

**Legislative-Citizen Commission on Minnesota Resources  
2008 Project Abstract  
For the period ending June 30, 2010**

**PROJECT MANAGER:** Gerald J. Niemi

**AFFILIATION:** Natural Resources Research Institute, University of Minnesota-Duluth

**MAILING ADDRESS:** 5013 Miller Trunk Highway

**CITY/STATE/ZIP:** Duluth/MN/55811

**PHONE:** 218-720-4270

**EMAIL:** [gniemi@d.umn.edu](mailto:gniemi@d.umn.edu)

**FUNDING SOURCE:** Environmental and Natural Resources Trust Fund

**LEGAL CITATION:** M.L. 2008, Chap. 367, Sec. 2, Subd. 5(d)

**APPROPRIATION AMOUNT:** \$101,000.

**Overall Project Outcome and Results**

This project is the first two-years of an anticipated six-year effort in the development of the Minnesota Breeding Bird Atlas – the first-ever comprehensive survey 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). Because of the vastness of Minnesota, both of these efforts are necessary and complementary. Objectives of this portion of the project were to gain uniform statewide coverage for all of Minnesota’s birds, estimate breeding bird populations by habitat type, and contribute to a nationwide network of bird atlases in the United States. The first two years of this project focused on the experimental design to sample all townships in Minnesota over a five-year period, an interactive data entry system, data gathering using standard 10-minute point counts, and a brief data summary. Data gathering was primarily completed by graduate and undergraduate students at the University of Minnesota, Duluth and Twin Cities campuses. All were required to pass a test of 80 bird songs, verify their hearing ability, and participated in field standardization exercises.

Over the two breeding seasons (2009 and 2010) covered by this project, the target of 40 % of Minnesota townships (>920) was sampled. We observed over 200 species of birds and counted over 78,000 individual birds during the first two years of these efforts in over 950 townships and in over 2800 individual point counts. In addition, all bird censusers contributed thousands of observations to the volunteer data base in the complementary study organized by Audubon Minnesota, including over 4,000 probable or confirmed breeding records for Minnesota birds. Over 98 % of the data gathered in 2009 and 2010 have been entered and error checked.

**Project Results Use and Dissemination**

These data will be downloaded to the Minnesota breeding bird atlas during the fall of 2010 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.

## **Supplementary Materials**

The Minnesota Breeding Bird Atlas has received considerable publicity over the past two years. Included below are several examples of these public relations materials such as 1) an article in the U of Minnesota-NRRI NOW publication, and 2) example article by John Myers a reporter for the Duluth News Tribune in the Enterprise, a publication by Park Rapids, MN.

## Trust Fund 2008 Work Program Final Report

**Date of Report:** August 16, 2010

**Final Report:** June 30, 2010

**Contact Information:** Gerald Niemi

**I. PROJECT TITLE:** Minnesota Breeding Bird Atlas –Joint Project –  
Natural Resources Research Institute, University of  
Minnesota, Duluth and  
Audubon MN

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

**Location:** Statewide

**Total Trust Fund Project Budget:** \$270,000

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.

<b>To NRRI – U of Minnesota Duluth</b>	<b>Trust Fund Appropriation:</b>	\$	101,000
	<b>Minus Amount Spent:</b>	\$	101,000
	<b>Equal Balance:</b>	\$	0

To Audubon Minnesota	Trust Fund Appropriation:	\$	169,000
	Minus Amount Spent:	\$	159,726
	Equal Balance	\$	9,274

**Legal Citation:** M.L. 2008, Chap. 367, Sec. 2, Subd. 5(d)

**Appropriation Language:**

\$270,000 is from the trust fund to develop 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, \$169,000 is to the commissioner of natural resources for an agreement with Audubon Minnesota and \$101,000 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**

### **Result 1: Project Development**

Audubon Minnesota will oversee this Result using their portion of the appropriation. A separate workplan submitted by Audubon details this part of the effort. Project Manager, Gerald Niemi, serves on the Executive Committee of the MN Breeding Bird Atlas project and participates on the Steering Committee to insure coordination between Result 4 and Result 2 and 3 (below).

### **Result 2: Data Management System**

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 have provided expertise and cooperation with Audubon and interaction with the Cornell Laboratory of Ornithology in the initiation of the data management system. NRRI from Result 4 below are working with Cornell University for an automatic download of the data to their system and incorporation into the MN Breeding Bird Atlas data base.

