

# North American Bird Conservation Initiative



Advancing Integrated Bird Conservation in North America

Fall 2014

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## The All-Bird Bulletin

### The Power of Citizen Science for Bird Conservation

Roxanne Bogart, Wildlife Biologist, Division of Bird Habitat Conservation, U.S. Fish and Wildlife Service and Allison Vogt, Migratory Bird and NABCI Coordinator, Association of Fish and Wildlife Agencies

In 2011, 71.9 million people in the United States, 30 percent of the population 16 years or older, participated in wildlife-watching activities. Most of these people—46.7 million—were watching birds, with 88 percent (41.3 million) observing wild birds around the home and 38 percent (17.8 million) taking trips away from home to observe them. These activities generated nearly \$107 billion in total industry output, 666,000 jobs, and \$13 billion in local, state, and federal tax revenue.

These statistics are presented in *Birding in the United States: A Demographic and Economic Analysis, Addendum to the 2011 National Survey of Fishing, Hunting and Wildlife-Associated Recreation*, by Erin Carver of the U.S. Fish and Wildlife Service. But they barely begin to tell the story of a citizen science revolution that is happening across the continent.



Birders in Tompkins County, New York. / Chris Wood

Imagine harnessing the passion and knowledge of millions of these birdwatchers for the benefit of bird conservation. Think about the boundless possibilities that exist to orchestrate these activities to generate information on birds, their behaviors, locations, and numbers—data that can be used to better understand what is limiting these species and the impacts of our on-the-ground conservation investments. When this happens, birdwatchers become citizen scientists—and bird conservation is better for it.

But the benefits don't stop there. Imagine people empowered not only to record information about birds but to become advocates for the species they observe and the places they visit—dedicated voices for their protection. When this happens, citizen scientists become conservationists.

Articles in this issue of *The All-Bird Bulletin* describe the important and cost-effective contributions being made by citizen scientists for bird conservation in North America, primarily the United States.

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Citizen science is not a new idea or effort—it began at the turn of the 20th century with the Christmas Bird Count (CBC), the longest-running citizen science project in the world, as described in the article on Page 3. Other important citizen science programs for birds continued to emerge, including the well-known Breeding Bird Survey (BBS), started in 1966, (see articles on Page 3 and 6) which provides breeding season population change information for about 420 species of birds, many of which are otherwise poorly monitored. Among many other uses, BBS and CBC trend estimates provide the biological foundation for the North American Bird Conservation Initiative's [\*State of the Birds 2014 Report\*](#), released on September 9,

2014, in Washington, D.C., which looks to birds as indicators of ecosystem health by examining population trends of species dependent on one of seven habitats: grasslands, forests, wetlands, ocean, aridlands, islands, and coasts. This year's report is also a five-year check-in on the indicators presented in the inaugural [\*2009 State of the Birds report\*](#).



Birdwatchers at Santa Ana National Wildlife Refuge in Texas. / Steve Hillebrand, U.S. Fish and Wildlife Service

On an even grander scale, eBird is marshaling the energy of millions of birdwatchers “as remote human sensors” to generate data through “new technologies, social networking, and crowdsourcing,” as described on Page 8. The “eBird enterprise” is fast becoming a world-wide phenomenon that is revolutionizing the meaning of citizen science.

All across the country, organizations are mobilizing volunteer observers at many scales and for many conservation purposes. In the Northwest, a novel partnership between eBird and the Avian Knowledge Network is enlisting birders into citizen science projects that will generate information needed by land managers to carry out science-driven conservation and natural resource management (see Page 10).



Mother and son birding at Big Muddy National Wildlife Refuge in Missouri. / Steve Hillebrand, U.S. Fish and Wildlife Service

In coastal California, citizens are monitoring coastal breeding waterbirds and riparian landbirds to help public and private organizations better manage their lands and waters for these species and to answer questions about disease transmission and climate change (see articles on Pages 12 and 14). Citizen scientists in Vermont are gathering forest breeding bird data that will inform land use plans and forest conservation strategies (see page 22). In Maryland, Bird Blitz volunteers are monitoring birds of conservation concern in specific habitats to help conservation organizations designate Important Bird Areas (see Page 24).

Other efforts are honing in on specific bird species and habitats. For instance, in Iowa, volunteers are being trained to survey Bald Eagle nests to help with post-delisting monitoring activities, as described on Page 16. Bird Blitz volunteers in 38 states are track-

ing the migration of the Rusty Blackbird to help shed light on the mysterious decline of this species (see Page 18). Volunteers in the Great Plains are using a web-based tool to submit information on the condition of their playas so that organizations can better conserve them (see page 20). And these are just a fraction of the citizen science programs happening for birds in the U.S.

Public and private organizations alike understand that wildlife conservation is not possible without considerable public support, including assistance from citizen science volunteers. Many of the authors in this issue discuss how time spent observing birds in nature can inspire volunteers to become agents of conservation advocacy within their communities. In this way, “citizen science not only makes good science,” as Caren Cooper of the Cornell Lab of Ornithology says on Page 26, it “also fosters good citizenship.” And in turn, hope is kindled for the future of birds, their habitats, other wildlife, and people.

## The Role of Citizen Science in Bird Conservation: The Christmas Bird Count and Breeding Bird Survey

*John Sauer, Wildlife Biologist, Patuxent Wildlife Research Center, U.S. Geological Survey and Greg Butcher, Migratory Species Coordinator, U.S. Forest Service International Programs*

Many birders in the United States, Canada, and Mexico are critical participants in bird monitoring and conservation activities. This linkage between recreational birders and avian conservation surveys is not new. It was established long before the internet and long before any fast communication facilitated the connection of birders to scientists. It started because a few key individuals realized that birding with a purpose added a new and important dimension to a recreational activity—and birders loved the idea that they were helping to study and conserve the birds they watch. And they still do today.

Two volunteer-based observer programs, the Christmas Bird Count (CBC) and the North American Breeding Bird Survey (BBS), have taken birding far beyond a casual recreational activity and become two of the most influential citizen science programs in the world for bird conservation and management. These surveys were started at a time when data was transmitted by post and stored on paper in file cabinets, and thus their ability to contribute to conservation was limited. Only recently have they achieved their conservation significance, as innovations in statistical and data management methods over the last 50 years now allow researchers to sort through large databases and conduct analyses that control for differences among observers and address longstanding quality control concerns.

The BBS and CBC are now principal databases that inform bird conservation in North America. The BBS is the authoritative source for data on breeding season populations for over 420 bird species; the CBC provides supplemental data on wintering populations and distributions of many of these species along with additional data on species that breed outside of the BBS survey range. Collectively, 490 species are monitored by participants of the BBS and CBC.

Analysis of this BBS and CBC data provides population trends for determining conservation priorities among species, as presented in reports such as the [U.S. Fish and Wildlife Service's \(USFWS\) 2008 Birds of Conservation Concern](#) and the [Audubon/American Bird Conservancy WatchList](#). A telling statistic of the measure of importance of these two surveys is that they provided trend results for 97 percent of species summarized in *The State of the Birds 2009 Report*, produced under the auspices of the North American Bird Conservation Initiative. The most recent *State of the Birds 2014 Report*, released on September 9th in Washington, D.C., updates the initial 2009 report on the status and trends of birds in the United States. Without the BBS and CBC—the two longest standing citizen science programs in the world for birds—these reports would not have been possible.

*Christmas Bird Count.* The [National Audubon Society's Christmas Bird Count](#) is the largest and longest continuing citizen science event in the world. It began in 1900, when 26 individuals responded to an editorial by Frank Chapman in *Bird-Lore* magazine by spending an hour or two counting birds in their neighborhood on Christmas afternoon. Chapman was editor of *Bird-Lore*, and a pioneer in writing bird identification guides, while he maintained an active scientific career as Curator of Ornithology at the American Museum of Natural History in New York. He had a strong interest in engaging the public in science and conservation, but his primary motivation in starting Christmas bird counts was to provide an alternative to another holiday tradition: holiday hunts for game and nongame birds.

The killing of songbirds for food or sport was a major conservation issue in the United States at the beginning of the 20th century, and Chapman saw bird counts as a way of creating a less consumptive means of enjoying birds over the holidays. He had great success with it, and the idea of counting birds has largely replaced the holiday



Christmas Bird Count volunteers in Northampton, Massachusetts. / Geoff LeBaron, National Audubon Society



hunts (with an assist from the Migratory Bird Treaty Act, of course). Both the number of counts and participants has increased throughout the 20th and 21st centuries. In 2012-13, 71,531 individuals participated at 2,369 locations, including 2,266 locations in the United States (excluding Hawaii) and Canada. CBCs are also done in Latin America, the Caribbean, and U.S. territories around the world.

All CBCs occur within a 15-mile-diameter circle. Each CBC has a local coordinator, who chooses a single calendar day within two weeks of Christmas Day for each year's count. Each local CBC is conducted by between 1 and 230 field observers, who spend between 1 and 650 party-hours and travel between 0 and 4,100 party-miles looking for birds. Each local CBC also includes between 0 and 343 individuals, who record birds at home. Most party-miles are covered by car, but party-hours and miles can also be covered on foot, bicycle, skis, snowshoes, snowmobile, boat, and airplane. Many counts include nocturnal party-hours and party-miles. The count compiler and regional representative review the data. Rarities require detailed documentation, often a photo.

Although the CBC has standardized techniques, it was conceived of as a birdwatching event rather than a statistical survey. Circle locations were selected because they seemed to be good places to count birds, and there is no systematic means of ensuring that circles are consistently sampled. To extract a scientific product from this loosely controlled riot of bird counters, we employ statistical models that control for variation in counting effort over space and time, changes in circle locations over time, and other features that influence the quality of data collected across the continent.

Analysis of CBC data provides critical wintering distribution and trend information for many resident and temperate migrant species; comparative analyses of these data show striking changes in wintering distributions of many temperate migrant species in recent years (see above map). These and other recent analyses of CBC data have focused on the period 1966 to present, corresponding to the years covered by the BBS. Prior to 1966, coverage of CBC circles becomes much more limited, and more research is needed to determine how these earlier data can be summarized to provide regional trends. CBC trend analyses complement BBS results by providing trend information for species that breed north of the BBS range, such as Rusty Blackbirds, or coastal breeding or raptor species that are poorly sampled by the BBS.

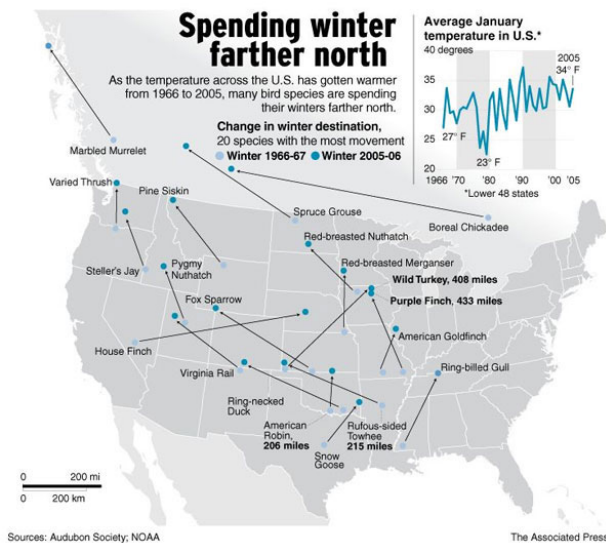
Our confidence in the value of the CBC is enhanced by comparative analyses that have shown consistency in estimated trends between CBC and BBS results for 70 percent of species that are surveyed by both programs. However, studies suggest that CBC results tend to provide more positive estimates of population change compared to the BBS. This bias is due to changes in birdwatcher behavior on CBCs over time and by range shifts that appear to be affecting winter bird distributions more than breeding distributions (see above map). Thus, when data from both surveys are available, BBS data are often preferred.

