2010 Project Abstract
For the Period Ending June 30, 2012

PROJECT TITLE: The Minnesota Breeding Bird Atlas
PROJECT MANAGER: Mark Martell
AFFILIATION: Audubon Minnesota
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WEBSITE: http://mn.audubon.org
FUNDING SOURCE: Environment and Natural Resources Trust Fund
LEGAL CITATION: ML 2010, Chap.362, Sec.2, Subd.3c.

APPROPRIATION AMOUNT: $372,000

Overall Project Outcome and Results

The Minnesota Breeding Bird Atlas is a statewide survey of the breeding distribution of Minnesota's birds. The project combines efforts, coordinated by Audubon Minnesota, of volunteers and multiple partners to obtain detailed information on breeding status of Minnesota's birds, with systematic and habitat based abundance data, coordinated by the Natural Resources Research Institute at the University of Minnesota-Duluth. The combination of these two efforts represents a powerful addition to understanding the distribution, relative abundance, and habitat use by Minnesota's breeding birds.

Over 800 volunteers have participated in the project and have reported over 22,000 hours of donated time. Twenty-nine individuals act as regional coordinators helping to recruit, train, and monitor volunteers. Our database has 207,000 observations on 245 species and confirmed breeding by 226 species around the state. Data has been reported from 5,596 blocks, including 2,166 priority blocks (there is one priority block per township) which gives us data from 92% of the state.

Final products will include a book and on-line atlas, including distribution maps, species breeding status, and conservation and historical information. Products will be available to the public as well as conservation agencies and organizations. Information gathered during this project is at the sub-township level and will provide spatial detail more compatible with contemporary remote sensing imagery available for vegetation, water, and development. Data will be useful to a wide variety of organizations including federal agencies, many state agencies such as the MN DNR and MPCA, county land management agencies, and both regional and local organizations to highlight tourism opportunities. Data will also be of great utility for use in agency decision-making regarding the dedicated funding legislation associated with land acquisition and water quality protection. These types of spatially-intensive data sets are essential to make wiser decisions about land use allocations for energy development, transportation networks, and other residential or industrial development.

Project Results Use and Dissemination

The primary form of information dissemination to date has been through the Minnesota Breeding Bird Atlas website (mnbba.org). Because our data collection is not complete, and we have not subjected all of the data to quality control we have not made efforts to disseminate the information to a wider audience at this time but plan to do so in future efforts.

Environment and Natural Resources Trust Fund
2010 Work Program Final Report

Date of Report: August 10, 2012
Final Report
Date of Work Program Approval:
Project Completion Date: June 30, 2012

I. PROJECT TITLE: The Minnesota Breeding Bird Atlas

Project Manager: Mark Martell
Affiliation: Audubon Minnesota
Mailing Address: 2357 Ventura Drive, Suite 106
City / State / Zip: St. Paul, MN 55125
Telephone Number: 651-739-9332 ext. 15
E-mail Address: mmartell@audubon.org
FAX Number: 651-731-1330
Web Site Address: http://mn.audubon.org

Location: Statewide

Total ENRTF Project Budget: ENRTF Appropriation $ 372,000

The total appropriation for this project will be split between Audubon Minnesota and the Natural Resources Research Institute at the University of Minnesota Duluth (NRRI) as outlined below. NRRI will submit a separate work plan for their part of the project.

	To Audubon Minnesota	To NRRI – U of Minnesota Duluth	Total
Trust Fund Appropriation	$211,000	$161,000	$372,000
Minus Amount Spent:	$211,000	$161,000	$372,000
Equal Balance:	$ 0	$0	$0

Legal Citation: ML 2010, Chap.362, Sec.2, Subd.3c.

Appropriation Language:
$372,000 is from the trust fund to continue development of a statewide survey of Minnesota breeding bird distribution and create related publications, including a book and online atlas with distribution maps and breeding status. Of this appropriation, $211,000 is to the commissioner of natural resources for an agreement with Audubon Minnesota and $161,000 is to the Board of Regents of the University of Minnesota for the Natural Resources Research Institute. The atlas must be available for downloading on the Internet free of charge.

II. and III. FINAL PROJECT SUMMARY

The Minnesota Breeding Bird Atlas is a statewide survey of the breeding distribution of Minnesota's birds. The project combines efforts, coordinated by Audubon Minnesota, of volunteers and multiple partners to obtain detailed information on breeding status of Minnesota's birds, with systematic and habitat based abundance data, coordinated by the Natural Resources Research Institute at the University of Minnesota-Duluth. The combination of these two efforts represents a powerful addition to understanding the distribution, relative abundance, and habitat use by Minnesota's breeding birds.

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Amendment Request (09/18/12)
We request an amendment retroactive to March to make shifts in budget line items within and between Results in order to account for minor differences between anticipated budget expenditures and final actual expenditures. These shifts, documented on Attachment A, impact the budget line items for "Personnel", "Workshops/Meetings", "Supplies" and "Travel Expenses in Minnesota" under Result 1; the budget line items for "Personnel", "Supplies", and "Travel Expenses in Minnesota" under Result 2; and the budget item for "Personnel" under Result 3.
Amendment Approved: 09/19/12

IV. OUTLINE OF PROJECT RESULTS*:*

RESULT 1: Volunteer and Staff Training and Management to be done by Audubon

Description: The project will be overseen by a partner steering committee and various sub-committees which were established during the first 2 years of the project. These committees provide coordination among partners, work with technical experts, and broadly oversee staff and volunteers. The project is housed at Audubon Minnesota with a full-time project coordinator and additional part-time staff as needed. Project staff,

volunteer coordinators and surveyors need to be recruited and trained in a variety of tasks. Most of the data will be collected and entered into the database by volunteers working around the state and overseen by 32 volunteer regional coordinators. These volunteers and coordinators need to be recruited statewide, and provided with ongoing training and support. We will produce recruitment materials for newspapers and newsletters, directly contacting various organizations around the state, and making personal appearances and contacts. Training materials will include on-line and hard copy versions of both detailed and summary instructions, protocols, and support materials. Recruitment and training workshops will be held around the state.

Summary Budget Information for Result 1:	**ENRTF Budget:**	**$** ~~55,067~~ 54,161
	Amount Spent:	**$** 54,161
	Balance:	**$** ~~905.17~~ 0.00

Deliverable	Completion Date	Budget
1. Recruit and train project staff, volunteer coordinators and surveyors	April 2012	~~$27,534~~ $27,080
2. Produce survey materials	April 2012	~~$27,533~~ $27,081

Result Completion Date: April 2012

Final Report Summary:

Minnesota Breeding Bird Atlas (MNBBA) Project partners worked together and coordinated their activities through; the MNBBA Steering Committee, a Data Verification Sub-committee and a Methods Advisory sub-committee. These committees met regularly and provided valuable oversight and technical advice. Individuals on these committees were drawn from the U.S. Fish and Wildlife Service, various Divisions of the Minnesota Department of Natural Resources, the Minnesota Ornithologists' Union, the University of Minnesota and other organizations.

For administrative purposes we divided the state into 32 regions. There are 28 individuals serving as regional coordinators covering 22 of the 32 administrative regions around the state (some regions have more than 1 coordinator) with the Project Coordinator serving as coordinator for regions without local leadership. The regional coordinators assist in recruiting volunteers, reviewing data, and provide a local contact for media, the public, and handle other requests that arise. We held yearly meetings with volunteer coordinators and the advisory and steering committee members to review MNBBA project progress and process, discuss project improvements, and for additional volunteer recruitment and survey coverage.

Over 800 volunteers have been recruited and are participating in the project. They have reported over 22,000 hours of time spent on the project, although the reporting of hours is voluntary and we believe that it under-represents the actual time spent by volunteers on the project. Materials for volunteer surveyors and Regional Coordinators were updated at the beginning of Season 3 and have been made available on our website (http://www.mnbba.org/materials.php). Volunteer recruitment and training

strategies were re-designed each year to meet changing project needs. Our strategies included media and newsletter articles, personal contacts, and talks at bird clubs and birding events around the state. The difficulty in getting volunteers to remote parts of the state necessitated hiring temporary paid surveyors during the second year of this appropriation. A job description was developed and posted resulting in over 70 applications being received. Seven temporary surveyors were hired; training took place in May 2012.

RESULT 2: Data Collection to be done by Audubon

Description: Surveys for breeding birds will be conducted by volunteers, and as needed by paid staff, from January – August of each year. We have designated the northeast 3 X 3 mile quadrant of each township in the state as our priority blocks. These 2,250 (approximately) blocks will be the focus of our efforts, although data from any other location in the state will be accepted. Blocks in hard to access areas (the northern peatlands and the BWCA) will be surveyed by paid staff. This leaves 2,120 blocks to be surveyed by volunteers. By the end of year 4 we expect to have completed surveys in 1,580 (74.5%) of these priority blocks. Paid surveyors will be temporarily hired during year 4 to collect data in remote parts of the state.

