2008 PROJECTS

MN Laws 2008, Chapter 367, Section 2 (beginning July 1, 2008)

NOTE: For all projects, contact us to obtain the most up-to-date work programs for current projects (project updates are required twice each year) or the final reports of completed projects.

The following documents are short abstracts for projects funded during the 2008 Legislative Session. The final date of completion for these projects is listed at the end of the abstract. When available, we have provided links to a project's web site. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

Subd. 3 Land and Habitat

3a Metro Conservation Corridors (MeCC) - Phase IV
3b Vermillion River Corridor Acquisition and Restoration in Dakota County
3c Minnesota's Habitat Conservation Partnership - Phase V
3d Preserving the Avon Hills Landscape
3e Minnesota River Valley Green Corridor Land Protection
3f Scientific and Natural Area Acquisition
3g State Land Acquisition Consolidation
3h State Park and Trail Land Acquisition
3i Metropolitan Regional Park System Land Acquisition
3j Local Initiative Grants - Regional Parks and Natural Areas
3k Conservation Partners/Environmental Partnerships Matching Grant Program
3l County Trail Systems Design
3m Accelerated Prairie Management, Survey, Acquisition and Evaluation
3n Prairie Ecosystem Restoration
3o Best Practices for Native Prairie Management
3p Impacts of Climate Change and CO2 on Prairie and Forest Production - **RESEARCH**
3q Biofuel Production and Wildlife Conservation in Working Prairies - **RESEARCH**

Subd. 4 Water Resources

4a Future of Energy and Minnesota Water Resources - **RESEARCH**
4b Accelerating Plans for Integrated Control of the Common Carp - **RESEARCH**
4c Testing Pesticides and Degradates in Public Drinking Water
4d Assessment of Riparian Buffers in the Whitewater River Watershed
4e Intra-Lake Zoning to Protect Sensitive Lakeshore Areas
4f Native Shoreland Buffer Incentives Program
4g Southeast Minnesota Stream Restoration Projects
4h South-Central MN Groundwater Monitoring and County Geologic Atlases
4i Lake Superior Research - **RESEARCH**

Subd. 5 Natural Resource Information

5a Updating the National Wetlands Inventory for Minnesota
5b Soil Survey
5c Updating Precipitation Intensities for Runoff Estimation and Infrastructure Designs
5d The Minnesota Breeding Bird Atlas
5e Restorable Wetlands Inventory
5f Wildlife Disease Data Surveillance and Analysis - **RESEARCH**
5g Conservation Easement Stewardship, Oversight and Maintenance
5h Conservation Easement Stewardship and Enforcement Program Plan

Subd. 6 Environmental Education

6a Waters of Minnesota Documentary on Watersheds
6b Global Warming - Reducing Carbon Footprint of Minnesota Schools

Subd. 7 Establishment of an Emerging Issues Account

Funding Sources: (**note: all projects are TF, unless otherwise noted)
Environment and Natural Resources Trust Fund (TF)
Great Lakes Protection Account (GLPA)

Subd. 3 Land and Habitat

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Metro Conservation Corridors (MeCC) - Phase IV
Subd. 3a $3,150,000

Sarah Strommen
Minnesota Land Trust
2356 University Avenue West, Suite 240
St. Paul, MN 55114

Phone: (651) 647-9769
Email: sstrommen@mnland.org
Web: http://www.dnr.state.mn.us/metroconservationcorridors/index.html

OVERALL PROJECT OUTCOME AND RESULTS
During the fourth phase of the Metro Corridors project, the Metro Conservation Corridors Partners continued their work to accelerate protection and restoration of remaining high-quality natural lands in the greater Twin Cities Metropolitan Area by strategically coordinating and focusing conservation efforts within a connected and scientifically-identified network of critical lands. This corridor network stretches from the area's urban core to its rural perimeter, including portions of 16 counties.

The Partners employed a multi-faceted approach, which included accomplishments in four specific result areas:

1. Partnership and Program Coordination: Partners met quarterly to review project accomplishments and coordinate activity. With DNR support, the partners also continued efforts to develop an online database to facilitate tracking and reporting of MeCC projects over time.
2. Restore and Enhance Significant Habitat: Collectively, the partners restored 775 acres of land. Restoration of an additional 464 acres and 0.06 miles of shoreline was completed using other funds.
3. Acquire Significant Habitat: Collectively the partners protected 1,183 acres of land, including more than 4 miles of shoreline through acquisition of fee title and conservation easements and leveraged an additional 773 acres of land and more than 5 miles of shoreline using other funds.
4. Other Conservation Tools and Incentives: The Metro Greenways Program assisted three cities, two soil & water conservation districts, and one county with the development and gathering of natural resources information to identify sites for protection or restoration and/or to implement conservation measures.

Since 2003, MeCC partners have protected more than 8,000 acres and restored more than 6,500 acres. These strategic and coordinated efforts address a number of recommendations of the Statewide Conservation and Preservation Plan, including protecting priority land habitats, protecting critical shorelands of streams and lakes, restoring land, wetlands, and wetland-associated watersheds, and improving connectivity and access to outdoor recreation.

PROJECT RESULTS USE AND DISSEMINATION
As projects were completed, the individual partners were encouraged to publicize accomplishments through press releases, organization newsletters and websites. These efforts resulted in information being distributed to the public through websites, email lists, daily and weekly newspapers, newsletters, and other print materials. Additionally, once the MeCC database development is complete, the partnership plans to incorporate a public web portal, which will display accomplishments.

COMPLETE OVERALL FINAL REPORT

Abstracts and Reports of Individual Partner Projects

1.1 Overall Summary and Coordination and Administration of MeCC Partnership (DNR)
2.1 Restore/Enhance Significant Watershed Habitat (Friends of the Mississippi River)
2.2 Lower Minnesota River Watershed Restoration & Enhancement Project (Friends of Minnesota Valley)
2.3 Restore and Enhance Significant Habitat (Great River Greening)
2.4 Metro Greenways Habitat Restoration and Enhancement Grants (DNR)
2.5 Scientific and Natural Area (SNA) Restoration and Enhancement (DNR)
3.1 Critical Lands Protection Program - Fee Title & Conservation Easement Acquisition (Trust for Public Land)
3.2 Protecting Significant Habitat by Acquiring Conservation Easements (Minnesota Land Trust)

3.3 Fee Acquisition for Minnesota Valley National Wildlife Refuge (Minnesota Valley National Wildlife Refuge Trust)
3.4 Metro Greenways Habitat Acquisition (DNR)
3.5 DNR Fish and Wildlife Acquisition (DNR)
3.6 Acquisition of Significant Habitat (DNR)
4.1 Metro Greenways Community Conservation Assistance Grants (DNR)

Project completed: 06/30/2010

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Vermillion River Corridor Acquisition and Restoration in Dakota County
Subd. 3b $400,000

Alan Singer
Dakota County
14955 Galaxie Ave
Apple Valley, MN 55124

Phone: (952) 891-7001
Email: al.singer@co.dakota.mn.us
Fax: (952) 891-7031
Web: http://www.co.dakota.mn.us

Funds enable Dakota County to develop and begin implementation of a comprehensive and integrated water quality, wildlife habitat, and outdoor recreational corridor system plan for the 335 square mile Vermillion River watershed, located in the counties of Dakota, Scott, and Goodhue. Implementation using these funds includes fee title and conservation easement acquisition to protect approximately 125 acres and restoration efforts to enhance approximately 40 acres.

Project Publication:
Vermillion River Corridor Plan: Improving Water Quality, Habitat, and Recreation (PDF - 13.2 MB)

Project due to be completed: 6/30/2011
Work Program

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Minnesota's Habitat Corridors Partnership - Phase IV
Subd. 3c $3,150,000

Joe Pavelko
Pheasants Forever, Inc
7975 Acorn Circle
Victoria, MN 55386

Phone: (612) 532-3800
Email: jpavelko@pheasantsforever.org
Web: http://www.mnhabitatcorridors.org

Overall Project Outcome and Results
During the period between July 1st, 2008 and June 30th, 2010, Minnesota's Habitat Conservation Partnership (HCP) collectively expended $3,100,005 of Environment and Natural Resources Trust Fund (ENRTF) dollars to restore, enhance, or protect 8,143 acres of habitat and 199,832 feet of shoreline and riparian areas. Additionally, HCP used these funds to leverage an additional $6,607,398 of other non-state funds to restore, enhance, or protect 8,423 acres of habitat and 23,585 feet of shoreline and riparian areas. In total, HCP expended $11,877,328 to restore, enhance or protect a total of 17,397 acres of habitat and 152,780 feet of shoreline and riparian areas within the defined HCP project areas.

