

**Environment and Natural Resources Trust Fund  
2014 Request for Proposals (RFP)**

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**Project Title:**

**ENRTF ID: 163-F**

Cattail Management for Wetland Wildlife and Bioenergy Potential

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**Category:** F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat

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**Total Project Budget:** \$ 74,600

**Proposed Project Time Period for the Funding Requested:** 2 Years, July 2014 - June 2016

**Summary:**

This project will evaluate different management techniques for the control of cattails in northwest Minnesota and their wildlife effects and potentials to use cattails as a biofuel.

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**Sponsoring Organization:** U of MN

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Crookston MN 56716

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**Location**

**Region:** Northwest

**County Name:** Marshall, Pennington, Polk, Red Lake

**City / Township:** Crookton/Crookston

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<input type="checkbox"/> Funding Priorities	<input type="checkbox"/> Multiple Benefits	<input type="checkbox"/> Outcomes	<input type="checkbox"/> Knowledge Base
<input type="checkbox"/> Extent of Impact	<input type="checkbox"/> Innovation	<input type="checkbox"/> Scientific/Tech Basis	<input type="checkbox"/> Urgency
<input type="checkbox"/> Capacity Readiness	<input type="checkbox"/> Leverage	<input type="checkbox"/> Employment	<input type="checkbox"/> TOTAL <input type="checkbox"/> %



**PROJECT TITLE: Cattail management for wetland wildlife and bioenergy potential.**

**I. PROJECT STATEMENT**

On many public lands (National Wildlife Refuges, Wildlife Management Areas, Waterfowl Production Areas, flood control impoundments) in northwest Minnesota, cattail growth has far exceeded the 50:50 distribution recommended for optimum wetland wildlife habitat (Weller and Spatcher, 1965; Murkin, et. al., 1981). The need for cattail control is supported by David Rave and Ray Norrgard (MN DNR): *“There have been some studies examining the management of exotic cattails using flooding, herbicide treatments, and mechanical means such as roto-tilling. However, these methods are expensive and labor intensive. If a market could be established to utilize exotic cattails, management would become much more affordable. We are excited by the possibilities that this innovative research project may lead to in the management of exotic cattails in Minnesota wetlands, and fully endorse this project.* Also, David Bennett, manager of the Glacial Ridge National Wildlife near Crookston, and where extensive acreages of hybrid cattails are developing, commented: *“As a manager of a National Wildlife Refuge, cattail management has been a concern for nearly my entire 37 years with the U.S. Fish and Wildlife Service. Hybrid cattail encroachment of our nation’s wetlands is having a negative effect on many water-nesting birds. I believe your project will provide the essential first steps to making the biomass harvest of cattails a viable wetland management tool.”* Cattails have also been demonstrated to have bioenergy potentials in Manitoba. Grosshans, et. al. (2011), noted that pelletized cattails have energy comparable to wood pellets at 17 MJ/kg. ([http://www.iisd.org/pdf/2011/netleylibau\\_marsh.pdf](http://www.iisd.org/pdf/2011/netleylibau_marsh.pdf)) Thus, cattails could be simultaneously managed for wetland wildlife and harvested for bioenergy. The U.S. is heavily dependent on fossil fuel energy. Using cattails as a partial substitute for fossil fuels could help mitigate climate change by reducing GHG emissions. Additionally, local rural economies could be boosted by harvesting an in-state, renewable resource since Minnesota has no fossil fuels. Cattails can be effectively managed/harvested with conventional equipment in very dry falls like 2012, but methods must be developed that can be employed in average to wet years. This should facilitate better cattail control and wildlife management by removing cattail litter (Larkina, Lishawab, and Tuchman, 2012) and assuring more dependable bioenergy harvest. Concurrent with management/harvest demonstrations, data on the response of wetland wildlife to management applications are needed.

Goal 1: Evaluate cattail management/harvesting techniques in representative habitats of northwest Minnesota.

Goal 2: Monitor wetland wildlife effects of cattail management/harvest.

Goal 3: Develop a publication that extends applicable findings to land managers and policy makers.

