Breeding bird atlases add zip to summer birding

Gregory S. Butcher and Charles R. Smith

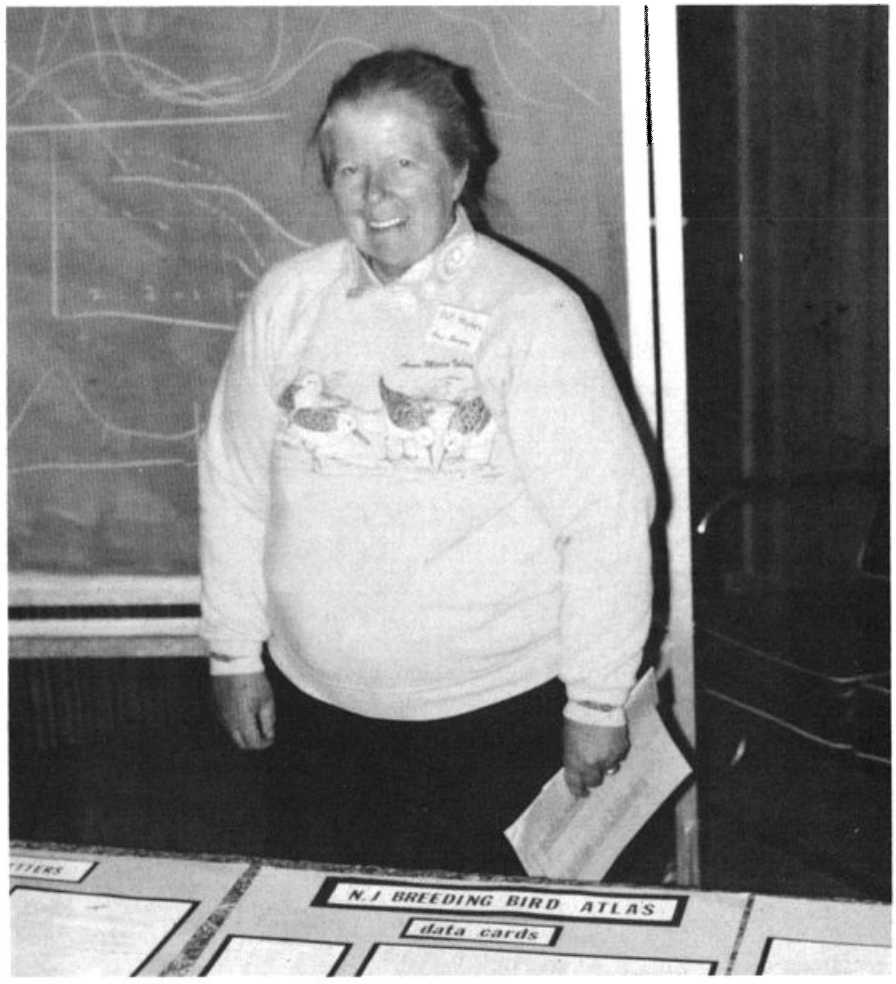
NO LONGER IS THERE A LULL IN birding activity between the last spring warbler and the first fall shorebird. Atlas fever is spreading throughout North America and the world! To date, nine states and two Canadian provinces have completed fieldwork for breeding bird atlas projects, and 18 states and four provinces currently are collecting data (Table 1). A handful of other areas are preparing to begin atlas projects. Most European countries already have completed an atlas and currently are involved in a coordinated all-Europe atlas. Australia, New Zealand, and parts of Africa have been atlased. In fact, traveling birders might want to participate in active atlas projects during their travels. But first, we here present a review of a few facts about breeding bird atlases and an update on their status in North America.

A breeding bird atlas is a coordinated effort to determine the breeding distribution of all bird species in a defined geographic region. The region of interest is divided into blocks (squares or rectangles) on a map, and the breeding status of birds is recorded within each block or within a sample of blocks. Within each block, a species' breeding status can be recorded as possible, probable, or confirmed based on the behavior of the birds or the finding of nests or young. The blocks vary in size from one degree of latitude and longitude in the western United States to $2\frac{1}{2}$ kilometers by $2\frac{1}{2}$ kilometers in some counties in Maryland.

As a result of the tremendous interest in atlasing, two meetings were held this year. The Second Northeastern Breeding Bird Atlas Conference was held April 25–27, 1986, at Cornell Univer-

Nothing in the world of atlasing can be boring. Go out and see for yourself.

