

M.L. 2013 Projects

[MN Laws 2013, Chapter 52, Section 2 \(beginning July 1, 2013\)](#)

For the next biennium (July 1, 2013 - June 30, 2015), approximately \$33.8 million is available each fiscal year (Total = \$67,620,000) for funding from the Environment and Natural Resources Trust Fund. In response to the 2013 Request for Proposal, 169 proposals requesting a total of approximately \$155 million were received. Through a competitive, multi-step process 66 of these proposals, requesting a total of \$73 million, were chosen to present to the LCCMR and 46 of those proposals, totaling \$38.2 million (all FY 2014 funds and part of the FY 2015 funds), were chosen to receive a recommendation for funding to the 2013 MN Legislature. The Legislature adopted all 46 of these project recommendations and added one additional project. All 47 appropriations were signed into law by the Governor on 05/09/13. \$29.6 million remains available for LCCMR funding recommendations to the ML 2014 Legislature.

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.

When available, we have provided links to web sites related to the project. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

MN Laws 2013, Chapter 52, Section 2

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Subd. 05 Water Resources

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- [05b](#) Assessment of Natural Copper-Nickel Bedrocks on Water Quality - **RESEARCH**
- [05c](#) Heron Lake Sediment and Phosphorus Reduction Implementation Projects
- [05d](#) Southern Minnesota Lakes Restoration
- [05e](#) Measuring Hydrologic Benefits from Glacial Ridge Habitat Restoration - **RESEARCH**
- [05f](#) Evaluation of Lake Superior Water Quality Health - **RESEARCH**
- [05g](#) Membranes for Wastewater-Generated Hydrogen and Clean Water - **RESEARCH**
- [05h](#) Antibiotics in Minnesota Waters - Phase II - Mississippi River - **RESEARCH**

Subd. 06 Aquatic and Terrestrial Invasive Species

- [06a](#) An Aquatic Invasive Species Research Center - **RESEARCH**
- [06b](#) Detection and Monitoring of Asian Carp Populations
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Subd. 07 Environmental Education

- [07a](#) Minnesota Conservation Apprentice Academy
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Subd. 08 Administration and Contract Management

- [08a](#) Legislative-Citizen Commission on Minnesota Resources
- [08b](#) Contract Agreement Reimbursement

Funding Source:

Environment and Natural Resources Trust Fund (TF)

MN Laws 2013, Chapter 52, Section 2

Subd. 03 Natural Resource Data and Information

Minnesota Biological Survey

Subd. 03a \$2,650,000 TF

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Appropriation Language

\$2,650,000 the first year is from the trust fund to the commissioner of natural resources for continuation of the Minnesota biological survey to provide a foundation for conserving biological diversity by systematically collecting, interpreting, monitoring, and delivering data on plant and animal distribution and ecology, native plant communities, and functional landscapes.

Project Overview

The Minnesota Biological Survey (MBS) is an ongoing effort begun in 1987 by the Minnesota Department of Natural Resources (DNR) that is systematically surveying, county-by-county, the state's natural habitats. The effort identifies significant natural areas and collects and interprets data on the status, distribution, and ecology of plants, animals, and native plant communities throughout the state. To date, surveys have been completed in 81 of Minnesota's 87 counties and nearly 20,000 records of rare features have been recorded. MBS data is used by all levels of government in natural resource planning and use decisions, including prioritization of protection of park lands and scientific and natural areas. This appropriation will permit continuation of the survey in Lake, St. Louis, Clearwater, Beltrami, Lake of the Woods, and Koochiching counties. Additionally sites containing select native plant communities or select rare plant and animal populations will be monitored, conservation technical assistance will be provided, and interpretive products and publications will be developed to make the information useful to a variety of audiences.

Project due to be completed: 6/30/2015

County Geologic Atlases - Part A

Subd. 03b \$1,200,000 TF

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Appropriation Language

\$1,200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to continue the acceleration of the production of county geologic atlases that define aquifer boundaries and the connection of aquifers to the land surface and surface water resources for the purpose of sustainable management of surface water and groundwater resources. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The Minnesota County Geologic Atlas program is an ongoing effort begun in 1979 that is being conducted jointly by the University of Minnesota's Minnesota Geological Survey and the Minnesota Department of Natural Resources (DNR). This portion, called Part A and conducted by the Minnesota Geological Survey, collects geologic information to produce maps and databases that define aquifer boundaries and the connection of aquifers to the land surface and surface water resources. The information is used in planning and environmental protection efforts at all levels of government, by businesses, and by homeowners to ensure sound and sustainable planning, management, and protection of water resources used for drinking, agriculture, industry, and more. This appropriation will initiate Part A geologic atlases for three additional counties yet to be determined depending on county participation and other priorities.

Project due to be completed: 6/30/2016

County Geologic Atlases - Part B

Subd. 03c \$1,200,000 TF

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Appropriation Language

\$1,200,000 the first year is from the trust fund to the commissioner of natural resources to continue the analysis and compilation of groundwater data for the production of county geologic atlases, publication of geospatial groundwater data, and continued mapping of springsheds and karst features for Winona and Houston Counties. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The Minnesota County Geologic Atlas program is an ongoing effort begun in 1979 that is being conducted jointly by the University of Minnesota's Minnesota Geological Survey and the Minnesota Department of Natural Resources (DNR). This portion, called Part B and conducted by the DNR, analyzes water samples to understand water chemistry and sensitivity to pollution. The information is used in planning and environmental protection efforts at all levels of government, by businesses, and by

homeowners to ensure sound and sustainable planning, management, and protection of water resources used for drinking, agriculture, industry, and more. This appropriation will continue or complete work on Part B geologic atlases for Blue Earth, Chisago, Nicollet, Sibley, Anoka, Wright, Renville, and Clay counties and potentially begin work on Part B atlases for Sherburne and Morrison counties. Additionally springshed mapping will be continued in the karst area of southeastern Minnesota in Winona, Houston, and Fillmore counties.

Project due to be completed: 6/30/2015

Updating the National Wetland Inventory for Minnesota - Phase IV

Subd. 03d \$1,000,000 TF

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Appropriation Language

\$1,000,000 the first year is from the trust fund to the commissioner of natural resources to continue the update and enhancement of wetland inventory maps for Minnesota. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Over the past 100 years, about half of Minnesota's original 22 million acres of wetlands have been drained or filled. Some regions of the State have lost more than 90 percent of their original wetlands. The National Wetland Inventory, a program initiated in the 1970s, is an important tool used at all levels of government and by private industry, non-profit organizations, and private landowners for wetland regulation and management, land management and conservation planning, environmental impact assessment, and natural resource inventories. The data behind the National Wetlands Inventory for Minnesota is now considerably out-of-date and a multi-phase, multi-agency collaborative effort coordinated by the Minnesota Department of Natural Resources is underway to update the data for the whole state. This appropriation is being used to conduct the fourth of six phases of this effort, which involves wetlands maps for portions of Lake, Cook, and St. Louis counties in northeastern Minnesota. A completed wetlands inventory will help improve wetland protection and management.

