

**Human Impact on Ancient Environments.** Charles L. Redman. 1999. University of Arizona Press, Tucson. Pp. 288, 9 photos, 46 line illustrations. ISBN: 0-8165-1963-3 (\$22.96, paper); ISBN: 0-8165-1962-5 (\$45.00, library cloth).

Our understanding of the relationship between people and the environment has long been in flux. In the past century alone, it has undergone a series of transformations from the environmental determinism of Ellsworth Huntington in the 1930s to the emergence of the field of human ecology in the 1970s (which has become an important component of both anthropology and archaeology), and more recently to an increasing interest on the degree to which human affairs have influenced the environment. *Human Impact* falls neatly within this latter realm. In what is less a systematic survey than an extended essay on the evidence for, and processes of, anthropogenic change, Charles Redman has not only produced an excellent introduction to this important area of study, but has demonstrated the utility of archaeological data in confronting contemporary problems: "...understanding the diversity of human environmental impacts, both sustainable and destructive, has the potential to become the hallmark of our discipline. No domain of inquiry is more appropriate for the archaeologist nor more pressing for contemporary society" (p. 6).

The title of Redman's first chapter, "Lessons from a Prehistoric 'Eden,'" sets both the tone and the stage for the ensuing discussion. Here he takes as his primary example the history of Easter Island as revealed through both archaeological and paleoenvironmental studies. A forested island when colonized by Polynesians approximately 1,600 years ago underwent substantial changes in both native flora and fauna, including extensive deforestation. Although the extensive deforestation and other human impacts on Easter Island occurred perhaps far more rapidly than other locations where humans also had an impact, this example serves well to illustrate both the potential speed and totality of anthropogenic change.

The second chapter, "Attitudes toward the Environment," provides an interesting review of Western perceptions of the environment, and how they influenced the landscape. Here, the examples are drawn primarily from Greek, Roman, and Judeo-Christian sources, with important similarities and contrasts among them noted. The brief discussion includes indications on the degree of environmental impact made by Roman society, for example, as well as comments on the Christian rationale for resource exploitation. However, this review is surprisingly limited on non-Western attitudes (2 pages vs. 6 pages), with China essentially being the only example mentioned. What is missing is attention to non-Western attitudes, such as the influence of Cree worldview regarding hunting or water control through the operation of Balinese water temples. Such examples are important because they hint at the range of environmentally inclusive worldviews and behaviors that may be reflected in the archaeological record.

Aptly titled "Concepts That Organize Our Thoughts," Chapter 3 provides a valuable exposition on the basics of human ecology, which is the study of the relationship between people and their environment. Here, Redman introduces the importance of scale ("we must employ concepts to organize the complexity of the real world into manageable units" [p. 35]); ecosystem composition and operation;

and human decision-making. While there are far more detailed expositions elsewhere on each of these themes (e.g., Dincauze 2000), this chapter suffices for the purposes of the volume.

The remainder of the volume explores various aspects of past human-environmental interactions through archaeological examples drawn from around the world. The first of these, "Animal Exploitation: The Prehistoric Loss of Habitat and Biodiversity" (Ch. 4), begins by examining the relationship that humans and animals have had. It then explores three elements of this relationship in terms of human impacts on the environment: extinction, dispersal, and domestication. The discussion on extinctions is thankfully not limited to Pleistocene mega fauna (although this is included from a brief, but comparative global overview), with its primary example an extended discussion of Polynesian colonization and resource harvesting and its effects on avifauna. The expansion of the geographic range of animals, both intentionally and unintentionally influenced or induced by humans, is but one of the factors explored, which can still have far-reaching consequences (e.g., the transport of the Zebra mussels to North American waters).

Redman hits his stride in the next two chapters, "The Impact of Agrarian Systems" and "The Growth of World Urbanism"—topics that he has had long experience with. When he states that, "In looking back over the vast sweep of the human career, there probably is no greater transformation than the introduction of agriculture" (p. 81), he is referring not only to the transformation of human society, but to that of the landscape. Ranging between New World and Old World examples, Redman's discussion on the processes by which agricultural societies developed and their impact on the environment is clear, and his examples are interesting and appropriate. Ample attention is devoted not only to the usual list of settings (e.g., the Middle East, Mesoamerica), but also to the American Southwest. The dynamic relationship between the operation of large-scale societies and their environments is illustrated through both modeling and field investigations. Perhaps due to space restrictions, aspects of these chapters could have been more fully developed. There is, for example, only passing mention of *chinampas* and their impact on the extensive wetlands of Mesoamerica.

The next chapter, "Forces that Grew with Society," addresses the impacts that agricultural systems and environmental conditions had on humans, ranging from the susceptibility of individuals to malaria to the response of populations to a host of population pressures. It is the most eclectic chapter of the volume with topics ranging from Thomas Malthus and nutrition, to Mediterranean trade networks, to failed Norse colonies in Greenland. Redman pulls all of these together by noting that the various dimensions of the urban revolution—"population growth, community health, industrial production, trade, and hierarchical government"—not only contribute to social change, but also have significant environmental impacts. This last theme is continued in the final chapter of the volume, "The Past as Prologue," in which the author suggests persuasively that the knowledge that we have obtained through archaeology concerning past urban societies has much to contribute in understanding our own. The questions that he poses—"Is there a natural or 'best' environment?" "Is urban society a sustainable solution?"—are not only important, but exactly the ones we need to be asking today. Throughout

both this chapter and this book, he encourages us to look at past societies to provide some of the knowledge we need today to make informed decisions as to the future.

Overall, this is a very successful book and will undoubtedly appeal to a broad readership. Not only does it deal with issues relating to the rise of urban societies, but to the larger issues of human ecosystems and anthropogenic processes. The volume could easily have been twice the length to include the wider range of human-environmental interactions once present. The relatively tight focus of the volume adds to the book's attractiveness and readability. Nonetheless, it falls short in several areas. Indigenous environmental perspectives are omitted, as is the role that small-scale societies had on the landscape. For example, there is no mention of fire-stick farming and wetland channeling in Australia, nor the effects on local vegetation of long-term harvesting wood for constructing and maintaining trackways and fish weirs in Europe and elsewhere). Obviously choices have to be made, but the omission of these types of anthropogenic factors is unfortunate nonetheless as small-scale societies were responsible for most of the archaeological record worldwide. Surprisingly, there is no mention of the application of one ancient land-altering technique, raised field farming, which has been demonstrated by Clark Erickson (1998) and others to be an important means of improving contemporary crop yields in Bolivia and Ecuador. One other minor point is that the index is not as inclusive as it should be; there is, for example, no mention of *chinampas* and many other terms found in the text.

All things considered, this is a very well written and organized book. As a general introduction to processes and effects of anthropogenic change, it succeeds admirably. Of equal importance is that Charles Redman puts his subject into context by exploring effects of human-induced environmental change upon a suite of ancient societies. In doing so, demonstrates that human activities may have profound environmental consequences, and that those consequences, in turn, provide new challenges or opportunities for future generations.

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