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*North American Breeding Bird Survey.* Chandler Robbins developed his vision for the [North American Breeding Bird Survey](#) while working as a biologist for the U.S. Fish and Wildlife Service. Roadside surveys for Mourning Dove and American Woodcock had been pioneered by USFWS biologists in the 1940s, and Chan coordinated these surveys and analyzed the data. "Why not extend the approach to include all birds, and enlist the birding community to conduct the surveys?" he thought.

Chan was well-versed in citizen scientist activities, having been an active organizer and analyst of CBCs, and knew from his experience with the North American Bird Phenology program ([www.pwrc.usgs.gov/bpp/](http://www.pwrc.usgs.gov/bpp/)) that dedicated citizens could be relied upon to contribute to long-term programs that followed rigorous protocols. He also had the benefit of good timing.

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Rachel Carson's concerns about pesticide effects on wildlife were influencing USFWS studies on wildlife populations and provided a motivation for developing monitoring programs. Were pesticides damaging populations of widespread and abundant species? Many of the species Carson identified as being at risk from pesticide applications were not within the traditional focus of USFWS research, which had tended to emphasize harvested species. Now an urgent reason existed for the USFWS to track populations of songbirds. Rachel Carson had raised the alarm about declining bird populations, and Chan made a compelling argument that a survey was needed to provide quantitative information about changes in wild bird populations—and his supervisors had the good sense to support him, or at least not block his efforts.

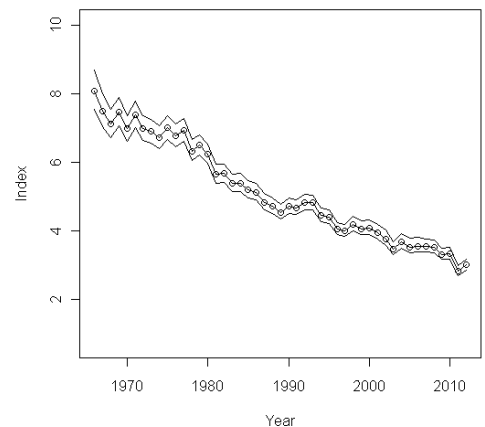
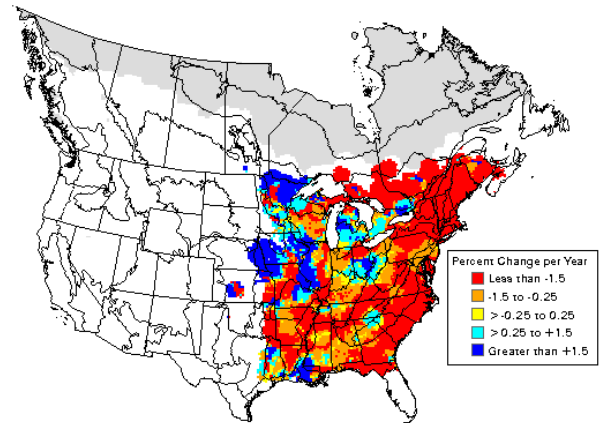
Chan used the bully pulpit of his federal position, along with his limitless energy, innovative spirit, and wide network of birdwatching friends, to create a continent-wide network of roadside surveys for birds. BBS observers have come to define competent birding: they must be able to identify all the local birds—and the occasional oddball—by sight and sound. These observers are the heart of this extremely successful and important survey.

Jointly coordinated by the U.S. Geological Survey, Canadian Wildlife Service, and Comisión Nacional Para el Conocimiento y Uso de la Biodiversidad (CONABIO) in Mexico (see article on Page 6), the BBS now covers North America from the Boreal Forest to the Chihuahuan Desert and is the only source of breeding season population change information for about 420 bird species. With very few exceptions, if you have heard an estimate of population change for a bird species in North America over the last 40 years, it is likely that the information originated from BBS data (see map and graph on this page).

Scientists across the continent rely on data and information generated through the BBS to evaluate the consequences of all factors that might influence birds, including pesticide use, land use changes, and the introduction of West Nile Virus ([www.nature.com/nature/journal/v447/n7145/abs/nature05829.html](http://www.nature.com/nature/journal/v447/n7145/abs/nature05829.html)). BBS data are also used to develop predictive models to assess consequences of environmental change, most notably for predicting the effects of climate change on birds ([www.treesearch.fs.fed.us/pubs/7514](http://www.treesearch.fs.fed.us/pubs/7514)).

BBS routes are randomly located within degree blocks of latitude and longitude. They are 24.5 miles long and comprise 50 point counts spaced about one-half mile apart. Each point count, or stop, extends for three minutes. During this period, the observer counts all birds heard singing or calling and any bird sighted within a quarter-mile radius. Each route is surveyed once a year by a skilled volunteer. Most routes are run during June, with some southern U.S. routes run in late May and some northern routes run during the first week of July. In 2013, 3,053 routes were surveyed; more than 4,900 routes exist in the database.

Although the BBS was designed as a statistical survey, it has also benefited from modern statistical methods that allow us to control inherent differences among observers and limited data from the western and northern parts of the survey. Other issues such as concerns about estimating trends from roadside counts are the subject of ongoing research. For example, recent studies using remotely sensed habitat data indicate that habitats do not differ greatly on- versus off-roadsides, and work is ongoing to evaluate whether differential change in habitats over time occurs on- versus off-road.



BBS map and graph of population change for Wood Thrush, for the 1966 to 2012 interval, paint troubling pictures of population decline for this species. / John Sauer, U.S. Geological Survey



Volunteer conducting the BBS along the Savoy, Massachusetts, route with excellent bird breeding habitat. / P. Morrissey

*Importance of Improving Survey Quality.* Given our reliance on the BBS and CBC data, survey managers have a responsibility to be constantly reassessing the methods, implementation, and analyses of the surveys. Hierarchical model analyses developed and implemented over the past few decades by U.S. and Canadian researchers have allayed critics' concerns about the quality of data from citizen science surveys, and greatly enhanced our ability to conduct analyses of BBS and CBC data, which provide estimates of population change while controlling for observer and effort effects. Encouraging research into the design, field methods, and data analysis of the surveys is an important means of maintaining the credibility of these vital programs.

We owe it to all the citizen scientists who have participated in the surveys over the past 115 years to both effectively use the survey data and to maintain the surveys' credibility via continued good management and research into improving methods. And we are indebted to the visionaries who established the surveys and worked to institutionalize them at a time when their long-term value was not clear.

Think of it: Without BBS and CBC results, we would have no quantitative data to document declines in species such as Wood Thrush or Cerulean Warbler; no data on declines in indicator species such as aridland or grassland bird species; and the Rachel Carsons of our era would have no better data than she did in the 1960s to sound the alarms about our great conservation crises.

For more information, contact Greg Butcher at [gbutcher@fs.fed.us](mailto:gbutcher@fs.fed.us) or John Sauer at [jrsauer@usgs.gov](mailto:jrsauer@usgs.gov).

## Expanding the Breeding Bird Survey (BBS) to Northern Mexico: Worth the Effort

*Vicente Rodríguez-Contreras, Specialist/Mexico BBS Coordinator and Humberto Berlanga, National NABCI Coordinator/Mexico BBS Coordinator, National Commission for the Knowledge and Use of Biodiversity (CONABIO), and Jennie Duberstein, Education & Outreach Coordinator, Sonoran Joint Venture, U.S. Fish and Wildlife Service*

The Breeding Bird Survey (BBS) is a large-scale, long-term bird monitoring program originally designed to understand population trends of various species affected by DDT in the middle of the 20th century. With more than 30 years of accumulated data, the results from the BBS are now one of the main sources of information for estimating population trends for over 400 species of birds in North America.



BBS Training workshop in Mexico. / Diana Venegas

In 1993, the U.S. Geological Survey implemented a pilot project to expand the BBS into Mexico. They hired personnel to run several routes in Mexico's northernmost states of Baja California, Sonora, Chihuahua, Nuevo Leon, and Tamaulipas. The results of this three-year effort suggested that running continuous BBS routes would provide enough data to assess population trends for more than 80 species. Despite this, the lack of personnel quickly became evident. The project ended when funding to pay surveyors ran out.

Since 2009, the national offices of the North American Bird Conservation Initiative (NABCI) in Mexico, with support from the Neotropical Migratory Bird Conservation Act, and other state

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agencies and non-governmental organizations, have been working on the BBS expansion in Mexico. Like the 1993 project, the first phase of the current effort focuses on northern Mexico. This part of the country is most like the rest of North America with respect to breeding seasons of bird species. In future phases we plan to adapt the protocols for the rest of Mexico.

Expanding the BBS to Mexico gives a more complete vision of the North American avifauna as a whole. It also provides valuable information on Mexican bird populations. This is especially urgent since Mexico has few bird monitoring programs to assess population status and none with this large-scale view.

The first steps to expand the program included translation and adaptation of existing materials. We created a Geographic Information System (GIS) of more than 300 BBS routes, including maps, which we used during eight state training workshops. During these meetings, we introduced people from different public and private organizations to the BBS program and its protocols. We also began recruiting volunteer surveyors for each state. We produced and electronically distributed maps for every route, and in 2009, volunteers began ground truthing and conducting surveys. Since then we have run nearly 100 routes and the number grows every year (Figure 1).

Unfortunately the program faces ongoing challenges. A lack of volunteer surveyors continues to hinder efforts. Security and safety concerns in some areas have also proven to be an issue. Because of this we haven't been able to run all routes regularly each year. Even so, we expect the number of routes with enough data to calculate trends in bird populations to increase during the upcoming field season.

As in 1993, we have had difficulty finding people with the necessary skills and abilities to run BBS routes. To make up for this, CONABIO hired regional coordinators to oversee the program in two main areas: the Rio Grande and Sonoran Joint Venture regions. The hiring of these coordinators was one of the first big project successes.

Regional coordinators have implemented workshops to develop birding skills and to train people in BBS protocols. This training, combined with a volunteer surveyor scheme, should help maintain program continuity. With more than 150 new birders in different learning stages, we hope to increase volunteer participation in the coming years.

We are currently reviewing data from these first years and hope to make them available soon. For more information, visit [www.pwrc.usgs.gov/BBS/](http://www.pwrc.usgs.gov/BBS/). And if you want to run a route in Mexico, contact Diana Venegas at [quetzalita97@hotmail.com](mailto:quetzalita97@hotmail.com) for the Sonoran Joint Venture region or René Valdés at [guacamayero@gmail.com](mailto:guacamayero@gmail.com) for the Rio Grande Joint Venture region.