Partners expended a total of $1,926,055 ($1,140,480 ENRTF; $785,575 other non-state funds) to restore/enhance a total of 9,081 acres (7,244 acres ENRTF; 1,837 other non-state funds). Work included 5,230 acres of grassland restoration/enhancement, 3,054 acres of wetland restoration/enhancement, 185 acres of woodland restoration, 27,380 feet of shoreline restoration, & 200 acres of wild rice restoration. Other accomplishments included shallow lake surveys, dam modifications, and site access/development.

Partners expended a total of $7,484,898 ($877,500 ENRTF; $6,607,398 other non-state funds) to acquire 6,951 acres (616 acres ENRTF; 6,335 acres other non-state funds) of perpetual conservation easements. Grassland/wetlands continued to be a priority for HCP partners working on easements, with 6,152 acres protected. Shoreline/riparian areas were also a

priority with almost 32,000 feet protected. In addition, 504 acres of woodland was also permanently protected.

Partners expended a total of $1,868,112 ($994,985 ENRTF; $873,127 other funds) to permanently protect 560 acres (309 acres ENRTF; 251 acres other non-state funds) in fee-title acquisition. HCP achieved 290 acres of new WMAs, 66 acres of AMAs, 124 acres of SNAs, and 80 acres of WPAs. Additionally, almost 10,000 feet of shoreline/riparian areas were protected.

For complete information, go to http://www.mnhabitatcorridors.org.

HCP Partners included: Ducks Unlimited, Fond du Lac Reservation, Friends of the Detroit Lakes Wetland Management District, Leech Lake Band of Ojibwe, MN Board of Water and Soil Resources, MN Deer Hunters Association, MN Department of Natural Resources, MN Land Trust, MN Valley National Wildlife Refuge Trust, Inc, National Wild Turkey Federation, Pheasants Forever, The Nature Conservancy, Trust for Public Land, U.S. Fish and Wildlife Service, U.S. Natural Resources Conservation Service.

Project Results Use and Dissemination The partnership acknowledges funding from the Minnesota Environment and Natural Resources Trust Fund. Accomplishment report information, mapping products, and project information can be found at http://www.mnhabitatcorridors.org. Other forms of information can be obtained by contacting Joe Pavelko, the HCP Coordinator, at (612) 532-3800.

COMPLETE OVERALL FINAL REPORT

Abstracts and Reports of Individual Partner Projects

0x Overall Summary of HCP - Phase IV
1a Project Coordination and Mapping (Pheasants Forever)
2a Hides for Habitat Restoration (Minnesota Deer Hunter Association)
2b Partners for Fish and Wildlife (U.S. Fish and Wildlife Service)
2c Living Lakes Enhancement (Ducks Unlimited)
2d Shallow Lakes Assessment and Management (DNR)
2e* Fond du Lac - Wild Rice Habitat Restoration (Fon du Lac Band of Chippewa) **[*Dollars turned back; no expenditure. No Final Report.]**
2f Habitat Enhancement on Shallow Lakes and Forested Impoundments (Leech Lake Band of Ojibwe)
2g Wildlife Areas Management (DNR)
2h Fish Habitat Restoration (DNR)
2i Set out Seedlings (National Wild Turkey Federation)
2j Lakescaping (DNR)
2k Prairie Management (DNR)
2n Campaign for Conservation (The Nature Conservancy)
2o Working Lands Partnership (Friends of the Detroit Lakes Wetland Management District)
2o Bluffland Restoration (National Wild Turkey Federation)
3a Shorelands Protection Program (Minnesota Land Trust)
3c Living Lakes Enhancements (Ducks Unlimited)
3d Wetlands Reserve Program (Ducks Unlimited and U.S. Natural Resources Conservation Service)
3e RIM Reserve (BWSR)
4a Critical Lands Conservation Initiative (Pheasants Forever)
4b Fisheries and Widlife Acquisition (DNR)
4c Critical Lands Protection Program (Trust for Public Land)
4h Habitat Acquisition for Minnesota Valley Wetland Management District of USFWS (Minnesota Valley National Wildlife Refuge Trust)
4i Habitat Acquisition - Professional Services (DNR)

Project due to be completed: 6/30/2010
Overall Work Program(For work programs of individual partner projects, click links directly above)

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Preserving the Avon Hills Landscape
Subd. 3d $337,000

Thomas Kroll
Saint Johns Arboretum and University
Box 3000
Collegeville, MN 56321

Phone: (320) 363-3163
Email: tkroll@csbsju.edu
Fax: (320) 363-3202
Web: http://www.csbsju.edu/arboretum/avonhills

Saint John's Arboretum and University and the Minnesota Land Trust will work with local landowners, non-profit organizations, and local units of government to develop plans and implement land protection measures, including ordinances and conservation easements, that will benefit the Avon Hills landscape area (approximately 80 square miles in Stearns County) of central Minnesota. Implementation using these funds includes conservation easement acquisition to permanently protect approximately 450-1,000 acres. Conservation easements will be held and monitored by the Minnesota Land Trust.

Project due to be completed: 6/30/2011
Work Program

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Minnesota River Valley Green Corridor Land Protection
Subd. 3e $1,000,000

Nancy Fasching
Southwest Initiative Foundation
PO Box 428
Hutchinson, MN 55350

Phone: (320) 587-4848
Email: nancyf@swifoundation.org
Fax: (320) 587-3838
Web: http://www.swifoundation.org

Overall Project Outcome and Results
The Green Corridor Legacy Program will provide Minnesotans public access to high quality game and wildlife habitat through a multi-year land acquisition plan.

The initial phase of this project included:

- Acquisition of 249.23 acres of easement free fee-title acquisition conservation lands from willing sellers. This program acquired land from willing and supportive landowners. The land is purchased and then transferred to the DNR for long-term habitat conservation, outdoor recreational access, sustainability, and monitoring. These properties include the Whispering Ridge Aquatic Management Area in Redwood County (182.87 acres), Beaver Falls Aquatic Management Area in Renville County (6.6 acres), and two additions to Fort Ridgely State Park in Renville County (29.85 acres and 30 acres).
- Development of a conservation plan guidance document that insures both the natural resources and the natural history of this corridor are restored, conserved, protected and utilized in manners that balance the ecological, cultural, socio-economic and recreational needs of today, while preserving these resources for future generations.
- Organization of a variety of stakeholders into a working partnership team committed to the vision for a Green Corridor in the Minnesota River Valley.

Project Results Use and Dissemination
Results from this project have been disseminated as follows:

- The conservation plan will be used to guide and vet proposed acquisitions by Green Corridor, Inc.
- More importantly, the plan will be used as a key decision support system by a wide variety of conservation partners and stakeholders within the project area to craft and implement a conservation and economic vision for the project area.
- The plan will be disseminated principally through the web, but is also available in limited numbers via CD and hard copy format. In the near future, once the new Tatanka Bluff Council website is fully operational, a recap of these FY08 ENRTF appropriation accomplishments will be posted on this website under the "Green Corridor" icon tab. The website will ask viewers for comments and feedback concerning the various strategies and outcomes related to this project and the Conservation Plan. The project will also served as a cornerstone for future funding requests to the LCCMR and from the Outdoor Heritage Fund.

The communications and outreach activities that have been done for the Minnesota River Valley Green Corridor Project include:

- The plan has been adopted by Green Corridor, Inc. as its conservation vision for the Middle Minnesota Valley.
- The final plan was presented to the public on May 6th, 2010 at the Tatanka Bluffs Council annual meeting at the Redwood Area Community Center in Redwood Falls MN.

- The conservation plan entitled, "Conservation in the Middle Minnesota Valley: A Blueprint and Action Plan" was produced in hard copy, CD and web format. The product will be available via the following web sites: Green Corridor, Inc. (www.tatankabluffs.com) and Great River Greening (www.greatrivergreening.org).
- Since the start of this project in the summer of 2008 numerous meetings, public forums, and media outreach activities have taken place that have illustrated the intended outcomes, accomplishments, and public benefits of this appropriation.

Project Publication:
Conservation in the Middle Minnesota Valley: A Blueprint and Action Plan (PDF - 14.6 MB)

FINAL REPORT

Project completed: 6/30/2010

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Scientific and Natural Area Acquisition
Subd. 3f $1,000,000

Peggy Booth
MN Department of Natural Resources (DNR)
500 Lafayette Rd, Box 25
St. Paul, MN 55155

Phone: (651) 259-5088
Email: peggy.booth@dnr.state.mn.us
Fax: (651) 296-1811
Web: http://www.dnr.state.mn.us/snas

Overall Project Outcome and Results
Environment and Natural Resources Trust Fund (ENRTF) dollars from this appropriation contributed toward the acquisition of six sites protecting a total of 673 acres (211.3 acres using ENRTF dollars; 461.7 acres using other funds) with rare features and native plant communities. These acquisitions resulted in three new Scientific and Natural Area (SNA) units within the State Outdoor Recreation System - Chimney Rock SNA (Dakota County), Clinton Falls Dwarf Trout Lily SNA (Steele County), and Lester Lake SNA (Hubbard County) - plus additions to three existing SNAs - Franconia Bluffs SNA (Chisago County), Lake Alexander Woods SNA (Morrison County), and St. Wendel Tamarack Bog SNA (Stearns County).

