
Water bugs are familiar insects in aquatic habitats throughout the world. Interest exists in water bugs because they are excellent model organisms in evolutionary biology, ecology and conservation biology, and some are used as indicator species for water quality of natural water bodies.

They belong to the order Hemiptera (suborder Heteroptera), the largest insect order with incomplete metamorphosis. There are two main kinds of water bugs: (1) the semi-aquatic bugs (Gerromorpha) which live upon the water surface and (2) the true aquatic bugs (Nepomorpha) which live beneath the water surface. Water bugs occur in a wide variety of natural habitats, practically in all standing and running water: in small, temporary pools, small streams, rivers, lakes, coastal mangroves, tidal pools of coral reefs, and even on the surface of the open ocean, hundreds of kilometres away from land.

Water bugs are chiefly predators and scavengers, but some of them are omnivores, eating plant material (like algae) and animal matter. They will feed on any prey that they can master, from tiny crustaceans and insects to tadpoles and small fish. They play a key role in aquatic ecosystems, where they are predators and prey of larger organisms, like fish and birds.

This handbook is the first comprehensive guide facilitating the identification of Australian water bugs. It provides an overview of all 15 families, 17 subfamilies, and 54 genera known to occur on mainland Australia, Tasmania and nearby islands. Illustrated keys, featuring a minimum of technical language, are offered to assist with the identification of all species of adult water bugs. The book is richly illustrated with eight colour plates, many black-and-white photographs, scanning electron micrographs and numerous line-drawings. The book can be divided into two parts, chapters 1–5 which deal with the more general aspects of water bugs, like their biology, ecology, phylogeny and collection, and chapters 6–21, which mainly cover their systematics.

In Chapter 1, the Introduction, water bugs in Australia and their distribution patterns are discussed. The water bug fauna of Australia is not as rich as that of the Oriental, Neotropical or Afro-tropical regions, but it is unique because a high percentage of the semi-aquatic species are marine (24% compared to 10% worldwide), many primitive forms which are important for understanding the evolutionary history of water bugs occur here and many groups originated and diversified within the continent itself. The chapter ends with a useful reference list for additional reading.

Chapter 2 deals with the biology and ecology of the water bugs. A key to the Australian water bugs (mainly genera), based on habitats and habits, is provided. Sections deal with habitats, respiration, locomotion, feeding, reproductive biology, wing polymorphism, parasites and commensals, economic importance, and the use of water bugs in environmental monitoring.

The classification and phylogeny of the water bugs are discussed in Chapter 3. The Gerromorpha originated and diversified mainly in the Jurassic and early Cretaceous periods while the Nepomorpha evolved in the transition between the Permian and Triassic periods, and diversified mainly in the latter period.

Chapter 4 on identification is wholly devoted to a discussion of the terms used in the keys and descriptions. It is copiously illustrated and all relevant terms are explained and illustrated.

Collecting methods and specimen preparation are briefly dealt with in Chapter 5. Different sections (all fairly concise) deal with collecting water bugs, rearing, specimen preparation, labelling, and the major collections of Australian water bugs.

Chapter 6 presents a key to the adults of Australian families of water bugs. Like all the keys in the subsequent chapters it is clear and well illustrated, with the minimum of technical terms and language used.


For each family there is a section on its identification (mainly giving the morphological characters by which it can be identified) and an overview of the number of species and distribution worldwide, its biology, and any other unusual information on the
family. This is followed by a key to the Australian genera of the family. Thereafter every genus is discussed in terms of its identification, biology and distribution, and a key to all the Australian species is provided. For every genus there is at least one illustration to show the general appearance (‘habitus’) of a representative species, and a map showing the distribution of the genus in Australia. Key morphological aspects of almost all the species are also illustrated.

Chapter 21 is followed by a fairly extensive reference section (18 pages); Appendix 1: checklist and distribution of Australian water bugs in which the original author, type locality and deposition of the holotype, synonyms and distribution of each species are given; and an index that contains the names of higher taxa, genera and subgenera, including morphological terms and other subjects discussed in the book.

The main features of this book, which make it so invaluable for scientists and amateurs alike, are:

- It is complete and comprehensive, covering all the species recorded from Australia.
- Well-illustrated keys to all the families, genera and species are provided. These keys contain a minimum of technical language and could easily be used by anyone with a basic knowledge of entomological terms.
- The morphology, for most species, is exquisitely and functionally illustrated in numerous scanning electron micrographs, colour and black-and-white photographs, and line-drawings.

It is hard to find any critique of the book. Perhaps a glossary of terms would have enhanced it, especially for amateurs not familiar with the terms who probably will repeatedly have to go back to try and find the terms in the chapter where they are discussed. The distribution maps for each genus could easily have been adapted to also show the distribution of the individual species of the genus, especially where the genus contains only a few species.

Although the book is mainly directed towards an Australian readership, it will be a valuable resource for heteropterists and amateurs interested in aquatic insects all over the world. Many of the families and genera are cosmopolitan or occur in other parts of the world too, and the discussion on their identification and biology is thus valuable.

This book is especially of interest to scientists and other interested persons from southern Africa, as 14 of the 15 families, and half of the 54 genera discussed in the book, also occur here. Entomologists from southern Africa can only envy such a comprehensive work on the Australian water bugs. For southern Africa, there are no keys, or only incomplete keys for many of the species; several species are only known from their original short Latin descriptions, while many species remain undescribed. Additionally, there does not exist any mentionable museum collection of southern African water bugs (which is equally true for many other heteropteran families), to help address this taxonomic challenge. Hopefully this book will stimulate some interest in the southern African water bugs. No major library should be without a copy of this excellent book.

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