

## BOOK REVIEWS

**Arizona Breeding Bird Atlas**, by Troy E. Corman and Cathryn Wise-Gervais (editors). 2005. University of New Mexico Press, Albuquerque. 645 pages, 270 maps, over 320 color photos, 455 charts. Hardback \$45 (ISBN 0-8263-3379-6).

Arizona, although not bordering any large body of water, can boast one of the largest cumulative species lists of any North American state or province, some 535 species (as of December 2005). Until the recent publication of the Arizona Breeding Bird Atlas (hereafter ABBA), few publications had dealt specifically with breeding birds in the state. Apart from a few regional bird-finding guides (e.g. southeastern Arizona, Maricopa County, Grand Canyon, Navajo Indian Reservation), the main bodies of work covering Arizona's breeding birds were the monumental *Birds of Arizona* by Phillips, Monson, and Marshall (published 1964) and the more regional *Birds of the Lower Colorado River* by Rosenberg, Ohmart, Hunter, and Anderson (published 1991). Therefore, the time was ripe for a comprehensive treatment of Arizona's breeding birds. The stated goal of the ABBA is to provide a "snapshot" of the distribution of breeding birds in Arizona at the end of the 20th century. This very attractive publication thus provides a visual presentation of a wealth of data collected during the atlas' study period (1993–2000) and is an extremely useful tool for researchers and birders alike.

The introductory portions of the book cover a variety of subjects, from the design of the project (including sampling methods and objectives) to the description of data collection. Following protocols set forth by the North American Ornithological Atlas Committee in 1990, Arizona was divided into 1899 "quads" based on Geological Survey maps covering 7.5 minutes of latitude and longitude. Furthermore, a priority-block system was devised to divide the quads and allow for random sampling within them. It was mainly these priority blocks that were sampled by the more than 700 volunteers and researchers (an impressive number!). Data are presented on 1834 of the possible 1899 quads, and the authors describe in detail various limitations of the data, including variation in habitats within quads, variability in skill level among atlasers, difficulty in sampling remote and rugged areas, limitations on entering private and Native American lands, etc. One may quibble about aspects of the methods, or about what data were ultimately presented, and why, but the bottom line is that for the first time most of the state was surveyed for breeding birds, and the book is a faithful presentation of that survey.

Before I get to the meat of the book, the species accounts, I should mention that the authors have also included a very interesting and informative section on the geography, climate, and habitats of Arizona. Full-page maps depicting Arizona's topography, biotic communities, and annual precipitation are of great interest, as are discussions of the radical environmental changes Arizona has experienced over the years. Other maps depicting riparian areas, selected towns and cities, and dams, lakes, and water impoundments are all useful but unfortunately somewhat lacking in detail and completeness. For example, none of the many sewage-treatment facilities are depicted on the maps (figure 14), yet these have become an important component of Arizona's aquatic habitats. This section also describes 30 habitat types by which field observers were asked to classify bird sightings in the blocks. A nice color photo, written description, and discussion of each habitat's status and distribution within the state are included. Although this section is written in a nontechnical fashion (e. g., no scientific names for any plants), it gives the reader a good understanding of the habitat heterogeneity within Arizona.

The bulk of the book consists of 270 core species accounts for each species confirmed breeding in Arizona during the atlas period. A supplemental section includes 47 additional species that were rare and local confirmed breeders during the atlas period, species only suspected as breeding that occurred in proper habitat and season,

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and species that bred historically (prior to 1993) but were not found breeding during the atlas period. A few species, such as the Eastern Wood-Pewee, Yellow-throated Vireo, and Carolina Wren included in the supplemental list on the basis of territorial singing males likely represented vagrants as opposed to true range extensions. Each core account consists of a small color photograph, usually with the species engaging in some type of breeding activity, a large map showing the quads in which breeding was confirmed, probable, or possible, and written sections on habitat, breeding, and distribution and status. The design of the accounts was well conceived, with each species taking up two full pages and all the maps in the lower right corner of the right-hand page. All accounts have an attractive bar graph depicting frequency data with regard to habitat types and a small chart presenting the numerical data depicted on the maps (number of quads, blocks, etc.).

