

Trust Fund 2009 Work Program

Date of Report: May 2009

Date of Next Status Report: January 2010

Date of Work Program Approval:

Project Completion Date: This workprogram outlines activities and products to be completed during the two-year duration of this funding (ending June 30, 2011). This is a continuation project so data generated from activities of the Minnesota County Biological Survey (MCBS) in previous biennia will be applied to the proposed outcomes, and data and procedures derived from work this biennium will be applied to future surveys and products.

I. PROJECT TITLE: Minnesota County Biological Survey

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Location: (see also map): Surveys will continue in Lake, Cook and St Louis counties. Surveys will begin in Clearwater and Beltrami counties.

Total Trust Fund Project Budget:	Trust Fund Appropriation: \$ 2,100,000
	Minus Amount Spent: \$ <u>0</u>
	Equal Balance: \$ 2,100,000

Legal Citation: M.L. 2009, Chp. 143, Sec. 2, Subd. 3a

Appropriation Language: Minnesota County Biological Survey
\$2,100,000 is from the trust fund to the commissioner of natural resources for continuation of the Minnesota county biological survey to provide a foundation for conserving biological diversity by systematically collecting, interpreting and delivering data on plant and animal distribution and ecology, native plant communities, and functional landscapes.

II. PROJECT SUMMARY AND RESULTS The Minnesota County Biological Survey (MCBS) systematically collects and interprets data on the distribution and ecology of native plant communities, plants and animals. The field survey focus this biennium is in northeastern and north-central Minnesota (see map). The information gathered by MCBS serves as a foundation for the conservation of Minnesota's biological diversity and functional landscapes through ecological monitoring, environmental review, planning, and critical habitat protection. MCBS has completed surveys in 74 of Minnesota's 87 counties. Since 1987, MCBS has added 16,824 new records of rare features to the

Department of Natural Resource's (DNR) information systems. Currently over 45,000 polygons of native plant communities and nearly 10,000 MCBS sites of biodiversity significance polygons are accessible to customers using DNR's "Data Deli".

Data have been used to prioritize park and natural area protection; to identify sites for native prairie management, monitoring, and restoration; in the development of a state wildlife action plan; to revise the state's list of rare species; and as baseline data for identification of high conservation value forests and high quality lakes. MCBS interprets results through technical assistance and publications to help guide private and public conservation and management of ecological systems, rare resources, and sites of biodiversity significance. MCBS collaborated in the development of native plant communities field guides and assists with training programs to use the guides. Data collected by MCBS provided some of the basis for a book *Trees and shrubs of Minnesota*. During this biennium, progress on publication of two additional books is planned.

III. PROGRESS SUMMARY AS OF __:

IV. OUTLINE OF PROJECT RESULTS:

Result 1: Field Surveys (see also attached map)

Description: The status and distribution of rare resources will be identified, providing a basis for the maintenance of Minnesota's biological diversity and ecological systems through ecological management, planning, research, monitoring, and critical habitat acquisition.

Procedure: A multi-level survey process is followed.

Review and site identification: Plant ecologists, botanists and zoologists review existing relevant natural resource data and record information into electronic databases, using Geographic Information Systems and other DNR information systems to consolidate and organize data. Examples of these data include forest inventories, wetlands inventories, wildlife habitat inventories, park surveys, soil surveys, land use data, historical public land surveys, biophysical surveys, academic research, and records from museum collections. Using these data, supplemented by the interpretation of aerial photography or other imagery, staff identify MCBS sites and species habitats for targeted surveys.

Coordination: Staff notify and coordinate surveys when possible with other divisions within the DNR, universities, counties, municipalities, tribal governments, watershed districts, federal natural resource agencies, conservation organizations, corporations, and individual landowners. This is critical to the success of data consolidation and field surveys.

Field Surveys: Ground surveys to assess MCBS site and native plant community quality and condition include the collection of vegetation samples in coordination with other sampling (soils, water chemistry etc.) when possible. Aerial surveys sometimes

supplement ground surveys. Additional specialized techniques are used during field seasons to survey selected rare species or groups of species (e.g., plants, birds, mammals, reptiles, amphibians, insects, fishes).

Summary Budget Information for Result 1:

Trust Fund Budget:	\$ 750,000
Amount Spent:	\$ 0
Balance:	\$ 750,000

Deliverable	Completion Date	Budget	Status (see below)
Review and site identification	June 2010 Northeast August 2009 Beltrami/Clearwater	220,000	
Coordination	July 2009-June 2011	150,000	
Field surveys	July-Oct 2009; April-Oct 2010; April-June 2011	380,000	

Results Status as of January 2010
Results Status as of October 2010
Results Status as of March 2011
Final Report Summary June 2011

Result 2: Information System Expansion

Description: MCBS will provide data and collections to information systems and museums, resulting in the long-term storage of biological collections and the distribution of information to individuals, organizations, and agencies with diverse natural resources goals.