Summary Budget Information for Result 2: ENRTF Budget: $** ~~99,367~~ **$100,434

Amount Spent: $ 100,434

Balance: $ ~~-1,067~~ 0

Deliverable	Completion Date	Budget
1. Breeding bird data gathered by volunteers in 1,040 of Minnesota townships.	Aug 30, 2011	$45,434
2. Breeding bird data gathered by volunteers and paid surveyors in 1,580 of Minnesota townships.	June 30, 2012	$55,000

FINAL REPORT SUMMARY

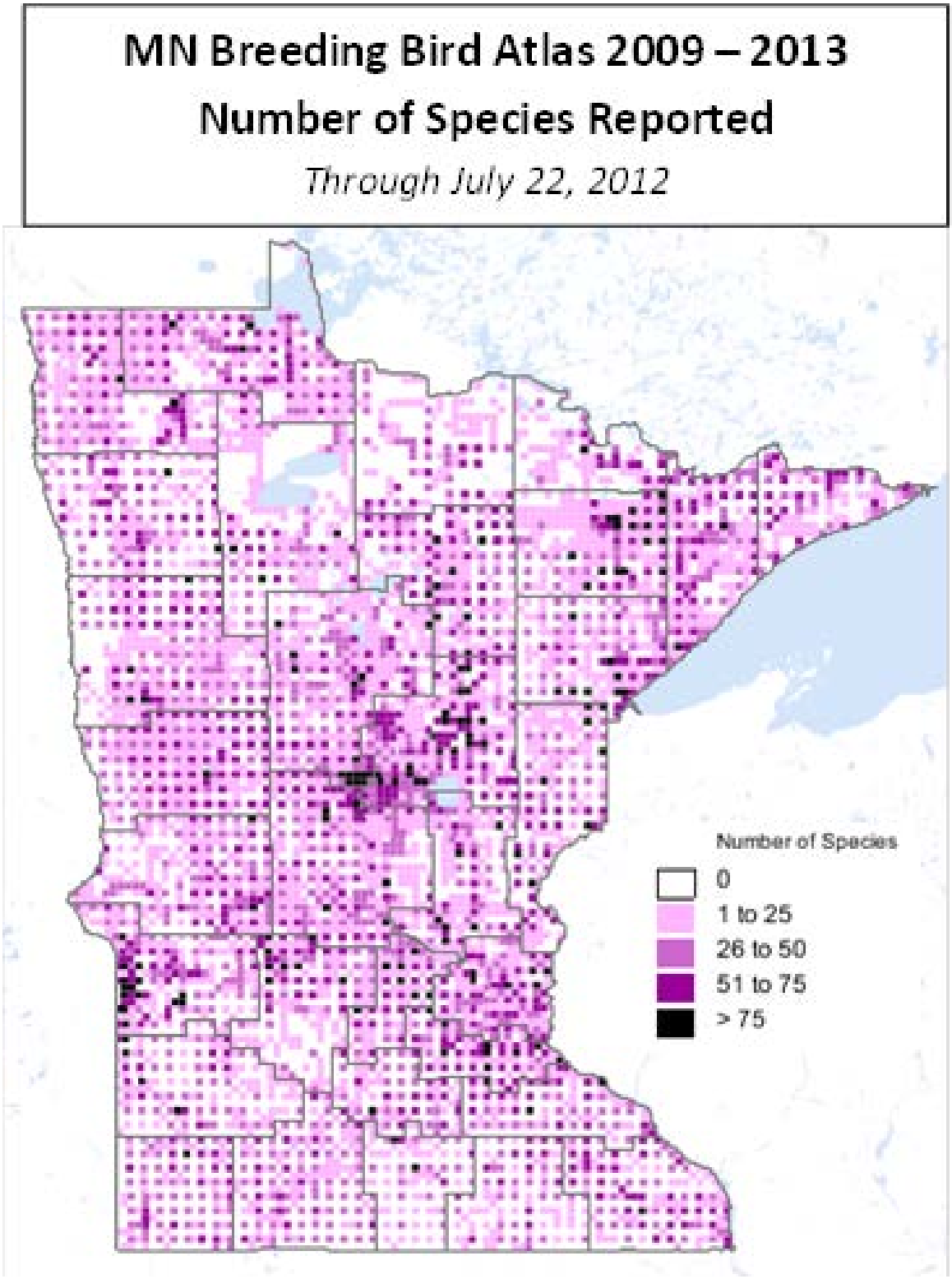
Over 800 volunteers, along with seven paid temporary employees have entered 207,000 observations on 245 different bird species statewide. Breeding was confirmed (meaning a nest, eggs, or fledgling was found) for 226 species. At this point we have data in 2,168 of our 2,352 “priority blocks (there is one priority block per state), which means we have 92% of the state covered. We expect that when all of season 4 data is entered, all but a few inaccessible priority blocks will have data.

In addition to volunteers and paid surveyors we made a concerted effort to find and enter data collected by agency personnel, University researchers, and others who are doing bird work in Minnesota but had not yet entered their data in the BBA database. In 2011, we also organized “block-busting” weekends encouraging volunteers to get together at a specific location and intensely survey the surrounding area. We did 3 such weekends in June and July; one in Itasca County, one in Freeborn County, and one in Stearns and Kandiyohi Counties. An additional event, the “Cheesehead Challenge” was held in Pine County on June 17 – 19 in 2011 and June 15-17 in Fillmore County in 2012. These events brought in birders from Wisconsin for a friendly competition with Minnesota birders. Finally, we initiated a program to recruit volunteers to cover blocks in targeted areas and provided limited reimbursements for gas and lodging based on results.

Our efforts have documented new county breeding records and distribution patterns that indicate changes to the breeding range of other species as well. County records reported in the Atlas include Sedge Wren in St Louis County, Lark Sparrow in Wilkin County, and Baltimore Oriole in Rock County. One species found breeding far outside of its expected range was a Bufflehead in Cottonwood County. Two species whose ranges appear to be expanding northward compared to 1975 ranges are the Northern Cardinal and Red-bellied Woodpecker.

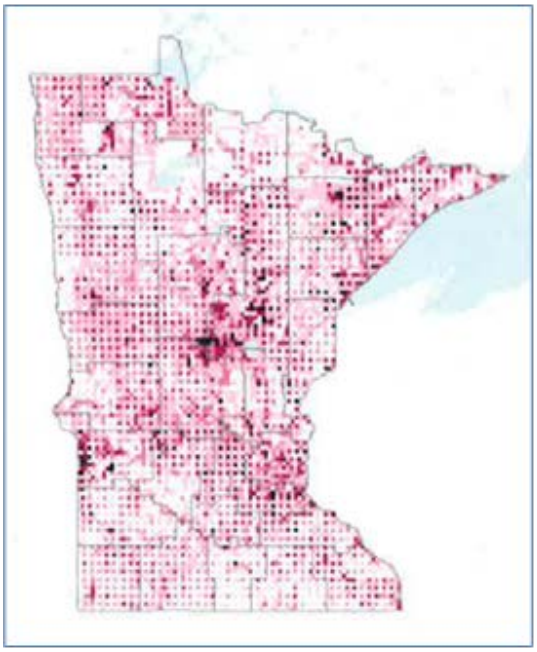
The total species coverage statewide is shown in the maps below.

Figure 1 – Number of species reported by block and by year.

