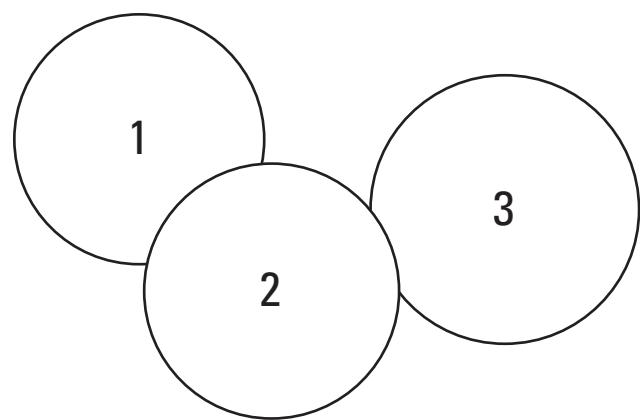


Strategic Plan for the North American Breeding Bird Survey: 2006-2010



Circular 1307



1. Magnolia Warbler
2. Hooded Oriole
3. Red-breasted Nuthatch

Strategic Plan for the North American Breeding Bird Survey: 2006-2010

Prepared in cooperation with Environment Canada's Canadian Wildlife Service
and Mexico's National Commission for the Knowledge and Use of Biodiversity

Circular 1307

**U.S. Department of the Interior
U.S. Geological Survey**

U.S. Department of the Interior
DIRK KEMPTHORNE, Secretary

U.S. Geological Survey
Mark D. Myers, Director

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Contents

Foreword	iv
Acknowledgments.....	iv
Executive Summary.....	v
What is the North American Breeding Bird Survey?.....	1
Who participates in the BBS?	1
History of the BBS.....	1
What is the purpose of the North American Breeding Bird Survey?.....	2
How are BBS data used?.....	3
What are the organizational context and role of the program?.....	4
Strategic Goals of the North American Breeding Bird Survey.....	5
References Cited.....	8

Figures

1. BBS participants come from all walks of life. However, 54 percent are natural resource professionals.....	1
2. Total number of BBS routes sampled annually, 1966 – 2005	5

Tables

1. Strategic Plan goals, strategies, objectives, actions, outcomes, and measures for achieving the mission of the North American Breeding Bird Survey program.....	10
2. Timeline for accomplishing action items.....	16

Strategic Plan for the North American Breeding Bird Survey: 2006-2010

A publication of the North American Breeding Bird Survey program under the auspices of the U.S. Geological Survey, Environment Canada's Canadian Wildlife Service, and Mexico's National Commission for the Knowledge and Use of Biodiversity.

Foreword

In November 2005, a group of experts and stakeholders in the North American Breeding Bird Survey (BBS) met to assist in the development of a 5-year strategic plan for the program. The primary charge of workshop participants was to revisit and revise the tasks remaining from the 2000 review, to identify emerging issues, and to set priorities for making progress on those tasks over the next 5 years. The larger context for this workshop was to develop a work plan for the BBS that helps meet the broader strategic goals of the project organizers, the U.S. Geological Survey and the Canadian Wildlife Service, including the establishment of a Mexican BBS program in collaboration with the National Commission for the Knowledge and Use of Biodiversity. Although placed in the context of a 5-year timeframe, it is recognized that full implementation of the plan may take decades. As such, the strategic plan should be revisited every 5 years to evaluate progress and reprioritize goals, objectives, and strategies as necessary.

Acknowledgments

The value of this Plan lies in the input it incorporates from a wide variety of experts and stakeholders. Participants in the initial face-to-face discussions, organized by Keith Pardieck and David Ziolkowski, Jr., and facilitated by Karen Buehler (K.L. Buehler and Associates, Inc., Alexandria, Va.) and Tom Will, included the following:

Name	Organization
Humberto Berlanga	National Commission for the Knowledge and Use of Biodiversity (Mexico) / North American Bird Conservation Initiative
Connie Downes	Environment Canada's Canadian Wildlife Service
Paul V. Dresler	USGS Status and Trends Program
Erica H. Dunn	Environment Canada / Partners in Flight
Charles M. Francis	Environment Canada's Canadian Wildlife Service
Michael Green	USFWS Migratory Bird Office (Region 1)
Marshall A. Howe	USGS Patuxent Wildlife Research Center
Eduardo E. Iñigo-Elias	Cornell Laboratory of Ornithology
Neal D. Niemuth	USFWS Habitat and Population Evaluation Team
Keith L. Pardieck	USGS Patuxent Wildlife Research Center
J. Andy Royle	USGS Patuxent Wildlife Research Center
John R. Sauer	USGS Patuxent Wildlife Research Center
Todd Schneider	Georgia Department of Natural Resources
Ted R. Simons	North Carolina State Univ./USGS Coop. Research Unit
Wayne E. Thogmartin	USGS Upper Midwest Environmental Science Center
Tom C. Will	USFWS Migratory Bird Office (Region 3) / Partners in Flight
Sartor O. Williams, III	New Mexico Department of Game and Fish
David J. Ziolkowski, Jr.	USGS Patuxent Wildlife Research Center



The Rusty Blackbird is an ecologically unique species with more than 80 percent of its breeding population in the northern boreal forest. Poorly sampled and widely believed to be declining, this species illustrates the need for expanded monitoring effort in the region. Photo by Gerhard Hofmann.

Unable to attend the initial discussions, Peter Blancher and Brian Collins provided written comments for consideration. Input from additional experts was sought on early drafts of this Plan, and the final version benefited from contributions made by Jim Nichols, Ken Pollock, and Terry Rich.

Special thanks go to Tom Will for serving as the workshop facilitator on the second day, and to Erica Dunn for composing the initial draft Plan. Keith Pardieck compiled and edited subsequent iterations, and advanced the draft Plan through its final stages. Dave Ziolkowski, Jr., compiled photos and figures, and prepared captions.

We also acknowledge Dale Simmons and Denis Sun of USGS Publishing Service Center 3, who provided final copy editing and layout design services for this publication.

The USGS Status and Trends of Biological Resources Program, Biological Resources Discipline, funded publication of this Plan.

Executive Summary

The mission of the North American Breeding Bird Survey (BBS) is to provide scientifically credible measures of the status and trends of North American bird populations at continental and regional scales to inform biologically sound conservation and management actions. Determining population trends, relative abundance, and distributions of North American avifauna is critical for identifying conservation priorities, determining appropriate conservation actions, and evaluating those actions. The BBS program, jointly coordinated by the U.S. Geological Survey and Environment Canada's Canadian Wildlife Service, provides the U.S. and Canadian Federal governments, state and provincial agencies, other conservation practitioners, and the general public with science-based avian population trend estimates and other information for regional and national species' population assessments.

Despite the demonstrated value of the BBS for furthering avian conservation across North America, its importance is often underappreciated, and it is underfunded compared with many other government-supported programs that report on status of the environment. Today, BBS resources, adjusted for inflation, are below the amount allocated in the 1970s and are still only sufficient to support two biologists. Yet the number of routes, participants, data, and data requests has quadrupled. Data and information management and delivery requirements and security concerns, non-existent in 1966, impose further demands on BBS resources. In addition, the Mexican expansion of the BBS offers new hope for a truly continental approach to avian conservation, but also brings additional challenges. Meeting the goals of this plan will take

cooperation among myriad stakeholders; yet, even with collaboration, most objectives of this plan will be unattainable if BBS program support is not increased.

