-166) in the report *Our Common Future* (also known as the Brundtland report). Biological diversity was further emphasised by the International Union for the Conservation of Nature (IUCN), the United Nations Environment Programme (UNEP) and World Wildlife Fund for Nature (WWF) in their global conservation strategy, *Caring for the Earth: A Strategy for Sustainable Living* (IUCN, UNEP and WWF 1991: 9).

Biodiversity has since become globally recognised as a key condition for long-term sustainable development. The importance of protecting biodiversity was articulated in chapter 15 of the 1992 report of the United Nations Conference on Environment and Development in Rio de Janeiro (the Earth Summit). The political momentum generated by this concern resulted in the signing of the United Nations Convention on Biological Diversity by 157 government delegates (Ministry for the Environment, 1997).

New Zealand's 1997 *State of the Environment* report indicated that "Biodiversity decline is New Zealand's most pervasive environmental issue, with 85 percent of lowland forests and wetlands now gone, and at least 800 species and 200 sub-species of animals, fungi and plants considered threatened" (Ministry for the Environment, 1997:10.6). New Zealand has incorporated the principle of biological diversity within the government's Environment 2010 Strategy. The Strategy includes, as one of its main aims, the protection of "indigenous habitats and biological resources by: maintaining and enhancing the net area of New Zealand's remaining indigenous forests and enhancing the ecological integrity of other remaining indigenous ecosystems; promoting the conservation and sustainable management of biological diversity so that the quality of our

indigenous and productive ecosystems is maintained or enhanced" (Ministry for the Environment, 1995:34).

The potential for conflict between the need to preserve biological heritage and economic activity highlights the potential role of environmental planners in the areas of process, community consultation, and conflict resolution. Planners can look for compromises and trade-offs within land production systems that encourage landowners and farmers to retain areas of native vegetation wholly or in part, to allow the survival of some elements of native flora and fauna within farmed, residential or urban landscapes.

The Pattern of New Zealand's Biodiversity Loss

Areas of greatest habitat value for the conservation of native biodiversity also tend to be those used for food production and forestry. Barbault and Sastrapradja (1995:198) summarised the immediate or 'proximate' causes of species extinction as habitat degradation (loss, change in quality, and fragmentation), over-exploitation and the introduction of alien species. Of these, habitat loss and the introduction of alien species pose the greatest threat to the terrestrial environments of New Zealand. The 1997 *State of the Environment report* listed the main causes of New Zealand's biodiversity loss as the shrinkage of lowland habitat (including lowland forest, wetlands and estuarine habitats), declining quality of remaining land and freshwater habitats, impacts of pests and weeds, and, in the case of some marine species and ecosystems, human over-exploitation (Ministry of the Environment 1997:10.6).

In New Zealand, agriculture has been the single greatest cause of land-use change and habitat destruction. Before European emigration gathered pace in the nineteenth century, the areas in New Zealand of highest biodiversity were the flood plains and coastal lowlands. These have also been the areas that witnessed the greatest amount of human settlement and conversion to agriculture. Not only did these areas include the greatest diversity of ecosystems (coastal and low altitude forest of various structure and species composition, bog, swamp, flood plain, estuaries, dunes, lakes, rivers, and streams), they were also critical for the ecology of many birds. Today, most of the land below 300 metres is privately owned and contains only fragments of the original native vegetation. Such fragments suffer ecological disturbance and continued biodiversity loss, although they continue to serve as the seed banks of a depleted biological heritage and need special protection to restore some of the hybrid landscapes in which exotic and native species can coexist. Holland (1996:6) has argued that if we are to occupy islands in a sustainable manner we must learn to maintain their distinctive ecosystems and

species by, among other things, "facilitating sustainable mixtures of native and exotic species in permanently settled areas."

