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Book review

Why Birds Matter: Ecological Function and Ecosystem Services. Ç.H. Şekercioğlu, D.G. Wenny, C.J. Whelan (Eds.), The University of Chicago Press, 2016, (x + 387 pp. Paper $45.00 ISBN: 9780226382630; Cloth $135.00 ISBN: 9780226382463; e-book $45.00 ISBN: 9780226382777)

Why Birds Matter collects research on avian ecosystem services into a single source geared to the educated non-scientist. This meticulous and well-organized reference discusses the roles of a wide variety of avian species in pollination and seed dispersal, forest building, nutrient dispersal, and ecosystem engineering (e.g. cavity building) in a range of habitats. Even as its data indicates the substantial benefits of avian ecosystem services, its balanced approach notes a few avian disservices. For instance, guano necessary to soil fertility and the economic wellbeing of human communities that harvest it becomes problematic when too much of it accumulates below certain seabird roosts.

Given the task of concentrating so much information in a single volume, it is evident why the majority of essays in this collection have multiple authors. Yet there is also a good deal more we do not know. Thus each chapter contains important suggestions for further research.

The editors are aware of the limits of the utilitarian approach in valuing birds, and some of the contributors list religious and cultural services along with economic ones. They are also aware of the anthropocentrism of the ecosystem approach in general. As the foreword by American Birding President Jeffrey Gordon points out, the authors "never lose sight of the value birds have in their own right." (p. vii) In this context, nuggets of information such as the way American crows use moving vehicles as nutcrackers and Caledonian crows make specialized tools from leaves illustrate that birds have intentions of their own—and values beyond human purposes.

Indeed, we cannot assess avian ecosystem services without knowing something about birds "in their own right", such as the seasonally shifting social structures of certain species. This is underscored by the fact that avian ecosystem services stem from birds' resource utilization as they go about their lives.

This book will appeal to those engaged with birds for personal, ethical and/or aesthetic reasons. It provides ample data to answer skeptics concerning the importance of avian conservation in public policy arenas. It would also be a good text for college classes that focus not only on ornithology, but also on broader issues of ecosystem services. The authors wrestle, for instance, with the issue of how to observe and quantify ecosystem services. Their best answer lies in calculating what it would cost humans to do the same things as birds currently do. But focusing on counting one benefit may cause us to miss others within complex ecosystems—and the time element adds a further level of complexity, as indicated by the chart showing timber yields as against non-timber yields over the long term (p. 123). Careful observation also indicates that avian pollination services are more widespread than the mere consideration of the co-evolution of bird and flower anatomy of certain plant and bird species predicts, since pollination is also undertaken by species of birds other than those whose beaks seem made for particular flower types. Altogether, such issues lead to the undercounting of avian ecosystem services.

This work explores other concerns in research design, such as ways to compensate for the trait that makes avian species valuable in their ability to transport seeds, nutrients, and plants between geographically separate areas. Some of the best data in this regard comes from comparing islands with introduced bird predators with those where no such predators exist. Intentionally excluding species from particular areas in order to get comparative data is a more difficult task.

Why Birds Matter makes a solid case that it is in the public interest to make avian ecosystem services better known. There is the dramatic instance of the decline of vultures in South India as a result of the veterinary medicine diclofenac, which vultures consumed along with cow carcasses. This decline has implemented the rise of feral dog and rat populations, in turn causing a rabies epidemic costing an estimated 48,000 additional human deaths and 34 billion dollars between 1992 and 2006.

Research that might influence agricultural choices were it better known is the Dutch study that found the presence of insect-eating birds increased fruit crop yields by sixty-six per cent. Negative views of birds by grain and fruit growers might be mitigated by data that indicates actual crop losses caused by grain and fruit eating birds are for the most part negligible. Support for forest set-asides to protect endangered bird species might be bolstered by knowledge of avian roles in both forest building—and re-building after clearing or fire. Birdwatchers and hunters who work to conserve bird species would be served by the knowledge of the extent to which birds implement the creation of wetlands and habitats for other species. One chart in this work lists thousands of plant species consumed by birds that dwell at least part time in wetlands and are responsible for seeding and spreading many of these plants.

Another argument for conservation of bird species, especially in the face of climate change, is that fact that simple mitigation strategies cannot replace avian biodiversity. Particular species of birds and plants, along with their habitats, are endangered *together* in places where no other birds, insects or mammals are available to take up their ecological roles. Though preservation of avian biodiversity is pressing, management decisions regarding the conservation of avian species are far from simple—as in protecting birds from turbines on wind farms.

In many conservation decisions, modifying human actions is the best available management strategy, as in the case where phasing out the use of diclofenac is allowing the comeback of indigenous Indian vultures. Though I did not find it mentioned here, much of the research in *Why Birds Matter* supports the use of the precautionary principle in this regard.

Birds have been our fellow travelers on earth for some 16,500 years, as cave paintings at Lascaux indicate. As authors of this work speculate,

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birds likely influenced our use of tools, language, and development of human culture itself. *Why Birds Matter* offers data with which to defend the survival of our remarkable avian allies as we continue to learn from them. It builds an unassailable case that in an interconnected natural world that which serves the lives of other species also serves our own.

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