Dorothy Crumb



Dot Hughes with the New Jersey Atlas exhibit. Photo/Chandler S. Robbins.

It's really exciting to feel one can contribute something worthwhile while going out snooping after the birds.

Lee Boyd

sity, sponsored by the Cornell Laboratory of Ornithology. And a Round Table Discussion on "The Uses of Breeding Bird Atlases," chaired by Michael Cadman of the Ontario Breeding Bird Atlas, was held at the International Ornithological Congress in Ottawa, Ontario, June 24, 1986. Another important meeting for atlasers is scheduled for next year. The First North American Ornithological Atlas Conference will be held in San Francisco, California, August 10–13, 1987.

The recent April 1986 conference did not discuss the details of beginning an atlas project, as most participants' projects were already well under way. Many of those details are described in the Proceedings of the First Northeastern Breeding Bird Atlas Conference, held at the Vermont Institute of Natural Science in Woodstock, Vermont, November 6–8, 1981. A summary of the Vermont conference appears in *American Birds* Volume 36, Number 1 (1982). Although the recent conference was billed as "Northeastern," it was in fact North American in scope. Nearly 50 each of the active or recently-completed North American atlas projects. Presently, four Working Groups of NORAC have been formed to address the following tasks: planning for the 1987 North American Ornithological Atlas Conference, reviewing breeding criteria codes, reviewing grid sizes and sampling techniques, and, evaluating uses of atlas data.

Standard codes

The key to an atlas project is the correct use of the written codes indicating the likelihood that a species breeds in a particular survey block (based on observations of that species in the block). At the 1981 conference in Vermont, participants agreed upon a set of codes to recommend for use by all North American breeding bird atlases. These codes were based largely on those used in the British atlas, which was the first bird atlas project in the world.

At the Cornell conference, participants discussed modifications of the

Finding rails is a lot like owling; the use of a tape recorder moves the exercise from hopeless dependence upon luck to a moment of existential truth, from disbelief to faith.

Mike Peterson

participants attended, representing 21 states and three Canadian provinces.

A major result of the 1986 conference was the reactivation of the North American Ornithological Atlas Committee (hereafter, NORAC), originally formed in 1980. A Steering Group for NORAC was formed that includes Raymond Adams (Michigan), Betty Burridge (California), Paul Eagles (Ontario), Hugh Kingery (Colorado), Sarah Laughlin (Vermont), Chandler Robbins (Maryland), and Charles Smith (Chairman, New York). The full North American Ornithological Atlas Committee will include representatives from standard North American codes that have been adopted by various atlas projects. The codes recommended are reproduced here along with their definitions (Table 2). Participants were enthusiastic about the addition of a code called Multiple Males (M) to indicate "Probable" breeding status when many different singing males are encountered in a survey block. However, participants also agreed that the sighting of multiple singing males in a block on a single visit is not sufficient evidence to "Confirm" breeding by that species, no matter how many singing males are seen.

A related discussion concerned codes that are appropriately applied to some species, but not to others. Eirik Blom reported that in Maryland, observations of all colonial and wide-ranging species are assigned to an "Observed" category, unless active nests are found. Species included are all herons (except Green-backed Heron and Yellow-crowned Night-Heron), all egrets, Glossy Ibis, all gulls and terns, Bank Swallow, Bald Eagle, Osprey, and vultures. Maryland made this decision because they wanted to encourage observers to find the exact location of nests for those species and did not want to include observations of foraging birds far from their nest sites.

Adequate coverage

A major concern of most atlas projects is getting the most out of their volunteers. Thus, it is important to assign volunteers to a new block when the probability of adding species in an old block declines beyond a certain point. The two best contributions to the issues are contained in the proceedings of the 1981 Vermont conference (see postscript at the end of this article), in articles by Gilbert Raynor and Charles Smith.

Raynor suggested that atlas leaders should determine which species are expected to occur in each block, based on the habitats in the block, knowledge of which species are expected in each habitat, and atlas data from the first year or two of the project. The list of expected species can be compared with the list of species recorded to determine when "enough is enough." Smith provided a method for determining when individuals are reaching the limits of their abilities and/or the limits of the block by graphing the rate at which new species are being added to the block When the rate of additions drops to a low point, it is time to move on to another block.

Simpler rules of thumb have been used by other atlas projects. In Vermont, it was decided that most blocks probably contain about 100 breeding species and that recording 75% of those species and "confirming" 50% of the species recorded would be reasonable goals. Thus, the limits of 75 species total, with 38 species confirmed were established. In England, it was decided that most atlasers reached the limits of their abilities, in a given block, in about 16 hours of atlasing, so 16 hours of effort

was established as a guideline, marking the point at which an observer should move to a new block.

