THE PETRELS: THEIR ECOLOGY AND BREEDING SYSTEMS

Warham, J. 1990. London: Academic Press. 440 pp., many photographs, figures and tables. Price £28.50. ISBN 0 12735 420 4.

John Warham has been publishing papers on the Procellariiformes since the 1950s and this book is the culmination of his extensive research into the breeding biology of this large and varied group of seabirds. In the preface he promises a further volume which will concentrate on aspects such as behaviour and vocalizations, feeding, conservation and management, although these are touched on in this book also.

The book starts with an introduction to the order Procellariiformes, outlining the main characteristics of the group and indicating the variety of breeding ecologies and distributions present in the 103 species. Each of chapters two to ten are dedicated to particular families or genera within the order: Diomedeidae, the fulmars, the gadfly petrels, *Halobaena* and *Pachyptila, Bulweria, Procellaria* and *Calonectris, Puffinus,* Hydrobatidae, Pelecanoididae. After an introduction these chapters are subdivided into sections on general characteristics, species, life styles, distribution, feeding and foods, breeding, dispersal and migration, populations and mortality, and conservation. There are plenty of useful line drawings of bills, distribution maps and illustrations of blood plasma proteins.

Chapter 11 is an introduction to the second part of the book where the author takes a more detailed look at the breeding biology of petrels. There is now a large body of research literature on Procellariiformes and the author draws on this extensively to compare and contrast the breeding patterns exhibited by the different species. Chapter 12 looks at the pre-egg stage in petrels including sections on the nest, patterns of activity at the colonies and nest defence. A section on the pre-laying exodus shows that this ranges from a few days in most of the albatrosses to as much as 50-80 days in some of the *Pterodroma* petrels.

The chapter on the petrel egg (chapter 13) contains some of the most detailed data in the book. The author considers the size, shape, structure and composition of the eggs and there is an interesting discourse on the relationships between egg shape and pelvis shape. The next chapter concentrates on incubation. This chapter, in particular, illustrates that whereas a considerable amount of information is available for a few well-studied species, such as the Wandering Albatross *Diomedea exulans*, the giant petrels *Macronectes* and the Manx Shearwater *Puffinus puffinus*, virtually nothing is known for more than half of the petrels. The storm petrels present an especially difficult challenge and many would provide almost virgin territory for the dedicated seabird researcher.

The final long chapter covers the chick stage of the life cycle and includes sections on nestling behaviour, chick feeding, chick development, the 'desertion' period that is characteristic of petrels, fledging and breeding success.

This book is very much a comparative summary of research into the Procellariiformes. As such, it provides a useful and informative compilation of current ideas and research trends. It is well produced and should provide a profitable addition to the seabird enthusiast's bookshelf.

S. Hunter, 20 London Road, Saffron Walden, Essex, CB11 4ED, United Kingdom. *Received 30 December 1990.*

WORLD CHECKLIST OF THREATENED BIRDS

Norton, J., Stuart, S. & Johnson, T. 1990. Peterborough: Nature Conservancy Council. 274 pp. Price £20.00. ISBN 0 86139 601 4.

Listed in this publication are nearly 2 200 of the world's bird species. The species included have been selected using the following criteria: those birds listed in Appendix I, II or III of the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES); and those included in the International Council for Bird Preservation's publication 'Birds to Watch' (Collar & Andrew 1988), whose Red Data Book categories are given in the International Union for the Conservation of Nature's 1988 Red List of threatened animals.

The species are listed taxonomically with each bird's status under CITES and in the IUCN Red List noted, along with the forms of exploitation to which they are subjected (e.g. live animal trade, egg collecting). The geographical range, by country, of each species is given under the headings of breeding, non-breeding and vagrant.

The main purpose of the book is to provide a reference source for authorities involved in assessing permit requirements under CITES for importing/exporting birds. It is also a useful quick reference guide to the distribution of threatened birds with 469 references to publications giving more information about their status generally or in particular areas of their range.

N.A. Gartshore, Minsmere Reserve, Westleton, Saxmundham, Suffolk, IP17 3BY, United Kingdom.
Received 21 December 1990.

