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

Project Title: **ENRTF ID:** **019-A**

Sandhill Crane Populations and Management in Minnesota

Category: A. Foundational Natural Resource Data and Information

Total Project Budget: $ 306,904

Proposed Project Time Period for the Funding Requested: 3 Years, July 2014 - June 2017

Summary:

Obtain information essential to managing Minnesotas 2 populations of sandhill cranes, using GPS-cellular transmitters to delineate population boundaries, habitat use relative to crop depredation, and migration patterns and survival.

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Sponsoring Organization: U of MN

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Location

Region: Central, Northwest

County Name: Becker, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Morrison, Todd, Wadena

City / Township:

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%

PROJECT TITLE: Sandhill Crane Populations and Management in Minnesota

I. PROJECT STATEMENT

Sandhill cranes (*Grus canadensis*) are considered to be an important part of Minnesota's natural heritage, and although they have expanded their breeding range in Minnesota, they remain a species of management concern. Minnesota supports 2 populations of sandhill cranes– the Mid-continent Population that breeds and migrates through northwestern Minnesota, and the Eastern Population that breeds and migrates throughout much of the remainder of the State. Minnesota initiated a sandhill crane hunting season on Mid-continent Population cranes in 2010, and Eastern Population cranes are currently hunted in Kentucky. Several other eastern states are currently considering initiating sandhill crane hunting seasons on Eastern Population cranes, and Mid-continent Population cranes are currently hunted in much of the central U.S. and Canada. Current information on population distribution and migration patterns of sandhill cranes that breed in Minnesota is insufficient for projecting the impact of current and future hunting seasons, and for making informed management decisions in Minnesota. In addition, sandhill crane crop depredation complaints have increased exponentially over the last 10 years in some locations in Minnesota and complaints will continue to grow with increasing crane populations. Wildlife managers in the state require a better understanding of crane movements and what cranes (e.g., adults or juveniles) are responsible for the damage to address this growing problem.

A 2012 survey estimated there were 7,200 Mid-continent Population sandhill cranes in northwestern Minnesota during the breeding season. How many Eastern Population sandhill cranes breed in Minnesota is not known; recent surveys have tallied > 75,000 Eastern Population cranes on fall staging areas. The size of the Eastern Population of sandhill cranes has increased significantly in the past 15-20 years, and Eastern Population sandhill cranes have expanded their breeding range during that period in Minnesota. As crane numbers increase, conflicts between cranes and agriculture will also increase, and there will be additional interest in hunting cranes more broadly across Minnesota and the eastern U.S. However, management options in Minnesota are currently limited because the boundary between Mid-continent Population and Eastern Population cranes is not clearly delineated. Furthermore, additional information is required concerning how and where cranes depredate crops and how cranes use habitat at local and landscape scales to effectively manage sandhill cranes in Minnesota. By using cutting-edge GPS-cell transmitters, we aim to help fill in these important information gaps. Specifically, we propose to address the following goals and objectives:

1. Delineate the boundary between Mid-continent and Eastern Population sandhill cranes in Minnesota, allowing these populations to be more effectively managed as separate units.
2. Determine spatial patterns in the use of agricultural crops, grazed and ungrazed grasslands, and wetland habitats by cranes, thereby improving our ability to determine appropriate management actions, including steps necessary to address depredation issues.
3. Evaluate year-round movement patterns (e.g., migration) and survival of Minnesota sandhill cranes.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Mark 45 sandhill cranes with GPS-cell transmitters in Minnesota **Budget:** $253,831

We propose to mark 60 (15 in 2014 and 30 in 2015 plus 15 additional cranes to be marked with cooperator funds prior to receiving Environmental and Natural Resources Trust Fund funding) sandhill cranes along the presumed boundary between MCP and EP cranes in Minnesota with GPS-cell transmitters.