This project will achieve the above goals by working with agencies and private contractors to do field tests using conventional and modified (attachment of tracks, etc) harvesting equipment to operate in a range of wet habitats. To augment field demonstrations, an extensive literature review of findings in North America and Europe will describe the range of equipment used in similar settings. Wildlife studies initiated on a pilot basis in 2013 will be intensified in representative habitats in 2014 and 2015.

**II. DESCRIPTION OF PROJECT ACTIVITIES:**

**Activity 1: Cattail Management/Harvest**

**Budget: \$ 13,600**

Demonstrate and evaluate methods of cattail management in 3 northwest Minnesota settings; restored shallow wetlands landscape (Glacial Ridge National Wildlife Refuge), a representative flood control impoundment with water level control capacity (Agassiz Valley Project or Parnell Impoundment), and a representative wetland wildlife management area with limited water level control capacity (Agassiz National Wildlife Refuge). Agassiz NWR received LOHC funding for chemical control of cattails where equipment access is limited. Glacial Ridge NWR received LOHC funding for mechanical management of cattails.



**Environment and Natural Resources Trust Fund (ENRTF)**

**2014 Main Proposal**

**Project Title: Cattail management for wetland wildlife and bioenergy potential**

**Activity 2. Wildlife monitoring.**

**Budget: \$ 56,000**

Monitor wildlife, especially wetland birds, in the 3 study settings during the 2014 season (before manipulation control) and the 2015 field season (after management).

**Activity 3. Outreach publication**

**Budget: \$ 5,000**

Develop an illustrated informational booklet that describes wetland wildlife values of cattail management/harvest and as a concurrent source of bioenergy to inform user groups and policy makers.

<b>Outcomes</b>	<b>Completion Date</b>
1. Demonstration of cattail management/harvest techniques and their logistical and energetic/cost feasibility.	December 2015
2. Evaluate management effects on wildlife in different wetland settings.	April 2016
3. Publish in electronic and hard copy, an informative booklet for land managers	April 2016

**III. PROJECT STRATEGY**

**A. Project Team/Partners**

- \*Vanessa Lane (and 2 student assistants/ year), Ornithologist, U of MN, Crookston. Bird monitoring.
- \*Mattracks, Inc. Karlstad, MN. Contract for track-mounted tractor and track mounts for baler plus operator.
- \*Northwest Research and Outreach Center, U of MN. Project coordination. Will sub-contract for booklet production.
- David Bennett and Jessica Dowler, Glacial Ridge NWR. Study site coordination and monitoring. In-kind.
- Emily Hutchins and Dave Rave, MN DNR. Study site coordination and bird monitoring. In-kind.
- Gregg Knutsen, Biologist, Agassiz NWR. Study site coordination. In-kind.
- \* Will receive money from this request.

**B. Timeline Requirements**

This project proposes to extend initial work in 2012-13 on assessing cattails as a biofuel (extent of resource, surveys of land managers, identification of potential users, evaluation of pelletizing and energy processing technology) in NW MN co-funded by the Northwest Minnesota Foundation (\$ 21,570) and the Institute for Renewable Energy and the Environment, U of MN (\$ 6,934). Additionally, surveys of bird, mammal, and amphibians were initiated in 2013 at the Glacial Ridge NWR and will be continued in May and June of 2014. These surveys will be supported by other funds (to be identified) before funds from this proposal become available. This project can be completed by April 30, 2016.

**C. Long-Term Strategy and Future Funding Needs**

This project will contribute to the information base on managing wetlands which are overgrown with hybrid cattails to benefit wildlife and concurrently provide renewable biofuel. Further, the 2013 Minnesota Energy Bill calls for a framework to “transition to a renewable energy economy that ends Minnesota’s contribution to greenhouse gases from burning fossil fuels within the next few decades.” Other bioenergy related proposals being discussed for northwest Minnesota include; 1) American Ag Energy and the Agricultural Utilization Research Institute are evaluating the feasibility of a bioenergy plant using a variety of feedstocks and 2) the Red River Basin Commission and the International Institute for Sustainable Development (Winnipeg) are proposing to use cattails as a bio-mechanism to extract phosphorous from flood water in specially designed basins.