### **Result 3: Volunteer 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 gathering point count data on Result 4 have also served as volunteers. All personnel have entered their data into the MN breeding bird atlas data base during their gathering of data on point counts..

### **Result 4: Point Count Surveys**

Result 4 is focused on the breeding season in Minnesota (approximately mid-May to mid-July). We designed an efficient means to sample the townships. We used 2-person teams gathering point count data – one group in southern Minnesota, one in western Minnesota, and one in northern Minnesota, plus individual expert observers in selected regions of the state. Individuals were able to sample about 3 townships per morning, but in some cases where there is good road access they were able to sample 4 townships per morning. The townships sampled were selected in a restricted, random fashion to insure the townships censused are evenly-distributed across the state. It was “restricted” to also insure logistical (transportation) efficiency, primarily so that townships to be sampled on a daily and weekly basis were relatively close together. The protocol was peer-reviewed by seven professional and amateur ornithologists in the state of MN and WI and their comments 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 censusers are paid as temporary university employees because the 1) field work is physically demanding, 2) work time include difficult hours (e.g., approximately 4:00 am to noon), and 3) it is a fulltime job.

We designed an input program in which data are transferred from field sheets to digital files via an Internet interface. Data are double-entered and error checked for any mistakes in data entry. Besides the systematic point counts, the field crews have been recording all observations of bird species within the townships they are sampling. These data, along with the appropriate breeding category, will be recorded directly into the Cornell MN Breeding Bird Atlas data base.

Over the two years of censusing during the 2009 and 2010 breeding seasons, we have recorded over 78,000 individual birds in over 920 townships sampled in Minnesota (Figure 1). This is over 40 % of the townships in the state of Minnesota and meets our target of 40 % covered in two years of effort. Hence we are on target to complete sampling in the over 2300 townships in the state of Minnesota. These samples include over 40 townships sampled in inaccessible or remote areas such as the Boundary Waters Canoe Area Wilderness and the Red Lake Peatland/Pine Island State Forest region of northern Minnesota. We have recorded over 200 species for 2,850 individual point counts completed throughout Minnesota. We have averaged 27.6 individual birds recorded per point and an average of 85.3 individual birds within 3 point counts of a priority block per township. The most common species recorded were the following (frequency = number of points observed/number of points sampled): American Robin (58.2%), Common Yellowthroat (51.8%), Red-winged Blackbird (51.1%), Song Sparrow (49.8%), Mourning Dove (38.8%), American Crow (37.7%), American Goldfinch (37.7%), Red-eyed Vireo (33.4%), Chipping Sparrow (29.8%), Common Grackle (28.1%), House Wren (28.0%), and Blue Jay (25.5%).

At the time of this report, about 98% of the data have been entered and error checked. Over the coming years, these data will be analyzed and presented in more detail. We anticipate that these data will be downloaded to the Cornell website during the fall-winter period of 2010-2011.



**Summary Budget Information for Result 4:**

**Trust Fund Budget:** \$ 101,000  
**Amount Spent:** \$ 101,000  
**Balance:** \$ 0

<b>Deliverable</b>	<b>Completion Date</b>	<b>Budget</b>	<b>Status</b>
<b>1. Over 500 townships have been sampled during the May-June 2009 breeding bird period – this exceeds the number of points we had anticipated sampling in year 1</b>	June 30, 2009	\$38,240	Completed.
<b>2 An additional 400 townships were sampled in May-June 2010 for a total of over 900 townships sampled in Minnesota. This meets our target for the first two years of this study.</b>	June 30, 2010	\$22,880	Completed
<b>3. Over 40 hard-to-access townships were sampled in northern Minnesota during the past year (summer 2010). We believe that we will be able to sample all or nearly all of these townships during the five years of data gathering.</b>	June 30, 2010	\$39,880	Completed

**Completion Date:** *June 30, 2010*

**V. TOTAL TRUST FUND PROJECT BUDGET:**

Total Appropriation to the Minnesota Breeding Bird Atlas: \$270,000

NRRI – U of MN Duluth as detailed in this workplan: \$101,000

Audubon Minnesota as detailed in their separate workplan: \$169,000

NRRI – U of MN Duluth

**Seasonal Field Staff:**

**50,200**

**Other Direct Operating Costs:**

**1,000**

GIS survey, site analysis work

**Seasonal Field Staff Travel:**

**\$40,800**

Costs for 6-12 field staff to travel by car to field sites throughout Minnesota over a two-year period. Costs include transportation by car, lodging, and meals.