Project due to be completed: 6/30/2016

Conservation Easement Stewardship Program - Phase III

Subd. 03e \$60,000 TF

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Appropriation Language

\$200,000 the first year is from the trust fund to the commissioner of natural resources for the final phase to bring conservation easements held by the Department of Natural Resources up to minimum conservation standards, through monitoring, baseline data collection, and baseline report preparation.

Project Overview

The purchase of conservation easements - restrictions on land use that protect natural features while keeping land in private ownership - has proven to be an effective means to protect land at a lower initial cost than full state ownership. However, once an easement is purchased there are ongoing stewardship, monitoring, and enforcement responsibilities necessary to ensure the terms of the agreement between the easement holder and the landowner are met. Earlier efforts funded by the Environment and Natural Resources Trust Fund in 2008 and 2011 allowed the Minnesota Department of Natural Resources (DNR) to retroactively bring existing conservation easements up to minimum standards by developing a central inventory and management system of the conservation easements held by the DNR, along with a plan for how they would be administered into the future. This appropriation is the final phase of this effort allowing the DNR to continue and accelerate the implementation of the previously developed plan. Additionally, tools will be developed to enhance monitoring efficiency using remote sensing.

Project due to be completed: 6/30/2015

Harnessing Soudan Mine Microbes: Bioremediation, Bioenergy and Biocontrol

Subd. 03f \$838,000 TF

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RESEARCH

Appropriation Language

\$838,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to continue the characterization of unique microbes discovered in the Soudan Underground Mine State Park that have potential applications for metal remediation in water resources, microbial electrofuels, and biocontrol of white-nose bat syndrome. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The Soudan Iron Mine near Ely, Minnesota is no longer an active mine and is now part of a state park, as well as the home to a state-of-the-art physics laboratory at the bottom of the mine. The mine has also been discovered to contain an extreme environment in the form of an ancient and very salty brine bubbling up from a half-mile below the Earth's surface through holes drilled when the mine was active. Strange microorganisms - part of an ecosystem never before characterized by science - have been found

living in the brine. Scientists from the University of Minnesota will use this appropriation to continue to study this unique ecosystem and its organisms and build upon findings from a previous Environment and Natural Resources Trust Fund supported effort to explore potential applications of using the microorganisms living there for removing metals from mine waters, producing biofuels, and developing a biocontrol for White-Nose Syndrome, which is decimating bat populations around the country.

Project due to be completed: 6/30/2016

Improved Rapid Forest Ecosystem and Habitat Inventory

Subd. 03g \$262,000 TF

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Appropriation Language

\$262,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate a new approach to forest inventory, based on statewide forest inventory and analysis (FIA) data.

Project Overview

Minnesota has 15.9 million acres of forest land managed by a variety of county, state and federal agencies, and private landowners for timber production, wildlife habitat, and ecological considerations. Forest managers rely on inventory data to make effective planning and management decisions. Because forests are continually changing through natural and human processes, forest inventory data is periodically updated. However, doing so is an expensive and time-consuming endeavor and, as a result, much of Minnesota's forest inventory data is currently out of date. This appropriation is being used by scientists at the University of Minnesota to evaluate an innovative approach to forest inventory using existing statewide Forest Inventory and Analysis (FIA) data that could help reduce costs, expedite future updates, and improve overall usability.

Project due to be completed: 6/30/2015

Finding Disease Resistant Elm Trees in Minnesota

Subd. 03h \$200,000 TF

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RESEARCH

Appropriation Language

\$200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate and identify native Minnesota elms resistant to Dutch elm disease to assist with limiting the susceptibility of the state's elms to Dutch elm disease. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Elms were once a very widespread tree in Minnesota and amongst the most common and popular in urban landscapes due to their size, shading capability, and tolerance of pollution and other stresses. Over the past five decades, though, Dutch elm disease, an exotic and invasive pathogen, has killed millions of elms throughout the state. However, scientists at the University of Minnesota have observed that some elms have survived the disease and appear to have special characteristics that make them resistant to Dutch elm disease. This appropriation is being used to identify, propagate, and evaluate native Minnesota elms resistant to Dutch elm disease to assist with limiting the susceptibility of the state's remaining elms to Dutch elm disease and possibly lay the foundation for re-introductions of the tree in the future.

Project due to be completed: 6/30/2016

Enhancing Timber Sale Program Environmental and Economic Sustainability

Subd. 03i \$336,000 TF

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Appropriation Language

\$336,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate the impacts of timber payment methods on postharvest forest ecological conditions and net revenue generated from public timber sale programs. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Minnesota has 9.5 million acres of public forest lands that play an important role in sustaining Minnesota's environment and economy. The policies and programs used by public timber sale programs can impact post-harvest ecological conditions and have pronounced effects on the composition, structure, and productivity of the forest in the future. Additionally, timber harvesting revenues play an important role in economic activity, employment, and tax revenue. Currently, timber on public lands is sold in of two ways: pay based on volume harvested and pay based on appraised volume available for harvest, regardless of the actual harvest. Scientists at the University of Minnesota are using this appropriation to evaluate how timber payment methods impact post-harvest forest ecological conditions, net revenue generated from public timber sale programs, and barriers perceived by forest

managers and loggers. This information will help gauge economic and ecological tradeoffs between the two methods in order to maximize future forest productivity, wildlife habitat, and biodiversity.

Project due to be completed: 6/30/2016

Enhancing Environmental and Economic Benefits of Woodland Grazing

Subd. 03j \$190,000 TF

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RESEARCH

Appropriation Language

\$190,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate management options for woodlands used for grazing to improve ecological and economic benefits. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Over 527,000 acres of unmanaged woodlands are being used for livestock grazing throughout Minnesota. Managing these grazed woodlands based on the use of best management practices can provide environmental and economic opportunities, including improved water quality, maximized forage production, and higher-quality timber. The best management practices involved are commonly used in other parts of the country with other types of ecosystems, but have not been widely adopted in Minnesota due to a lack of knowledge and experience with implementing them within the ecosystems of Minnesota. This appropriation is being used by scientists at the University of Minnesota to evaluate and demonstrate how to effectively adapt and implement these best management practices for improved woodland grazing for use in Minnesota.

