



WOOD DUCK / WIL HERSHBERGER

CHAPTER 1
Introduction

Richard S. Bailey and Casey B. Rucker

The Mountain State's birds are heard singing in the deepest forest coves, encountered soaring over grasslands and farms, and enjoyed at feeding stations in residential yards. Birds' movements and sounds can make them easy to find, and this detectability affords outstanding opportunities to study their ecology, behavior, and populations. Changes in bird distribution and abundance can also be bellwethers of ecosystem health. West Virginia's two ornithological Atlases together depict avian occurrence across 30 years of changing landscapes and human activities. Data from the two projects are summarized in this volume, both for general enjoyment and for use by those interested in protecting and conserving the state's birdlife.

Purposes and Usefulness of Ornithological Atlases

Ornithological atlases vary greatly in geographic scope, ranging from counties to states, ecoregions, and nations. The first systematic bird atlas was published in England in 1970, and it inspired similar efforts in other European nations. Prior to that time, assessments of species occurrence were based on individual observations, nest records, and other previously published work. The first statewide atlas project in the United States was conducted in Massachusetts beginning in 1974, and employed a grid system whose basic unit is a geographic block consisting of one-sixth of a United States Geological Survey 7.5-minute topographic quadrangle. By the early twenty-first century, at least one atlas had been completed for a majority of US states and Canadian provinces.

Amassing sufficient data requires years of fieldwork for even the smallest states, and data collection for most atlas projects in the United States has been completed over periods averaging five years. Documenting and understanding change in bird populations also require that atlas projects be repeated at regular intervals. In most cases, 20 to 25 years between projects has been used as a practical interim period that provides meaningful results given available resources.

Ornithological atlases are important contributors to conservation planning and science. In addition, they can be powerful catalysts for encouraging bird enthusiasts to apply their knowledge and skills apart from a recreational context. Atlas fieldwork typically requires many thousands of hours of effort by hundreds or thousands of volunteers. Volunteers involved with the second West Virginia Atlas frequently reported great satisfaction in contributing meaningfully to a project that will help shape a better future for the birds they love. Their enthusiasm can also translate into increased involvement in other field projects in following years.

Goals of Twenty-First-Century Breeding Bird Atlases

In general, a breeding bird atlas attempts to fulfill several broad missions. The first is to provide estimates of distribution and occurrence of all breeding bird species in a geographic area

within a fixed time period. This aim is achieved by systematic surveys that document breeding evidence for as many species as possible in all or a subset of grid-based blocks. Atlases also seek to eliminate gaps in coverage, a particular concern in West Virginia where substantial portions of the state are otherwise seldom visited by birders.

The second goal, in areas where one or more atlases have already been completed, is to measure changes in distribution and occurrence of breeding avifauna. Increases or decreases in species occurrence may be linked with changes in land cover, climate, invasion by exotic species, range-wide and regional demographic trends, and other factors. In many cases, changes observed in atlases completed in neighboring states can also be informative. For this reason, results from second atlases in Maryland, New York, Ohio, and Pennsylvania are frequently cited in this book.

The third objective is to provide, where feasible, estimates of population density and relative abundance for individual bird species or groups of species. Methodology has varied based on resources and capacity, but generally consists of point-count surveys, which enable estimation of species abundance by counting birds at predetermined locations for fixed periods of time. The surveys supplement results from the North American Breeding Bird Survey and provide local and regional assessments of abundance and density at finer resolutions. In the case of some declining species with statewide distributions in West Virginia, such as Cerulean Warbler, estimated density maps produced for this Atlas have already assisted in targeting conservation work.

The West Virginia Breeding Bird Atlas 1984–1989

Fieldwork for the first Atlas was conducted from 1984 to 1989 concurrently with atlas projects in a number of other states. The Atlas coordinators, Albert R. Buckelew Jr. and George A. Hall, realized that an adequate survey of all blocks was not possible given volunteer availability, the extensively rural character of the state, and substantial habitat access challenges imposed by topography, private land ownership, and limited road coverage. Accordingly, they designated and concentrated field effort on a subset of blocks. Regional coordinators directed more than 300 volunteers to acquire and submit data. The Brooks Bird Club, West Virginia's statewide ornithological organization, founded in 1932, played a central role in the successful completion of the project. Financial support was provided by the West Virginia Division of Natural Resources Nongame Wildlife Program. After six years of effort, 162 species were confirmed as breeding in the state.

