

Book reviews

Marine decapod Crustacea of southern Australia: a guide to identification. By Gary C. B. Poore. Published in 2004 by CSIRO Publishing, P.O. Box 1139, Collingwood, VIC 3066, Australia. 608 p., hardcover. ISBN: 0-643-06906-2. Price: AU\$180.00 (orders: publishing.sales@csiro.au).

This is a great book for anyone interested in decapod crustaceans and stomatopods from this part of the world. No, it's not a comprehensive guide covering all New Zealand decapods, nor is it the final word on southern Australian decapods. It is, however, a very useful, well-structured guide to the Decapoda that is a huge advance on Herbert Hale's crustaceans of South Australia, albeit on just two groups of this diverse subphylum. It will be invaluable to Australian marine biologists and an asset for those of us who try to identify New Zealand crabs, shrimps, and stomatopods from time to time.

Identification guides are tools, meant more for dipping into for identifying specimens and for seeking out other information on particular species, than for reading chapters at a time as for most books. Thus, the opening chapters are easily overlooked, being treated as largely superfluous by the user (not reader). The introductory chapter, however, holds something for all users. It rapidly introduces the fundamentals of crustaceans, explains the geographic scope of the guide, summarises the history of decapod (and crustacean) discovery in Australia, and presents an overview of southern Australia's marine environment, its decapod habitats, and the resulting biogeographic patterns of the region. The introduction concludes with a brief explanation of the higher taxonomy used and an outline of the structure of the taxonomic sections. It also directs users to a comprehensive and illustrated glossary at the end of the book. Chapter 2 plunges into the deeper waters of crustacean phylogeny and higher classification, but the discussion is clear and easily understood. So too, is the reason for the often exasperating attention that systematists give to revising

names and families: "a species' genus and family placement should tell you something about its ecology and evolutionary history", as well as its biology. The rest of the chapter describes the six classes of the Crustacea, leading to a classification of the Decapoda and a key to the major groups of decapods, which, conveniently, includes similar Crustacea.

The working chapters each treat a suborder or infraorder in a consistently functional fashion. Each (including that on mantis shrimps) starts with an overview of the taxon, outlining its composition and common or diagnostic characteristics. A brief history of the group's systematics identifies key works for further reference, should the need arise. Next follows a formal diagnosis of the group, then a key to major divisions or Australian superfamilies and families to continue the identification process, and a list of important references to the taxon. Entries for individual species comprise a few lines describing diagnostic characteristics, some notes on known geographic and depth ranges, followed by additional notes distinguishing species. Notes on the ecology and biology of each species are also included, providing considerable additional interest, especially for well studied or commercial species, such as rock lobsters and the Tasmanian giant crab. Species' entries include a sentence giving any previous generic placement.

This structure is repeated for successively lower taxonomic levels, with keys to each family usually leading to genus and species levels (up to four keys may be required within a chapter). Thus, keys are interspersed throughout the book, placing them conveniently close to relevant illustrations and diagnostic and ecological notes on each genus and species. Page references within higher level keys mean that it is easy to find the next key needed in the identification process. References to key literature are presented at the end of each section, but these mostly do not include references to original descriptions. The index is to scientific names only and lacks entries for the three alien species (*Eriocheir sinensis*, the Chinese mitten crab; *Hemigrapsus sanguineus*; *H. pencilatus*), even

though there is a box on p. 512 specifically for these and one is also mentioned in the Introduction. I wonder whether including common names in the index would have added to the book's use?

The abundant and clear illustrations add substantially to the identification section of the book. Almost every species is illustrated in some way. Whole animal illustrations are used extensively, providing reassurance that the user is on track when identifying an unfamiliar specimen. Most illustrations are very clearly reproduced (often from older publications) and of very high quality; they're very enjoyable to simply browse (among my favourites are Fig. 34, three pandalid shrimps, and Fig. 99, a collection of leucosid crabs). Many of the illustrations are of species' diagnostic characters only. These are often grouped into a single figure for ease of comparison, but also graphically demonstrate the unexpected variation of basic patterns that delight and frustrate. Fig. 63–65 are great examples of this for galatheids, but others abound. The colour photographs add substantially by showing the live colours for the 160 or so species of decapods and stomatopods included, as well as providing further details of their overall morphology.