Outcome	Completion Date
1. Mark 15 (plus 15 with cooperator funds for a total of 30) sandhill cranes along presumed boundary in 2014	August 2014

2. Mark 30 sandhill cranes along boundary in 2015	August 2015

Activity 2: Acquire movement and habitat data for radio-marked cranes **Budget:** $53,073

Beginning with transmitter deployment in 2014, we propose to acquire high-resolution location data for sandhill cranes breeding in Minnesota, and evaluate local and regional movements and habitat use.

Outcome	Completion Date
1. Acquire high-resolution GPS data for marked cranes	August 2016
2. Acquire data regarding local habitat (including distribution of agricultural crops)	October 2016
3. Assess habitat use and patterns of crop depredation	December 2016

III. PROJECT STRATEGY

A. Project Team/Partners

This project will be conducted cooperatively through the MN Cooperative Fish and Wildlife Research Unit at the University of MN. Project partners include University of MN principal investigators, MN Department of Natural Resources scientists, and U.S. Fish and Wildlife Service biologists. Funds received from this Environmental and Natural Resources Trust Fund request will be received by the University of MN in an agreement with Drs. Andersen and Fieberg as co-Principal Investigators. Funds contributed from other sources will be used to initiate the project prior to Environmental and Natural Resources Trust Fund funds becoming available in 2014.

David E. Andersen, U.S. Geological Survey, MN Cooperative Fish and Wildlife Research Unit, University of Minnesota.
John Fieberg, University of MN, Department of Fisheries, Wildlife, and Conservation Biology.
Jeff S. Lawrence, Minnesota Department of Natural Resources.
Tom Cooper, U.S. Fish and Wildlife Service, Webless Migratory Bird Coordinator.
Dave Fronczak, U.S. Fish and Wildlife Service.

B. Timeline Requirements

The project duration is 3 years. We propose to begin capturing and marking sandhill cranes in spring 2014 (prior to availability of Environmental and Natural Resources Trust Fund funds) using secured and pending funding from project collaborators. We propose to capture a total of 30 cranes in 2014 and 30 cranes in 2015. Telemetry GPS location data from marked cranes will continue through August 2016. Collection of habitat data will occur during summers 2014, 2015, and 2016. Data analyses and evaluation will be completed during 2016.

C. Long-Term Strategy and Future Funding Needs

We expect to be able to meet project objectives during the proposed project period (July 2014 – December 2016) with requested and collaborator funds, and do not anticipate making additional requests to the Environmental and Natural Resources Trust Fund to support this project. We have funds secured and pending to begin this project prior to when Environmental and Natural Resources Trust Fund funds would become available in 2014.

2014 Detailed Project Budget

Project Title: Sandhill Crane Populations and Management in Minnesota

IV. TOTAL ENRTF REQUEST BUDGET *2.5* years

BUDGET ITEM *(See "Guidance on Allowable Expenses", p. 13)*	AMOUNT
Personnel: **Co-**PI salary (Fieberg, 1 month per year x 2 years, 19.83% fringe benefits - $21,435) M.S. student (2 years, 83.6% fringe benefits including tuition - $76,667) Project technician (6 months, 36.8% fringe benefits - $17,073) Field technicians (3 @ 8 weeks, 9.23% fringe - $12,059)	$ 127,234
Contracts: N/A	$ -
Equipment/Tools/Supplies: Cell – GPS transmitters (45 @ $2,600) Bands, attachment materials, and miscellaneous field supplies ($7,500)	$ 124,500
Acquisition (Fee Title or Permanent Easements): *N/A*	$ -
Travel: Mileage for 4-wheel drive vehicles (2 vehicles@$0.565/mile x 100 miles/day x 60 days/year x 2 years) Lodging and per diem (2 people x $100/day x 30 days x 2 years)	$ 19,170
Additional Budget Items: Remote data retrieval ($400 per year per transmitter; 30 transmitters @ 24 months and 30 transmitters @ 12 months)	$ 36,000
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 306,904

