

the botanist who sacrificed his time in doing the best possible job available on the specimens. A list of errors is recommended for inclusion in the book.

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Requiem for Nature, by John Terborgh. Island Press/Shearwater Books, Washington D.C. and Covelo, California, 1999. 234 pp.

If I had to recommend only one book for the layman to read about current problems of conserving the world's rain forests, this would be it. The conservation of biodiversity has now become a feverish concern not only of biologists, but of development planners, economists, business leaders, and political leaders. This is a good sign, but unfortunately, even among conservationists there are deep disagreements over what is the best approach to save the biodiversity of the Earth from the extinction crisis that is upon us. The most widely accepted approach to preventing threatened species and their habitats from extinction has been the creation of "protected areas," primarily national parks and wildlife reserves. In most tropical areas, however, this approach is not working very well, and there is vigorous debate in the conservation community over how to remedy the situation. Terborgh's book very clearly portrays the maladies affecting parks, mostly drawing on his personal experiences, and offers his own prognosis and long term cures. His conclusions are highly opinionated—his goal is to redress current misunderstandings and misguided funding priorities in conservation. In fact, this book is one of several recent volumes that deal with this issue, but in my opinion it is the most readable and convincing, with the least professional jargon.

John Terborgh, a highly regarded ecology and tropical biology professor at Duke University, has thirty years of experience in studying populations and communities in the tropical rain forest, most of it in Peru. The opening chapters introduce us to the place he knows and loves the most, Manu Biosphere Reserve, a largely wilderness area of 15,000 km² which stretches from the Amazon lowlands to the 4,000-m high peaks of the Peruvian Andes. There, far up the Manu River, Terborgh helped to establish and still manages the Cocha Cashu Biological Station, from which has emanated a steady stream of high-quality research findings. Like virtually all tropical ecologists, Terborgh has increasingly become involved conservation projects and activities, as an eyewitness to the relentless expansion of human activity into wild areas and the steady decimation of animals and their habitats.

Manu Reserve has become legendary for its diversity of plants, birds, mammals insects, etc. The number of species it contains is roughly the same as that in all of Thailand. For example, it has close to 1,000 bird species, about the same as Thailand. In the author's long term perspective, however, Manu is a "Paradise Fading." It is threatened both within and without. Within, it contains a cancer in the form of an expanding population of tribal

peoples, some of which still avoid all contact with outsiders, and others which have made contact and gradually want more guns, better transportation, trade outlets and money. It is inevitable that as they become "developed," they will cease to be indigenous people living within the limits of nature. However, they will not easily be moved out or have their native hunting rights revoked. From without, the main threats are grossly understaffed and underfunded management and protection units, a growing population of farmers and land developers who see resources going to "waste," and an often indifferent and unstable government. Farther outside is a developed world whose business and political leaders still worship economic growth and see profitability as the bottom line. "Sustainability" is a concept which is much discussed, but still rarely implemented. It is also a slippery concept which can be defined to suit anyone's purpose.

The problems and long term prospects of Manu Reserve are repeated in virtually all tropical countries which harbor the bulk of the world's species. The book cites examples from all over the world. Conservationists would like to see ten percent of the land area of the Earth set aside as protected conservation areas, and that target has nearly been reached for the remaining tropical forests. Because of the generally low level of commitment to protecting these areas, and the nearly ubiquitous threats from encroachment and poaching, conservation agencies, in collaboration with development agencies such as the World Bank, have devised strategies that promote "integrated conservation and development projects" and other projects that stress economic benefits for local residents. Many such projects have worked successfully in places where locals have been given a stake in management and proper incentives, but in too many other areas, such projects have led to no reduction in poaching or forest destruction whatsoever. There is currently a backlash among many conservationists—especially among biologists—against the commitment of conservation funds to such development projects which ignore the necessary enforcement measures. Terborgh and many of his colleagues are leading the backlash. Neither rural development, tourism, community benefits, local participation, nor sustainable development necessarily lead to conservation of species and habitats, without strong enforcement of laws against hunting and encroachment in protected areas. Another necessary requirement is human population control, but this topic is now often considered to be politically incorrect even to raise. It is a fact that a great many species will not survive outside of totally protected areas, and many will not survive over the long term inside the areas even with such protection.

What is the answer to this crisis? There are a lot of changes that must be implemented—changes in the attitudes and policies of Western governments, in the commitment of governments of developing countries, and in the general understanding and resolve of the public everywhere. Terborgh reviews the litany of problems facing tropical governments: instability, corruption, inequality, poverty, population growth, institutional weakness. There is no obvious single solution. The best hope may lie in the "internationalization of nature protection," through creation of a U.N.-like body to oversee and perhaps even assume some responsibilities for nature protection where countries are unable to do it themselves. Such an organization should be supported by the wealthier countries which now contribute only minuscule amounts of funds (especially the U.S.) for global conservation.

It is the custom of book reviewers to end by quibbling about certain points or flaws, no matter how trivial, that they find irritating. In a chapter on "Parks—the Last Bastions of Nature," Terborgh briefly reviews the situations in selected countries on all continents.

Thailand is included, and also Khao Yai Park, but the information presented (from a couple of secondary sources) is so out of date and pessimistic as to be quite misleading. Thailand has more than 12 percent of its land area under protection in parks and wildlife sanctuaries. It is quite correct that the so-called reserved forests have nearly all been destroyed by logging companies and then encroached upon by shifting cultivators, but virtually all the remaining forests, and many wetlands, have been decreed as conservation areas by the central Royal Forest Department. Thailand is more advanced and probably more effective in managing its protected areas than any other country of the region. It is protecting the areas from destruction without any significant foreign aid, although there are still serious problems with poaching in most units.

Moreover, Thailand has most of the ingredients required for effective conservation management: relatively stable elected government, a rather free press that is strong on environmental issues, reasonably strong institutions (at least compared with neighboring countries), and growing awareness about the environment. While the conservation situation here cannot be said to be rosy, neither is it as primitive and depressing as in most other developing countries. In any event, I still highly recommend this book. The basic causes of rain forest destruction are similar the world over.

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