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Guano and the Opening of the Pacific World: A Global Ecological History

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Gregory Cushman?s preface opens with some bold claims. He suggests that the Black Death, the African Slave Trade, the Second World War and the harvesting of bird excrement deposits from islands in the Pacific oceans were of equal importance in world history. The Peruvian Government?s efforts to conserve guano birds were central in the development of Aldo Leopold?s ecological thinking, while the extraction of huge quantities of guano from small Pacific islands enabled the rapid development of Australia and New Zealand?s economies. The opening pages foreshadow this impressively vast book, which follows guano through time and space and intertwines environmental, social, intellectual, economic and climate histories with the history of colonialism, science, migration and global development. The book spans the 19th century, and most of the 20th, and links the history of Peru, Banaba, Easter Island, the Christmas Islands and numerous other islands in the Pacific Ocean with the history of Britain, the United States, Australia, New Zealand and Japan. Cushman extends Alfred Crosby?s ecological imperialism thesis, by demonstrating that the creation of neo-European agro-ecological systems in North America and Australasia were only sustained through the mass transfers of soil nutrients, mostly sourced from exploited regions in the Pacific world. As if

these topics were not ambitious enough, Cushman also traces the influence of technocratic governance and neo-Malthusianism at both the national (Peruvian) and global scales. The book is all the more noteworthy as, despite the massive breadth of the it?s subject matter, Cushman remains attentive to the people in this history. The book introduces numerous individuals, from explorers, scientific experts, technocrats and colonial administrators through to the workers who mined the guano, nitrates and phosphates and members of the island nations displaced by the mining. All round, this is one of the most impressive books published in the emerging field of global environmental history.

Leading environmental historians, including J. R. McNeill, an editor of the series in which this book is published, have been calling for a global turn in recent years. They argue that many environmental problems extend well beyond the local, regional and national scales upon which most environmental histories focus. Moreover, the ideas and technologies that have influenced our relationships with the environment were just as transnational as the water pollution, acid rain and carbon emissions that regularly ignored national boundaries. There is much to be gained by situating local and regional environmental histories within a global framework. This globalizing trend, however, is not without its pitfalls and it becomes increasingly challenging to keep humans at the centre of a global environmental history. Some of the best global environmental histories rely primarily on secondary sources and seek new insights by synthesizing the existing literature to provide comparative and transnational perspectives. These are very important books, but something is lost when history focuses on global scale transformations. Gregory Cushman has produced an exemplary book confirming the necessity of this globalizing trend and demonstrating a powerful alternative method of blending transnational with local analysis through a number of interconnected global narratives. Cushman labels his approach the ?following? methodology, though he indicates he learned of the label long after embarking on his research. This label doesn?t quite encapsulate Cushman?s methodology, which is really an example of deeply eclectic historical research at its best. Following guano was the first step, but it took a wide array of methods and sources to connect the history of guano with labour exploitation, colonial displacement and climate fluctuations, or the conservation of guano birds with the complicated political history of Peru.

The book traces the development of the guano, nitrate and phosphates industries in Peru and on a number of islands spread throughout the Pacific Ocean. Through these various local studies, Cushman pays close attention to core social history questions. He interweaves the history of race, class and gender, along with the devastating relationship between colonialism and the story of mined soil nutrients. This provides a comparative framework to explore the different variations of informal economic and direct imperialism as guano and nitrates developed into crucial global commodities beginning in the mid 19th century.

The one major criticism of the book is the deficiency of maps for an audience of potential readers unfamiliar with this part of the world. This unfamiliar geography is even more confusing when there are two Christmas Islands discussed in the book. It would really help the reader if each chapter that introduced a new region included an appropriate map that traced guano and other nitrates around the world. I created a web map, using Google Map Engine Lite, which identifies most of the major geographic locations discussed in the book and which might help others as they read the book - https://mapsengine.google.com/map/edit?mid=zcYbIluB78iw.k0mK1SOAqdcc [2].

The basic narrative of Peru?s guano boom during the mid 19th century and its relationship with farming in England is well developed in both environmental and agricultural history. Bird excrement built up on islands off of the coast of Peru and retained high nitrogen concentrations due to the dry climate. This first imported source of nitrogen, commoditized decades before the Haber?Bosch process, helped significantly increase agricultural yields during the mid 19th century.

Cushman?s book starts with a detailed reexamination of the guano boom from the Peruvian perspective, before detailing the exports crash in the early 1870s, from which the country never recovered. In Peru, guano remained an important source of nitrogen for Peruvian agriculture until the mid 20th century and the British went on to exploit numerous other guano and phosphate rich islands throughout the Pacific Ocean in the decades that followed.

