# Environment and Natural Resources Trust Fund

2027 Request for Proposal

## General Information

**Proposal ID:** 2027-600

**Proposal Title:** Aerial Infrared Surveys of Sharp-Tailed Grouse and Prairie-Chickens

## Project Manager Information

**Name:** Charlotte Roy

**Organization:** MN DNR - Fish and Wildlife Division

**Office Telephone:** (218) 328-8876

**Email:** charlotte.roy@state.mn.us

## Project Basic Information

**Project Summary:** We will conduct aerial infrared surveys to locate and count display grounds of two native gamebirds vulnerable to habitat loss so population data are sufficient to inform adaptive management.

**ENRTF Funds Requested:** $334,000

**Proposed Project Completion:** December 31, 2030

**LCCMR Funding Category:** Fish and Wildlife (D)

## Project Location

**What is the best scale for describing where your work will take place?**

Region(s): NE, NW, Central,

**What is the best scale to describe the area impacted by your work?**

Statewide

**When will the work impact occur?**

In the Future

## Narrative

**Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

Aerial infrared surveys can be used to monitor wildlife in areas that are remote, difficult to access, or when optimal survey windows are sufficiently short to constrain sampling with existing staff and resources through other methods. Sharp-tailed grouse and greater prairie-chicken leks (i.e., display grounds) are frequently in difficult to access locations (e.g., bogs, areas without road access). Survey windows are limited to a couple hours each morning during a few weeks each April/May, which limits staff ability to survey all areas. During springs 2022 and 2023, we investigated the utility of aerial infrared surveys for sharp-tailed grouse and greater prairie-chickens at a small number of leks in northwestern Minnesota. We found that aerial infrared surveys have utility for prairie grouse monitoring. We propose utilizing aerial infrared surveys during spring to:

-Find previously unknown sharp-tailed grouse leks in the east-central region, where sharp-tailed grouse populations have declined precipitously in recent years, to better understand the current population and its connection to nearby sources of birds that may be important for maintenance or viability of this declining population, and

-Examine the utility of aerial surveys to replace or supplement existing prairie-chicken surveys which are facing impending personnel shortages

**What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.**

We will locate and count sharp-tailed grouse and prairie-chicken display grounds using the high-resolution infrared sensor on a new DNR Enforcement airplane to obtain population data to inform management of these native gamebirds and Species of Greatest Conservation Need. The spatial sampling design for sharp-tailed grouse will be informed by wildlife manager input from the northeast region about difficult-to-access areas that might contain unknown sharp-tailed grouse leks. The spatial sampling design for prairie-chickens will be informed by the existing survey blocks for prairie-chickens, which are conducted by DNR staff and volunteer cooperators from the Minnesota Prairie Chicken Society and provide good information but face impending personnel constraints. The peak survey period is in April and early May. We will survey 30 mins before sunrise to 90 mins after sunrise for as many days as weather permits. A graduate student, technicians, survey cooperators, and the Project Manager will assist with ground counts conducted at the same time as flights for prairie-chickens in the survey blocks. The graduate student will examine whether aerial counts can be combined with ground counts to produce statistically valid survey results, and whether an aerial infrared survey could be a cost-effective replacement for ground surveys.

**What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?**

Outcomes for sharp-tailed grouse will consist of data that could inform management to promote connectivity and persistence of the east-central population. The hunting season for sharp-tailed grouse was closed in east-central range in 2021, following a sharp decline in numbers. For prairie-chickens, aerial infrared surveys could ensure the continuance of long-term population monitoring initiated in 2004, after reopening the hunting season following a decades-long closure. Prairie chickens and sharp-tailed grouse are both games species but are also area-sensitive Species of Greatest Conservation Need because of their vulnerability to habitat loss. Monitoring data can alert us to population changes warranting action.

## Activities and Milestones

### Activity 1: Conduct Aerial Infrared Surveys for Sharp-tailed Grouse and Prairie-chickens to Locate Display Grounds

**Activity Budget:** $182,390

**Activity Description:**
We will locate display grounds using the high-resolution infrared sensor on a DNR airplane beginning 30 mins before sunrise and ending 90 mins after sunrise. We will request input from wildlife managers in the east-central sharp-tailed grouse region about difficult-to-access areas that could contain unknown leks. Search areas could include areas with recent wildfires, forest pest outbreaks with large scale tree mortality, bog peatlands, or extensive timber harvest that create large open areas that could support sharp-tailed grouse. Prairie-chicken sampling will focus on the 17 survey blocks surveyed annually from the ground by DNR staff and volunteer cooperators. From our pilot study, we anticipate being able to survey 205 km of transects covering 8,660 ha each morning with transects 400 m apart, which is equivalent to 2 survey blocks/day. We will survey when weather permits during April and early May. Ground counts will be conducted simultaneously with recorded flights for prairie-chickens and birds will be flushed after both surveys to obtain a true count. The first year we will focus on sharp-tailed grouse, the second on prairie-chickens, and the third year we will address information gaps arising from weather limitations or information learned in previous years.