V. OTHER FUNDS (Used to inititate project prior to ENRTF funds)

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State $ Being Applied to Project During Project Period: U.S. Fish and Wildlife Service (Webless Migratory Game Bird Research Program $50,000) U.S. Geological Survey (Quick Response - $40,000)	$ 90,000	*Pending*
Other State $ Being Applied to Project During Project Period: MN Department of Natural Resources	$ 25,000	*Pending*
In-kind Services During Project Period: 2 vehicles per year x 3 months per vehicle x $500/month Use of MN Coop Unit vehicles	$ 3,000	*Secured*
Remaining $ from Current ENRTF Appropriation (if applicable): N/A	$ -	
University of Minnesota: 52% in foregone federally negotiated ICR funding	$ 141,362	
Funding History: MN Cooperative Fish and Wildlife Research Unit (Webless-funded RWO - $30,000)	$ 30,000	Secured

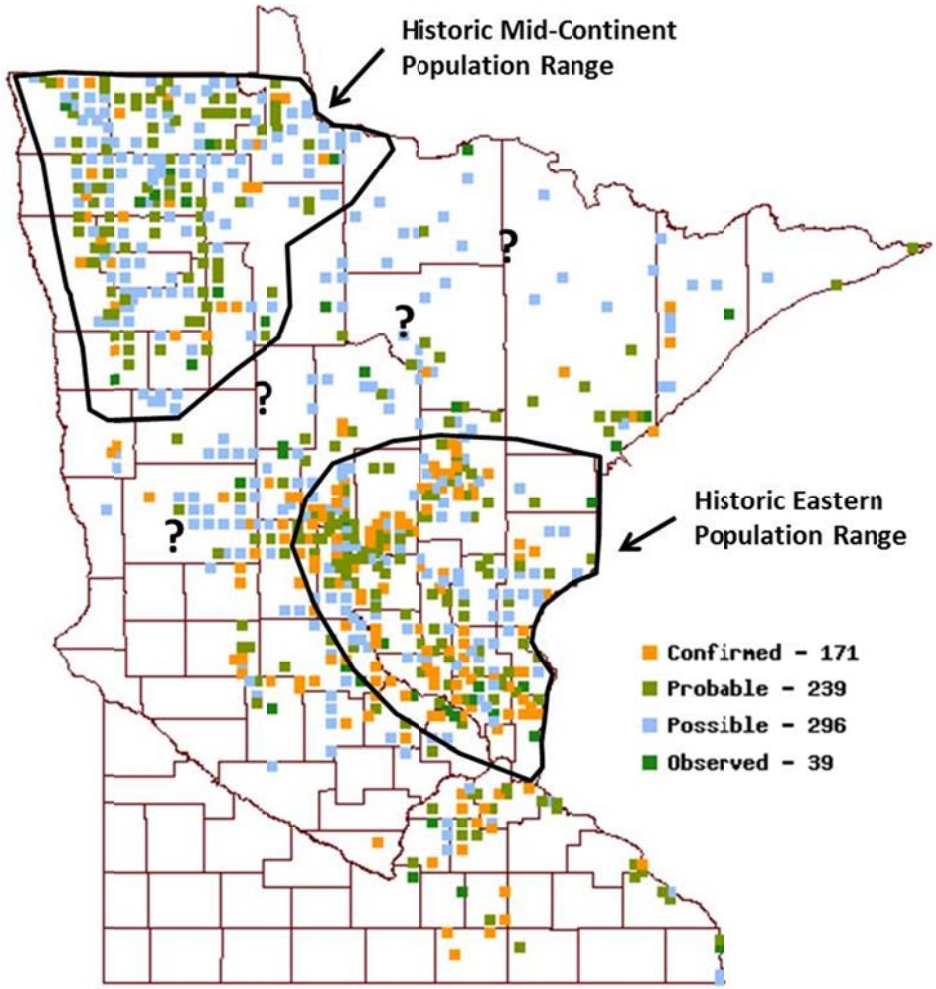

Figure 1. Sandhill crane locations in Minnesota based on preliminary data from the Minnesota Breeding Bird Atlas. The historic breeding ranges of Mid-continent and Eastern Population sandhill cranes in Minnesota are delineated by the polygons, while the cranes breeding in the area delineated by question marks are the focus of this proposal. (http://www.mnbba.org/blockmap/cresults.php?species=Sandhill Crane)