Conservationists have increasingly recognised that future protection of biodiversity will have to include cultivated and pastoral landscapes rather than just national parks or areas especially set aside for such purposes (Western, 1989:158-165; Western et al, 1989:304-324). McIntyre, Barrett and Ford (1996:156) comment that while reserves will continue to be important for the protection of biodiversity, the opportunities to extend or create new reserves are decreasing as pressures on land resources are increasing. Thus, "conservation in areas between reserves must be integrated with other land uses."

The United Kingdom has shown a similar recognition, at official levels, of the importance of biodiversity conservation within developed landscapes through the policies contained within its national biodiversity strategy. The Biodiversity UK Action Plan includes a variety of measures and policies for the conservation of biodiversity in land under private ownership. These measures include the introduction of planning policy guidance notes on nature conservation for use by local authorities, the operation of a series of farming and conservation programmes designed to encourage the retention of wildlife habitat, and a series of stated actions intended to encourage further conservation (Department of the Environment 1994:71-98).

Legal and Administrative Frameworks

For the conservation of New Zealand's natural biodiversity, two different types of administrative and legal framework apply: that which applies to public land, and that which applies to private land. The Department of Conservation administers the bulk of conservation land in public ownership outside production environments. Therefore, only a very small proportion of the areas of conservation value within New Zealand's production landscapes come under the legal and administrative framework of protected areas legislation, because virtually all land under production is privately owned or controlled by Maori trusts.

With the exception of a few exclusion areas, all parts of New Zealand are subject to a suite of legislation which includes the Resource Management Act 1991, the Forests Amendment Act 1993, and the Biosecurity Act 1993. The Wild Animal Control Act 1977 and the Wildlife Act 1953 also apply to private land, but are of little significance to the way private landowners manage their land. The Resource Management Act is the most far-reaching in its consequences for environmental planning. The purpose of the Act is:

to promote the sustainable management of natural and physical resources by 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 wellbeing 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.

Section 6 of the Act states that, as a matter of national importance, all persons exercising functions and powers under the Act "shall recognise and provide for ...(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, ...(b) the protection of outstanding natural features and landscapes ...; and (c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna." Section 7 (d) also states that persons exercising functions and powers under the Act shall have particular regard to the "intrinsic values of ecosystems." In short, the provisions of the Act create a strong legal mandate for the conservation of natural resources in developed landscapes.

All development of natural and physical resources is, in theory, subject to the policies of district and regional councils. Resource management policies are developed and codified in district and regional plans and policy statements through public consultation procedures, and then implemented by the application of rules, incentives, education, and development control (resource consent applications). Districts and regional councils are encouraged to work together, and to hold joint hearings where development proposals relate to issues that involve mixed responsibility.

Local Government and Legislation

New Zealand's local government institutions are important for biodiversity conservation in a number of ways. Local governments have a legal mandate to promote environmental protection at local and regional levels; and are accountable to individuals and communities for environmental conditions within their local area. Local authorities can also harness community involvement in environmental action, and are

potentially the level of government that can provide the ongoing care that is necessary for long-term ecological protection and restoration.

As a consequence of the Resource Management Act, the conservation of biological diversity has become increasingly recognised by local government planners as an essential component of sustainable local and regional development. Since the Act came into operation in 1991, district councils in particular have been obliged to make provision for the protection of native habitat. The techniques used have included the use of schedules of ecologically significant sites, restrictions on the clearing of native forest, and provisions for encouraging the protection or restoration of riparian margins.

However, experience suggests that legal and administrative instruments alone are seldom sufficient to encourage greater environmental responsibility. Of equal relevance is the incentive approach to conservation. James (1993:10) and Froude (1997:17-20) observed that landowners tend to react negatively to regulatory mechanisms of conservation, and prefer positive approaches such as incentives and provision of information. Experience has also shown that where the skills of planners in relation to community consultation have been fully involved, community acceptance of provisions for habitat protection has been much stronger than in situations where local or regional governments have imposed such provisions without community consultation.

