

# Digital Distribution Maps of the Birds of the Western Hemisphere

Version 1.0

by

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## Introduction

Habitat for birds and other organisms is disappearing quickly from the Earth's surface. Conservationists are in a race against time to protect remaining habitat to stem the loss of biodiversity. Critical to these conservation efforts is focusing on-the-ground actions where threatened species where they are found. To aid conservationists in determining where these species occur, a group of conservation organizations joined forces in 2000 to develop a digital library of the distributions of the birds and mammals of the Western Hemisphere. These organizations, NatureServe (known then as the Association for Biodiversity Information), Conservation International – Center for Applied Biodiversity Science, The Nature Conservancy – Migratory Bird Program (known then as Wings of the Americas), and World Wildlife Fund – US, later joined by Environment Canada – WILDSPACE, wanted to make these maps easily accessible to conservation planners and other interested users. They signed a Memorandum of Understanding to govern work on the project and delegated NatureServe with the primary responsibility to compile the database. This compact disk presents one product of this collaboration—a digital map library of the distributions of the birds of the Western Hemisphere.

## Coverage

**Western Hemisphere.** The project covers continental North, Central, and South America and associated islands, including all near shore islands in Canada and the United States, islands in the Bering Sea, and the U.S. Aleutian islands; the entire Caribbean; the Mexican islands of Guadalupe and the Revillagigedo archipelago; the Galápagos islands including Isla del Coco (Costa Rica); the Colombian Pacific islands of Malpelo and Gorgona; the Chilean islands of San Ambrosia, San Félix and the Juan Fernández Archipelago; the Falkland Islands; and the Brazilian islands of Fernando de Noronha and Atol das Rocas. This coverage excludes Greenland, the Hawaiian Islands, and mid-Atlantic islands such as Bermuda, Tristan da Cunha, and South Georgia.

**Terrestrial Ranges only.** Because the goal of the project is to produce a tool to aid on-the-ground conservation, the maps show terrestrial ranges only. Conservation of marine birds while at sea is dependent on management policies, so the geographic ranges of pelagic species is a less critical conservation issue. Also, pelagic ranges are poorly and unevenly known throughout the hemisphere,

making a balanced coverage of these ranges difficult. We made a special attempt to map breeding localities of seabirds because these areas are typically in need of conservation measures.

**Extant and Recently Extinct Species.** Whenever data are available, the maps show ranges where species formerly occurred but are now extirpated. Similarly, we included recently extinct species if data were available.

**Vagrants.** For completeness, we attempted to map all species recorded from the project area. However, especially in North America, we made no attempt to show all locations where species have been recorded as vagrants.

**Introduced Species.** To the extent that existing data allowed us, we mapped current distributions of species that have been introduced and established in the project area. Distributions of all birds and especially introduced species are constantly changing, so data users should be aware that these maps reflect the situation at the time the data source was produced, not necessarily today's distribution.

## **Map Production**

To produce the maps we used existing digital maps that were available to us (see Data Contributors) and digitized maps for all remaining species and portions of ranges. We digitized by eye from published maps in books and other compilations as well as hand-drawn maps on paper. In most cases we digitized at a 1:5,000,000 to 1:10,000,000 scale, although we used 1:3,000,000 for the Andes and Central America. After initial digitization, ornithologists reviewed the maps and we incorporated these corrections to the digital maps.

We coded all polygons and points by whether the species is still present or extinct in the location, and by the species' origin (permanent resident, breeder, non-breeder, passage migrant, introduced). The key to the codes, all technical information about the maps, and a list of references cited in the database are contained in the accompanying metadata file.