Cushman follows the guano trade, the people involved and a number of key ideas across the world in the remaining eight chapters of this book. Chapter three links the guano trade with agriculture in the United States, develops the argument that the soil fertilizer trade constituted a crucial second stage in the process of ecological imperialism and traces the role of soap manufacturers in colonizing Pacific islands for coconut plantations. Chapter four continues with these themes and explores the colonization and exploitation of Banaba and Nauru in the early 20th century. Chapter five returns to Peru and focuses on technocratic efforts to manage the guano industry in the decades after the collapse of the boom, while at the same time situating this national history within the global history of development studies. The chapter explores the close connections between the development of authoritarian and oligarchical governance with technocratic management of economies and environments in Peru and in many other countries around the world. Chapter six continues with this theme and focuses on the successful efforts of the Compañía Administradora del Guano (CAG) to revive the guano bird population between 1909 and 1956 and the unequal distribution of the benefits of this success to wealthy export-orientated agriculturists. Chapters seven and eight focus on neo-Malthusian concerns including anxiety related to the global food supply before the Second World War and the role of conservationist technocrats and scientists in the development of an overtly ecological perspective of population growth. The final chapter returns again to Peru to explore the devastating consequences of the ?Blue Revolution? when a growing demand for animal protein in affluent post-war North America and Western Europe created a demand for fishmeal from Peru and the carefully managed guano bird ecosystem collapsed as the result of intensive fishing. The book ends with a strong conclusion where Cushman pulls together the many divergent themes and arguments in the previous ten chapters.

Throughout this book, Cushman makes a persuasive argument that the Pacific World played an important role in the development of global industrial-capitalism. Building on Alfred Crosby?s *Ecological Imperialism* , Cushman argues that productive neo-European agricultural systems could not have been maintained without the guano and phosphates extracted from South America and Pacific islands. The ecological transformation of Australia and New Zealand, for example, required large quantities of fertilizer to maintain their rural economies. The development of these settler colonies relied directly on the exploitation and colonization of Banaba and Nauru islands (pp. 128?9). Chapter four opens with an illustrative quote from Raobeia ?Ken? Sigrah, whose family was displaced from their homeland before he was born in the 1950s: ?Where is Banaba? ? Banaba?s all over Australia, New Zealand and everywhere else in the world. Been used as phosphate. So where is my country? Where is my island?? (p. 109) With this quote, Cushman acknowledges that Ken and other indigenous individuals understood this central thesis of his book, that environmental imperialism relied on a steady flow of soil nutrients extracted from their home islands, long before he came to study this topic.

Cushman traces the evolution of Malthusian ideas, from the beginning of the 19th century through to Paul R. Ehrlich?s *Population Bomb* and the formation of the Club of Rome in 1968. He demonstrates the ongoing concern that human population might outgrow the environment?s capacity and how this often justified ruthless actions against whole groups of people or species of animals in order to provide food security for England, the United States or Japan. This narrative reaches a climax with the sacrifice of the guano bird colonies off Peru in the interest of the fishmeal industry, which was used to feed the chickens and pigs that transformed Western diets in the decades after the Second World War.

The transnational exploration of technocratic governance and Malthusian ideas allows Cushman to challenge the standard narrative that people failed to question environmental destruction before the 1960s. He finds a growing awareness of the delicate ecological balance that allowed guano birds to flourish and supply a constant supply of fresh guano fertilizer for Peruvian farms decades after the collapse of the export industry.

He also points to Aldo Leopold?s awareness that agricultural abundance increasingly relied on ?biotic capital? extracted from islands south of the equator and his concern that the ?pooling? of global ?biotic capital? might lead to significant environmental consequences. Leopold was in close communication with William Vogt, an American, who spent time studying guano birds and worked for the Conservation Section of the Pan American Union, before publishing his neo-Malthusian best seller, *Road to Survival* in 1948.

Close scientific study and the development of government policy to protect the ecology of the sea birds contributed to a transnational conservation network, with William Vogt as its linchpin. This network contributed to the growth of a global conservation movement in the decades leading up to the publication of Rachel Carson?s *Silent Spring* in 1962. However, the history of technocratic governance had a much darker side and Cushman finds that technocrats and other elites understood environmental limitations and made choices to secure enough guano, nitrates, corpra, or fishmeal to preserve their country?s or class? self-interests. Throughout the book focuses on the reductionist tendencies of technocratic officials who could not see the complexity of the ecosystems that supported guano birds and allowed them to produce a vital supply of nitrogen.

In addition to all of the narratives and themes mentioned above, Cushman also makes an important contribution to climate history. Using a combination of existing data and his own climate reconstructions, Cushman remains attentive to the importance of climatic fluctuations for the people, birds and fish in the guano extraction regions.

The book?s strength, the amazing span of material and geography covered, is at times a flaw. It is not an easy book to set down and pick up a few days later. Some chapters move across vast geographies and periods. Cushman demands an attentive reader. Despite this and the lack of maps, I have been talking about this book and recommending it to others since I started reading it. It is a model for future research in global environmental history and I hope that others continue to provide a comparable level of insight into our collective history as they follow other commodities around the world.

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Science
http://esp.ku.edu/professor-cushmans-book-reviewed-science [3]
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