Project due to be completed: 6/30/2017

Subd. 04 Land, Habitat, Restoration and Recreation

State Parks and State Trails Land Acquisition

Subd. 04a \$1,000,000 TF

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Appropriation Language

\$1,000,000 the first year is from the trust fund to the commissioner of natural resources to acquire authorized state trails and critical parcels within the statutory boundaries of state parks. State park land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. A list of proposed acquisitions must be provided as part of the required work plan. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Minnesota's extensive state park and trail system, the second oldest in the country, is currently comprised of a total of 76 state parks and recreation areas and 13 state trails scattered throughout the state. Some of Minnesota's state parks and trails have privately owned lands within the designated park boundaries or trail corridors. Purchase of these lands from willing landowners for addition to the state park and trail system makes them permanently available for public recreation and enjoyment and facilitates more efficient management. Additional benefits include preserving contiguous wildlife corridors, facilitating preservation and restoration of native plant communities and cultural resources, reducing impacts of future development, and providing riparian buffers along wetlands, creeks, and lakes. The Minnesota Department of Natural Resources is using this appropriation to fund the acquisition of approximately 245 acres to add to the state park and trail system, which includes:

- 50 acres for Great River Bluffs State Park in Winona County
- 115 acres for Cuyuna Country State Recreation Area in Crow County
- 80 acres for the Mill Towns State Trail in Rice County

Project due to be completed: 6/30/2015

Scientific and Natural Areas Restoration, Enhancement and Citizen Engagement

Subd. 04b \$1,500,000 TF

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Appropriation Language

\$1,500,000 the first year is from the trust fund to the commissioner of natural resources to conserve sites of biodiversity significance by restoring and enhancing lands established as scientific and natural areas as provided in Minnesota Statutes, section 86A.05, subdivision 5, and providing volunteer engagement and outreach. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Minnesota's Scientific and Natural Areas (SNA) Program is an effort to preserve and perpetuate the state's ecological diversity and ensure that no single rare feature is lost from any region of the state. This

includes landforms, fossil remains, plant and animal communities, rare and endangered species, and other unique biotic or geological features. These sites play an important role in scientific study, public education, and outdoor recreation. The Minnesota Department of Natural Resources is using this appropriation to conduct restoration and enhancement activities on approximately 1,600 acres in existing SNAs and to increase citizen and student knowledge and skills pertaining to ecological restoration and biodiversity conservation through engagement with SNAs.

Project due to be completed: 6/30/2015

Native Prairie Stewardship and Prairie Bank Easement Acquisition

Subd. 04c \$750,000 TF

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Appropriation Language

\$750,000 the first year is from the trust fund to the commissioner of natural resources to acquire native prairie bank easements, prepare baseline property assessments, restore and enhance native prairie sites, and provide technical assistance to landowners. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Prior to European settlement more than 18 million acres of prairie covered Minnesota. Today less than 1% of that native prairie remains, and about half of those remaining acres are in private landownership without any formal protection currently in place. Through this appropriation the Minnesota Department of Natural Resources will work with private landowners of high quality native prairie sites to protect remaining native prairie using a variety of tools. Approximately 200 acres are expected to be permanently protected through Native Prairie Bank conservation easements. A variety of restoration and enhancement activities will be implemented on a total of about 690 acres. Additionally, education and technical assistance will be provided to interested landowners to help them improve the management and stewardship of native prairie sites they own.

Project due to be completed: 6/30/2015

Metropolitan Conservation Corridors (MeCC) - Phase VII

Subd. 04d \$2,000,000 TF

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Appropriation Language

\$2,000,000 the first year is from the trust fund for the acceleration of agency programs and cooperative agreements. Of this appropriation, \$10,000 is to the commissioner of natural resources for agency programs and \$1,990,000 is to the commissioner of natural resources for agreements as follows: \$304,000 with Friends of the Mississippi River; \$368,000 with Dakota County; \$208,000 with Great River Greening; \$310,000 with Minnesota Land Trust; \$400,000 with Minnesota Valley National Wildlife Refuge Trust, Inc.; and \$400,000 with the Trust for Public Land for planning, restoring, and protecting priority natural areas in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties, through contracted services, technical assistance, conservation easements, and fee title acquisition. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. Expenditures are limited to the identified project corridor areas as defined in the work plan. This appropriation may not be used for the purchase of habitable residential structures, unless expressly approved in the work plan. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work plan. Lands that would require payments in lieu of taxes under Minnesota Statutes, section 97A.061 or 477A.12, shall not be acquired with money from this appropriation. Up to \$54,000 is for use by Minnesota Land Trust in a monitoring and enforcement fund as approved in the work plan and subject to subdivision 16. An entity that acquires a conservation easement with appropriations from the trust fund must have a long-term stewardship plan for the easement and a fund established for monitoring and enforcing the agreement. Money appropriated from the trust fund for easement acquisition may be used to establish a monitoring, management, and enforcement fund as approved in the work plan. An annual financial report is required for any monitoring, management, and enforcement fund established, including expenditures from the fund. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

OVERALL PROJECT OVERVIEW

Though many parts of the Twin Cities metropolitan area are urbanized, there are also has large areas of natural lands that continue to serve as important habitat for fish, wildlife, and plant communities. However, pressure on these remaining lands continues to intensify as population and development pressures increase. This appropriation represents the seventh phase of an ongoing effort by a partnership of state and non-profit organizations, called the Metro Conservation Corridors (MeCC) partnership, to conduct strategic and coordinated land protection, restoration, and enhancement activities that build connections between remaining high quality natural areas in the greater Twin Cities metropolitan area and ensures their benefits are available for future generations. Efforts will strengthen and protect biodiversity; improve water quality in lakes, rivers, and streams; and improve connectivity and access to outdoor recreation. This phase involves six partners and is expected to result in the permanent protection of more than 260 acres and the restoration and enhancement of more than 260 acres. Organizations involved in this phase include Dakota County, Friends of the Mississippi River, Great River Greening, Minnesota Land Trust, MN Valley National Wildlife Refuge Trust, and Trust for Public Land.

Individual Partner Project Overviews

- 1.1/1.2: *Coordination and Mapping - [Minnesota Land Trust](#) (\$20,000)*
 The Minnesota Land Trust provides coordination, mapping, and data management for the Metropolitan Conservation Corridors partnership. Funds are being used to coordinate the partnership, guide strategic outreach and implementation efforts, manage project data, and provide reporting and mapping of accomplishments.
- 2.1 & 3.4: *Protect, Restore and Enhance Significant Watershed Habitat - [Friends of the Mississippi River](#) (\$304,000)*
 Friends of the Mississippi is using this appropriation to permanently protect six acres through fee title acquisition for addition to Fish Creek Natural Area near Maplewood, MN, and to restore and enhance approximately 134 acres of permanently protected prairie, savanna, wetland, and forest habitat in Dakota, Washington, Ramsey, and Hennepin counties. Specific restoration and enhancement activities will include updating management plans, soil preparation, prescribed burning, native vegetation installation, woody encroachment removal, and invasive species control.
- 2.3: *Restoring Our Lands and Waters - [Great River Greening](#) (\$208,000)*
 These funds will enable Great River Greening to restore approximately 90 acres of permanently protected forests, savanna, prairie, and wetland habitat and 0.18 miles of shoreland habitat while engaging hundreds of volunteers in the stewardship of the Metropolitan area's remaining natural areas. Specific activities include invasive species control, seeding/planting, prescribed burning, and other associated activities.
- 2.6 & 3.7: *Dakota County Lakeshore and Riparian Protection - [Dakota County](#) (\$368,000)*
 Through this appropriation Dakota County plans to permanently protect approximately 27 acres of shoreland and contiguous upland in the Marcott Lakes area of Inver Grove Heights by securing a conservation easement from willing landowner. For all acres protected, natural resource management plans will be prepared to ensure their long term stewardship. Additionally, restoration and enhancement activities are expected to occur on approximately 40 acres.
- 3.1: *2013 TPLs Critical Land Protection Program - [Trust for Public Land](#) (\$400,000)*
 The Trust for Public Land is using this appropriation to purchase approximately 24 acres of land and 0.2 miles of shoreline with high ecological value and then convey the land to state or local governments for long-term stewardship and protection. Lands being considered for permanent protection in this round of funding include an areas around the Rum River in Anoka County, Lindstrom Natural Area in Chisago County, and Carnelian Creek and Keystone Woods area in Washington County.
- 3.2: *Protect Signifcant Habitat by Acquiring Conservation Easements - [Minnesota Land Trust](#) (\$300,000)*
 With this appropriation, the Minnesota Land Trust plans to protect 100 acres of high quality forest, prairie, wetland, or shoreline habitat by securing permanent conservation easements and dedicating funds for their perpetual monitoring, management, and enforcement. Lands being considered for permanent protection in this round of funding are located in Chisago, Goodhue, Hennepin, Isanti, and Washington counties.
- 3.3: *Priority Expansion of Minnesota Valley National Wildlife Refuge - [Minnesota Valley National Wildlife Refuge Trust Inc.](#) (\$400,000)*
 The Minnesota Valley National Wildlife Refuge Trust is using this appropriation to purchase a total of approximately 100 acres of land and donated to the U.S. Fish and Wildlife Service to