Procedure:

Data collected by MCBS are entered into manual and computerized files in DNR's information systems. Key databases include those tracking locations of plants and animals, rare features, relev  (vegetation plot samples), aquatic plant lists/lakes, MCBS sites, native plant community polygons (GIS), and animal aggregations. Locations of native plant communities are mapped at the scale of U.S.Geological Survey 1:24,000 topographic maps using ARC/GIS. Shape files of native plant communities and MCBS sites are available on the DNR's Data Deli, accessible through the website. Rare species locations are entered into BIOTICS, an information system developed by NatureServe, an international organization with a major focus on the storage, distribution and interpretation of rare features data. Photographic vouchers, color slides, digital images, and other digital media are stored at the DNR, St. Paul. Field data sheets are filed electronically or manually.

Information System Development: The collection and management of data continues to improve through the use of networks, GIS, relational databases, global positioning systems, and field data recorders. MCBS participates in DNR's efforts to maintain data standards and quality of data, to integrate databases, and to improve information delivery

Preparation of Collections: All plant and animal specimens are identified; collections are prepared for permanent storage and deposited in appropriate repositories at the J.F. Bell Museum of Natural History at the University of Minnesota and the Science Museum of Minnesota.

Deliverable	Completion Date	Budget	Status (see below)
Data entered in DNR Information Systems	January 2010 # records added October 2010 #records added March 2011 #records added June 2011 #records added	575,000	
Information System Development	Updates with each status report	75,000	
Preparation of Collections	March 2010 #collections deposited June 2011 #collections deposited	50,000	

Summary Budget Information for Result 3:	Trust Fund Budget:	\$ 650,000
	Amount Spent:	\$ 0
	Balance:	\$ 650,000

Deliverable	Completion Date	Budget	Status (see below)
MCBS data on website	Dec 2009 Shape files of sites and native plant communities on DNR's Data Deli for three counties. Oct 2010 Shape files of sites and native plant communities on DNR's Data Deli for three counties.	100,000	
Technical assistance, ecological evaluations, data interpretation	July 2009-June 2011 Updates with each status report.	200,000	
Publications, web products.	June 2010 Vegetation plot data available on the web. Other updates with each status report July 2009-June 2011.	100,000	
Aspen Parkland-Red River Valley natural history/ guide book	Updates with each status report July 2009-June 2011. (Proposed publication 2013)	240,000	
<i>Amphibians and reptiles native to Minnesota</i>	Updates with each status report. (2 nd edition of book with revisions including new MCBS data. Publication proposed for 2012)	10,000	

Results Status as of January 2010

Results Status as of October 2010

Results Status as of March 2011

Final Report Summary June 2011

V. TOTAL TRUST FUND PROJECT BUDGET:

Personnel: \$1,950,000= FTE's: 8.5 ecologists, 3 botanists, 2 data managers, 1 information officer

There are four classified positions that are working all of part of the time on this project (3FTE); 11.5 unclassified staff. (11.5 FTE with professional technical contracts used for a portion of the salary of one ecologist and .5 information manager due to state hiring restrictions-see attachment A).

Field equipment, including data recorders	\$30,000
Travel and Fleet	\$100,000
Field supplies	\$20,000

Use of classified staff: Robert Dana (.5 FTE ecologist) and Nancy Sather (1.0 FTE plant ecologist) are the two primary authors of the Aspen Parkland-Red River Valley natural history/ guide book that is specifically identified in Result #3. This book is an

opportunity to publish and permanently archive knowledge and perspectives gained especially by these individuals due to decades of their field experience and investigation in the prairie and parkland region.

Robert's past funding has come from numerous sources. During FY10, he will continue to work on MCBS animal survey projects with temporary funding (Federal) provided by the State Wildlife Grants (as prioritized by the State Wildlife Action plan). The Landowner Incentive Program (LIP), a Federal Program proposed for discontinuation in December 2009, will provide a portion of his salary in early FY10 that enables him to complete a report for his recently completed LIP projects. Robert's expertise related to native prairie and insects will be utilized in Result 3 of the work program as related to management, conservation planning, local assistance and training. In terms of backfilling his position, other Divisional staff including regional staff primarily in the Scientific and Natural Area program, are performing some of the responsibilities once assigned to Robert.

