BOOK REVIEW: *The Ecology of Migrant Birds: A Neotropical Perspective*

by John Kricher

The Ecology of Migrant Birds: A Neotropical Perspective, by John H. Rappole. Washington, D.C.: Smithsonian Institution Press. 1995. 504 pages, 19 line drawings, 27 tables. $35.00, hardbound.

A perusal of North American bird books published before, say, 1970, will quickly demonstrate that many species accounts are, for lack of information, incomplete. Consider the classic three-volume *Birds of Massachusetts* by Edward Howe Forbush. In the delightfully written "haunts and habits" sections that accompany each species, account you can learn about the wintering behavior of such species as Snowy Owls, Black-capped Chickadees, and Fox Sparrows. But you will learn very little about the winter ecologies of most long-distance migrants, those species whose migration takes them for the winter months to the Caribbean islands and to the ecosystems of tropical America. You will read nothing about the winter territoriality of Wood Thrushes, the diversity of Neotropical habitats used by Black-and-White Warblers, or the threat that habitat loss along the east slope of the Peruvian Andes poses to Cerulean Warblers. No one had studied these species on their wintering grounds.

Thanks to the efforts of scores of researchers over the past three decades, ornithologists now understand much more about what orioles, thrushes, wood-warblers, and others do when they spend the winter months in such places as Belize, Costa Rica, Venezuela, Puerto Rico, or Mexico. Once a "black hole" of knowledge, the ecology of Neotropical migrants on their wintering grounds is rapidly becoming rather well understood. It is timely, therefore, that this diverse information be summarized such that interested professionals and laypersons alike can gain a sound overview of it. John H. Rappole is one of the leading researchers in the burgeoning field of Neotropical migrant ornithology, and he is well positioned to author such an account.

Rappole's book is neither a field guide nor a species-by-species account. Instead, Rappole paints with a broad brush, tackling such topics as habitat and resource use, how migrants fit into tropical bird communities, evolution of migration itself, population changes, and recommended conservation measures. Each of nine chapters is fundamentally a review of the relevant ornithological literature, as interpreted by Rappole. The book is written such that one need not be an ornithologist or population biologist to understand it. Therefore, the modest volume will serve as an excellent primer as well as a useful introduction to the vast literature that has accumulated on this topic in recent years.

The book aptly summarizes some important findings. For example, many North American birders naively believe that loss of rain forests is the central threat, not only to Neotropic biodiversity, but to "our" migrant bird species. In

actuality, Neotropical migrants use a very wide range of habitats: mangrove swamps, dry deciduous forests, montane cloud forests, pine forests, savannas, scrub, forest edge, disturbed areas. Only a relatively few species are essentially confined to interior lowland rain forest. Conservation measures in the Neotropics must be at least as concerned with the preservation of non-rain forest habitats as with preserving rain forests.

Another misperception is that migrant species are often perceived as "invading" tropical ecosystems, as though they are outsiders, species adapted to the temperate zone, but somehow forcing their ways into the tropics in order to survive the cold northern winter. But Rappole explains that migrants are just as much part of Neotropical ecosystems as resident species, indeed most evolved there. Further, the lines of separation between migrant and resident are often more blurred than sharp: many tropical species do, in fact, migrate to some extent (as in shifting elevations from rainy to dry season) and many migrants (such as Yellow and Yellow-throated warblers) have resident populations that breed the Neotropics. In such species-rich communities, ecology gets pretty complicated, and much still remains to be learned about species interactions. But what is clear is that migrants are at least as much Neotropical as Palearctic: they are integral components of the ecology of two different biogeographic realms.

The remarkable phenomenon of migration itself is obviously at the crux of any consideration of why a species such as a Blackpoll Warbler would nest in northern hemisphere boreal forests and then fly nonstop for thousands of miles, from the New England coast to Venezuela, only to continue even farther to equatorial Amazonia. How could such a process have evolved? Rappole devotes three chapters to a consideration of migration, its possible evolutionary origins, and how Old World and New World migration patterns compare. Not all ornithologists will agree with him, but Rappole argues that at least for some species (such as Red-eyed Vireo), migration may have started as a response to intraspecific competition for breeding sites. The impression one gets from such examples reverses the previously held bias. Red-eyed Vireos emerge as Neotropical birds that annually emigrate from their native land for a short breeding season in the temperature zone, only to return to the tropics as soon as possible.

Most birders are concerned with the possible decline and loss of migrant species. One chapter is devoted to discussing current population changes, and one to suggested conservation measures. Migrants are potentially vulnerable species because they require a breeding ground ecosystem, a wintering ground ecosystem, and an array of suitable stopover sites to sustain them during their migration. Should there be a significant loss in any one of those three habitat categories, a migrant species would decline. If two, or even all three should be reduced, a migrant species could potentially face extinction. But ascertaining

reliable patterns of population change is not easy. For example, Rappole lists seven assumptions that underlie the Breeding Bird Survey (BBS), which is the most frequently used database to track populations of Neotropical migrants. Any of these seven assumptions may be faulty. As an obvious example, BBS routes are all, by definition, located along roads, precisely where recent decades have seen dramatic increases in houses, mini-malls, and other forms of human-created structures. Therefore, habitat change may be markedly greater along a road than away from it, meaning that any presumed changes in breeding bird populations quite possibly could be overestimated by BBS data.

However, even allowing for such potential interpretive difficulties, there is sufficient evidence, from various databases, that at least some species of Neotropical migrants are in decline in some areas. Recent research, completed after the publication of Rappole's book, shows that some long-distance migrant species are increasing as well. As with most of ecology, the situation is variable and complicated. It is not possible to generalize about 338 species distributed over two continents and parts in between. So research, and lots of it, needs to continue.

Rappole makes a strong plea for coordinated conservation efforts, attempting to use the final chapter of his book both as a rallying call and outline for action. He correctly identifies such factors as human population growth, various forms of pollution, and habitat loss as significant and continuing threats to biodiversity — not just to migrants, but to all Neotropical species. His numerous but briefly stated recommendations, divided into policy, research, and management, will come as little surprise to most who have considered the magnitude of threat facing global tropical ecosystems. But the bottom line is clear: though birds do not respect political boundaries, humans must. Therefore, for global conservation to be assured, humans in temperate and tropical nations alike must embrace conservation principles as a fundamental part of their societal ethics. It remains an understatement to say that this goal is not yet sufficiently achieved.

The book includes five appendices and a 39-page literature cited section, and is thoroughly indexed.

John Kricher is a frequent contributor to *Bird Observer*. His most recent book is a revised and expanded edition of *A Neotropical Companion*, published in fall 1997 by Princeton University Press.