Figure 2. Sandhill crane at Crex Meadows, Wisconsin equipped with a tibiotarsus-mounted GPS satellite transmitters and alpha-numeric coded band. GPS – cell transmitters would be attached to sandhill cranes near the presumed boundary between the Mid-Continent Population and Eastern Population cranes in Minnesota as part of the proposed project.

Project Manager Qualifications & Organization Description

David E. Andersen is the Leader of the U.S. Geological Survey (USGS), Minnesota Cooperative Fish and Wildlife Research Unit (MN CFWRU; mncoopunit.cfans.umn.edu) and Adjunct Professor in the Department of Fisheries, Wildlife, and Conservation Biology on the St. Paul Campus of the University of Minnesota. Dr. Andersen received a Ph.D. in Wildlife Ecology (1988) and a Ph.D. in Zoology (1988) from the University of Wisconsin-Madison, an M.S. in Wildlife Ecology (1984) from the University of Wisconsin-Madison, and a B.S. from St. Olaf College (1981). He has worked at the MN CFWRU since 1989, having conducted research in avian ecology and conservation, working with graduate students on projects involving raptors, forest-nesting birds, waterfowl, shorebirds, and cranes. Dr. Andersen has advised or co-advised 24 M.S. students and 4 Ph.D. students, authored or co-authored over 100 scientific publications, and has served as Principal Investigator on dozens of research projects totaling several million dollars in external funding.

Dr. Andersen will serve as project coordinator, working with collaborators at the University of Minnesota, the Minnesota Department of Natural Resources (MN DNR), and the U.S. Fish and Wildlife Service (FWS) to conduct the proposed research. Dr. Andersen will serve as co-advisor for an M.S. student on the project. Dr. Fieberg will serve as co-Principal Investigator at the University of MN and will co-advise an M.S. student who will lead the field portion of this project. Dr. Lawrence (MN DNR) will help coordinate field logistics, develop project protocols, and serve on the advisory committee of the M.S. student who will lead the field portion of this project. Dr. Cooper (FWS) will help coordinate field logistics, develop project protocols, and serve on the advisory committee of the M.S. student who will lead the field portion of this project. Mr. Fronczak (FWS) has extensive experience capturing and marking sandhill cranes with GPS transmitters, and will aid in the field portion of this project. Along with project collaborators, Dr. Andersen will seek project funding from other agencies (e.g., MN DNR, FWS, USGS Quick Response Program); develop project protocols; aid in data collection, management, and analyses; and provide logistical support to field activities. Dr. Andersen is currently working on a related satellite telemetry project evaluating migration patterns of Eastern Population sandhill cranes where many of the methods necessary to complete the proposed project have been applied. Mr. Fronczak is currently working on a project identifying migration routes of Eastern Population sandhill cranes. Dr. Andersen will oversee project progress and reporting.

Minnesota Cooperative Fish and Wildlife Research Unit – The MN CFWRU was established in 1987 and staffed beginning in 1989. The MN CFWRU's primary mission is to conduct research related to fish and wildlife addressing issues of regional, national, and international significance. Cooperators of the MN CFWRU include the USGS, FWS, MN DNR, University of Minnesota, and the Wildlife Management Institute. The MN CFWRU is currently staffed by 3 USGS scientists, who conduct research, train graduate students, teach graduate-level courses, and provide outreach. The MN CFWRU currently is involved in upwards of 20 projects involving over $3.5 million in external research funding.

University of Minnesota – The University of Minnesota is a land-grant institution of higher education, and ENRTF funding granted for this project would be managed by the University of Minnesota.