

While a large part of the story concerns the efforts to learn about the snake, another important part is the efforts to save some of the birds from extinction. He explains why species that arrive on islands so rarely become established. His explanation of Stuart Pimm's population theory will perhaps prove rather dense for many readers, but is an important part of the story of efforts to save the Guam Rail now extinct in the wild and establish populations on snake-free Rota.

The race to save endangered species on Guam has focused especially on the Guam Rail and the Micronesian Kingfisher. When Julie Savidge was hired to find out what was killing the birds, Bob Beck was hired to save what was left. Jaffe tells how Beck was able to enlist support of many zoos for the breeding programs, and gives some insight into the logistics of maintaining a diverse genetic stock under such circumstances. The story of Beck's adventures feeding kingfishers en route to zoos (pp.73-75) is reminiscent of the humorous tales in Gerald Durrell's books. Because kingfishers have to be fed often, Beck had to take a big jar of geckoes with him on the plane and then stun the prey "without arousing the interest or ire of the other passengers."

The story of the Rail releases is here, too, including Greg Witteman's adventures on Rota and the explanation for why the big Rail release with world expert Dillon Ripley never made the CNN news.

One can learn a lot of island biology from this book. Indeed, one can learn much more island biology from this book than from environmental biology textbooks, which are notably lacking in coverage of islands, tropical or otherwise.

The account is apparently accurate despite some careless spelling errors, like Tino Aguon's name, that may fool local readers into thinking that the whole story is riddled with errors. However, there are no references. This may be good journalistic style, but will be frustrating to readers who want to look further or verify some of the scientific statements. Much has been published from all this scientific work, and a couple of papers in *Micronesica* will give interested readers a start into the literature (McCoid 1991, Rodda & Fritts 1992).

#### References

- Mann, C. C. 1993 (Feb.) How many is too many? *The Atlantic Monthly*, pp. 47-67.  
 McCoid, M. J. 1991. Brown tree snake (*Boiga irregularis*) on Guam: a worst case scenario of

an introduced predator. *Micronesica Suppl.* 3: 63-69.

- Porritt, J. 1991. A new international order. One world and beyond. In J. Porritt (ed.) *Save the Earth*, pp. 33-39. Atlanta, GA: Turner Publ.  
 Rodda, G. H. & T. H. Fritts. 1992. Sampling techniques for an arboreal snake, *Boiga irregularis*. *Micronesica* 25: 23-40.

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#### Books received Climate change and sustainable agriculture

**CLIMATE & AGRICULTURE IN THE PACIFIC ISLANDS: FUTURE PERSPECTIVES.** Aalbersberg, W., P. D. Nunn, A. D. Ravuvu (editors). 1993. Institute of Pacific Studies, Suva, Fiji. 80 pp., softcover. ISBN 982-02-0083-0.

**SOUTH-EAST ASIA'S ENVIRONMENTAL FUTURE: THE SEARCH FOR SUSTAINABILITY.** Brookfield, H. & Y. Byron (editors). 1993. United Nations University Press, Tokyo/Oxford University Press, Kuala Lumpur, Malaysia. 422 pp., hardcover. ISBN 92-808-0823-0. US\$40.

**AGROFORESTRY IN THE PACIFIC ISLANDS: SYSTEMS FOR SUSTAINABILITY.** Clarke, W. C. & R. R. Thaman (editors). 1993. United Nations University Press, Tokyo. 297 pp., softcover. ISBN 92-808-0824-9. US\$35. ("Developing country price US\$17.50.")<sup>1</sup>

The small book edited by Aalbersberg et al., is a report of a 1991 conference in Fiji. Asesela Ravuvu begins by setting the historical perspective of climate change and sea level changes in the Pacific islands, noting that after the last Ice Age there was a Climate Optimum—about 5000 years ago—when average temperatures were higher than today and sea levels some 1-2 meters higher than today. When the temperatures cooled somewhat and the sea levels became what they are today, many Pacific Islands had coastal plat-

<sup>1</sup> The two UN University Press books can be ordered in the US from: UNIPUB, 4611-F Assembly Drive, Lanham, MD 20706-4391.

forms, where migrating peoples settled and began farming.

The rest of the book briefly summarizes projections of global climate change and sea level rise, with specific data and examples from Pacific islands. While some chapters focus on agricultural effects (e.g., Aalberberg's on agriculture-climate feedback loops and Wigglesworth's on crop genetic resources), others cover climate or sea level with little specific reference to agriculture, and there is even one article on potential effects on coral reefs.

A stated goal of this volume is, "to increase grass-roots awareness, to help Pacific populations cope with changes and make the necessary sacrifices to counter the negative impacts of climate change." Inasmuch as it summarizes the topic broadly and readably, this small book may find wide readership in the region.

In contrast, the proceedings of the United Nations University conference (Brookfield & Byron) has a much broader scope: sustainability of the environment—not just agriculture—in the southeast Asian mainland, the Philippines, Indonesia, and New Guinea. Even though this region is largely continental, "the greater bulk of the region's people inhabit the coastal zone," as Philippine marine biologist Edgardo Gomez notes in his article on "Coastal, inshore and marine problems." Thus, for those who require a more extensive treatment of the field, this book is pertinent to the Pacific islands as well. Its value is that it takes global issues and provides regional data, bridging the gap between what has been found out in developed countries and what needs to be known in these developing countries. Yet, for the Pacific islands it still falls short of making the connection, and it will take people fairly knowledgeable to adapt and apply this wealth of information.

Agroforestry is a type of agriculture in which the native forests are gradually replaced by trees that are useful in one or several ways. This "compromise" between native forests and deforestation for croplands is increasingly seen as the most viable future where forests and people interact. It has the advantages of maintaining ground cover, thereby slowing erosion, and of helping the

carbon dioxide budget of the planet. On the other hand, biodiversity is much lower than in an undisturbed tropical forest. Agroforestry is also seen as a "traditional" solution to resource management that might balance the perceived excesses of "western" resource management. Thus the case studies in Clarke & Thaman's book, from Melanesia, Polynesia, and Micronesia, will be of interest well beyond the region, while being particularly instructive here.

The chapter on Micronesia, by University of Guam geographer Harley Manner and editor W. C. Clarke, first describes five types of high island agriculture, including wetland taro cultivation, mixed tree gardening, and open-canopy agriculture. This summary covers only seven pages, and a much more thorough treatment can be found in Rosalind Hunter-Anderson's paper in *Micronesica* 24:1–56 (1991). The rest of the chapter is a case study of atoll agroforestry in Kiribati. In this way it nicely complements Hunter-Anderson's paper. Atoll agroforestry systems, the authors note, "operate under the most severe environmental constraints and greatest population pressures. Further, in response to these constraints and pressures, atoll-dwellers have created the most intensive agroforestry in all the Pacific, with the greatest relative dominance of trees over non-trees." (pp. 130–1)

In the final chapter there is an excellent list of benefits of agroforestry, under the heading, "appreciation of indigenous agroforestry." The authors present this list recognizing that while sustainability may be greater in agroforestry than in staple-food crop production, "sustainability is not common sense if there is no future return to the individual on today's investment in conservation or long-term production." They quote a Tongan farmer as saying, "But when the day starts and I have to decide whether or not to plant cassava or trees for my family, a day planting cassava is worth more." (pp. 192–3)

The book ends with an appendix (by R. R. Thaman) of the uses of 100 Pacific Islands agroforestry trees, which is a fascinating compilation that shows, among other things, the extent to which island peoples maximized their living resources.

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