expand the Minnesota Valley National Wildlife Refuge. Many benefits are anticipated from this project, including improved habitat connectivity, protection of native species, improved water quality in the Minnesota River, and increased public access to natural lands for activities such as hiking, hunting, and fishing. Restoration and management plans will be completed for all acquired lands.

Project due to be completed: 6/30/2015

[Overall MeCC Work Plan](#) (PDF)

Individual Partner Work Plans:

- [1.1/1.2](#) - MeCC VII - Coordination and Mapping - MLT (\$20,000)
- [2.1/3.4](#) - MeCC VII - Protect, Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River (\$304,000)
- [2.3](#) - MeCC VII - Restoring Our Lands and Waters - Great River Greening (\$208,000)
- [2.6/3.7](#) - MeCC VII - Dakota County Lakeshore and Riparian Protection - Dakota County (\$368,000)
- [3.1](#) - MeCC VII - 2013 TPLs Critical Land Protection Program - The Trust for Public Land (\$400,000)
- [3.2](#) - MeCC VII - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust (\$300,000)
- [3.3](#) - MeCC VII - Priority Expansion of Minnesota Valley National Wildlife Refuge - Minnesota Valley National Wildlife Refuge Trust Inc. (\$400,000)

Landscape Arboretum Acquisition Lake Tamarack

Subd. 04e \$2,000,000 TF

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Appropriation Language

\$2,000,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to acquire land surrounding Lake Tamarack in Carver County as part of the acquisition of approximately 80 acres. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The University of Minnesota's Landscape Arboretum is the largest and most diverse horticultural site in Minnesota. It features gardens and natural areas representative of Minnesota and the upper-Midwest that can be explored using several miles of trails. Additionally it conducts fruit and plant breeding research to develop cultivars that have particular desired characteristics, such as cold hardiness or disease resistance. The arboretum has a long-term goal of protecting the entire watershed of which it is a part. This appropriation is being used by the arboretum to acquire approximately 80 acres of land

surrounding Lake Tamarack in Carver County, which will protect a variety of habitat types and 1,300 feet of shoreline in an area threatened by development. This new portion of the arboretum will have free public access and provide additional land for future research that may pertain to restoration ecology, crop production, bio-energy, or wildlife habitat.

OVERALL PROJECT OUTCOME AND RESULTS

The University of Minnesota Landscape Arboretum purchased the property at 400 Arboretum Boulevard, Victoria, (previously known as the Kerber Farm or Lano Burau Property), effective Friday, November 1, 2013. The property consists of 78.13 acres in Carver County. This is the final property purchase identified in the Arboretum's 1995 Boundaries Plan. Over 300 acres have been added to the Arboretum during the last 18 years.

The property is north of State Highway 5 and directly adjacent to the Horticultural Research Center. The property contains native forest, wetlands, tillable land, and 1,300 feet of lakeshore on Lake Tamarack. Current structures on the property will be evaluated for condition and safety and some will likely be retained for unheated storage while others may be demolished.

The property will be used in the future for research; protection of wildlife, wetlands and water quality; protection of big woods, oak savanna and upland meadow; and educational and public low impact recreational purposes. Research uses have not been determined and roads, fencing, and irrigation will be installed in the 10 acre area designated for research. Some of the current soybean fields could also be used for alternative crop, forage crop, or restoration research projects, and the Arboretum is considering partners from across the University of Minnesota or other conservation and natural resources groups.

Funding for this purchase was provided by the Environment and Natural Resources Trust Fund (ENRTF) - recommended by the Legislative Citizens Commission for Minnesota Resources (LCCMR), the Lessard Sams Outdoor Heritage Council (LSOHC) and the Minnesota Landscape Arboretum Foundation. Because we received LCCMR and LSOHC funding to purchase the property, the Arboretum will provide FREE public access. The University of Minnesota is charging the City of Victoria \$1 for the 50 year Use License Agreement for the Trail that crosses the Lake Tamarack Property and \$1 for the Use License Agreement for Temporary Construction Access for this trail. There are no fees beyond the \$2 for the entire trail including the sections that do not cross the Lake Tamarack Property. Finally, the Arboretum will work over the next several months to develop public access policies and install signage.

PROJECT RESULTS USE AND DISSEMINATION

The acquisition was successfully publicized by the Arboretum with a press release issued on November 11, 2013 and was also covered in the Arboretum E-News with 10,000 subscribers. It was then covered in the local media:

- U to expand arboretum with 78-acre purchase, Minnesota Daily, January 28, 2013
- U Arboretum expands base in Chanhassen by 78 acres, Star Tribune, November 12, 2013
- Minnesota Landscape Arboretum grows by 78 acres, Finance & Commerce, November 13, 2013
- Minnesota Landscape Arboretum Grows By 78 Acres, WCCO-CBS News Online, November 13, 2013

Project completed: 6/30/2014

Conservation Program Technical Assistance

Subd. 04f \$3,000,000 TF

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Appropriation Language

\$3,000,000 the first year is from the trust fund to the Board of Water and Soil Resources to continue providing grants to soil and water conservation districts and other units of local and state government for the employment of staff to reenroll expiring lands into programs for conservation purposes. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Enrollment of private lands in conservation programs can provide important natural resource and other public benefits by taking the lands out of production so that they can provide various wildlife, water quality, and ecological benefits. This appropriation is enabling the Minnesota Board of Soil and Water Resources to continue to provide grants to local soil and water conservation districts for employment of technical staff to assist private landowners in implementing conservation programs. This effort is expected to assist with the enrollment, retention, and management of 170,000 private acres of grasslands, wetlands, and forests in federal and state conservation programs, particularly in areas expected to lose enrollments in the Conservation Reserve Program (CRP).