The BBS developed this strategic plan to help set priorities and identify resources required for the program to continue to meet the evolving needs of the conservation community for information on bird population change. By setting clear goals, strategies, and measures of success, this plan provides a cohesive framework and vision for maintenance and development of the BBS. The plan identifies two major goals for the BBS, with a number of strategies and objectives to achieve these goals. Over the next 5 years, progress made in addressing each long-term goal and its associated 5-year strategies and objectives will gage the plan's success. Specific actions, projected outcomes, and measures of success related to accomplishing these are outlined in Table 1, with a timeline in Table 2.

The two main goals for the program, with a summary of the strategies to achieve them, are:

Goal 1: Collect scientifically credible measures of the status and trends of North American bird populations at continental and regional scales.

The North American Breeding Bird Survey will continue to support North American natural resource conservation through the collection of scientifically credible measures of the status and trends of continental bird populations. While doing this, the BBS will work to improve the science behind the program to better meet its mission and the changing needs of the avian conservation community. In partnership with collaborators, the BBS will address detection probability bias and habitat bias, improve analytical methods, and more fully assess and account for observer quality. Moreover, the BBS will improve the quality and breadth of avian population data through strategic increases in route density and the establishment of a Mexican BBS program.

Goal 2: Ensure BBS data and analytical results are widely available and easily accessible for use by the avian conservation and management communities.

At the heart of the BBS lies a four-million-record database containing more than 40 years of data on more than 600 bird species. These data are of no value if not well maintained, appropriately analyzed, and widely and easily accessible. The USGS has greatly improved data management and accessibility in recent years. Trend estimates were first made available via the Internet in the mid-1990s, followed closely by the raw data with baseline metadata and standard operating procedures. Nevertheless, numerous enhancements to data management and the usability of BBS results will greatly improve the ability of the BBS to serve avian conservation goals. The BBS needs to ensure that BBS data and results presented on the web site use the best data-management practices and statistical methods, with adequate documentation for users to understand them and any differences between different trend estimates. Moreover, the BBS needs to increase communication with BBS partners and stakeholders to ensure that it continues to meet the avian population status and trends needs of the conservation community and to encourage the development of new products. Working with collaborators, the BBS will develop tools for integrating environmental parameters like habitat change into the analyses, and for integrating BBS data with other avian survey results. In addition, the BBS will continue to improve data and database management through the incorporation of additional data and data fields, such as georeferenced stop locations and more complete metadata for the raw data and results, thus enhancing the uses that can be made of the data.

Strategic Plan for the North American Breeding Bird Survey: 2006-2010

What is the North American Breeding Bird Survey?

The North American Breeding Bird Survey (BBS) is an international avian survey, conducted annually during the breeding season along thousands of roadside survey routes in the United States and Canada. Each route is 24.5 miles (39.2 km) long with counting locations placed at half-mile (800-m) intervals, for a total of 50 stops. At each stop, an observer skilled in avian identification conducts a 3-minute point count, recording every bird seen within a quarter-mile (400-m) radius and every bird heard. Operational for more than 40 years, the BBS has proven to be an inexpensive means of assessing range-wide population trends of a large number of species (Robbins and others, 1986).

Today the BBS provides the foundation for non-game, landbird conservation in North America with more than 2,200 skilled participants sampling 3,000 routes annually across the continental U.S. and southern Canada. Each year long-term population trends are calculated for more than 400 of the greater than 650 bird species recorded on BBS routes. These trends inform researchers and wildlife managers of significant changes in bird population levels and are utilized, along with other indicators, by the U.S. Fish and Wildlife Service, Canadian Wildlife Service, state wildlife agencies, and Partners in Flight to establish national and regional avian conservation priorities. Trends, along with both raw and summarized data, are made available on the Internet (<http://www.pwrc.usgs.gov/bbs>).

Who participates in the BBS?

More than 8,000 individuals have participated in the BBS over the last 4 decades, 75 percent of U.S. participants on a volunteer basis (87 percent of Canadian participants). Although the majority of participants are natural resource professionals, they come from all walks of life, including homemakers, students, business people, teachers, doctors, lawyers, scientists, and retirees, to name but a few (Fig. 1). The common threads that bind them to the BBS are their interest in birds, their desire to assist in avian conservation through better scientific knowledge, and their excellent avian identification skills.

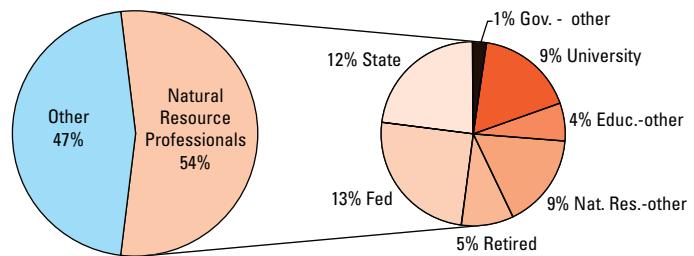
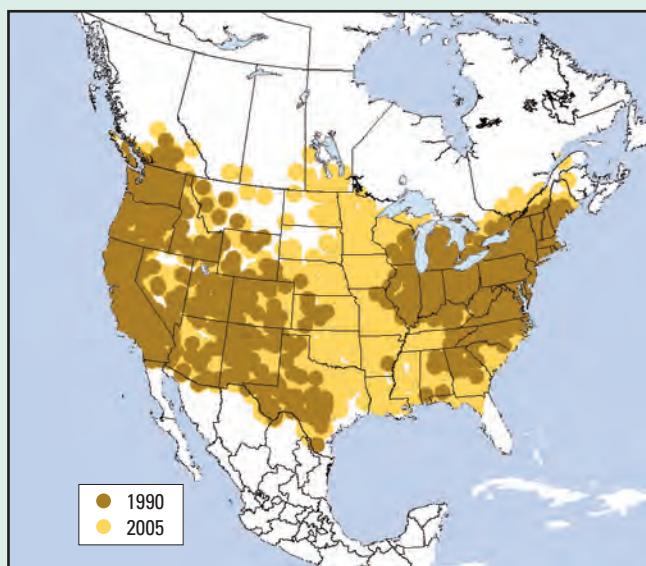
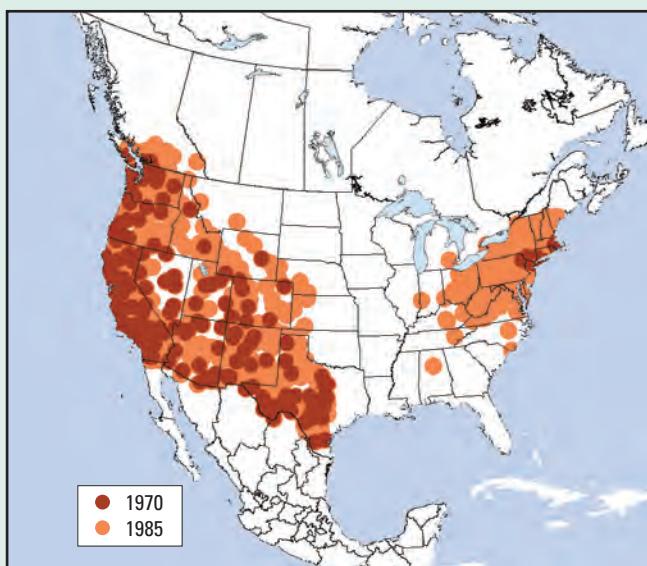


Figure 1. BBS participants come from all walks of life. However, 54 percent are natural resource professionals. (Source: 1997 USFWS BBS Participant Survey Results (<http://www.pwrc.usgs.gov/bbs/bbsnews/Poll98/>))

History of the BBS

In the early 1960s, widespread pesticide use, while potentially effective at controlling many harmful insects, was strongly suspected to be having harmful effects on bird populations. Unfortunately, no long-term regional or continental population data were available for most bird species, making it difficult to demonstrate changes in bird populations. In a bold initiative to remedy this information gap, Chandler S. Robbins and colleagues in the U.S. Fish and Wildlife Service developed the North American Breeding Bird Survey (BBS). Field-tested in Maryland and Delaware in 1965, the BBS was officially launched in 1966, utilizing 600 roadside routes to obtain range-wide population data on breeding birds in the eastern U.S. and Canada, with Tony Erskine taking the lead for the Canadian Wildlife Service. By 1968, the BBS sampled more than 1,200 routes and encompassed the contiguous United States and the southern half of all Canadian provinces. The BBS has steadily grown since then to include more than 4,100 routes.

