

## BOOK REVIEWS

**Atlas of the Breeding Birds of Nevada**, by Ted Floyd, Chris S. Elphick, Graham Chisholm, Kevin Mack, Robert G. Elston, Elisabeth M. Ammon, and John D. Boone. 2007. University of Nevada Press, Reno and Las Vegas. Forewords by Sen. Harry Reid and by C. Richard Tracy. 581 pages, numerous color maps and habitat photographs. Hardcover, \$60. ISBN-13:978-0-87417-695-7.

The first bird atlas I owned was *Montana Bird Distribution*, 2<sup>nd</sup> ed., by P. D. Skaar, published in 1980. Resolution was poor, with winter and summer occupancy each presented in 47 grid cells—an average pixel size (to use today's jargon for spatial resolution) of over 3100 square miles! The obvious upside to poor resolution, however, was that maps for nine species fitted on a single page, making the entire atlas only 66 pages long. Using the options found on manual typewriters, *Montana Bird Distribution* managed to convey information on the distribution and relative abundance of species, confidence of records in the grid cells, spring arrivals, and state rarities.

Despite the limitations imposed by manual typewriters, this is what I think a good bird atlas should do—tell me what species I can expect to find, and where. (My major disappointment from this atlas was that it was never able to convert Water Pipits into Sprague's Pipits for me when I was in the field.) Some atlases seem compelled to serve multiple functions, including trying to be a field guide and give extensive life-history information not relevant to distribution and abundance. The *Atlas of the Breeding Birds of Nevada* meets my first set of criteria for a good bird atlas, then exceeds it. It provides breeding-distribution maps for 275 species and a table of relative habitat use in the state. In addition, there is a narrative of each species' conservation status in the state and related management issues. This type of information is not normally found in bird atlases, and it is a welcome addition—it is one of several reasons to own this excellent volume.

But how did the authors get the information on birds' breeding distributions in Nevada? Anyone who has looked at Breeding Bird Survey (BBS) results for the U.S. will understand what a challenge making a breeding-bird atlas for Nevada must have been. BBS statewide summary maps often show Nevada as a blank space, denoting coverage insufficient for reliable distribution maps or trend estimates. Nevada is the most urban state in the U.S.; that is, it has the highest proportion of its inhabitants living in cities. Because breeding-bird surveys, and bird atlases in general, tend to rely heavily on volunteers, having very few people spread across a very large area is a disadvantage. Nevada is larger than Indiana, Ohio, and West Virginia combined but has only 130,000 people living outside of its cities. To complicate matters, there are few roads, and large parts of the state are military bases with restricted access. So how does one go about effectively surveying such a large area with limited resources? Floyd and colleagues accomplished this prodigious task using a scientific approach, dividing the state into habitat types, randomly sampling within each type in proportion to its extent, and using statistical models to fill in expected distributions between sampling areas. Almost 800 habitat blocks were surveyed over four years, with over 14,000 observer-hours of field work. Survey blocks, however, made up a small proportion of the state. Consequently, birds' occupancies of most of the state are predicted on the basis of observed distributions and habitat affiliation. The authors' approach takes advantage of simple statistical tools that can be used to predict the likelihood a site is occupied, combined with the powerful map-making capabilities of geographic information system (GIS) software. Because models are simplifications of the real world, some of the predicted distributions will turn out to be incomplete or in error. The authors state this up front and discuss the strengths and shortcomings of their approach early in the book. This limitation does not bother me at all. Subsequent surveys in the extrapolated areas will be used to improve subsequent editions of the atlas, and in the meantime I have the best distributional maps that limited survey coverage can provide.

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From the surveys and models, two excellent statewide maps are provided for each species. The smaller map is coded in multiple colors, with colors depicting degrees of likelihood that a species will occupy a particular area. A second, larger map gives detailed information on occupancy and abundance of the species in the survey blocks. The larger map represents the actual survey results from which the smaller map is made. If I have any complaint about the book it is that the county boundaries (found on the larger map) are too faint, and I probably would have switched the relative sizes of the two maps. I find the intricate detail of the predicted distributions fascinating and useful—if the map were larger, predicted distributions would be easier to determine (particularly for rare species). But this is a pretty minor complaint relative to the excellent job that has been done in creating this breeding-bird atlas.

I would be remiss in this review if I did not say a few words about the bird illustrations in the *Atlas of the Breeding Birds of Nevada*. First, the cover and frontispiece by David Sibley, featuring the Sage and Black-throated Sparrows, are excellent illustrations of birds in native vegetation. These species are featured because sparrows are particularly abundant in Nevada—Brewer's Sparrow was the species most commonly encountered during the surveys, followed closely by Common Raven. (OK, so the Mountain Bluebird is more colorful, but why not a sparrow for a state bird?) Second, beyond distribution maps, it has become *de rigueur* for bird atlases to illustrate each of the birds it covers. The illustrations in the *Atlas of the Breeding Birds of Nevada* exploit a tactic different from what you often encounter—they're fun! Instead of the typical adult perched to exhibit field marks, in the Nevada Atlas Ray Nelson provides a sketch for each species that often emphasizes behavior or field views—but not traditional views—and sometimes he even lets humor creep into the illustrations. I won't give away all of the fun, but I need to mention a few examples: a Canada Goose nesting on a rooftop, copulating Green-winged Teal, a Sharp-shinned Hawk carrying a dead Steller's Jay, Black-necked Stilt chicks and the feet of an adult, Cliff Swallow nests (but no birds), and a Chipping Sparrow in hand in a bander's grip exposing a brood patch. Among the more light-hearted illustrations are of a Northern Goshawk attacking a birder and a Gilded Flicker tail disappearing into a nesting cavity.

The *Atlas of the Breeding Birds of Nevada* is a great addition to any birder's book collection (particularly if you enjoy atlases or go birding in Nevada). In addition, I think other states considering new or revised atlases would benefit from (at least considering) the statistical approach to creating distribution maps found in this atlas, particularly if the state is large and its survey coverage is limited.

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