Project due to be completed: 6/30/2016

Moose Habitat Restoration in Northeastern Minnesota

Subd. 04g \$200,000 TF

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RESEARCH**Appropriation Language**

\$200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota for the Natural Resources Research Institute to develop best practices guidelines for creating moose foraging habitat efficiently and cost-effectively. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Moose, one of Minnesota's most iconic wildlife species, are dying at increasingly higher rates in Minnesota and there is uncertainty as to why. Estimates suggest the population declined 35 percent just between 2012 to 2013, and projections suggest moose could be nearly gone from the state by 2020 if this trend is not halted and, ideally, reversed. Scientists at the University of Minnesota are using this appropriation to identify appropriate management and habitat needs and the sorts of actions that can be implemented to help slow or prevent continued population declines amongst Minnesota's moose populations. The project is a continuation and expansion of work completed and underway by two other past Environment and Natural Resources Trust Fund supported projects on determining the cause for the increasing mortality.

Project due to be completed: 6/30/2016

Bee Pollinator Habitat Enhancement

Subd. 04h \$200,000 TF

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Appropriation Language

\$200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to assess the potential to supplement traditional turf grass by providing critical floral plant resources to enhance bee pollinator habitat. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Bees play a key role in ecosystem function and in agriculture, including more than one hundred U.S. crops that either need or benefit from pollinators. However, bee pollinators are in dramatic decline in Minnesota and throughout the country. One of the potential causes appears to be a scarcity of bee-friendly flowers, particularly in urban areas, which is leading to nutritional deficiencies, chronic exposure to pesticides, and debilitating diseases and parasites. Scientists at the University of Minnesota are using this appropriation to assess options that can be broadly implemented in urban areas to enhance bee pollinator habitat and counteract declining populations and bee health. The effort will examine ways to supplement traditional turfgrass landscapes, particularly in areas that primarily serve an aesthetic purpose, with flowering plants that can provide increased nutrition and less potential exposure to pesticides.

Project due to be completed: 6/30/2016

Conservation Grazing to Improve Wildlife Habitat on Wildlife Management Areas

Subd. 04i \$600,000 TF

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Appropriation Language

\$600,000 the first year is from the trust fund to the commissioner of natural resources to develop grazing plans and provide infrastructure to support conservation grazing on approximately 10,000 acres of targeted wildlife management areas in partnership with local livestock producers. Any revenue generated as a result of this appropriation must be reinvested in producing plans, conducting maintenance, or building infrastructure for new or existing conservation grazing efforts. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Overall Project Overview

Grassland ecosystems evolved to depend on periodic disturbances, such as fire and grazing, to maintain their health and stability. Periodic disturbances help control invasive species, add nutrients back into the soil, germinate plant seeds, enhance wildlife habitat, and more. In Minnesota habitat managers have used fire as a disturbance tool for decades but the use of grazing has been much rarer, mostly because of a lack of necessary infrastructure such as fencing. This appropriation is being used by the Minnesota Department of Natural Resources to provide the infrastructure needed to support conservation grazing on 10,000 acres of targeted wildlife management areas to demonstrate that grazing can be effectively and cost-efficiently implemented to improve grassland habitat quality and ecological integrity in Minnesota.

Project due to be completed: 6/30/2016

Preserving the Avon Hills Landscape - Phase II

Subd. 04j \$772,000 TF

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Appropriation Language

\$772,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Saint John's University in cooperation with the Minnesota Land Trust to secure permanent conservation easements on high quality habitat in Stearns County, prepare conservation management plans, and provide public outreach. A list of proposed easement acquisitions must be provided as part of the required work plan. Up to \$80,000 is for use by Minnesota Land Trust in a monitoring and enforcement fund as approved in the work plan and subject to subdivision 16. An entity that acquires a conservation easement with appropriations from the trust fund must have a long-term stewardship plan for the easement and a fund established for monitoring and enforcing the agreement. Money appropriated from the trust fund for easement acquisition may be used to establish a monitoring,

management, and enforcement fund as approved in the work plan. An annual financial report is required for any monitoring, management, and enforcement fund established, including expenditures from the fund. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The Avon Hills area is a unique 65,000-acre glacial moraine landscape located in Stearns County just west of St. Cloud. It has been identified as having statewide ecological significance and includes the highest concentration of native plant communities in the county - including oak and maple-basswood forests, tamarack and mixed-hardwood swamps, and wet meadows - and several rare plants and animal species, including American ginseng, cerulean warbler, red-shouldered hawk, and Blanding's turtle. This appropriation is being used by the St. John's Arboretum at St. John's University to secure permanent protection, via conservation easements, for an additional 350-550 acres of high quality habitat in the Avon Hills area, prepare conservation management plans for the easement lands, and provide public outreach on the significance of the Avon Hills landscape and options for its protection. St. John's Arboretum previously used a 2008 Environment and Natural Resources Trust Fund appropriation to permanently protect more than 1,000 acres in the area.

Project due to be completed: 6/30/2016

Frogtown Farm and Park Acquisition

Subd. 04k \$1,500,000 TF

Robert McGillivray

The Trust for Public Land
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Appropriation Language

\$1,500,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Trust for Public Land to acquire a portion of 12 acres for Frogtown Farm and Park to be established as a St. Paul city park.

Project Overview

The Frogtown area of St. Paul is a culturally diverse, low-income neighborhood having less green space per child than any other neighborhood in the city and was recently identified as an area in need of a new park. This appropriation is being used by The Trust for Public Land, in partnership with the City of St. Paul, to acquire a portion of twelve acres of a currently vacant space in the area to establish the multi-purpose Frogtown Farm and Park. The vision for the space is to provide a safe space for neighborhood children to experience nature and families to recreate while simultaneously acting as a demonstration urban farm for community members to learn about growing food locally as a vehicle for advancing self-sufficiency, environmental stewardship, healthy living, and community collaboration.

Project due to be completed: 6/30/2015

Restoration Evaluations

Subd. 04I \$200,000 Transfer from M.L. 2009, Chp. 143, Sec. 2 ,Subd. 8b as amended by M.L. 2011, First Special Session, Chp. 2, Art. 3, Sec. 2, Subd. 18, Para. A, Clause 8

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Appropriation Language

\$200,000 from Laws 2009, chapter 143, section 2, subdivision 8, paragraph (b), Legislative-Citizen Commission on Minnesota Resources, as amended by Laws 2011, First Special Session, chapter 2, article 3, section 2, subdivision 18, paragraph (a), clause (8), is transferred to the Board of Regents of the University of Minnesota for evaluation of lands restored using money from the trust fund. The lands to be evaluated shall be identified and prioritized in consultation with the Legislative-Citizen Commission on Minnesota Resources.

Project Overview

Ecological restorations aim to aid the recovery of native ecosystems that have been degraded or lost. However, very seldom are restorations evaluated past the initial implementation phase to determine whether the efforts achieved their goals and the funds spent were a strategic conservation investment. Monitoring and evaluation of restorations can teach what works and what does not in order to advance restoration practices and increase the likelihood of success for future projects. The Environment and Natural Resources Trust Fund has funded restoration activities on hundreds of thousands of acres since its inception. The University of Minnesota is using this appropriation to evaluate the outcomes and effectiveness of some of those restoration efforts in order to inform and improve future land restoration techniques and best practices and future state investments in restoration activities.