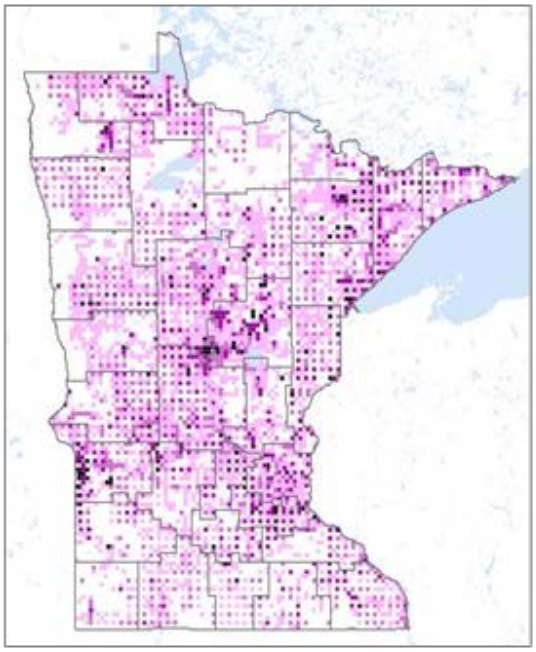


MNBBA Survey Progress, 2009 thru July 2012
Number of Species Reported by Block

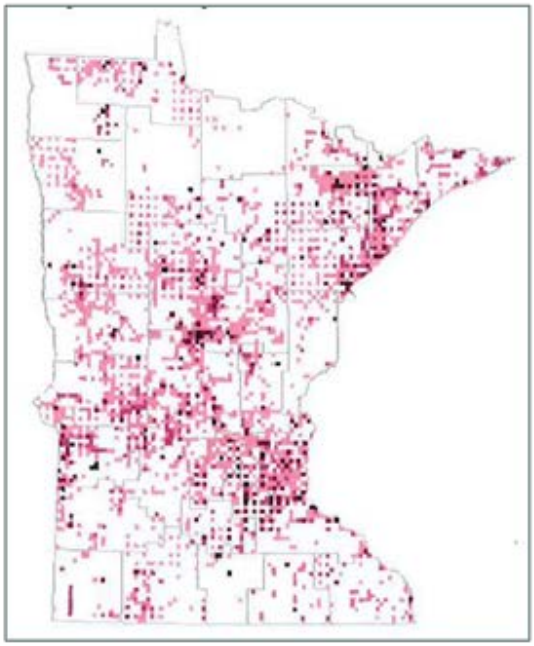
2012



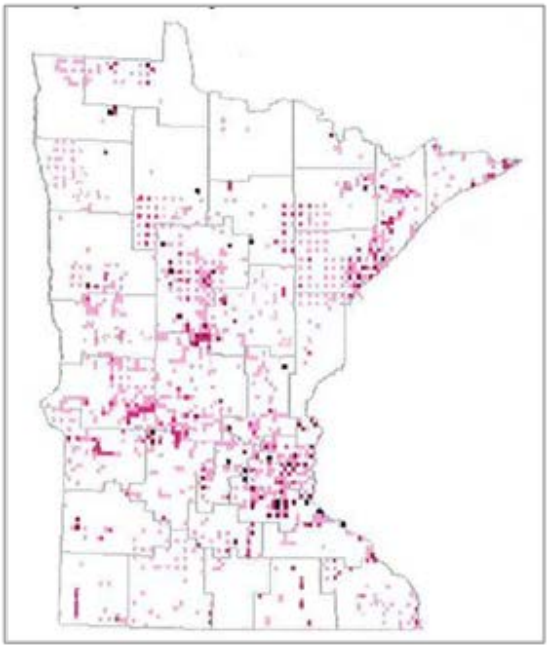
2011



2010



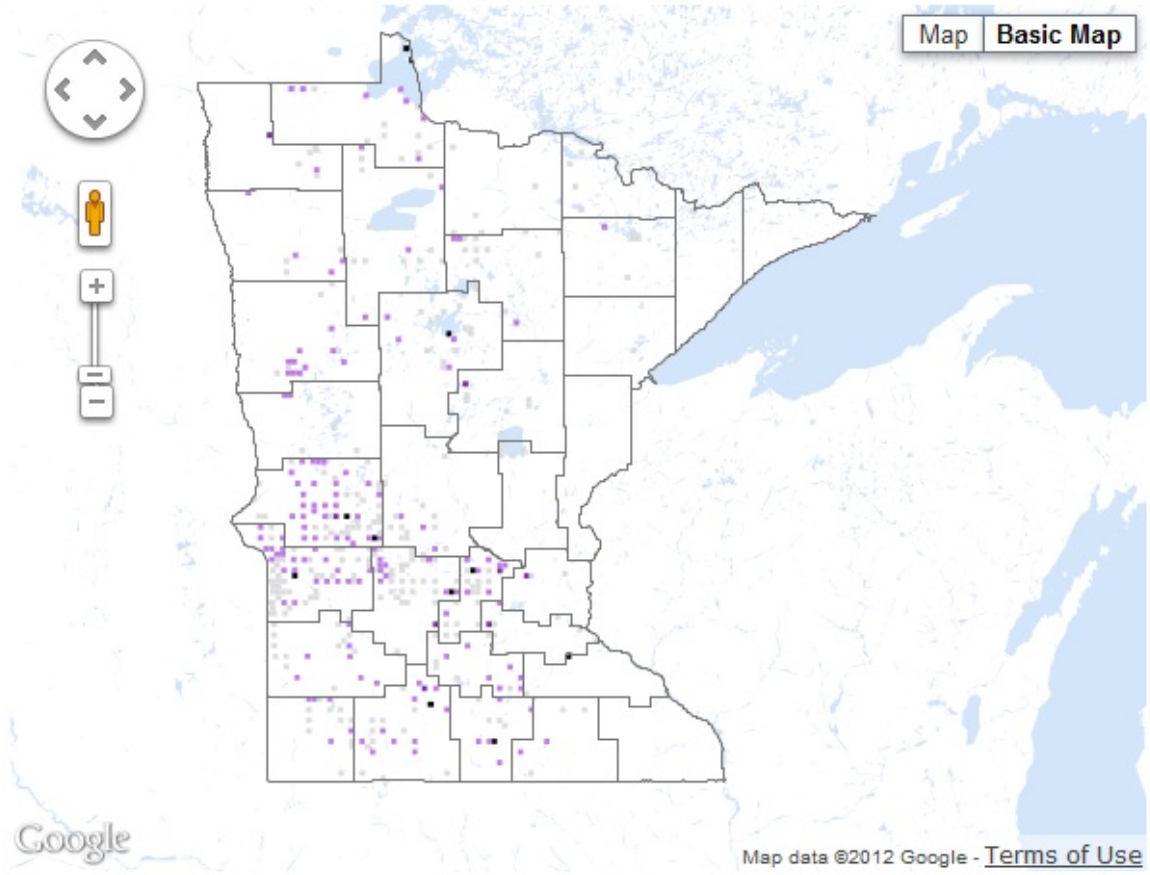
2009



Examples of species specific data.

Atlas 2009-13

American White Pelican - *Pelecanus erythrorhynchos*



American White Pelican (blocks)

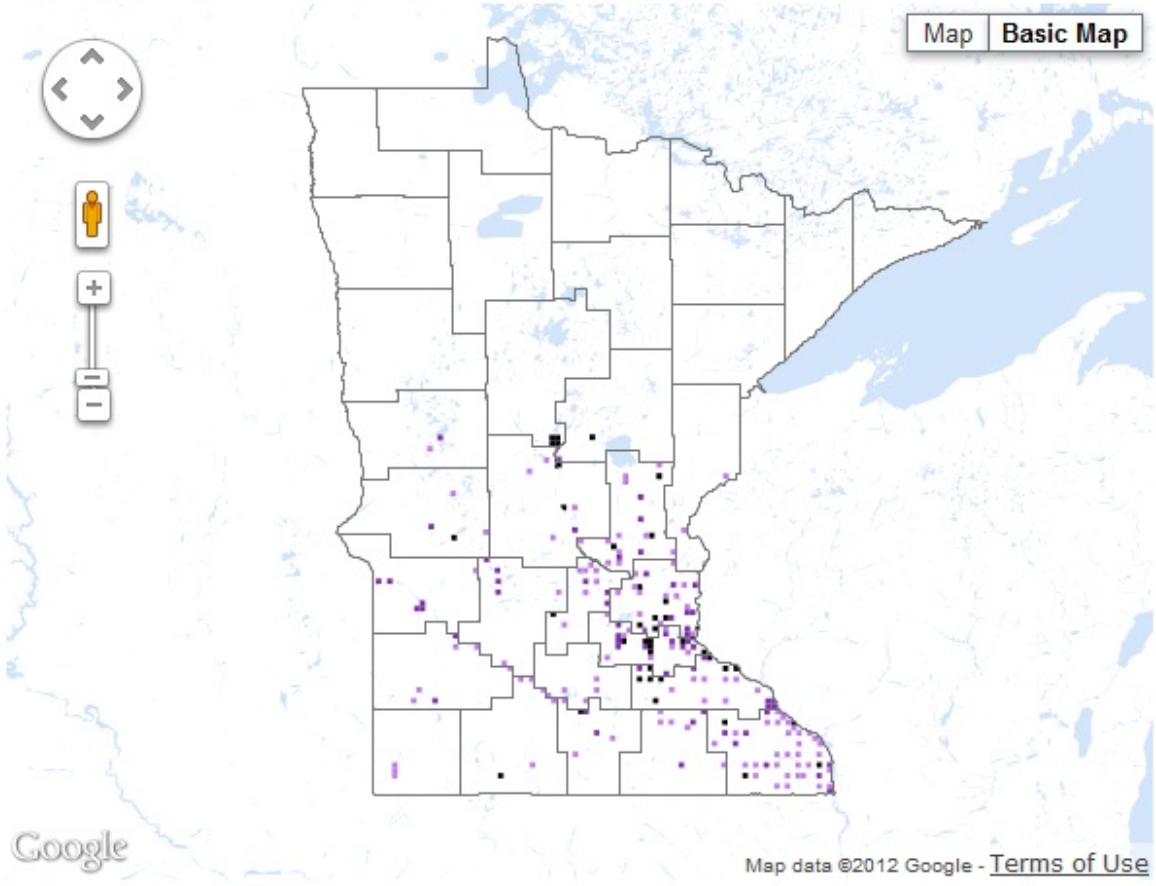
Observed	273
Possible	149
Probable	8
Confirmed	11

Breeding Status
Observed
Possible
Probable
Confirmed
Not reported

Credit: Carrol Henderson

Atlas 2009-13

Blue-gray Gnatcatcher - *Polioptila caerulea*



Blue-gray Gnatcatcher (blocks)

Observed	1
Possible	122
Probable	64
Confirmed	44

Breeding Status
Observed
Possible
Probable
Confirmed
Not reported

Credit Andrew Nyhus

RESULT 3: Data Management and Analysis to be done by Audubon

Description: We will continue to support, maintain, and update our Breeding Bird Atlas website. We will also continue our contract with Cornell for the use of their data management system. The BBA website will be the central source of information about the atlas for volunteers, partners, and the general public. We will provide volunteers with survey protocols, identification aids, and other information. Updated results and maps will be maintained and improved as necessary.

The Cornell system for management and storage of data; which includes on-line data entry, quality control, and editing capabilities will continue to be operational. This system will house the data during the course of the project. We will have the ability to print aerial photos and topographic maps of survey sites and view BBA results by species or geographic region.

Summary Budget Information for Result 3:	**ENRTF Budget:**	**$** ~~56,566~~ 56,404
	Amount Spent:	**$** 56,404
	Balance:	**$** ~~162~~ $0

Deliverable	Completion Date	Budget
1. Continuation of BBA data access and informational website	June 30, 2012	$28,202
2. A web-based data entry, management, and reporting system	June 30, 2012	$28,202

Result Completion Date: June 30, 2012

Final Report Summary

We have maintained a project website: *mnbba.org* which provides news and information on the project to volunteers and the public. The site is also where we provide training and data collection materials for volunteers including field forms, project handbook and reporting forms. This site also serves as a portal to the Cornell database and provides up-to-date data summaries.

We have contracted with Cornell Laboratory of Ornithology to provide the project database. This database allows data entry and recovery online and gives daily updates on project status. Printed block maps were redesigned by Cornell to provide images based on Google Maps and revised to reflect more accurate block boundaries and coordinates. This improvement eliminated the topographic map option; however, topographic images for critical regions were downloaded and made available to Regional Coordinators on CDs.

Our Data Verification Committee reviews data and provides annual quality control for the project. These experts review reports of rare and unusual species and identify

species reported out of their expected range. This process is ongoing and will continue to be a part of the project until after the end of the data survey portion of the project. As the project progresses, preliminary analysis is conducted to determine remaining species and geographic coverage targets.

RESULT 4: Point Count Data Collection to be done by NRRI

Description: This work is overseen by the Natural Resources Research Institutes at the University of Minnesota Duluth and is detailed in a separate work plan they have submitted.

