



Book Review

Ecology, Conservation, and Adventure of the Tropical Forests in Asia and New Guinea

On the Forests of Tropical Asia. Lest the Memory Fade. Ashton, P. 2014. Royal Botanic Gardens, Kew, U.K., and University of Chicago Press, Chicago, IL, U.S.A. 670 pp. \$180.00 (hardcover). ISBN 13: 9781842464755.

Searching for Pekpek: Cassowaries and Conservation in the New Guinea Rainforest. Mack, A. L. 2014. Cassowary & Conservation Publishing. xvii + 235 pp. \$19.95 (paperback). ISBN 13: 9780989390309.

Rainforests typically feature in coffee-table books of lavish photos, textbooks heavy on dry ecological theory, or travelogues that describe the collecting adventures of ecologists. Peter Ashton's *On the Forests of Tropical Asia* combines all three genres in a 670-page, 3-kg masterpiece. As Ashton recounts it, his is indeed "the first attempt to describe and compare the forests of one whole tropical region as a unity."

The author was introduced to rainforests by four Iban Dayak men when he was a young botanist in the service of the Sultan of Brunei. Three years later, he returned to Cambridge with "an impressive knowledge of a hyperdiverse local flora, classified according to the Iban terminology." The book is dedicated to these men, and Ashton's is far from the only case of indigenous initiation for an academic ecologist. Tropical forest science has been shaped by rainforest peoples perhaps more than we care to admit. In this, it is no different from modern art, also inspired by indigenous traditions, except, for example, Picasso's African period lasted only 3 years, whereas Ashton's tropical Asia period is entering its 60th year and still going strong.

Opportunities for students of ecology to experience indigenous ecology have almost disappeared, as have many pristine forests of Asia. *Lest the Memory Fade* is unfortunately an apt subtitle for a book that documents an ancient and disappearing world. I imagine the next generation of Borneo-born biologists looking at the black and white photos in the book and comparing the forests of old with the oil-palm plantations that shaped their childhoods. Ashton's book may help ensure that there are ecologists working in Borneo in the future, a prerequisite for the survival of at least some forest remnants.

Peter Ashton has made a huge advantage, which should be replicated by his successors whenever possible, of studying tropical forests for over half a century. It is probably the broad perspective Ashton gained from studying

156 forests that led him to attempt an overall classification and description of Asian rainforests in their often confusing diversity. His approach is grounded by historical perspective, starting with the complicated tectonic dynamics of the region.

General ecological principles often lose their predictive power when applied to specific ecological situations—tree species, forest types, or regions. Ashton italicizes known unknowns throughout the text: "the regeneration paths of climax species with differing light responses can at present be only inferred." In other words, although we do understand early successional dynamics in tree gaps reasonably well, we still do not know how the primary forest will assemble after the pioneer-species stage.

The author's quest to understand forest composition included a rare laboratory adventure. Ashton was "spectacularly lucky" to see how J. R. Bray and J. T. Curtis devised a new analytical method, ordination, so that "after three weeks of 14-hour days on a hand calculator, the coefficients of similarity between plots were ready and patterns gradually emerged." Modern ordinations provide a guide to the composition of various forest types in Asia. This perspective is expanded to elevational gradients and augmented with phylogenetic and phylogeographic perspectives. The chapter on the mechanisms maintaining forest diversity goes well beyond the usual dichotomy between neutral and niche theory frameworks in that it discusses the often complicated interplay of historical accident, environmental filters, niche structure, and neutral dynamics in individual forests. Unsurprisingly, the result is not particularly satisfying for ecology students who would prefer to learn a single, all-explaining principle for rainforest biodiversity.

The chapter "People and the Forest: a Tightly Interwoven Tapestry Has Frayed" describes people-forest relationships in the past and the radical changes they are undergoing presently. The overview includes the history of agriculture, village and state governance, global trade (since Roman times), the concept of plantations brought by the Dutch and British, European forestry practices, the "triumph of mercantilism" in our approach to forests, and the quest for sustainable forest management. The decline of traditional forest knowledge and the stirrings of a local conservation movement are elucidated.

The last chapter is on the future of the forests and asks, "Can we retain forest options profitably?" The opening paragraph likens forest destruction to burning of the Alexandria library in the 7th century, a better simile of the

rainforests' importance than their reduction to a provider of carbon capture, climate mitigation or other ecosystem services. The book gives an excellent, unsentimental analysis of current pressures on forests that acknowledges significant opportunity costs of rainforest protection, both for indigenous peoples and entire countries. Rainforest value in Asia, following a Kuznets curve, is now, at the height of industrialization, probably around its historical minimum. It should increase again with continuing economic development. Will Asian societies develop fast enough for the forests to become valued again before they are all gone? The race between economic growth and forest destruction is full of suspense.