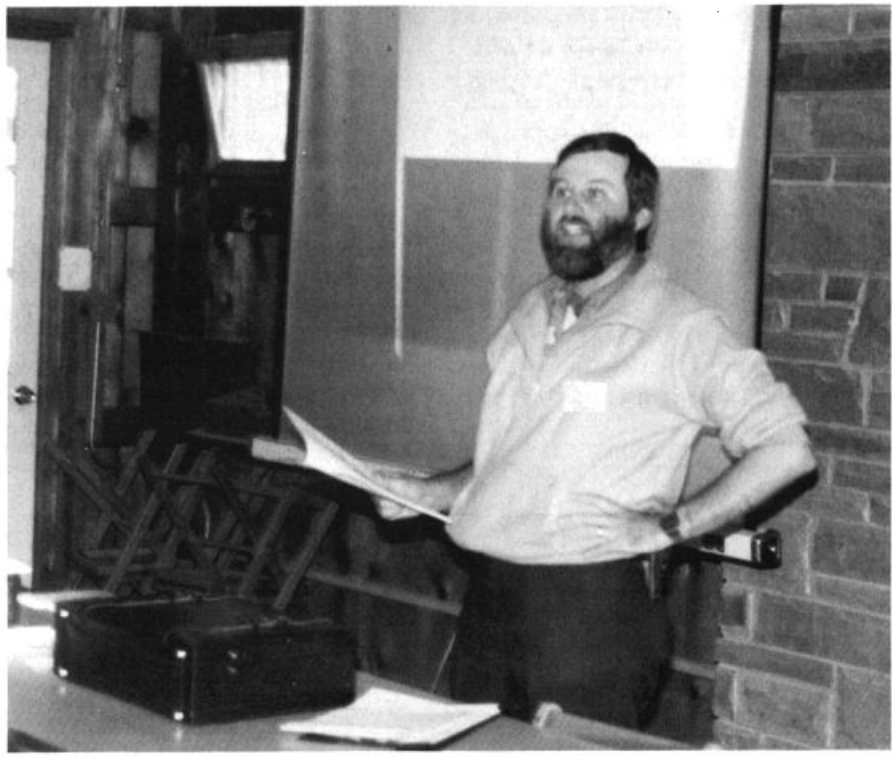
In addition to trying to determine when adequate coverage has been achieved, most atlas projects work very hard to increase the amount of coverage for difficult species and difficult blocks. For example, Maryland employs three methods for increasing the number of nocturnal birds encountered: (1) assigning specialists to concentrate on nocturnal birds in a large area, (2) sponsoring a Weekend Owl Party involving a number of teams of two or three birders that bird for five hours each on two nights and meet afterwards to compare notes, and (3) contacting members of local bird clubs to determine if they have night birds or other unusual birds in their neighborhood.

"Blockbusting" is a term used by atlasers to indicate a coordinated effort to obtain data from difficult blocks, usually ones that are far from human population centers. Many states and provinces have paid individuals to atlas remote blocks. In some cases, blockbusters have only one day per block to record all the species they can, but it is preferable if blockbusters can return to each block a week or two after their initial visit.

Estimates of abundance

One of the most variable aspects of an atlas project is whether or not estimates of the number of breeding pairs are included in the atlas and if so, how those estimates are obtained. There are Breeding Bird Survey (hereafter, B.B.S.) routes distributed throughout North America, managed by the U.S. Fish and Wildlife Service. Many states and provinces use data from these routes to determine the relative abundance of birds within their area of interest. In addition, some atlas projects have added Mini-routes, a shorter version of a B.B.S. route, to supplement the B.B.S. routes. On every B.B.S. route there are 50 stops along a 25-mile automobile route; mini-routes may have only 15 or 25 stops along a shorter route and are usually confined within a single atlas block.

At least two other ways of estimating abundance have been used in North America and elsewhere. One approach asks atlasers to estimate the number of breeding pairs in a block based on their observations in the block. These estimates usually are very imprecise, using



Dr. Paul J. F. Eagles discussing the uses of atlas data. Photo/Chandler S. Robbins.

categories like 1–2 pairs, 3–10 pairs, 11–100 pairs, 101–1000 pairs, and so on. Another approach asks atlasers to keep track of the number of birds actually observed and the amount of time spent looking for birds in each block. Then, the number of individuals seen per hour of effort can be used for comparisons among blocks.