About the sites:

- The 77-acre new Chimney Rock SNA acquisition included a landowner donation and funding from Dakota County and the Department's rare species mitigation funds (pro-rated at 44.6 acres for this appropriation). Chimney Rock SNA is named for its unique geological feature of statewide significance and contains four rare plant species.
- The 21-acre Clinton Falls Dwarf Trout Lily SNA contains the world's largest population of the Minnesota endemic species of dwarf trout lily which straddles and is riparian to the Straight River.
- The new 440-acre Lester Lake site - jointly managed as an SNA and an Aquatic Management Area (320 acres designated as SNA and 120 acres designated as AMA) - was acquired through the Trust for Public Land with funding support from the Outdoor Heritage Fund, Kabekona Lake Association and Foundation, and Reinvest in Minnesota (pro-rated at 30.3 ENRTF acres for this appropriation). This site fully contains the undisturbed 70-acre Lester Lake, forested and sedge meadow native plant communities, and habitat for state special concern red-shouldered hawk and white adder's mouth orchid.
- Additions to existing SNAs include various native forest communities at the 35-acre Franconia Bluffs SNA, Parcel 2 (prorated at approximately 15.4 acres ENRTF), a 40-acre addition to Lake Alexander Woods SNA, and a 60-acre addition to the St. Wendel Tamarack Bog.

FINAL REPORT RECEIVED - AWAITING REVISION

Project completed: 6/30/2010

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State Land Acquisition Consolidation
Subd. 3g $500,000

Craig Engwall
MN Department of Natural Resources (DNR)

1201 E Hwy 3
Grand Rapids, MN 55744

Phone: (218) 999-7913
Email: craig.engwall@dnr.state.mn.us
Fax: (218) 327-4263
Web: http://www.dnr.state.mn.us

Establishment of a revolving account of funds the Department of Natural Resources (DNR) can use to consolidate state land ownership in Northern Minnesota in order to reduce forest fragmentation and enhance management efficiency. Funds in the account can finance the acquisition of lands of significant natural resource value adjacent to existing DNR forest lands; funds are replenished through the sale of isolated DNR parcels in difficult to manage areas.

Project due to be completed: 6/30/2011
Work Program

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State Park and Trail Land Acquisition
Subd. 3h $1,500,000

Larry Peterson (Parks) and Stan Linnell (Trails)
MN Department of Natural Resources (DNR)
500 Lafayette Rd
St. Paul, MN 55155

Phone: Larry Peterson: (651) 259-5593; Stan Linnell: 651) 259-5626
Email: larry.peterson@state.mn.us and stan.linnell@dnr.state.mn.us
Fax: (651) 296-6532 [Parks]; (651) 297-5475 (Trails)
Web: http://www.dnr.state.mn.us

Overall Project Outcome and Results
The Trust Fund funding allowed for the following State Parks and State Trails land acquisition projects:

- Ownership of approximately 158 acres currently for sale adjacent to Monson Lake State Park. Adding this parcel will provide additional access to a high quality lake and is adjacent to state park ownership.
- Ownership of approximately 360 acres at George Crosby Manitou State Park. Acquisition of this parcel will provide protection to one of the largest and highest quality old-growth northern hardwood forest complexes in the Lake Superior Highlands.
- The DNR Parks and Trails Division made offers to acquire four parcels of land for the Mill Towns State Trail that were rejected by the landowners at the end of June 2010. An Amendment request to transfer the remaining funds to Result 5-acquisition of approximately 1.25 miles of Paul Bunyan State Trail was approved on August 17, 2010.
- The DNR Parks and Trails Division made offers to acquire one parcel in Maplewood State Park that was rejected by the landowner at the end of June 2010.
- Ownership of approximately 1.25 miles of the Paul Bunyan State Trail. The property acquired is comprised entirely of former industrial property and is located adjacent to the shoreline of Lake Bemidji. This acquisition is partially funded through LCCMR and provides for State ownership of a significant segment of the remaining authorized Paul Bunyan State Trail. The acquired trail segment is to be constructed during 2011. Additional funding through Capital Bonding (2005 and 2006) and 2009 LCCMR was also used for this project.

See attached map for locations.

All acquisitions are from willing sellers, within the statutory boundaries of state parks and for statutory authorized state trails as determined by the Commissioner.

FINAL REPORT

Project completed: 6/30/2010

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Metropolitan Regional Park System Land Acquisition
Subd. 3i $1,500,000

Arne Stefferud
Metropolitan Council

390 N Robert St
St. Paul, MN 55101

Phone: (651) 602-1360
Email: arne.stefferud@metc.state.mn.us
Fax: (651) 602-1467
Web: http://www.metrocouncil.org

The Metropolitan Council will grant these funds to metropolitan regional park agencies, along with a required minimum 40% match of non-state funds, to acquire approximately 225 acres within approved regional park unit boundaries in the Metropolitan Regional Park System.

Project due to be completed: 6/30/2011
Work Program

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Local Initiative Grants - Regional Parks and Natural Areas
Subd. 3j $1,000,000

Wayne Sames
MN Department of Natural Resources (DNR)
500 Lafayette Rd.
St. Paul, MN 55155

Phone: (651) 259-5559
Email: wayne.sames@dnr.state.mn.us
Fax: (651) 296-6047
Web: http://www.dnr.state.mn.us

Co- Project Manager:
Marc Mattice
Wright County Parks
1901 Highway 25 North
Buffalo, MN 55313

Phone: (763) 682-7693
Email: marc.mattice@co.wright.mn.us
Fax: (763) 682-7313
Web: http://www.co.wright.mn.us/department/parks/

Through this program, the Department of Natural Resources (DNR) provides matching grants to local governments for acquisition of regional parkland outside the Twin Cities metropolitan area and for natural and scenic area land statewide. Specifically, these funds are to be used for a regional park grant to Wright County to begin to acquire lands for a proposed regional park on the Bertram Chain of Lakes in Wright County.

Project due to be completed: 6/30/2011
Work Program

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Conservation Partners/Environmental Partnerships Matching Grant Program
Subd. 3k $150,000

Wayne Sames
MN Department of Natural Resources (DNR)
500 Lafayette Rd, Box 10
St. Paul, MN 55155

Phone: (651) 259-5559
Email: wayne.sames@state.mn.us
Fax: (651) 296-6047
Web: http://www.dnr.state.mn.us/grants/habitat/env_cons_part.html

Overall Project Outcome and Results

A total of seven projects were completed for a total grant amount of $123,000. Five Conservation Partners habitat projects were completed for $87,000. The projects included reforestation and invasive species removal in Coon Rapids Dam Regional Park; improving the aquatic ecology of a 130 acre shallow lake in Kandiyohi County; restoration of 1,300 feet of Minnesota River shoreline in Mankato; a 15 acre restoration of prairie, savanna and wetland in Ramsey County; and implementation of several lake shore conservation projects in Stearns County.

Two Environmental Partnership projects were completed for $36,000. The projects involved implementation of innovative storm water management and interpretation at Square lake Regional Park and demonstration of innovative storm water management practices with environmental interpretation by the Washington County Conservation District.

Two projects originally awarded grants were withdrawn by the applicants.

Administration of the grants was completed by DNR local grants staff for a total of $10,000. A summary of the funded projects is attached.

Project Results Use and Dissemination
Grant recipients are required to submit a final report on the project to the DNR. This information is maintained in the project file and is available on request. Some projects involve the development of informational signing, brochures, booklets, etc., that are made available to the public.

FINAL REPORT

Project due to be completed: 6/30/2010

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County Trail System Design
Subd. 3l $175,000

Mary Vogel
University of Minnesota
151 Rapson Hall
89 Church St SE
Minneapolis, MN 55455

Phone: (612) 626-7417
Email: vogel001@umn.edu
Fax: (612) 626-7424
Web: http://ccl.design.umn.edu/

Overall Project Outcome and Results
Using a publicly engaged process involving citizens, county trail committees, local officials, and trail users, and building on the Center's previous state trail work, the Center for Changing Landscapes created designs/plans for individual county trail systems in Brown, Lyon, Redwood, and Renville Counties. While celebrating the region's and each county's environmental and cultural assets, the county-wide, community, district, and site scale plans/designs link the counties and the communities within them and connect to the existing city trails and the authorized state trails.