Publication of *The West Virginia Breeding Bird Atlas* in 1994, written by the coordinators of the project, afforded for the first time a comprehensive view of avian species distribution and occurrence in the state. The Atlas still serves as a definitive historical record of West Virginia's breeding avifauna. Prior to its publication, the principal authoritative sources for statewide

species occurrence were the Breeding Bird Survey and G. Hall's *West Virginia Birds*, published in 1983.

The Second Atlas of Breeding Birds in West Virginia 2009–2014

A primary purpose of the first State Wildlife Action Plan, 2005–2015 (chapter 9), was acquisition of additional data regarding species occurrence across all taxa, including birds. To meet this goal, Division of Natural Resources staff began planning in earnest for a second breeding bird atlas in 2007. Unlike the first Atlas, the second was administered and coordinated wholly by the Division. Tasks were organized according to four areas of need: funding; methodology and scope; data management and infrastructure; and outreach to prospective volunteers, partner agencies, and nongovernmental organizations. Survey effort was once again directed towards a subset of blocks, termed priority blocks. Most funding for the project was provided by federal State and Tribal Wildlife Grants.

Over six years of data collection, from 2009 to 2014, more than 170 volunteers and staff contributed to the project, confirming breeding for 160 species. Expanding beyond the scope of the first Atlas, this book includes analyses of estimated occurrence, estimated change in occurrence between Atlases, and estimated species density and population. Field methodology for this Atlas as well as important differences between results of the two projects are discussed in chapters 4 and 6.

Role of the West Virginia Atlases in Conservation Planning

Results from West Virginia's two Atlases have already informed research, conservation policy and planning, and management actions. For instance, data from the first Atlas were used in the development of a state list of species in need of conservation. Later, results from the project were combined with data from point-count surveys to create a list of Species of Greatest Conservation Need for the first State Wildlife Action Plan in 2005. Second Atlas results underpinned amendments to the list for the second Plan in 2015 and contributed to creation of a species richness map that formed a basis for the Plan's Conservation Focus Areas. Atlas results will continue to be used in conservation efforts through the next atlas period, not only within the state but also by regional and national conservation planners.

Background Information

OVERVIEW OF CITED SOURCES

This book is intended both to provide enjoyment to readers interested in West Virginia's birds and to serve as a scientific resource. Sources include papers published in academic journals, other published atlases, historical information on bird

occurrence, datasets on geography, climate, and other topics, government and nongovernmental organization reports, newspaper and magazine articles, and personal communications.

HISTORICAL ORNITHOLOGICAL LITERATURE FROM WEST VIRGINIA

Historical data on birdlife in West Virginia are presented throughout this volume as a means of providing context for second Atlas results and analysis, particularly in species accounts.

John James Audubon and Alexander Wilson published the first accounts of birdlife in what is now West Virginia during the first half of the 1800s. The first ornithological records after statehood in 1863 typically focused on observations in specific locations over limited time periods. Accounts frequently referenced in this book include W. Scott's *Partial List of the Summer Birds of Kanawha County, West Virginia* (1873), W. Brewster's *Some Observations on the Birds of Ritchie County, West Virginia* (1875), T. Surber's *Birds of Greenbrier Co., West Va.* (1889), and W. Rives's important and frequently cited *The Summer Birds of the West Virginia Spruce Belt* (1898), which describes bird occurrence in high-elevation Red Spruce forests in Tucker County at the height of the logging boom in the 1890s. One widely available historical account, W. Doan's *Birds of West Virginia* (1888), has been omitted as a reference from this book due to its dismissal by contemporary ornithologists as unreliable in substance and conclusions.

In the early twentieth century, E. Brooks published the first West Virginia bird list with a statewide scope, *List of Birds Found in West Virginia* (1909), later followed by P. Bibbee's *Birds of West Virginia: A Check-List* (1934), and M. Brooks's *A Check-List of West Virginia Birds* (1944). The last author had published the important article "The breeding warblers of the central Allegheny Mountain Region" several years earlier in *The Auk* (1940). E. Brooks's *A Descriptive Bibliography of West Virginia Ornithology* (1938) provided a roadmap for historical research in the preparation of this Atlas. Publication of *The Redstart*, the journal of the Brooks Bird Club, began in 1933; 437 issues had been published by the end of 2020. Many *Redstart* articles are cited throughout this book. Finally, G. Hall summarized more than a century of data on state bird occurrence from extant ornithological literature in his essential *West Virginia Birds: Distribution and Ecology* (1983).

The preceding list is by no means complete; it is intended, rather, to give a representative sample of the most important historical sources that are frequently cited in this volume.

