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Book reviews

Developing the Antarctic Protected Area System. Proceedings of the SCAR/IUCN Workshop on Antarctic Protected Areas, Cambridge, UK, 29 June–2 July 1992.

Edited by *R.I. Lewis Smith, D.W.H. Walton and P.R. Dingwall.* IUCN, Gland and Cambridge (1994).
137 pages. ISBN 2 8317 0218 6.

Antarctic Specially Protected Areas and Antarctic Specially Managed were the two new categories which emerged from the 1991 negotiation of the Protocol on Environmental Protection to the Antarctic Treaty. That was an important change which prompted many questions; questions about design, management, information and communication let alone legal and policy issues. The need to define operational rules in a practical fashion was the basis for the SCAR/IUCN (Scientific Committee on Antarctic Research/International Union for the Conservation of Nature and Natural Resources) Workshop on Antarctic Protected Area. Most of the results of that Workshop appear in this small book, contributions coming from more than 20 contributors.

Following a foreword and a commentary of the Recommendations to the XVII Antarctic Treaty Consultative Meeting, this book has five sections (a useful and readable summary by commentators appears at the end of each section). The first section deals with the Antarctic Protected Area System and the identification and selection of those Areas. The following section deals with the practice and realities of management and planning for Antarctic Protected Areas. Two contributions make up a section on management of tourism and protection of historical features. There then follows a section of international legal and policy issues then a section on information and communication. There is a useful list of acronyms at the end of this text

This is no textbook and it does not lend itself to easy reading. This is a manual or a reference text which, for the most part, has valuable and topical information. It seems clear from the contents of this book that the future of conservation in Antarctica will require an improved, integrated, interdisciplinary approach, together with the best expertise in technology. The rationalization of the protected area categories is a milestone in Antarctic history and no doubt the results of this workshop will become an important step in the history of Antarctic management and conservation. However, it is disappointing that this report of the Workshop could not have been produced earlier. The editors might also have developed a process by which a simple record of the proceedings could be published in as short a time as possible. Alternatively they might have considered the publication of a more carefully edited text in which repetition is avoided and in which the content are carefully selected. Perhaps workshops of this kind do not lend themselves to being the substance of books?

On one hand I hope that this book sets the level of expertise for future books in this series 'Conservation of Southern Polar Regions', but on the other hand I hope that this book does not set the standards for the editorial style.

IAN F. SPELLERBERG

Antarctica: A Guide to the Wildlife

Tony Soper, Illustrations by Dafila Scott
Bradt Publications (1995).
144 pages. £14.95. ISBN 1 898323 07 0

Antarctica is visited each year by large numbers of tourists, from keen and enthusiastic groups of bird watchers, to parties with little more than a passing interest in the wealth of wildlife displayed before the. This book, although not essential to either type of visitor, would be of general interest to both — as well as to the range of others in between.

The Introduction and opening chapter on Discovery and Exploitation paint a very broad canvas with background information, and although brief, set the wildlife in context with the history of human exploitation of the continent. The subsequent chapters are in keeping with a guide, being sharply condensed general information on Terrestrial Plants and Insects (2 pages). Marine Invertebrates (3 pages), Fish (1 page), Birds (74 pages), and Mammals (71 pages). The text and illustration in these chapters is not presented as a 'field-guide' to aid or enable identification - there is no emphasizing of diagnostic features, no comparative plumage information, no detail on sexual dimorphism etc. Instead, the information is presented as an interesting and knowledgeable background read, especially for each of the 16 mammal and 39 bird species mentioned. The illustrations also follow the spirit of a general guide, being more pictorial and atmospheric than diagrammatic and descriptive. Few of the species portrayed are static, each is active against a typical seascape or landscape.

Scattered through the text are boxes of information which build on the main flow of the text. The boxes are placed and coloured light blue to draw the attention of even the most casual browser to some of the more interesting aspects of Antarctic wildlife. Examples of subjects covered in the boxes are; *Seal terminology, Spermaceti, Why no penguins in the Arctic?, Oil Secretion and Excretion.*

As if to emphasize its target readership, the book concludes with the IAATO Code of Conduct for Visitors to the Antarctic, and also lists Antarctic Tour Operators. It would be of

interest and help to all visitors if the operators put this book on their pre-departure suggested reading list, or made sure thaat copies were available on board. It would be a 'good read' for times when the wildlife was out of sight.