BBS volunteer in Mexico. / Monica Silva

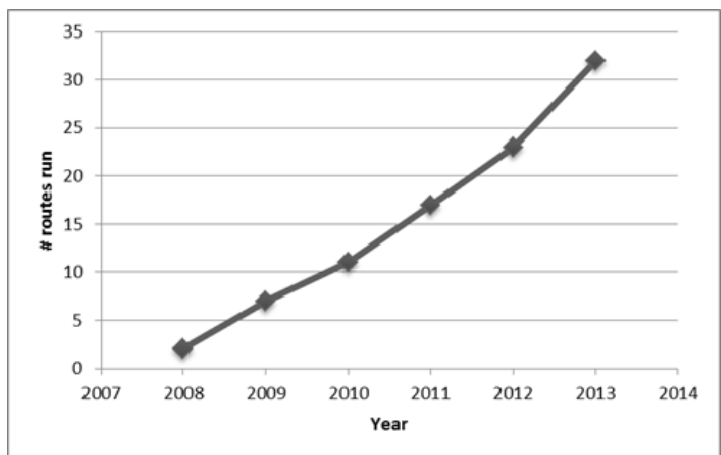


Figure 1. Number of BBS routes run in Mexico each year since 2008.

## The eBird Enterprise: Tracking Bird Distributions Throughout the Hemisphere

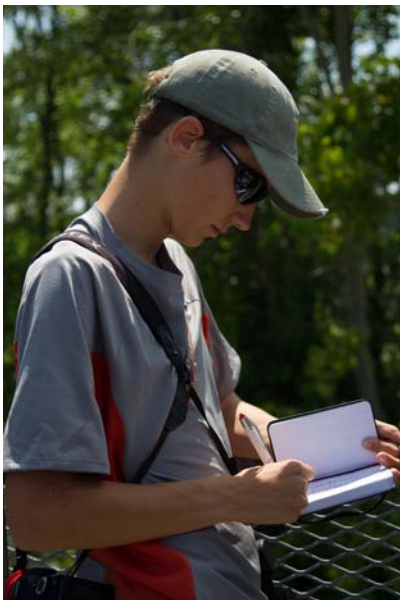
Ken Rosenberg, Director of Conservation Science, and Chris Wood, eBird Program Leader, Cornell Laboratory of Ornithology

Many of the big questions in ecology today, such as understanding the effects of global land use change, changing climate, and dynamic species distributions, are increasingly relying on the availability of large volumes of scientific data. Taking advantage of the proliferation of “big data” often requires new synthetic analysis techniques to explore and identify patterns at large spatial and temporal scales that are otherwise not apparent. Similarly, conservation of migratory birds is increasingly focused on the full life cycle of species, and for many of the species of highest conservation concern today, the greatest threats may lie away from the breeding grounds—yet we often lack data from outside the breeding season or outside North America. This presents a huge challenge for bird monitoring programs, which are often not designed to address such large-scale questions—or collect data that are not easily available for use by scientists and conservationists.



eBirders in Hamlin, New York. / Chris Wood

*eBird: The Grand Experiment.* Within this context of large-scale ecological questions and full life cycle conservation concerns, eBird was launched in 2002, as a fully on-line program that allows birders to enter checklists of birds from any location and any time of the year. eBird collects information about the distribution and abundance of birds, taking advantage of the enormous and growing popularity of birdwatching to create a global network of volunteers who submit bird observations via the Internet to a central data repository. Through a combination of broad-based community engagement and global partnerships, the volume of data coming into eBird has increased exponentially (30 to 40 percent annually) for the past decade. By mid-year 2014, over 195 million observations had been submitted by more than 200,000 separate observers, who spent 14.5 million hours in the field collecting data.



The Cornell Young Birders annual event brings together teenagers with a passion for birds for four days of field trips and workshops to learn about birding, eBird, and careers involving birds. / Chris Wood

In a sense, eBird was a grand experiment, to see if we could mobilize millions of birdwatchers as remote [human sensors](#), and take advantage of a wave of new technologies, social networking, and crowdsourcing. Twenty percent of eBird data are now entered on iPhones and similar devices, creating a seamless interface between the observer and the database—eliminating the paper stage. The result is probably the largest citizen science database in the world, with observations coming from every country and providing distribution and abundance information for 9,606 species—96 percent of the world’s birds. eBird is unique among broad-scale bird monitoring projects because it collects data year-round from around the world.

*Improving Data Quality.* Many features of eBird are designed to increase participation and therefore increase the quantity of data collected. From the start, however, an equal amount of effort has gone into ensuring the quality of eBird data. Data quality features include a set of automated filters that set the limit for species and number of individuals that would be expected at any place and time—these filters have gotten more and more sophisticated over time, as our network of expert regional reviewers grows. Any unusual species or unusual count for a species gets flagged automatically in the database—and these flagged records need to be approved by a human reviewer before they can be displayed on maps or used in analyses.

Data entry in the field via the mobile apps improves data quality because unusual records are instantly flagged and observers are requested to provide

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written documentation before a checklist can be entered. Documentation of unusual records is further facilitated by the ability to embed photographs, videos, and sound recordings directly into the eBird checklist; a high proportion of rare birds are now documented by these media specimens, which are curated along with the observational records in the eBird database.

At the same time, eBird has had success pushing birders towards better, more scientific practices. A much higher proportion of eBird data being submitted now follows basic guidelines that make it much more valuable. In the case of eBird, “standardized” observations means that observers: (1) use either stationary or traveling count protocols (corresponding to what most birders do anyway); (2) record effort, in terms of time spent and distance traveled while birding; and (3) perhaps most importantly, submit a complete checklist of birds identified—which allows us to infer zeros for species not reported.

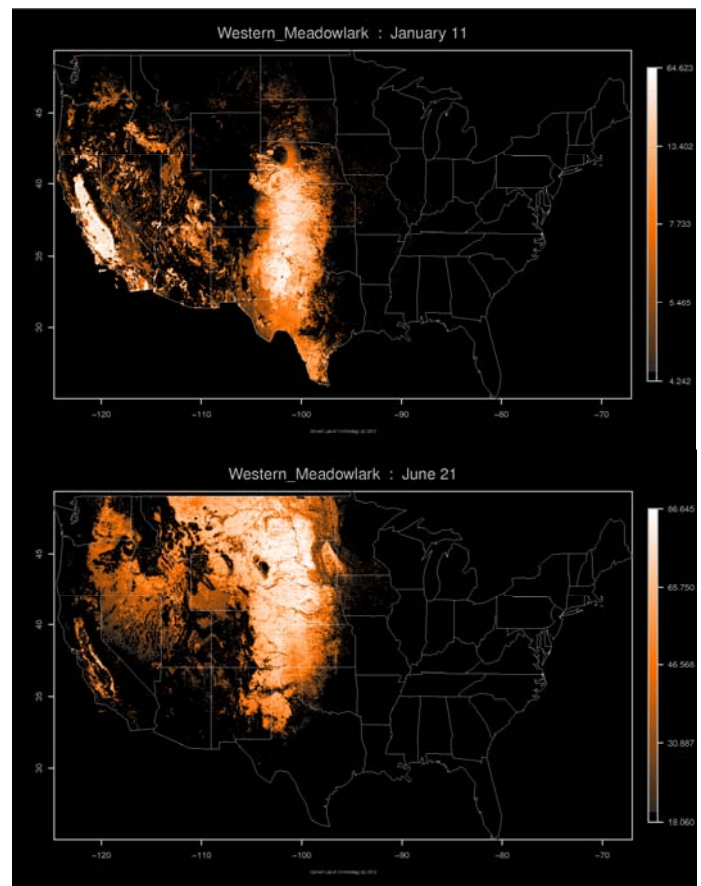
*The Global eBird Enterprise.* While outreach and engagement with birders are important, they are secondary benefits to our ultimate purpose: providing data for science and conservation. eBird has evolved from a stand-alone citizen science project focused on collecting data into a cooperative partnership, involving several distinct user groups spanning multiple scientific domains and dozens of partner organizations, each with its own unique interests in the project’s success. What we now think of as the “eBird Enterprise”—a global project with high conservation significance—was recently described and featured in the journal [Biological Conservation](#). Our collaborators are experts in a wide range of fields: population ecologists, conservation biologists, quantitative ecologists, statisticians, computer scientists, GIS and informatics specialists, educators, application developers, and data administrators.

A key to eBird’s success has been the state-of-the-art management of the eBird database, resulting in free and open access to all raw eBird data. In the last 18 months, more than 6,000 individuals have downloaded data, resulting in more than 120 peer-reviewed scientific publications that have used eBird data. Collaboration with computer scientists has been especially important because of the messy and unstructured nature of raw eBird data. In order to map bird distributions throughout their range, for example, and not just where birders go birding, we needed to develop a new computer modeling framework to analyze the massive amounts of eBird data we were collecting. This [modeling approach](#) results in the most detailed distribution maps available for any bird species—these give us a whole new way of thinking about species range maps (see Figure 1).

The ability to model year-round distributions for hundreds of North American birds has allowed us to visualize and study bird migration at continental scales, increasing our fundamental understanding of migration biology. These models have also informed conservation



Western Meadowlark singing in Stutsman County, North Dakota. / Chris Wood



Maps based on spatiotemporal exploratory models of eBird data depict Western Meadowlark distributions for mid January and mid June 2012. / Cornell Lab of Ornithology

## The Pacific Northwest eBird and Avian Knowledge Network Partnership

*John D. Alexander, Executive Director, Klamath Bird Observatory and Eric Gardner, Wildlife Diversity Division Manager, Washington Department of Fish and Wildlife*

Bird conservation partners in the Pacific Northwest are meeting North American Bird Conservation Initiative (NABCI) priorities for bird monitoring and citizen engagement by developing and synchronizing a regional eBird portal and a regional Avian Knowledge Network (AKN) node. Together, eBird Northwest and Avian Knowledge Northwest are being designed to meet the following objectives, presented in the U.S. NABCI Committee's publication, *Opportunities for Improving Avian Monitoring*:

- Integrate monitoring into bird management and conservation practices,
- Coordinate monitoring programs among organizations, and
- Maintain monitoring data in modern data management systems for more effective data delivery.

While meeting these objectives, this AKN-eBird collaborative will also engage citizen scientists as a broad and supportive constituency for bird conservation, which is also a priority for NABCI.



What are the Avian Knowledge Network and eBird and how do they relate? The [Avian Knowledge Network](#) is a partnership of people, institutions, and government agencies supporting the conservation of birds and their habitats. The AKN's model is based on data, the adaptive management paradigm, and best available science. AKN partners are working to improve access to and use and awareness of bird data, information, and tools at scales ranging from individual locations to administrative regions (e.g., management areas, states, countries) and species ranges.

[eBird](#) is a real-time, online checklist program that is revolutionizing the way the birding community reports and accesses information about birds (see article on page 8). eBird is a

fast growing contributor of bird observation data to the Avian Knowledge Network. Together, eBird and AKN offer modern solutions for data capture, management, and delivery in support of bird conservation.