The information below is taken from the NRRI final report to LCCMR

Result 4: Point Count Data Collection
This result is the primary responsibility of the Natural Resources Research Institute at the University of Minnesota Duluth. It is focused on the breeding season in Minnesota (approximately mid-May to mid-July). We designed an efficient means to sample the townships. Individuals were able to sample about three townships per morning, but in some cases where there is good road access they were able to sample 4 to 5 townships per morning. The townships sampled were selected in a restricted, random fashion to insure the townships censused were evenly distributed across the state. It was "restricted" to insure logistical (transportation) efficiency, primarily so townships sampled on a daily and weekly basis were relatively close together. The protocol was peer-reviewed by seven professional and amateur ornithologists from MN and WI, whose comments were incorporated.

The censusing protocol calls for censusers to pass a test of their bird identification skills by sound and pass a hearing test to insure their hearing is within normal ranges. Censusers also go through a 3-4 day training session to improve the standardization of data gathering. These censurers are either graduate students or paid as temporary university employees because the 1) field work is physically demanding, 2) work time include difficult hours, and 3) it is a fulltime job. Up to ten paid, seasonal field surveyors primarily graduate and undergraduate students have completed a majority of the counts needed for this effort. **The goal was to complete sampling of 80% of the townships in the state of Minnesota and this goal has been met.** However, with the additional funding from the state of Minnesota that we received in May 2012 from the Minnesota Department of Natural Resources through Audubon Minnesota (our partner in this effort), we have completed the sampling of over 99% of the townships in the state. We will complete the remaining 1% (approximately 22 townships) during the summer of 2013. These areas include some of the most remote and hard-to-access areas of the state, primarily the remote peatlands of Koochiching, Beltrami, and St. Louis Counties.

Over 70% of the data for the townships have been entered and error checked. This exceeds the deliverable of having 60% of the data error checked. This project was primarily a data gathering effort with little time allocated to analysis; however, over the coming two to three years during the completion of the Minnesota Breeding Bird Atlas project these data will receive substantial analysis. Therefore, in this final report we primarily highlight the places, the habitats, and the bird species identified as part of the breeding bird atlas. We also provide four appendices of data: 1) Appendix A – a summary of the total individuals observed from 2009-2011, 2) Appendix B – the average number of individuals of a species observed from 2009-20011 in the state and in the three major regions of the state, 3) Appendix C – a summary of the 30 most abundant bird species observed in the state and for each of the major regions of the state, and 4) Appendix D – a summary of the 30 most abundant species in each ecosection of the state. Ecosections are extensively used in management of natural resources in the state.

We emphasize that this is the first comprehensive, systematic count of the breeding birds of the state and further emphasize its complementarity to the volunteer efforts being coordinated by Audubon Minnesota. The data gathered will allow for comparisons of the breeding bird communities to be made at many different areal scales from the sub-township level, township, counties, ecosections, and for the entire state.

Figure 1 shows the townships that have been completed with data entered as of mid-July 2012. The remaining funds from this LCCMR project were expended to compile, analyze, and complete the sampling for over 80% of the townships in the state. Therefore, we met the deliverable of 80% (>1,840 townships out of 2,300 townships) during the fourth year of sampling in 2012.

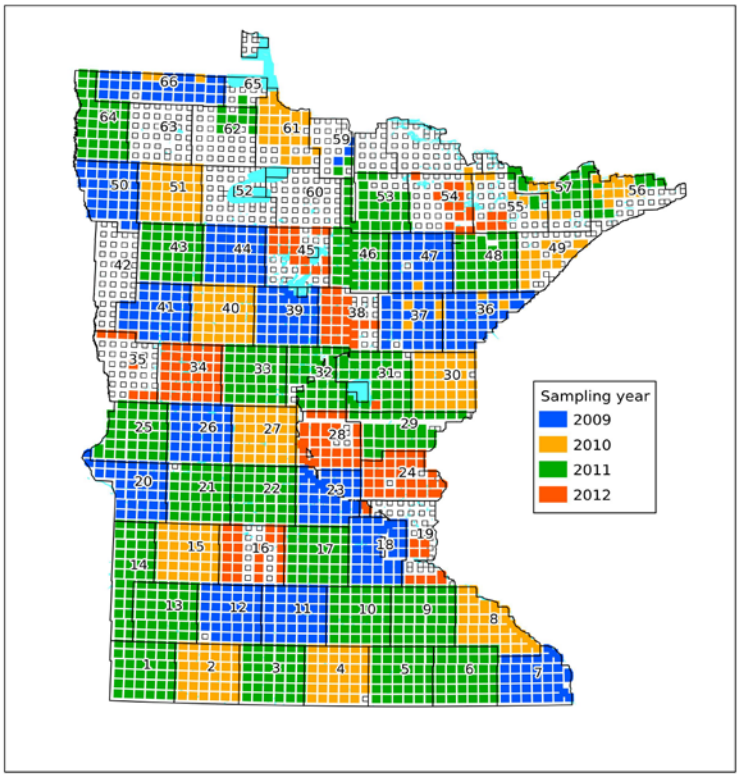


Figure 1. Townships sampled with point counts in 2009, 2010, 2011, and 2012. Note that the samples in 2012 are not yet complete and entered as of July 24, 2012.

Table 1. Summary of number of points sampled for the entire state and by three regions of the state [southeast (SE), west (W) and northeast (NE)] from 2009 to 2011.

Habitat	State	SE	W	NE
Barren land	15		13	2
Cultivated crops	1684	917	756	11
Deciduous forest	1234	235	226	773
Developed low intensity	104	75	24	5
Developed medium intensity	43	36	4	3
Developed open space	26	9	1	16
Emergent herbaceous wetlands	380	79	213	88

Evergreen forest	324		28	296
Grassland/herbaceous	400	244	144	12
Pasture/hay	676	361	218	97
Shrub/scrub	99	12	22	65
Woody wetlands	223	21	43	159

The dominant habitats of the state were sampled for birds are shown in Table 1 and as expected they are dominated by cultivated crops, deciduous forest, pasture/hay, and grassland/herbaceous ecosystems. Similarly, the total number of individual birds counted are a reflection of the number of point counts sampled within the various habitats sampled (Table 2). Through the first three years of sampling (2009-2011) a total of 288,144 individual birds have been counted.

Table 2. Total number of individual birds identified by habitat for the state and for each of the three major regions of the state.

Habitat	State	SE	W	NE
Barren land	313	--	263	50
Cultivated crops	46801	25190	21277	334
Deciduous forest	26304	5852	5982	14470
Developed low intensity	3306	2333	712	261
Developed medium intensity	1319	1059	186	74
Developed open space	652	277	22	353
Emergent herbaceous wetlands	14566	3447	8563	2556
Evergreen forest	6447	--	591	5856
Grassland/herbaceous	14181	8561	5299	321
Pasture/hay	21973	12286	7245	2442
Shrub/scrub	2491	360	603	1528
Woody wetlands	5569	920	1236	3413

The average number of individual birds recorded at a point count is a more revealing statistic in terms of the relative density of birds within various habitat types (Table 3), but they are also influenced by detectability. The highest densities of birds are observed in wetland habitats, including emergent herbaceous wetlands like those comprised of cattail.

Table 3. The average number of individual birds counted per point by habitat type and for the state and each of the three major regions.

Habitat	State	SE	W	NE
Barren land	20.9	--	20.2	25.0
Cultivated crops	27.8	27.5	28.1	30.4
Deciduous forest	21.3	24.9	26.5	18.7
Developed low intensity	31.8	31.1	29.7	52.2
Developed medium intensity	30.7	29.4	46.5	24.7
Developed open space	25.1	30.8	22.0	22.1
Emergent herbaceous wetlands	38.3	43.6	40.2	29.0
Evergreen forest	19.9	--	21.1	19.8
Grassland/herbaceous	35.5	35.1	36.8	26.8

Pasture/hay	32.5	34.0	33.2	25.2
Shrub/scrub	25.2	30.0	27.4	23.5
Woody wetlands	25.0	43.8	28.7	21.5

Summary Budget Information for Result 4:

ENRTF Budget: $ 161,000
Amount Spent: $ 161,000
Balance: $ 0

Deliverable	Completion Date	Budget
1. Data gathered for an additional 40% of Minnesota townships or a total of 80% over four years.	June 30, 2012	$141,000
2. Data entered and error-checked for 60% of Minnesota townships.	June 30, 2012	$10,000
3. Preliminary tables and figures on the relative distribution and abundance of MN breeding birds.	June 30, 2012	$10,000

V. TOTAL ENRTF PROJECT BUDGET: $372,000
AUDUBON MINNESOTA ENRTF PROJECT BUDGET: ***$211,000 (REMAINING AMOUNT TO BE SPENT BY NRRI)***

Personnel: **$ 172,740**

Project Manager (Mark Martell) $23,960, 16% FTE, includes 32 - 36% fringe benefit rate

Program Coordinator (Bonnie Sample) $119,419 est., 100%FTE, includes 32 - 36% fringe benefit rate

Administrative Support (various) $4834 est., 8%FTE, includes 12% or 36% fringe benefit rate (12% for part-time employees, 36% for full-time employees) depending on employment status with the National Audubon Society

Temporary bird surveyors (7) $24,527

Contracts: $ 8,519

Website Maintenance – Updates on mnbb.org (continued work with Dave Cahlander)

Data Management System – Updates and maintenance on database contracted with Cornell Univ.

