***Guano and the Opening of the Pacific World: A Global Ecological History*, Gregory T. Cushman (2013)**
Cambridge: Cambridge University Press, 416 pp.,
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I will open by confessing that I have dragged the chain somewhat in writing this review, because the depth and breadth of this unprepossessing-looking book continually expanded into a remarkable *tour de force* covering a wide range of interlinked topics of global relevance. My ability to review it adequately seemed to diminish page by page. Gregory T. Cushman's *Preface* indicates that the book's development began simply with birds and how their excrement, guano, was recognized as an important factor in driving progress in modern Peru. The word 'guano' originates from a native Peruvian term (*huanu,* dung) that refers mainly to bird and bat excrement used as an agricultural fertilizer. From birds to guano and Peru, Cushman realized he had lifted the lid of a veritable Pandora's Box in which he discovered 'guano and guano birds at the heart of Aldo Leopold's famous essay on our moral relationships to the earth, at the base of New Zealand and Australia's rise to First World status, or at the core of the identity of several Pacific peoples' and that 'marine bird excrement is at the root of modern existence and fundamental to the incorporation of the Pacific Ocean into global history – to the opening of the Pacific World' (xiii). Does Cushman succeed in convincing the reader of the accuracy of these ambitious statements? In a word, yes.

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The book is framed around a complex seven-fold argument described in the introduction. In summary, these 'arguments' (essentially issues and themes) are: (1) the geographical parameters of the Pacific world; (2) the creation/construction of the Pacific world; (3) the agency of nature on the creation of the Pacific world; (4) connections between the Pacific world and the industrial revolution; (5) cultural influences of the transformations in the Pacific world and industrial revolution; (6) social groups that orchestrated much of the guano world; and (7) the ethical ramifications of the world created by guano.

The themes are examined in each of the eight chapters, book-ended by introductory and concluding narratives. Chapter 2 (The Guano Age) establishes the importance of marine bird excrement, nitrates, and the opening of the Pacific World; Chapters 3 (Neo-ecological Imperialism) and 4 (Where is Banaba?) focus on what Cushman terms neo-ecological imperialism and includes two case studies of postcolonial exploration for nitrates. In one, he examines Peru, Ecuador, Chile and the USA. In the second, he investigates guano in the central Pacific to serve Australia and New Zealand. Chapter 5 (Conservation and the Technocratic Ideal) shows how the 'enormous costs of uncontrolled environmental exploitation during the guano age inspired a reaction around the globe in which governments empowered a new class of trained professionals to manage key natural resources on a more sustainable basis' (20). Chapter 6 (The Most Valuable Birds in the World) re-focusses on Peru and the new ecological and socio-political relationships that arose from these technocratic developments. Chapter 7 (When the Japanese Came to Dinner) re-examines the topic of Pacific geopolitics between the two world wars and the rise of Japan as a world power. Chapter 8 (The Road to Survival) describes how Malthusian thinking (about population growth) came to be applied to the topic of environmentalism, initially in Latin America and then more globally. Chapter 9 (Guano and the Blue Revolution) examines how Malthusian ideas influenced development projects, especially in the aftermath of World War

II when the world experienced rapidly growing populations during what has been called ‘The Great Acceleration’ – likely to demark the start of the new Anthropocene epoch − in Peru, Mexico, and other Third World countries. Various other topics, such as the societal impact of El Niño events, are also interwoven throughout the text.

It is now abundantly clear that the costs of achieving substantial increases in food production in New Zealand from c. 1950 onwards include accelerated soil erosion and widespread soil and environmental degradation through the over-use of fertilizer, especially nitrogen and phosphorus, exploitation of steeplands and wetlands for agriculture, and other factors. Yet it must be remembered that shortages of food following World War II were regarded as paramount, both globally and in New Zealand where discussions in the New Zealand Journal of Agriculture (NZJA), the Sheep Industry Commission, and Federated Farmers focused upon the need to increase food production. The text below from an article in NZJA makes the point:

> Can it be doubted that of all problems that should preoccupy mankind, that of the fertility of the earth is of the most fundamental importance?’ asks a leading British scientist. As food is fabricated soil fertility, and the world food crisis is probably post-war problem number one, at no time in history have so many people been so deeply concerned with edible products made possible only by soil fertility (Holford 1946, p. 1)

The advent of aerial topdressing in the late 1940s allowed New Zealand to attain some primacy in alleviating the food-shortage problem, and additionally helped to stem the rate of loss of soils in erosion-prone hill country in eastern North Island and elsewhere. The resultant high living standards ‘in turn inspired thousands of […] immigrants […] to flock to Australia and New Zealand so they, too, could enjoy First World livelihoods. Much of this was

premised on cheap phosphate from Banaba and Nauru. Soil conservation in the southwestern Pacific, like ecology, was a science of empire' (132).

While the book's bold vision and impressive geographical span is to be applauded, it also makes for heavy going in places. Do not expect this to be a book that you can dip in and out of. Another criticism of the book is the paucity of maps, and I would have liked to have also seen some tables and diagrams to illustrate, for example, timelines, conceptual relationships, and summations of data. In his tracing of the policies of young nations in the nineteenth century, which were trying to position themselves in a global market that grew largely out of its colonial use of their resources, Cushman attaches environmental consequences to the colonial legacy. And it is in this environmental treatment of history that Cushman may remind all of us that history is meaningless if we do not acknowledge, and study, its dependence and relationship to its physical environment. As a geoscientist involved in integrative studies of the physical environment including pedology and tephrochronology, and with cross-over interests in environmental determinism and geoarchaeology, I cannot but totally agree.

REFERENCE

Holford, G.H. (1946), 'Fertilisers – history of supplies in war and peace', in *New Zealand Journal of Agriculture* 73, pp. 1-6.