One never knows when going into the field just what the rewards will be, but to "go expecting" gives the joy of anticipation and rarely are we disappointed.

Vivian Mills Pitzrick

Computers

Almost all North American atlas projects use computers to store atlas data and to generate maps of species distributions; however, no two computer systems are alike. The details of many of the computer systems are described in articles in the Proceedings of the Cornell conference, but Dan Brauning of Pennsylvania probably has the best advice for projects that are unsure how to proceed.

The Pennsylvania atlas is using a single microcomputer to manage all its atlas records, which are expected to exceed 300,000. The major requirements are a hard disk for data storage, a database management system, and a mapping software system. All three are easily available for microcomputers. Brauning estimates that the current cost for such a system would be about $9500. This cost may seem high, until one realizes that it is very easy for an atlas project to spend $5000 per year for five or six years for the use of a mainframe computer.

David Balser of the Ontario atlas project emphasizes the importance of beginning the computerization of the data in the first year. Ontario waited until after the third year of data collection to begin computerization and had a very difficult time catching up.

Funding

A major question a potential atlas

project must face is, "Can we afford to do it?" In North America, atlas projects range from highly-financed, with a large number of paid staff members and funded blockbusters, to poorly-financed, where almost all work is done by volunteers. The need for money depends primarily on the size of the region to be atlased (and the number of blocks) and on the availability of volunteers to do the work. As Paul Eagles reported in 1986, funding is potentially available from foundations, corporations, conservation organizations, universities, governmental organizations, museums, and private individuals. In the Proceedings of the 1986 conference, Sarah Laughlin provides a complete accounting of the Vermont atlas from beginning to end, including the monetary value of volunteer contributions. This chapter is required reading for any new atlas project!

A comment I've heard from several workers is that Atlasing has stimulated them to look at birds more and notice things they had not realized. They spend more time observing just what birds are doing, especially involving breeding behavior.

Robert Andrle

Publication

The culmination of an atlas project is the publication of the maps resulting from the project. The simplest possible map format was designed by P.D. Skaar in his mimeographed book *Montana Bird Distribution.* The initial book was prepared using a typewriter and each block was filled with a letter representing the status of the species in that block (or a dash if there were no records for that species in that block). The letters were positioned on the page so that a rough outline of the state of Montana resulted. *The Atlas of the Breeding Birds of Vermont* looks much different, with a printed base map showing all the blocks that were sampled during the project and different symbols for possible, probable, and confirmed status (our review of *The Atlas of the Breeding Birds of Vermont* in this issue shows two sample pages).

A major consideration for an atlas publication is how much text to include. Most relevant to each publication will be a history of each species' status in the state or province and a summary of the species' habitat preferences as demonstrated by atlas data. Information about identification, world-wide distribution, and breeding biology can be found in other references, but might be included, especially if there is no other ornithological reference available for the state or province.

A number of publication decisions must be made: who should publish, how fancy the publication should be, how much text should be included, who should write the text, and who should edit the text. The Proceedings of the 1986 conference includes three articles that address these questions from the viewpoint of New York, Ontario, and Vermont atlasers.

This Atlas is a legacy to future generations; let's leave a complete one.

Janet Carroll

Uses of atlas data

Much of the round table discussion at the International Ornithological Congress (1986) centered around the scientific usefulness of atlas data. Chandler Robbins is the single American most responsible for promoting the value of applying atlas data once they have been published. At the discussion, he presented a summary of the uses of atlas data: (1) to update distribution maps in field guides, (2) to document range expansion or contraction, (3) to demonstrate habitat associations, (4) to determine the location of rare species, (5) to determine the best areas for birds, (6) to determine which areas ought to be preserved in their natural state, and (7) to determine the effects of human activities on bird distributions.

The importance of understanding basic information about bird distributions should not be underestimated Currently, a number of scientists in the United States are discussing the initiation of a National Biological Survey The purpose of such a survey would be to document the distributions of plants and animals throughout the region of interest. Both the British and Australian atlases are part of national biological surveys, which also include many other organisms. Although a grid-based atlas is just one way of doing a national biological survey, it was the method of choice in both Britain and Australia.

