

ESSENTIAL ORNITHOLOGY

Scott, G. 2010. Oxford, U.K. and New York, N.Y., USA: Oxford University Press. 208 pp, 75 b/w and 30 colour illustrations. Paperback: ISBN 978-0-19-856997-8, U.S.\$55. Hardcover: ISBN 978-0-19-856998-5, U.S.\$110.

This newcomer to the ornithology textbook world is clearly aimed at the introductory undergraduate level. In the seven core chapters it covers the usual topics: *Evolution of Birds*; *Feathers and Flight* (including moult); *Movement and Migration*; *Eggs, Chicks and nests*; *Reproduction* (covering mating systems, song, courtship and other breeding behaviour); *Foraging and Avoiding Predation*; and *Populations, Communities and Conservation*. The primary material is covered in concise informative text and numerous diagrams and is a balanced blend of classical (e.g. *Archaeopteryx*, eggshell-thinning in falcons) and relatively new (e.g. stable isotopes, molecular phylogeny) topics. Features include references to key journal papers in the margins next to the main text, rather than in a terminal reference list, and the occasional boxes covering selected topics in more detail. There are 29 small colour photos on eight pages.

Seabirds are decidedly under-represented in this book, featuring only in one box (covering tracking of albatrosses and the problems of fisheries bycatch in the Southern Ocean) and in brief sections on moult strategies (gulls), formation flying (pelicans), chick-begging (gulls) and olfaction (Procellariiformes). Foraging, the activity that takes up most of a bird's life, is covered in only 10 pages, most of

which focuses on cooperative foraging (without mentioning seabird feeding flocks). The section on *Flocks and Colonies* is all about flocks (again no seabirds) with nothing at all about colonies. The wonderful physiological and behavioural adaptations that birds have for underwater foraging are never mentioned.

The book in its paperback version seems to be aimed at students in short undergraduate ornithology courses who might not be prepared to pay for a more comprehensive text such as Gill (2007; 758 pages in hardcover at \$125 list-price). For that audience Scott's *Essential Ornithology* seems adequate, if supplemented by primary literature and other reference material. But for anyone working with birds or seeking a career in ornithology I recommend the more comprehensive (albeit expensive) alternative.

REFERENCE

GILL, F.B. 2007. Ornithology, 3rd edition. New York: Freeman.

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SYNTHESIS OF THE CONSERVATION STATUS OF THE PATAGONIAN SEA AND AREAS OF INFLUENCE

(*Síntesis del estado de conservación del Mar Patagónico y áreas de influencia*)

Foro para la Conservación del Mar Patagónico y Áreas de Influencia. 2008. Puerto Madryn, Argentina: Edición del Foro. In Spanish with English summaries. 810 pp, numerous photographs, diagrams and maps. ISBN 978-987-24414-3-2. Electronic book available free: <http://www.patagoniansea.org/>. Print copies by request at the Web site.

The ocean surrounding Patagonia is one of the world's richest marine areas, an important fishing ground and critical foraging ground for millions of seabirds. This important book, available in ground-breaking electronic format, reports the outcome of a conservation forum involving over 80 researchers from 29 institutions, both global (e.g. WWF, BirdLife International) and local (mostly Argentinean). The area covered extends from southern Brazil to Tierra del Fuego in the southwestern Atlantic, around Cape Horn, the Fuegian channels and the Pacific fjords of southern Chile. There is a comprehensive English summary (pp. 245-318) which also includes all the table and figure captions, making this volume accessible to non-Spanish readers.

Following introductory chapters explaining the origins of the book and broadly outlining physical and biological aspects of the Patagonian Sea, the book has four major parts. Part I *Alarming Topics Regarding Biological Diversity* reviews 65 IUCN-listed threatened species, including 16 bird species, and the threats they

and other marine organisms face. Part II *Laws and Institutions* covers the legal and institutional frameworks, the ineffectiveness of legal enforcement, the lack of management agreements, and some progress in establishing coastal marine protected areas (MPAs) which currently cover only a small portion of the area. Part III *Human Uses and their Consequences* is an extensive review of the environmental and socio-economic impacts of human activities, including waste discharge, oil spills, over-fishing, high levels of discards in some fisheries and tourism. The review of fisheries bycatch problems and the failure to implement bycatch mitigation measures will be of interest to many marine ornithologists. Part IV *Indicators* identifies potential indicators of environmental health selected to be quantifiable and relevant. These include population trends and breeding performance of selected species (seven seabird species plus Southern Elephant Seals), extent of coastal MPAs, fisheries statistics, oil pollution and other key indicators. The final section of the book reviews the Patagonia area in the global marine context.

