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The Albatross and the Fish: Linked Lives in the Open Seas

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challenges that face researchers in a foreign country that has unusual land-ownership laws are particularly interesting, as are the personal stories about finding this bird in remote areas. It is in this section that the annual census is introduced, and personal stories of volunteers who have contributed to this effort for many decades are given. By using the story of a young conservationist from the Bahamas, the author is able to touch on the larger picture of today's conservation efforts between countries and agencies with different agendas, and he shows how one person can make a difference in conservation efforts in the Bahamas. Perhaps most satisfying in this section is the chapter on conflict resolution. Again, the examples presented on key conflicts help make the story even more extraordinary.

The last part, on the future, is the shortest and least developed. The future of Kirtland's Warbler is definitely uncertain, given efforts to delist and the unknowns associated with a changing climate, but the final stages of the story seem incomplete. However, the fairly new idea of establishing trust funds for conservation-reliant species such as Kirtland's Warbler is presented well, and maybe that is the end of the story so far.

By the end of the book, the reader truly begins to understand why so many people come from all over the world to view this warbler. A common thread among individual accounts presented here is the excitement and thrill of finding the elusive Kirtland's Warbler and, once found, the surprise that these birds are quite "friendly." Although the book is not meant to be a historical documentation of events and individuals, I feel that the failure to mention the contributions of John R. Probst is a major oversight. Dr. Probst, a retired Forest Service researcher, played an integral role on the recovery team for almost 30 years. His many publications on breeding habitat requirements at stand and landscape scales, population limiting factors, and pairing success were important scientific contributions. If the goal was to display the passion that individuals who worked with this bird showed, then Dr. Probst's devotion over decades could have easily been incorporated into the past and present sections of the book.

Though written for the lay person, there are enough historical accounts and information that biologists, ornithologists, and conservationists will find the book useful. This book will make good reading in a graduate seminar on endangered species, policy, and human dimensions. In addition, many readers of this journal and birdwatchers who travel great distances to see this rare bird will find a place on their shelves for this book because the story about the influence of a small bird on communities from two countries and on the careers of many individuals is truly fascinating.—Deahn M. Donner, *Institute for Applied Ecosystem Studies, Northern Research Station, U.S. Forest Service, 5985 Highway K, Rhinelander, Wisconsin 54529, USA. E-mail: ddonnerwright@fs.fed.us*

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The Albatross and the Fish: Linked Lives in the Open Seas.—R. W. Doughty and V. Carmichael. 2011. University of Texas Press, Austin. 302 pp. ISBN 9780292726826. Hardcover, $29.95.—This is a book about the complex relationships among policies that address the exploitation and conservation of key parts of the marine environment. It examines efforts to conserve albatrosses, one of the most threatened bird families on the planet, and one of the main causes of their situation—fisheries for tuna and other species. There has been a tendency over much of recent human existence to regard the planet's environment and the life that it supports as being here solely to support humans. In this view, harvesting should serve the short-term needs of the harvesters. The authors describe in detail the dawning realization of the threats to albatrosses, the underlying drivers on those threats, and the efforts to reduce them.

The first six chapters describe the essentials of the birds' biology and a history of human interaction with albatrosses, including efforts in the 20th century to conserve albatrosses at their colonies. The text has some black-and-white photographs, and there are a few pages of the same photographs in color. The seventh and eighth chapters cover the growth of the legal environment that affects human interactions with albatrosses. Chapter 9 surveys the world fishing industry briefly, leading into a series of chapters concerning fisheries and fisheries management.

The book describes the change from net fishing to longline fishing that occurred in the 1980s, driven partly by a ban on high-seas drift nets, but also by the usefulness of lines in harvesting new target species. This change brought with it higher rates of bycatch of albatrosses (and some other species) that took a decade or so to be noticed in terms of albatross population trajectories. The techniques to reduce this bycatch are remarkably simple in concept (described in one chapter), but the challenge is to ensure their implementation, particularly when an individual fisher may only see a very occasional bycatch and the techniques may add, very marginally, to the complexity of the fishing operation. Most regulatory structures for fishing are dominated by the interests of the harvesters. This applies both nationally and internationally, and when those structures are inadequate to ensure that overharvesting does not occur on the target fish stocks, what hope is there for a bycatch species?

The authors provide a history of the work that has gone into attempting to change this situation, including that of the individual scientists who noticed the problems originally and the work of non-governmental and some governmental organizations. The book finishes with the establishment of the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and the first years as that agreement began to be implemented. The authors are ultimately hopeful that the combined efforts of all of the players, including those engaged in ACAP work, will be successful, but they note that this is by no means a foregone conclusion.