The Challenges of Biodiversity Conservation for New Zealand Planners

The global imperatives to conserve biodiversity as a means of sustainable development, plus the provisions of the Resource Management Act have presented planners in New Zealand with a number of significant challenges. These include new knowledge and conceptual understandings of the relationship between humans and the natural environment, and new ways of working in partnership with local and regional communities and with New Zealand's indigenous Maori. The RMA provisions relating to protection of the life-supporting capacity of ecosystems and of significant indigenous vegetation and habitat of indigenous species, have prompted a need among planners to develop greater understanding and skills in relation to ecosystems and ecological concepts. At the same time, the Act requires planners and local authorities to work with Maori in the management of natural and physical resources.

Maori, as traditional owners or guardians of the landscape, have particular status under the Resource Management Act, to be consulted and have their interests considered. Frequently, but not always, the

conservation of native biodiversity may accord with protection of Maori interests. However, as indicated later, Maori do not always feel obliged to follow the conservation line, and, as part of the new skills required by the RMA, planners have to acquire both an understanding of natural ecosystem processes, and ways of ensuring that Maori are fully and fairly involved in the planning process.

In the long-term, the conservation of natural biodiversity depends on protecting the natural and physical conditions that are crucial to the survival of native species and ecosystems. This will depend on integrated ecosystem-based management within the context of district or regional landscapes. Ecosystem-based management involves an awareness of the relationships between elements of the landscape; and management of the processes that enable the plants, animals and natural conditions to continue without undue disruption. This recognition presents a challenge to planners because it introduces a new set of considerations in relation to landscape design (the interaction requirements and interdependencies of ecosystems and species); and also because it requires planners to devise planning policies which encourage appropriate long-term ecosystem management practices. Planners who have knowledge of ecosystems and ecological principles are better able to explain environmental considerations to the public, and translate ecological principles into effective planning policies.

Two particular areas of knowledge that promise to assist planners with the task of conserving biodiversity are conservation biology and landscape ecology. Conservation biology is an interdisciplinary field that aims to understand the effects of human activities on species, communities, and ecosystems, and to develop practical approaches to reintegrating endangered species into functioning ecosystems, and preventing the extinction of native species (Primack, 1995:5).

Landscape ecology incorporates many aspects of conservation biology, but focuses on the patterns of ecological relationships at the scale of landscapes and regions (Forman, 1995:preface). Landscape ecology and conservation biology are related in many of their concerns and concepts, but landscape ecology pays special attention to the spatial analysis of landscapes (and may use Geographic Information Systems as a tool for analysis), while conservation biology is primarily concerned with the application of biological principles for the management of ecosystems, communities and species. Landscape ecology can therefore be described as the scientific study of landscapes that are the spatial manifestation of ecosystem processes. Landscapes are considered to have form, structure, and function which give rise to patterns of interaction among the elements that allow inferences and predictions to be made for management purposes.

Research within conservation biology and landscape ecology has created a body of knowledge about the conservation requirements of native species that, if applied, could reverse current trends. Despite the strength of research in relation to nature conservation, McIntyre et al (1996:169) point out that "although the general ecological principles for maintaining biological diversity have been developed over the last 20 years, loss of species and communities continues unabated. It is now widely recognised that without community involvement and co-operation, conservation management plans will be ineffective."

Although planners in New Zealand have largely accepted the importance of biodiversity conservation, planning policies so far remain mostly within the ambit of the Resource Management Act, as a statutory framework, and depend largely on the imposition of planning controls when applications come in for development. Current planning policies, therefore, tend to be reactive rather than proactive, coming into effect only after a new development has been proposed; and seldom in response to existing development. It may remain for the next generation of planners to devise techniques and strategies that will work more effectively in future.

Maori Contributions to Biological Heritage

An important principle articulated by the Resource Management Act is that all individuals exercising functions under it, "shall recognise and provide for... the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, *waahi tapu* (sacred sites) and other *taonga* (treasures)." They must have particular regard to the exercise of *kaitiakitanga* (guardianship) and must, "take into account the principles of the Treaty of Waitangi", signed in 1840 between the Maori tribes of New Zealand and the British Crown.

