

Atlas of the Breeding Birds of Ontario 2001–2005

Author: Drilling, Nancy

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The *Atlas of the Breeding Birds of Ontario* summarizes the results of the second breeding bird atlas in Ontario. From 2001 to 2005, almost 3500 people spent over 152 000 hours in the field documenting the distribution and abundance of breeding birds throughout the province. Atlasers used the same survey methods as were used during the first Ontario atlas (1981–1985) but increased their efforts to survey northern regions adequately, resulting in a better view of bird distributions. New to the second atlas was the collection of point-count data to estimate relative abundance and population sizes at the provincial level. In addition, atlas organizers incorporated new analytic techniques such as GIS analyses and special mapping techniques. The book consists of a foreword, extensive acknowledgments, six introductory chapters on atlas methods, summaries and discussion of results and biogeography, accounts of 288 breeding species and hybrids, nine appendices on various topics, a bibliography, and an index.

The heart of the book is the species accounts. Each account is two pages long and consists of text, maps, graphs, and photos. Every account has at least one photo of the species, often showing the species at a nest or with young birds. Most photos are of good quality, although sometimes a somewhat lower-quality photo is used to illustrate the species at its nest. Species too rare for a map of their relative abundance to be generated have one or two more photos, generally of excellent quality, showing some aspect of the nest as well as typical breeding habitat. The text is divided into an introductory paragraph, Distribution and Population Status, Breeding Biology, and Abundance. The Distribution and Population Status section summarizes the historical and first atlas's distribution and discusses the second atlas's results, often repeating what is shown on the distribution map. Most of the information in the Breeding Biology section is from other sources, but most accounts also discuss the extent to which breeding was confirmed during this study. The Abundance section generally summarizes what is shown on the map of relative abundance. Overall, the text is informative and interesting, well written, and consistent across accounts. Unfortunately, the graphics do not meet the same standards. Distribution maps on the first page of each account combine two unrelated types of data: breeding evidence (confirmed, possible, or probable breeding) and a "change" map (species observed during both intervals, 1981–1985 only, 2001–2005 only, or not observed). The result is an unnecessarily complicated map that obscures patterns of both types of data. In many accounts, the distribution map portrays half of the province with a small inset showing the species' distribution over the entire province at a coarser scale. However, some species have another map, located on the second page, covering the entire province. This map is unlabeled, has no legend, and has no explanation of why it is there. For species with adequate point-count data, a second type of map shows the pattern of relative abundance, defined as number of birds per 25 point counts, across the province. A large number of assumptions and caveats applies to this type of map. Nevertheless, for many species the maps of relative abundance seem to illustrate realistic patterns, and they generate interesting discussion of possible reasons for the observed patterns. Finally, each species account includes a graph portraying "probability of observation" for the first and second atlas, by region, and in the province as a whole. The vague and unfamiliar "probability" phrase sent me scrambling to the introductory chapters for an explanation, and I suspect that many other readers will also be mystified. The book's explanations of the phrase and how it was calculated are not particularly clear, but the authors of most species accounts interpreted this number as the percentage of blocks in which the species was observed, adjusted to a standardized 20 hours of effort per block per atlas. The section of species accounts ends with a segment containing a short paragraph on 20 additional species that historically bred in the province but were not reported with breeding evidence during the second atlas.

Besides the species accounts, two chapters present results: Chapter 4 has an overview of coverage and effort, species reported, number of species per block, and point counts, whereas Chapter 5 presents statistics on distribution changes between atlases. Large tables in the appendices include breeding evidence per species per atlas, proportional change by species, and estimates of population size per species. The population sizes estimated from point counts cannot be interpreted because they are

based on raw bird counts rather than counts adjusted for differing probabilities of detection. Specifics on methods, including field methods, data processing, and analytic and mapping methods are scattered in two chapters and two appendices, which total about 20 pages. A reader wanting details on a particular method will need to read through these sections to find an answer because neither the table of contents nor the index is detailed enough for a search of topics. Background and reference materials include chapters on biogeography and bird-conservation initiatives in Ontario as well as a gazetteer, a glossary, a list of referenced plants and animals, and an extensive section of literature cited.

Chapter 5 contains a lengthy and thought-provoking discussion of changes in bird distribution. The first section discusses various hypotheses on why bird distributions may be changing, including natural vegetation changes, land-use changes, fires, insect outbreaks, human population growth, and climate change. Next, species are grouped by habitat affinities, and the groups' distribution changes are compared with their habitat's distribution. For example, changes in grassland birds are compared with changes in the distribution of grassland. However, correlation is not causation, and these types of comparisons can only suggest possible explanations. I hope these comparisons will stimulate more focused research and analyses to determine the underlying causes, which probably will differ for different species and species groups.

The second Ontario breeding bird atlas was an impressive project, and the resulting database on breeding birds will be an extremely valuable resource for years to come. The strength of the book is the text and photos in the species accounts. Those interested in consulting these narratives frequently may find the book to be worth its price or at least use the library copy regularly. Ornithologists, managers, students, and others more interested in the data and analytical side of the project may be better served by going to the atlas's web site (www.birdsontario.org/atlas). There the user can download distribution maps, query and download customized data summaries, and download or request raw data.—NANCY DRILLING, Rocky Mountain Bird Observatory, P.O. Box 1232, Brighton, CO 80601. E-mail: nancy.drilling@rmbo.org.