*eBird and the Avian Knowledge Network in the Pacific Northwest.* The Avian Knowledge Network is organized into partnerships centered on nodes. The regional [Avian Knowledge Northwest](#) node ([www.AvianKnowledgeNorthwest.net](http://www.AvianKnowledgeNorthwest.net)) provides information from current and comprehensive datasets on birds and the environment for scientists, natural resource managers, and other individuals interested in conservation science in the Pacific Northwest.

Like the Avian Knowledge Network, eBird also includes regional nodes or portals. A new eBird portal, eBird Northwest ([www.ebird.org/nw](http://www.ebird.org/nw)), is being developed in synergy with Avian Knowledge Northwest. This new synchronous model is being developed to enlist birders into citizen science projects that are focused on filling specific regional information gaps identified by natural resource managers who are working to meet bird conservation priorities. By encouraging birders to contribute data, this unique AKN-eBird prototype is further engaging citizens as supporters of science-driven conservation and natural resource management.

Washington Department of Fish and Wildlife (WDFW) and the U.S. Fish and Wildlife Service's Pacific Region (USFWS) recognize that wildlife conservation objectives cannot be achieved without considerable public support, including the assistance of citizen science volunteers. These agencies are using eBird Northwest to pro-

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mote specific citizen science projects that are designed to generate credible scientific data that meet the agencies' particular information needs.

For instance, WDFW is developing an ecological integrity monitoring program for its state wildlife areas, which is engaging birders through eBird Northwest to achieve a critical element of its State Wildlife Action Plan. This element includes using WDFW's database to map and track priority species distribution changes over time. Data collected by citizen scientists is now being integrated through eBird Northwest, making these maps even more comprehensive. Using an Ecological Integrity Assessment method, the state agency is measuring the current ecological integrity on WDFW managed lands through a standardized and repeatable assessment of current ecological conditions. One such measure of integrity is bird species occurrence at specific sites relative to that species' natural distribution. eBird Hotspots created on state wildlife areas allow eBirders to contribute records that will be summarized as part of the agency's integrity indices. In this way, the eBird portal directs the birding community to these sites to report their observations, strengthening the agency's ecological integrity monitoring program.

WDFW is also partnering with Audubon Washington on a project to assess the current distribution of sagebrush-obligate passerines in eastern Washington. Local Audubon chapters are engaging in the project through chapter volunteers, who are participating in training on bird identification, survey protocols, and data entry using eBird. The eBird Northwest Portal, which links to this project's website and eBird data entry page, is providing a means for recruiting volunteers to participate in these surveys, as well as a forum to report project results to participants and to the wider birding community. By engaging avid birders and conservationists in collecting data within their own local areas, the project is developing a framework for long-term monitoring sagebrush-obligate species of conservation concern into the future.



eBirders at Malheur National Wildlife Refuge in Princeton, Oregon.  
/ Klamath Bird Observatory

The USFWS is harnessing eBird data, such as those entered through eBird Northwest, to meet inventory and monitoring needs on national wildlife refuges. As part of National Wildlife Refuge Week, the Service has partnered with the American Birding Association and issued an eBird challenge, which encourages all birders to visit their local refuges, submit eBird checklists, and share photos on a special Facebook page. A new Avian Knowledge Network histogram tool now combines this influx of eBird data with other AKN datasets, providing information about the year-round occurrence of birds. The tool allows users to select one or more species and a national wildlife refuge to generate a visualization illustrating year-round occurrence for the species in the refuge's county. Such information is strengthening refuge inventory efforts and informing refuge management.

*Using Technology to Engage Citizens in Support of Science-based Conservation.* WDFW, USFWS, and many other partners recognize eBird as a powerful way to connect the birding community with both the conservation of species of greatest need and concern and efforts to keep common birds common. By integrating eBird Northwest with Avian Knowledge Northwest, these partners foresee added benefits for the kind of science-driven conservation that is central to their roles within NABCI to promote all bird conservation.

By participating in eBird Northwest's citizen science programs, which are designed to meet specific regional information needs, the public's sense of investment in public lands conservation should grow, resulting in stronger expectations and accountability for government conservation programs. Such investments of personal time and resources by engaged citizens may then lead to growing public support for establishing substantial and reliable funding for science-driven conservation. These opportunities also connect NGOs with citizens, who then may become stronger supporters of these organizations' science and conservation programs.



## Citizen Science Supporting Seabird Conservation on Public Lands in California

*James Weigand, Ecologist, Bureau of Land Management California State Office*

One of the greatest resources for science on federal public lands is the people who live close to these lands. By engaging in scientific data collection, citizens are extending the scope of the public's stewardship role in public land management. According to [\*The State of the Birds 2011 Report on Public Lands and Waters of the United States\*](#), major threats to coastal birds include coastal development, increased human disturbance, and sea-level rise. Information being collected on seabirds by citizen scientists is helping public and private organizations alike better understand and address these challenges.



Black Oystercatcher is considered an indicator for the health of rocky intertidal shorelines. This adult is incubating during a July 2014 re-nest. / Donald Shephard

One example of this involvement comes from California, where the Bureau of Land Management (BLM) manages the California Coastal National Monument (CCNM). To coordinate seabird data collection using common protocols, the BLM works closely with the Gulf of the Farallones National Marine Sanctuary (NMS), the San Francisco Bay National Wildlife Refuge Complex, coastal national parks, California State Parks, and non-governmental organizations (NGOs) such as Audubon California, Pacific Grove Museum of Natural History, and Point Blue Conservation Science. Agency and NGO staff train interested local residents as volunteers to observe seabirds and collect data on public coastal lands across the length of California.

Since 2011, Audubon California, BLM, and the National Park Service have teamed up to coordinate volunteer observers up and down the California coast to census Black Oystercatchers and study their nesting success. Oystercatchers are very amenable to citizen science monitoring because they are charismatic and inspiring to people, which helps attract and retain volunteers. They are large, easy to identify by sight and sound, and fairly stationary during the breeding season, all of which reduces the chance of double counting. Because the oystercatcher often nests among rocks just a few feet above the high-tide mark, bird biologists believe that the species is especially vulnerable to sea-level rise. The data being collected by citizen scientists will go a long way toward helping biologists test this hypothesis.



Black Oystercatcher nest monitoring volunteer at Point Cabrillo State Marine Reserve in northern Mendocino County, California. / Joleen Ossello

For example, creating a geospatial description of breeding habitat for Black Oystercatcher would provide a clearer picture of the importance of California to the global status of the species, and show areas of potential focus for conservation activities, including monitoring and protection. This

map could be the basis for a modeled analysis of the vulnerability of these breeding territories to inundation resulting from the climate change impacts of sea-level rise in combination with increased storm events.

In fact, citizens' findings are already advancing our understanding of the ecology and abundance of Black Oystercatcher populations in California. First, the number of oystercatchers surveyed by citizens is perhaps as much as four times higher than what biologists previously suspected. The data indicate that oystercatchers concentrate in high numbers on the Monterey, Sonoma, and Mendocino County coastlines, and a disproportionate number of them nest on the CCNM rocks and islands.

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Citizen scientists have also initiated their own projects involving the CCNM. For example, residents of Mendocino County initiated a study of Pelagic Cormorants in 2009, focusing on contrasts in cormorant nest success on CCNM rocks and islands in both urban and remote locations. In urban locations, people may approach nests relatively closely for easy observation and study, but other nests remain inaccessible because of their locations on island and coastal ledges, in which case people observe the nests from boats offshore. These data help managers gain a better understanding about how resilient Pelagic Cormorants are when they nest around working harbors or close to people's coast-side homes. Word of mouth has drawn additional involvement from citizen scientists as far south as San Luis Obispo County and north to Humboldt County and as a result the network of citizen observers for Pelagic Cormorants has grown.

One lynchpin of citizen science for seabirds in California has been the creation of the Seabird Protection Network by the Gulf of the Farallones NMS, with the aim of quantifying and reducing human disturbances to seabirds. Since its founding and original focus in the San Francisco Bay Area, the Network has expanded along the coast with the development of regional chapters of BLM, Stewards of the Coast and Redwoods/California State Parks, and the Montrose Settlements Trustee Council. The Network provides the critical function of uniformly reporting and compiling citizen observations of disturbances to seabirds at their roosting, resting, and nesting sites. Agencies use this information to better manage seabird colonies by responding with site-appropriate measures to avert more disturbances. The other role citizens play in the Network is in sharing scientific information about seabirds and their ecology at public lectures, meetings, and personal contacts with shoreline visitors throughout the year.

By gathering scientific data and then communicating with the general public about seabirds—their life history and our role in their conservation—citizen scientists are both helping agencies better manage seabirds and increasing people's awareness and appreciation for these species—two vital steps in promoting seabird conservation in California.

*For more information, visit:*

*The Seabird Protection Network at [www.seabirdprotectionnetwork.org/](http://www.seabirdprotectionnetwork.org/)*

*Gulf of the Farallones National Marine Sanctuary at [farallones.noaa.gov/eco/seabird/welcome.html](http://farallones.noaa.gov/eco/seabird/welcome.html)*

*Stewards of the Coast and Redwoods, Sonoma County at [www.stewardscr.org/cms/pages/volunteer\\_sonoma\\_coast\\_seabird\\_monitoring.html](http://www.stewardscr.org/cms/pages/volunteer_sonoma_coast_seabird_monitoring.html)*

*Audubon California Black Oystercatcher Survey at [ca.audubon.org/black-oystercatcher](http://ca.audubon.org/black-oystercatcher)*

*Mendocino Coast Audubon Society—Pelagic Cormorant Study at [www.mendocinocoastaudubon.org/mcas\\_cons\\_cormorant.html](http://www.mendocinocoastaudubon.org/mcas_cons_cormorant.html)*

*BLM California Coastal National Monument - Point Sur to Point Mugu at [www.blm.gov/ca/st/en/prog/blm\\_special\\_areas/nm/ccnm/spn.html](http://www.blm.gov/ca/st/en/prog/blm_special_areas/nm/ccnm/spn.html)*

*or contact:*

*James Weigand at [jweigand@blm.gov](mailto:jweigand@blm.gov).*

*David Ledig, CCNM Manager at [dledig@blm.gov](mailto:dledig@blm.gov).*

*Sage Tezak, Seabird Protection Network Coordinator at [sage.tezak@noaa.gov](mailto:sage.tezak@noaa.gov).*

*Anna Weinstein, Seabird and Marine Program Director at [aweinstein@audubon.org](mailto:aweinstein@audubon.org)*



The least social of the cormorants, the Pelagic Cormorant nests on steep cliffs along rocky and exposed shorelines, either in loose colonies or far from nearest neighbors. / Mike Baird

## Thirty Years of Citizen Science for Bird Conservation in the San Francisco Bay Area

*Kristin Butler, Outreach and Communications Director, San Francisco Bay Bird Observatory*

The [San Francisco Bay Bird Observatory](#) (SFBBO) was founded in 1981 with a mission to conserve birds and their habitats through science and outreach. SFBBO's work takes place in the San Francisco Bay Area, one of the most heavily developed but biologically rich estuaries in the world. The Bay provides habitat for migratory shorebirds, wintering waterfowl, and numerous colonial-nesting waterbird species, and is surrounded by grassland, riparian, and coastal habitats that support a diverse array of landbirds and seabirds. The region is also one of the most heavily developed urban areas in the world, with nearly 7.5 million people placing increasing pressures on the region's biological resources.