Project Goals:

- Create county trail plans/designs that promote recreation and environmental awareness and stewardship by addressing issues of environmental type, quality, and preservation along trail corridors and in the larger trail landscapes by preserving, enhancing, and interpreting natural and cultural landscape systems and features;
- Leverage the effectiveness of existing and planned recreational, natural, and cultural assets such as parks, trails, historic sites, conservation lands;
- Create community and county consensus around trail opportunities; and
- Create plans/designs for use to empower county trail funding from local and other sources.

Project Products:

- Community-focused and county-wide trail discussions: local input and critiques of plans/designs were given in over 25 public meetings with trail committees, citizens, and local officials;
- A printed and digital report that includes analyses of the landscape of the region and the four counties; 4 county trail system plans/designs; 49 county system routes through individual communities; 54 community trailhead locations; 19 community trailhead designs; 5 trailhead & special place designs; 5 county park trailhead designs; 4 signature element package that brand each county trail: logos, signs, kiosks, and rest areas; and a plan/design for the Chief Sleepy Eye Spur.

- Over 60 display boards of trail work for trail committee and larger public meetings
- Power point presentations for committee and public meetings

Plans are available for download at http://ccl.design.umn.edu/publications.html

Project Results Use & Dissemination

- Local media have publicized project meetings and the work. There have been newspaper articles, newsletter articles, radio interviews, and website postings.
- The plans/designs have been presented to and discussions held with county trail committees, park committees, city councils, and county boards.
- Plans/designs for Chief Sleepy Eye Spur were presented to the Minnesota Senate's Capitol Investment Committee and the House's Capitol Investment Finance Division.
- The work has been adopted including in the newly updated Southwestern Trail Plan and Lyon County's trail plan in its comprehensive plan.
- Plans are being made for a public meeting in September that will roll out all of the work in the four counties and set the stage for cooperation among the counties and for the development of a coordinated implementation strategy.
- Project results distributed to each county in both printed and digital form for their use and posted on LCCMR's and the Center for Changing Landscape's websites.

FINAL REPORT

Project completed: 6/30/2010

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Accelerated Prairie Management, Survey, Acquisition and Evaluation
Subd. 3m $1,250,000

Carmen Converse
MN Department of Natural Resources (DNR)
500 Lafayette Rd, Box 25
St. Paul, MN 55155

Phone: (651) 259-5083
Email: carmen.converse@dnr.state.mn.us
Fax: 651) 296-1811
Web: http://dnr.state.mn.us/eco

Overall Project Outcome and Results (includes Use and Dissemination)
Minnesota's native prairie covered about 18 million acres at the time of the public land surveys (1847-1908); currently less than one percent remains. This multi-faceted prairie project was designed to increase conservation of native prairie and provide tools for long-term management and assessment of this rare resource. Project results addressed:

1. Rapid assessment of remaining native prairie;
2. Completion of the Minnesota County Biological Survey (MCBS) in six prairie counties;
3. Increased technical assistance to private prairie landowners;
4. Acceleration of management of public and private prairie lands;
5. Establishment of a baseline dataset for long-term status trend monitoring and analysis;
6. Acquisition of prairie bank easements.

Results:
1) Rapid Assessment: The effectiveness of a computerized procedure to detect changes in mapped prairies was explored in this result. Detailed feature extraction, segmentation, and change analysis procedures using the SPRING software was completed for 1,521 prairie/savanna sites identified by the MCBS prior to 1994. The total area assessed included 65,444 acres of prairie/savanna habitat in 32 counties and over 192,000 acres of surrounding "buffer" area. Statewide, the prairie habitat examined had a 4% change affecting 2,332 acres from 1991 to 2008. Prairie habitat outside of protected areas had significantly higher amounts of prairie loss or woody vegetation encroachment. A separate report, Accelerated prairie management, survey, acquisition and evaluation result 1: Rapid assessment of remaining native prairie was completed.

2) MCBS completed surveys in six counties. Less than 1,700 acres of prairie in these counties was recorded as compared to approximately 2,053,300 acres recorded in the late 1800's. The rarity of prairie species is largely due to prairie habitat loss and fragmentation. Rare plant populations were recorded at 281 new locations, including new distributional data on species such as Wild quinine and Valerian. Vegetation samples (relevés) were collected at 26 locations. A State Wildlife Grant for concurrent animal surveys resulted in 70 new records. Sites of high biodiversity significance such as the 15 acre Dexter Prairie were identified for protection as natural areas.

3) Technical assistance: DNR prairie specialists provided consultation regarding management and protection strategies for native prairies at eight public events and individually to 63 private landowners. Forty prairie stewardship plans were delivered to landowners.

4) Management: The Scientific and Natural Area program (SNA) prairie management activities resulted in 545 acres of woody plant removal, 2085 acres of prescribed burning, 2162 acres of exotic species treatments, and 84.5 acres of prairie reconstruction.

5) Status Trend Monitoring: A total of 683 vegetation transects, 42 relevés, and 1596 bird point counts were completed at 38 sites containing high quality prairie providing a baseline dataset for future proposed long-term monitoring and analysis on at least 35 sites. A separate report, Accelerated prairie management, survey, acquisition and evaluation result 5: Prairie monitoring and evaluation was completed.

6) Protection: SNA protected high quality prairies in Big Stone, Pipestone, Goodhue, and Fillmore counties through acquisition of five Native Prairie Bank conservation easements (totaling 476.2 acres) that provide habitat for species such as Greater Prairie Chicken, Chestnut-collared Longspur, Prairie bush clover and Plains wild indigo.

FINAL REPORT

Project completed: 6/30/2010

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Prairie Ecosystem Restoration
Subd. 3n $80,000

Rich Perrine
Martin Soil and Water Conservation District
923 N State St, Ste 170
Fairmont, MN 56031

Phone: (507) 235-6680
Email: richard.perrine@mn.nacdnet.net
Fax: (507) 235-8171
Web: http://www.martinswcd.net

Overall Project Outcome and Results
This project's focus was to collect seed and plant materials from 50 species of local ecotype native plants from 50 vulnerable prairie remnants and then re-seed or plant them on 1,000 acres or more of protected easements. By increasing the plant diversity in our native prairies we aimed to improve their natural functions and provide a better habitat for our insects, birds, and mammals. Additionally, the seeds collected are being used as foundation seed and their origination followed according to MN Crop Improvement Association's (MCIA) "Yellow Tag" program.

Letters were received from 31 landowners and 18 County Townships giving us permission to conduct native plant inventories and then collect seed and plant materials. MCIA was contracted to perform site inspections, identification, and verification of native species in order for the seeds collected to maintain their "Yellow Tag" eligibility. We received an overwhelming response for us to plant on 1589 acres. Many properties had several areas in which we planted seed or seedling plugs which we successfully grew.

In June 2009 four interns were hired and put to work learning plant and seed identification and seed stratification requirements. Daily tasks included identifying prairie remnants or sites with local ecotype native species, planting trays, using GPS to mark species locations on large sites, placing no mow signs in selected ditches, shelling and cataloguing seed types and amounts collected. Seeds were collected from 104 different species of which 34 species could be considered at-risk for further decline.

Projects Results Use and Dissemination
Articles were published in Martin SWCD's Conservation Update and several radio spots were aired discussing this project to update county residents on our progress. We also set up information booths at various community events and we always had photographs and talked about what we were doing with the project.

FINAL REPORT RECEIVED - AWAITING REVISION

Project completed: 6/30/2010

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Best Practices for Native Prairie Management
Subd. 3o $45,000

Michelle Snider
Minnesota Recreation and Park Association
200 Charles Street NE
Fridley, MN 55432

Phone: (763) 571-1305 x100
Email: snider@mnrecpark.org
Fax: (763) 571-5204
Web: http://www.mnrpa.org

Overall Project Outcomes and Results
The 2004 LCMR Parks Study and the 2003-2008 State Comprehensive Outdoor Recreation Plan (SCORP) recommended better coordination among Minnesota's outdoor recreation providers. This project addressed these recommendations by engaging public and private outdoor recreation leaders to transform better coordination into shared knowledge and practices.

Two native prairie demonstration projects will identify best management practices and maintenance methodologies as the sites continue to mature. The first native prairie demonstration area is located within Cedar Creek Ecosystem Science Reserve in East Bethel, Minnesota. One-half of the area was mowed, and one-half was burned prior to seeding. This 23-acre demonstration area features five treatments: burn/broadcast seed; burn/drill seed; mow/broadcast seed; mow/drill seed; and forb plantings.

The second native prairie demonstration project is located within two city parks in Hutchinson, Minnesota. The two areas' objectives were to restore turf back to native prairie, and to further an oak savanna restoration. This approximately 10-acre demonstration area (total acreage within the two sites) features four treatments: drill seed near lowland river area; broadcast seed near high-ground river area; hand-seed; and over-seeding of a continued restoration project.