Workshop meeting space

Printing/Mailing: $278

Recruitment and communication with estimated 1,000 volunteer surveyors

Equipment/Tools/Supplies: **$327**

Travel: $ 29,136 (primarily mileage, some lodging and overnight where needed)

Staff - $7,000

Volunteer - $35,000

Capital Expenditures greater than $35,000 – none

VI. PROJECT STRATEGY:

A. Project Partners receiving funds from the Trust Fund (through this appropriation):

Audubon Minnesota – Mark Martell, Project Manager, $211,000

Natural Resources Research Institute – Univ. of MN Duluth – Gerald J. Niemi, $161,000

Other Partners – Not receiving Funds

Bell Museum of Natural History - Dr. Scott Lanyon

Minnesota DNR Division of Ecological Resources

U.S. Fish and Wildlife Service

Minnesota Ornithologists' Union

B. Project Impact and Long-term Strategy:
The Minnesota Breeding Bird Atlas will provide the first time-specific survey of all the breeding birds in the state. This information will be available to land and resource managers, the public, and policy makers providing an invaluable resource as future events such as global warming require a response. Information can continue to be collected by partners and others providing a unique and robust view of Minnesota's birds.

C. Other Funds Proposed to be spent during the Project Period: $80,000
Audubon Minnesota - $48,565
Minnesota Ornithologists' Union - $20,000
U.S. Fish and Wildlife Service - $15,186
MN DNR - $18,300

D. Spending HIstory: LCCMR ML 2008 sub 5d - $270,000, Audubon- $30,000, USFWS- $50,000, Minnesota Ornithologists' Union- $20,000, MN DNR - $20,000

VII. DISSEMINATION: Information will be available at: www.mnbba.org, at the end of the anticipated 6-year project we will publish a hardcover atlas.

VIII. REPORTING REQUIREMENTS: Periodic work program progress reports will be submitted not later than: January 31, 2011, July 31, 2011, January 31, 2012. A final work program report and associated products will be submitted between June 30 and August 1, 2011 as requested by the LCCMR.

IX. RESEARCH PROJECTS:

Appendix 1. List of Outreach Materials

Audubon Minnesota Newsletters
- Spring 2012
- Winter 2012
- November 2011
- Fall 2010

BBA Handout at Minnesota Ornithologists' Union Meeting December 2011
Better Forests Magazine
St. James Plain Dealer Newspaper Feb 2012
Timberjay July 2012
Minnesota State Fair 2011
MRVAC (Audubon) newsletter
Friends of Sherburne Refuge News
St. Paul Audubon Society Newsletter
MOU Newsletter
Presentation to the Wild River Audubon Chapter November 2011
Presentation to the Greater Prairie Chicken Society
Presentation to the Mississippi Headwaters Audubon Chapter April 2011
Presentation to the Minnesota Ornithologists' Union Annual Meeting December 2010
Presentation to the MN DNR NW Wildlife Mangers Feb 2012

Minnesota's Breeding Birds Need Your Help!

Cedar Waxwings, courtship behavior. Photo by Jim Williams

Minnesota is in the middle of the most comprehensive bird conservation project ever conducted in the state. The project is the Minnesota Breeding Bird Atlas (MNBBA), a 5-year program that will give us a current, science-based, snap-shot of which species are nesting and where in the state they nest. The best part is that the Atlas depends on citizen scientists to collect the information – that means that if you can identify birds, you can add your observations to the project! Forested lands offer excellent habitat for many species so as a tree farmer, your property is a wonderful place to look for birds and observe breeding behavior.

Participating in the Atlas is a great way to make a lasting contribution to Minnesota's bird conservation.

Minnesota's Atlas

Breeding bird Atlases are used throughout the world to document and map the distribution of breeding birds and Minnesota follows standard Atlas format and guidelines. Most people are surprised to learn that forty-one states have already completed a breeding bird Atlas, and twelve states are working on, or have completed, their 2nd Atlas, conducted more than 15 years after their first Atlas. South Dakota and Iowa are currently wrapping-up their 2nd Atlas projects. The analysis of the differences between the first and second Atlas document species changes over 15-20 years. This will be especially critical as we look at possible impacts from climate change. Minnesota is the only state along the Mississippi Flyway that does not have an Atlas, so we are overdue to complete this project.

Why is the Atlas important?

There are books that provide a historical look at species distributions in Minnesota, but the Atlas will document breeding evidence down to the township level and will identify the level of breeding activity: observed only, possible, probable, or confirmed evidence. It is also a repeatable survey, so information from a 2nd Atlas will show us what changes have occurred to breeding birds: changes to species ranges, new species breeding in the state, and species that no longer breed in the state.

Not only will the Atlas document which species breed in Minnesota, and where they breed, but it will also identify areas of high species diversity. A parallel project is simultaneously collecting information about how common, or abundant, our breeding birds are throughout their breeding range. This is guaranteed to tell us some things we don't know about our breeding birds.

In a nutshell, the MNBBA will:

- Map the current distribution and abundance of breeding birds in Minnesota
- Support local, county, state, and regional conservation planning
- Lead to better research questions
- Establish a baseline for monitoring changes
- Engage more people in bird conservation

Results to date are already available on the project website, *www.mnbba.org*, including a great photo gallery of images submitted by volunteers. Please check it out! Final results from this project will be published in a book and on a website with detailed distribution maps and narratives for all Minnesota breeding birds.

Ovenbird carrying food to young. Photo by Marshall Howe.

What do volunteers do?

There are two ways to participate; a volunteer can be a Field Observer or a Surveyor.

Field Observers record 1) species they see anywhere in the state, with 2) an evidence code that describes what they see (e.g. pair observed in nesting habitat), 3) the date and 4) the location of the observation. Or, a volunteer can become a Surveyor.

*A **Surveyor*** registers and selects a priority block, then makes multiple visits during the breeding season to that block. There are 2352 priority blocks in the state, systematically and randomly selected throughout the state to provide unbiased and comprehensive coverage. To survey a block is basically a 3-step process: find and explore a priority block, get out and bird, and then report your observations. Surveyors use the same data collection methods as Field Observers, the difference is that all observations are for the same location and surveyors only need to report a species more than once if they can upgrade the evidence. It takes about 20 hours of active surveying between March and August to complete a block survey; this is a very effective approach to completing the project. The goal of the survey is to identify as many different species as the surveyor finds within a block and record the strongest breeding evidence for each species (e.g. adult carrying nesting material).

Participating in the Atlas is an opportunity to contribute to something important, to bird with a purpose! Volunteers can:

- Improve id. and observational skills
- Learn more about bird behavior
- Have fun
- Explore new birding sites
- See things you have never seen before
- Contribute to MN bird conservation

Warbling vireo nestlings. Note that no birds were disturbed to take this photo. Photo by Ron Refsnider.

For more information

Check out the Atlas website at *www.mnbba.org*, or contact Bonnie Sample, Project Coordinator, at 651-739-9332, ext. 20, or *bsample@audubon.org*. We would love to have you be part of the Atlas.

The Breeding Bird Atlas is funded by lottery money from the Minnesota Environment and Natural Resources Trust Fund and Minnesota agencies and organizations interested in bird conservation: U.S. Fish and Wildlife Service, MN Department of Natural Resources, Minnesota Ornithologists' Union, Audubon Minnesota, Natural Resources Research Institute - UMD. If you too, are concerned about conservation of Minnesota birds, please join us. ■

Feb 16, 2012 St James Plaindealer

Learn your bird neighbors by participating in the 'Breeding Bird Atlas' survey

DOUG DEDECKER
STAFF WRITER

Breeding Bird Project Coordinator Bonnie Sample visited with resident Cindy Torkelson last week and went over the Breeding Bird Atlas Project.

Calling all 'birders', and people interested in nature.

An important multi year project aimed at determining which birds breed in Minnesota needs your help.

The project is called the 'Minnesota Breeding Bird Atlas'. The project's objective is to determine the number of bird species that breed in Minnesota. It also will record the range of the breeding species across the state of Minnesota. The results will be published in a large hard cover atlas in 2014.

Breeding Bird atlases are used through out the world to document and map the distribution of breeding birds.

Most other states have already published breeding bird atlases. In fact, Minnesota is the only state along the Mississippi flyway that has not published one atlas. Some states have published two.

Project coordinator Bonnie Sample held a meeting with interested people at the Stray Cat Cafe last week discussing the program, and seeking observer volunteers in Watonwan County.

A breeding bird population baseline study is important because recent data from other monitoring programs suggests major declines in many of the 222 species of birds that have been known to nest in Minnesota.

Volunteers will be assigned 3x3 mile blocks of territory in each township with the goal of determining the types of breeding birds in that block.

The project has a number of criteria that are used to determine if a species might be or is proved to breeding in an area.

Sample said the average volunteer will spend no more than 20 hours between March and August surveying for the Atlas. This is a very limited commitment for an individual to make.

All people can participate in the breeding bird atlas project. Local people can volunteer to survey one or more of the priority blocks, document breeding species in their immediate neighborhood, and recruit others to get involved with the atlas project.

Interested people can get involved by checking out the **mnbba.org** website (link provided on our home page). The site is comprehensive, and has a list of the areas in the state where different breeding birds have been observed.

If you are an Internet surfer, this is a site that is well worth spending some time on. It's interesting to anyone curious about what species of birds are in Minnesota.

As far as the bird nesting population in Watonwan County goes, a few more bird species and the distribution of those bird species may need to be found. Currently Watonwan County has 61 nesting species identified, while Cottonwood to the west has 89, and Blue Earth to the east has 99.

Inquiries about helping with this project can be made to Project Coordinator Bonnie Sample at bsample@audubon.org or by calling Bonnie 651-739-9332.

If you decide to participate results can be submitted to the project on line, or you can mail them in.