The book is profusely illustrated with high-quality maps, diagrams and photographs. The target audience seems to be primarily scientists, naturalists, fisheries managers and, hopefully, political decision-makers, in Argentina, Chile and neighbouring areas. The book's free distribution (supported by several charitable foundations) and clear, attractive layout should enhance its impact in Patagonia. The book deserves a wide global audience and is a valuable and thought-provoking reference for biologists and conservation organizations working anywhere on bycatch or other

fisheries-related mitigation, marine conservation, MPAs or eco-tourism. The Patagonia Sea forum have set an admirable example of how a wide range of interest groups can produce a powerful guide to monitoring and improving ecosystem health and species survival in an important marine region. Download it for free.

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HANDBOOK OF MARINE FISHERIES CONSERVATION AND MANAGEMENT

Grafton, R.Q., Hilborn, R., Squires, D., Tait, M. & Williams, M. (Eds.) 2009. Oxford, U.K.: Oxford University Press. 770 + xiv pp. Hardcover. ISBN 978-0-19-537028-7. US\$159.

MISMANAGEMENT OF MARINE FISHERIES

Longhurst, A. 2010. Cambridge, U.K.: Cambridge University Press. 320 + xii pp. Hardcover. ISBN 978-0-521-89672-6. US\$120.

If you want to learn about the state of the world's fisheries and the details about how we got there, read these two books. Longhurst in particular reviews the history of fisheries, beginning with medieval times, and the history of fishery science and its hypotheses; Grafton *et al.* begins with the present. Both books agree that the oceans are in a crisis, owing in large part to the depletion of fish, a fact that most marine ornithologists ignore as they proceed in looking for climate change signals to explain the longer-term seabird population trends evident in their data (shorter-term variability, they're safe). Yes, seabirds eat the target species of most industrial fisheries, that's a fact, and the fact acknowledged by these books is that most of this prey base is essentially gone or hugely reduced and/or spatially altered. Various seabird publications out of South Africa are exemplary in this regard.

Both books agree that the depletion of fish is mainly a people problem, as in too many, and specifically, too many fishing vessels (3.8 million over 100 t), too many fishers (200 million) and way too many people consuming fish from marine capture fisheries. World-wide global landings of marine fish reached 6×10^7 t in the late 1980s, and despite increased effort has remained at that level ever since, with some species groups showing declines (gadoids) to be replaced by others (demersal species and sometimes previous 'trash' fish, e.g. elasmobranchs). In many countries fish is the main source of protein. Currently, about half the total fish consumed are from marine capture fisheries, with the remainder coming from aquaculture, half of which (but not the shellfish) requires fish meal. Should you want to learn about the latter, marine fish aquaculture, read Greenberg's (2010) *Four Fish: the History of the Last Wild Food* (Penguin Press, NY).

You might look at these two books, which elaborate on somewhat the same general subject, as one produced by the fishery managers/fishery scientists who view the cup as half full (Grafton *et al.*), and the other, by an ecologist, as half empty (Longhurst). The 102 authors of chapters in Grafton *et al.* are an impressive array of

career fishery scientists, managers and economists, absent most of the folks that comprise the half-empty assemblage. Alan Longhurst, seemingly of the latter pedigree, has had an impressive career in marine ecology and fishery science himself. Grafton *et al.*, towards the end of its run of 56 chapters, leads us to believe that with the establishment of individual transferable quotas (ITQs), quota management systems (QMSs), or some way to invoke individual ownership of a fish stock, thus circumventing the "law of the commons" and the "race to fish" (competition to fill holds before the total allowable catch is reached, at least in managed fisheries), that there is hope in solving the crisis despite the human demand. By invoking individual ownership, fishers, like farmers, will actually husband their resource leading to a true harvest, rather than an extraction. Effective ITQs and QMSs so far are rare, themselves attempting to overcome human behavior, i.e., a lot of people will have to stop fishing and, like many things in this world, these commodities will eventually become owned/controlled by just a few persons who perhaps have no knowledge of fish or oceans.

Unlike Grafton *et al.*, Longhurst delves into the science and fish natural history behind fishery management itself. Regardless of whether ITQs become common, he questions the pinnacle theory of fishery science, namely that (page *i*) "a fishery creates its own natural resource by the compensatory growth it induces in the fish," or the so-called excess production that supposedly comes from competitive release among juveniles and subadults once the large fish are removed. This is the paradigm that has controlled fishery management since the middle of the last century. As a marine ecologist and one-time fishery scientist, Longhurst comes from a different angle than that of most fishery scientists; he sees that the elegant models that drive modern management are long on obeying the laws of mathematics but short on incorporating fish natural history and behavior and short on the services that fish provide to the ecosystem and, thereby, to themselves (not questioned to any appreciable degree in Grafton *et al.*; cf chapters by Punt, Clark). In that regard, reading through Grafton *et al.*, it appears that there has not been a lot of ecology in managing

fisheries thus far but rather much trial and error. Preservation of biodiversity and ecosystem-based management are concepts in their infancy, despite a wealth of literature spanning decades, and so far mean avoiding the capture of protected species or members of the charismatic megafauna, or making sure that the target and its main bycatch species are fished “sustainably.”