## 2014 Detailed Project Budget

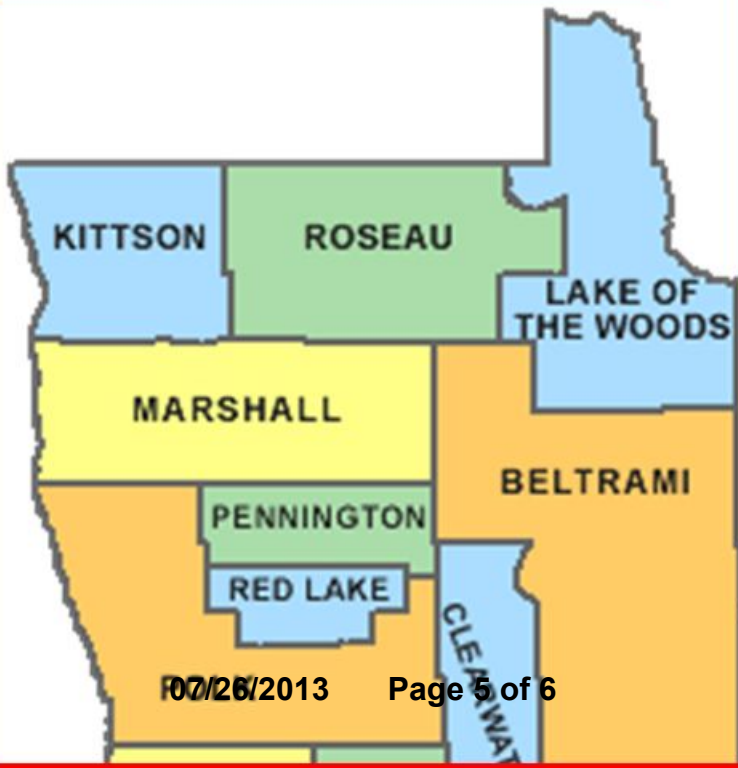
Project Title: Cattail management for wetland wildlife and bioenergy potential.

### IV. TOTAL ENRTF REQUEST BUDGET 2 years

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
<b>Personnel:</b> Vanessa Lane, research coordinator. <b>2014.</b> 3 months, \$ 12K (66.4% sal. 33.6% fringe) <b>2015.</b> 5 months \$ 20K: Two research technicians for 2014 (2 months) and 2015 (3 months). \$ 15K (63.2% salary, 36.7% fringe)	\$ 47,000
<b>Contracts:</b> Mattracks, Inc. Harvesting of 50 % of 50-acre study area using track-mounted, bi-directional tractor and track-mounted baler @ \$ 190/hour for 40 hrs. (Includes operator) = \$ 7.6K. Rental of baler, front-end loader, and swather: \$ 4K. Equipment moving costs: \$ 2K.	\$13,600
<b>Equipment/Tools/Supplies:</b> Flagging, field marker poles, miscellaneous tools, waders for field workers.	\$ 1,000
<b>Travel:</b> For data collection, to and from study areas; \$ 1,200/month for research coordinator, technicians, and project coordinator: \$ 5K for 2014 and 2015. Travel to in-state conferences and seminars to present finding to other land managers: \$ 1.5K. Coordinating meetings with agencies and contractors. \$ 1.5K.	\$8,000
<b>Additional Budget Items:</b> Publication of ~ 40-page booklet summarizing finding of cattail management efforts in northwest Minnesota. Printing of 300 hard copies. Basis for cost estimate is past experience with printing similar publications. 5K	\$ 5,000
<b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>	<b>\$ 74,600</b>

### V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
<b>In-kind Services During Project Period:</b> Svedarsky salary as project manager: 25K. Use of NW Research and Outreach Center pickup and ATV for 2014 and 2015 field seasons: 4K. DNR biologists assisting with biological monitoring: 2K.	\$ 31,000	<i>Secured</i>
<b>Funding History:</b> Assessment of cattail resources in NW MN - NW MN Foundation; \$ 21, 570 and Institute for Renewable Energy and the Environment; 6,934. LOHC funds for cattail management using equipment and herbicides at Glacial Ridge NWR and Agassiz NWR; ~ 100K.	\$ 128,504	<i>Secured</i>
	<b>\$ 159,504</b>	