The application of the Resource Management Act has given Maori throughout New Zealand an expectation and a willingness to be involved in the processes of environmental planning. Resource managers are now required by law to consider the cultural values and concerns of Maori in relation to land, water and other natural resources, and Maori are developing an increasing capacity to be involved. This process is likely to gain more momentum as current legislation becomes entrenched; and will have flow-on implications for planning requirements as the concerns of Maori become recognised in devising regional plans for biodiversity conservation.

The Resource Management Act's concern for Maori sensibilities is reflected in the fact that environment-related Maori terms have been

incorporated within the body of legislation (Crengle, 1993). The concept of *kaitiakitanga* is one which explicitly reflects and incorporates the relationship between Maori land management and environmental sustainability. It is defined in the Resource Management Act as "the exercise of guardianship by the *tangata whenua* (tribe or land-owning group who have customary authority) of an area in accordance with tikanga Maori (customary values and practices) in relation to natural and physical resources, and includes the ethic of stewardship." *Kaitiaki* or guardians are those recognised by other Maori of the land-owning group as having special knowledge in relation to the management of resources within that land. The *kaitiaki* are expected to protect the integrity of those resources in trust, for future generations, by preserving traditional knowledge of indigenous habitats.

However, it cannot automatically be assumed that all Maori will necessarily view environmental sustainability as a key consideration in the management of ancestral land. There is a divergence of views among Maori about protection versus development, and many Maori are of the view that development is necessary for the social and economic welfare of their people (Horsley, 1989). Also, there are individuals, within Maoridom, who have retained knowledge and skills for the sustainable management of native ecosystems and species, but who are reluctant to pass this knowledge to strangers or representatives of local government.

Conclusion

The government of New Zealand is a signatory to the UN Convention on Biological Diversity, and has pledged a commitment to promote biodiversity conservation. This paper argues that, in the light of growing acceptance of the concept of sustainable development, environmental and land-use planners should adopt methods and principles of planning and design that support biological heritage and native biodiversity. The loss of biodiversity has become a matter of increasing concern at global, regional and local levels, and it is a particular problem within New Zealand because of the high rates of endemism characteristic of its species, and their vulnerability to habitat loss and introduced competitors. Biodiversity conservation has become widely accepted as a key element of environmentally sustainable development.

Local and regional government can be helpful in this regard by bringing about bylaws to mitigate the loss of native biodiversity, as they are the levels of government that can directly influence private landowners and farm managers. The Resource Management Act allows districts and regions to impose regulations and conditions in relation to all development of natural and physical resources.

Planners assist in moving concepts and principles to policies and practice, by working to integrate human interests with ecological considerations. Planners can often determine which areas of land-use conflict are based on substantive differences of interest, and which are based on ignorance or lack of information about the ecological value of a landscape. In cases of major conflict, planners can help to bring about the political resolution of differences by mediating between different interest groups within the community and by ensuring that all interest groups are fairly informed and involved in the process.

Plants, animals and ecosystems are subject to biological processes that require integrated management over time. However, the existing network of protected natural areas is deficient in terms of size, distribution and ecological representation to assure the conservation of all endangered native species. It is quite inadequate to restrict the conservation of biological heritage to the existing network of parks and reserves, as biodiversity conservation should also include the private landscapes of farms and forests. Private land managers must become aware of how their activities can affect native ecosystems and species, and should be encouraged to assist with long-term measures for the restoration of native biodiversity.

In a world where environmental conflicts and economic pressures are likely to grow, planning for preserving biological heritage requires new knowledge and skills in relation to ecosystem processes and species biology. In New Zealand, the requirement for greater understanding of biological systems must be matched by a commitment to involve indigenous Maori in the planning process. Future protection of native species and ecosystems is likely to involve the development of systems of co-management where central government (in the form of the Department of Conservation) and local authorities are prepared to trust local Maori land-owning groups with the management of local biological resources.

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