Project due to be completed: 6/30/2015

Subd. 05 Water Resources

Sustaining Lakes in a Changing Environment - Phase II

Subd. 05a \$1,200,000 TF

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RESEARCH

Appropriation Language

\$1,200,000 the first year is from the trust fund to the commissioner of natural resources in cooperation with the United States Geological Survey, the University of Minnesota, and the University of St. Thomas to continue development and implementation of monitoring, modeling, and reporting protocols for Minnesota lakes to be used in water and fisheries management. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Minnesota's environment is changing in response to a variety of stressors - including population growth, residential development, industry, agriculture, invasive species, and climate change - and the state's iconic lakes, and the goods and services they provide (e.g., fishing and water recreation), are an important part of what's being impacted. To manage effectively for these changes it is important to understand how the state's many lakes respond to these stressors. This includes knowing baseline habitat conditions, observing long-term changes to the baseline, and developing models that can forecast the risks posed and expected impacts of various stressors. In 2009 the Minnesota Department of Natural Resources (DNR) began an ambitious long-term monitoring effort of 24 "sentinel" lakes throughout the state specifically identified to represent the breath of basic conditions (e.g., water chemistry, habitat conditions, fishery types, surrounding ecosystem types) present in Minnesota's most common aquatic environments. The DNR is using this appropriation to continue and expand on that effort to develop and implement improved monitoring, modeling, and reporting protocols that will provide timely information on lake trends, reduce uncertainty about potential causes, and guide conservation approaches for improving water quality, reversing problematic trends, and preventing further degradation into the future.

Project due to be completed: 6/30/2016

Assessment of Natural Copper-Nickel Bedrocks on Water Quality

Subd. 05b \$585,000 TF

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RESEARCH

Appropriation Language

\$585,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota in cooperation with the United States Geological Survey to assess impacts of existing mineralization and potential mining on northeastern Minnesota regional water quality, including impacts from copper, nickel, and other metal concentrations in rocks, streambed sediments, and soils in areas of potential base-metal mining. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Large deposits of copper, nickel, cobalt, and other minerals in northeastern Minnesota could provide huge economic and employment benefits to the state while becoming an important source of important metals for the country. However, the mining required to extract them could have significant water quality impacts in a region that includes the Boundary Water Canoe Area Wilderness and other environmentally sensitive watersheds. Up-to-date and accurate geochemical data is needed in order to assess and predict water quality impacts of potential mining and inform decision-making to protect water quality and sensitive ecosystems. Scientists at the University of Minnesota are using this appropriation to gather baseline data for assessing how existing concentrations of these metals in rocks, streambeds, and soils currently influence regional water quality. This information is a critical component for examining the risks posed by any potential future mining.

Project due to be completed: 6/30/2016

Heron Lake Sediment and Phosphorus Reduction Implementation Projects

Subd. 05c \$122,000 TF

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Appropriation Language

\$122,000 the first year is from the trust fund to the Board of Water and Soil Resources for an agreement with the Heron Lake Watershed District for public outreach and installation and monitoring of water quality improvement projects. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Once known for its clean water, fertile soil, and healthy habitat, in more recent times the Heron Lake Watershed in southwestern Minnesota has been heavily impacted by pollution from intensive agriculture, feedlots, non-compliant septic systems, and urban stormwater runoff. The Heron Lake Watershed District is using this appropriation for public outreach and installation and monitoring of water quality improvement projects aimed at reducing sediment and nutrient loading for the benefit of public health, recreation, and wildlife habitat.

Project due to be completed: 6/30/2016

Southern Minnesota Lakes Restoration

Subd. 05d \$463,000 TF

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Appropriation Language

\$463,000 the first year is from the trust fund to the Board of Water and Soil Resources for an agreement with Le Sueur County to install shoreland and agricultural best management practices to improve water quality for up to 14 lakes in a tri-county area in southern Minnesota. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Lakes and streams located in Blue Earth, Le Sueur, and Waseca Counties provide important public benefits such as hydrologic storage, economic and recreational opportunities, and regional water quality improvement. However, several of the lakes and streams have been listed as impaired because of excess nutrients and sediment from runoff. Le Sueur County is using this appropriation to install shoreland and agricultural best management practices such as wetland enhancements, infiltration basins, stream restoration, and native plantings to improve the water quality of up to 11 lakes in the region.

Project due to be completed: 6/30/2016

Measuring Hydrologic Benefits from Glacial Ridge Habitat Restoration

Subd. 05e \$400,000 TF

Tim Cowdery

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RESEARCH

Appropriation Language

\$400,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Red Lake Watershed District in cooperation with the United States Geological Survey to compare the hydrology of habitats before and after restorations to evaluate and quantify the impacts on flood reduction and water quality in order to inform improvements to restoration techniques. The United States Geologic Survey is not subject to the requirements in Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Since 2000, a diverse group of partners has been collectively working in northwestern Minnesota on one of the largest prairie-wetland restorations in the world. Spanning 22,000 acres and adjacent to an additional 16,000 acres of public and private conservation land, the goal of the Glacial Ridge Project has been to demonstrate whether large-scale habitat restoration is a viable way to reduce flooding and improve water quality. Prior to beginning restoration efforts on the project, a comprehensive baseline hydrologic study of the area was completed by the U.S. Geological Survey (USGS). The Red Lake Watershed District and USGS are using this appropriation to conduct a post restoration study that will

quantify and evaluate the amount of flood reduction, water-quality improvement, and ecosystem-function change that has resulted from the wetland and prairie restoration efforts at Glacial Ridge. This information will be used to guide future restoration efforts throughout the state and beyond.

Project due to be completed: 6/30/2016

Evaluation of Lake Superior Water Quality Health

Subd. 05f \$600,000 TF

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RESEARCH

Appropriation Language

\$600,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate impacts to Lake Superior from a changing thermal structure and invasive species in order to implement lake water quality management strategies. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Lake Superior, the world's largest freshwater lake by surface area, is amongst Minnesota's greatest natural resources providing drinking water, shipping, recreation, and tourism. Recently the lake has been undergoing significant changes including increasing water temperatures, decreasing ice cover, increasing nutrient loads, decreasing biological productivity, increasing invasive species, and changes in species abundance and distribution. The reasons behind these changes and the interactions amongst them are not well understood. Scientists at the Large Lakes Observatory at the University of Minnesota - Duluth are using this appropriation to gather critical baseline data on Lake Superior to evaluate the impacts these changes are having on the lake and how natural resource managers and scientific and regulatory entities can best respond to the changes. No prior large lake study has ever included the breadth of measurements, geographic range, and span of seasons to be examined by this study.

