

## BOOK REVIEW

Review of *Polar bears: a complete guide to their biology and behavior*, by Andrew Derocher (2012). Baltimore: Johns Hopkins University Press. 264 pp. ISBN 978-1-42140-305-2.

Two of the world's leading polar bear scientists have recently released books on their favourite species aimed at the general public. In 2011, Ian Stirling published his second popular book on polar bears, *Polar bears: the natural history of a threatened species*, a classic-to-be for a general readership and a skilful update on the latest in polar bear science. The following year his former student, Andrew Derocher, came out with his book in the same genre, a volume that sums up three decades of research.

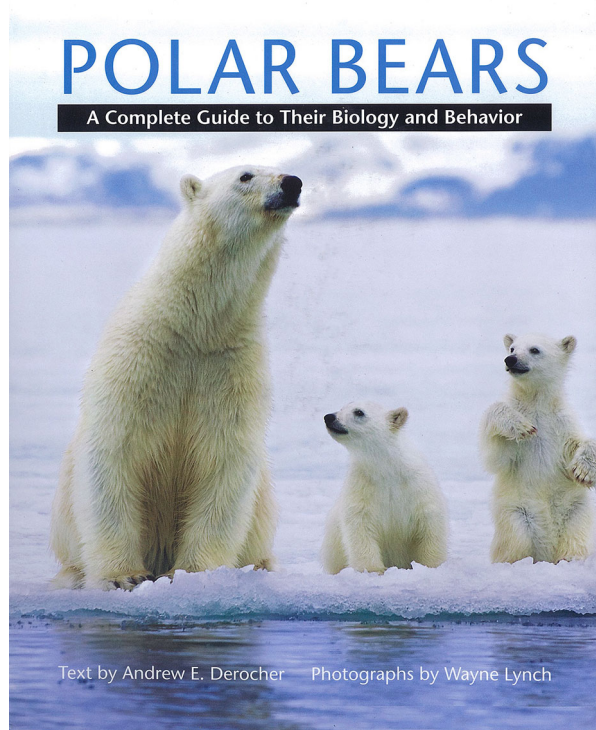
While this review is not meant to be a comparison of these two books, it is worthwhile mentioning that they complement each other in some ways. Stirling's book is a fantastic read, and I think it is fair to say that he would be a better writer of fiction than Derocher. But where Stirling takes the liberty of dwelling more on certain issues that he is passionate about, Derocher fans out his knowledge on the whole range of themes relating to polar bears, and also goes into a little more technical detail than his former mentor does.

*Polar bears: a complete guide to their biology and behavior* consists of 14 chapters covering all vital aspects of the natural history of polar bears. The author takes us through a logical progression of topics, from the animal's appearance through its evolution, habitat, behaviour and the threats polar bears face, all in quite astonishing detail—astonishing because so much of the information is obviously based on Derocher's own work and experience. It is also very well written.

After the introductory parts, the book really starts with chapter 2, which describes the looks of polar bears and how they have evolved the various traits and characteristics making them so incredibly well adapted to a life on the ice. The level of technical detail is quite amazing, but this does not make it a dull read; actually quite the contrary. In chapter 3, the author describes the polar bear's evolutionary history. A patchy fossil record makes this history largely invisible to us, although recent developments in genetic analysis have yielded more information. This is a highly dynamic scientific field: since 2010 a handful of studies have pushed back the age

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of *Ursus maritimus* from a few hundred thousand years to a few million years. A couple of the latest studies have come out since this book was published. However, the author has wisely formulated his discussion in a way that the new findings that are emerging do not make his book seem obsolete or out-dated.

In chapter 4, polar bear–human interactions through the 19th century are described. I have the impression that the author kept this chapter brief, even though he has a lot more to write about. Let us hope for a new book dedicated to this topic.

Chapter 5 comprises a very brief overview of how Arctic marine ecosystems are put together. This four-page chapter is the only one in which I feel Derocher could have built up a little more foundation for our understanding of how polar bears tick. A good grasp of the structure and function of Arctic ecosystems, and what makes these ecosystems special, is vital for understanding polar bear ecology. More explanations and illustrations of fundamental concepts would probably have benefited the non-expert reader here.

In chapter 6, the author goes into great detail about the features of sea ice that are important for polar bears. For beginners and even more advanced students, this is a

great text about sea ice as a habitat. With references to Inuit knowledge and the author's own experiences, this chapter is a joy to read.

In chapter 7, Derocher gives a condensed yet comprehensive overview of polar bear prey species, making it quite clear why polar bears cannot survive as vegetarians, though the diets of most other bear species are predominantly plant based.

Chapter 8 covers all the necessary items to understand how and why polar bears move and how population units have come into being. In this chapter, Derocher avoids the question of numbers—how many polar bears are there now and how many were there 50 years ago; did the world population grow after the signing of the International Agreement on the Conservation of Polar Bears in 1973? The lack of scientifically valid estimates of past populations has been utilized by climate-change nay-sayers who argue that polar bear numbers are higher today than 50 years ago. This is not really shocking considering the unsustainable harvest back in the 1960s, but a biased discussion has surfaced in the past couple of years, and this chapter would have been a great place to present some facts to the general public.

Chapter 9 describes the various hunting methods that polar bears engage in. The next three chapters, revealing a great deal of in-depth knowledge and nuance, deal largely with polar bear reproduction. To a large extent, polar bear reproductive behaviour is inaccessible to scientists, but the author again serves the reader a detailed and comprehensive story.

Chapter 13 is the gloomy part of the book, in which the author sheds more light on the main threats to the future well-being of polar bears and how the future might look if these threats are not mitigated, climate warming being by far the most serious one. These threats are each themes that cover books of their own, and the author sums them up well.

The book ends with a brief chapter in which the author looks at the near-term future and presents a list of relevant scientific names, a list of polar bear food items and, finally, a long list of recommended further reading for readers who want to learn more.

Derocher has certainly written one of the most authoritative and technically comprehensive yet engaging books on polar bears that will be available for many years. The technical detail and background information is such that parts of the book have a textbook quality—which I mean in a positive way. In some parts, as already mentioned above, the book might have been enhanced by a few more illustrations to clarify basic concepts. But this is really a minor drawback that most readers probably won't notice.

If I were to pick one book that would give a general audience a solid understanding of polar bear ecology, it would be Derocher's *Polar bears: a complete guide to their biology and behavior*.

## Reference

Stirling I. 2011. *Polar bears: the natural history of a threatened species*. Markham, ON: Fitzhenry & Whiteside.