

Alfred E. Hartemink, Invasion of *Piper aduncum* in the Shifting Cultivation Systems of Papua New Guinea

ISRIC—World Soil Information, Wageningen, The Netherlands, 2006, 234 pp, ISBN 90-810628-1-6 (pbk), € 35

Navjot S. Sodhi and Ilsa Sharp, Winged Invaders. Pest Birds of the Asia Pacific

SNP International Publishing, Singapore, 2006, 184 pp, ISBN 981-248-065-X (pbk), US\$29.50

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Invasion biology is now sufficiently mature that regional presses publish both popular books on the invasion phenomenon and scientific monographs on particular invasions. Two recent examples merit attention from the international community.

Hartemink's monograph on the arrival and spread of the neotropical shrub or small tree *Piper aduncum* in Papua New Guinea brings together 10 journal articles by the author and colleagues on various aspects of a fast-moving invasion, together with an introductory chapter relating this case to the invasion literature generally and a summary chapter including a discussion of research lacunae. Introduced by unknown means and first observed on the island in 1935, *P. aduncum* apparently underwent a pronounced lag through the 1960s, before beginning a spread in the 1970s that accelerated into an

explosive expansion in the 1990s. Apparently dispersed by bats, it now dominates secondary fallow vegetation and impedes succession in many lowland areas with shifting agriculture, occasionally forming vast monocultures. In some areas, it even outcompetes legendary other invaders such as *Chromolaena odorata* and *Imperata cylindrica*.

What is most striking about this invasion in the context of invasion biology is that *Piper* has quickly become integrated into many aspects of the agriculture, sociology, and economics of the rural population, and while it is increasingly recognized as problematic, particularly with respect to native biodiversity, the invasion is seen as a net benefit by the majority of natives. This paradox is treated throughout the book, particularly in a series of chapters on the relationship of *Piper* to a sweet potato-dominated agriculture and a long chapter by T.H. Siges et al. on the myriad ways *Piper* is used in three villages in the Finschhafen District of Papua New Guinea. Agriculture and home construction are the most important activities drastically changed by this invasion, the former on balance for the better and the latter for

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the worse, but many other daily features of life have been modified. For example, young *Piper* leaves picked a few days previously are used for toilet paper at pit toilet houses, completely replacing a local plant previously cultivated specifically for this purpose. And *Piper* now has many medicinal uses in these villages.

The chief downsides of the *Piper* invasion are two. First is loss of forest and timber products. Older residents lament losing native trees good for poles, building houses, posts, and other uses that have disappeared because *Piper* prevented regeneration of the original forest. Native game like cassowary and pigs avoid *Piper* fallows, and wild fowl eggs are scarce. The second loss is perhaps more consequential. The dispersion of large villages into smaller, more isolated hamlets is facilitated by this invasion. *Piper* is easy to clear, and this leads to the establishment of small breakaway communities. Previously, large groups were needed to clear the original forest.

This book will be a revelation to most invasion cognoscenti; the *Piper* invasion is relatively recent, rapid, in a remote area, and not well-publicized. The interaction of biology and anthropology differentiates this invasion from most others, and it is superbly described. A map in the introduction with place names and provinces would have been very helpful.

Sodhi and Sharp's *Winged Invaders*, aimed at a lay audience, is an erudite treatment of invasive introduced bird species in the Asia Pacific region, with particular emphasis on Singapore but substantial treatment of some species in China, Australia, and elsewhere. It is copiously illustrated and consists of four main sections—a pithy introduction on invasions generally and bird invasions worldwide in particular, a long section on the biology and impacts of ca. 25 major invaders in the region, a short but authoritative description of diseases, including avian influenza and West Nile virus, harbored and vectored by introduced birds, and a substantial section on when and how to manage bird invasions. The book is easily understood by non-experts but contains sophisticated discussions of some aspects of invasion biology. For invasion biologists with

normal knowledge of ornithology, much of the material in the species accounts will not seem too interesting, but there are many nuggets on the specifics of invasion history and management of particular birds in the Asia Pacific that are not well known outside the region. For example, there is a general discussion of and repeated reference to the release of birds—often exotic species—as a religious rite, primarily by Buddhists but also by practitioners of other religions, and even as cultural traditions no longer bound tightly to religion.

Of great general interest, and of relevance to introduced species beyond birds, is the extensive consideration of how to decide whether and how to attempt to manage an introduced population. The question of whether to manage is thoughtfully addressed, on the grounds of both the nature and degree of impact and the likelihood that management will work. The authors describe methods as extreme as organized shooting campaigns in urbanized areas, as for the house crow (*Corvus splendens*) in Singapore, but they generally opt for less drastic measures, especially controlling access to garbage and modification or elimination of the sorts of sites used as roosts by various species. A pervasive problem is that many exotic invasive birds, particularly corvids but also species not as widely recognized as intelligent, learn fairly quickly to circumvent some initially effective techniques. In the end, the authors are quite pessimistic, suggesting that inexorable habitat destruction in much of the Asia Pacific will foster an increasing number of invasions and increasing density of invaders, and to a large extent people will simply have to learn to live with them.

Although *Winged Invaders* is written as a popular book and should be recommended as such, most invasion biologists—at least those not from the Asia Pacific—will be well rewarded by it. Although there is an extensive bibliography, it is frustrating that there are virtually no citations within the text. I found myself jotting down many examples of interesting invasion phenomena to follow up on and perhaps to cite, but often at somewhat of a loss as to how to begin.