For Australian biologists who work with decapods, this book is a must. Is it useful for New Zealand marine biologists? In particular, how well does it cover the New Zealand fauna? New Zealand, including the Kermadec Islands, spans much of the

latitudinal range of southern Australia, but our southern and subantarctic waters are well south of those treated in this guide. I checked coverage against an unpublished list of New Zealand decapods compiled by Rick Webber (Museum of New Zealand Te Papa Tongarewa). The guide covers all suborders and infraorders reported from New Zealand. Comparison showed that all families of the New Zealand Anomura and all except two minor families of the Brachyura are covered. When I examined two large families for coverage of genera, I found that four of the five galatheid and seven of 13 pagurid genera known from New Zealand are also included.

If it is not comprehensive for New Zealand taxa, is it worth having? I think it is. For me, its value lies in its content and approach. The well-structured treatment and focus on providing a well-balanced mix of taxonomic diagnoses, straight-forward keys, clear illustrations of whole animals and important characters, and very readable synopses of natural history of each species means that it is an invaluable resource, even though probably not the main identification tool for our New Zealand fauna.

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Marine mammals: fisheries, tourism and management issues. Edited by Nicholas J. Gales, Mark A. Hindell and Roger Kirkwood. Published in 2003 by CSIRO Publishing, P.O. Box 1139, Collingwood, VIC 3066, Australia. 446 p., hardcover. ISBN: 0-643-06953-4. Price: AU\$116 (orders: publishing.sales@csiro.au).

This book addresses interactions between humans and marine mammals in a collection of reviews derived from the 2001 Southern Hemisphere Marine Mammal Conference. An emphasis on Southern Hemisphere research makes this book indispensable reading for all marine mammal scientists and students in New Zealand. The spectrum of topics and innovative approaches to research and presentation broaden its relevance—I recommend a browse by anyone interested in marine science or in human impacts on nature. The reviews are clear and

comprehensive. Expect new ideas and concepts, for example, the book includes one topic—mariculture—addressed for the first time from the perspective of marine mammals.

The first section, “Marine mammals and fisheries”, begins with a skilful insight into the culling debate. Here David Lavigne clearly and cleverly presents the familiar but polarised arguments—marine ecosystems are either simple food chains where the effects of changes are easily deduced, or complicated food webs where the effects of changes are unpredictable. I was surprised but reassured by the forehead-smacking revelation that fact and attitude can be irreconcilable.

The next four chapters take an ecosystem approach to assess interactions between marine mammals and fisheries in the Southern Ocean, Australia, Patagonia and South Africa. These include the chapter that I regard as the gem of this book—trophic interactions between seals and Australian

fisheries. Authors Goldsworthy et al. extend the parameter for comparison beyond fisheries catches to include estimates for biomasses of species groups. This ambitious progression is a prerequisite to simulate realistic scenarios for trophic interactions. I particularly appreciated the way the authors integrate marine mammals into the marine ecosystem, rather than treating them as an add-on comparable to fisheries. We have sufficient relevant data to duplicate this style of analysis for New Zealand.

The next four chapters primarily address examples of operational interactions—interactions with fishing gear—that cause death of marine mammals. The accounts of two threatened endemic New Zealand species make interesting reading. They offer contrasting examples of the impact of fisheries-related mortalities and subsequent management responses. Kills in gillnets have reduced the distribution and abundance of Hector's dolphin (*Cephalorhynchus hectori*) and this decline is ongoing. Authors Pichler et al. conclude that waiting to act emphatically until evidence of decline is overwhelming may be too late to prevent extinction. They recommend the immediate implementation of a precautionary principle to management—err on the side of caution unless evidence indicates otherwise. In contrast, the precautionary principle has been applied to the New Zealand sea lion (*Phocarctos hookeri*). Authors Wilkinson et al. describe management of fisheries impacts that are based on the assumption that kills in trawl nets around Auckland Islands, the species population base, have prevented or delayed an increase in numbers and subsequent spread in breeding distribution. Management and research to reduce the number of sea lions killed has taken two paths. First, a maximum limit is set annually for the allowable number of kills and the fishery is closed if the limit is exceeded. Second, an exclusion device is under development with the aim to eject seals alive from trawl nets. Although an exclusion device potentially will eliminate seal kills in trawl nets, the authors emphasise that seals must be ejected not only alive but also uninjured. A similar seal exclusion device deployed in Australia is described and illustrated in an earlier chapter (Shaughnessy et al.). The two chapters share a co-author and so I was surprised that the two studies differed in position of the device in the net and in the collection and analysis of data. Perhaps research would benefit from trans-Tasman co-operation. Here I have to admit a bias against the chapter on New Zealand sea lions because the authors did not question whether fisheries-related mortalities