With many of their atlases completed, European workers already are applying the results of their efforts Jacques Blondel, a French biogeographer, has made extensive use of the French atlas to document and understand patterns in the distributions of French birds. With the help of a computer, Robert Kwak of the Netherlands has used the Dutch atlas data to define 18 breeding bird districts. These bird districts were correlated with differences in land use, soil type, amount of groundwater, and salinity. In addition to an increased knowledge of the factors that affect bird distribution, the Dutch found this system useful in determining important habitats for birds within the 18 districts. Klaus Witt of West Berlin has devised a method for using atlas data to rank species according to rarity, to determine the highest priority of species that ought to be protected. His method includes information on relative abundance and changes in abundance, as well as the information on distribution that an atlas provides. And in the United States, Vermont has used

I can't wait to get at it again this year.

Kaye Anderson

atlas data to create a state list of endangered and threatened bird species.

The value of atlas data will be increased significantly when atlas projects are repeated in the future. At that time, the original atlas will serve as a standard against which changes in distribution can be assessed.

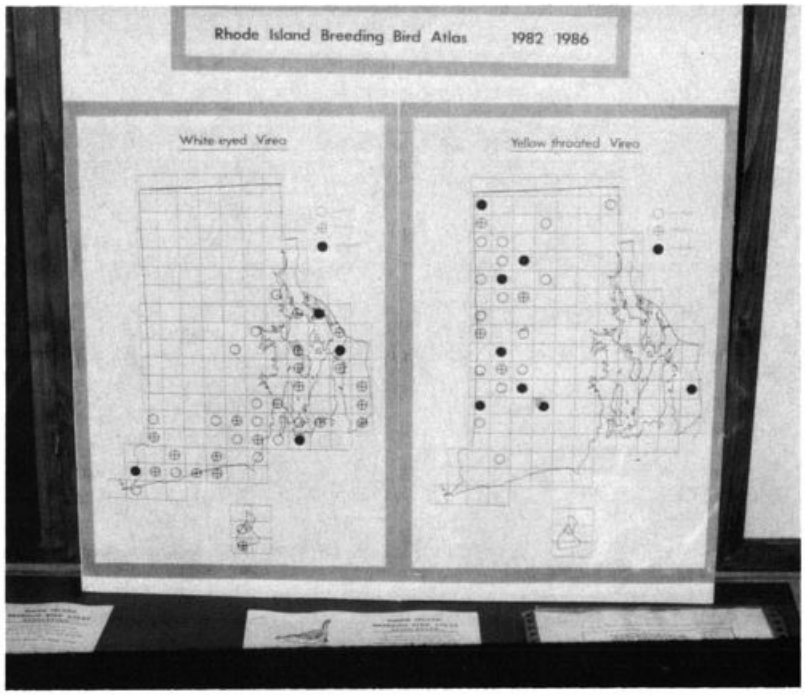
After the atlas

Most atlas projects bring together a large number of interested field workers who enjoy being involved in such projects. Are there other projects that can make use of this corps of enthusiastic volunteers?

In Britain, the two major projects that followed the breeding bird atlas were a winter atlas and a register of important ornithological sites. In Australia, participants moved on to national surveys for shorebirds, waterfowl, and raptors. In addition, many more Australians began to contribute to their Nest Record Scheme.

In North America, there are numerous projects that welcome volunteer cooperators. In winter, of course, there is the National Audubon Society's Christmas Bird Count. During migration, the Hawk Migration Association of North America encourages birders to keep hawk migration counts, and the International Shorebird Survey encourages birders to keep shorebird counts. During the breeding season, birders with well developed skills in identifying birds by sight and sound might wish to run a Breeding Bird Survey route. Volunteer observers are encouraged to submit Nest Record Cards and Colonial Bird Register forms to the Laboratory of Ornithology. One of the most time-consuming and also one of the most rewarding projects is a Breeding Bird Census and/or a Winter Bird-Population Study. These involve repeated visits to a single plot and also require descriptions of the vegetation on the plot. The information collected is useful for determining how the kinds and numbers of birds in a specific area change over time.

Many people are interested in the possibility of a coordinated North American atlas, perhaps from 1996 through 2000. It might be called "atlas to the turn of the century!" Such a project would be an ambitious endeavor that would require a lot of coordination and a secure source of funding. However, the project has more potential for uniting and inspiring North American birders than almost any other activity. Probably discussions of the feasibility of such an atlas probably will be an important part of the North American Ornithological Atlas Conference at San Francisco in 1987.



The Rhode Island Breeding Bird Atlas. Photo/Chandler S. Robbins.

In addition to the ecological value of atlasing, birders have found it to be fun. No longer do they simply look for field marks to answer "What bird is that?" The making of lists is no longer the major goal. Now the birder observes what a bird is doing and tries to interpret what its behavior means.

