

Heard Island: Southern Ocean Sentinel

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HEARD Island is one of the most remote places on earth. It is of volcanic origin (and currently volcanically active) on the submarine Kerguelen Plateau in the Southern Ocean, roughly 4 000 km south-west of Australia, 1 500 km from Antarctica, 3 750 km from Africa, and 7 500 km from India. The island is 367 km² in area at latitude 53°S, south of the Antarctic Polar Front (Antarctic Convergence), is 70% covered with glaciers, and has a geologic, biologic and human history of substantial interest. Because of its remoteness, relative recent discovery (1853), and infrequent human visitation, it is pristine with no human-introduced plants or mammals.

This book is a summary of the knowledge accumulated in 150 years of infrequent human visitation, and the information acquired during scientific exploration of the island, particularly in the past several decades. The book consists of three sections, the first contains 10 chapters that deal with the geology and biology of Heard Island; the second consists of five chapters that trace the history of human exploration and exploitation, and the fascinating political interactions that have occurred; the third section consists of seven appendices. The book also has an index. The first and second chapters deal with the geologic history and geomorphology of Heard, and its companion McDonald Island 35 km away. The third chapter discusses the glaciers of Heard Island, and the fourth, climate. Chapters five through 10 deal with the vegetation, terrestrial invertebrates, freshwater fauna, nearshore fishes, status and conservation of seabirds, and marine mammals. The human occupation chapters concern nineteenth century sealing practices, sovereignty and scientific concerns, the 1947–1955 Australian National Antarctic Research Expedition (ANARE), the ANARE years 1963–2001, and the new era of conservation science. The appendices detail marine macro-algae, bryophytes, vascular plants, terrestrial

invertebrates, coastal marine and littoral invertebrates, birds, and marine mammals. A fold-out map adjacent to the front cover is a helpful location guide.

The Kerguelen Plateau is of interest geologically because it is one of the biggest submarine plateaus on earth, and an obstruction to the circum-Antarctic circulation. Its geologic history dates back more than 115 million years, although the heart of Heard Island, Big Ben volcano (2 745 m amsl), the tallest mountain within Australian territory outside of Antarctica, is probably less than a million years old and has had active lava flows as recently as 1985. The weather is less than idyllic, with strong winds, persistent low clouds, and frequent precipitation. However, there is evidence that the climate is warming and producing a retreat of many of the glaciers, thus opening up new land for plant and animal colonization. The vascular plant flora is small compared to other subantarctic islands, as is the invertebrate fauna. Census data suggest that in the past 50 years or so there have been substantial changes in some vertebrate populations. For example, the King Penguin (*Aptenodytes patagonicus*) population has been doubling about every five years since 1947 and Southern Elephant Seal (*Mirounga leonina*) numbers have been significantly reduced. On the human perspective, I found the political manoeuvring and machinations over establishing Australian control over about half of Antarctica, in which Heard Island played a vital role, most interesting — politics and science intertwined. International politics aside, recent expeditions have made substantial progress in developing base-line information on the biota of Heard Island and developing a conservation perspective.

This book brings together what is known about this fascinating island and its human history. The authors are a cosmopolitan group, including residents of South Africa and the United States, as well as Victoria, New South Wales, Queensland, and Tasmania (where the Australian Antarctic Division is headquartered). I found it an interesting read and recommend it to those who have interest in the subantarctic or arctic, or of human interaction with harsh environments. As for the politics, it is nice to see that, whatever the reasons, governments are capable of supporting good science.

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