affected species viability. They omitted reference to a publication within the timeframe of this book, Maunder et al. (2000), that challenged the validity of this assumption. Wilkinson et al. do conclude with the suggestion that the Auckland Islands population of sea lions is near carrying capacity but they seem unaware that this is incompatible with the assumption that kills in nets are preventing an increase in numbers.

The first section concludes with a review of the effects of aquaculture, the fastest growing food industry in the world. Effects of mariculture are addressed for the first time from the perspective of marine mammals. Authors Kemper et al. thoroughly assess known and potential impacts of mariculture that extend beyond interactions with marine mammals. I found their synopsis depressingly pessimistic. However, they present sound policy recommendations and practical methods to reduce damage to gear and entanglement by marine mammals.

The second section, "Marine mammals and tourism", begins with an enthralling and insightful approach to tourism on cetaceans. Rather than replicate other recent reviews on this topic, authors Bejder & Samuels address the issue of the design of research intended to investigate the effects of tourism on cetaceans. I thought that their appendix was particularly inventive in the context of a review—the authors wrote abstracts for 19 published studies with the specific aim of elaborating on the methods used. The next chapter presents the first review of tourism targeting seals in the Southern Hemisphere that reflects its recent emergence as an offshoot of whale watching. Authors Kirkwood et al. emphasise the importance of regulations and their implementation to ensure the sustainability of this rapidly growing industry. This context is repeated in the next chapter that addresses swimming with cetaceans.

The last section, "Management issues", consists of six chapters that address an unrelated mix of topics—ethics, ecosystem monitoring, acoustics, DNA surveys, species with international distributions, and pollution. Each seemed comprehensive but only the first two appealed to my interests. In a chapter on ethics, authors Gales et al. address potential for conflict between scientists, animal ethics committees, and public attitudes. Gone are the days when scientists could do pretty much what they wanted. The compromise between data collection and disturbance has now expanded to include public perception—techniques now must pass public scrutiny in addition to not affecting the performance of study animals. Addressed examples include the

recent hot-iron branding of New Zealand sea lions. In the next chapter, authors Hindell et al. examine how seals can be used as indicators of environmental change. They conclude that long-term monitoring programmes must expand beyond single species to include other ecosystem and climatic parameters.

A problem with any collation of reviews is the unavoidable obsolescence created by the duration between writing and publication—here May 2001 and December 2003, respectively. The companion volume for this book contains 15 papers published in a special issue of *Australian Mammalogy* (Volume 24, Number 1) entitled “Proceedings of the 2001 Southern Hemisphere Marine Mammal Conference” and published in September 2002. An editorial shortfall in the book was a lack of referencing to relevant publications in these Proceedings. Appropriate referencing happened only in chapters where the author list included either an author in a Proceedings paper or an editor. In my perhaps biased opinion, the chapter on New Zealand sea lions would have benefited with reference to McConkey et al. (2002a,b).

Freshwater fishes of north-eastern Australia.

By Brad Pusey, Mark Kennard, and Angela Arthington. Published in 2004 by CSIRO Publishing, P.O. Box 1139, Collingwood, VIC 3066, Australia. 700 p., hardcover. ISBN: 0-643-06966-6. Price: AU\$89.00 (orders: publishing.sales@csiro.au).

This is a quite extraordinary book that covers an absolute mass of detail about the auto-ecology of the fish of north-eastern Australia. It's huge, weighing 2.3 kg, so isn't the sort of thing you'd want to carry in the field (nor would you want to see it getting knocked around at \$89, though it's worth every cent). There is a very long key to all of the species, so there are “helps” for identification, though this is not one of its great strengths (the key might have been less daunting and easier to use if partitioned between families). Moreover, there are no colour photos so it's not the sort of book that you can sit down and rather idly browse through. But you will rarely find a book with this much detail and it is a splendid resource of information. It reminds me of one of the classics of fish literature—Bigelow & Schroeder's “Fish of the Gulf of Maine”, first published in 1953.

