# AQUATIC INSECTS

## Challenges to Populations

EDITED BY

JILL LANCASTER AND ROBERT A. BRIERS

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**JILL LANCASTER AND ROBERT A. BRIERS**

Insects are a diverse, numerous and important group in aquatic habitats, occupying key functional and ecological roles. This edited volume brings together acknowledged experts in often disparate fields ranging from physiology and ecology to evolution. Chapters consider in a unified manner the challenges facing insect populations in the aquatic medium and how they have adapted to achieve such prominence in virtually all habitats. All stages of the life-cycle are covered and biotic, abiotic and evolutionary issues are brought together in a volume which provides an up-to-date review of research. It will be of particular use to researchers and students alike who have an interest in aquatic insects, and factors influencing their survival and success.

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# AQUATIC INSECTS

## Challenges to Populations

## Proceedings of the Royal Entomological Society's 24th Symposium

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# Preface

It is customary in the preface or introduction of a book to stress the importance of the subject matter, in order to justify the publication and to encourage readers on to the main text. One of the problems with this is the overuse, and consequent devaluation of 'importance' (Brooker *et al.*, 2005). As far as aquatic insects are concerned, we feel that little justification for having an interest in this group is necessary. Their persistent presence in the Earth's fauna (>300 million years since insects invaded aquatic habitats), their numerical dominance in contemporary freshwaters (and some saline waters), and the diversity of roles they perform in aquatic ecosystems speak for the importance of the group. In an academic context, aquatic insects have served as model systems for the development of understanding of many aspects of insect physiology, behaviour, ecology and evolution, so there are many aficionados of this group.

The papers in this book were presented at the 24th International Symposium of the Royal Entomological Society, which was held at the University of Edinburgh, UK, in July 2007. The title of the symposium and this book, *Aquatic Insects: Challenges to Populations*, reflects an unashamed bias of the editors towards processes acting at the population level, but the book's content takes a very broad view of populations. In planning the symposium, our aim was to bring together key workers in diverse fields, to take an integrated view of the challenges facing aquatic insects and to foster a broad appreciation of the links between subject areas that can lead to deeper understanding. It is easy and comforting to stay within the relatively narrow confines of one's own discipline or area of interest, but the greatest prospect for progress and new ideas often comes through discovering connections between apparently unrelated ideas. Thus, this book considers some of the potential influences on individuals and populations (e.g. environmental stresses, parasites, cannibalism, dispersal limitations), the 'cunning tricks' used by aquatic insects to overcome challenges (e.g. polarization vision, life-history strategies, osmoregulation, cold hardiness) and the consequences of those challenges at different levels of organization (e.g. distribution patterns,

population structure, population genetics, evolution). Similarly, the set of papers encompass many taxa and all life stages of aquatic insects, not just the 'aquatic' stages. It is impossible, in one book, to provide exhaustive cover of all the challenges to populations, and though this set of topics may seem eclectic, we hope it provides a thought-provoking sample. During the symposium, we hoped that the presentations would spark new ideas and synergisms; they certainly sparked conversation! Similarly, we hope that readers will take the opportunity to read multiple chapters and find inspiration for their own work, or simply a wider appreciation for the wonders of aquatic insects.

It is also customary in the preface of a book to acknowledge the people who often work behind the scenes but, without whom, the book never would have existed. We would like to acknowledge our co-convenor of the symposium, Craig Macadam, who was instrumental in getting us involved in the first place, and contributed equally to the success of the meeting. We were also heartened by the eagerness with which the speakers (and subsequent authors) accepted our invitations and by their promptness in producing the required manuscripts. All those who attended the meeting also contributed to its success, and to much lively debate and discussion. Those who agreed to review chapters are also acknowledged for their insightful and constructive comments, which improved the final volume immeasurably.

We would also like to thank the Royal Entomological Society who provided the generous funding, which enabled the meeting of a truly international, and very high quality, set of speakers. Bill Blakemore, Registrar of the Society, and its other staff and officers provided invaluable assistance with the organization of the meeting and the flow of funds. Last, but most certainly not least, we thank Graham Stone (University of Edinburgh) and his team who did so much to ensure that the symposium ran smoothly.

**Jill Lancaster**
**Robert A. Briers**

## References

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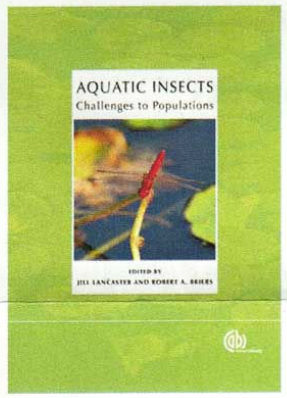


## Aquatic Insects
### Challenges to Populations

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**Audience:**
Researchers in aquatic insects and entomology.

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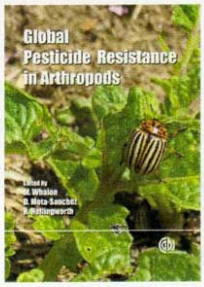


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