JERVIS, M. A., AND N. A. C. KIDD (eds.). 1996. Insect natural enemies. Practical approaches to their study and evaluation. Chapman and Hall; London, x + 491 p. Hardback. ISBN 0-412-39900-8. $138.95.

This book is about the behavior and ecology of insect parasitoids and predators. The subjects (the parasitoids and predators) and the objects (hosts of the parasitoids and prey of the predators) are insects. Its 7 authors are from Wales, the Netherlands, and England. In 6 long chapters, mostly with 2 authors, they write about many of the things that a specialist in biological control needs to know. The chapters are thus aimed at graduate students and professionals in biological control. I think the book will also be very useful to ethologists and ecologists who study insect parasitoids and predators from a purely academic viewpoint (as contrasted with biological control's applied viewpoint) because biological control research is at the forefront of studies in insect behavior and ecology. The book will be of very little use to systematists because the information is **not** organized order by order and family by family and is **not** a replacement for Clausen's **Entomophagous insects**.

The 6 chapters are: (1) Foraging behavior [with emphasis on Hymenoptera], (2) The life cycle [which includes sections on female and male reproductive systems with emphasis on Hymenoptera], (3) Mating behavior [with emphasis on Hymenoptera], (4) Populations and communities [including a section on field sampling techniques], (5) Population dynamics [including a section on selection criteria for biological control agents], and (6) Phytophagy. The chapters are not like those in Annual Review of Entomology. First, they are longer. Second, they offer their authors' viewpoint, documented and illustrated by selected examples, rather than attempting to review at least the highlights of everything published. This is not detrimental. Third, they emphasize the "parasitic" Hymenoptera, although this is reasonable in the context of biological control because these insects have played such a prominent role. Fourth, the

author's perspective and the examples they cite are mainly European. Undoubtedly it makes a better book when authors write about examples familiar to them; North American readers can learn by reading it even if they find the examples unfamiliar. Fifth, the literature cited is almost entirely in English, most likely because most of the literature these days **is** published in English (there could be other explanations).

The chapter on populations and communities includes a 35-page section on field sampling techniques. I found inclusion of this section to be a little curious because the authors **should** have been able to omit it, and refer to a standard textbook on entomology for the methods. Yet, I do not know a standard textbook on entomology which includes a comprehensive review of this subject. Then again, the section seems to have been included only halfheartedly because it is about sampling techniques for insects on the ground surface, on plants, and in flight: it does not include methods for sampling aquatic insects, has little about subterranean insects, and omits many techniques. Perhaps there is a market for an entire book on sampling techniques for all groups of insects.

The chapter on phytophagy is much the shortest and deals almost entirely with feeding by adult parasitoids and predators on floral nectar and pollen. Most of the information is about Syrphidae, and the reader might reasonably hope for a more complete synthesis of knowledge on other insect families. The reader might also wish for more insight into saprophagy, and phytophagy on plant materials other than nectar and pollen, by parasitoids and predators.

Overall, the book is a very useful supplement to textbooks on biological control (for example, Van Driesche & Bellows, 1996, reviewed in Florida Entomologist 79: 269-270), but its price is likely to deter purchase by students. The line drawings and standard of editing are good. The photographs are all in black and white, and some lack contrast. The book emphasizes the “parasitic” Hymenoptera, as perhaps it must, but to the detriment of other taxa of biological control agents, especially predators. It is the first of its kind and was needed: the editors should be congratulated.

J. H. Frank
Entomology & Nematology Dept.
University of Florida
Gainesville
FL 32611-0630