A San Francisco Bay Bird Observatory citizen scientist and staff biologist monitor nesting waterbirds. / SFBBO

For over three decades, SFBBO's work to study and protect birds has benefitted from its urban setting by utilizing the power of citizen scientists. The organization was started by a group of college students, who took the initiative to conduct field studies on bird populations around the Bay. After forming a nonprofit, they merged with the Coyote Creek Riparian Station, a similar group of academics doing bird banding studies on passerines at a local riparian restoration site.

These studies, which were launched in the early 1980s, continue today and are now SFBBO's Colonial Waterbird Program and Coyote Creek Field Station. They have produced more than 30 years of continuous high quality data, and are primarily fueled by the work of citizen scientists.

Citizen scientists in SFBBO's Colonial Waterbird Program monitor more than 60 waterbird colonies (e.g. herons, terns, etc.) throughout the Bay Area during nesting season. The information they collect is used by the U.S. Fish and Wildlife Service, other land managers, and organizations like the Audubon Society to manage, protect, and understand Bay Area birds.

Participants in the program are required to become members of SFBBO and go through a screening process that includes an application, interview, and reference check. A staff biologist trains them to use datasheets and understand avian courtship and nesting behavior at an orientation in January each year and then they are assigned their own colony to monitor. They are managed by SFBBO's Outreach Director, and a staff biologist answers questions throughout the season and analyzes the data for an annual report that is shared on SFBBO's website.

In 2014, more than 50 citizen scientists participated in the program. They visited their colonies once or twice a month from February through August to collect data on the numbers of nests, adults, and chicks at the site, and recorded observations about bird behavior and changes to their habitat. Volunteers have historically been adults, but this year SFBBO included a group of local high school students and also opened the program to families. Other new features included a Scouting Team to check out leads about possible new colonies and a Mentoring Team of veterans who support new volunteers.

In addition, because many colonial waterbirds nest in neighborhoods and public parks, citizen scientists—conspicuous because of their clipboards and spotting scopes—are often asked about the birds while they are working in the field. In 2013, SFBBO took advantage of this phenomenon by developing an Ambassador Program for citizen scientists who were interested in leading presentations, bird viewings, and corporate lunch 'n learns to showcase their bird colonies. These events became very popular, deepened the volunteers' connections to the organiza-

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tion, and created a sense of ownership and affection for “our neighborhood birds” in the communities surrounding nesting colonies.

Citizen scientists have played an equally important role at SFBBO’s Coyote Creek Field Station (CCFS), where they work with a staff biologist to capture landbirds in mist nets, band them, and collect data ranging from age, sex, and weight to wing length, furculum fat content, and body molt. The long term datasets they create are sent to the U.S. Geological Survey’s Bird Banding Laboratory and are used by universities and others to answer questions about everything from avian parasite transmission to the impact of climate change on birds.

Volunteers in this year-round program go through the same screening as those in the Colonial Waterbird Program, but participate in a more rigorous training process that includes one or two mornings (six hours each day) per month for three years. Their first duty is patrolling the mist net lanes, then they practice how to extract birds from nets, and finally learn to band birds and collect data. In 2013, more than 30 citizen science volunteers helped SFBBO’s Landbird Program Director band almost 4,000 birds, and several led banding demonstrations at CCFS to share “science in action” with the public.

SFBBO has a small staff of 10 scientists and outreach specialists, so the efforts of citizen scientists are invaluable to its success. In 2013, volunteers in these two programs contributed more than 4,300 hours of service, equivalent to nearly two full-time staff positions. By including citizen scientists in its programs, SFBBO augments its ability to connect with the community and protect birds as they live, winter, or migrate through this ecologically important region.

For more information, contact Kristin Butler at [kbutler@sfbbo.org](mailto:kbutler@sfbbo.org) or visit [www.sfbbo.org](http://www.sfbbo.org).

### Bird Photo Contest

The San Francisco Bay Bird Observatory is holding a “Click Off” bird photo contest. Enter by Oct 5th, 2014, to win great prizes! Categories are “Bird Behavior,” “Birds and Their Habitats,” “Birds and Humans,” and “Bird Portraits.” For contest rules or to register, visit: [sfbbo.org/support/fall\\_challenge/click\\_off\\_2013.php](http://sfbbo.org/support/fall_challenge/click_off_2013.php).



An SFBBO citizen scientist teaches the public about a colony of herons. / SFBBO



An SFBBO citizen scientist teaches families about bird banding at Coyote Creek Field Station. / SFBBO

## Eyes on Eagles: Citizen Scientists Help with Post-delisting Monitoring in Iowa

*Stephanie Shepherd, Wildlife Diversity Biologist, Iowa Department of Natural Resources*

Since 1977, when Iowa recorded its first Bald Eagle nest in almost 80 years, the number of nesting eagles has steadily climbed, at first slowly, then more quickly in the last two decades. Bald Eagle is one of the few species once listed under the Federal Endangered Species Act that has made a successful recovery and been removed from the list of imperiled species.



Citizen participants on a Bald Eagle Nest monitoring training field trip in Iowa. / Mindy Kralicek

However, the Bald Eagle's welcome recovery and delisting has presented wildlife professionals with a bit of a quandary. No matter how recovered a once imperiled species is, monitoring of the species is always necessary once protections are lifted. Monitoring is not necessarily a short-term prospect either because population changes often take many years to exhibit themselves. The quandary arises because the agencies most responsible for this monitoring are often overwhelmed by responsibility for a multitude of species. With the Bald Eagle population doing well, what kind of resources can and should be devoted to this one species?

One way the Iowa Department of Natural Resources has chosen to address this challenge is by utilizing a formal volunteer based Bald Eagle nest monitoring program. Bald Eagles have a number of characteristics

that make them a good choice for monitoring by volunteers. They are large birds that build prominent and relatively permanent nests to which they return every year. The pertinent data can be collected while watching from a distance, ensuring that the birds are undisturbed. They are fun to watch and many people have an affinity for them. People can also remember how rare eagles were roughly two short decades ago, which increases their motivation to assist with recovery.

There are reasons agencies might consider using citizen scientists to collect needed monitoring data on eagles. In Iowa, we have always relied to some degree on opportunistic reports of nest sites, so our main goal was to formalize the program. Other states have intensive formalized programs but may need to scale back on the resources they are expending. It was this second scenario which prompted Jody Millar with the U.S. Fish and Wildlife Service to suggest the development of a training video for Iowa's Bald Eagle nest monitors that would also serve as a template or tool for other conservation agencies around the country that may be interested in investigating the use of this type of program. The video was produced by Ravenswood Media of Chicago and can be found with supporting materials on the Iowa DNR website: [goo.gl/20aBCF](http://goo.gl/20aBCF) or [www.iowadnr.gov/Environment/WildlifeStewardship/NonGameWildlife/VolunteerWildlifeSurveys/BaldEagleTrainingVideo.aspx](http://www.iowadnr.gov/Environment/WildlifeStewardship/NonGameWildlife/VolunteerWildlifeSurveys/BaldEagleTrainingVideo.aspx).

For Iowa's program, we made a random selection of 50 percent of our active nesting sites and established them as Sentinel Territories. We then began to recruit and train volunteers to collect data on: (1) nest occupancy, (2) number of young produced, and (3) number of young fledged. We hold a small number of one-day training workshops in the spring each year and volunteer monitors are then assigned to a sentinel nesting territory. We currently have 100 volunteers monitoring 145 nesting territories.

A number of other states also have similar programs or are currently developing the use of citizen scientists to monitor eagles. Despite disparate locations (e.g. New York, Oklahoma, Florida) the benefits and challenges are

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similar. Recruitment, retention and training of volunteers does require resources but the existence of active organizations devoted to birds is a help because it provides a pool of interested and knowledgeable citizens from which to recruit. Some nest sites are easier to find volunteers for than others (e.g. those near urban centers), so ensuring the monitoring of an appropriate sample of nests can be a challenge. Finally, certain data (such as number of young) can be hard to gather, so having a complete yearly dataset on all nests is not possible.

However, these challenges are offset by the many benefits. The data collected by citizen scientists save the agency a great deal of time and money. This cadre of concerned citizens is also able to keep an eye on nest sites to report violations of the Bald and Golden Eagle Protection Act while simultaneously becoming advocates for these birds in their communities. It provides agencies with a much needed connection to the public and the public with a new connection to nature and conservation.



Citizen scientists spot a Bald Eagle nest during Iowa training field trip. / Mindy Kralicek

The Bald Eagle still faces many conservation challenges such as riparian habitat loss, wind energy development, water quality issues, and lead poisoning. By employing concerned and dedicated citizens as volunteer monitors we have established, at the very least, an early warning system that will signal any trouble with our nation's symbol while also allowing people to connect personally with these magnificent birds. As state and federal agencies transition out of intense and time-consuming monitoring protocols, they can turn to a citizen science program as one possible future direction for keeping our eyes on Bald Eagles.

*For more information, contact Stephanie Shepherd at [stephanie.shepherd@dnr.iowa.gov](mailto:stephanie.shepherd@dnr.iowa.gov).*



Bald Eagle nest with young in Iowa. / Pat Schlarbaum



## Counting, Collecting and Reporting: Citizen Science Making a Difference for the Rusty Blackbird

*Debra Reynolds, Communications Coordinator, Division of Migratory Birds, U.S. Fish and Wildlife Service*

The Rusty Blackbird, a close relative of the Common Grackle, is one of North America's most rapidly declining species. If you look carefully into the wooded swamps and woodlands of a boreal forest during spring or summer, you may catch a glimpse of a Rusty Blackbird. Or you might see them in one of the 38 states in the eastern U.S. as they migrate from their boreal breeding grounds in Canada, Alaska, and northern New England towards their wintering areas. It is difficult to differentiate them from other blackbirds; the telltale sign is their rusty feather edges and pale yellow eyes. Once common, the population has dropped 85 to 95 percent in the last 40 years.



Male Rusty Blackbird observed in Maryland. The North American Breeding Bird Survey estimates that Rusty Blackbird populations declined by 6.2 percent every year between 1966 and 2010. / Bonnie Ott

The cause of this dramatic decline in numbers is unclear. Extensive loss of wooded forests and wetlands to agriculture on their wintering grounds is a likely factor but the principle cause is unknown. Scientists hypothesize that there is a “perfect storm” of factors, including competition for food with the more common blackbirds and increased exposure to disease. On their breeding grounds, climate change is having a profound effect as their primary habitat becomes prone to drying. Researchers are also finding high levels of mercury in their bodies, which might be affecting their overall health. But little is known about their migratory ecology—a critical component of any strategy to ensure this species is protected throughout its annual life cycle.

