

well to heed Wulf's advice to consider reinstating him as our hero.

The Invention of Nature by Andrea Wulf and John Murray, 2015. £25.00, hbk; £9.99 pbk (496 pp.) ISBN 10 1848548982, ISBN 13 978-1848548985. Winner of the 2015 Costa Biography Award and the 2016 Royal Society Science Book Prize

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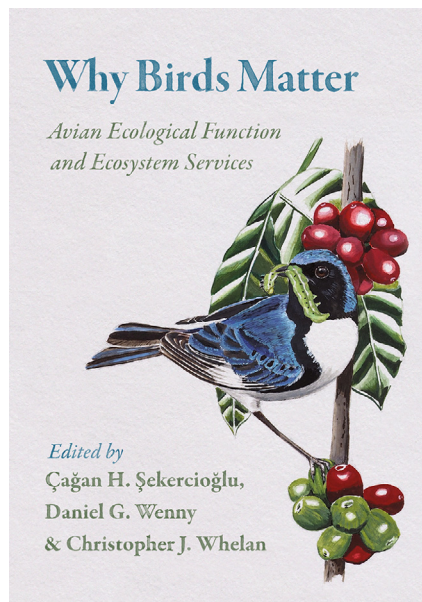
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Book Review

Birds Make the World Go Round

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The idea that every day we all receive many direct and indirect benefits – ecosystem services – from the million other

species on our planet has become a cornerstone of conservation efforts. This perspective has raised important support for conservation targets by appealing to people's wallets as well as to their hearts and minds. However, the tide has been countered with cries that excessive commodification of nature fails to acknowledge the intrinsic value of biodiversity, increases the divide between wealthy and developing nations, and could be counterproductive in the long run. Accordingly, while some have argued that 'The last word in ignorance is the man who says of an animal or plant, "What good is it?"' [1], others have dedicated themselves to understanding how humans benefit, and ultimately depend upon, the many species around us. *Why Birds Matter* builds a much-needed bridge between these two viewpoints. Throughout this book the authors provide an impressive account of studies quantifying the many benefits of birds to our economies and wellbeing, but without losing sight of the intrinsic value of birds in their own right. Under the integrative view expressed in this book, recognizing the importance of the service provided by blue jays – carefully planting thousands of acorns on open land after forest fires – does not undermine their intrinsic value as animals, in the same way that recognizing the value of a skilled plumber in no way detracts from his intrinsic value as a person.

Why Birds Matter unequivocally shows to any non-believer that birds are indeed key providers of all the main types of ecosystem services. The 20 billion chickens eaten every year, and the down feathers in our duvets, are examples of direct goods provided by birds. The benefit of regulatory services such as the control of agricultural pests or plant pollination is also obvious and can be quantified by improved yields. The provision of nonmaterial cultural and spiritual services is revealed by the prominent role of birds in art, religion, and recreational activities such as birdwatching. Last but

not least, birds contribute to support services such as nutrient cycling and soil formation.

One could ask if, and why, birds are so disproportionately important to the functioning of the World. Through the pages of *Why Birds Matter* we see that they are, and for several reasons, the main being their unrivaled mobility. Chapter after chapter, the authors provide impressive accounts of birds moving nutrients (most notably phosphorous in the form of guano); genes (their own, those of their parasites, and those encapsulated inside pollen grains and seeds); viruses and other diseases; and matter (such as soil and feeding remains). These are all constantly shuffled at local, regional, and global scales as a result of bird movements that in a very practical sense make the world go round.

Importantly, *Why Birds Matter* does not fall into the pitfall of considering all bird actions as beneficial, and also provides a fair view of their disservices such as agricultural losses and collisions with aircraft – the 'Hudson river miracle' in 2009, for example. Ultimately, however, even disservices show that birds matter 'big time', and that we will be able to take much better decisions if we fully understand their multiple roles in ecosystems. Many only recognized how dangerous these knowledge gaps can be during the first outbreaks of bird flu H5N1, leading to increased public interest in wild bird migrations. This book identifies several current knowledge gaps, making it a valuable tool for prospective students and researchers who want to look deeper into avian ecosystem services.

On the less positive side I would point only to a slight bias towards the selection of North American examples, and a less comprehensive assessment of nonmaterial services provided by birds, such as in the cultural, social, spiritual, and scientific arenas. The language style is clear

and accessible to a wide audience, but favors accuracy over the more passionate writing style typical of many popular bird books. The book is relevant to scientists, but its value extends beyond bird interest groups, offering a valuable introduction to the use of economic arguments in conservation, and hopefully facilitating a much-needed bridge with policy makers.

Most people, at some level, harbor a sense of empathy for birds: for their sheer

beauty, their admirable migrations, their wonderful songs, or for their capacity to remind us of the freedom and wilderness beyond our little concrete worlds. But this book reminds us that, besides all that well-deserved admiration, birds are singing to us like a canary in the mine – warning us that if we lose them, we are in deep trouble.

Why Birds Matter: Avian Ecological Function and Ecosystem Services edited by Çağan H. Şekercioğlu, Daniel G. Wenny, and Christopher J. Whelan, University of Chicago Press, 2016. US\$135, hbk; US\$45, pbk; US

\$45, e-book (368 pp.) ISBN 978-0-22-638263-0/978-0-22-638246-3/978-0-22-638277-7

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