ABBREVIATIONS AND ACRONYMS

Measurements are generally presented in metric units followed by British imperial units in parentheses. Table 1.1 presents a list of frequently used abbreviations and acronyms regarding units of measurement as well as names of organizations, place-names or designations, and a chemical compound.

FREQUENTLY MENTIONED PLACES

Table 1.2 presents a list of locations that are frequently mentioned in this book, along with their coordinates. In some cases,

TABLE 1.1 Frequently used abbreviations and acronyms

Abbreviation	Definition	Abbreviation	Definition
ac	acre(s)	km ²	square kilometer(s)
AMJV	Appalachian Mountains Joint Venture	m	meter(s)
BBS	North American Breeding Bird Survey	mi	mile(s)
C	Celsius	mi ²	square miles
CBC	Christmas Bird Count	NWR	National Wildlife Refuge
cm	centimeter(s)	PIF	Partners in Flight
DDT	dichloro-diphenyl-trichloroethane	SWAP	State Wildlife Action Plan
F	Fahrenheit	US	United States
ft	foot (feet)	USDA	US Department of Agriculture
ha	hectare(s)	USFWS	US Fish and Wildlife Service
in	inch(es)	WMA	Wildlife Management Area
km	kilometer(s)	WVDNR	West Virginia Division of Natural Resources

TABLE 1.2 List of frequently mentioned places

#	Location	County	Latitude	Longitude
1	Allegheny Front	Grant, Mineral, Pendleton, Randolph, Tucker	39.144	-79.257
2	Altona Marsh	Jefferson	39.293	-77.884
3	Boaz Marsh	Wood	39.365	-81.499
4	Canaan Mountain	Tucker	39.064	-79.546
5	Canaan Valley	Tucker	39.071	-79.423
6	Canaan Valley National Wildlife Refuge	Tucker	39.046	-79.447
7	Cheat Mountain	Pocahontas and Randolph	38.721	-79.863
8	Coopers Rock State Forest	Monongalia and Preston	39.656	-79.788
9	Cranberry Glades Botanical Area	Pocahontas	38.198	-80.275
10	Cranberry Wilderness Area	Pocahontas and Webster	38.290	-80.282
11	Cranesville Swamp Preserve	Preston	39.541	-79.483
12	Dolly Sods Wilderness	Grant, Randolph, and Tucker	39.044	-79.344
13	Gaudineer Knob	Pocahontas and Randolph	38.615	-79.844
14	George Washington and Jefferson National Forest	Hampshire, Hardy, Monroe, and Pendleton	39.022	-78.579
15	Green Bottom Wildlife Management Area	Cabell	38.588	-82.261
16	Greenbrier Valley	Greenbrier, Monroe, and Pocahontas	37.810	-80.432
17	Harpers Ferry National Historical Park	Jefferson	39.316	-77.743
18	Hillcrest Wildlife Management Area	Hancock	40.542	-80.530
19	Leetown Fish Hatchery	Jefferson	39.351	-77.927
20	Meadow River Wildlife Management Area	Greenbrier	37.936	-80.676
21	McClintic Wildlife Management Area	Mason	38.930	-82.076
22	Monongahela National Forest	10 counties in the Allegheny Mountains and Ridge and Valley	38.554	-79.897
23	New River Gorge National Park and Preserve	Fayette, Raleigh, and Summers	37.844	-81.018
24	North Fork Mountain	Grant and Pendleton	38.748	-79.372
25	Oglebay Park	Ohio	40.097	-80.663
26	Ohio River Islands National Wildlife Refuge	Pleasants, Wood, and others	39.391	-81.421
27	Pleasant Creek Wildlife Management Area	Barbour and Taylor	39.244	-80.031
28	Seneca Rocks	Pendleton	38.835	-79.366
29	Shenandoah Valley	Berkeley and Jefferson	39.402	-77.962
30	Sleepy Creek Wildlife Management Area	Berkeley and Morgan	39.512	-78.159
31	Spruce Knob	Pendleton	38.700	-79.533
32	Stonewall Jackson Lake	Lewis	38.938	-80.418
33	Teays Valley	Cabell and Putnam	38.450	-81.929
34	Tygart Lake	Barbour and Taylor	39.267	-79.986