Three regional workshops were conducted to exchange information and techniques used during the demonstrations, and overall native prairie best practices. The first regional workshop focused on native prairie impacts, research, and reconnecting children to nature. Session content included biodiversity and its impacts on prairie ecosystems; bioenergy; climate; productivity and resistance to drought, disease, and pests; and reconnecting children with the native environment by teaching them the value of the native prairies, lands, and waterways.

The second regional workshop was designed to gather a cross-section of professionals to discuss strategies and solutions for best practices in native prairie management. Session content included best practices in native prairie management from numerous perspectives: engineering, wildlife, natural resources, park resources, and water resources. Workshop presenters also provided information on partnerships, stormwater program and vegetation, prairie maintenance, prairie seed installation, and forestry inventories.

The third regional workshop centered on small and large suburban native prairie areas. Session content included prairie and native plant/tree protection and restoration; and agricultural development that has been one of the largest sources of local habitat removal with current efforts to restore these prairies to their original native habitats. Workshop presenters also provided information on efforts to convert 600 acres of former agricultural land to native prairie and wetland.

Projects Results Use and Dissemination
The two demonstration areas were components of two of the regional workshops to share the site preparation, seed selection, and methodology information with participants. Project results have been provided within the Minnesota Recreation and Park Association's 2009 annual report, and Minnesota's state report during National Recreation and Park Association meetings.

Additionally, project updates are included on the Minnesota Recreation and Park Association's website and the best practices website. Further project results dissemination will be shared during Minnesota Recreation and Park Association educational conferences and trainings.

FINAL REPORT

Project completed: 6/30/2010

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Impacts of Climate Change and CO2 on Prairie and Forest Production
Subd. 3p $180,000

Peter Reich
University of Minnesota
1530 Cleveland Ave N
St. Paul, MN 55108

Phone: (612) 624-4270
Email: preich@umn.edu
Fax: (612) 625-5212
Web: http://www.forestry.umn.edu/people/facstaff/reich/

RESEARCH

Biofuels from perennial plants could be an important part of Minnesota's energy future; however, much uncertainty surrounds the growth potential and carbon sequestration potential of different perennial biofuels, especially with respect to anticipated changes in climate and atmospheric chemistry over the next century. The University of Minnesota will accelerate research simulating future climate and atmospheric conditions to determine their impacts on biomass production, carbon sequestration, and water quality in prairie and tree species.

Project due to be completed: 6/30/2011
Work Program

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Biofuel Production and Wildlife Conservation in Working Prairies
Subd. 3q $500,000

Clarence Lehman
University of Minnesota
100 Ecology Building,1987 Upper Buford Circle
St. Paul, MN 55108

Phone: (612) 625-5734
Email: lehman@umn.edu
Fax: (612) 624-6777
Web: http://www.cbs.umn.edu/eeb/faculty/LehmanClarence/

RESEARCH

Biofuels are likely to be an important component of future energy production. Biofuel production in Minnesota and around the globe has the potential to either improve conditions for wildlife species or make conditions markedly worse. The University of Minnesota will identify and research management practices that promote wildlife conservation and associated habitat biodiversity on future working prairies used for renewable bioenergy production.

Project due to be completed: 6/30/2011
Work Program

Subd. 4 Water Resources

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Future of Energy and Minnesota Water Resources
Subd. 4a $270,000

Sangwon Suh
University of California - Santa Barbara
3422 Bren Hall
Santa Barbara, CA 93106-5131

Phone: (805) 893-7185
Email: suh@bren.ucsb.edu

RESEARCH

Overall Project Outcome and Results

Minnesota's water resources are poised to undergo significant changes in the coming decades. For example, with new bioenergy policies aiming to reduce fossil fuel dependency, Minnesota has become one of the top five bioethanol producers in the United States in the past two decades. Bio-energy production, together with increasing population, energy demand, and climate uncertainties present a great challenge for water authorities seeking to sustainable future water supply. There is an urgent need to integrate an analysis of demands on Minnesota's water resources with scenarios of future energy production. This project aimed to envision Minnesota's temporal and spatial water schemes by 2030 in response to population, energy, and climate scenarios, by integrating a system dynamics model with geographic information system (GIS) data. We developed an integrated spatial model that analyzes the future of Minnesota's water budget with particular attention to changes in water demand under different scenarios. Key trends incorporated into the scenarios include (1) biofuel production (considering water needs for irrigation of the biofuel feedstock as well as for processing); (2) changes in the electricity grid mix considering Minnesota's Renewable Energy Standards; (3) demographic changes; and (4) climate change. Scenarios of water demand was combined with GIS mapping and water balance techniques, which can deliver spatially and temporally explicit water budget projections for each scenario.

The results indicate that population growth and increasing demand on electric power generation are two primary factors driving increasing future water demand in Minnesota. Water management should be coupled with urban development and planning to reduce water stress induced by population growth and electric power generation. Late summer and winter are two periods of time in which it is particularly challenging to support human demand of water without the potential of drawing down the water resources. This report produced by this project presents maps and regional monthly water availability graphs for various scenarios tested in this study. These system characteristics shown in the current scenario analysis can play an important part of future water conservation and management planning.

Project Results Use and Dissemination
The study results were presented in more than four national and international conferences hosted in the US and Portugal, in which a poster summarizing the findings of this study won the poster contest in the prestigious Gordon Research Conference in 2010. One paper was published in a high-impact journal, Environmental Science and Technology (ES&T) in 2009; the paper was one of the top-three most-cited and downloaded articles in September, 2009. Another, follow-up article has been submitted to the same journal and is currently under review. In 2008, a round-table forum was hosted at the University of Minnesota to discus water sustainability modeling and its application. Scholars from state agencies, research institutes, and NGOs attended the forum to brainstorm feasible frameworks for assessing Minnesota's water future under different uncertainties. Detailed information of the presentations in this forum and relevant supporting information can be found at http://www.iel.umn.edu/forum/waterforum.htm PI. Suh is participating in a publication by the United Nations Environmental Programme (UNEP) on biofuel's water implication as an author based on the knowledge and findings gathered from this project. The publication is expected to be released in early 2010.

PROJECT PUBLICATION: The Future of Energy and Minnesota's Water Resources

FINAL REPORT

Project completed: 6/30/2010

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Accelerating Plans for Integrated Control of the Common Carp
Subd. 4b $550,000

Peter Sorensen
University of Minnesota
1980 Folwell Ave
St. Paul, MN 55108

Phone: (612) 624-4997
Email: soren003@umn.edu
Fax: (612) 625-5299
Web: http://fwcb.cfans.umn.edu/sorensen/

RESEARCH

The common carp, first introduced and widely distributed across the United States in the late 1800s, is one of the most damaging invasive fish species in Minnesota and around the country. Common carp reduce food sources needed by native fish, stir up sediment and reduce water clarity, and harm underwater plants that maintain water quality and provide food and shelter for other fish. Various methods of control have proven either unsuccessful or environmentally damaging. These funds enable the University of Minnesota to continue, expand, and accelerate research into new and better options for controlling common carp by building upon major findings from a previous Environment and Natural Resources Trust Fund funded phase of this research [ML 2005, First Special Session, Chapter 1, Article 2, Section 11, Subd 5(g)], which identified

recruitment (i.e. the process by which newly hatched fish survive to a year in age) as a key weakness in the life history of the common carp.

Project due to be completed: 6/30/2011
Work Program

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Testing Pesticides and Degradates in Public Drinking Water
Subd. 4c $368,000

John Hines
MN Department of Agriculture (MDA)
625 Robert St N
St Paul, MN 55155

Phone: (651) 201-6694
Email: john.w.hines@state.mn.us
Fax: (651) 201-6117
Web: http://www.mda.state.mn.us/chemicals/pesticides/maace.aspx

Overall Project Outcome and Results
Pesticides are known to impact Minnesota's groundwater and there are new pesticides being developed and registered for use every year. To ensure the safe use of new pesticides it is essential to measure the concentration and frequency of their detection in the state's water resources. In addition it is critically important, for proper pesticide management, to be able to analyze water samples for the compounds parent pesticides break down into. It is only through the precise measurement of extremely small quantities of pesticides in the state's water resources that impacts to human and ecological health may be determined.

Through this project the Minnesota Department of Agriculture (MDA) laboratory acquired the necessary analytical equipment and developed appropriate analytical methods for analyzing water samples for additional new generation pesticides and their degradates in groundwater and drinking water in Minnesota. The new equipment and related methods expanded the spectrum of compounds the MDA is able to detect in water samples, increased precision of water sample analysis, and improved the overall efficiency of water sample analysis at the MDA. Furthermore, the MDA laboratory is now capable of measuring many pesticides to levels of sub parts-per-trillion in a water sample. Measures of such precision will allow the MDA to manage pesticide use to keep concentrations below levels injurious to humans or the environment.