The [International Rusty Blackbird Working Group](#) believed that the mystery of the Rusty Blackbird decline and the large range of states it inhabits made it a perfect candidate for a citizen science project. So the Working Group, in partnership with the Vermont Center for Ecostudies, the U.S. Fish and Wildlife Service, and Cornell Laboratory for Ornithology, and dozens of state and local partners, developed and launched a three-year Rusty Blackbird Spring Migration Blitz in 2014.

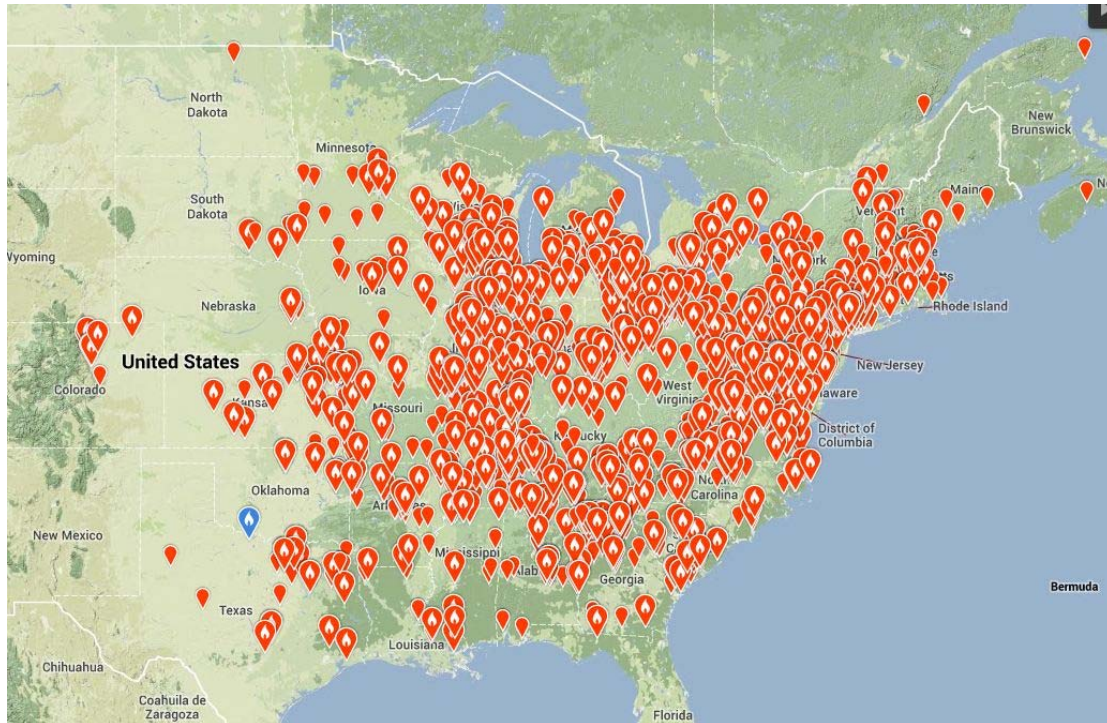
“The Migration Blitz will provide new information on migration timing and migratory hot spots that will help us focus conservation efforts for this species where and when they will have the greatest impact,” says Randy Dettmers, a U.S. Fish and Wildlife Service biologist studying the bird’s behavior.

The Rusty Blackbird Spring Migration Blitz was designed to track Rusties on their northward migration from the southeastern U.S. up through Canada and into Alaska. Birders from 38 U.S. states, 9 Canadian provinces, and 3 Canadian territories searched for this elusive songbird from early March through mid-June. Presence or absence information is entered into the Cornell Lab of Ornithology eBird site and scientists will then use the data from the Blitz to target future conservation efforts and research initiatives.

To encourage data collection and volunteer engagement, state coordinators and partners got creative about recruiting citizen scientists. Minnesota and Wisconsin held a friendly competition to observe the most Rusties. Iowa Public Radio hosted a feature on Rusty Blackbirds, Michigan Audubon hosted a Rusty Blackbird weekend, and the Delaware state coordinator held Rusty birding trips to search for stopover areas.

After only a single week of blitzing, birders across 27 states had already mapped hundreds of Rusty Blackbird observations, based on data from eBird from March 1-8, 2014. During the first full month of the Blitz, birders submitted 6,281 checklists into eBird, which included location information for Rusty Blackbirds. This is a 41 percent increase from 2013, when no Blitz occurred. By the end of the Blitz in June, a total of 14,865 checklists

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Map of observations made during the first month of the Rusty Blackbird Blitz, March 1-31, 2014. Map and data courtesy of eBird.

contained at least one Rusty Blackbird observation, bumping the overall increase of observations up 62 percent from 2013. Clearly, the Blitz made a difference!

This data provides much more than the typical snapshot of a single location; it's like a collage that shows a much fuller picture. While the final tallies are still coming in, if the upward trend of submitted information continues, there will be a wealth of knowledge for scientists to sort through.

The Spring Migration Blitz presents a unique opportunity for citizens to both get outside and enjoy nature in the spring, and to actively participate in an effort that sets a new precedent for conservation. As Judith Scarl, Blitz Co-ordinator at the Vermont Center for Ecostudies states, "the Blitz focuses on Rusties, but it also demonstrates the power and potential for leveraging citizen science for conservation."

For more information, contact Debra Reynolds at [debra\\_reynolds@fws.gov](mailto:debra_reynolds@fws.gov) or Judith Scarl at [jscarl@vtcecostudies.org](mailto:jscarl@vtcecostudies.org).

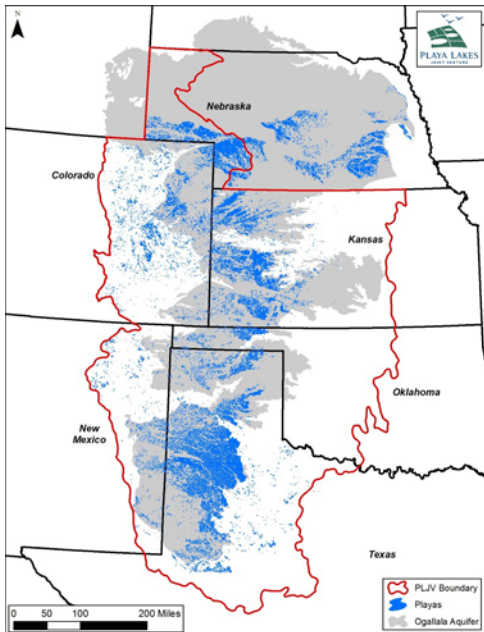


Female Rusty Blackbird observed in Quebec. / Laval Roy

## Playa Lakes Joint Venture Uses Crowdsourcing to Collect Information on Playas

*Mirub Hamend, Communications Director, Playa Lakes Joint Venture*

The Playa Lakes Joint Venture (PLJV) has developed a citizen science project designed to collect vital information on the ecological condition of playas throughout the western Great Plains. The Joint Venture created a web-based tool that will allow the general public, after some initial training, to evaluate whether playas have been modified and select the type of modification, if any. By using a web-based crowdsourcing model (soliciting contributions from a large group of people), PLJV will be able to distribute the workload of this project while educating the public about the importance of playas.



About 80,000 playas dot the PLJV region, which stretches across six states. These wetlands provide critically important wildlife habitat and are the main source of recharge to the Ogallala Aquifer. But many playas have been modified from their natural condition by a variety of factors, and effective conservation of these wetlands depends on a better understanding of these modifications.

“The purpose of this project is to conduct a remote assessment of modifications to individual playas throughout the entire PLJV region. This inventory will help us better understand the range of modifications on the landscape, identify spatial patterns, and characterize individual playas so we can determine their potential for conservation and restoration,” says PLJV GIS Director Alex Daniels, who developed the online assessment tool. “We can also use the information collected to better understand how playa habitats support wildlife populations and to design more effective conservation programs that meet the needs of both people and wildlife.”

The availability and quality of spatial data for playas has greatly improved over the last 10 years; however, many existing datasets still do not provide a measure of wetland function or health. This is a substantial problem because field work has shown that many of these mapped playas are no longer recognizable as playas on the ground due to land use activities such as cropping or pitting. These modified playas have diminished ecological function and value to wildlife relative to intact playas. Being able to catalog playas will help PLJV and its partners to better target conservation and restoration efforts.

The playa region lies at the heart of the Central Flyway, an important migration corridor that supports millions of birds every year. This region is also an important agricultural area, providing much of the wheat, corn, and livestock produced in the U.S. Playas are impacted by a variety of modifications and land-use changes that affect their ecological functioning, such as farming, pits, and ditches or drains. In general, these modifications interrupt the natural playa hydrology, reduce their ability to provide food and habitat to birds and other animals, and may prevent recharge to the aquifer.

“Although the modifications reduce the ability of playas to support wildlife, it is important to recognize that these modifications are land-use decisions made by farmers and ranchers to support their livelihoods. Understanding both sides of this issue is critical because playa conservation does not happen in spite of landowners; it happens because of landowners,” says Daniels.

Over 80 percent of playas are located on private lands, thus conservation of these wetlands will require common sense solutions that help both people and wildlife make a living on the land. By understanding the distribution of playa modifications, resource managers can better protect playas with limited alterations and help restore those with more.

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“This information will allow us to take a giant step forward in targeting our playa conservation efforts,” says Christopher Rustay, PLJV Conservation Delivery Leader. “We will be able to determine which playas are most appropriate for conservation programs like the Conservation Reserve Program versus restoration efforts like NAWCA projects, as well as determine which playas are fossil playas, with too many impacts to justify conservation efforts.”

The end result of detailing playa status is improved decision making regarding playa conservation. These data will be incorporated into PLJV’s Probable Playas layer and the Playa Decision Support System—which helps developers and conservationists make decisions regarding playa conservation.


The public launch of the Playa Modifications Assessment is scheduled for later this year. If you would like to receive a launch announcement, please join our mailing list (<http://eepurl.com/3AnQ>) and select “Citizen Science” as one of the topics of interest.

For more information, contact Mirub Hamend at [mirub.hamend@pljv.org](mailto:mirub.hamend@pljv.org).



**Playa Modifications Assessment** Help us protect playas.

Playas are ephemeral wetlands found throughout the western great plains. They are important for birds and other wildlife, and they are the main source of recharge for the Ogallala Aquifer. Please help us improve our knowledge of playas by identifying modifications in the following images. To revisit the main training page click [here](#). For examples of specific modifications check the following: [Farmed Playas](#), [Pits](#), [Ditches](#).



10 acre playa

Do you see any modifications in the playa (e.g. farming, pits, ditches, etc.)?