Grafton *et al.*, which resulted from a five-day workshop in 2007, is less a “Handbook” and more an “Encyclopedia,” with its encyclopedic aspect facilitated quite effectively by a very detailed 29-page index. The book is divided into four sections. In the first, *Overview*, nine chapters cover subjects such as economic trends, aquaculture, gender issues in commercial fishing, governance, subsidies, and the thorny problem of climate. These chapters provide an overall context to over-exploitation, which is twofold: first, in the usual sense of fewer fish to be had with increasing effort; but, second, in the fact that fewer fishers and fishing effort, leading to recovered fish stocks, would actually lead to higher profits. In the second section, *Ecosystem Conservation and Fisheries Management*, eight chapters cover subjects such as conservation of biodiversity, bycatch of sensitive species, IUU (illegal) fishing, foodweb modeling, and four chapters dealing specifically with harmed resources: two on sea turtles, one on a dolphin and one on cold-water coral reefs. In other words, this section reviews the response of target and non-target populations to exploitation. In the third section, *Case Studies in Governance*, 19 chapters review the details of attempts to regulate fisheries in a diverse array of areas from all corners of the world. Obviously fishery management has had and will have to adapt itself, succeeding or not, to diverse societal values. Finally, the last section, *Policy Instruments and Perspectives*, is composed of 20 chapters, which review the factors behind fishery management, other than scientific and societal ones. Included are discussions of fisheries buybacks, corporate governance, allocations viewed in several ways, bioeconomic modeling, ecolabeling, 200-mile EEZs and so on.

Of particular interest to me, only one short chapter in Grafton *et al.* discusses marine protected areas (MPAs) or reserves (Kompas *et al.*), although the subject is touched on in two others. All view MPAs as a necessary management tool in view of human behavior. Kompas *et al.*, the short chapter, show that well-planned MPAs work to enhance fish stocks, to then be fished around their perimeters; Fosså and Skjoldal show that MPAs are the only way to preserve cold-water reefs from damage by fishing gear (as well as to enhance the fish stocks that rely on the existence of the reefs and their complexity); and Clark makes the bold statement (page 644) that “the failure to include an MPA as part of the management strategy of a given fishery can amount to neglect of the implications of irreducible uncertainty.”

The latter statement reverts back to the Longhurst contention that fishery science has been weak, to its detriment, on dealing with ecosystem and climate variability (both loaded with uncertainty). In his 11 chapters, Longhurst begins with a history of fishery science and in the next three covers the main biological characteristics of teleost fish that set them apart from all other vertebrates, including birds: 1) the consequences of their unique reproductive pattern with extreme fecundity and planktonic larvae that supports widespread nutritive cannibalism; 2) their indeterminate growth, not possible for creatures which have to deal with gravity, so that older female fish are progressively more efficient reproducers than younger fish, with implications for selection as fisheries target the larger individuals; and 3) perhaps most importantly, the non-linear ways in which fish populations respond to natural climate variability as interacting members of complex species assemblages. He notes that “surplus production,” the cornerstone of fishery science, has never been detected in terrestrial vertebrates. He then offers chapters on whether sustainable fishing has ever been achieved; on how certain we are on the status of fish stocks; on the mechanics of population collapse; on why some fish stocks don’t recover from depletion; and on the way in which the fishery science community is responding to the wealth of new ecosystem knowledge, or not. In a discussion of MPAs, though difficult to achieve at an appropriate scale, he, too, agrees that they are indispensable if we are to have patches of “healthy” marine ecosystems in parts of the globe. Finally, he offers the characteristics of the ideal fish (for management purposes) and gives examples of two successful fisheries: one (tuna in the eastern tropical Pacific) for an “ideal” fish in the near-absence of any management and the other (ground fish in the Bering Sea) for fish difficult to manage, but managed nevertheless largely because of minimal political interference. This gets back to the human problem, with both examples having otherwise excellent science but only Bering Sea management responding sensitively to it, with control of fishing capacity (stringent seasons, ITQs and the like) relative to the varying strength of exploited populations. Not that the Bering Sea fisheries are absent problems (e.g. decline of pinnipeds, bycatch of salmon in trawl fisheries, etc), but the management structure appears capable of finding a solution. The two volumes, then, Grafton *et al.* and Longhurst, converge on this point of what makes successful management, something not easy to achieve in the face of human behavior.

I recommend that all ornithologists who have any interest in the marine ecology of seabirds read both of these books. An appreciation is needed within our community about whom seabirds are really competing with, other than the weather/climate.

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