BRUCE PEARSON

Remote Sensing of Sea Ice and Icebergs

Edited by *Simon Haykin, Edward O. Lewis, R. Keith Raney* and *James Rossiter*
John Wiley and Sons, New York (1994).
686 pages, £73.00. ISBN 0 471 55494 4.

This book presents remote sensing of marine ice from an unashamedly Canadian perspective. Canada, with more that 90% of its coastline subject to navigational hazards from sea ice or icebergs has a strong economic incentive to develop systems for routine remote sensing of marine ice. In particular there was an expectation in the early 1980s of large scale petroleum development in the Canadian Arctic; while the more recent development focus has changed, remote sensing requirements remain.

This book is a collection of (generally) multi-authored contributed review papers. All the authors are affiliated with Canadian institutes, most chapters use Canadian technical developments as examples of the various remote sensing techniques, and geographically the book concentrates on the Arctic, with minimal discussion of the Antarctic. Most chapters deal with sensing at microwave frequencies, particularly radar systems, and visible and infrared imaging are not included. Throughout there is a strong emphasis on explaining the background theory and principles of different types of remote sensing. There is also a strong focus on techniques and systems that provide operational data, since the primary remote sensing requirements for Arctic marine ice are in support of navigation and national resource management. This contrasts with Antarctic requirements which are principally scientific ones.

Chapter 2 reviews the physical characteristics and seasonal development of Arctic sea ice and snow, the electromagnetic properties of ice and snow, and the relationship between the radar scattering properties of sea ice over large areas and the surface structure and ice type.

Non microwave techniques are treated in Chapters 3 and 4. Chapter 3, acoustic sensing and seismic techniques, deals cursorily with bottom moored upward looking sonar systems and concentrates on the use of natural acoustic and seismic radiation from an ice field to derive information on mechanical deformation and stress. This technique is not as yet practical and the discussion is largely theoretical with some experimental samples. Chapter 4 discusses the difficult problem of remote sensing of ice thickness, concentrating on Canadian contributions to the development of the airborne inductive electromagnetic system, possible the most promising recent developments in this area. Passive microwave systems are dealt with in Chapter 5 which includes a review of radiometer systems and of the interpretation of sea ice from the data. The latter concentrates on the Canadian Atmospheric Environmental Service/York University (AES/York) algorithm used to derive ice type and concentration from passive microwave satellite data.

The remaining 60% of the volume deals with the active microwave systems, starting with a thorough review of the fundamental principles of radar measurement. The use of surface based radar for ice detection and discrimination is dealt with in three chapters. These cover standard non-coherent radars similar to those found on most ships (with emphasis on Canadian research to specifically improve radar design and signal processing for ice) and the as yet more experimental techniques of over-the-horizon radar and surface based coherent radars (using information on the Doppler frequency shift, phase and polarization of the return signal, in addition to amplitude). Canada has been particularly active in the development of commercial airborne remote sensing facilities, using side-looking airborne radar and synthetic aperture radar (SAR), for ice reconnaissance in support of shipping. These and the essential components of onboard data processing, data delivery, and an exploitation system, are covered in Chapter 10.

SAR imaging of sea ice is discussed in Chapter 11 using both airborne and satellite examples from different zones and for different seasons. Here, and in the chapter on passive microwave imaging, I expected to find considerable overlap with Carsey (1992), but the two books show a quite different emphasis. Whereas the papers in Carsey deal with the, often empirical, techniques of extracting different types of ice information from microwave imaging, here the emphasis is on the effect of specific sensor and system properties (such as image geometry, motion compensation, speckle, calibration, etc.) on ice imaging. This leads to a chapter on the system characteristics of RADARSAT, which will be launched this year and is principally designed for high resolution, global sea ice observation. The discussion includes integration of RADARSAT C-band SAR data with other data sources to provide operational ice products.

There is considerable variability in the depth and standard of the contributions, but editorial control has avoided the duplication of basic theory in different chapters. Presentation is generally of a high standard, although there a few diagrams from research reports which are inadequately explained in their context here. I doubt this is a volume that will be referenced much by Antarctic scientists using remote sensing products to support research, but it will form a useful addition to the library of those involved in the development of remote sensing systems and techniques for any high latitude.

IAN ALLISON