In excess of 300 scientific and conservation-based articles utilizing BBS data and trends have been published. Chandler Robbins, Danny Bystrak, and Paul Geissler firmly established the utility of the BBS for tracking large-scale avian population changes through their 1986 watershed publication, "The Breeding Bird Survey: Its First Fifteen Years, 1965 – 1979" (Robbins and others, 1986). In it they provided baseline population trend estimates for 230 North American bird species, documented the effects of extreme weather events on birds, and tracked the expansion of exotic and introduced species. In



Native to the western U.S., the expansion of the House Finch from a small introduced population in the northeast is illustrated here using data from four time periods. Such maps provide a dramatic example of how BBS data can be used to chart distributional changes in both native and exotic bird species.

1989, BBS data were instrumental in documenting large-scale population declines of neotropical migrant woodland bird species in eastern North America (Robbins and others, 1989), galvanizing research and conservation efforts to identify and reverse the causes of those declines. More recently, BBS data focused conservation attention on the plight of declining grassland bird populations (Peterjohn and Sauer, 1996; Peterjohn and Sauer, 1999; Pardieck and Sauer, 2000). Today the U.S. Fish and Wildlife Service, Canadian Wildlife Service, Partners in Flight, and the North American Bird Conservation Initiative rely upon the BBS, along with other indicators, to assess avian conservation priorities.

To ensure the continued relevance of the BBS to the goals of the sponsoring agencies, the USGS Patuxent Wildlife Research Center convened a Peer Review Panel in April 1999 to review scientific and operational aspects of the North American Breeding Bird Survey. The Panel noted the exceptional cost-effectiveness with which BBS fulfills a large number of important agency goals. They also recognized several aspects of the Program that should be addressed if the BBS is to maintain and increase its value for conservation purposes. These included technical issues related to BBS data collection, issues relating to BBS Office operations and management, and suggestions for new program directions (O'Connor and others, 2000). Of the 32 Panel recommendations, 8 have been completed, 12 have not been initiated, and 12 are ongoing, including BBS expansion into Mexico.

Efforts to make the BBS a truly North American program began in earnest in the early 1990s with a 3-year pilot project

to investigate the feasibility of establishing a Mexican BBS program. Study results indicated that expansion of the BBS into northern Mexico was technically feasible, but institutional and ornithological support within Mexico was insufficient at the time to maintain a long-term commitment. A decade later, the Mexican avian conservation community has grown substantially, as has their need for better avian population trend information. To this end, the Mexican National Commission for the Knowledge and Use of Biodiversity has partnered with the U.S. Geological Survey and the Canadian Wildlife Service to establish a Mexican BBS by 2010.

What is the purpose of the North American Breeding Bird Survey?

The purpose of the BBS is captured in its mission statement:

The North American Breeding Bird Survey provides scientifically credible measures of the status and trends of North American bird populations at continental and regional scales to inform biologically sound conservation and management actions.

A key feature of the BBS that distinguishes it from most other avian monitoring programs is the breadth of its geographical coverage. It is unique in providing annual information on distribution, abundance, and trends across most of

the breeding ranges of hundreds of species simultaneously. Because population change may differ among regions, no other survey is as useful as the BBS for documenting the status of relatively common and widespread species at a near-continental scale.

The primary functions of the BBS, in order of importance, are to:

1. Measure avian population change to help identify species' priorities for conservation, including:
 - estimation of interval-specific change (population trend) for time periods of management and scientific interest;
 - estimation of annual indices that also capture annual variation in bird numbers;
 - estimation of spatial patterns of population change.

These estimates will be made:

- for individual species and for defined groups of species (environmental indicators, community guilds);
 - within Bird Conservation Regions or larger areas;
 - at a resolution and accuracy useful for large-scale conservation planning (e.g., the Partners in Flight target: 80-percent power to detect a 50-percent decline over 20 years using a 2-tailed test and significance of 0.10 (Dunn and others, 2005)).
2. Provide avian count data for model-based conservation planning:

- for development of models that associate bird counts with environmental features such as habitat, landscape features, and weather;

- to test predictions from models of bird population change and the factors that might influence change;

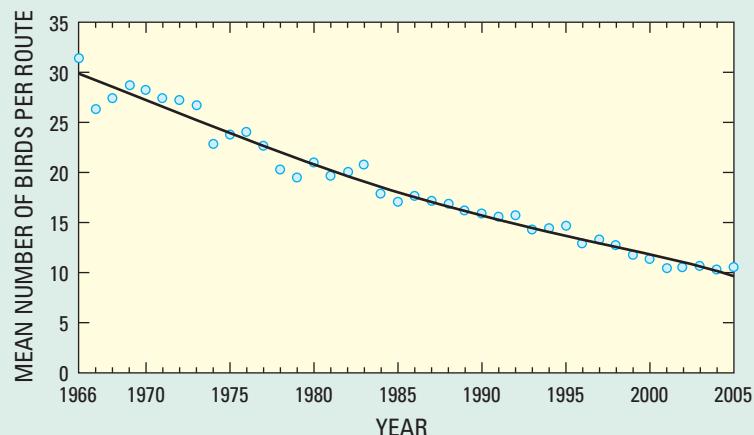
- for scientific studies investigating underlying variation in bird populations.

3. Provide avian count data for estimating species' population sizes:
 - to inform selection of population goals;
 - to assess population status relative to population goals.

How are BBS data used?

Results of the BBS are used in numerous ways “to inform biologically sound conservation and management actions,” and new means of doing so continue to be developed. Some of the ways BBS accomplishes this, with examples of each, include the following:

- Helps identify priorities for conservation, management, and additional research. The Partners in Flight North American Landbird Conservation Plan (Rich and others, 2004) drew heavily on BBS results to identify species and ecosystems of high conservation concern and stewardship responsibility.
- Assesses response of bird populations to collective conservation and management activities across their



The Eastern Meadowlark population trend summary from 1966 to 2005 illustrates the steady population decline witnessed for this species. Grassland birds as a whole have experienced steeper, more consistent declines than any other avian group during this period. Photo by Gary Rosenberg. Graph source: Sauer and others, 2005.

4 Strategic Plan for the North American Breeding Bird Survey: 2006-2010

ranges. BBS data are increasingly being used to estimate population size, set population objectives, and keep track of annual changes in populations to determine whether targets are being met.

- Provides context for local- to regional-scale abundance and trends, so they can be appropriately interpreted. Population changes in natural reserves (such as national parks) or in areas of habitat management (such as riparian restoration projects or forestry tracts) must be interpreted in the context of broad-scale population changes that take place independently of local action.
- Contributes data to a wide variety of research and conservation applications. BBS counts can be combined with habitat and other data to develop spatially explicit models that provide insight into causative factors and broad-scale patterns in distribution and abundance, which in turn provide guidance for conservation action.
- Provides basic biological data on the distribution and abundance of North American birds that are used for educational purposes. Relative abundance estimates; species richness estimates; and species lists for routes, states, regions, and countries derived from BBS data are used to demonstrate biological principles in the

classroom and provide regionally explicit information on bird distributions to the general public. Such data can also be used to inform policy makers of the importance of various ecosystems and regions for maintenance of avian biodiversity.