## **Data Contributors and Sources**

The source for all South American ranges is Robert Ridgely's compilation of research maps for South American birds, many of which have been previously published (Ridgely and Tudor 1989, 1994). Tom Allnutt provided digitized drafts of several hundred of these maps. We also smoothed the ¼ degree grid data provided by The Nature Conservancy for threatened Latin American species (Mehlman et al., 1999). Robert Ridgely also reviewed and updated the digitized maps for every species. For species of the Galápagos Islands, we

supplemented the Ridgely maps with distribution information from the field guide by Castro and Phillips (1996). No published maps are available for Nicaragua, Costa Rica, and Panama, so we contracted James Zook, an active Costa Rican-based ornithologist, to draw these maps based on the literature and his field experience. Maps including Mexico, Guatemala, Belize, El Salvador, and Honduras are primarily based on Howell and Webb (1995). Don McNicol provided digitized maps for all Canadian species that formed the basis for most North American maps. These maps were based primarily on the Peterson field guide series (Peterson 1980, 1990) and the *Birds of North America* series (Poole and Gill 1992). For the remaining species and migratory ranges of North American species, we used maps from *Birds of North America* where available and Sibley (2000). Caribbean data came from Raffaele et al. (1998) and Schreiber and Lee (Schreiber and Lee 2000). Overall, we cite 46 sources for the information in this database. The Ridgely data are based on thousands more references.

### **Use and Acknowledgement of the Data**

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All products produced on any media, including but not limited to publications, databases, theses, websites, and oral presentations should acknowledge the data contributors:

“Data provided by NatureServe in collaboration with Robert Ridgely, James Zook, The Nature Conservancy – Migratory Bird Program, Conservation International – CABS, World Wildlife Fund – US, and Environment Canada – WILDSPACE.”

All scientific research that makes extensive use of the maps for South American species should offer co-authorship to Robert Ridgely (address below or via email at rridgely@earthlink.net). Similarly, projects that make extensive use of the Nicaraguan, Costa Rican, and/or Panamanian data should offer co-authorship to James Zook (jrzook@racsa.co.cr). Please be sure to contact these scientists before putting their names on any document!

The proper citation for this CD is:

“Ridgely, R. S., T. F. Allnutt, T. Brooks, D. K. McNicol, D. W. Mehlman, B. E. Young, and J. R. Zook. 2003. Digital Distribution Maps of the Birds of the Western Hemisphere, version 1.0. NatureServe, Arlington, Virginia, USA.”

Please contact Bruce Young ([bruce\\_young@natureserve.org](mailto:bruce_young@natureserve.org)) if you are interested in using this database or any of the data contained therein in a commercial product.

### **Software Compatibility**

The shapefiles on this compact disk are compatible with ArcView 3.X software produced by the Environmental Systems Research Institute, Inc. To purchase ArcView software, check the ESRI website ([www.esri.com](http://www.esri.com)) for a distributor near you. Alternatively, you can download ArcExplorer, software that allows you to view but not modify the range maps, for free at <http://www.esri.com/software/arcexplorer/index.html>.

### **Errors and Updates**

Although we feel we did the best job possible to produce an accurate database, some errors surely remain in the data. Our knowledge of bird distributions continues to improve, so some of these maps may be out of date by the time you see them. Please alert Bruce Young ([bruce\\_young@natureserve.org](mailto:bruce_young@natureserve.org)) of any errors you detect in the data or of newly published information that would serve to update the maps. We will be constantly reviewing the scientific literature to keep abreast of taxonomic and distributional changes. Updated maps will be available for download at NatureServe's website ([www.natureserve.org](http://www.natureserve.org)).

### **Disclaimer**

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check NatureServe's website ([www.natureserve.org](http://www.natureserve.org)) for updated information. The data provided is for planning, assessment, and informational purposes.

## **Acknowledgments**

For their generous financial support, we thank Conservation International – Center for Applied Biodiversity Science, The Nature Conservancy – Migratory Bird Program, the Oracle Corporate Giving Program, and NatureServe. We are indebted to the GIS wizardry of Pilar Hernandez whose scripts allowed the project to finish this century and with a manageable number of errors. The Monteverde Institute kindly made their GIS facility available to us. Thanks to Margaret Buck for helping us set up the digitizing lab in Monteverde, Costa Rica. We thank Maria Allen, John Cooley, Alberto Guindon, José Luiz Isurza, Carmela Landeo, Missy Martin, Juan Ali Ramírez, and Allen Suárez for tirelessly digitizing endless folders of maps. We are indebted to Jamie Stewart for generously setting up our FTP server at the Academy of Natural Sciences, printing all of the draft South American maps, and providing database advice. Finally, thanks to Larry Master for believing in this project and supporting it for the duration.

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