The first thing I looked at when I opened the book was the visual presentation of the breeding data, as depicted in the maps. The maps are relatively large (5.5 × 4.5 inches) and easy to read. They are gray, contrasting nicely against the white pages, and all counties are shown in a thin but distinct black line. Each quad where the species occurred is plotted on the state map in one of three colors (black for confirmed, green for probable, and white for possible; definitions for these categories are in the introduction). My main criticism of the maps is that the template does not have any landmarks other than county boundaries. This minimal background makes determining the quads' exact locations very difficult. Perhaps the authors felt a justification in presenting location data this way as a means of protecting both "sensitive" nesting information and private landowners (as they described for presenting locations of the quads only, not the priority blocks). But I don't see what harm would have been done by including major mountain ranges, rivers, cities, or towns on the template, which would have made the maps easier to read.

The text accompanying the maps is generally very informative. The first section addresses habitat, mainly as a written description of habitat data presented in the bar graph, as related to the distribution around Arizona for the 30 described habitats. Next is a section on "breeding." Although it is stated that breeding information (e.g., timing of breeding, nesting behavior, etc.) was not a focus of the project, it is included here. A "breeding phenology" graph is presented for species with 10 or more records of confirmed breeding. Finally, there is a "distribution and status" section that describes the species' overall range, its current status and distribution in Arizona, and any interesting previously published historical aspects of that distribution. It is important to look at the current distribution on the map *and* read the distribution section, because the map alone presents only data from the project, and, for a variety of reasons, the actual distribution may not be completely represented by the map. Geographic variation and racial differences were largely ignored, with only occasional reference to unique subspecies found in Arizona. This is unfortunate and detracts from the scientific status of the work. At least one photograph associated with the accounts, that of the Orange-crowned Warbler, appears to represent a migrant and wintering subspecies (*lutescens*), not the breeding subspecies (*orestera*). Perhaps one of the more useful sections of the book is the bibliography, which takes up 19 pages and has more than 900 citations.

It is difficult to find much fault with the ABBA. As in any project of this magnitude, evaluating the accuracy of the data is difficult except by comparing the maps with others previously published, such as those in *Birds of Arizona*. Given the incredible number of observers who took part, it would not be surprising if skill levels varied greatly (as pointed out by the authors), but one hopes that the sheer amount of data swamps out any small inconsistencies caused by possible misidentifications. Of more concern is the missing of species altogether in areas where they do occur. Breaking up quads into six blocks and then selecting one at random may account for "missing" data because priority blocks may not have included preferred habitats of rarer

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species. The editors considered this problem, however, and included supplemental observation data to compensate for such situations. The question is, then, what was the purpose and advantage of using a system of randomly selected priority blocks in the first place—something not well justified in the introductory material. As all aspects of this atlas project are purely descriptive, from presence/absence of bird species to specific habitats in which it is found, why invoke a constrained priority-block system that may miss critical habitats within the quads? Perhaps seeking out “good-looking” habitats within a quad might have maximized the species found nesting within that quad and minimized missing rare species? This appears to have been done, but to what extent is unclear.

One might ask what are the ramifications of missing breeding birds? A primary goal of the ABBA was to provide baseline data for long-term comparisons—say with another atlas survey conducted 20 years hence. These sorts of comparisons can be very informative for common species that are increasing or decreasing in widespread habitats. For rare or difficult-to-detect species, however, such comparisons may be more problematic. As an example, let’s look at the Red-breasted Nuthatch in southeastern Arizona. The map shows this species as absent from the Santa Rita Mountains and as only a possible breeder in the Santa Catalina Mountains. The text does mention that absence from the Santa Ritas (during the atlas period) may have been due to lack of coverage of specific habitats. But the species’ status as only a possible breeder in the Santa Catalinas is inexplicable, as it clearly breeds there (compare *Birds of Arizona*, and the presence of calling birds in habitat and season); perhaps the birds were not vocal during atlas visits, or perhaps the habitats this species prefers were not included in the priority block sampled? One may argue that such data don’t reflect true status, and, therefore, future comparisons might be equally misleading. Let’s hope such examples are rare and will not detract from the overall usefulness of the atlas.

Without doubt, the ABBA should be viewed as a very important work, the first of its kind for Arizona. One may argue about aspects of study design, or the presentation of some data, but there should be no argument with regard to the monumental effort by the Arizona Game and Fish Department, the editors, project leaders, field crews, and many volunteers, all of whom are responsible for bringing what was just an idea in the mid 1980s to the final product we see today. Anyone interested in the distribution of birds in Arizona should have a copy of the ABBA, and I hope the work will serve as an inspiration towards furthering our ever-growing knowledge of Arizona birds.

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