Gordon M. Meade

Postscript

To understand fully the nature and scope of the breeding bird atlas effort in North America, one has to read and study the proceedings of the two conferences mentioned in the preceding article. Those proceedings still can be purchased from the following sources:

Proceedings of the First Northeastern Breeding Bird Atlas Conference, November 1981. Vermont Institute of Natural Science, Woodstock, Vermont 05091 $14.00.

Perhaps blockbusting helps satisfy some deep-seated, atavistic hunter-predator within the human psyche. I've never had more pure fun birding in my entire life.

Mike Peterson

Table 1. North American Breeding Bird Atlas Directory.

STATE	*PROJECT YEARS*	*NAME/ADDRESS OF CONTACT*	*SPONSORING AGENCIES*
Alabama	1987–?	Joseph M. Meyers Nongame Biologist Alabama Dept. of Conservation and Natural Resources 64 North Union Street Montgomery, AL 36104	Alabama Ornithological Society
California—Marin County	1976–1978	David Schuford, Coordinator Marin County Atlas Point Reyes Bird Observatory Box 321 Bolinas, CA 94924	Point Reyes Bird Observatory
California—Orange County	1985–1989	Jeff Froke Orange County Breeding Bird Atlas Starr Ranch Audubon Sanctuary P.O. Box 224-COTO Trabuco Canyon, CA 92678	National Audubon Society
California—Sonoma County	1986–1990	Betty Burridge, Coordinator 963 Crest Drive Santa Rosa, CA 95404	Madrone Audubon Society
Colorado	1963–1978, publication available from contact	Steve Bissell, Coordinator Division of Wildlife 6060 Broadway Denver, CO 80216	Colorado Field Ornithologists, Colorado Division of Wildlife (Nongame Section)
Connecticut	1982–1986	David Rosgen, Coordinator Northeast Regional Office National Audubon Society RR #1, Box 171, Rte. 4 Sharon, CT 06069	National Audubon Society/ Northeast Region, Audubon Council of Connecticut
Delaware	1983–1987	Dr. Richard West, Coordinator 620 Foulkstone Road Wilmington, DE 19803	Delmarva Ornithological Society, Delaware Audubon Society, Tri-State Bird Rescue and Research, Delaware Museum of Natural History, Delaware Nature Education Society, Society of Natural History of Delaware, Dept. of Natural Resources and Environmental Control
Florida	1986–1990	Wes Biggs Florida Breeding Bird Atlas Project Florida Audubon Society 1101 Audubon Way Maitland, FL 32751	Florida Audubon Society, Florida Ornithological Society
Illinois	1986–1990	Vernon Kleen, Coordinator RR #2, Box 481 Athens, IL 62613	Illinois Dept. of Conservation, Illinois Audubon Society, Audubon Council of Illinois
Indiana	1985–1989	Chris Iverson Division of Fish & Wildlife 3900 Soldiers Home Road West Lafayette, IN 47906	Non-game & Endangered Wildlife Programs of Indiana Dept. of Natural Resources, Indiana Academy of Sciences, Indiana Audubon Society, National Audubon Society, Midwest Regional Office and Local Chapters

Table 1. (*Continued*)