Prior to completion of this project the MDA was able to analyze water samples for 36 pesticide parent compounds and 11 breakdown products. The new methods are able to analyze samples for 88 parent pesticides and 22 breakdown products. Before the new methods were developed the lowest measurable value for a specific pesticide was between 50 and 1000 parts-per-trillion while the laboratory is now able to measure pesticide quantities between 0.8 and 50 parts-per-trillion, depending on the specific pesticide being measured.

Sample results for monitoring conducted by the MDA during winter and spring periods in 2010 are showing interesting results. A small number of pesticides never before discovered have been detected, albeit at very low concentrations. A clearer image of the occurrence of various pesticide breakdown products is also beginning to emerge and ongoing work should provide insight to the balance between pesticide parent and degradate detections in the state's water resources. These results will also allow the MDA to more precisely determine pesticide impacts to the water resources and aid in understanding the effectiveness of recommended BMPs and other pesticide management practices.

To the degree that time and lab resources allow, the equipment purchased and methods developed through this project will also be available for use by any future publicly funded projects at no cost except standard operating expenses.

Project Results Use and Dissemination
Immediately following successful development of the new methods the MDA laboratory analyzed 100 samples from public drinking water wells across the state. These wells were selected and sampled by the Minnesota Department of Health from the available community wells that are not typically included in the US-EPA Safe Drinking Water Act pesticide monitoring requirements. As of this report results are just becoming available. Results of the testing will be made available by the Department of Health following proper notification of the participating communities.

In addition to the one time sampling of the community wells, every sample collected by the MDA monitoring program for both surface water and groundwater will be analyzed with the new methods. The first results from the MDA monitoring program samples will be published in mid 2011 as part of the program's annual water quality monitoring data report. Development of the methods and analysis of samples utilizing the methods will also be reported to the US-EPA as part of the federal reporting requirements enabling the registration of pesticides for use in the state of Minnesota.

FINAL REPORT

Project completed: 6/30/2010

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Assessment of Riparian Buffers in the Whitewater River Watershed
Subd. 4d $52,000

Megan Kranz-McGuire
Whitewater Joint Powers Board
400 Wilson St, Box 39
Lewiston, MN 55952

Phone: (507) 523-2171
Email: megankm@charterinternet.com
Fax: (507) 523-3717
Web: http://www.whitewaterwatershed.org

Funds enable an effort in southeastern Minnesota led by the Whitewater Joint Powers Board that will assist in the prioritization of stream restoration efforts to improve water quality and habitat and in the enforcement of riparian buffers. An inventory of streams and adjacent land use and a survey of riparian landowners throughout the region will be conducted.

FINAL REPORT RECEIVED - CURRENTLY UNDER TECHNICAL REVIEW

Project completed: 6/30/2010
Work Program

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Intra-Lake Zoning To Protect Sensitive Lakeshore Areas
Subd. 4e $125,000

Paul Radomski
MN Department of Natural Resources (DNR)
1601 Minnesota Dr
Brainerd, MN 56401

Phone: (218) 833-8643
Email: paul.radomski@dnr.state.mn.us
Fax: (218) 828-6043
Web: http://www.dnr.state.mn.us

Funds continue and expand a previous Environment and Natural Resources Trust Fund funded cooperative effort [ML 2007, Chap. 30, Sec. 2, Subd. 5(h)] between Cass County and the Department of Natural Resources (DNR) to identify sensitive shorelines on highest priority area lakes and implement innovative zoning practices to protect water quality and lakeshore habitat.

Project due to be completed: 6/30/2011
Work Program

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Native Shoreland Buffer Incentives Program
Subd. 4f $225,000

Erika Rivers
MN Department of Natural Resources (DNR)
1201 E Highway 2
Grand Rapids, MN 55744

Phone: (218) 999-7914
Email: erika.rivers@dnr.state.mn.us
Fax: (218) 327-4263
Web: http://www.dnr.state.mn.us

Shoreline buffers of native vegetation filter excess nutrients and pollutants from runoff and provide habitat. Across Minnesota, thousands of shoreline miles of native vegetation buffers have been stripped because landowners lacked understanding of the important ecological function of buffers and any incentive for maintaining them. These funds enable the Department of Natural Resources (DNR) to accelerate a native shoreland buffer incentive program through market research, technical assistance, and competitive matching grants of $75,000 to local governments to craft and implement shoreland protection incentive programs that encourage maintaining and restoring native shoreland buffers.

Project due to be completed: 6/30/2011
Work Program

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Southeast MN Stream Restoration Projects
Subd. 4g $240,000

Jeff Hastings
Trout Unlimited
E7740 Hastings Ln
Westby, WI 54667

Phone: (608) 606-4158
Email: jhastings@tu.org
Web: http://www.tu.org/driftless

Early European settlement and agricultural practices from the 1850's to the 1930's left a legacy of erosion, flooding, and alteration on coldwater streams in southeast Minnesota that is still negatively impacting those streams today. Funds enable Trout Unlimited to accelerate streambank stabilization and restoration on at least six miles of stream in southeast Minnesota while simultaneously building the capacity of area government agencies and private citizens to implement future stream restoration projects.

Project due to be completed: 6/30/2011
Work Program

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South-Central MN Groundwater Monitoring and County Geologic Atlases
Subd. 4h $1,600,000

Part 1 ($706,000)
Dale Setterholm
Minnesota Geological Survey
University of Minnesota
2642 University Ave. W.
St. Paul, MN 55114

Phone: 612) 627-4780
Email: sette001@umn.edu
Fax: (612) 627-4778
Web: http://www.geo.umn.edu/mgs/

Part 2 ($894,000)
Jim Berg
MN Department of Natural Resources (DNR)
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5680
Email: jim.berg@dnr.state.mn.us
Fax: (651) 296-0445
Web: http://www.dnr.state.mn.us

The Minnesota Geological Survey and the Department of Natural Resources (DNR)will continue their joint long-term effort of mapping the location, size, boundaries, and vulnerability of the state's groundwater to support wise use and protection of groundwater and other resources. In this phase of work, DNR will: 1) develop a plan for a statewide network of water level

monitoring wells, and 2) investigate physical and recharge characteristics of the Mt. Simon Aquifer - the deepest bedrock aquifer of south central Minnesota and the Twin Cities metro area. In this phase of work, Minnesota Geologic Survey will: 1)initiate atlases in Blue Earth, Le Sueur, and Nicollet counties, and 2)provide processing and analysis support for the DNR's drilling work.

Project due to be completed: 6/30/2011
Work Program - Dale Setterholm
Work Program - Jim Berg

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Lake Superior Research
Subd. 4i $86,000 (GLPA)

Steve Colman
University of Minnesota
Large Lakes Observatory, UMD
2205 E. 5th St.
Duluth, MN 55812

Phone: (218) 726-8522
Email: scolman@d.umn.edu
Fax: (218) 726-6979
Web: http://www.d.umn.edu/llo

RESEARCH

Overall Project Outcome and Results
There is a surprising lack of study and understanding of the ecosystems of the Great Lakes and their properties, especially in the deepwater basins. We know more about many marine systems than we know about the Great Lakes. With current concerns about the environmental health of the Great Lakes, studies supported through this project aimed to contribute to alleviating some of the unknowns. A series of studies were conducted that research the condition, functioning, and processes of Lake Superior, its sediments, and its ecosystem including:

- Studies related to the entire living ecosystem, from top predator fish down to picoplankton.
- Studies of the circulation of the lake using numerical models and oceanographic instrumentation.
- Studies of the water column including the balance between CO2 production and oxygen consumption, the processes related to the fate of organic matter and nutrients, and the effect of these and other water column processes on primary producers.
- Studies of the transport and delivery of organic and inorganic materials to the lake floor as sediments that accumulate in deep waters of the lake and the erosion, transport, and storage of coarse-grained sediment in coastal waters.

In all of these studies, we took a holistic, "physics to fish" approach, examining the interactions between physical and biological processes.

We conducted a total of 24 field projects, with project funds going primarily to the cost of using of our research ship for an aggregate of 53 days at sea. Project funds leveraged other funding as most of these studies were small pilot projects, extensions to projects funded from other sources, and projects to collect preliminary data often required for proposals to the national science agencies. The projects have a common theme of understanding the dynamics of Lake Superior, its sediments, and its ecosystem. Through these studies, we hope to provide Minnesotans, from lay citizens to environmental managers, a better understanding of how Lake Superior works and how it might change in response to climate change and human activity.