Andrew Mack's *Searching for Pekpek* is a personal story of rainforest research with a rainforest-conservation message. It may take only a few more generations of students before Mack's account of his research on Cassowaries reads as a quaint tale from an ancient past, perhaps similar to Wallace's account of shooting orangutans to be stuffed as museum specimens in the Malay Archipelago. Few present-day tropical ecologists start their research careers to the sound of tropical trees crashing to the ground, cleared to make space for their own research station in a remote rainforest, but to a sufficiently determined biologist Papua New Guinea (PNG) is one of the few places on Earth that still provides this kind of academic freedom.

Mack leaves readers in little doubt about his determination. The birth of the Sera Field Station in one of the least accessible rainforests of PNG rates among the more adventurous and entertaining reports on doctoral research available in contemporary biological literature. In PNG, rules that are part of tribal oral history guide the present day ownership of forests, forcing Mack to negotiate fieldwork with village landowners. Unfortunately, few western academics have a natural talent for playing tribal politics in an alien culture. Mack vividly describes how these academics inevitably caused misunderstanding and conflict but also forged relationships that ultimately benefitted their research. A lifetime spent in the rainforest makes Papua New Guineans highly efficient field researchers with a formidable knowledge of natural history, although one that is not structured according to the canons of hypothesis-driven Western science (Novotny et al. 2012). The close encounters between university academics and villagers tend to be in equal measure frustrating and enlightening for both sides.

Virtually all Papua New Guineans are landowners. Together, they control the fate of the country's forests, making decisions about conservation and exploitation of natural resources. This may sound like good news for conservation to foreigners who subscribe to the myth that rainforest dwellers are all born conservationists. In

reality, however, tribal societies prefer to maintain their lifestyle while eagerly seeking, testing, and absorbing novel ideas and items from the outside world. Conservation needs to support such synthesis of tradition and modernity by providing a viable income or be easily defeated by the allure of logging royalties (Novotny 2010). Mack describes often rather desperate efforts to integrate conservation with so-called sustainable business projects that would pay conservation costs, including implausibly located ecotourist lodges and marketing schemes for rainforest products that do not have a market. His experience with international conservation leads to a seemingly common sense, but in the world of practical conservation still radical, epiphany; that is, rainforest conservation in PNG and other tropical countries can never succeed unless driven by local conservationists and overseas experts would be best utilized to train nationals rather than executing conservation plans themselves in places where they lack the necessary social skills and political clout to sustain them.

International conservation has of course taken the concept of capacity building fully on board and developed very fine rhetoric on the subject. However, when Mack and collaborators got to work transforming the Wildlife Conservation Society's PNG operation into a genuine training base with numerous local students working on a variety of dissertation projects on rainforest biodiversity, it was a revelation, and one of the most exciting and significant developments in PNG conservation in decades. The termination of this experiment, when WCS decided to return to business-as-usual conservation, appears to be one of the larger mistakes in the recent history of rainforest conservation.

Tropical conservation is socially complicated because it connects three very different worlds with often conflicting interests: rainforest village societies and local non-governmental organizations (NGOs), government agencies, and international conservation NGOs. The villagers, who are theoretically rich because they own a globally important biodiversity estate, although one that often lacks the basic amenities such as electricity and healthcare, often view their partner NGOs, with salaried staff and air-conditioned offices, as living in excessive luxury and being paid with funds that should rightfully be going to the forest owners (West 2006). Mack's sentiments toward the even better appointed headquarters of global conservation organizations mirror those of the villagers towards their local NGOs. His critique of overseas-driven conservation would have benefited from a broader examination of conservation projects in PNG that included NGOs with which he had not been personally involved. Similar comparative analyses are conspicuously lacking in the world of donor-driven conservation, where every project has to be an unqualified success.

In a perfect world, training of conservation experts and professional biologists should be spearheaded by local universities rather than conservation projects. However, many developing tropical countries, including PNG, have only teaching universities that lack research facilities and expect their staff to teach full time. As a result, students of such institutions rarely see, let alone experience, research in action. These countries also often lack the mechanisms for awarding funds according to the quality of research that could support the careers of promising young scientists. Tutoring students and junior biologists may be a more efficient long-term strategy for conservation in these countries than seemingly more direct efforts at establishing conservation areas. The main point of Mack's book, that overseas-driven conservation is doomed without a supportive indigenous academic community, is a valid one. It is an important insight, earned after years of hardship, and delivered in the most entertaining manner.

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