The playa region lies at the heart of the Central Flyway, an important migration corridor that supports millions of birds every year, like this American Avocet. / Brian Slobe

## Monitoring Birds from River Bottom to Mountain Top with Citizen Scientists

*Steven D. Faccio, Conservation Biologist, and Judith C. Scarl, Conservation Biologist, Vermont Center for Ecostudies*

Every June for the past 25 years, they have awakened well before dawn, earlier than even these hearty birders would care to admit. Packing little more than binoculars, a stopwatch, and a clipboard, they drive in the dark to forested study sites across Vermont and the Northeast. And as the woods and mountaintops around them rouse into a dawn chorus of song, they begin to count birds for two of the Northeast's most comprehensive bird monitoring programs. Spanning an elevational gradient from river valley to mountain top, the Vermont Forest Bird Monitoring Program and Mountain Birdwatch, projects of the Vermont Center for Ecostudies, unite people and science to cost-effectively monitor bird populations.



A birder collects Vermont Forest Bird Monitoring data in an old growth hardwood stand in Vermont. / Steve Faccio, Vermont Center for Ecostudies

*Vermont Forest Bird Monitoring Program.* Over the past quarter-century, with the help a dedicated corps of skilled volunteer birders, the Vermont Forest Bird Monitoring Program (FBMP) has collected detailed, long-term data on interior forest songbird populations. As such, it has amassed a unique bank of habitat-specific information across a broad range of forest types. The numbers below give a sense of the project's scope:

25:	years of survey data
33:	Vermont FBMP study sites
58:	citizen-scientists participating in the project
136:	number of bird species encountered
2,670:	hours spent in the woods
4,950:	number of point counts conducted
54,045:	bird observations in the FBMP database

What's most unique about the FBMP is that it samples breeding bird populations at interior forest sites that are protected as conservation lands. While forests are dynamic and undergo occasional change due to natural disturbances (e.g. storms, disease, etc.), sampling birds at sites that are free from forest management eliminates a major source of habitat variability that can influence species distribution and abundance, and confound long-term population trends.

Although the FBMP isn't monitoring any state- or federally-listed species—in fact, most are relatively common woodland songbirds—about 20 of these “common” birds are considered “Species of Greatest Conservation Need” in the [Vermont Wildlife Action Plan](#), and/or listed as “Conservation Priority Species” by Partners in Flight. These include birds such as Wood Thrush, Black-throated Green Warbler, and Canada Warbler, which are quite abundant on FBMP point counts, and for which the forests of Vermont (and other northeast states) support a significant portion of their global breeding populations. Therefore, these states have a high responsibility to ensure these populations are sustainable over the long-term. And in the face of threats such as climate change and introduced pests, including the Emerald Ash Borer, Hemlock Woolly Adelgid, and Asian Longhorned Beetle, long-term monitoring data are even more critical.

FBMP data have been used to develop the Vermont Forest Resources Plan, to investigate the effects of a damaging ice storm on breeding bird populations (see [www.vtecostudies.org/PDF/Faccio\\_ForEco\\_186.pdf](http://www.vtecostudies.org/PDF/Faccio_ForEco_186.pdf)), and were the catalyst in developing a variety of land protection and forest management strategies aimed at stabilizing declin-

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ing populations of Canada Warbler (see [www.vtecostudies.org/PDF/CAWAreport05.pdf](http://www.vtecostudies.org/PDF/CAWAreport05.pdf)). Currently, we're working on a comprehensive analysis of this 25-year dataset that will result in both a peer-reviewed publication and a non-technical report to be entitled, *The Status of Vermont Forest Birds*. Together these publications will help policy makers, landowners, conservationists, and birdwatchers develop land-use and forest conservation strategies for the future.

*Mountain Birdwatch.* For many birdwatchers, hearing the fluty trills of a rare Bicknell's Thrush is worth a steep, wet, pre-dawn hike up a northern New England mountaintop. Bicknell's Thrush is ranked as globally vulnerable by the International Union for Conservation of Nature, and breeds in dense montane fir-spruce in northern New England and New York, as well as Québec and the Maritime provinces of Canada. This species winters in the Greater Antilles, with the majority of the population concentrated on the island of Hispaniola. Recent estimates suggest that global population numbers between 95,000-126,000 individuals. With recent evidence of decline, especially in Canada, the Bicknell's Thrush is currently being considered for federal endangered status in the U.S. Although the majority of all potential breeding habitat falls within Canada, extensive forestry practices have rendered much of these areas unsuitable for Bicknell's Thrush. Currently, more than half of the global Bicknell's Thrush population breeds in the high-elevation fir-spruce forests of NY, VT, NH, and ME. (see [www.sararegistry.gc.ca/virtual\\_sara/files/cosewic/sr\\_Bicknell%27s%20Thrush\\_0810\\_e.pdf](http://www.sararegistry.gc.ca/virtual_sara/files/cosewic/sr_Bicknell%27s%20Thrush_0810_e.pdf)).

Despite its small population size and limited range, Bicknell's Thrush was not systematically monitored until 2000; due to habitat inaccessibility, this species was rarely detected by broad-scale monitoring programs such as the Breeding Bird Survey. Mountain Birdwatch (MBW) was established in Vermont by scientists at the Vermont Center for Ecostudies to fill this gap in monitoring. In 2001, MBW was expanded to monitor five high-elevation songbirds across the montane forests of NY, VT, NH, and ME. In 2010, scientists revised MBW to include ten avian target species, stronger monitoring protocols, and collaboration with Canada for systematic, range-wide monitoring of Bicknell's Thrush. Data from this program have been used to establish protective management zones in the Green Mountain and White Mountain National Forests, appropriately site wind turbines and ski trails, implement and evaluate conservation plans for Bicknell's Thrush, and assess potential locations for new Important Bird Areas in Maine.

In the United States, the success of MBW relies on its dedicated team of citizen scientists. In 2014, approximately 100 volunteers committed to surveying more than 120 routes across four states during the month of June. Volunteers begin their survey before dawn, often hiking to their first station in the dark or camping near their site to catch the waking trills of the Bicknell's Thrush or the first clear notes of a White-throated Sparrow. While most volunteers adopt a single route, some dedicated citizen scientists pick up extra surveys on mountains that otherwise would not be adopted. In 2013, Maine volunteers Mike and Barb Zimmermann surveyed 9 routes, single-handedly collecting one-third of all Maine MBW data for that year!

Citizen scientists of both the FBMP and MBW collect data at a scale almost impossible to achieve without volunteers, and in the process, these programs foster a team of educated conservation stewards for Bicknell's Thrush and all northeast forest birds.

For more information, contact Steve Faccio at [sfaccio@vtecostudies.org](mailto:sfaccio@vtecostudies.org) or Judith C. Scarl at [jscarl@vtecostudies.org](mailto:jscarl@vtecostudies.org).



A Mountain Birdwatcher collects data at dawn on Hurricane Mountain, Adirondacks, New York. / Wendy Cole



## Citizen Science Documents Vital Habitat for Prioritizing Conservation Action in Maryland

*Matthew Cimitile, Conservation Communications and Public Affairs Specialist, Appalachian Mountains Joint Venture*

Armed with field maps and GPS's, a band of volunteers stalked the grounds of Savage River State Forest in northwest Maryland to observe and survey some of the state's most at-risk bird species. Over a two-year period, 14 volunteers assisted Audubon Maryland-DC in a [Bird Blitz](#), a short, rapid, citizen science-based survey that seeks to locate birds such as Cerulean Warbler, Golden-winged Warbler, and Wood Thrush off the beaten path. The observational data collected is being used to document the importance of areas in and around the State Forest to at-risk birds to support designation as an Important Bird Area (IBA)—high priority habitat where Audubon and other partners focus bird conservation action.



The Savage River State Forest in Western Maryland.  
/ David Curson

Blitzes come in all forms. Some Blitzes seek out amphibians, others butterflies. Some can last over a period of weeks, others are conducted in a 24-hour span. For nearly a decade, Audubon Maryland-DC has harnessed the power of volunteers through Bird Blitzes for help in surveying a variety of habitats around the state to understand where key populations of at-risk birds occur during the breeding season. Since 2006, nearly 100 volunteers have conducted Blitzes resulting in the identification of 20 new IBAs in the state of Maryland.

“A Bird Blitz is an effective way to document IBAs because it uses a field method accessible to volunteer birders with little or no scientific training,” said David Curson, Audubon Maryland-DC’s Director of Bird Conservation. “This is possible because the criteria for identifying IBAs do not require accurate population estimates but rather good evidence that the population of at-risk birds exceeds a certain numerical threshold.”

Site-specific population data were largely missing for at-risk species in the rolling hills and mountains of northwest Maryland. Savage River State Forest makes up a critical part of this region. Comprising 54,000 acres, Savage River is the state’s largest forest—providing diverse habitat, preserving a strategic watershed, and offering abundant recreational opportunities. That this large expanse housed at-risk birds was likely, but evidence was needed.



Canada Warbler is a U.S. Fish and Wildlife Service Bird of Conservation Concern. / William Majoros

Leading up to the Bird Blitz, Audubon staff mapped out the routes volunteers would take throughout the forest in order to sample all suitable habitats for the at-risk birds they were hoping to sample. Each route could be covered in a 3 to 4 hour period and would place volunteers within 250 meters of most of the habitats likely to hold target bird species. Volunteers were on the lookout for at-risk species such as Alder Flycatcher, Blackburnian Warbler, Canada Warbler, Cerulean Warbler, Eastern Whip-poor-will, Golden-winged Warbler, Kentucky Warbler, Mourning Warbler, Red-headed Woodpecker, and Wood Thrush.

Equipped with the pre-loaded hiking routes on their GPS, volunteers hiked, listened, observed, and finally entered the location of all IBA trigger species into the GPS. During the Savage River Blitz, volunteers completed 28 surveys covering close to 160 kilometers of transects. Count totals included 120 Wood Thrush, 68 Canada Warblers, 32 Worm-eating War-

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blers, and 15 Cerulean Warblers. Field data were then compiled to generate spatial maps for use in the IBA designation process.

Areas with an IBA designation are critical for land use advocacy and for helping bird conservation partners and regional partnerships like Migratory Bird Joint Ventures prioritize habitat management actions to deliver cost-efficient and effective conservation across the landscape.

“A critical component of our Joint Venture work is conservation design—understanding where on the landscape we need to focus our work and resources, and why that area is important,” said Appalachian Mountains Joint Venture Coordinator Todd Fearer. “Audubon’s IBA program is an important resource for providing our JV partners with that information. Plus, their citizen science approach is an excellent way to involve the general public and increase awareness about bird conservation efforts in the region.”

The IBA nomination package for Savage River is currently under review, with the designation decision to be made later this year. Meanwhile, Audubon Maryland-DC is looking to expand its IBA program to engage people in the monitoring, advocacy, and stewardship of these critical sites.

Thanks to the Maryland Department of Natural Resources for the State Wildlife Grant that supported Bird Blitz efforts in the state.

For more information, contact David Curson, Audubon Maryland-DC, at [dcursion@audubon.org](mailto:dcursion@audubon.org).

### *From eBird, Page 9*

policy and actions. For example, as part of *The State of the Birds 2011* and *2013 Reports*, we overlaid species distribution models onto maps of public and private lands, from the U.S. Geological Survey’s Gap Analysis Protected Areas Database, to determine the stewardship responsibilities of federal and state agencies, as well as farmers, ranchers, and private forest owners, for conserving U.S. bird populations.