STATE	*PROJECT YEARS*	*NAME/ADDRESS OF CONTACT*	*SPONSORING AGENCIES*
Iowa	1985–1990	Douglas A. Reeves Wildlife Research Station RR #1 Boone, IA 50036	Iowa Conservation Commission, Iowa Ornithologists' Union
Kentucky	1985–1989	John R. MacGregor Dept. of Fish & Wildlife Resources #1 Game Farm Road Frankfort, KY 40601	Kentucky Department of Fish & Wildlife Resources, Kentucky Nature Preserves Commission, Kentucky Ornithological Society
Maine	1978–1983, publication can be obtained from Nongame Wildlife Project, Maine Dept. of Inland Fisheries & Wildlife, 284 State Street, Augusta, ME 04333	Paul Adamus RFD 5, Box 680 Augusta, ME 04330	Maine Audubon Society, Bowdoin College
Maryland	1983–1987	Eirik Blom, Coordinator Maryland Ornithological Society, Inc. 4915 Greenspring Baltimore, MD 21209	Maryland Ornithological Society, Inc., Maryland Dept. of Natural Resources
Massachusetts	1974–1980, publication expected in 1986	Richard A. Forster Massachusetts Audubon Society Lincoln, MA 01773	Massachusetts Division of Fisheries and Game, Massachusetts Audubon Society
Michigan	1983–1988	Ray Adams, Coordinator 6970 N. Westnedge Ave. Kalamazoo, MI 49007	Kalamazoo Nature Center, Michigan Audubon Society, Detroit Audubon Society, Michigan Dept. of Natural Resources (Nongame Wildlife and Endangered Species Program)
Missouri	1986–1990	James D. Wilson Ornithologist Missouri Dept. of Conservation P.O. Box 180 Jefferson City, MO 65102-0180	Missouri Dept. of Conservation, Missouri Bird Observatory
Montana	1803–1984, (ongoing) publication available from contact	Dennis Flath Nongame Biologist MT Dept. of Fish, Wildlife and Parks Box 5, MSU Bozeman, MT 59717	Montana Department of Fish, Wildlife and Parks (Nongame Program)
Nebraska	1984–1988	Wayne J. Mollhoff, Coordinator 736 S. Third Albion, NE 68620	Nebraska Ornithologists' Union, Nebraska Game and Parks Commission
New Hampshire	1981–1986	Sally Merrill Sutcliffe, Coordinator Wolff House 8 Ballard Street Durham, NH 03824	Audubon Society of New Hampshire, University of New Hampshire
New Jersey	1981–1985, not yet published	Ellen Gallagher, Coordinator Box 81 Layton, NJ 07851	Raccoon Ridge Bird Observatory
New York	1980–1985, publication expected in 1987	Janet R. Carroll, Coordinator NYSDEC, Wildlife Resources Center Delmar, NY 12054	Federation of New York State Bird Clubs, New York State Dept. of Environmental Conservation, Laboratory of Ornithology—Cornell University

Table 1. (*Continued*)

STATE	*PROJECT YEARS*	*NAME/ADDRESS OF CONTACT*	*SPONSORING AGENCIES*
North Carolina	1987–?	David S. Lee Curator of Birds N.C. St. Museum of Natural History P.O. Box 27647 Raleigh, NC 27611	North Carolina State Museum of Natural History
Ohio	1983–1987	Dan Rice, Coordinator Division of Natural Areas and Preserves Fountain Square Columbus, OH 43224	Ohio Dept. of Natural Resources, Ohio Audubon Council
Oregon—Lane County	?	Bob Altman 3720 NE Hiway 20 Corvallis, OR 97330	?
Pennsylvania	1984–1988	Daniel Brauning, Coordinator Academy of Natural Sciences 19th Street & The Parkway Philadelphia, PA 19103	The Academy of Natural Sciences, The Carnegie Museum of Natural History, The Pennsylvania Audubon Council, The Pennsylvania Game Commission
Rhode Island	1982–1986	Rick Enser, Coordinator 22 Hayes Street Providence, RI 02908	Rhode Island Ornithological Club, Rhode Island Natural Heritage Program, The Audubon Society of Rhode Island
Tennessee	1986–1990	Paul Hamel Tenn. Dept. of Conservation 701 Broadway Nashville, TN 37219	Tennessee Ornithological Society, Tennessee Wildlife Resource Agency, Tennessee Department of Conservation, Tennessee Valley Authority
Utah	historical–1982, (ongoing) publication available from contact	Robert Walters Div. of Wildlife Resources 1596 W. N. Temple Salt Lake City, UT 84116	Utah Division of Wildlife Resources
Vermont	1977–1981, publication available from University Press of New England, Hanover, NH 03755*	Sarah B. Laughlin Vermont Institute of Natural Science Woodstock, VT 05091	The Audubon Chapters in Vermont, Vermont Institute of Natural Science
Virginia	1984–1988	Sue Ridd, Coordinator 10718 Almond Street Fairfax, VA 22032	The Virginia Society of Ornithology, Commission of Game & Inland Fisheries, Audubon Naturalist Society
Washington—King County	1983–?	Dr. Eugene Hunn c/o Seattle Audubon Society 619 Joshua Green Building Seattle, WA 98101	Seattle Audubon Society, Washington State Dept. of Game (non-game program), University of Washington's Burke Museum
West Virginia	1984–1988	Dr. George A. Hall, Coordinator Dept. of Chemistry P.O. Box 6045 W. Va. University Morgantown, WV 26506-6045	Brooks Bird Club, West Virginia Department of Natural Resources
Wyoming	historical–?, publication available from contact	Bob Oakleaf Coordinator Non-game Bird Biologist Wyoming Game & Fish Dept. 260 Buena Vista Lander, WY 82520	Wyoming Game & Fish Dept.