Attachment A: Budget Detail for 2010 Projects - Summary and a Budget page for each partner (if applicable)

Project Title: Minnesota Breeding Bird Atlas

Project Manager Name: Mark Martell

Trust Fund Appropriation: $ *372,000*

1) See list of non-eligible expenses, do not include any of these items in your budget sheet

2) Remove any budget item lines not applicable

2010 Final Budget Detail for 2010 Project	**Result 1 Budget**	**Result 1 Budget Revised 9/12**	**Amount Spent**	**Balance**	**Result 2 Budget**	**Result 2 Budget Revised 9/12**	**Amount Spent**	**Balance**	**Result 3 Budget**	**Result 3 Budget Revised 9/12**	**Amount Spent**	**Balance**	**TOTAL BUDGET**	**Total Budget Revised 9/12**	**TOTAL BALANCE**
BUDGET ITEM															
PERSONNEL: wages and benefits	$49,567.00	$49,404.23	$49,404.23	$0.00	$72,622.00	$73,931.58	$73,931.58	$0.00	$49,566.00	$49,404.20	$49,404.20	$0.00	$171,755.00	$172,740.01	$0.00
Project Manager ($23,000 estimated) 16% FTE (includes 36% fringe benefit rate)	*$7,667.00*	*$7,987.65*	*$7,987.65*	*$0.00*	*$7,667.00*	*$7,986.65*	*$7,986.65*	*$0.00*	*$7,666.00*	*$7,985.63*	*$7,985.63*	*$0.00*	*$23,000.00*	*$23,959.93*	*$0.00*
Program Coordinator ($117,000 estimated), 100% FTE, (includes 36% fringe benefit rate)	*$39,000.00*	*$39,805.40*	*$39,805.40*	*$0.00*	*$39,000.00*	*$39,806.40*	*$39,806.40*	*$0.00*	*$39,000.00*	*$39,807.37*	*$39,807.37*	*$0.00*	*$117,000.00*	*$119,419.17*	*$0.00*
Administrative Support ($8,700 estimated), 8% FTE (includes 12% or 36% fringe benefit rate)	*$2,900.00*	*$1,611.18*	*$1,611.18*	*$0.00*	*$2,900.00*	*$1,611.18*	*$1,611.18*	*$0.00*	*$2,900.00*	*$1,611.20*	*$1,611.20*	*$0.00*	*$8,700.00*	*$4,833.56*	*$0.00*
Paid Block Coverage ($13.25/hr & 12% fringe benefits) 6-14-12					*$23,055.00*	*$24,527.35*	*$24,527.35*	*$0.00*					*$23,055.00*	*$24,527.35*	*$0.00*
Contracts															
Professional/technical															
Website Management and Update									$2,000.00	$2,000.00	$2,000.00	$0.00	$2,000.00	$2,000.00	$0.00
Data Management System (Cornell Lab of Ornithology)									$5,000.00	$5,000.00	$5,000.00	$0.00	$5,000.00	$5,000.00	$0.00
Other contracts															
Workshps/Meetings	$1,600.00	$1,519.51	$1,519.51	$0.00									$1,600.00	$1,519.51	$0.00
Printing/Mailing	$400.00	$278.04	$278.04	$0.00									$400.00	$278.04	$0.00
Supplies															
Field Supplies (maps, GPS units for volunteer surveyors)					$800.00	$326.82	$326.82	$0.00					$800.00	$326.82	$0.00
Travel expenses in Minnesota	$3,500.00	$2,960.05	$2,960.05	$0.00	$25,945.00	$26,175.57	$26,175.57	$0.00					$29,445.00	$29,135.62	$0.00
Staff Travel ($7,000 est)				$0.00											$0.00
Volunteer Travel ($35,000 est)				$0.00											$0.00
COLUMN TOTAL	**$55,067.00**	**$54,161.83**	**$54,161.83**	**$0.00**	**$99,367.00**	**$100,433.97**	**$100,433.97**	**$0.00**	**$56,566.00**	**$56,404.20**	**$56,404.20**	**$0.00**	**$211,000.00**	**$211,000.00**	$0.00

2010 Project Abstract
For the Period Ending June 30, 2012

PROJECT TITLE:	Minnesota Breeding Bird Atlas – NRRI/U of MN
PROJECT MANAGER:	Gerald J Niemi
AFFILIATION:	Natural Resources Research Institute, University of Minnesota
MAILING ADDRESS:	5013 Miller Trunk Hwy
CITY/STATE/ZIP:	Duluth MN 55811-1442
PHONE:	218.720.4270
E-MAIL:	gniemi@d.umn.edu
WEBSITE: [If applicable]	www.nrri.umn.edu

FUNDING SOURCE:	Environment and Natural Resources Trust Fund
LEGAL CITATION:	M.L. 2010, Chap. 362, Sec. 2, Subd. 3(c)

APPROPRIATION AMOUNT: $161,000

Overall Project Outcome and Results

This project is the third and fourth years of a four-year effort in the development of the Minnesota Breeding Bird Atlas – the first comprehensive assessment of Minnesota's breeding birds. The overall project is divided into two parts: 1) volunteer observations organized by Audubon Minnesota and 2) systematic surveys of Minnesota's breeding birds organized by the University of Minnesota (summarized here). Objectives were to gain uniform statewide coverage for all Minnesota's birds, estimate breeding bird populations by habitat type, and contribute to a nationwide network of bird atlases. Data gathering was primarily completed by graduate and undergraduate students at the University of Minnesota. All passed an aural bird identification test, verified their hearing ability, and participated in field standardization exercises.

Over the two breeding seasons (2011 and 2012) of this project, the target of 40% of Minnesota townships (>920) was successfully completed. Currently, over 80% (>1,800) of the townships have been sampled, with over 230 species observed and over 160,000 individuals counted in over 2,800 individual point counts. Thousands of additional breeding observations were submitted by surveyors from this project to the volunteer database in the complementary study organized by Audubon Minnesota, including over 4,000 probable or confirmed breeding records for Minnesota birds. Over 70% of the data gathered during 2009-2012 have been entered, checked for errors, and briefly summarized.

Project Results Use and Dissemination

The data gathered through 2010 have been downloaded to the Minnesota breeding bird atlas database and during the fall of 2011 through the Cornell University interface. All of these data will be incorporated into a comprehensive atlas of Minnesota's breeding birds that will be used as 1) a first-ever baseline on the current population status of this important Minnesota resource, 2) critical information for future conservation planning, and 3) as a guide for such activities as identifying important bird areas or for nature-based tourism activities. The ultimate dissemination of these data will be through an interactive data system and we anticipate the publication of a hard copy book assuming suitable funding can be obtained.

Environment and Natural Resources Trust Fund (ENRTF)
2010 Work Program

Date of Report: January 31, 2012
Date of Next Status Report: July 31, 2012
Date of Work program Approval: June 9, 2010
Project Completion Date: June 30, 2012

I. PROJECT TITLE: Minnesota Breeding Bird Atlas – NRRRI/U of MN

Project Manager: Gerald J Niemi
Affiliation: Natural Resources Research Institute, University of Minnesota
Mailing Address: 5013 Miller Trunk Hwy
City / State / Zip: Duluth MN 55811
Telephone Number: 218/720-4270
E-mail Address: gniemi@d.umn.edu
Fax Number: 218/720-4328
Web Page address: http://www.nrri.umn.edu

Location: Statewide

Total Trust Fund Project Budget: $372,000

The total appropriation for this project will be split between Audubon Minnesota and the Natural Resources Research Institute at the University of Minnesota Duluth as outlined below. Audubon Minnesota will submit a separate workplan for their part of the project.

NRRI, University of Minnesota Duluth	**Trust Fund Appropriation:**	**$**	**161,000**
	Minus Amount Spent:	**$**	**160,249**
	Equal Balance:	**$**	**751**
Audubon Minnesota	Trust Fund Appropriation:	$	211,000
	Minus Amount Spent:	$	120,931
	Equal Balance:	$	90,069

Legal Citation: M.L. 2010, Chap. 362, Sec. 2, Subd. 3(c)

Appropriation Language:
$372,000 is from the trust fund to continue development of a statewide survey of Minnesota breeding bird distribution and create related publications, including a book and online atlas with distribution maps and breeding status. Of this appropriation, $211,000 is to the commissioner of natural resources for an agreement with Audubon Minnesota and $161,000 is to the Board of Regents of the University of Minnesota for the Natural Resources Research Institute. The atlas must be available for downloading on the Internet free of charge.

II. PROJECT SUMMARY AND RESULTS:

The Minnesota Breeding Bird Atlas is a comprehensive, statewide survey of the breeding distribution of Minnesota's birds. Breeding Bird Atlases are used throughout the world to document and map the distribution of breeding birds. Atlas information is vital to scientists

and conservationists, allowing them to focus conservation investments in the most strategic and effective manner. Minnesota is one of only six states that do not have an atlas, impeding state, regional, and national conservation efforts. Moreover, this atlas project combines a unique effort by over 600 volunteers coordinated by Audubon Minnesota to obtain detailed information on breeding status of Minnesota's breeding birds, while this project coordinated by the Natural Resources Research Institute is gathering systematic and consistent data from every township in the state of Minnesota. The combination of these two efforts represents a powerful addition to understanding the distribution, relative abundance, and habitat use by Minnesota's breeding birds.

Birds are important indicators of the quality of our environment and they are greatly appreciated by the public. According to the MN DNR, more than 1.8 million Minnesota citizens have been identified as having a defined interest in birds. In addition to our data gathering, many of the contemporary databases gathered by agencies, universities, and other organizations will be incorporated into the atlas. Final products will include a book and on-line atlas, containing detailed distribution maps, data on species breeding status, and a summary of historical species information. Access to the information will be provided to the public as well as conservation agencies and organizations. These data will be useful to a wide variety of organizations including federal agencies, many state agencies such as the MN DNR and MPCA, county land management agencies, and both regional and local organizations to highlight tourism opportunities.

As a major participant in the LCCMR funded, Statewide Conservation and Preservation Plan, project manager Niemi needed to rely on crude information on the identification of important areas of biological diversity in the state. The information gathered during this project is at the sub-township level and will provide much greater spatial detail; one more compatible with contemporary remote sensing imagery available for vegetation, water, and development. These data will also be of great utility for use in agency decision-making regarding the dedicated funding legislation associated with land acquisition and water quality protection. These types of spatially-intensive data sets are essential to make wiser decisions about land use allocations for energy development, transportation networks, and other residential or industrial development.

