SAMWAYS, M. J. 2005. Insect Diversity Conservation. Cambridge Univ. Press, Cambridge, U.K. viii + 342 pp. Paperback. ISBN 0-521-78947-8. $55.00 (Hardback, ISBN 0-521-78338-0, $110.00).

"Wilderness is the ultimate natural value" (p. 206). Given that so much of the world is today altered by humans, how can we conserve that natural value? By setting aside parks and preserves, we attempt to do so, but for various reasons we fall short of perfection. Parks and preserves may be illegally encroached upon by humans. They may be too small or not in all the right places for their purpose. They may be invaded by immigrant species (including those whose presence was inadvertently aided by humans) and introduced species. They may be damaged by human-caused pollution or altered by global warming. Then again, why do we bother to try to conserve insect diversity?

The author (who lives in South Africa) of this book addresses these questions and more from a global viewpoint. He begins with a chapter on ethical foundations, and includes Insect Utility, Ethical Philosophy, Insect Rights, and Spiritual (religious) Conceptions. And yes, this **is** the appropriate place to begin because the entire framework depends upon human values. According to the author, representatives of all five major religions (Buddhist, Christian, Hindu, Jewish, and Muslim) at least pay lip service to wildlife conservation, although none expressly mentions insects. In the U.S.A., federal and state laws on wildlife implicitly or explicitly include insects, and insects are the vast majority of animal species. However, 'wildlife specialists' in the U.S.A. typically emphasize vertebrate animals, and through lack of knowledge or interest or time, pay little attention to insects. Somewhere in here there is confusion between the right of the individual animal (insect) to live out its life and the right of the species to exist. The author states "best we let individuals live" (p. 11), and he does not mean that an individual of an endangered species has any special rights over an individual of a widespread species. When he gets to rights of species, he wonders how to take into account that 99% of all species that have existed on earth are now extinct.

This made me examine my own position. I have no compunction about killing small or large numbers of individuals of those species that I consider to be pests, but it has to be my definition of pest, not that of the average Florida resident as exemplified by Dave Barry's statement "insects, if they get anywhere near you . . .whomp them with a hard-cover work of fiction at least the size of Moby Dick" (Barry 1990). The only difference is that I have a narrower definition of pests and perhaps a greater tolerance of small numbers of them. I also kill individual insects that I want to study or as necessary for some experiment. Other than that, I am reluctant to kill insects, and occasionally I even rescue them. At the species level, I believe in the idea of conservation of endangered and threatened insect species. However, I do not extend this belief to species of all phyla of organisms: I would have no remorse if all malarial parasites (*Plasmodium* spp.) of humans were to be eradicated worldwide. Rationally, perhaps all species of all phyla (including *Plasmodium* spp.) could be assigned equal 'rights' to existence. Does anyone truly believe in that level of rationality from the standpoint of ethics? So I have my own values and am not being rational. But, back to killing insects: May we generalize that we all kill insects (either directly or by proxy) according to perceived need, but that perception of need differs between people? Does that explain why some people perceive the need to use electrocuting insect traps that kill any insect unlucky enough to be caught? Or use broad-spectrum chemical pesticides on their lawns? Or enthuse about insectivorous bats simply because they consume lots of insects?

The author then presents the following chapters, and this is where the science comes in: (2) The special case of insects in conservation biology, (3) Insects and the conservation of ecosystem processes, (4) Insects and the changing world, (5) Responses by insects to the changing land mosaic, (6) Threats from invasive aliens, biological control, and genetic engineering, (7) Global climate change and synergistic impacts, (8) Conserving and managing insect diversity, (9) Mapping, inventorying and monitoring, (10) Managing for insect diversity, (11) Restoration of insect diversity, and (12) Conventions and social issues in insect diversity conservation. All of these chapters are well written and well documented and this book is an up-to-date compendium. But the author wrote the first chapter appropriately because conservation is rooted in ethics. Ethics is not science but a grab-bag of human perceptions.

A statement: "Broadly, the doing of conservation has two components. The first is research, or the finding out. The second is the practical implementation . . ." (p. 156) makes me wonder just how we will ever succeed in documenting the abundance of all the ≈ 5 million insect species in the world, or even the ≈ 12,500 in Florida. Certainly abundance of 'charismatic' native species (butterflies and dragonflies) is being documented in Florida, but for the vast majority we have little idea of the species that are rare, threatened and endangered, despite the good intentions of Mark Deyrup and Richard Franz (Deyrup & Franz 1994). This is because (a) current funding agencies have insufficient funds to support such studies by students or professionals (perhaps because the general public is disinterested—the 'Dave Barry syndrome' wishes most insects dead), and so concentrate their funding effort on 'charismatic' species, and (b) because, unlike in Europe

and perhaps Japan, there is only a tiny core of dedicated amateurs making such studies, although the Research Associates program of the Florida State Collection of Arthropods is trying to build one. All of the insect species in Florida are not yet described, and for many thousands of them—most of them—we have but trivial information about population densities and threats to existence. We hardly know which ones are threatened and endangered.

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