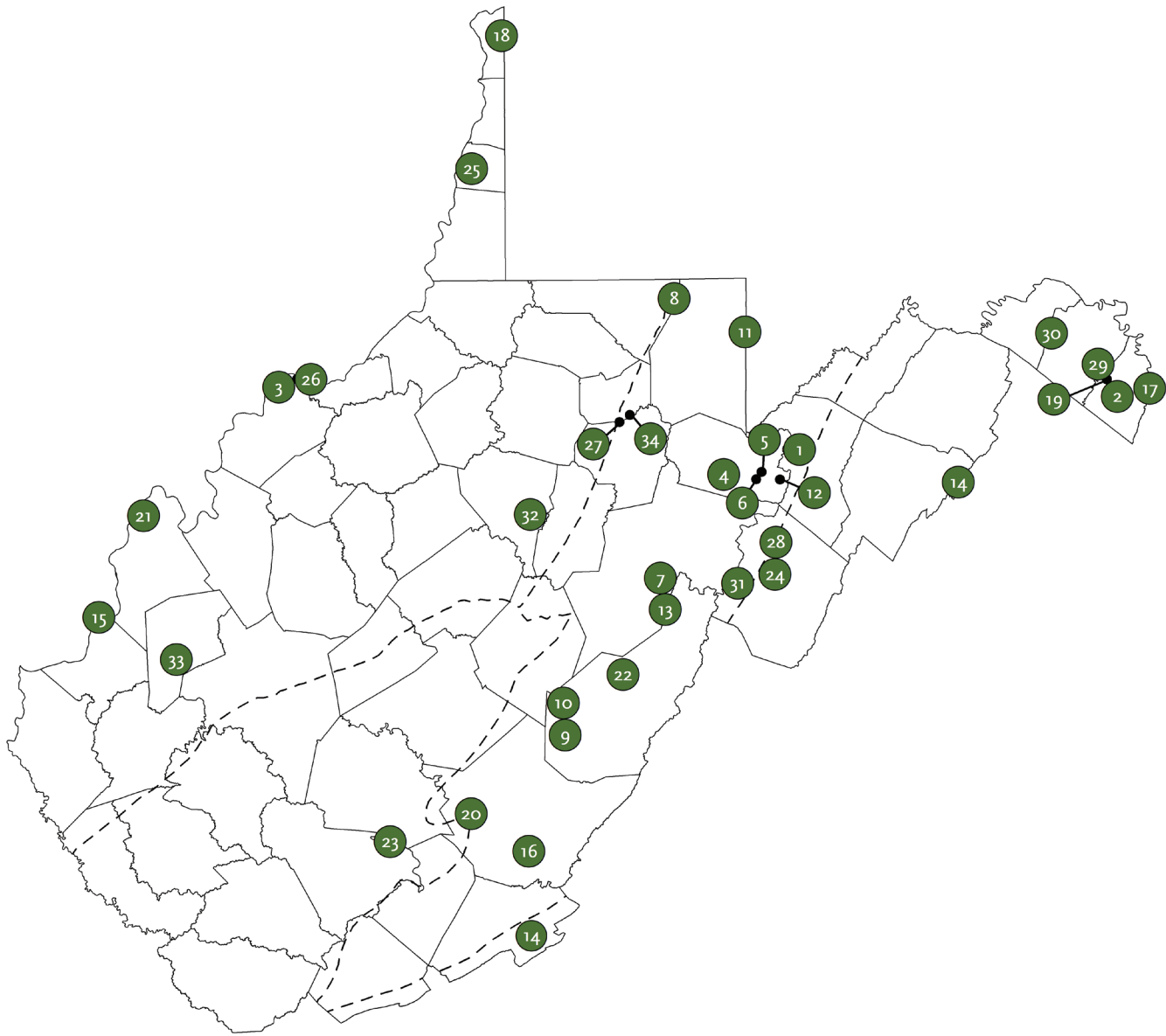


FIGURE 1.1 Map of frequently mentioned places. Numbers correspond to those in table 1.2.

geographic centers were used to identify places with large geographical extents. Locations range from small areas such as Oglebay Park in Ohio County to the expanse of Monongahela National Forest, which overlaps ten counties and encompasses hundreds of thousands of hectares. Figure 1.1 depicts the locations on a state map.

REFERENCES TO BIRDS AND OTHER TAXA

Breeding bird species are identified by their common names, capitalized in accordance with the usage of the American

Ornithological Society. The names of other flora and fauna are similarly presented: individual species names are capitalized except for agricultural crops, while general references are in lower case; names of flora are in accordance with the 2015 working draft of *Flora of the Southern and Mid-Atlantic States* (Weakley 2015). Scientific names of each bird species are included in species accounts. Appendix I lists both scientific and common names of other bird species as well as those of other taxa.