Nancy Sather has been funded in the past by numerous state and federal sources as related to her work both with rare species and native plant communities. Recently much of her work on MCBS was funded by other sources that are no longer available.

Jared Cruz (.5FTE), a GIS specialist, will manage the shape files developed by the project. He will be responsible for adding to and maintaining the polygons of native plant communities (now numbering over 45,000) and the MCBS sites of biodiversity significance, so that polygons are accessible to customers using DNR's "Data Deli". Interpretative products of data for project outcomes presented on the web, in publications and on maps frequently require GIS personnel. Since this .5FTE of work is specific to MCBS, there is no one else needed to backfill to accomplish other Divisional tasks.

Welby Smith (1.0 FTE) is currently assigned to plant collection in the northern regions identified in the project. The size and inaccessibility of the project area make the addition of this highly experienced botanist desirable. Welby's botanical expertise related to verification of collections, comments on issues such as forest management, conservation planning, local assistance and botanical training are utilized as part of Result 3 of this work program. Some of Welby's previous responsibilities have been assigned to others (the coordination of the state list of rare vascular plants for example), or included projects that have been completed or eliminated from Divisional priorities. As one example of a completed product, Welby authored the *Trees and shrubs of Minnesota* published in 2008.

Field equipment for work in remote areas (such as tents, tarps, packs, stoves, data recorders, tree corers, GPS units, plant specimen driers)

Travel and Fleet includes field season use of state vehicles ("summer loaners"), lodging and related expenses when not camping, and food while in travel status.

Field supplies include items such as plant presses, batteries, air photos, maps, water resistant note books.

TOTAL TRUST FUND PROJECT BUDGET: \$2,100,000

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

VI. PROJECT STRATEGY:

A. Project Partners: The University of Minnesota Bell Museum of Natural History and the Science Museum of Minnesota provide resources for the curation of specimens collected by MCBS. Surveys of Red Lake Reservation lands will be conducted pending approval by the Red Lake Tribal Council. This request does not include funding for these partners.

B. Project Impact and Long-term Strategy: The need to protect and manage functional ecological systems, including ecological processes and component organisms, continues to accelerate with increased demands for water and energy, continued habitat fragmentation, loss of species and genetic diversity, exotic species expansion, and climate change. Baseline data on the distribution and ecology of Minnesota's plants and animals, native plant communities, and functional landscapes are needed to prioritize actions to conserve and manage ecological systems and critical components of biological diversity. MCBS systematically collects, interprets, and delivers these baseline data to private and public users to help guide decision-making. MCBS prioritizes sites of biodiversity significance for conservation and as potential sites for monitoring of critical habitat and ecological functions. MCBS provides educational products and assists with training, planning, and environmental review. Funding will be requested from the Minnesota Legislature and other sources such as the State Wildlife Grants for an ongoing Minnesota Biological Survey that will extend beyond the completion of the first statewide assessment, proposed for completion in 2021.

Proposed future strategies for continuation of a Minnesota Biological Survey

1) Increase technical assistance from survey staff to interpret data (publications, web-products) and to train and deliver quality information to counties, municipalities, and managers making decisions that impact the state's ecological systems and rare resources.

2) Data Gaps: Survey areas where weather conditions, life-history cycles, lack of experts, etc. during the first survey left data gaps, and add areas once perceived as lower priority but threatened due to new issues (exotic species, climate change, disease, habitat fragmentation, demands for energy and genetic variability).

3) Aquatics: Expand upon MCBS aquatic surveys and integrate complementary surveys to identify outstanding aquatic landscapes and sites (lakeshed, watershed, etc.).

4) Establish long-term monitoring of ecological conditions in priority sites of outstanding and high biodiversity significance and other representative ecological systems (watersheds, ecological land type associations). Track the distribution of plants and animals, with more detailed monitoring of selected species. Monitoring

also will be required for specific resource management issues (examples: prairie grazing, recreational impacts, groundwater/calcareous fens, forest certification, climate change).

5) Continue collaboration with other resource agencies and with universities, colleges, and museums that provide results of new research, innovative tools and new concepts, collection repositories, and educational opportunities for the public.

6) Continue information system development to enter, archive, manage, and deliver data and information.

C. Other Funds Proposed to be Spent during the Project Period:

All funds are pending:

Heritage Enhancement: \$1,159,000

General Fund \$ 700,000

State Wildlife Action grant \$ 500,000 (federal-funds most of the animal surveys)

D. Spending History: 2 –year time frame prior to July 1, 2009= \$3,579,400

includes \$1,500,000 Trust Fund. **Legal Citation:** ML 2007, Chap.30, Sec2, Subd. 6a.

