

## Lloyd Vernon Knutson and Jean-Claude Vala: *Biology of snail-killing Sciomyzidae flies*

Cambridge University Press, Cambridge, UK, 2011, xix + 506 pp, Hardback £85.00, \$150.00, ISBN 978-0-5218-6785-6

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Received: 3 April 2012 / Accepted: 10 April 2012 / Published online: 4 May 2012  
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The snail-killing flies are a moderate-sized family of acalyptrate Diptera which have received considerable attention in recent decades. This is principally because they have been found to be important predators or parasitoids of molluscs, some of which are important to human or domestic animal health. There are 539 described species and the larval habits of 38% of these are known—a very high proportion for a family of Diptera. Historically, nearly all the work on their life-histories has been done since the 1950s.

The book has an overview of all the natural enemies of Mollusca and of malacophagy in flies. The following topics on snail-killing flies are included: life cycles; host relationships; feeding behaviour; phenology; reproduction; habitat associations and bio-indicators; enemies; defence mechanisms; population dynamics; morphology; physiology; behaviour; systematics; zoogeography; evolution; biological control; history of research and methodology.

Snail-killing flies are shown to be almost entirely associated with molluscs, upon which the larvae feed. Most therefore occur in the wetland habitats frequented by molluscs, but some occur in dry habitats with their snail hosts. Some snail-killing flies are highly host-specific, but most are found on a range of molluscs.

Conservationists will be particularly interested in Chapter 10, which includes information on threatened species and bio-indicators. It shows that while many species of snail-killing flies appear to be rare, this could be an artefact of time of collecting, habitat association or collection method. There is compelling evidence of a decline in abundance of snail-killing flies in Europe and North

America. The use of snail-killing flies as bio-indicators must be regarded as in its infancy, but it is clear from ecological studies that they may occupy a very narrow ecological range. There is a strong case for including them in studies of threatened species and as bio-indicators of the ecological health of habitats. British and other European workers have conducted detailed studies on threatened Sciomyzidae and this research is reviewed in this book. Much of the interest in Sciomyzidae is due to their potential as biocontrol agents of molluscs and this is considered in Chapter 18.

The systematics section (Chapter 15) contains very useful keys to genera of adults, larvae and puparia from the major zoogeographical regions. The systematic position and family limits of the family are considered in the same chapter. There is a world checklist of Sciomyzidae and Phaeomyiidae in Chapter 21, a resource which will be particularly useful to researchers, including taxonomists, recorders and museum curators.

The upsurge in interest in the biology of snail-killing flies in the last half-century is due to a few dedicated workers, including the authors, chiefly in North America and Europe. This stems from the pioneering work of C.O. Berg in the U.S.A. from 1953 onwards. It shows what can be achieved on a specialised family of Diptera given a focussed interest and a modicum of funding.

Included in the book is a DVD describing the possibilities for biocontrol of freshwater snails that are obligate intermediate hosts of trematode flatworms that cause schistosomiasis of man and fascioliasis of man and domestic animals.

This is a useful book containing a very detailed overview of the subject. It is written for academics, graduate students and specialists and is certainly not a 'coffee table' book. It is thoroughly recommended for those interested in Sciomyzidae and it is hoped it will encourage workers to address the many gaps in knowledge revealed in the book.

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