Project Results Use and Dissemination
We have now collected a wealth of environmental data for Lake Superior. A significant part of those data have already been used for larger research proposals to the National Science Foundation and other agencies, some of which have already been successful in bringing new federal funding into the state. Plans are for the results of studies supported through this project to be published in peer-reviewed journals where they will be available to Minnesota managers and regulators. With other funding, we are in the process of developing a system called the Global Great Lakes Data and Modeling Center, which will allow incorporation and assimilation of existing data, new data like those collected in this project, and ongoing real-time observational data. The Data and Modeling Center will allow numerical models to be run and compared in real time using the different data sets and make all data readily available though an internet interface.

FINAL REPORT

Project completed: 10/31/2009

Subd. 5 Natural Resource Information

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Updating the National Wetlands Inventory for Minnesota
Subd. 5a $550,000

Doug Norris
MN Department of Natural Resources (DNR)
500 Lafayette Rd, Box 25
St. Paul, MN 55155

Phone: (651) 259-5125
Email: doug.norris@dnr.state.mn.us
Fax: (651) 296-1811
Web: http://www.dnr.state.mn.us/eco/wetlands/index.html

Wetland inventories are an essential tool for effective wetland management, protection, and restoration. The data is used at all levels of government, as well as by private industry and non-profit organizations, for wetland regulation and management, land use and conservation planning, environmental impact assessment, and natural resource inventories. The original National Wetland Inventory for Minnesota is outdated and updating the data for Minnesota has been identified as an important priority. Funds enable the DNR to begin a multi-phase process of updating the National Wetland Inventory statewide.

Project due to be completed: 6/30/2011
Work Program

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Soil Survey
Subd. 5b $400,000

Megan Lennon
MN Board of Water and Soil Resources (BWSR)
520 Lafayette Road North
Saint Paul, MN 55155

Phone: (651) 296-1285
Email: megan.lennon@state.mn.us
Fax: (651) 297-5615
Web: http://www.bwsr.state.mn.us

Overall Project Outcome and Results
Accurate soils information is essential for evaluating the potential for land to support development, crop and forest production, and for identifying the most suitable locations for conservation practices and other land uses. Readily accessible local soil information is critical to informing conservation decisions and provides a foundation for sustainable land use planning. The soil survey is the mechanism for how this basic natural resource information is made available to land use authorities and landowners to make the best land use decisions.

In the ongoing, multi-year project to map, classify, interpret, and Web-publish an inventory of the soils of Minnesota, this one-year phase of the project focused on accelerating the completion of a Statewide soil survey, increase soil mapping in targeted areas, and enhancing soils data through increased sample collection, availability, and interpretation. Specifically:

1. 71,000 acres mapped in Crow Wing County;
2. 32,000 acres mapped in Pine County;
3. 85,000 acres mapped in Koochiching County;
4. 80,000 acres mapped in the Crane Lake subset of St. Louis County;
5. Data from 1,000 soil samples (some dating back to the 1970's) were interpreted for the first time and incorporated into Soil Surveys for many Minnesota counties;
6. Landuse effects on soil carbon were determined on 118 sites in 14 counties throughout the State, this data can be used to develop soil carbon management guidance.

The soil survey project was extremely successful and many of the mapping goals were exceeded. Mapping surpassed initial acreage goals in both Crow Wing and Pine Counties, and the soil surveys for Koochiching and St. Louis Counties were completed 1 year ahead of schedule. A report detailing the results of re-analysis of lab samples from the 1970's highlighting landuse impacts on soil carbon will be available in January 2011.

Project Results Use and Dissemination
The Soil Survey project funded by the Minnesota Environment and Natural Resources Trust Fund is highlighted as a BWSR feature project (www.bwsr.state.mn.us/projects/soil_survey.pdf) on the Agency's homepage. All the data, mapping information, and interpretations are available on the Web Soil Survey as a user-friendly, GIS-based application. Web Soil Survey provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world.

FINAL REPORT

Project completed: 6/30/2010

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Updating Precipitation Intensities for Runoff Estimation and Infrastructure Designs
Subd. 5c $100,000

Bruce Wilson
MN Pollution Control Agency (PCA)
520 N Lafayette Rd
Saint Paul, MN 55155

Phone: (651) 282-2619
Email: bruce.wilson@state.mn.us
Fax: (651) 297-8337
Web: http://www.pca.state.mn.us

Accurate estimates of rainfall intensities and duration are necessary for detection of climate change and related consequences for natural resources management and infrastructure design efforts. Most existing estimates are based on data that has not been updated since 1961, and which is believed to not reflect current rainfall patterns as altered by climate change. Funds enable to the Pollution Control Agency to participate in a multi-state cooperative effort with the National Oceanic and Atmospheric Administration to obtain updated climate change related rainfall frequencies. This data will have broad application for storm water conveyance and infrastructure design throughout Minnesota.

Project due to be completed: 6/30/2011
Work Program

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The MN Breeding Bird Atlas
Subd. 5d $270,000

Part 1 ($169,000)
Mark Martell
Audubon Minnesota
2357 Ventura Dr, Ste 106
St. Paul, MN 55125

Phone: (651) 739-9332
Email: mmartell@audubon.org
Fax: (651) 731-1330
Web: http://www.mnbba.org/

Part 2 ($101,000)
Gerald Niemi
Natural Resources Research Institute (NRRI) - University of Minnesota
5013 Miller Trunk Hwy
Duluth, MN 55811

Phone: (218) 720-4270
Email: gniemi@nrri.umn.edu
Fax: (218) 720-4328
Web: http://www.mnbba.org/

PART 1: AUDUBON MINNESOTA

Overall Project Outcome and Results
These were the first 2-years of an anticipated six-year effort which will result in a comprehensive, statewide survey documenting the breeding distribution of all species of birds in Minnesota. After six years the final atlas products will include the publication of a book and an interactive on-line atlas, both with detailed distribution maps, data on species breeding status, and a summary of data from other surveys. Full access to the information will be provided to the public as well as conservation agencies and organizations.

The first two years of the project, focused on project development, volunteer recruitment, establishment of a data management system, and 2 seasons of data collection. This is a statewide multi-partner project overseen and advised by steering and technical committees. One full-time and one part-time temporary project staff were hired during this period and were assisted by 30 volunteer coordinators overseeing 638 volunteer surveyors. Written materials, workshops, and field sessions were used to recruit and train participants in the project. A data access and information website was established (http://www.mnbba.org) and we contracted with Cornell University to adapt their web-based data entry, management, and reporting system (the e-bird database) to our project (http://bird.atlasing.org/Atlas/MN/Main?cmd=Start). The MNBBA website and the Cornell database are linked and complement each other.

Each Township in the state is divided into 4 "blocks" with one block (usually the NE) designated as the "priority block". Data collection began in spring of 2009 and by the end of the six-year project will include every one of the approximately 2,120 Township in Minnesota. An all-species, volunteer driven survey, and a separate specialized "point count" survey (overseen by NRRI) will be conducted in each of townships across the state. By June 30, 2010 data had been entered into our database from 2,076 survey blocks. The 638 volunteers reported spending 6,939 hours doing surveys. A total of 48,425 individual sightings were submitted on 238 species.

Project Results Use and Dissemination
Results from the Breeding Bird Survey are updated daily and available on our website at http://www.mnbba.org. Further analysis and dissemination of the data will be available at the conclusion of the project at the end of year 6 or 7. To date the Minnesota Breeding Bird Atlas has received coverage in a number of newspapers statewide and various organizational publications and newsletters.

FINAL REPORT

Project completed: 6/30/2010

PART 2: NRRI

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.

FINAL REPORT

Project completed: 6/30/2010

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Restorable Wetlands Inventory
Subd. 5e $245,000

Darin Blunck
Ducks Unlimited, Inc.
1 Waterfowl Way
Memphis, TN 38103

Phone: (901) 758-3788
Email: dblunck@ducks.org
Fax: (701) 355-3575
Web: http://www.ducks.org

Overall Project Outcome and Results
The Restorable Wetlands Inventory (RWI) is a complement to the National Wetlands Inventory (NWI) completed in late-1980s by the U.S. Fish & Wildlife Service. An administrative decision was made developing the original NWI not to map wetland basins in Minnesota identified as completely drained. The number and acreage of completely drained wetlands that were not mapped by the NWI process is significant.

The RWI project identifies and digitizes the completely-drained depressional wetlands that were not mapped by the NWI process. Restorable wetlands mapping is based upon protocols established for NWI allowing seamless integration of the two datasets.

In the Southwest Prairie Complex, over 300,000 individual restorable wetland basins were identified and mapped. Upon completing the Southwest Prairie Complex mapping, townships in 42 western and south-central counties in the prairie and transition zone eco-regions of Minnesota have been mapped, adding an important component to the State's spatial data infrastructure that informs environmental planning and research. Through this investment in RWI - combined with the National Wetlands Inventory, landcover classifications, and a growing catalogue of high-resolution elevation data - our capacity to understand (and importantly, restore and manage) Minnesota's wetland resources is continuing to improve.

