GULLS, A GUIDE TO IDENTIFICATION

Grant, P. J. 1986 (second edition). Calton, Staffordshire, United Kingdom: T. & A.D. Poyser. 352 pages, 544 black and white photographs, numerous line drawings and figures. UK £15,00. ISBN 0-85661-044-5.

This book must surely be a benchmark for the similar treatment of other groups of birds. Ostensibly a pure identification work, it provides an excellent basis for all studies of gull distribution, ecology and behaviour.

The major addition found in the second edition is the inclusion of the species from the west coast of north America; all the gulls from that continent are now covered. The photographs and text for the new species are certainly up to the standards set by the originals. The other new material in the latest edition enhances some of the best features of the book. The original introduction included an excellent treatment of moult, topography and ageing - the new introduction also has valuable advice on assessing colours and size in the field. The first edition provided a number of photographs for each species - the second has more and/or better photographs, and most races and ages of gulls are now covered. Having a number of photographs for each species is very important as it allows comparison of field notes with views taken from a variety of angles and in different lights. It is even useful to know which features are still visible in some of the poorer photographs - perhaps akin to observing a gull half a kilometre out to sea on a drizzly day.

The production of the second edition only four years after the first is an indication of the nature of this book; it is very much a working manual and the reader is invited on a number of occasions to help with its continued improvement. If one has a pet method of separating two very similar species which is not in the book, rather than criticise one should pass on the information for the next update.

Although the line drawings show the features which can be used for the identification of species, ages and sexes, their quality is still rather variable. It cannot be easy to draw species that are predominantly white and the situation is not helped (at least in my copy) by rather poor reproduction of some of the drawings. This point should not detract from what is a truly an excellent book.

One can only hope that other groups of birds (perhaps waders?) will be treated in a similar way. I am looking forward to the next edition. More information on biometrics of species, races and sexes would be useful for gull researchers, and perhaps it is too much to ask, but there are only half of the world's gull species to go!

M. Jones, Department of Biological Sciences, Manchester Polytechnic, John Dalton Building, Chester Street, Manchester, United Kingdom, M1 5GD. *Received 30 January 1988.*

A GUIDE TO THE OTOLITHS OF SOUTHERN OCEAN FISHES

Hecht, T. 1987. *South African Journal of Antarctic Research* 17: 1-87. (Available free from Technical Editor, FRD, CSIR, P. O. Box 395, Pretoria 0001, South Africa).

There are some 260 species of pelagic, demersal and deep-water fish that have been reported south of the Antarctic Polar Front. Little or nothing is known of the biology of the majority of these and only those which are commonly found in coastal waters or are caught by commercial-scale fishing have been thoroughly investigated.

Predator-prey studies within the Antarctic ecosystem are currently topical fields of research with the objective of identifying interactions as well as the diet and consumption of predators. Fish are known to be a key component in the Antarctic food web but because they are rapidly digested in the gut of predators their identification depends on the examination of residual structures such as bones, scales and otoliths. Of these the otoliths are probably the most informative because they are species specific and it is possible to quantify the numbers and size of the prey ingested. Ichthyologists investigating Antarctic material have been encouraged to accumulate reference collections of residual structures, particularly otoliths, and this monograph, compiled by Professor Hecht, is a most timely and welcome advance in this sphere of research.

The monograph covers 117 species from 28 families and of these 92 species occur in the Antarctic zone. Some systematic revision of the Antarctic ichthyofauna has been undertaken recently and some of the groups referred to in the text have not taken this into account. For example, the family Harpagiferidae is now considered to be split into the Harpagiferidae and the Artedidraconidae; and the species *Harpagifer bispinis* is now thought to be confined to localities north of the Antarctic Polar Front. This, however, does not detract from the usefulness of the Guide as a means of identifying fish by using their otoliths.

The introductory section describing the morphology and terminology associated with otoliths is comprehensively written and clearly illustrated. The majority of the remainder of the volume is devoted to descriptions of the otoliths from each species and illustrations of typical examples. Diagrams of the otoliths from different size specimens of each species have been given whenever these have been available to the author. This is important because the morphology of the otoliths from individual species usually becomes more complex (and more distinctive) with age. These diagrams are clear black and white illustrations which are very much better for the purpose of identification than photomicrographs.

Finally, an identification key for the otoliths is given. This will serve as a useful guide to the group from which an unidentified specimen is likely to have originated. However, it should be used with caution for identification to species level of juvenile fish until the characteristics are defined for those species which cannot be discriminated at present, and until it is revised to include a greater proportion of the Southern Ocean species.