What are the organizational context and role of the program?

The BBS is run jointly by the U.S. Geological Survey (USGS), as part of the program on Status and Trends of Biological Resources, and by Environment Canada's Canadian Wildlife Service (CWS). It helps to address specific USGS goals of measuring biological health, and responds to the needs of scientists, land and resource managers, policy makers, and the public. BBS contributes to the CWS mandate to conserve wildlife and the ecosystems of which they are a part. While the BBS is not yet established in Mexico, the National Commission for the Knowledge and Use of Biodiversity (CONABIO) is committed to the development of a Mexican BBS program to address avian population information needs in that country and complete the continental picture.

Strategic Goals of the North American Breeding Bird Survey

The two primary goals of the BBS program are inter-related and of approximately equal importance.

- Strategies within each goal are listed in approximate order of priority.
- Objectives listed are all high priority within their respective Strategy.

Action items to achieve specific objectives are listed in Table 1, and are labelled as H(igh), M(edium), or L(ow) priority. Low-priority items may be addressed early on if they are easy to do without deflecting attention from higher priority actions. Priorities are the same for all participating countries except where otherwise noted. Table 2 indicates the timeline for accomplishing each action.

These goals flow directly from the BBS mission statement and provide the framework for guiding future work on the Breeding Bird Survey:

Goal 1: Collect scientifically credible measures of the status and trends of North American bird populations at continental and regional scales.

Goal 2: Ensure BBS data and analytical results are widely available and easily accessible for use by the avian conservation and management communities.

It should be understood that many of the objectives and actions outlined below for meeting these goals address new

work or support that is needed to further strengthen the BBS. Additional resources are therefore required, beyond those currently allocated to the ongoing program, to achieve these goals.

Goal 1: Collect scientifically credible measures of the status and trends of North American bird populations at continental and regional scales.

Strategy 1A: Build sufficient financial and in-kind support for the BBS to ensure continued operation of the BBS program, while enhancing the scientific credibility, improving geographic coverage, and increasing use and availability of the data.

Despite the demonstrated value of the BBS for furthering avian conservation across North America, the importance of BBS is often underappreciated, and underfunded compared with many other government-supported programs that report on status of the environment. Beginning in the early 1970s when the BBS consisted of little more than 1,000 routes, the U.S. staff consisted of two biologists to coordinate the effort and to receive, manage, analyze, and make available the information collected. Today, BBS resources within the U.S. office, adjusted for inflation, are below the amount allocated in the 1970s and still are sufficient to support only two biologists. Yet the number of routes, participants, data, and data requests has quadrupled (Fig. 2). Data and information management and delivery requirements and security concerns, non-existent

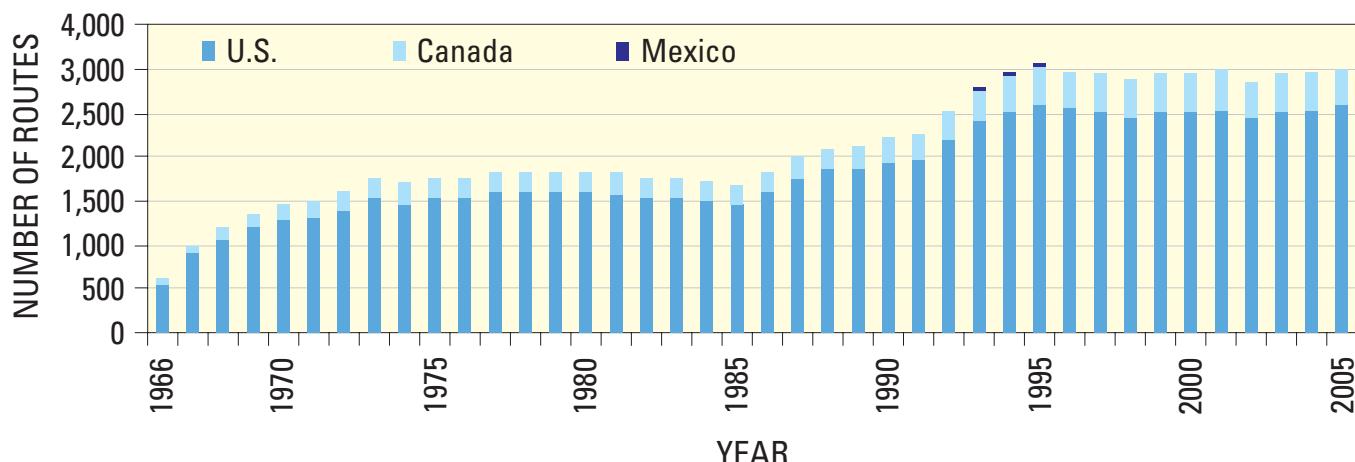


Figure 2. Total number of BBS routes sampled annually, 1966 – 2005. (Includes route totals from Mexican pilot project conducted 1993 – 1995.)

6 Strategic Plan for the North American Breeding Bird Survey: 2006-2010

in 1966, impose additional demands for BBS resources. Current resource levels are barely sufficient to maintain the survey at current levels; additional resources are needed to implement most of the actions identified in this plan.

Objective 1A1: Increase awareness of policy makers and management agencies of the existence and value of the BBS program, and use this awareness to increase support for the program.

Objective 1A2: Ensure an adequate volunteer participant base through increasing support to state/provincial/territorial coordinators and continued development and implementation of ideas for retention and recruitment of participants.

Objective 1A3: Ensure database and electronic infrastructure (e.g., web connectivity) are adequately supported to meet ever-changing technological advances and security concerns to enable timely and accurate data collection and distribution.

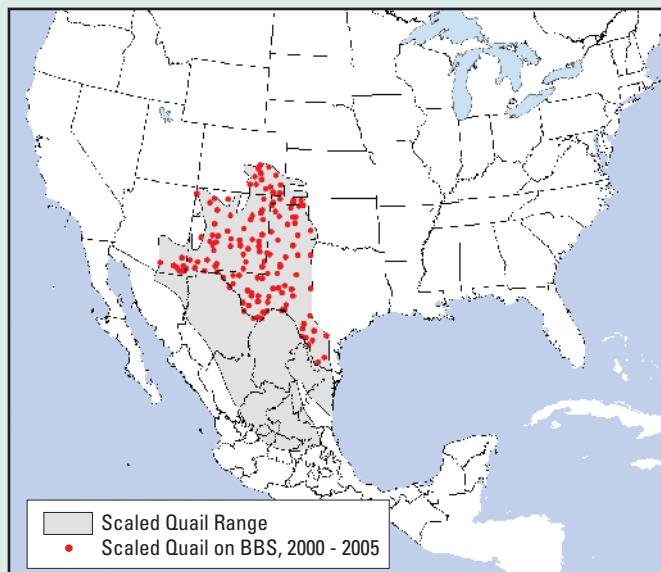
Strategy 1B: Strengthen the scientific credibility of BBS results at continental and regional scales.