Years 3 and 4 of this six-year project will focus on data collection, review, and organization. Data will be collected at the ownership level by volunteers recruited and trained by project staff and by paid, specially trained observers conducting limited, standardized point counts. Combined, these methods will provide the most complete picture to date on the overall distribution of all bird species as well as relative abundance estimates and detailed breeding habitat analysis for a majority of the breeding bird species of Minnesota. By the end of this work period we anticipate having some information from all townships in the state including "hard-to-access" townships in the BWCA and the northern peatlands, and should have completed sampling in 80% of the townships.

Data entry and access along with project updates and information will be handled through our website and the data management system we maintain with Cornell University. The appropriation will be split with $211,000 going to Audubon Minnesota to oversee project results 1 – 3 and $161,000 going to the Natural Resources Research Institute, University of Minnesota.

III. PROGRESS SUMMARY AS OF JANUARY 31, 2011

At the start of this portion of the project on July 1, 2010 we were in the process of completing the 2010 breeding bird samples. Overall we have completed sampling in 920 townships in Minnesota. This represents over 40% of the townships in Minnesota and indicates that we are on-target to complete sampling of the remaining 60% of townships over the coming three years. All of the data gathered during the 2009 and 2010 field seasons have been double-entered and all of the data have been error checked and corrected against the original field sheets. These data represent over 78,000 observations of individual birds for over 200 species. We are currently in the process of downloading these data to the Cornell University master data bank. These data will greatly increase the number of observations and reports for townships across the state of MN that will be observable on the website.

We have also been working closely with Audubon Minnesota on a strategy to increase the breeding confirmation for many species in the townships we intend to sample in 2011. This strategy will include having volunteers and potentially paid staff from Audubon Minnesota returning to the point counts and places within townships we have sampled. These data will allow a better determination on whether species are probable or confirmed breeding species within these townships. In general, the activity on this project is relatively minor during the period from September to April because project activity is primarily during the summer field season.

IV. OUTLINE OF PROJECT RESULTS*:*

Result 1: Volunteer and Staff Training and Management
Audubon Minnesota will oversee this Result using their portion of the appropriation. A separate workplan submitted by Audubon details this part of the effort.

Result 2: Data Collection
Audubon Minnesota will oversee this Result using their portion of the appropriation. A separate workplan submitted by Audubon details this part of the effort. NRRI personnel with expertise in geographic information systems will participate in many aspects of this portion of the project, including interaction with the Cornell Laboratory of Ornithology on the data management system.

Result 3: Data Management and Analysis
Audubon Minnesota will oversee this Result using their portion of the appropriation. A separate work plan submitted by Audubon details this part of the effort. NRRI personnel will continue to collaborate with Audubon and participate in coordination of this effort.

Result 4: Point Count Data Collection
Description: This work will be overseen by the Natural Resources Research Institute at the University of Minnesota Duluth. Up to ten paid, seasonal field surveyors, primarily graduate and undergraduate students will conduct counts in townships of Minnesota and the remote and hard-to-access areas of the state, including the BWCAW and the remote peatlands of Koochiching, Beltrami, and St. Louis Counties. By the end of year 4 approximately 80% of the point counts conducted by these specially trained seasonal staff will be completed for the entire state of Minnesota, including those in the BWCAW and other remote locations. A standard protocol has been developed and tested for the gathering of these data. These systematic counts will provide uniform and standardized distribution and abundance data on bird species across the entire state. We anticipate that some of these remote locations will require specialized travel such as the use of helicopters, boats, canoe, and extensive hiking in remote areas. These individuals will also gather data in the same fashion as the

volunteers to supplement the data in all the townships, but especially in most of the remote, inaccessible townships where volunteers are unlikely to cover.

Summary Budget Information for Result 4:	**ENRTF Budget:**	**$ 161,000**
	Amount Spent:	**$ 160,249**
	Balance:	**$ 751**

Deliverable	**Completion Date**	**Budget**
1. Data gathered for an additional 40% of Minnesota townships or a total of 80% over four years.	June 30, 2012	$141,000
2. Data entered and error-checked for 60% of Minnesota townships.	June 30, 2012	$10,000
3. Preliminary tables and figures on the relative distribution and abundance of MN breeding birds.	June 30, 2012	$10,000

Result Status as of January 31, 2011:
Field sampling for birds in over 400 Minnesota townships were completed during July 2010. These data have been double entered; once by the original counter and once by another counter. Any inconsistencies in the two entries are checked against the original field sheets or in some cases the original counter is contacted for clarification. In general, the number of inconsistencies is substantially less than 5% and most are easily reconciled with a simple check of the original field sheet. We are closely coordinating with efforts of Audubon Minnesota to increase coverage and determination of breeding by species in the various townships sampled.

The point count methodology has worked very effectively. We detect a mean between 17 and 38 species per township (priority block) and an average of 28 individual birds per point or 85 individual birds within a township. This results in a total for the two breeding seasons of sampling of over 78,000 individual birds and over 200 bird species. We have sampled a total of 2,850 individual points. We have also been responsible for sampling most of the inaccessible townships in the state. We have sampled over 20 inaccessible townships including six within the Boundary Waters Canoe Area Wilderness (BWCAW). In the BWCAW we identified between 40 and 51 species in one morning of sampling with approximately half identified as probable or confirmed breeding species. Our coverage of inaccessible blocks will be greatly expanded in summer 2011.

Most of the counts are being conducted by undergraduate and graduate students of the University of Minnesota Duluth and Twin Cities. These data will also be used as a basis for several future MS and PhD students at these universities.

Result Status as of July 31, 2011:
Breeding birds were sampled in over 700 townships with over 2,000 point counts from May 27 to July 15, 2011. This represents the completion of approximately 70% of the townships in the state of Minnesota and we are on track to complete sampling of all townships if funding is obtained for the next two years. Because these data collection efforts were recently completed, they have not yet been analyzed. These data are currently being double-entered and error-checked to insure accurate information. Species observations will also be scrutinized by several experts to insure that they are correct.

Preliminary Summary of 2009-2010 Data

A total of 899 townships and 2,849 points including 1,032 points (324 townships) in the southeast region, 906 points (288 townships) in the western region, and 911 points (287 townships) in the northeast region of Minnesota were surveyed by NRRI observers in the 2009 and 2010 field seasons (Table 1). In 2009 and 2010 66,730 individuals of 193 bird species were identified in Minnesota by NRRI observers. Note that that blocks represent the northeast quadrat (3 miles x 3 miles) of the township, so blocks are a subset sample of a township.

Table 1. Summary of points surveyed, blocks surveyed, clusters surveyed, number of individuals, and average number of indivuals per block detected by region (2009-2010).

Region	# Points	% Points	# Blocks	% Blocks	# Clusters	% Clusters	# Individuals	% Individuals	Average # individuals/ block
Southeast	1032	36.2	324	36.0	9	29.0	24740	37.1	76.3
West	906	31.8	288	32.0	8	25.8	24390	36.6	85.0
Northeast	911	32.0	287	31.9	14	45.2	17600	26.4	61.3
Total	2849	100.0	899	100.0	31	100.0	66730	100.0	74.2

Of the total 2,849 points surveyed in 2009-2010, cultivated crop habitat was sampled most often with a total of 844 points (29.6%), 733 points (25.7%) sampled were located in deciduous habitat, and 385 points (13.5%) were located in pasture habitats. Each of the remaining nine habitats covered 0.1-6.8% of the remaining points (Table 2). Without the inclusion of adjustments for distance of detection, cultivated crops, pasture, and deciduous forests were the habitats with largest number of observed individuals with 18,940, 14,885, and 10,066 detected in 2009 and 2010. The habitats with the greatest species abundance (of the 193 recorded species in Minnesota) were deciduous forests, emergent wetlands, and cultivated crops with 176, 156, and 154 species detected, respectively (Table 2). The habitats with lowest species abundance were habitats in developed and barren lands.

Table 2. Summary of points surveyed and individuals detected by habitat (2009-2010).

Habitat	# Points Surveyed	% Points Surveyed	# Individuals	% Individuals	# Species	% Species
Barren Land	4	0.1	74	0.1	33	17.1
Cultivated Crops	844	29.6	18940	28.4	154	79.8
Pasture/Hay	385	13.5	10066	15.1	147	76.2
Developed-Low Intensity	75	2.6	1836	2.8	88	45.6
Developed-Medium Intensity	31	1.1	793	1.2	51	26.4
Developed-Open Space	22	0.8	486	0.7	74	38.3
Deciduous Forest	733	25.7	14885	22.3	176	91.2
Evergreen Forest	193	6.8	3684	5.5	119	61.7
Grassland/Herbaceous	171	6.0	4627	6.9	123	63.7
Emergent Herbaceous Wetlands	194	6.8	6565	9.8	156	80.8
Shrub/Scrub	71	2.5	1717	2.6	116	60.1
Woody Wetlands	124	4.4	3014	4.5	137	71
No Data	2	0.1	43	0.1	23	11.9
Total	**2849**	**100.0**	**66730**	**100.0**	**193**	--

