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BOOK REVIEWS

RAYMOND PIEROTTI, EDITOR

Speciation and Geographic Variation in Black-tailed Gnatcatchers.—Jonathan L. Atwood. 1988. Ornithological Monograph No. 42. American Ornithologists' Union, Washington, DC. 74 p. ISBN 0-943610-53-2. $10.00, paper.

It is curious that the mythology of the Ph.D. degree has not received more attention. In studies based on fieldwork, particularly, young people are dispatched on odysseys to difficult places, often with insufficient resources, to show their mettle, learn something about the unknown, and return with valuable data that will earn them their place in the community of scholars. In ornithology, this has long been true of studies of geographic variation, hybrid zones, and—as in this case—species status. An apparently unwritten rule is that little of the difficulties or the romance of the travail should appear in the results of these studies. In this tradition, Jonathan Atwood's monograph on gnatcatchers of the southwestern United States and adjacent Baja California and mainland Mexico is a rather dry report of the results of his extensive field, lab, and museum studies of a little known group of birds. The major goal of the research was to establish species limits among several populations in the black-tailed group of gnatcatchers. In addition, patterns of morphological variation were considered, as were questions of historical biogeography and speciation.

Species status. Atwood sought to determine the specific status of the *californica* taxon of the Black-tailed Gnatcatcher (*Polioptila melanura*) complex, which primarily occurs in Baja California. Field studies of the birds in a few restricted areas of sympatry between *P. m. melanura* and *P. m. californica* yielded results consistent with assortative mating; vocal analysis and playback experiments indicated differences in calls and strong preferential response of birds to calls of their own type when simultaneously presented with vocalizations of the two forms. In addition to the extensively documented vocal characteristics, morphological differences were found between the two forms. These results indicate that the two taxa are diagnosable and mate assortatively in areas of sympatry; thus *californica* represents a separate species to practitioners of either biological or phylogenetic species concepts.

A second species-level problem involved two allopatric populations of *P. melanura, P. m. melanura* and *P. m. lucida,* in the Chihuahuan and Sonoran deserts, respectively. Some morphological differences between these taxa were found, but vocal differences were not apparent. In the absence of any sympatry, and given the lack of vocal differentiation, Atwood considered these taxa conspecific, but recognized that they represent two phylogenetic species.

The taxonomic goals of this study were straightforward and the results were clear-cut. Fieldwork, biogeography, song, and morphology were all brought to bear on the problem of species status. In the context of recent studies of this sort, the lack of any molecular results stands out; these might have provided useful information on the phylogenetic relations of all the various taxa in the study, and perhaps on the status of the two allopatric populations of *P. melanura.* A significant amount of genetic differentiation between *melanura* and *lucida* would indicate a long period of past isolation and hence support for specific status. However, the chances of finding these differences are greater with mtDNA methods than protein electrophoresis, and the former techniques were not widely available when this project was underway.

Morphological variation. The apparent goal of this section of the monograph was to document patterns of character variation. The degree of sexual dimorphism was computed for several mensural and color characters; a small amount of differentiation was found. For those characteristics that were significantly different, males were larger in size and females were more brown in color. Patterns and statistical significance of geographic variation in the same measurements were also studied. Some patterns of variation were consistently encountered; for instance, the two allopatric populations of *P. melanura* frequently differed. Other patterns were less clear; variation in some characters of *P. californica* were described as clinal, but this was not confirmed with statistical tests. The variation may well consist of heterogeneous patches. Various multivariate analyses of the mensural measurements also were reported; some of these make more sense than others. For example, principal component analyses of a combination of all specimens of three species results in the confounding of intrapopulation, intraspecific, and interspecific variation. In another analysis, clustering of populations based on taxonomic distances resulted in phenograms that appear to reflect hierarchy at the level of species and phylogenetic taxa, but do not make much sense within geographic regions. This again suggests patchy distributions of characters over space (or substantial sampling error), rather than clinal variation. SS-STP analyses were presented, but are difficult to interpret because localities were ordered by character means regardless of geography; for organisms with essentially one-dimensional distributions, such as the individual species of these gnatcatchers, it would make more sense to order localities by contiguity. Overall, this part of the monograph reflects the status quo in many avian morphometric studies—insufficient attention to the logic of the analyses and the biological significance of the results.

Historical analysis. The monograph is concluded with a brief analysis of relationships within taxa with similar distributions in the deserts of the southwestern United States and adjacent Mexico. The author described alternate scenarios for speciation and biogeographic relationships of his gnatcatchers and two other taxa, quail and towhees. The results of this analysis were inconclusive, as the author points out; however, that was inevitable given flaws in the methodology. Atwood at-

tempted to find concordance among the phylogenetic-biogeographic patterns in these three clades; unfortunately, however, he failed to perform any cladistic or other phylogenetic analysis of the gnatcatchers. Thus, the "phylogenetic" relationships in Figure 38A (note that *P. californica* occurs in region 1, not 3) were based on overall similarity of biological species, one of which, *P. melanura,* was composed of two phylogenetic taxa not known to be monophyletic. The three biological taxa also were not shown to represent a clade. More rigorous analysis would have been necessary to bring this section of the monograph up to current standards.