Although BBS data are currently widely used for many different purposes, there are concerns about possible bias due to variation in detection probabilities, uneven habitat cover-

age, and observer quality. The proportion of birds detected is known to vary among species, habitats, time of day, date in season, observer, amount of traffic, and many other factors. Systematic variation in detection probabilities over time or space could bias estimates of population attributes. A major limitation of the BBS is that routes are laid out on roads. Roads may not sample certain types of habitat, and trends in both habitat and birds may be different along roads than elsewhere. Routes with increasingly heavy traffic are abandoned, potentially introducing another habitat bias. BBS participants are skilled observers, often with years of field experience. Nonetheless, skill levels are not equal and there is no documentation of skill levels. Documenting skill levels could increase confidence in the survey, and reducing variation in skill levels could increase precision of estimates.

Objective 1B1: Implement projects to evaluate the magnitude of potential bias due to variation in detection probability associated with species detection variation, observer variation, and traffic noise and habitat issues, and determine whether any approaches for estimating detection probability can be routinely implemented in the BBS.

Objective 1B2: Evaluate the magnitude of potential bias associated with non-random coverage of habitats, considering differences in habitat availability and habitat change along BBS routes compared with



The distribution of the Scaled Quail, a popular game bird of the southwestern U.S., extends into poorly monitored regions of northern Mexico. Comprehensive population assessments for this and other cross-border species are hampered by the lack of corresponding data from these regions. Photo by Gary Rosenberg. Map source: revised from Schemnitz, 1994.

the broader landscape as well as differences in bird distribution and detectability in relation to roadsides, and develop analytic or operational strategies for addressing any resultant bias.

Objective 1B3: Develop assessment and training tools to assess current skill levels of observers, and to enhance skill levels, particularly for new recruits, thus reducing variation in observer effects.

Strategy 1C: Improve geographic coverage of the BBS.

BBS routes were initially set up evenly across the survey area. However, routes have been added in regions with high volunteer density, and existing routes are not always covered. Much of northern Canada is not sampled at all, so data for many species come from only a small proportion of a species range. As a result, trend information for those species cannot be considered reliable, as it only represents a small portion of their range. No routes are currently run in Mexico, but Dunn and others (2005) estimated that a BBS-style program could provide adequate population trend estimates for more than 80 bird species found in northern Mexico.

Objective 1C1: Increase BBS route coverage in areas within the current BBS area that are currently undersampled, through strategic recruitment or reallocation of existing volunteers.

Objective 1C2: Work with Mexican authorities to expand the BBS into Mexico by the year 2010.

Objective 1C3: Develop innovative approaches to survey poorly sampled areas in such a way that data can be integrated with the larger database for analytic purposes. Options to be considered include short routes, off-road routes, use of microphone recordings to calibrate observer effects, etc.

Goal 2: Ensure BBS data and analytical results are widely available and easily accessible for use by the avian conservation and management communities.

Strategy 2A: Ensure that BBS data and results presented on the web site use the best data-management practices and statistical methods, with

adequate documentation for users to understand them.

Results from the BBS can be used to inform conservation and management actions only if the data, results from analyses of those data, and interpretations of those results are all widely and easily available to users. Data must be available in ways that are easily understood by users, and analyzed in statistically defensible ways. Currently, population trend estimates are provided on both USGS and CWS web sites, but using different statistical methods, with somewhat different results. Furthermore, new statistical approaches (e.g., hierarchical models) have been published, and presented as improvements, but not yet implemented in an operational context. Such diversity of approaches, while a healthy component of scientific research, can confuse users and undermine credibility of the survey if not adequately documented and explained. Data-management needs are also evolving as the survey expands, as additional data are collected (such as detectability measures or habitat data), and with increased demand for interoperability with other programs.

Objective 2A1: Continue to improve and add value to the results and information presented on the BBS web site by ensuring that the most appropriate analysis methods are used, that these methods provide the information required by users, and that the approaches are adequately documented.

Objective 2A2: Continue to improve database management to cope with increased data collection, and to ensure that best available data-management practices are met.

Strategy 2B: Increase communication with BBS partners and stakeholders to ensure BBS continues to meet the avian population status and trends needs of the conservation community and to encourage the development of new products.

The successful execution of this Plan and the continued relevance of the BBS for avian conservation depend upon open communication between BBS partners and stakeholders.

Objective 2B1: Increase communications with key users of BBS data.

Objective 2B2: Promote development of products by partners that synthesize and interpret BBS results.

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Tables 1-2

Table 1. Strategic Plan goals, strategies, objectives, actions, outcomes, and measures for achieving the mission of the North American Breeding Bird Survey program.

Goal 1: Collect scientifically credible measures of the status and trends of North American bird populations at continental and regional scales.		
Strategy 1A: Build sufficient financial and in-kind support for the BBS to ensure continued operation of the BBS program, while enhancing the scientific credibility, improving geographic coverage, and increasing use and availability of the data.		
Objective 1A1: Increase awareness of policy makers and management agencies of the existence and value of the BBS program, and use this awareness to increase support for the program.		
Action	Outcome	Measures
1A1a (H). Form a working group to develop ideas for increasing support to BBS, and to assist with and evaluate progress on accomplishing the objective. Ideas may include seeking increased base support and cyclical funds, or forming a BBS endowment under a non-government organization.	<ul style="list-style-type: none"> Ideas identified to increase base funding. Funding increased to accomplish other objectives, through appropriate implementation of these ideas. 	<ul style="list-style-type: none"> Working group established. Appropriate ideas developed and implemented. Base funding increased to accomplish objectives.
1A1b (H). Develop and distribute a publicity packet, ask users like Partners in Flight to highlight the importance of BBS to them, show connections and benefits to industry.	<ul style="list-style-type: none"> Raised awareness among the general public and policy makers of the importance and utility of BBS increases support for program. 	<ul style="list-style-type: none"> Outreach and publicity products developed and distributed to key partners including industry.
1A1c (L). Update bibliography of scientific and conservation documents that use BBS data.	<ul style="list-style-type: none"> Importance of BBS for science and conservation emphasized. Provides additional fuel for outreach. 	<ul style="list-style-type: none"> Bibliography completed and maintained.
Objective 1A2: Ensure an adequate volunteer participant base through increasing support to state/provincial/territorial coordinators and continued development and implementation of ideas for retention and recruitment of participants.		
Action	Outcome	Measures
1A2a (M). Develop stronger partnerships with state and provincial/territorial conservation agencies and encourage incorporation of BBS into official duties of their staff by running routes and/or being regional coordinators.	<ul style="list-style-type: none"> State/provincial resources available to assist in meeting route coverage goals (e.g., remote route coverage) and training goals. BBS better integrated with conservation initiatives and with local monitoring programs. 	<ul style="list-style-type: none"> 30% of states have increased commitment to BBS. At least two provinces have additional staff contributing to BBS.
1A2b (H). Form working group to further develop, prioritize, and implement participant outreach and training strategies such as mentoring programs, BBS trainer modules, recruitment flyers, PowerPoint presentations, incorporation of BBS information in field guides, text books and teaching plans, and periodic publication of BBS related articles in popular magazines.	<ul style="list-style-type: none"> Greater participation in BBS program. Larger pool of trained participants. Reduced variation among participants due to training. 	<ul style="list-style-type: none"> New outreach and recruitment materials are developed. At least one new training program initiated. Rate of recruitment of new observers increases.
1A2c (H). Hold coordinator meetings at least every 3 years, with regional meetings more often as opportunities allow.	<ul style="list-style-type: none"> Improved communication between national offices and regional coordinators. Greater participation and outreach by regional coordinators. 	<ul style="list-style-type: none"> Coordinators meet every 2-3 years.

