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REASONS

## Hitching a lift

### Out of Eden: An Odyssey of Ecological Invasion

by Alan Burdick

Farrar, Strauss & Giroux: 2005. 336 pp.  
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When geographical barriers are removed and species invade new areas, the potential consequences for biodiversity are grave. If all geographical barriers were removed, the number of mammal species would be expected to fall from 4,200 to just 2,200, for example. Unfortunately, removing geographical barriers is precisely what we are doing. Unprecedented traffic of people, goods, materials and (often unintentionally) invading organisms circulates the globe.

In a vivid illustration of this 'propagule pressure', Alan Burdick's book *Out of Eden* describes a recent voyage using traditional Polynesian sailing vessels. On their way home to Hawaii, the canoeists reported the appearance of a painfully biting insect. The entomologists they consulted concluded that some tiny biting midge (common name: 'no-see-um') must have boarded the canoes at the Marquesas Islands. None of the species it might have been was present in Hawaii, so the quarantine authorities ordered a thorough cleaning of the boats before they docked. Spraying three times with insecticides, scrubbing the boat four times, throwing everything organic overboard, and keelhauling the sails got rid of the midge, but the following stowaways still survived: "four species of fly, two species of ant, a cockroach, two spiders, a book louse, a parasitic wasp, a beetle, several snails, some live shrimps, a gecko, two species of eye gnat, and a scale insect that in some parts of the world is considered a serious agricultural pest."

*Out of Eden* chronicles the author's visits to

Guam to get a first-hand impression of the effect of, and research on, the "snake that ate Guam", the brown tree snake *Boiga irregularis*.

The next stop is Hawaii, which is under threat of invasion by the same snake and many other species. Several people studying various exciting phenomena appear, and it seems that the uniqueness of the Hawaiian biota moulded their personalities, too (or are we faced with pre-adaptation?). There are some fascinating stories (my favourite involves some singing underground leafhoppers), and Burdick drip-feeds a lot of complex information. Some topics, such as the niche concept and the 'empty niche' problem, are very well explained. The discussion of ecological disturbance attributed to feral pigs in Hawaii provides an interesting glimpse of the cultural conflicts surrounding invasion biology.

In the third part of the book, several detailed chapters describe the threat of marine invasions. As a terrestrial ecologist, I enjoyed reading these chapters and found them very informative; however, lay readers might think they contain too much biological detail. Nevertheless, this emerges as the best-written and most original part of the book.

This is journalist Burdick's first book, and unfortunately this sometimes shows in the style. I was slightly disturbed by the exaggerated statements, warfare-like language (even though there is a fine discussion of the consequences of using such language in invasion biology), occasionally cheap *bon mots* ("If the selection pressure is applied by an alien species, is it still 'natural' selection?") and a constant breathlessness. What may have a place in a magazine article becomes tiring over the course of a book — one cannot remain permanently excited for more than 300 pages. Fortunately, as the book progresses, Burdick's style matures.

There are also some superficialities and errors, as nearly always occurs when the writer is not an expert. For example, the mathematicians Alfred Lotka and Vito Volterra worked independently and were not "a pair"; avian malaria is not a predator (which kills and consumes the prey), but a parasite (which usually does not); and nitrogen-fixing symbionts do not "gather nitrogen from soil", they fix nitrogen from the air. A few mistakes like these are not too troublesome, but here the reader is asked just too many times to benevolently glide over them. Better editing could have eliminated many of these slips.

Strangely, and inexcusably, the book has no index, references or notes, even though it is evident from the text that the author consulted a lot of published literature. This makes it almost useless for anyone who wants to go further. There are only six illustrations, and these are of mediocre quality. No reader will be familiar with all the locations and organisms mentioned, so a liberal sprinkling of (good) illustrative material should be included in such a book.

This 'odyssey' generally takes the right direction, despite occasional meanders, and has the occasional thrilling moment. Overall, however, it fails on too many details to be convincingly, triumphantly successful. David Quammen's *Song of the Dodo* (Prentice Hall, 1996) and especially Yvonne Baskin's *A Plague of Rats and Rubber Vines* (Island Press, 2002) cover much of the same territory and, where there is overlap, these are better. Nevertheless, readers of *Out of Eden* will acquire a much-needed understanding of why we should care about biological invasions. ■

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