This is one of the best books I have read on the complexities of human interactions that underpin nature conservation. There are 50 pages of appendices and supporting material. Although well researched, the book is perhaps a little biased in its sources toward the English-speaking conservation part of the global community. It would have been interesting to understand and explore more of the Latin American or east Asian attitudes to the problems besetting the albatrosses and the related issue of harvesting the sea's resources. There are some places where I understood issues differently but, as with all history, there is much that is personal interpretation. I recommend the book to anyone who wishes to understand the history of albatross conservation—and

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I look forward with hope to a successful outcome for the efforts documented here.—Mark Tasker, *Joint Nature Conservation Committee, Inverdee House, Baxter Street, Aberdeen, AB11 9QA, United Kingdom. E-mail: mark.tasker@jncc.gov.uk*

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Citizen Science: Public Participation in Environmental Research.—Janis L. Dickinson and Rick Bonney, Eds. 2012. Cornell University Press, Ithaca, New York. 240 pp., 32 figures, 4 tables. ISBN 9780801449116. Cloth, $49.95.—This book provides a current view of citizen science in the context of modern communication and engagement through the Internet. The Cornell Lab of Ornithology (CLO) has led the way in this domain within the New World, and the authorship of this edited volume reflects this leadership: 21 of 45 authors are from the CLO, with others coming from U.S. academic and conservation institutions, and one chapter presenting the U.K. experience. This treatment of citizen science is both broad and deep—necessitating, in places, the exploration of complex concepts and detailed explanations. Although a diversity of audiences will benefit from dipping into accounts as wide-ranging as Bioinformatics and Children and Nature, the purpose of this book is to inform serious engagement with citizen science as we continue to develop the capability of people to collect scientifically useful data that can benefit environmental conservation.

The book has three main parts. The first deals with the practice of citizen science, referring to case studies over the past quarter century and moving on to the Internet's impact on how we capture, analyze, and manage data, grow the volunteer base, and evaluate the outcomes of citizen science. The second part covers the various ways we can use the data for conservation, and the third broadens the book's interest into areas of educational and social policy.

Richard Louv's foreword sets the scene nicely, stating that "Citizen scientists collect more than data. They gather meaning." This expresses the heart of the book, which goes on to describe the whole end-to-end process for nurturing the partnership between professional and citizen scientists and turning data into meaningful information that can make a difference. Richard's hope is that citizen science can reverse the trend of young people becoming disconnected from the natural world. The introductory chapter explains why birds are at the center of the growing citizen science movement. The CLO and the British Trust for Ornithology (BTO) curate and use huge volumes of historical and recent bird monitoring data, collected by people who are excited by the birds around them. The Internet era allows the loop between data collector and professional institution to be completed and then used to nurture the relationship through feedback, the citizen's interaction with their own data and those of others, and for volunteers to really feel part of the conversion of observations into scientific conservation outputs. The case studies of FeederWatch, Monitoring Monarchs, Neighborhood Nestwatch, and Project BudBurst enable lessons to be learned.

For many readers, Steve Kelling's chapter on bioinformatics will be the key element underpinning future developments in citizen science. Readers will need a strong interest in computer science, and a good understanding of data modeling and visualization, to embrace the full potential of these fast-developing techniques. Progress relies on information tools for global networks of volunteers, rewards for participation, data exchange through a cyber-infrastructure, and successful analysis and visualizations that explain the data findings to relevant sectors. Visions for the future include crowd-sourcing of solutions from environmental data. In the following chapter, Miyoko Chu, the CLO's director of communications, and others tackle the challenge of recruiting hundreds of thousands of people to participate in citizen science projects, an engagement job still to be done. Here, again, the Internet has changed the game. Creating projects that people will be interested in requires a knowledge of the motivations and rewards of participation. Understanding different audiences and how best to communicate with them leads to participant-centered approaches. Case studies on eBird and the Great Backyard Bird Count demonstrate how participant-based rewards—tools for birders in the case of eBird—and publicity have fueled data collection. The future challenges are well described, of embracing social networking and enabling the citizen science community to build itself.

How much is the CLO case-study approach, adopted throughout most of this book, the whole story? This approach relies on a very large community of participants collecting big data by a simple method. It is the scale of the data set that allows the fast-developing computer-science concepts of analysis, modeling, and visualizations to tell a story about bird movements, abundance, and changing patterns. There are other approaches, as described in the chapter on the U.K. experience: BTO, again with citizen scientists, collects more stratified data in a range of bespoke projects that look at all the different stages of birds' life histories. This provides an opportunity for integrated population monitoring, whereby the cause of population change can be more readily identified, a feature historically successful in the U.K. conservation policy landscape. This U.K. experience sits slightly aside from the Cornell approach, and generally there could have been a better integration of different models for citizen science threaded throughout the book.

The BTO account comes at the end of Part II, where four other chapters are devoted to the impacts of citizen science on conservation research. Increasingly the methods are used in landscape-scale ecology, such as testing hypotheses on habitat loss and fragmentation. In Fink and Hochachka's chapter on data mining to explore patterns in citizen science data, the visualizations from eBird of the migration movements of birds at a continental scale really come into their own. They treat the analytical challenges openly and recognize the potential biases and how to deal with them. Developing a conservation research program, as described by Hames, Lowe, and Rosenberg in the next chapter, takes these analytical approaches a step further in thinking about how to use them in addressing the impacts of environmental change. Birds in Forested Landscapes, in which volunteers undertake field experiments alongside traditional survey data gathering, is the described model.

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