Project due to be completed: 6/30/2016

Membranes for Wastewater-Generated Hydrogen and Clean Water

Subd. 05g \$246,000 TF

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RESEARCH

Appropriation Language

\$246,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to develop, optimize, and test membranes made of thin film polymers embedded with selected bacteria to generate clean water and energy in the form of hydrogen from wastewater. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Waste streams often contain unutilized resources that if properly extracted or otherwise utilized could be used to provide additional sources of renewable energy or other benefits. Wastewater is one of the primary candidate waste streams because of its nutrient content and researchers have been developing technologies such as microbial fuel cells and algal-based biofuel production in order make use of these nutrients. Researchers at the University of Minnesota are using this appropriation to develop, test, and optimize another new technology that can be used to extract energy from wastewater, specifically a polymer membrane embedded with select bacteria that could be used to simultaneously improve wastewater treatment while generating renewable energy in the form of hydrogen. If effective the technology is likely to be scalable with broad application potential for use with any biodegradable liquid waste stream.

Project due to be completed: 6/30/2016

Antibiotics in Minnesota Waters - Phase II - Mississippi River

Subd. 05h \$203,000 TF

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RESEARCH

Appropriation Language

\$203,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the University of St. Thomas to measure antibiotic concentrations and antibiotic resistance levels and assess the contributions of farm runoff and wastewater treatment in a portion of the Mississippi River. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The occurrences of contaminants including antibiotics, other pharmaceuticals, and personal care products in the environment have gained increasing attention in recent years because of their potential health and ecological impacts. However, serious gaps remain in our understanding of these contaminants and the significance of the threats they may pose, such as to drinking water. Through this

appropriation scientists at the University of St. Thomas, Gustavus Adolphus College, and the University of Minnesota will continue work focused on the threats posed by antibiotics to understand which antibiotics are of the most concern - for example, because of their potential to increase antibiotic resistance - and to delineate their urban and rural sources. The first phase focused on antibiotics in the Minnesota River and this phase will focus on the Mississippi River. Findings will help develop strategies to manage threats and minimize future impacts posed by antibiotics to human and ecological health.

Project due to be completed: 6/30/2015

Subd. 06 Aquatic and Terrestrial Invasive Species

An Aquatic Invasive Species Research Center

Subd. 06a \$8,700,000 TF

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RESEARCH

Appropriation Language

\$4,350,000 the first year and \$4,350,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota to develop and support an aquatic invasive species (AIS) research center at the University of Minnesota that will develop new techniques to control aquatic invasive species including Asian carp, zebra mussels, and plant species. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project Overview

Aquatic invasive species pose critical ecological and economic challenges for the entire state and beyond. They can cause irreparable harm to fisheries and aquatic habitat as well as damage to infrastructure. The problems posed by aquatic invasive species continue to grow as existing infestations expand and new exotic species arrive, most of which are poorly understood. New ideas and approaches are needed to develop real solutions. In 2012 the Minnesota Legislature provided the University of Minnesota with \$3,800,000 (\$2,000,000 from the Environment and Natural Resources Trust Fund; \$1,800,000 from the Clean Water Fund) to launch a new, first-of-its-kind research center specifically focused on developing and implementing solutions to control aquatic invasive species. This appropriation provides this new center with additional initial operating funds for conducting research aimed at slowing the spread, reducing, controlling, and/or eradicating aquatic invasive species including Asian carp, zebra mussels, Eurasian watermilfoil, and more. Proven tools and techniques developed at the center are intended to be implemented statewide.

Project due to be completed: 6/30/2019

Detection and Monitoring of Asian Carp Populations

Subd. 06b \$540,000 TF

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Appropriation Language

\$540,000 the first year is from the trust fund to the commissioner of natural resources to accelerate a search and monitoring program directly targeting Asian carp to be used in the development of potential control strategies.

Project Overview

Asian carp pose a real and serious threat to Minnesota's aquatic ecosystems. While there are a few instances of individual carp being found in Minnesota waters, including the Mississippi and St. Croix Rivers, it is not presently believed that there are significant established populations in the state. In order to quickly and effectively respond to threats posed by Asian carp in the future, though, detailed information about the fish themselves is needed. The DNR is using this appropriation to establish an aggressive search and monitoring program directly targeting Asian carp to determine existing distribution and abundance, measure current reproductive success, and evaluate impacts on native fish populations. The information will inform rapid response efforts aimed at control and removal of Asian carp as they emerge.

Project due to be completed: 6/30/2015

Improving Emerald Ash Borer Detection Efficacy for Control

Subd. 06c \$600,000 TF

PART A (\$240,000)

Mark Abrahamson

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PART B (\$360,000)

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Web: <http://www.entomology.umn.edu/People/GradFaculty/Aukema/>

Appropriation Language

\$600,000 the first year is from the trust fund to evaluate and implement options for effective detection of the presence of emerald ash borer. Of this appropriation, \$240,000 is to the commissioner of agriculture and \$360,000 is to the Board of Regents of the University of Minnesota. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The Emerald Ash Borer (EAB) is an invasive insect that has been decimating ash trees throughout the Great Lakes states. It was first discovered in Minnesota in 2009 and is now found in four counties (Hennepin, Houston, Ramsey, and Winona). EAB poses a particularly serious threat to Minnesota because it is home to nearly 1 billion ash trees that occur throughout the state - the second most of any state. Loss of these trees would devastate ecosystems throughout Minnesota and have major economic impacts for the forest products industry as well as through the costs associated with treatment, removal, and replacement of lost trees. Much work has already been done to stem the spread of EAB in Minnesota, including education, quarantine, detection surveys, and biological control efforts. Effective detection remains a key obstacle, though, as current detection tools have not been calibrated to estimate population densities. The Minnesota Department of Agriculture and the University of Minnesota are using this appropriation to attempt to fill this critical information gap necessary for best determining how and where to implement control measures. The effort will evaluate a range of detection tools and measure their ability to detect EAB at different population densities in order to improve and implement better detection practices.

Project due to be completed: 6/30/2016

Elimination of Target Invasive Plant Species

Subd. 06d \$350,000 TF

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Appropriation Language

\$350,000 the first year is from the trust fund to the commissioner of agriculture to train volunteers and professionals to find, control, and monitor targeted newly emergent invasive species. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

New invasive plant species continue to emerge in Minnesota and will pose ongoing threats to Minnesota's economy, ecology, and environment if able to spread across the state. It is cheapest, easiest, and least harmful to find and control small populations of invasive plants before they become widespread. The Minnesota Department of Agriculture is using this appropriation to increase the state's

flexibility and rapid response to newly emergent terrestrial invasive plant species by training professionals and volunteers to find, control, and monitor certain invasive plants that presently exist only as small, isolated populations in the state. Targeted species include Dalmatian toadflax (NW MN), cutleaf teasel (various isolated areas of state), Japanese hops (SW MN), Oriental bittersweet (Areas along St. Croix and Mississippi Rivers), and Grecian foxglove (Washington County).