Project Partners were the LCCMR, Ducks Unlimited, Inc., and the U.S. Fish and Wildlife Service. The photo-interpretation and digitization work was contracted to the GIS Lab at South Dakota State University.

Project Results Use and Dissemination
The Restorable Wetlands Inventory mapping product for the Southwest Prairie Complex is complete and will be distributed on the Minnesota Data Deli and Ducks Unlimited, Inc. websites by the end of August 2010 in GIS-compatible formats.

Attached are maps showing mapping extent of the current M.L. 2008 appropriation and the cumulative RWI mapping effort.

FINAL REPORT

Project completed: 6/30/2010

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Wildlife Disease Data Surveillance and Analysis
Subd. 5f $100,000

Patrick Redig
University of Minnesota
1920 Fitch Ave
St. Paul, MN 55108

Phone: (612) 624-4969
Email: redig001@umn.edu
Fax: (612) 624-8740
Web: http://www.theraptorcenter.org

RESEARCH

Overall Project Outcome and Results

Wildlife is an integral part of the complex interrelationship between human, animal, and environmental health, yet there is no centralized system for collection of wildlife health data. The study of wildlife health is limited by the logistics and expenses involved with sample acquisition. Wildlife rehabilitation centers represent an untapped resource as they admit a larger number of wild animals with a greater variety of species than any other resource.

This project developed a centralized database for tracking morbidity and mortality of wildlife seen in wildlife rehabilitation centers in Minnesota. A central goal was the development of standardized terminology, a critical step in the ability to integrate data from multiple rehabilitation centers. Initially, a survey was designed and distributed to ascertain current practices for clinical wildlife health data management. Next, a series of workshops was held with experts in the field of wildlife health to define data sets for signalment, animal recovery information, cause of admission and initial clinical signs. The animal recovery and signalment descriptors were used to integrate 10 years of historical data from Minnesota's two largest wildlife rehabilitation facilities. This established baseline data for normal patterns of wildlife admissions and created a preliminary GIS and web-based information system. A pilot project involving six wildlife hospitals focusing on avian species susceptible to lead poisoning, was begun to evaluate the functionality of the circumstances of admission, clinical signs and pathophysiological diagnosis terminology. This project is ongoing.

The results of this project were instrumental in the creation of a template for wildlife health data reporting and the development of a system for surveillance of wildlife health issues. This information will be important for wildlife conservation projects, wildlife management, disease surveillance, and as an indicator of ecosystem health. The data can be accessed through the new web site, http://wildlifedisease.nbii.gov/cwhi/, or by contacting The Raptor Center.

Project Results Use and Dissemination
The information resulting from this project has already been used to inform the development of a wildlife health reporting system being developed by the Wildlife Center of Virginia and to be distributed to wildlife rehabilitation centers around the country. A secondary outcome of this project, the development of a collaborative group called the Clinical Wildlife Health Initiative, has resulted in the expansion of this work to a national level. Discussions are underway on the potential use of this information in the United States Fish and Wildlife Service permitting process for rehabilitation center reporting, as well as the use of the new system for long-term monitoring at rehabilitation centers along the Gulf Coast as a result of the Deepwater Horizon Oil Spill.

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Project completed: 6/30/2010

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Conservation Easement Stewardship, Oversight and Maintenance
Subd. 5g $180,000

Kevin Lines
MN Board of Water and Soil Resources (BWSR)
520 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 297-8025
Email: kevin.lines@bwsr.state.mn.us
Fax: (651) 297-5615
Web: http://www.bwsr.state.mn.us

Funds enable the Board of Water and Soil Resources (BWSR) to enhance long-term stewardship, oversight, and maintenance of conservation easements held by BWSR.

Project due to be completed: 6/30/2011
Work Program

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Conservation Easement Stewardship and Enforcement Program Plan
Subd. 5h $520,000

Kathy Lewis
MN Department of Natural Resources (DNR)
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5404

Email: kathy.lewis@dnr.state.mn.us
Fax: (651) 296-6047
Web: http://www.dnr.state.mn.us

Co-Project Manager
Susan Damon
MN Department of Natural Resources (DNR)
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5961
Email: susan.damon@dnr.state.mn.us
Web: http://www.dnr.state.mn.us

Funds enable the Department of Natural Resources (DNR) to inventory anddigitize conservation easements held by DNR and to prepare a plan for long-term stewardship, monitoring, and enforcement of those easements.

Project due to be completed: 6/30/2011
Work Program

Subd. 6 Environmental Education

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Waters of Minnesota Documentary on Watersheds
Subd. 6a $349,000

Barbara Coffin
Bell Museum of Natural History - University of Minnesota
10 Church St SE
Minneapolis, MN 55455

Phone: (612) 624-4986
Email: bcoffin@umn.edu
Fax: (612) 626-7704
Web: http://www.bellmuseum.org/

Overall Project Outcome and Results
The documentary film that resulted from this project, Troubled Waters: A Mississippi River Story, examines our relationship to the Mississippi River and its surrounding watershed through the competing interests of food, fuel, and environment. Excess nitrogen and phosphorus, fertilizers essential to the growth of plants, are contaminating the nation's rivers, lakes, and aquifers at the same time as precious soils wash away. The film tells the complex story of these troubled waters, both here in Minnesota and downstream as far away as the Gulf of Mexico, and highlights innovative solutions, such as high-tech farmers that practice precision agriculture and conservation farming methods; cattle farming while maintaining perennial cover on the landscape; and new technologies that hold water back on the land. Farmers, scientists, and entrepreneurs offer new ideas for meeting the goals of an ambitious, food-producing nation while ensuring the long-term health and sustainability of one of its most precious resources: the Mississippi River and its watershed.

Engaging, serious, and hopeful documentary video has proven to be an innovative and effective environmental education tool that reaches a broad audience of students and adults. Following the successful model of the recent Emmy award-winning television series Minnesota: A History of the Land, this new documentary will be broadcast on public television and be available in DVD format for local distribution.

Project Results Use and Dissemination
Troubled Waters: A Mississippi River Story will be broadcast on Twin Cities Public Television. Subsequent broadcasts are planned for the Minnesota Channel. Public television stations along the length of the Mississippi River will have the opportunity to air the film. A public premiere screening event is planned for October 3, 2010. The documentary is available in professional quality DVD format for educational uses. The DVD will be distributed to Mississippi River venues (e.g. the National Mississippi River Museum & Aquarium and Mississippi National River and Recreation Area Interpretive Center).

View **"Troubled Waters: A Mississippi River Story"** online for free on the Twin Cities Public Television website.

FINAL REPORT

Project completed: 6/30/2010

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Global Warming - Reducing Carbon Footprint of Minnesota Schools
Subd. 6b $750,000

William Sierks
MN Pollution Control Agency (PCA)
520 N Lafayette Road, Ste. 200
Saint Paul, MN 55155

Phone: (651) 757-2722
Email: bill.sierks@state.mn.us
Fax: (651) 215-0246
Web: http://www.pca.state.mn.us

Funds will be used by the Pollution Control Agency (PCA) to provide information and technical assistance and to enact a grant program designed to help high schools, colleges, and universities to play a key role in addressing climate change. Up to 100 schools statewide will receive guidance and assistance identifying their carbon footprints and developing and implementing plans to reduce carbon emissions.

Project due to be completed: 6/30/2011
Work Program

Subd. 7 Establishment of an Emerging Issues Account

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Emerging Issues Account
Subd. 7 $155,000

Susan Thornton, Director
LCCMR
100 Rev. Dr. Martin Luther King Blvd.
Rm 65 State Office Bldg
St. Paul, MN 55155

Phone: (651) 296-2406
Email: susan.thrornton@lccmr.leg.mn
Fax: (651) 296-1321
Web: http://www.lccmr.leg.mn

Funds will be used by the LCCMR to provide assistance for an unexpected, urgent, or emergency need where time is of the essence, as authorized in Minnesota Statutes, section 116P.08, subdivision 4, paragraph (d).

WENT TO:

Statewide Ecological Ranking Conservation Reserve Program (CRP) and Other Critical Lands - $155,000 (completion date for this portion is 6/30/2010)

Other funds include:
M.L. 2007, Chp. 30, Sec. 2, Subd. 7 "Emerging Issues Account" - $13,000 (completion date for this portion is 6/30/2009)

M.L. 2009, Chp. 143, Sec. 2, Subd. 4g "Statewide Ecological Ranking of Conservation Reserve Program (CRP) and Other Critical Lands" - $107,000 (Project due to be completed: 6/30/2011)

Project due to be completed: 6/30/2011