*What’s next?* Global climate change, land conversion, and human population growth present significant conservation challenges that require understanding processes occurring at continental and global scales. The dynamic nature of these processes requires the ability to monitor systems across full annual cycles—both to identify threats and evaluate conservation actions. eBird is well poised to provide a solution. Expanding the data-delivery capacity of the eBird enterprise to meet these demands will be our primary focus over the next decade.

For more information, contact Chris Wood at [cbris.wood@cornell.edu](mailto:cbris.wood@cornell.edu) or Ken Rosenberg at [kvr2@cornell.edu](mailto:kvr2@cornell.edu).



Wood Thrush is a U.S. Fish and Wildlife Bird of Conservation Concern. / Bill Hubick

## Citizen Science: The Key to Unlocking Collaborative Conservation for Birds

*Caren Cooper, Research Associate, Cornell Laboratory of Ornithology*

One of the biggest mysteries that puzzles ornithologists and birdwatchers alike is not about the songs of birds, or their nesting, or even their migration. The biggest mystery about birds is how humanity can best co-exist with them. When we manage our natural resources, we cannot tell birds when to migrate, which routes to take, or where to nest. We can only manage people and habitats in ways that we think will influence birds for the better. Can citizen science help provide answers to resolve this co-existence mystery? We think so.

### New Citizen Science Association

A brand-new Citizen Science Association (CSA) is taking shape in response to the growing number of citizen science endeavors around the world. The data gathered by massive numbers of volunteers involved with these endeavors are important for studies in many scientific disciplines, including those focused on fish, birds, weather, stars, health, and so many more.

The Citizen Science Association is inspired by a vision of a world where people understand, value, and participate in science. To increase the growth and quality of citizen science projects around the globe, the CSA mission is to foster communication, collaboration, and professional development in citizen science.

The CSA is offering free inaugural membership for 2014, to grow, unite, and guide this global community of practice focused on public participation in science. The CSA recognizes all forms of citizen science and focuses on building the community of practice involving those who organize volunteers.

For more information about the Association, visit [CitizenScienceAssociation.org](http://CitizenScienceAssociation.org).

A lot can be accomplished without citizen science. Scientists are taught to do research, publish it, and to tell managers about their findings. Birdwatchers are taught to join conservation organizations, adopt green behaviors, and write to elected officials. In this way, bird conservation is a balanced mix of rigorous science and shared public values and it gets us pretty far.

But birdwatchers collect a lot of information that can be used to achieve our desire for bird conservation—if we make effective use of it. In this way, bird watchers become citizen scientists.

Citizen science is a way to discover more about birds and leverage the human dimension of conservation. With it we can gain both a shared understanding of birds and a shared concern for birds. Here are three ways citizen science expands our options for conservation:

*First, citizen science not only makes good science but also fosters good citizenship.* Good citizenship arises because people are empowered by the process of co-creating knowledge. There is something transformative about discovery—new knowledge enables people to see the world differently—which is a major force for change. When birdwatchers join citizen science projects, they are entering a powerful collaborative effort.

Birdwatchers have always been responsive to conservation. In response to declines in bird species at the turn of the nineteenth to twentieth centuries, people shifted from killing birds to watching them, and the

term “birdwatching” was born. Conservation-oriented birdwatchers transformed the Christmas Side Hunt into the Christmas Bird Count. They switched from collecting eggs to monitoring nests. In the 1960s, Rachel Carson’s *Silent Spring* sparked the formation of the Breeding Bird Survey and the Nest Record Cards (now called [NestWatch](#)).

Birdwatchers, and serious birders, are adjusting their hobbies to advance research and conservation. Most recently, concern for birds moved eBirders to see the value of not only reporting additions to their life lists, but in repeatedly creating complete checklists that indicate the presence and absences of species at a site. As birdwatchers discover what’s possible with their collective observations, through programs such as eBird and Breeding Bird Survey, they increasingly engage in citizen science. In the past, by the thousands. Now by the tens of thousands. One day, perhaps, by the millions. (See [article](#) on the use of citizen science in global bird research.)

Joining with others in citizen science to gain a shared understanding of the world is a powerful feeling. Studies in informal science education have just begun to explore the empowerment aspects of citizen science.

*Continued next page*



One of the first evaluations of social impacts of citizen science began with a focus on learning and attitude changes from citizen science participation in ornithology in 2005. They found that people learned more about birds, but didn't detect changes in attitudes about birds or science, probably because people self-select into the project and came to the project with highly positive attitudes already. Since then other studies have found that participation by "newbies" in citizen science can lead to more positive attitudes about science. Now new, more sensitive, evaluation instruments have been developed and we await more studies of participants in ornithological citizen science.

Meanwhile, studies of citizen science in other disciplines have found that participation can lead to increases in awareness, knowledge, interest, skills, attitudes, and conservation behaviors. For example, in Texas, researchers documented that volunteers who monitor water quality gained social capital through community networking on environmental issues and this has led to increased capability of the community to address these issues.

In North Carolina, researchers found that volunteers monitoring the nesting of Loggerhead Sea Turtles gained local expertise and now co-manage this endangered species with the state agency. They even undertake adaptive management by adjusting their field practices according to the results of the monitoring.

In the Midwest, researchers found that people monitoring Monarch butterfly larva have experienced an increase in their feelings of connection with nature, which subsequently led to conservation actions. In Louisiana, vulnerable communities collected data on exposures to health risks after the Gulf Oil Spill. These data made their way into the hands of policy-makers (though sadly did not result in new policy). In the western U.S., collaborative monitoring of forest resources by immigrant communities built trust among agencies and stakeholders.

Taken together, it seems that citizen science can create communities with resilience that arises from being able to learn and respond.

*Second, citizen science is one of the few tools for the study and management of residential lands.* While much of the nation's public lands remain important natural areas for birds, residential lands matter too. According to *The State of the Birds 2012 Report*, about 60 percent of land in the United States is privately owned. In western states, public lands abound, but in the East, some states are as much as 98 percent private. We cannot rely on public lands to harbor and sustain all bird species. As urban sprawl increases, residential communities hold the potential to make or break conservation efforts. Landowners engage, intentionally and unintentionally, in actions that affect, for better or worse, the conservation of birds.

Citizen science projects like [YardMap](#) are designed to increase people's capacity to manage their residential lands for birds. Imagine implementing the recommendations from books like Steve Kress's [The Bird Garden](#) and collectively evaluating each recommendation via YardMap? Logistically, how else can we study and effectively manage millions of dispersed, relatively tiny parcels of land in a coordinated way? As managers of their own property, the public has the potential to adaptively manage residential landscapes at scales that have continental significance. Citizen science thus can bring inclusive and deliberative approaches to create a new culture of land-use practices with significant conservation potential. In this scenario, citizen scientists become agents of the public good and facilitators of research and conservation.

### The USA Phenology Network

Phenology refers to recurring plant and animal life cycle stages, such as emergence of insects and migration of birds, and the study of the timing of these stages and their relationships to weather and climate.

The USA National Phenology Network encourages people of all ages and backgrounds to observe and record phenology as a way to discover and explore the nature and pace of our dynamic world. The Network makes phenology data, models, and related information freely available to empower scientists, resource managers, and the public in decision-making and adapting to variable and changing climates and environments.

The USA-NPN developed [Nature's Notebook](#), a project focused on collecting standardized ground observations of phenology by researchers, students and volunteers. The program also fosters phenology communities of practice, and the development of tools and techniques to support a wide range of decisions made routinely by citizens, managers, scientists, and others, including decisions related to allergies, wildfires, water, and conservation.

For more information, visit [www.usanpn.org/about](http://www.usanpn.org/about).

*The North American Bird Conservation Initiative (NABCI) is a coalition of organizations and partnerships dedicated to advancing integrated bird conservation in North America.*

*The vision of NABCI is to see populations and habitats of North America's birds protected, restored, and enhanced through coordinated efforts at international, national, regional, state, and local levels, guided by sound science and effective management.*

*The goal of NABCI is to deliver the full spectrum of bird conservation through regionally based, biologically driven, landscape-oriented partnerships.*

*The All-Bird Bulletin is the news and information-sharing publication of the U.S. NABCI Committee. [www.nabci-us.org](http://www.nabci-us.org)*

*For subscription or submission inquiries, contact the Editor, Roxanne Bogart, U.S. Fish and Wildlife Service, 413-253-8582 or [Roxanne.Bogart@fws.gov](mailto:Roxanne.Bogart@fws.gov). To download back issues, visit [www.nabci-us.org/allbirdbulletin.htm](http://www.nabci-us.org/allbirdbulletin.htm).*

*The All-Bird Bulletin publishes information on infrastructure, planning, science, funding, and other advancements in the field of integrated bird conservation and management. For submissions, include author's name, organization, title, and contact information. Pictures are welcome but not necessary.*

*Third, citizen science is a way for the public to bring both values and knowledge to the decision-making table. The perspectives, ideas, values, and opinions of members of the public are valid influences on policy, and these can be benchmarks that decision makers use to make informed judgments on issues. Through participation in citizen science, members of the public can also contribute to the other key part of the decision-making equation: formation of scientific knowledge. For example, scientific research via citizen science could tell policy makers how many birds might be at risk from the placement of a communication tower along a flyway; public values can tell policy makers the benchmark, that is, the amount of risk that is acceptable.*

Thus, with citizen science the most heightened civic engagement is possible: contributions to the formation of new knowledge and articulation of values. People can hold different values, disagree in their opinions, and be informed by different experiences, but knowledge derived from sound science is reliable, repeatable, and indisputable. With citizen science, the public can engage in the science and that leaves room for public discourse on the values. The cautionary flag is to avoid inadvertent advocacy by clearly distinguishing value judgments from scientific information. Citizens can by all means contribute both but must do so distinctly.

Citizen science advances scientific research, provides informal science education, can facilitate social and environmental change, brings fulfillment, joy, enriching experiences, and scientific discoveries, creates networks with social capital, and the list goes on. Despite how far citizen science has taken us, however, it is still in its infancy.

The bottom line is that the participatory process of citizen science is operating in the service of society by informing collaborative conservation decisions and solutions based on shared evidence and shared values.

*For more information, contact Caren Cooper at [caren.cooper@cornell.edu](mailto:caren.cooper@cornell.edu). For more on citizen science, follow Caren on Twitter @CoopSciScoop.*

### ***From Pacific Northwest, Page 11***

By integrating eBird Northwest and Avian Knowledge Northwest, conservation partners in the Pacific Northwest are harnessing state-of-the-art, 21st century data technologies to meet NABCI's critical objectives for monitoring, data management and accessibility, and science-driven conservation and management. Federal and state agency partners are using these technologies to further engage the public in protecting and restoring native bird populations and their habitats, which ultimately may lead not only to healthier environmental conditions for birds but also greater public support for their conservation.

*For more information, contact John Alexander at [jda@klamathbird.org](mailto:jda@klamathbird.org) or Eric Gardner at [eric.gardner@dfw.wa.gov](mailto:eric.gardner@dfw.wa.gov).*



Waterfowl at Klamath National Wildlife Refuge. / J. Livaudais