**Supplies:**

**\$ 9,000**

Three GPS units and six digital cameras (Amendment approved 4/21/09)

**Explanation of Capital Expenditures Greater Than \$3,500:** None

**VI. OTHER FUNDS & PARTNERS:**

**A. Project Partners:** No other project partners are to receive project funds.

**B. Other Funds Proposed to be spent during the Project Period:**

Potential: National Fish and Wildlife Foundation - \$26,900 (grant requests submitted)

**C. Past Spending:**

**D. Time:** The described work in this plan is two years in duration. The overall project completion is expected to be six years with a total (six year) budget of \$1,500,000

**VII. DISSEMINATION:**

The project will establish a web site that will provide access to information and results during and after the project period. A book may be published at the end of the six-year project.

**Attachment A: see attached**

# For the birds

New York has two. Pennsylvania is working on its second. Wisconsin just finished their first.

And finally, Minnesota—with its major continental flyway along the Mississippi—will join the other 47 states that have a comprehensive Breeding Bird Atlas. The six-year project gets underway this spring to assess how many breeding bird species there are, and where, across the entire state. It will also provide baseline data to monitor changes in their populations.

NRRI is leading the scientific data-gathering and analysis portion of the project. And it's familiar work for NRRI ornithologist and scientist Jerry Niemi. For many years, Niemi provided leadership for the institute's long-term bird monitoring program in the Chippewa, Superior and Chequamegon national forests.

"This atlas project is consistent with the methodology we've used on the national forests," said Niemi. "We're taking our scientific approach and going statewide."

Over the next five years, NRRI's newly hired and highly trained birding team will listen and watch for breeding birds in every township in Minnesota—some 2,300—for three 10-minute counts. This

summer is the trial run to figure out how long the process actually takes.

By 2016, Minnesota will have scientifically observed and documented data on the estimated 225 to 250 bird species that breed here each spring, along with maps, charts and graphs.

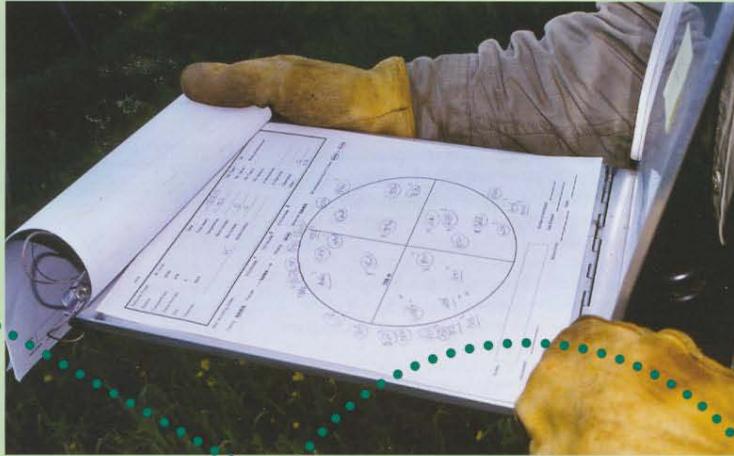
A second part of this extensive study will incorporate the findings of almost 1,000 volunteer birders across the state. Minnesota Audubon is seeking bird enthusiasts across the state and will coordinate the data collected from them. Because of the inconsistencies in volunteer skill levels, time, and numbers, Niemi said NRRI will use a limited amount of the volunteer information in their study.

"No state that I know of has used the scientific point count approach that we use, but the ones I've talked with said they wished they had," Niemi said.

NRRI's funding will also allow Niemi to send observers to areas that are very remote, like the Boundary Waters Canoe Area Wilderness and the Red Lake Peatland.

Baseline data on breeding bird populations is critical for measuring the health of bird populations, ecosystems, and understanding how people affect the landscape. NRRI's project is funded by the Legislative-Citizens Commission on Minnesota Resources.





# Count begins for Minnesota Bird Atlas

## HOW POINT COUNTS ARE DONE

As the sun rises during bird breeding season (June 1 to July 10), observers trained and tested to identify the songs of over 80 different bird species go into the woods and listen. Listen carefully. They make notations on a clipboard to indicate bird species they hear inside and outside a 100 meter radius.

