the four letter code (for example, GOEA for the Golden Eagle), and the page number for the colour plate layout.

Each account has labelled sub-sections that cover a specific aspect of the species; these include: Overview, Fight Style, Size and Shape, Plumage, Geographic Variation, Molt, Similar Species, Status and Distribution, Migration, and Vocalization. Each account has a colour distribution map which is helpful in determining the range of the species based on season (colour code key is on the very last page opposite the book cover and flap).

A bonus in helping beginning and advanced birders ID raptors are several mystery raptor plates. These mystery plates show several images of raptors in action and the reader is to figure out the correct ID based on what has been learned from the previous layouts. Answers are in the back of the book, but the reader should not look at the photo and then quickly see if they were correct! Doing this will not make you a better birder according to the authors – take your time – work out the image before checking the answer. Nothing is better than the real thing – looking at raptors in the field – but practising with this guide is the next best thing and will help enrich your experience in the field.

The *Crossley ID Guide: Raptors* does not cover nocturnal raptors, such as owls. At first I thought that the guide should have included them, but after some thought I can see why they were left out. The model the guide uses is identifying raptors in flight (although perched photos are included). Owls typically do not fly around much during the day, unless they are flushed from their hiding spot (one exception is the Burrowing Owl, a diurnal species, but it doesn't really fly around much unless flushed or is foraging). The guide's success is teaching birders how to ID flying birds – birds that stay in flight long enough to make an ID or are high in the sky to allow prolonged observation. Owls do not soar like diurnal raptors and therefore another identification method will have to be developed to help in owl ID. I hope Crossley and others will produce an owl ID guide similar to this one. In addition, the authors include vultures and condors in their raptor guide, although they are not really raptors. They are included, I suppose, because they are raptor-like, that is, large diurnal birds that soar and often are mistaken for raptors. Including them in the guide will allow birders to compare and contrast them to raptors so firm identifications can be made in the field.

Overall, the guide offers a new way to study birds of prey and provides a renewed opportunity to enjoy our diurnal flying friends. The *Crossley ID Guide* series are a welcomed insight into the wonders of bird identification for seasoned birders and beginners alike.

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Ecology and Conservation of the Sirenia. Dugongs and Manatees

By Helene Marsh, Thomas J. O'Shea and John E. Reynolds III. 2011. Conservation Biology 18, Cambridge University Press, Cambridge, U.K. 521 pages, 65.00 USD, Paper.

There is no doubt that this is a scholarly treatise of the Dugongs and Manatees of the world. The authors have combed the scientific literature to compile an exhaustive summary of the evolutionary history, biology and conservation status and challenges of the Sirenia (Manatees and Dugongs) of the world. As such, it is of primary interest to Sirenian researchers and conservation biologists. However, there is still much here of interest to the general reader with a broad interest in natural history and conservation.

Four Sirenian species are distributed in warm, shallow tropical and subtropical waters around the globe today – the Dugong, West Indian Manatee, West African Manatee and Amazonian Manatee. This book delivers on the promise of its title. Every aspect of the ecology of present day Manatees and Dugongs, as well as other species from the evolutionary past, is detailed in a few very detailed and very comprehensive chapters, with a common and recurring focus on the conservation status and recovery potential of this imperilled order of marine mammals.

The biology of all four Sirenian species is covered in a thorough and well organized manner, covering extensive subject matter in broad chapters devoted to the extinct Stellar's Sea Cow, evolution, feeding biology, behaviour and habitat use, life history and population dynamics, threats, conservation status, and conservation opportunities. For each topic, the available science is presented in a systematic and progressive manner for each of the four extant species, on occasion also referencing the Stellar's Sea Cow and ancestral Sirenians. Chapters end with an excellent summary comprising conclusions, implications for conservation and suggestions for future research. Surprisingly little is known about several aspects of Sirenian biology and ecology, and the authors do an excellent job of weaving together disparate research on the various Sirenian species into a cohesive, logical and comprehensive compilation. The subject is extremely well researched, and the reader gets the impression that virtually every published source dealing with Sirenian life history and conservation has been consulted in the writing of this treatise. Even interesting minor facts are included, such as the facts that both Dugongs and Manatees have died through impalement on the barbs of rays, that Manatees are less tolerant of approaching scuba divers than snorkellers, that there were past attempts to harness Manatees to clear vegetation-infested canals, and that

there is an international citizen science initiative (Seagrass-Watch) devoted to the monitoring of coastal seagrass communities (the principal forage of Sirenians).