* *see Birder's Bookshelf for a review*

Table 1. (*Continued*)

STATE	*PROJECT YEARS*	*NAME/ADDRESS OF CONTACT*	*SPONSORING AGENCIES*
		CANADIAN PROVINCES	
Alberta	1987–1991	Allen N. Wisely Alberta Ornithological Records Committee c/o Calgary Field Naturalists Society P.O. Box 981 Calgary, AB T2P 2K4	?
British Columbia	1977–1985, publication expected in 1988	R. Wayne Campbell Vertebrate Zoology Division British Columbia Provincial Museum 675 Belleville Street Victoria, BC V8V 1X4	?
Maritime Provinces	1986–1990	Judith Kennedy, Coordinator The Maritimes Breeding Bird Atlas c/o Natural History Section Nova Scotia Museum 1747 Summer Street Halifax, NS B3H 3A6	Canadian Wildlife Service
Ontario	1981–1985, publication expected in 1987	Mike Cadman, Coordinator FON Conservation Centre 355 Lesmill Road Don Mills, ON M3B 2W8	Federation of Ontario Naturalists, Long Point Bird Observatory
Quebec	1984–1989	Jean Gauthier Environment Canada Canadian Wildlife Service 1141 Rt. de L'Eglise C.P. 10100 Ste. Foy, Quebec City, PQ GIV 4H5	Canadian Wildlife Service, Province Quebec Society for the Protection of Birds
Saskatchewan	?	A. R. Smith Canadian Wildlife Service Prairie Migratory Bird Research Centre 115 Perimeter Road Saskatoon, SK S7N OX4	Canadian Wildlife Service
Yukon	?	Helmut Grünberg Yukon Conservation Society P.O. Box 4163 Whitehorse, Yukon	?

Table 2. Standard breeding codes as recommended by the 1986 conference.

Category	*Code*	*Evidence*
OBSERVED	O	Species (♂ or ♀) observed in a block during its breeding season, but believed not to be breeding.
POSSIBLE	X	Species (♂ or ♀) observed in suitable nesting habitat during its breeding season.
	S	Singing male present in suitable nesting habitat during its breeding season.
PROBABLE	M	Multiple (*e.g.*, seven) males of a single species singing within a block during a single visit during their breeding season.
	P	Pair observed in suitable habitat during its breeding season.
	T	Permanent territory presumed through either defense (*e.g.*, chasing of other birds) or song at the same location on at least two occasions a week or more apart).
	C	Courtship behavior or copulation.
	N	Visiting probable nest-site.
	A	Agitated behavior or anxiety calls from adult.
	B	Nest building by wrens or excavation of holes by woodpeckers.
CONFIRMED	NB	Nest building by all except woodpeckers and wrens.
	DD	Distraction display or injury feigning.
	PE	Physiological evidence of breeding based on a bird in the hand (*i.e.*, a highly vacularized, edematous incubation/brood patch, or an egg in the oviduct).
	UN	Used nest or eggshells found. Caution: these must be carefully identified if they are to be accepted.
	FY	Adult carrying food for young, or feeding recently fledged young.*
	FL	Recently fledged young (of altricial species) incapable of sustained flight* or downy young (of precocial species) restricted to the natal area by dependence on adults or limited mobility.
	ON	Evidence of an occupied nest: adults entering or leaving nest site in circumstances indicating an occupied nest (for high nests or nest holes, the contents of which cannot be seen), or adult incubating or brooding.
	FS	Adult carrying a fecal sac.
	NE	Nest with egg(s).*
	NY	Nest with young seen or heard.*

* *Presence of cowbird eggs or young confirms both cowbird and host species.*

*House Wren (*Troglodytes aedon*). Illustration/Joseph C. Rigli.*

Proceedings of the Second Northeastern Breeding Bird Atlas Conference, April 1986. Cooperative Research Program, Cornell Laboratory of Ornithology, 159 Sapsucker Woods Road, Ithaca, NY 14850-1999 $10.00.

In addition, if you want a listing of currently active North American breeding bird atlas projects or information about the North American Ornithological Atlas Conference scheduled for August 1987, send a self-addressed, stamped envelope to the Cooperative Research Program, Cornell Laboratory of Ornithology, 159 Sapsucker Woods Road, Ithaca, NY 14850-1999 (authors' address).

What do I do next year in the post-migration birding doldrums, now that the Atlas is over?

Sally M. Sutcliffe