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Ecology and conservation of the sirenia: dugongs and manatees

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BOOK REVIEW

Ecology and conservation of the sirenia: dugongs and manatees

Helene Marsh, Thomas J. O'Shea and John E. Reynolds III

Cambridge University Press, Cambridge, 2012, 521 pp, ISBN 978-0-521-88828-8, US\$135, £85 (hardcover), and 978-0-521-71643-7, US\$65, £43 (paperback)

This 18th volume in the Cambridge series of books on Conservation Biology is a most worthy addition to the set. At last we have a scholarly guide to the literature for 'the other marine mammals', the Sirenia. Often thought of as poor cousins to the cetaceans, these fascinating animals, most closely related to elephants and hyraxes, have stimulated the human imagination for thousands of years. Not only are they culturally important in many parts of their ranges, they are thought to be the origin of seamen's mermaid myth (my only comment on that is these sailors must have been on an extended voyage!).

There are four extant species of sirenians – one dugong and three manatees (or four if you're a splitter) – distributed throughout shallow tropical and subtropical waters across the globe and all are considered to be in danger of extinction. These unique animals are just as worthy of study and conservation as are the whales and dolphins. An up-to-date summary of what is known on these topics has been lacking, but this book, written by three of the world's most published and well-respected dugong and manatee researchers, goes a long way to filling this need.

The volume begins with three introductory chapters. The order Sirenia has a long evolutionary history, considered in detail in Chapter 3. At one time the sirenians were more speciose and it is one of my regrets that the Steller's sea cow (given its own chapter here) is gone from the North Pacific where I live. Not only would I not have had to travel halfway around the globe to study a sirenian, but the local marine ecosystem undoubtedly would have been much different with this mega-herbivore present.

Following these introductory chapters, the remainder of the book, as suggested by its subtitle, is really two books in one. Chapters 4–6 are detailed summaries of the literature on aspects of sirenian ecology, from foraging to life history. The remainder of the book (chapters 7–9) deals with the various

threats to dugongs and manatees and provides an exhaustive assessment of population status of all four species throughout their ranges (in 80 countries). There has been much more research on manatees than on dugongs, and thus there's a considerably more detailed treatment of the former in both parts of the book.

Given their habitats and behaviour, sirenians are difficult animals to study and it is good to see the hard-won results of such studies assembled in one up-to-date place. However, sometimes, for example in the foraging chapter, it is not always possible to tell whether a statement is based on a substantial, well-replicated study or is simply an anecdote. A more theory-based structure here, as in Chapter 6 (Life History, Reproductive Biology and Population Dynamics), might have made for a stronger chapter. These sorts of differences in style between chapters are probably a consequence of the multi-authored nature of the work. As another example, Chapter 6 also contains a much more detailed treatment of methodology, and the biases associated with various techniques, than do the other ecology chapters.

I felt that the material could sometimes have been better organized in these early chapters. Chapter 5 (Behavior and Habitat Use) is a real mash up, even including a bit of sensory physiology, and anti-predator behaviour is not considered in the main habitat use section, although work by Aaron Wirsing (e.g. Wirsing et al. 2007) supports the conclusion that it is a major determinant of habitat use, at least in dugongs. This study is mentioned earlier in the chapter, but would have been more appropriately placed here.

Throughout the book the authors make a concerted attempt to link the two major sections, on ecology and conservation, as they believe that a fuller understanding of a species' biology is essential for its effective conservation. Personally, I agree strongly that 'Efforts to conserve most populations of sirenians would be improved by increased knowledge of their behavioural ecology' (p. 207). Yet in Chapter 9 the point is made that scientific knowledge is not enough, and in some cases is not even needed. This book provides an excellent summary of what we know, what is needed and what still needs to be learned. Hopefully it will help to prevent other sirenians from following Steller's sea cow (and mermaids?) to extinction.

The value of the book is further enhanced by online appendices containing supplementary

material in extensive tables, for example on food plants eaten and parasites hosted. These can be found at www.cambridge.org/9780521888288.

Reference

Wirsing AJ, Heithaus MR, Dill LM. 2007. Living on the edge: Dugongs prefer to forage in microhabitats that allow escape from rather than avoidance of predators. *Animal Behavior* 74:93–101.

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