Project due to be completed: 6/30/2016

Biological Control of Garlic Mustard

Subd. 06e \$140,000 TF

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RESEARCH

Appropriation Language

\$140,000 the first year is from the trust fund to the commissioner of natural resources in cooperation with the University of Minnesota to continue the implementation of biological control for invasive garlic mustard plants. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Garlic mustard is a non-native, invasive plant species that is severely threatening native plant communities and degrading wildlife habitat in forest and riparian zones throughout the state. The plant is considered the highest priority species for development of long-term management solutions such as biological control, which involves using natural enemies of a non-native species from its native region to control or reduce the impact of the species in the areas where they are invasive. Introducing one non-native species to control another, though, is something that must be done with care so that the introduction does not have unintended consequences. This appropriation is enabling the Minnesota Department of Natural Resources and the University of Minnesota to continue ongoing research and evaluation of biological control options for garlic mustard. With this phase the aim is to be able to release multiple biological control inserts and monitor their effectiveness.

Project due to be completed: 6/30/2016

Zebra Mussel Control Research and Evaluation in Minnesota Waters

Subd. 06f \$600,000 TF

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RESEARCH

Appropriation Language

\$600,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the United States Geological Survey, Upper Midwest Environmental Sciences Center, to assess the ecological impacts of a commercially available molluscicide formulation on the reproduction and development of native fish, as well as impacts on larval aquatic insect survival, and to evaluate the effectiveness of these treatment options for detection and control of zebra mussels. The United States Geologic Survey is not subject to the requirements in Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Zebra mussels are an aquatic species that are invasive in Minnesota and severely threaten native fish and other aquatic species by disrupting food webs and damaging spawning habitat. Their range continues to expand within Minnesota lakes and rivers, where they are spread through the transporting of water, vegetation, or equipment from an infested water body. Once established zebra mussels are very difficult to control and there is an immediate need for safe and effective control measures to reduce their impacts in the state. Scientists at the United States Geological Survey are using this appropriation to assess the ecological impacts of a commercially available molluscicide formulation (Zequanox) showing some promise for the control of zebra mussels. Findings will be used to determine the extent to which this product can and should be used in Minnesota waters and, if so, to optimize treatment protocols and techniques to maximize zebra mussel control while minimizing undesirable impacts.

Project due to be completed: 6/30/2015

Controlling Terrestrial Invasive Plants with Grazing Animals

Subd. 06g \$52,000 TF

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Appropriation Language

\$52,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Hiawatha Valley Resource Conservation and Development, Inc. to develop cost effective best management practices to control invasive terrestrial species through planned grazing. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Terrestrial invasive plants such as buckthorn, wild parsnip, garlic mustard, and others are becoming widespread threats throughout many sites in Minnesota. Present chemical and mechanical control methods tend to be costly, effective only in the short-term, or have other negative environmental impacts. However, an alternative practice of using grazing animals for invasive species management is used successfully in many parts of the western United States. Grazing animals can help put target plant species at a competitive disadvantage if plants are grazed at times when they are most vulnerable in order to prevent flower and seed production. The Hiawatha Valley Resource Conservation & Development Council is using this appropriation to develop and demonstrate cost effective and environmentally friendly best management practices for using grazing as a component of invasive species management in Minnesota.

Project due to be completed: 6/30/2017 [Extended in M.L. 2014, Chapter 226]

Subd. 07 Environmental Education

Minnesota Conservation Apprentice Academy

Subd. 07a \$186,000 TF

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Appropriation Language

\$186,000 the first year is from the trust fund to the Board of Water and Soil Resources in cooperation with the Conservation Corps Minnesota to continue a program to train and mentor future conservation professionals by providing apprenticeship service opportunities with soil and water conservation districts.

Project Overview

Many of the most experienced conservation practitioners at local soil and water conservation districts throughout the state are nearing retirement, and with their departure will go much of their practical, on-the-ground knowledge, experience, and skills. Meanwhile, college students seeking to be the next generation of conservation practitioners have knowledge of emerging technologies and other innovations that can improve and contribute to current conservation efforts. Through this appropriation the Minnesota Board of Soil and Water Resources will work with the Minnesota Conservation Corps to continue a program that places students in apprenticeship positions with county soil and water conservation district offices throughout the state. This unique program provides an opportunity for interns to gain valuable in-the-field experience from current practitioners while sharing their knowledge with those practitioners about the newest ideas and solutions for meeting today's natural resource challenges.

Project due to be completed: 6/30/2015

Youth Outdoors: Mississippi River Education and Employment Opportunities

Subd. 07b \$450,000 TF

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Appropriation Language

\$450,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Wilderness Inquiry to provide outdoor education, recreation, and youth employment on the Mississippi River from Grand Rapids to St. Cloud, the Twin Cities, Hastings, and Red Wing. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

There has been a sharp decline in participation in outdoor recreation and education amongst youth, particularly in urban areas. Some argue that youth who have meaningful outdoor education experiences are more likely to become engaged in environmental stewardship and invested in outdoor resources as adults. Wilderness Inquiry - in partnership with state and federal agencies, non-profits, and local school districts - is using this appropriation to expand an environmental education and recreation program that provides youth with hands-on educational and recreational experiences of the Mississippi River. Funds enable the program to offer canoe experiences to an additional 6,000 youth and to expand the types of experiences provided to include overnight camping, aquatic sampling and monitoring, and conservation-related internships. The program is also expanding geographically to serve additional communities in the Twin Cities and outstate, including Grand Rapids, St. Cloud, Hastings, and Red Wing.

Project due to be completed: 6/30/2016

Subd. 08 Administration and Contract Management

Legislative-Citizen Commission on Minnesota Resources

Subd. 08a \$990,000 TF

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Appropriation Language

\$990,000 the first year is from the trust fund to the LCCMR for administration in fiscal years 2014 and 2015 as provided in Minnesota Statutes, section 116P.09, subdivision 5.

Project Overview

Per M.S. 116P.09, up to 4% of the amount available for appropriation from the Environment and Natural Resources Trust Fund (ENRTF) for a biennium is available for expenses related to LCCMR administration. These expenses include the LCCMR's project selection and approval process and its ongoing oversight of projects funded by the ENRTF, including both new projects funded during the biennium and existing projects funded in previous bienniums. Historically, LCCMR has always used less than 3% of available funds for administration. This appropriation, which represents 1.46% of the amount available for the biennium, funds LCCMR administration expenses for FY 2014-15.

Project due to be completed: 6/30/2015

Contract Management

Subd. 08b \$135,000 TF

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Web: <http://www.dnr.state.mn.us>

Appropriation Language

\$135,000 the first year is from the trust fund to the commissioner of natural resources at the direction of the Legislative-Citizen Commission on Minnesota Resources for expenses incurred for contract agreement reimbursement for the agreements specified in this section. The commissioner shall provide documentation to the Legislative-Citizen Commission on Minnesota Resources on the expenditure of these funds.

Project Overview

Appropriations to non-state entities must be made through a formal contract with a state entity that manages all of the funds for the project on a reimbursement basis. This appropriation to Minnesota's Department of Natural Resources (DNR) funds the expenses incurred by the DNR in contracting, contract management, and expense re-imbusement for most of the Environment and Natural Resources Trust Fund appropriations made to non-state entities, including both new projects funded during the biennium and existing projects funded in previous bienniums.

Project due to be completed: 6/30/2015

[Work Plan](#) (PDF)