VII. DISSEMINATION:

MCBS data are stored primarily in the Division of Ecological Resources information systems. In addition, MCBS procedures, updates, recent maps and links to related data are presented on the DNR website. Many GIS datasets are delivered to clients through the web and through agreements with the requesting agency and the DNR. For data on locations or rare features, a data request form is available via the web:

<http://www.dnr.state.mn.us/eco/nhnrp/nhis.html>

MCBS invests considerable time in publishing and distributing survey results in a variety of formats for various audiences. The DNR and Legislative libraries and other local information repositories (such as libraries within counties) are sent published products, including books, maps, reports, field guides and digital media. Many products are available on the DNR website, including GIS shape files of native plant communities and MCBS sites, native plant community field guides, and guides to sampling techniques such as vegetation plot data collection using the relevé method. MCBS web pages are updated with new information and have links to associated resources.

<http://www.dnr.state.mn.us/eco/mcbs/index.html>

As MCBS nears completion, the publication of natural history books based on MCBS data is consistent with user's demands. The second edition of *Amphibians and reptiles native to Minnesota* will include updated distribution data from MCBS. For example, the four-toed salamander, first documented in the state in 1994 has been recorded by MCBS at 50 additional locations since that time. A new book will feature the Aspen Parkland landscape of northwestern Minnesota along with the northwestern prairie region and Red River valley. Based on local collaborator interest, this book will include a guide to selected natural areas of the region. Focus groups held in the northwestern region

expressed strong interest in a book describing the natural history of the region and publication by a Minnesota publisher is planned.

Staff routinely make presentations that describe MCBS methodologies and results to a wide range of audiences including county boards, local planning groups, citizen advisory groups, other biologists, land managers and students. MCBS staff provide local planners with ecological interpretations describing important sites of biodiversity identified during the Survey to assist with management plans. Staff lead or participate in technical workshops and field trips to exchange ideas on survey methodology and provide training in the application and interpretation of the data.

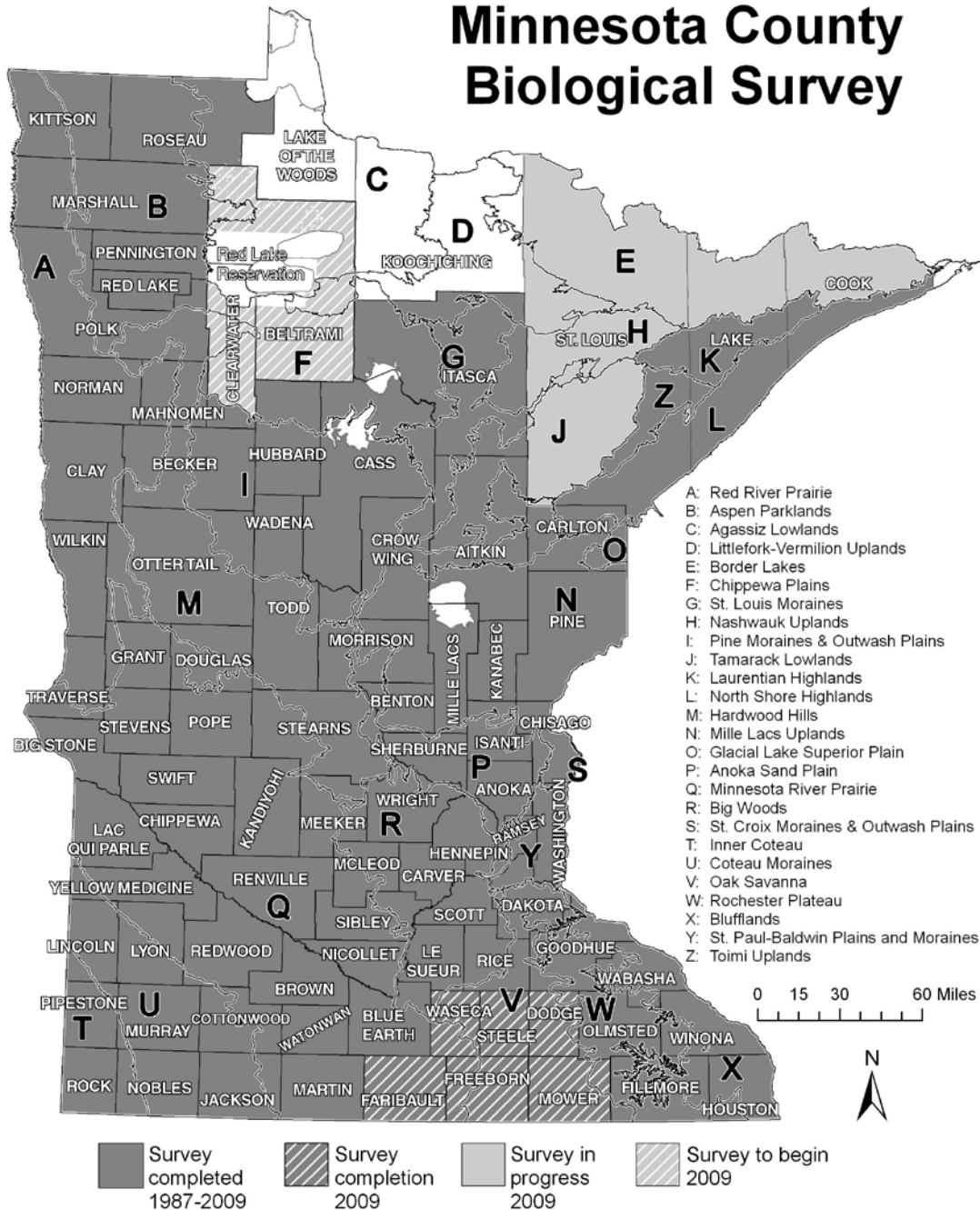
Physical collections are deposited at Minnesota repositories, primarily at the University of Minnesota's J.F. Bell Museum of Natural History and the Science Museum of Minnesota, St. Paul. As part of a larger network of museums and herbaria, these cooperators are essential to the documentation and sharing of MCBS results. MCBS and museum staff meet periodically to address curatorial, data management, and interpretive needs.