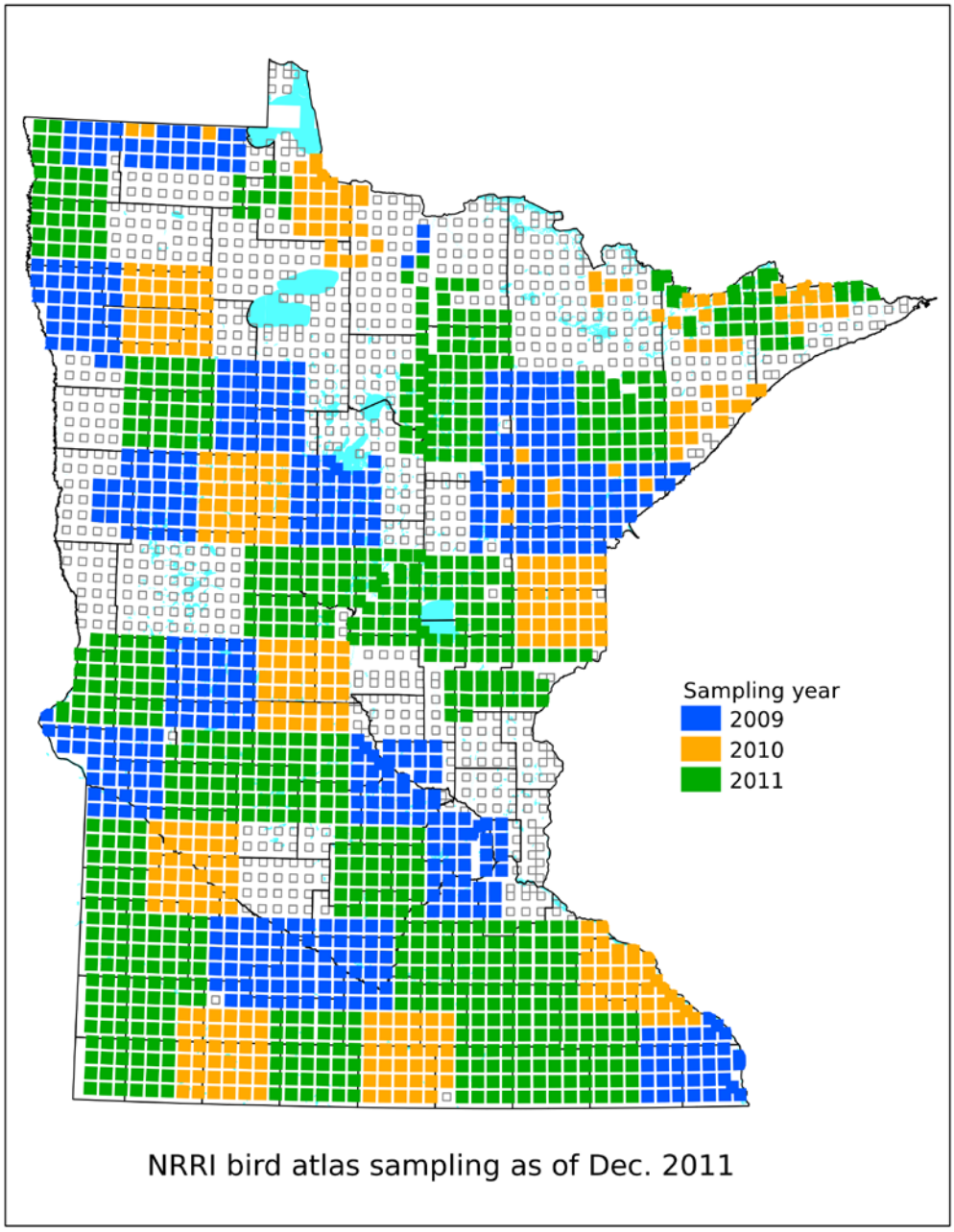
The average number of individuals reported was 74.2 per township with an average of 26 species detected per township. The number of individuals found in a given township ranged from 16 with points in cultivated crops and deciduous forest habitat to a high of 430 individuals in a township with points in emergent herbaceous wetland, pasture, and cultivated crop habitat. The number of species identified in a given township ranged from a minimum of 8 different species to in a township with 48 identified species. The township with 8 species had two points in medium intensity developed land, and one point in low intensity developed land. The township with 48 species had points located in pasture, grassland, and deciduous forest habitats. The most common species detected in Minnesota include Red-winged Blackbird (6,107), American Robin (2,767), and Common Yellowthroat (2,720); however, species abundance varied by habitat.

Result Status as of January 31, 2012: A total of 791 townships were sampled for breeding birds during the June-July 2011 period. This included a total of 2,375 point counts and 45,190 observations of 203 bird species. The total for the three years of sampling represents approximately 75% of the 2,300 townships in Minnesota. These totals also include 28 townships sampled in the BWCA and over 30 townships in the Red Lake Peatland. Up to this point we have not used any helicopter time to sample these difficult to reach places. The sampling within these areas has exclusively relied on the use of canoes and extensive hiking.

Summary of three years of sampling for Minnesota breeding bird species.

Year	Townships	Points	Observations	Species
2009	529	1,593	32,030	206
2010	414	1,245	25,921	193
2011	791	2,375	45,190	203
Total	1,734	5,213	103,141	602

The distribution of townships sampled in 2009, 20010, and 2011 is shown in the map below. Those shown in gray are those that are still need to be sampled of which some will be sampled in 2012.



All data gathered through July 2011 have been error-checked for data entry and downloaded into the Minnesota Breeding Bird Atlas website via Cornell University which is the repository for this information. In addition, NRRI has worked cooperatively with Audubon Minnesota in the development of a sampling strategy for the volunteers in order to maximize coverage of the state and in conjunction with systematic sampling of the state by NRRI. We

are also in the process of entering data from several other projects funded to NRRI that have been gathered in a similar fashion. The combination of these data will allow NRRI to reach its goal of sampling 80% of the townships in Minnesota by the end of this project in July 2012.

Final Report Summary: August 1, 2012:

V. TOTAL ENRTF PROJECT BUDGET: $372,000

Personnel: $ 222,700
Contracts: $ 61,000
Equipment/Tools/Supplies: $ 5,300
Travel: $ 83,000

Explanation of Capital Expenditures Greater Than $3,500: We have requested $40,000 in the budget for helicopter services (competitively bid) and for BWCAW outfitter services. These two items may be absolutely necessary in order to successfully and safely sample the large number of townships in Minnesota that are inaccessible by vehicle, boat, bike, or on foot. The summer of 2010 will be our first year in attempting to sample the inaccessible townships of Minnesota both in the BWCAW and in the Red Lake Peatland region. In the summer of 2010, we will attempt to do this without helicopters or the use of outfitters in order to save money and invest in more individuals to do the sampling. Depending on these results, we may request a modification to the budget. A consideration is the efficiency with which we can sample these inaccessible areas. Even though one individual was able to sample three to four townships per morning in areas with good road access, in these inaccessible areas our goal is to sample one township per morning. Hence, we will need to evaluate our efficiencies in cost per township of effort using different modes of transportation.

VI. PROJECT STRATEGY:

A. Project Partners:

Audubon Minnesota – Mark Martell, Project Manager, $211,000
Natural Resources Research Institute – University of Minnesota Duluth – Gerald J. Niemi, $161,000

Other Partners – Not receiving Funds

Bell Museum of Natural History - Dr. Scott Lanyon
Minnesota DNR Division of Ecological Resources
U.S. Fish and Wildlife Service
Minnesota Ornithologists' Union

B. Project Impact and Long-term Strategy:

The Minnesota Breeding Bird Atlas will provide the first time-specific survey of all the breeding birds in the state. This information will be available to land and resource managers, the public, and policy makers providing an invaluable resource as future events such as global warming require a response. Information can continue to be collected by partners and others providing a unique and robust view of Minnesota's birds.

C. Other Funds Proposed to be Spent during the Project Period: $80,000

Audubon Minnesota - $20,000
Minnesota Ornithologists' Union - $20,000
U.S. Fish and Wildlife Service - $20,000
Minnesota DNR - $20,000

D. Spending HIstory: LCCMR ML 2008 sub 5d - $270,000, Audubon- $30,000, USFWS- $50,000, Minnesota Ornithologists' Union- $20,000, Minnesota DNR - $20,000

VII. DISSEMINATION: Information will be available at: www.mnbba.org, at the end of the anticipated 6-year project we will publish a hardcover atlas.

VIII. REPORTING REQUIREMENTS: Periodic work program progress reports will be submitted not later than: January 31, 2011, July 31, 2011**,** January 31, 2012**. A final work program report and associated products will be submitted between June 30 and August 1, 2011 as requested by the LCCMR.**

IX. RESEARCH PROJECTS:

Attachment A: Budget Detail for 2010 Projects - Summary and a Budget page for each partner (if applicable)

Project Title: ***Minnesota Breeding Bird Atlas***

Project Manager Name: Gerald Niemi

Trust Fund Appropriation: $ ***372,000 (Audobon - $211,000 / NRRI $161,000)***

1) See list of non-eligible expenses, do not include any of these items in your budget sheet

2) Remove any budget item lines not applicable

2010 Trust Fund Budget	**Result 4 Budget:**	**CORRECTED Revised Budget** (Sept. 26, 2011)	**Amount Spent (thru 09/26/11)**	**Balance**	**Amount Spent (thru 01/31/12)**	**Balance**
NRRI's Appropriation = $161,000	*Data Collection, Management and Analysis*					
BUDGET ITEM						
PERSONNEL: wages and benefits						
Wages: Research Associate, Terry Brown, 6% effort; Graduate Student, 3 mos. summer effort; Field assistants- 7 seasonal staff (4-7 wks each summer), 1 work study $625 award	64,656	93,756	94,450	-694	97,786	-4,030
Fringe: Research Associate, 33.3% fringe; Graduate Student, 24.2% fringe; Field assistants - 7 seasonal staff and 1 work study, 8.2% fringe	9,344	15,244	19,482	-4,238	20,505	-5,261
Contracts / Services						
Services for access to remote sites	40,000	0	0	0		
Other Services		5000	1,066	3,934	1,107	3,893
Supplies						
Field/lab supplies (camping supplies,maps,GPS,binoculars)	6,000	6,000	2,420	3,580	2,450	3,550
Travel expenses in Minnesota						
Field research travel	41,000	41,000	37,689	3,311	38,400	2,600
COLUMN TOTAL	**$161,000**	**$161,000**	**$155,108**	**$5,893**	**$160,248**	**$752**