Observers also record the minute they heard the bird and information about its behavior—singing, calling, carrying nesting material, or whether it's a sight observation.

## Bird Atlas project will see what's up in the air

BY JOHN MYERS  
DULUTH NEWS TRIBUNE

It's the most comprehensive study of bird species ever conducted in Minnesota, with researchers stopping three times in every township across the state to see what's flying around. Volunteers will contribute their findings as well.

The first-ever Minnesota Breeding Bird Atlas is long overdue, bird enthusiasts say, and will help document which species are where across the state.

About a dozen trained researchers will do the study's heavy lifting, stopping for 10 minutes at 2,352 different locations – generally the northwest quadrant of every township – from downtown Minneapolis, across southern Minnesota's farms, through the desolate Red Lake peatlands and even the Boundary Waters Canoe Area Wilderness.

Meanwhile, more than 1,000 volunteers, most of them avid birders, will fan out across assigned areas to help confirm what the scientists find, and maybe add findings of their own. Even the general public is being asked to report their findings, be it a back yard robin's nest or a hawk nesting on their office building.

"We're going to put it all together and get the most comprehensive dataset anyone has ever compiled [on Minnesota birds]," said Jerry Niemi, ornithologist at the

University of Minnesota Duluth's Natural Resources Research Institute.

The study won't count actual numbers of birds but how many species are identified and where. Surveyors will pay attention to the birds' habitats at nesting season, generally late May to early July, when the count will take place.

The three locations in each township include a random point, a point within the dominant habitat (farms, forest, swamps, etc.) and one in the second most common habitat.

It's estimated the state has between 225 and 250 bird species that nest here each summer.

Researchers started work this year and finished about 600 townships, Niemi said. Organizers hope to finish by 2013, with the atlas published in 2014. Most researchers are graduate students who must pass a test identifying 75 bird songs, as well as a hearing test.

"I can't do it because I can't pass the hearing test," Niemi noted.

While avid birders have a good handle on which native birds are most often seen here, there will likely be some surprises, said Anna Peterson, an NRRI bird researcher. Much of the existing data on the range of Minnesota birds is dated.

"Most of the older birding books show turkey vultures range only in southern Minnesota. But we all know

they have spread across the northern part of the state now," she said.

Another species, boreal chickadees, were once common across Minnesota and are listed as such in most books. But boreal chickadees now may have a much smaller range, Niemi said, while once common evening grosbeaks have nearly disappeared from the Northland.

Other birds thought to be extinct or rare may show up more often than anyone expected. And birds thought to be common may end up being scarcer than thought.

NRRI is leading the scientific data-gathering and analysis portion of the project, which is being compiled by the Cornell Laboratory of Ornithology. The Audubon Society is coordinating volunteers. The project is funded by the state's lottery and cigarette tax profits through the Legislative Citizen's Commission on Minnesota Resources.

Minnesota is one of only a few states that doesn't have a comprehensive breeding bird atlas. Wisconsin published its atlas in 2006.

More volunteers are needed to cover every survey section in the state, said Bonnie Sample, atlas coordinator for Minnesota Audubon.

In addition to volunteer surveyors and professional researchers, the general public is being asked to submit their bird sightings next summer. To find out how to report birds, or to volunteer to go into the field in a specific region to survey them, go to [mnbaa.org](http://mnbaa.org), e-mail [bsample@audubon.org](mailto:bsample@audubon.org) or call



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Attachment A: Budget Detail for 2008 Projects - Summary and a Budget page for each partner (if applicable)

**Breeding Bird Atlas**

**Project Manager Name: NRRI - Dr. Gerald Niemi**

**Trust Fund Appropriation: \$101,000**

- 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

<b>2008 Trust Fund Budget</b>	<b>Amount Budgeted</b>	<b>Amount Spent June 30, 2010</b>	<b>FINAL BALANCE</b>
<b>BUDGET ITEM</b>			
<b>PERSONNEL: Seasonal Research Assistants</b>	50,200	50,200	0
<b>Direct operating expenses</b>			
GIS-site analysis; print shop	1,000	1,000	0
<b>Travel expenses in Minnesota</b>	40,800	40,800	0
<b>Lab/field supplies</b>	9,000	9,000	0
<b>COLUMN TOTAL</b>	<b>\$101,000</b>	<b>\$101,000</b>	<b>0</b>