MCBS also delivers data through an international organization, NatureServe and also shares data with cooperators at colleges and universities and with others in ecological regions where surveys are ongoing or completed.

VIII. REPORTING REQUIREMENTS: Periodic work program progress reports will be submitted not later than January 2010, October 2010, and March 2011. A final workprogram report and associated products will be submitted between June 30 and August 1, 2011 as requested by LCCMR.

IX. RESEARCH PROPOSALS: N/A

Minnesota County Biological Survey



Survey on Red Lake Reservation pending approval by the Red Lake Tribal Council.

Attachment A: Budget Detail for 2009 Projects

Proposal Title: *Minnesota County Biological Survey*

Project Manager Name: Carmen Converse

Trust Fund Appropriation: \$ 2,100,000

2009 Trust Fund Budget	<u>Result 1</u> <u>Budget:\$750,000</u>	Amount Spent	Balance	<u>Result 2 Budget:</u> <u>\$700,000</u>	Amount Spent	Balance	<u>Result 3 Budget:</u> <u>\$650,000</u>	Amount Spent	Balance	
	<i>Field Surveys</i>			<i>Information System Expansion</i>			<i>Guidance Conservation Management</i>			
BUDGET ITEM										TOTAL FOR BUDGET
PERSONNEL: Wages and benefits										
Botanist (Karen Myhre)	50,000			60,000			26,000			136,000
Botanist (Lynden Gerdes)	60,000			50,000			26,000			136,000
Botanist (Welby Smith)*	70,000			40,000			56,000			166,000
Information Officer (Tom Klein)							136,000			
Information manager (Sharron Nelson)				136,000						136,000
GIS (.5FTE Jared Cruz)* .5 FTE vacant				124,000						124,000
Plant ecologist (Chel Anderson)	64,000			40,000			60,000			164,000
Plant ecologist (Vacant)/or contracts	50,000			30,000			24,000			104,000
Plant ecologist (Ethan Perry)	60,000			40,000			36,000			136,000
Plant ecologist (Erika Rowe)	60,000			30,000			30,000			120,000
Plant ecologist (Jason Johnson)	60,000			40,000			20,000			120,000
Plant ecologist (Rebecca Anderson)	50,000			40,000			30,000			120,000
Plant ecologist (Stacey Olszneski)	40,000			40,000			20,000			100,000
Plant ecologist (Nancy Sather)*	26,000			30,000			110,000			166,000
Ecologist (.5 FTE Robert Dana)*	10,000						76,000			86,000
SALARIES	600,000			700,000			650,000			1,950,000
Field equipment (includes data recorders)*	30,000									30,000
Travel expenses in Minnesota*	100,000									100,000
field supplies*	20,000									20,000
COLUMN TOTAL	750,000			700,000			650,000			2,100,000