In summary, the major part of this monograph, the analysis of species status, is very good and easily could have stood alone as a major contribution. The taxonomic recommendations concerning species status of *californica* have already been adopted by the AOU, and the author's diagnostic key to the taxa should prove useful to specialists working with these birds. Two other sections are not as well developed. The material on geographic variation requires more logic and organization. Likewise, a true phylogenetic analysis would have greatly helped the logic of the historical discussion and might have been used to pull the whole monograph together.—GEORGE F. BARROWCLOUGH, Department of Ornithology, American Museum of Natural History, New York, NY 10024.

A Stillness in the Pines: the Ecology of the Red-cockaded Woodpecker.—Robert W. McFarlane. 1992. W. W. Norton, NY. 270 p. with illustrations by Ellen Mabry. $22.95, hardback.

For all practical purposes, the situation confronting the endangered Red-cockaded Woodpecker (*Picoides borealis*) is much like that confronting the Spotted Owl (*Strix occidentalis*). Like the owl, the woodpecker is a permanent resident of old forests, and the once widespread habitat of both species is presently restricted to public lands, especially national forests. As with the owl, controversy over management of the woodpecker often involves controversy about the U.S. Forest Service and its management of commercially valuable forests. In a year in which lack of American jobs has become headline news, it is understandable why parts of the U.S. public may believe that saving owls or woodpeckers—or for that matter, protecting the environment—leads to loss of jobs.

A Stillness in the Pines is the first popular book length treatment on the Red-cockaded Woodpecker, which was once at least locally common in virgin, mature pine forests throughout the southeastern United States. It is now restricted to a few, highly isolated patches of mature second-growth pine. This is an eclectic book which, despite its subtitle, is not strictly an ecological treatment of the species. Some chapters take an ecological approach, but others combine science and politics, a reflection of the emotional and often confusing controversies surrounding management of this as well as other rare species.

Chapter 1, "The third dimension," is a generalized discussion of the relationship of birds and habitat. "What is a woodpecker," chapter 2, deals with basics of woodpecker anatomy. Chapter 3, "Extinction is forever," places the Red-cockaded Woodpecker (and other species, including the Ivory-billed Woodpecker, *Campephilus principalis*) in the food web of southeastern forests. Unfortunately, like the Ivory-billed Woodpecker, this forest type largely disappeared before anyone studied it. Chapter 4, "There is no place like this home," is a wide-ranging discussion of cavity use, including the predator-prey relationship in the Southeast involving woodpeckers and the black rat snake (*Elaphe obsoleta*). "The generalist, the specialist, and the ecological niche," and "A cooperative nature" provide summaries of field research dealing with Red-cockaded as well as other North American woodpeckers. Chapter 9, "Beetlemania," treats controversies surrounding management of pine bark beetle (*Dendroctonus*) irruptions in both the Southeast and elsewhere in North America. McFarlane culminates in two chapters, "Peckerwood politics" and "Meanwhile, deep in the heart of Texas," that explore the emotional, internal politics of endangered species recovery teams and the now famous Texas federal court case which, in 1988, expanded habitat protection for the woodpecker in the national forests of Texas and eventually throughout the bird's range.

The strengths of this book include high readability, summaries of important technical works on the Red-cockaded Woodpecker, the author's intimate involvement with both the scientific and political aspects of the subject, and timeliness. The weaknesses are related to these strengths. In making the book highly readable, McFarlane glossed over subjects of importance. For example, he may have felt that Chapter 1 needed to be a highly generalized ecological introduction to birds and the environment. However, in a book dealing specifically with one species, readers would have benefitted from detailed treatment of evolution of the fire-dominated pine ecosystem and theories about how a bird like the Red-cockaded Woodpecker might have evolved in this environment. In some places, McFarlane sounds like the advocate for one side in a controversy rather than a scientist explaining a variety of viewpoints. For example, in an otherwise informative treatment of the interrelations of pine bark beetles and the environment, McFarlane launches opinionated attacks on the Forest Service that detract from the value of his presentation.

A Stillness in the Pines is a "good read" for bird students and those with a specific interest in Red-cockaded Woodpeckers, endangered species in general, and the ongoing political struggles. It is also a useful introduction for those with limited access to a now burgeoning technical literature on this species. This plea for preservation of a once-common resident of the southern pine woods advocates understanding and protection in the face of pressures for exploitation.—JOSEPH C. NEAL, Arkansas Cooperative Fish and Wildlife Research Unit, University of Arkansas, Fayetteville, AR 72701.