Table 1. Strategic Plan goals, strategies, objectives, actions, outcomes, and measures for achieving the mission of the North American Breeding Bird Survey program.—Continued

[(H), high priority; (M), medium priority; (L), low priority]			
Action	Outcome	Measures	
1A2d (H). Provide coordinators with improved recruitment and management resources such as Web-based handbook, revised and enhanced maps, and electronic outreach materials (e.g., fact sheet, PowerPoint, etc.).	<ul style="list-style-type: none"> Regional coordinators have more tools for recruiting participants. Satisfaction among program coordinators and participants improved. 	<ul style="list-style-type: none"> Web-based handbook available. Proportion of routes with improved maps. At least two new outreach products developed. 	
1A2e (M). Evaluate BBS staffing needs. Add support staff as needed.	<ul style="list-style-type: none"> Professional BBS staff able to engage more fully in development of outreach, training, and scientific products. 	<ul style="list-style-type: none"> Staffing needs evaluated and recommendations developed. Staff hired to meet recommended levels. 	
1A2f (L). Develop incentive strategies to encourage participation (e.g., encourage employers of skilled birders to support those employees' participation, offer awards for notable BBS achievements, highlight a participant on Web each year, etc.)	<ul style="list-style-type: none"> Participant retention increased through greater program satisfaction. 	<ul style="list-style-type: none"> At least two new retention strategies developed. Participant retention rate increased. 	
Objective 1A3: Ensure database and electronic infrastructure are adequately supported to meet ever-changing technological advances and security concerns to enable timely and accurate data collection and distribution.			
Action	Outcome	Measures	
1A3a (H). Evaluate BBS computer programming and support needs. Add staff as required to meet current maintenance and future needs.	<ul style="list-style-type: none"> BBS is able to meet avian conservation needs in a more timely and cohesive manner. BBS biologists are freed to address biological aspects of program. Data are processed more quickly and efficiently. Staff are available to ensure Web programs are updated as necessary and system is appropriately documented. 	<ul style="list-style-type: none"> Evaluation complete. Computer staff hired to meet needs. Web interfaces are more user-friendly and widely used. Data are available in a timely manner each year Database documentation is complete 	
Strategy 1B: Strengthen the scientific credibility of BBS results at continental and regional scales.			
Objective 1B1: Implement projects to evaluate the magnitude of potential bias due to variation in detection probability associated with species detection variation, observer variation, and traffic noise and habitat issues, and determine whether any approaches for estimating detection probability can be routinely implemented in the BBS.			
Action	Outcome	Measures	
1B1a (H): Establish working group to identify and set priorities for incorporation into the BBS protocol methods for examining systematic bias reduction protocols implemented on experimental basis. Results of experiments should lead to specific scientifically defensible recommendations for incorporating measures of detection probability into the BBS, and if feasible, a process and timetable for implementation over 5 years.	<ul style="list-style-type: none"> Studies conducted. Recommendations for incorporating detectability estimation protocols are developed, if appropriate. Confidence in BBS increased through increased understanding of factors influencing data. 	<ul style="list-style-type: none"> Working group established. Request for proposals issued. At least one such study initiated by the 2008 BBS season. Detectability measures have been assessed, and if appropriate, are routinely incorporated in the BBS. 	

Table 1. Strategic Plan goals, strategies, objectives, actions, outcomes, and measures for achieving the mission of the North American Breeding Bird Survey program.—Continued

Objective 1B2: Evaluate the magnitude of potential bias associated with non-random coverage of habitats, considering differences in habitat availability and habitat change along BBS routes compared with the broader landscape as well as differences in bird distribution and detectability in relation to roadsides, and develop analytic or operational strategies for addressing any resultant bias.			
Action	Outcome	Measures	
1B2a (H): Complete collection, entry, and validation of coordinates for all BBS stops, to enable better investigations of habitat and landscape effects on bird counts.	<ul style="list-style-type: none"> Precise locations are available for researchers to classify habitats along BBS routes. Periodic assessment of habitat change at BBS stops enabled. Other habitat specific studies enabled. 	<ul style="list-style-type: none"> 90% of stop locations georeferenced using GIS/GPS. 	
1B2b (H): Conduct a study at the largest possible scale (contingent on availability of remote sensing data) of the degree to which BBS routes sample habitats and altitudes representative. Study should result in recommendations for addressing any potential bias associated with unrepresentative sampling.	<ul style="list-style-type: none"> Magnitude of potential bias associated with uneven habitat sampling is understood. Strategies developed to reduce any potential bias, e.g., through altered analysis methods or sampling design. 	<ul style="list-style-type: none"> Study conducted and report prepared. Procedures developed and implemented to address habitat bias, if necessary. 	
1B2c (H): Conduct study using remotely sensed data to determine whether rates of change in habitats differ along roadsides versus away from roads.	<ul style="list-style-type: none"> Recommendations developed for standard analytic or operational procedures to address any resultant bias, if necessary. 	<ul style="list-style-type: none"> Study conducted and report prepared. Habitat adjustments incorporated into BBS analytic or operational procedures, if appropriate. 	
1B2d (M): Design and set priorities for additional studies to address issues of habitat bias. Studies might focus on particular groups of species.	<ul style="list-style-type: none"> Working group consisting of USGS, CWS, and other scientists provides guidance and support in addressing habitat bias issues established. Priorities for additional studies identified. 	<ul style="list-style-type: none"> Working group established by 2007. At least one habitat bias study initiated. 	
Objective 1B3: Develop assessment and training tools to assess current skill levels of observers, and to enhance skill levels, particularly for new recruits, thus reducing variation in observer effects.			
Action	Outcome	Measures	
1B3a (H): Develop training, assessment, and self-testing tools for current and potential volunteers.	<ul style="list-style-type: none"> Observer quality maintained and/or assessed through training and testing. 	<ul style="list-style-type: none"> Training and/or self-assessment tool developed. Recommendations for observer assessment developed. 	
1B3b (M): Develop recommendations for periodic observer hearing tests (informal vs. formal tests, mandatory vs. voluntary), set acceptable standards, develop and maintain results database.	<ul style="list-style-type: none"> Observer quality maintained at high levels and hearing-related observer bias reduced. 	<ul style="list-style-type: none"> Standards set for acceptable hearing and recommendations for hearing tests developed. Operational procedures in place for observers to take hearing tests. 	
Strategy 1C: Improve geographic coverage of the BBS.			
Objective 1C1: Increase BBS route coverage in areas within the current BBS area that are currently undersampled, through strategic recruitment or reallocation of existing volunteers.			
Action	Outcome	Measures	
1C1a (H): Develop and implement methods for optimal distribution and density of routes to improve coverage of all species with moderate to large range size and abundance, and develop guidelines for BBS coordinators on the best strategy for distributing volunteers.	<ul style="list-style-type: none"> BBS coordinators have clear guidelines on when and how to direct recruitment efforts. Precision of BBS trends improved through optimal allocation of routes. 	<ul style="list-style-type: none"> Optimal route allocation guidelines developed. 	