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- McConkey S, McConnell H, Lalas C, Heinrich S, Ludmerer A, McNally N, Parker E, Borofsky C, Schimanski K, McIntosh G 2002b. A northward spread in the breeding distribution of the New Zealand sea lion *Phocarctos hookeri*. *Australian Mammalogy* 24: 97–106.

Around 130 species are explored, with a nearly standard set of sub-headings including: (1) description; (2) systematics; (3) distribution and abundance; (4) macro/meso/micro-habitats; (5) environmental tolerances; (6) reproduction; (7) movement; (8) trophic ecology; and (9) conservation status, threats and management. Each of these sections provides a substantial review of known information, much of it deriving from Pusey and his co-authors' enduring and extensive surveys of the rivers/freshwater fish of Australia's north-east, covering from Queensland at its border with New South Wales in the south, to the Cape York Peninsula in the north, and then west to the Gulf of Carpentaria. Their original work, in itself, on which this book is based, is monumental, and has taken the fish fauna of the area from being about the most inaccessible and little-known, to as well known as that in any other part of Australia. And, covering a huge transition from warm-temperate to sub-tropical, it provides a new perspective on Australian freshwater fish. You can only admire their long-term commitment to exploring some of the less accessible and little-known areas of Australia. Perhaps we should encourage them to do the same for the fish of another little-known area—north-western Australia.

The species' accounts vary a lot in size, depending of course on what is known about each, but some species run to 14–16 pages of text printed in quite small, 9.5 font. There are lots of tables, graphs and pie-charts summarising the data, but no distribution maps, which might have been useful but would have made the book even bigger. A series of large summary tables in an appendix does list the various catchments in which each species is found, though turning this into a “visual impression” of where they are found is not simple, perhaps easier for someone who knows the area's geography much better than I do. A fair bit of the information is derivative, and I have some concerns that the authors have derived their information from already derivative sources, so their text in some instances is a couple of steps away from the primary data. On the other hand the text is heavily referenced (nearly 1450 references). So, if you want to get back to the primary sources of data, this is often possible—though not always, as some sources that are used are themselves already derivative and may not provide access to where the information came from originally (there is a slight danger here of being caught in a game of “Chinese whispers”). Often wanting to know the source of some interesting morsel of information, I found the use of reference numbers in the text, rather than authors and dates, a little irksome—but at least the connections are provided, and comprehensively so.

Pusey has produced a very large number of stipple drawings, done over many years, and knowing the work involved, I can imagine him spending long evenings, perhaps after a tiring day in the field, head down over a bit of Bristol Board, dotting away until the intensity of it almost makes you dizzy. The drawings are a little varied in quality but it would be churlish to be more critical, as they are mostly fine illustrations and will become the standard. I found it a little disconcerting that, in closely related species, some had scales drawn and others didn't, e.g., the two species of *Gobiomorphus*, but it has to be recognised that just producing these figures has been

a very large and demanding task, and drawing scales is a rotten job. Also, one has to scan through the text to find out how big each fish illustrated is, and a caption would have been helpful. There are a few species missing, it seems. I looked for galaxiids (of course I did!), and found *Galaxias maculatus* mentioned in one of the tables but not dealt with in the text; also, *Galaxias olidus* reaches into southern Queensland, but is not mentioned at all. And a species of *Stiphodon* (f. Gobiidae) has been described from the area recently, but is not mentioned, and it is a particularly interesting record, as this genus is elsewhere virtually confined to oceanic islands of the tropics and sub-tropics.

I find it a little frustrating that Australian fish biologists are content to have more than one common name for many of their fish, and this is true of the present book, as well as others of its kind. It seems to me time for the Australians to have a “corroboree”, and develop some consensus about what names to use—and sooner rather than later.

There is a brief chapter at the end called “Conclusion: prospects, threats and information gaps”, which is a sort of “mop-up”. I cannot escape the thought that Pusey and co-authors must have a lot yet to tell us about the community ecology of these little-known fish and rivers. Maybe another book?

So, all-in-all, don't let a few quibbles detract from a wonderfully informative book that deserves to be widely purchased and used. It provides insights into the ichthyology and fish biology of Australia's north-east, will be an essential text on the fish of that area for decades, and it sets a standard for the rest of Australia (and places further afield) to aspire to.

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