

## **Book Review**

### **Pheromones and Animal Behaviour: Communication by Smell and Taste.**

By Tristram D. Wyatt. Cambridge University Press, Cambridge, UK. \$100 (Hardback), \$40 (Paperback). ISBN 052148068X

Over the past 10 years or so, there has been an explosion in research in the chemical senses that has been fueled largely by advances in molecular biology. For example, large families of genes controlling the expression of putative olfactory receptors have been identified in vertebrates and invertebrates alike. What are the ligands, however, that bind to these receptors? Some of them will surely be chemicals that are used to communicate between individuals of the same species: pheromones. This book by Tristram Wyatt examines the role of pheromones in the lives of animals through the looking glass of behavior. It is refreshing to see an all-inclusive approach to this topic, one that celebrates the diversity of animal life rather than reducing it to a couple of token "model" systems. It has been a long time since anyone burdened themselves with such a broad undertaking, so this book should be well received by ethologists and chemical ecologists alike. Of course, cutting a swath across invertebrate and vertebrate taxa could have produced a substantial volume. That compulsion has been resisted here to produce a well-written book that provides enough details to be convincing without devoting too much page space to any one specific subject. The overall shape of the book is aided by frequent references to both the primary literature and more in-depth specific review articles. In addition, many points are supported by use of data and illustrations from these sources. As such, the book will be particularly accessible to undergraduates and educators. More specialized practitioners of chemical ecology and behavior will also find something new and interesting in this broad text, and a gateway to original articles for those seeking a more detailed treatment is available through the cited source material. Many books currently are a compilation of chapters written by various experts in their fields. Such tomes often make for choppy reading owing to the different styles, both in prose and theme, of the contributing authors. Another strength of this volume is that it has been penned by a single author, allowing the development of consistent themes in each chapter that revolve, of course, around pheromones and behavior, but that are also placed within a broader evolutionary framework. Wyatt resists the temptation to pedal his own opinions, although there are times when some ideas could use further development rather than compression into a single-sentence question.

Although the book is written with great clarity throughout, there were several chapters that I found particularly noteworthy. One entitled "Sex pheromones: Finding and choosing mates" offered a concise introduction to mate choice and sexual selection, and another "Pheromones and social organization" provided details of how pheromones are used by certain animal groups to maintain a coherent social structure. A contrasting set of social interactions, that of establishing and maintaining territory, were examined separately in "Scent marking and territorial behaviour." Recent advances in our understanding of how chemical information is detected, processed, and represented by the brain were discussed in "Perception and action of pheromones: From receptor molecules to brains and behaviour." "Finding the source: Pheromones and orientation behaviour" explained the behavioral mechanisms that animals employ to navigate along pheromone plumes and trails. An additional chapter "Breaking the code: Illicit signallers and receivers of semiochemical signals" on those animals capable of varying degrees of chemical espionage and subterfuge was especially fascinating. A final one "On the scent of human attraction: Human pheromones" discussed the importance of olfactory information to humans and presented evidence for the existence of human pheromones.

All in all this is an excellent general book at a reasonable price. Color figures could have been used in certain instances, but that would likely have increased the cost. Appropriately, the book is dedicated in part to Martin Birch who was an early pioneer in insect pheromone research and edited one of the first, and possibly last, book devoted to the general subject of pheromones (Birch, 1974). There have been other recent volumes (Cardé and Minks, 1997; Hardie and Minks, 1999; Vander Meer et al., 1998), but they have tended to be aimed at a narrower, more specialized audience and all focus on insect pheromone systems. Although a great deal of progress has been made since Birch's compilation both in terms of identifying the actual chemicals that constitute pheromones and the behaviors that they elicit, it is clear from Wyatt's treatise that an enormous amount of work remains to be done. Phero-men, women, and students should be busy for many years to come!

#### REFERENCES

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