The chapter on evolutionary history is the only one that is perhaps too detailed for the general reader. While the topic is thoroughly and exhaustively covered, the complexity of various prehistoric species – the fossil record, the intricacies of their evolution and phylogeny, their scientific names and places in the family tree, their DNA and genetic linkages, may be too much for all but the most dedicated and most interested reader. In contrast, one extremely fascinating and illuminating chapter is devoted to the natural history and modern-day extinction of the Stellar's Sea Cow, the only modern-day Sirenian that occurred in cool northern latitudes, and whose large size, slow movements, and incomplete diving behaviour made it extremely attractive as an easy food source for 18th century explorers and a prime and very vulnerable candidate for early extirpation.

Conservation challenges are many and varied. Beyond the general exposure to a fascinating and little known order of marine mammals that faces serious conservation challenges world-wide, by far the most interesting aspects of this book to general naturalists and non-marine mammal specialists are likely to be the sections on the current status, threats and conservation opportunities for all four species. There are many general conclusions and observations that are relevant to the conservation of many marine mammal species. The multiple threats from climate change are clear and worrisome globally, as are the effects of harvest and habitat degradation. Harvest, both intentional and incidental, is still an issue for all Sirenians except the Florida Manatee; in many areas of the globe a Manatee or Dugong carcass provides a substantial enhancement to family income or food. It is clear that there is much more research and management effort directed towards the West Indian Manatee, particularly in Florida, than for the other Sirenian species; yet even for that species, there are clearly significant knowledge gaps. Mortality from motorboat strikes remains a major mortality factor for Florida Manatees; even with some regulations on motorboat speed the authors note that Florida Manatee conservation is hampered by the "perceived right to travel by boat over publicly owned waters at unregulated speeds wherever they wish".

Beginning with the chapter on Threats, the tone of the book gradually and subtly shifts from the presentation of objective scientific data to that of science-based advocacy, for example challenging 'slow-moving scientific and management communities". The authors challenge Sirenian managers and those managing other similarly-challenging species, pointing out that additional research and monitoring of Sirenian populations is often undertaken when it is urgent management action that is required, simply because it is easier, and that sometimes the main threat to conservation is "our inability to solve conservation problems, even when the issues and potential mitigation options are identified proactively".

The book is well produced technically. It is well supplied with interesting and informative figures, photographs and tables portraying various aspects of Sirenian life history and ecology. Additionally, there are many insert boxes distributed throughout the text that provide interesting supplemental details on the general topic being discussed. There are only a few puzzling and less than ideal uses of figures and tables. The numerous black and white photographs are placed throughout the text, readily located immediately after their reference in the text. However a subset of colour photographs is also inserted in the centre of the book without any specific reference or rationale for why they are included, and duplicating only a small portion of the many black and white figures. While the photographs undoubtedly add value, they also provoke confusion as there is no hint to the reader or any apparent logic as to when there is a duplicate colour copy of the image that could be referred to, and they appear almost an afterthought. Another irksome detail pertains to the inset of multiple (14) small boxes over a span of 60 pages all pertaining to various threats to Sirenian populations as they were individually identified in the text. The first few boxes were very difficult to understand, as they show only a single bar for each species, with text indicating that the degree of shading reflects the severity of the threat. The meaning of the reference is only discerned after viewing several of these miniature charts, particularly as the bars in the first chart were only black and white. It would have been much clearer and much more useful to have compiled all of these threats and their degree of severity into a single comprehensive table. Another cumbersome use of the otherwise very informative inset boxes was a box (7.6) that asked several questions raised about the adequacy of warm-water refugia for Florida Manatees; a second box (7.7) two pages later repeated these same questions with very short answers; one inset box would have sufficed. But these are admittedly minor criticisms in an extremely well-written and well-researched book.

Ecology and Conservation of the Sirenia. Dugongs and Manatees is an obvious labour of love, and an encyclopaedic summary of research on four widely dispersed Sirenian species facing many different life history challenges and human threats throughout their range. It is also a call to action for difficult decisions and essential conservation actions, a call that will resonate with all conservation-minded readers.

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