Table 1. Strategic Plan goals, strategies, objectives, actions, outcomes, and measures for achieving the mission of the North American Breeding Bird Survey program.—Continued

Objective 1C2: Work with Mexican authorities to expand the BBS into Mexico by the year 2010.		
Action	Outcome	Measures
1C1b (H): Implement strategic increases in route coverage to facilitate increase in number of species that meet precision targets at continental and regional scales. (Will require completion of action 1C1a.)	<ul style="list-style-type: none"> High-quality population trend information available for more bird species to enable better conservation planning. 	<ul style="list-style-type: none"> Proportion of recommended new routes that are actually covered.
Action	Outcome	Measures
1C2a (H): Conduct workshop at the North American Ornithological Conference in Veracruz, Mexico, in October 2006 to discuss implementation approaches, identify research needs, and develop working group to develop and implement strategy.	<ul style="list-style-type: none"> Working group identified to establish strategy and timeline for initiation of Mexican BBS program. Partners identified to assist with implementation and training. Research needs identified (e.g., Strategy 1C3). 	<ul style="list-style-type: none"> CONABIO, USGS, and CWS hold joint workshop at NAOC. Mexican coordinators and partners identified. Strategy and implementation plan developed.
1C2b (H for Mexico): Translate BBS materials and forms into Spanish.	<ul style="list-style-type: none"> Allows greater participation and outreach among non-English speakers. Increased participation among Mexican citizens. 	<ul style="list-style-type: none"> Essential BBS materials available in English and Spanish.
1C2c (H for Mexico): Develop strategies specific to participant training and recruitment in Mexico. For example, recruit staff from protected areas, encourage development of indigenous birding organizations, develop training materials, engage eco-tourists and guides in training/mentoring of local people, investigate use of financial incentives, etc.	<ul style="list-style-type: none"> Sufficient skilled participants are available to achieve coverage goals in Mexico. 	<ul style="list-style-type: none"> Training programs implemented. Number of people who complete training programs and participate in Mexican BBS.
Objective 1C3: Develop innovative approaches to survey poorly sampled areas in such a way that data can be integrated with the larger database for analytic purposes. Options to be considered include short routes, off-road routes, use of microphone recordings to calibrate observer effects, etc.		
Action	Outcome	Measures
1C3a (M; H for Canada and Mexico): Analyze BBS data from a subset of stops (e.g., first 20 or 30) to examine effect of a “short route” design on precision and magnitude of trends. Determine whether use of short routes to facilitate expansion of BBS into particular regions could be incorporated into standard continental analyses.	<ul style="list-style-type: none"> Determine feasibility of using short routes to enhance coverage in areas where regular routes are logistically not feasible, such as remote areas with limited road coverage. 	<ul style="list-style-type: none"> Specific recommendations regarding the implementation of short routes developed.
1C3b (M; H for Canada and Mexico): Evaluate analytical methods that can incorporate routes run by different observers each year, considering options such as double observer approaches, or microphone recordings.	<ul style="list-style-type: none"> Allow use of seasonal staff to cover routes in remote areas where long-term volunteers are not available. 	<ul style="list-style-type: none"> Recommendations developed on appropriate methods to survey routes in areas where it is not practical to maintain observer continuity.

Table 1. Strategic Plan goals, strategies, objectives, actions, outcomes, and measures for achieving the mission of the North American Breeding Bird Survey program.—Continued

Goal 2: Ensure BBS data and analytical results are widely available and easily accessible for use by the avian conservation and management communities.		
Strategy 2A: Ensure that BBS data and results presented on the web site use the best data-management practices and statistical methods, with adequate documentation for users to understand them.		
Objective 2A1: Continue to improve and add value to the results and information presented on the BBS web site, by ensuring that the most appropriate analysis methods are used, that these methods provide the information required by users, and that the approaches are adequately documented.		
Action	Outcome	Measures
Action 2A1a (H): Complete analysis using hierarchical models as per Link and Sauer (2002) to produce trend estimates and annual indices by region, and make these results available as part of the standard Web-based reports.	<ul style="list-style-type: none"> Most current and credible analyses available to users on web. Annual indices available to increase understanding of non-linear population change 	<ul style="list-style-type: none"> Hierarchical models used to provide trend estimates for all species by region on web. Annual indices of bird population abundance provided. Analyses updated in a timely manner to incorporate new data each year.
2A1b (H): Develop a comprehensive users' guide that explains what BBS is, how it works, and how it is analyzed (clarifying differences among approaches, including between U.S. and Canada), including the limitations of the survey.	<ul style="list-style-type: none"> Users have better understanding of BBS data and analyses, and are better able to incorporate results into management decisions and other uses. Credibility of trends increased. 	<ul style="list-style-type: none"> User guide developed through joint effort of USGS and CWS and available on BBS web site.
2A1c (H): Form a statistical working group to meet annually and discuss and review BBS-related analytical progress and plan analyses to address users' and coordinators' needs.	<ul style="list-style-type: none"> Working group ensures quality and direction of analytical progress continues to meet BBS needs. New and improved statistical methods are incorporated into BBS analyses. 	<ul style="list-style-type: none"> Statistical working group established. Annual meetings held.
2A1d (M): Add more detail on quality of trends, either displayed on the web site or in a downloadable file with details of the reason for assigning each color-coded "quality dot."	<ul style="list-style-type: none"> Quality of trends clearly documented to help avoid misinterpretation of results. 	<ul style="list-style-type: none"> Improved trend quality indicators developed and added to web analyses.
2A1e (L): Investigate Arc/IMS type tools that could allow users to select routes from non-standard regions for data downloading or for analysis online (e.g., Cornell Laboratory of Ornithology and Bird Banding Laboratory).	<ul style="list-style-type: none"> Tool allows selection and analyses of custom data sets to address research and management questions. More flexible and robust data retrieval possible. 	<ul style="list-style-type: none"> Availability of such tools on BBS site.
Objective 2A2: Continue to improve database management, to cope with increased data collection, and to ensure that best available data management practices are met.		
Action	Outcome	Measures
2A2a (H): Ensure all aspects of BBS program have appropriate and current metadata. This includes, but is not limited to, raw data files, route descriptions, including changes, taxonomy changes, and analytical products such as trend estimates, trend maps, relative abundance maps, and annual indices.	<ul style="list-style-type: none"> Metadata provide BBS data users with information needed to utilize data efficiently. 	<ul style="list-style-type: none"> Completed metadata for all BBS data are available on NBII and BBS web sites by 2008. Metadata updated annually.

Table 1. Strategic Plan goals, strategies, objectives, actions, outcomes, and measures for achieving the mission of the North American Breeding Bird Survey program.—Continued

Action	Outcome	Measures
2A2b (H): Ensure integrity of stop location database through appropriate quality-control and data-maintenance procedures including development of interactive tool to map, review, and edit route stop locations online (e.g., Google maps, NBII, Minnesota Map Server, eBird).	<ul style="list-style-type: none"> Increased accuracy and reliability of route and stop location information. 	<ul style="list-style-type: none"> Data integrity and maintenance protocols developed by 2007. Interactive route mapping and editing tool developed by 2008.
2A2c (M): Complete a stand-alone data-entry program for users in order to increase amount of data submitted electronically. (Also see 1A3c.)	<ul style="list-style-type: none"> Increased proportion of BBS participants submit data electronically, thus reducing data-entry burden to BBS staff. 	<ul style="list-style-type: none"> Stand-alone program completed, tested, and distributed to all participants.
2A2d (M; H for Canada and Mexico): Develop French and Spanish language data entry, retrieval, and management web applications.	<ul style="list-style-type: none"> Permits full participation of Spanish- (Mexico) and French- (Canada) speaking participants. 	<ul style="list-style-type: none"> Number of web applications available in French and Spanish.
2A2e (L): Scan historic paper field sheets and comment forms. Provide electronic image access.	<ul style="list-style-type: none"> Enhanced security of historic data. Researchers and public have access to historic stop data. Provides avenue for third parties to digitize stop data and provide to BBS office. 	<ul style="list-style-type: none"> Proportion of historic field sheets that have been electronically scanned. At least one web tool developed to make images available, taking into account privacy issues.
Strategy 2B: Increase communication with BBS partners and stakeholders to ensure BBS continues to meet the avian population status and trends needs of the conservation community and to encourage the development of new products.		
Objective 2B1: Increase communications with key users of BBS data.		
Action	Outcome	Measures
2B1a (H): Develop advisory group, incorporating researchers and managers, to provide guidance and evaluation of progress on this plan.	<ul style="list-style-type: none"> Increased communication between partners and BBS offices. Achieving goals of strategic plan remains a priority, and actions are undertaken most efficiently to achieve those goals. 	<ul style="list-style-type: none"> Advisory group established by 2007. Group reviews progress annually and submits written progress report enumerating accomplishments and providing guidance for future successes.
Objective 2B2: Promote development of products by partners that synthesize and interpret BBS results.		
Action	Outcome	Measures
2B2a (M): Encourage development of products that integrate BBS data with other sources of data to give improved measures of the status of bird populations in North America.	<ul style="list-style-type: none"> BBS results better integrated with other monitoring results in North America. 	<ul style="list-style-type: none"> At least one new integrated product developed.