**Daniel Svedarsky, Director, Center for Sustainability**  
**Research Biologist, Northwest Research and Outreach Station**  
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**Education:**

University of Missouri, Columbia, B.S. (1967), Biology  
University of Missouri, Columbia, M.S. (1969), Botany - Plant Ecology. Minor: Wildlife management  
University of North Dakota, Grand Forks. Ph.D. (1979), Wildlife Biology. Minor: Geology

**Teaching:** Head of the Natural Resources Department at U of MN Crookston (UMC) (2005-2009). Interim Vice-Chancellor of Academic Affairs, UMC. (Sept 2004-June 2005). Have taught a broad spectrum of field oriented classes since 1969 when I initiated the campus Natural Resources program. Currently teaching *Integrated Resource Management, Wildlife Habitat Management Techniques, and Environmental Science and Sustainability*. Crookston campus sustainability representative to U of MN system.

**Research and management experience:** Hold a joint appointment with the Northwest Research and Outreach Center, where I conduct research on wildlife and related land use issues as they pertain to wetlands, prairies, and agricultural environments. In connection with his research appointment I advise graduate students through an adjunct appointment with the University of North Dakota. Research leader/Manager for the following:

**2012.** 1) Feasibility study for utilization of biomass in the UMC heating plant. Clean Energy Resource Teams. \$ 4,000. 2) Assessment of cattail cover in northwest Minnesota and potential for concurrent bioenergy harvest and wetland management. NW MN Foundation. \$ 21,570. U of MN Institute for Renewable Energy and the Environment. \$ 6,934. 3) Implementation of the Crookston CommUniversity Trail. Crookston Community Development Fund. \$ 4,000. **2010.** Feasibility study for methane generation at UMC. Agricultural Utilization Research Institute. \$ 2,500. **2007-2009.** Three-year study of the Greater Prairie Chicken in conjunction with the Wisconsin Department of Natural Resources; University of Wisconsin, Madison, Minnesota Department of Natural Resources; U. S. Fish and Wildlife Service, The Nature Conservancy, and the University of North Dakota. \$ 169, 000. **2006.** 1) Ecology of the Aspen Parkland Conference. \$ 8,000. 2) Feasibility study for the Northern Prairie Visitor Center. \$ 30,000. **2005.** Habitat Friendly Farming; an exploration of incentive alternatives. \$ 9,500. **2005.** Feasibility study of Center for Sustainable Development at UMC and the hosting of a 2-day conference on sustainable development. \$ 5,000. **2004.** Biological monitoring at the Glacial Ridge Project. \$ 75,000. **1999.** Integrated prairie management. LCMR, State of Minnesota. \$ 350,000.

**Service to organizations and agencies:** President of The Wildlife Society, (2007-2008) the international organization of professional wildlife biologists, teachers, managers, and researchers. Organized the plenary session for the 2008 annual meeting in Miami entitled, *Thriving within limits; toward a scenario of hope*. TWS delegate to the UN Conference on Climate Change in Copenhagen, Denmark, December, 2009. Chair of the College and University Wildlife Education Working Group of The Wildlife Society (2010-2012). Past President of the North American Wildlife Technology Association, (1988-89). Board of Directors, Minnesota Zoo (1988-1992). Advisory committee member of the UMore Park Project; a U of Minnesota effort to develop a 5,000-acre sustainable community in Rosemount, Minnesota using sustainable development principles. Volunteer natural area manager with The Nature Conservancy. Member of Crookston In-Motion, a local planning initiative in which I coordinate a task force using sustainability principles as a guide to community development.

**Awards:**

1. Elected Fellow of The Wildlife Society Fellow. 2010.
2. U of MN President's Award for Distinguished Community Service. 2010.
3. The Minnesota Award – Minnesota Chapter of The Wildlife Society. 1999.
4. University of Minnesota Academy of Distinguished Teachers. 1998.
5. Morse -Alumni Award for Outstanding Contributions to Undergraduate Education. 1997.
6. The Hamerstrom Award – Prairie Grouse Technical Council. 1995.
7. National Stewardship Award - The Nature Conservancy. 1981.