PROTECTING INTERNATIONALLY IMPORTANT BIRD SITES

Stroud, D.A., Mudge, G.P. & Pienkowski, M.W. 1990. Peterborough: Nature Conservancy Council. 230 pp. Price £17.00. ISBN 0 86139 633 2.

Under the European Economic Community Council 'Directive on the Conservation of Wild Birds 1979' the United Kingdom is committed to conserving bird populations and their habitats throughout the country. Among the measures to be taken is the designation of Special Protection Areas (SPAs). At the Government's request the NCC identified sites of international importance for nature conservation for designation under both the EEC Birds Directive and the Ramsar Convention. This publication is a major review of these sites.

The first main chapter deals with the rationale for selection of sites whereas the second gives the SPA/Ramsar network in the UK: sites, bird habitats and species involved. The latter chapter is expanded in the form of appendices giving information on the representation of bird habitats within the network and a more detailed look at the conservation needs of vulnerable bird species.

This book will be of particular use to conservation bodies and individuals in helping to identify and evaluate other sites in the UK for inclusion in the SPA/Ramsar network.

N.A. Gartshore, Minsmere Reserve, Westleton, Saxmundham, Suffolk IP17 3BY, United Kingdom.
Received 21 December 1990.

FISHES OF THE SOUTHERN OCEAN

Gon, O. & Heemstra, P.C. (Eds.). 1990. Grahamstown: J.L.B. Smith Institute of Ichthyology, 462 pp., 12 colour plates, over 600 maps and line drawings. South African Rands 226. ISBN 0 86810 211 3.

Biologists working in the Southern Ocean have been eagerly awaiting the publication of this book. In the main they should not be disappointed. The marine fish known to occur in the Southern Ocean south of the Antarctic Polar Front and in the vicinity of the sub-Antarctic islands of the southern Indian Ocean are covered in detail in illustrated species accounts, with the emphasis on taxonomy, identification and distribution .

The systematic section, which covers 272 species in 49 families, has been produced by various authors and forms the bulk of the book. It is preceded by 69 pages of introductory chapters on the history of Antarctic ichthyology (Headland), oceanography and fish distribution (Lutjeharms), origin and evolution of the Antarctic ichthyofauna (Anderson), biology and physiological ecology of notothenioid fishes (Eastman), exploitation and conservation (Hureau & Slosarczyk) and otoliths (Hecht). The book is finished off with a glossary of terms, 31 pages of references and an index of scientific names.

What is the value of this *magnum opus* to the marine ornithologist? It is clearly the latest authoritative work on Southern Ocean fishes. As such, it will be consulted by ornithologists interested in the fish diets of southern seabirds and therefore deserves a place in ornithological libraries. However, I was disappointed to find an apparent lack of an editorial policy to have authors of family accounts adequately cover the relevant ornithological literature. In the species accounts the diet of fish species is often mentioned but rarely are there comments on their bird predators. This means that the important work done by ornithologists on the diets of southern penguins and procellariiforms is mainly ignored. For example, it is surprising to find birds as predators all but unmentioned in the species accounts of myctophid and notothenioid fish, some species (such as *Electrona carlsbergi* and *Pleuragramma antarcticum*) forming major parts of southern seabird diets.

Ornithological references often give information on distribution and maximum sizes which can accrue to accounts of fish based on purely ichthyological literature. A plea is made here for marine ichthyologists to regard seabirds as an integral part of the food chain and to recognize that much can be learned of a prey species from a study of its predator.

I would also have liked to see length/mass relationships given where they exist, and maximum masses as well as standard lengths cited. On the positive side, the provision of drawings of a "representative" otolith for many species is welcome to marine ornithologists, because otoliths are so important in the identification of the fish prey of seabirds.

The book is printed on heavy paper and appears well bound. Overall, it has a most pleasing appearance and the editors, authors and publisher should be proud of their production. Marine ornithologists studying the prey of southern seabirds will now eagerly await news of the planning of a similar work for squid, also an important component of seabird diets "down south".

J. Cooper, Percy FitzPatrick Institute of African Ornithology, University of Cape Town, Rondebosch 7700, South Africa. *Received 15 February 1991.*