Table 2. Timeline for accomplishing action items. (See Table 1 for complete description of each action.)

Goal 1: Collect scientifically credible measures of the status and trends of North American bird populations at continental and regional scales.						
Strategy 1A: Build sufficient financial and in-kind support for the BBS to ensure continued operation of the BBS program, while enhancing the scientific credibility, improving geographic coverage, and increasing use and availability of the data.						
Objective 1A1: Increase awareness of policy makers and management agencies of the existence and value of the BBS program, and use this awareness to increase support for the program.						
Action	2006	2007	2008	2009	2010	
1A1a (H). Form working group to further develop ideas, assist with and evaluate plan progress.						
1A1b (H). Develop and distribute a publicity packet.						
1A1c (L). Update bibliography.						
Objective 1A2: Ensure an adequate volunteer participant base through increasing support to state/provincial/territorial coordinators and continued development and implementation of ideas for retention and recruitment of participants.						
Action	2006	2007	2008	2009	2010	
1A2a (M). Develop stronger partnerships with state conservation agencies.						
1A2b (H). Form outreach and training working group.						
1A2c (H). Hold more frequent coordinator meetings.						
1A2d (H). Provide coordinators with improved recruitment and management resources.						
1A2e (M). Evaluate BBS staffing needs.						
1A2f (L). Develop incentive strategies to encourage ongoing participation.						
Objective 1A3: Ensure database and electronic infrastructure are adequately supported to meet ever-changing technological advances and security concerns to enable timely and accurate data collection and distribution.						
Action	2006	2007	2008	2009	2010	
1A3a (H). Evaluate BBS computer programming and support needs.						

Table 2. Timeline for accomplishing action items. (See Table 1 for complete description of each action.)—Continued.

Strategy 1B: Strengthen the scientific credibility of BBS results at continental and regional scales.					
Objective 1B1: Implement projects to evaluate the magnitude of potential bias due to variation in detection probability associated with species detection variation, observer variation, and traffic noise and habitat issues, and determine whether any approaches for estimating detection probability can be routinely implemented in the BBS.					
Action	2006	2007	2008	2009	2010
1B1a (H): Establish detection probability working group.					
Objective 1B2: Evaluate the magnitude of potential bias associated with non-random coverage of habitats, considering differences in habitat availability and habitat change along BBS routes compared with the broader landscape as well as differences in bird distribution and detectability in relation to roadsides, and develop analytic or operational strategies for addressing any resultant bias.					
Action	2006	2007	2008	2009	2010
1B2a (H): Complete database of coordinates for all BBS stops.					
1B2b (H): Conduct a study of the degree to which BBS routes sample habitats and altitudes.					
1B2c (H): Conduct study to determine whether rates of change in habitats differ on-roads versus off-roads.					
1B2d (M): Design and set priorities for additional studies to address issues of habitat bias.					
Objective 1B3: Develop assessment and training tools to assess current skill levels of observers, and to enhance skill levels, particularly for new recruits, thus reducing variation in observer effects.					
Action	2006	2007	2008	2009	2010
1B1 (M): Develop training, assessment, and self-testing programs for potential volunteers.					
1B2 (M): Develop recommendations for periodic observer hearing tests, etc.					
Strategy 1C: Improve geographic coverage of the BBS.					
Objective 1C1: Increase BBS route coverage in areas within the current BBS area that are currently undersampled, through strategic recruitment or reallocation of existing volunteers.					
Action	2006	2007	2008	2009	2010
1C1a (H): Develop and implement methods for optimal distribution and density of routes.					
1C1b (H): Increase route coverage to increase number of species that meet precision targets.					

Table 2. Timeline for accomplishing action items. (See Table 1 for complete description of each action.)—Continued.

Objective 1C2: Work with Mexican authorities to expand the BBS into Mexico by the year 2010.					
Action	2006	2007	2008	2009	2010
1C2a (H): Conduct workshop at NAOC and form working group to develop and implement strategy.					
1C2b (H for Mexico): Translate BBS materials and forms into Spanish.					
1C2c (H for Mexico): Develop strategies for participant training and recruitment in Mexico.					
Objective 1C3: Develop innovative approaches to survey poorly sampled areas in such a way that data can be integrated with the larger database for analytic purposes. Options to be considered include short routes, off-road routes, use of microphone recordings to calibrate observer effects, etc.					
Action	2006	2007	2008	2009	2010
1C3a (M; H for Canada and Mexico): Examine effect of a “short route” design on trends.					
1C3b (M; H for Canada and Mexico): Examine effect on trend precision of changing observers.					
Goal 2: Ensure BBS data and analytical results are widely available and easily accessible for use by the avian conservation and management communities.					
Strategy 2A: Ensure that BBS data and results presented on the web site use the best data-management practices and statistical methods, with adequate documentation for users to understand them.					
Objective 2A1: Continue to improve and add value to the results and information presented on the BBS website, by ensuring that the most appropriate analysis methods are used, that these methods provide the information required by users, and that the approaches are adequately documented.					
Action	2006	2007	2008	2009	2010
Action 2A1a (H): Complete hierarchical analysis and provide results on Internet, etc.					
2A1b (H): Develop a comprehensive BBS users’ guide.					
2A1c (H): Form a statistical working group to discuss and review BBS analytical progress.					
2A1d (M): Add more detail on quality of trends.					
2A1e (L): Investigate ArcIMS-type tools for selecting routes from non-standard regions, etc.					

Table 2. Timeline for accomplishing action items. (See Table 1 for complete description of each action.)—Continued.
[(H), high priority; (M), medium priority; (L), low priority]

Objective 2A2: Continue to improve database management, to cope with increased data collection, and to ensure that best available data-management practices are met.						
Action	2006	2007	2008	2009	2010	
2A2a (H): Ensure all aspects of BBS program have appropriate and current metadata.						
2A2b (H): Develop tools to enhance integrity of stop location database.						
2A2c (M): Complete a stand-alone data-entry program.						
2A2d (M; H for Canada and Mexico): Develop French and Spanish language web applications.						
2A2e (L): Scan historic paper field sheets and comment forms.						
Strategy 2B: Increase communication with BBS partners and stakeholders to ensure BBS continues to meet the avian population status and trends needs of the conservation community and to encourage the development of new products.						
Objective 2B1: Increase communications with key users of BBS data.						
Action	2006	2007	2008	2009	2010	
2B1a (H): Develop advisory group to provide guidance and annual evaluation of plan progress.						
Objective 2B2: Promote development of products by partners that synthesize and interpret BBS results.						
Action	2006	2007	2008	2009	2010	
2B2a (M): Encourage development of products that integrate BBS data with other sources of data to give improved measures of the status of bird populations in North America.						

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