This monographic presentation of the otoliths of fish from the Southern Ocean is well organized, has good concise descriptions and excellent illustrations. Antarctic biologists will welcome the Guide because it will enable them to identify the majority of the fish consumed by higher predators and include this component more precisely in models of predator-prey interactions. Professor

AN ENVIRONMENTAL IMPACT ASSESSMENT OF A PROPOSED EMERGENCY LANDING FACILITY ON MARION ISLAND - 1987

Heymann, G., Erasmus, T. Huntley, B.J., Liebenberg A.C., Retief, G. de F., Condy, P.R. & van der Westhuysen, O.A. 1987. Pretoria: *South African National Scientific Programmes Report* 140: 1-209. Soft cover, maps, diagrams, illustrations. ISBN 07988 4114 1.

This remarkably comprehensive report gives basic details of the Prince Edward Islands: two, adjacent, small, isolated, volcanic, sub-Antarctic islands located at about 46 45S, 37 50W, in the Indian Ocean between Africa and Antarctica. Marion Island has an area of 290 km^2 and rises to 1 230 m; Prince Edward Island, 19 km distant, is 45 km^2 and reaches 672 m. They were discovered in 1663 and were an important base for the sub-Antarctic sealing industry in the nineteenth century. There was no permanent habitation until they came under South African administration in 1947 when a meteorological station was established on Marion Island. Occasionally from then, and continuously after the mid-1960s, biological investigations have been conducted on the islands by the South African National Antarctic Research Programme. Their specialized flora and fauna are protected by a Draft Code of Conduct which is essentially similar to conventions adopted for the regions subject to the Antarctic Treaty.

In 1986 the South African Department of Environment Affairs considered the construction of an air strip on Marion Island to improve access to the station for medical or other relief, to provide surveillance and rescue aircraft with an emergency landing site, to improve control of territorial waters and the adjacent fishing zone, and to enable emergency provisioning of the station. The islands are of great biological interest, largely because of their isolation, thus the Minister for Environment Affairs commissioned a Panel to produce an environmental impact statement, the recommendations of which would be decisive for the continuation of the project. The proposed landing strip, with many journalistic speculations about its intended use, was widely reported in the press.

The report begins with a detailed outline of the terms of reference, formation, and investigations of the panel of experts which was established after a preliminary study of the project by a firm of civil engineers. The legal status of the islands and their environmental protection are described, with notes on the long-term goals. The logistics of the construction of the proposed landing facility, particularly the likely effects on the island, are discussed, followed by an examination of the practicality of its intended purposes. A cost/benefit analysis of the implications of alternative emergency measures is provided.

The environmental components involved are treated in a series of concise monographs. This section is introduced by notes on geology, geomorphology, meteorology, and hydrology. The biology of the islands is well described with particular attention to the plant and animal communities. Ornithologically there are 22 breeding species recorded on the islands, including 30% of the world's King Penguins *Aptenodytes*

breeding species recorded on the islands, including 30% of the world's King Penguins *Aptenodytes patagonicus*, and Marion Island is the third most important breeding locality for the Wandering Albatross *Diomedea exulans*. A table summarizes the breeding birds and presents population estimates; short notes about each species follow. There are similar notes and check lists of mammals, invertebrates, plants and other groups. The introduced species are described; the contrast between those of Marion Island and Prince Edward Island is particularly significant.

Historical artefacts are briefly mentioned (and reference given to a comprehensive paper on them) and attention is given to the aesthetic aspects of the islands which present some of the most untouched and magnificent parts of the world (when weather permits). This is confirmed by some excellent illustrations. The possibility of tourist visits is considered and a policy for their control indicated, with the intention of maintaining the islands as scientific reserves.

The panel, after consideration of this detailed information, recommended unanimously, on 29 April 1987, that the proposed emergency landing facility should not be constructed. On 12 May 1987 the Minister for Environment Affairs decided that "although a need does exist for a landing strip on Marion Island, to provide such a facility is not desirable because of the impact it will have on the fragile environment, particularly during the construction stage". It was also directed that the report be published.

The report is an ideal example of what such an environmental assessment should be. It also provides a very useful summary of the natural history and several other aspects of the islands, and includes a good bibliography. Much would also interest civil engineers involved in similar constructions in remote areas - especially where environmental considerations are critical. The work is well-illustrated (colour and monochrome), with good maps, and is efficiently organized.

R.K. Headland, Scott Polar Research Institute, Cambridge, CB2 1ER, U.K. *Received 22 March 1988.*