**Activity Milestones:**

| Description | Approximate Completion Date |
|---|---|
| Conduct and Record Aerial Surveys of Sharp-tailed Grouse in East-central MN | May 31, 2028 |
| Conduct and Record Aerial Surveys of Greater Prairie-chickens in West-central MN | May 31, 2029 |
| Conduct and Record Aerial Surveys to Fill Information Gaps in Any Region | May 31, 2030 |

### Activity 2: Review Aerial Infrared Imagery Videos and Determine Sharp-tailed Grouse and Greater Prairie-chicken Counts

**Activity Budget:** $151,610

**Activity Description:**
A graduate student will review the video of the aerial infrared imagery, count birds, and determine locations of display grounds. For sharp-tailed grouse, the locations of new display grounds in difficult-to-access locations will provide information about nearby sources of birds that could provide population connectivity. For prairie-chickens, we aim to determine whether aerial counts are comparable to ground counts and whether aerial surveys could be combined with or replace ground surveys. Therefore, we will compare ground counts to those obtained with the plane within the prairie-chicken survey blocks on the same morning. We will determine whether aerial counts can be combined with ground counts to produce statistically valid survey results. We will also calculate a correction factor for both aerial and ground surveys by flushing birds after surveys to identify any birds that were missed in the surveys the same morning. Additionally, we will determine whether an aerial infrared survey could be a cost-effective replacement to assist with ground surveys facing impending personnel constraints, compared to annually hiring temporary staff to conduct the survey where existing staff are unable to survey.

**Activity Milestones:**

| Description | Approximate Completion Date |
|---|---|
| Locate Sharp-tailed Grouse Leks and Count Birds | June 30, 2028 |
| Locate Greater Prairie Chicken Leks and Count Birds | June 30, 2029 |

| | |
|---|---|
| Identify Lek Locations and Bird Counts Requiring Second Year of Survey | June 30, 2030 |
| Analyze and interpret data and disseminate | December 31, 2030 |

## Project Partners and Collaborators

| Name | Organization | Role | Receiving Funds |
|---|---|---|---|
| Dr. Susan Ellis-Felege | University of North Dakota | Supervise graduate student and technicians to assist with ground surveys, review and analyze imagery to derive bird counts and lek locations, and produce a these on cost-effectiveness and accuracy of aerial survey | Yes |
| Minnesota Prairie-chicken Society | Minnesota Prairie-chicken Society | Assist with ground surveys | No |

## Dissemination

**Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.**
We will provide a final research thesis and final reports that will be posted on the MNDNR website. We will give presentations to Wildlife Managers in a research webinar and at in-person meetings, at professional conferences such as the Minnesota Chapter of the Wildlife Society Meeting, Minnesota Prairie-chicken Society Meeting, or Minnesota Sharp-tailed Grouse Society Meeting, and other professional conferences. We anticipate preparation of 1-2 manuscripts for publication. Results from this work will inform the future approach to prairie-chicken surveys and management of sharp-tailed grouse in the east-central portion of the population.

## Long-Term Implementation and Funding

**Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?**
The requested funding will support this research through its completion. If aerial infrared surveys are found to be a cost-effective replacement or supplemental survey method for prairie chickens, then we would pursue funding from the DNR to support an annual aerial infrared survey of prairie-chickens. If the number of new leks located during the sharp-tailed grouse survey effort is substantial, we may pursue DNR funding to fly the newly located leks in difficult to access locations every 3-5 years, to maintain current information about the east-central sharp-tailed grouse population over time in areas that wildlife managers have difficulty surveying.

## Other ENRTF Appropriations Awarded in the Last Six Years

| Name | Appropriation | Amount Awarded |
|---|---|---|
| Neonicotinoid Impacts on Minnesota Deer and Prairie Chickens | M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 19 | $177,000 |

## Project Manager and Organization Qualifications

**Project Manager Name:** Charlotte Roy

**Job Title:** Research Scientist

**Provide description of the project manager's qualifications to manage the proposed project.**
Dr. Charlotte Roy received her B.S. degree from State University of New York at Buffalo in 1995, her M.S. from Southern Illinois University Carbondale in 1998, and her Ph.D. in 2004 from the University of Missouri. Post-graduation, she completed postdoctoral research at University of California Davis and also taught classes and conducted research with

the Cooperative Wildlife Research Laboratory at Southern Illinois University Carbondale before coming to the Minnesota Department of Natural Resources (MNDNR) in 2007. She has been a Research Scientist with the Wildlife Research Unit at MNDNR for 19 years, with her research focusing primarily on gamebirds like waterfowl and grouse, but also including non-game birds, mammals, and invertebrates. She has conducted field studies and coordinated annual surveys of ruffed grouse, greater prairie-chickens, and sharp-tailed grouse since 2013, and developed a spruce grouse survey in 2018 which she now coordinates annually. She has authored 49 peer-reviewed publications, with 14 focused on grouse species.

**Organization:** MN DNR - Fish and Wildlife Division

**Organization Description:**
The Minnesota Department of Natural Resources is a state natural resource agency that conserves land, water, fish and wildlife, and provides access to outdoor recreation. Its mission is to “work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.” Our research will provide information needed to manage 2 wildlife populations in Minnesota, sharp-tailed grouse and greater prairie-chickens for the benefit of hunters, non-consumptive resource users, and future generations.

## Budget Summary

| Category / Name | Subcategory or Type | Description | Purpose | Gen. Ineligible | % Benefits | # FTE | Classified Staff? | $ Amount |
|---|---|---|---|---|---|---|---|---|
| **Personnel** | | | | | | | | |
| | | | | | | | **Sub Total** | **-** |
| **Contracts and Services** | | | | | | | | |
| Dr. Susan Ellis-Felege, University of North Dakota | Subaward | Supervise graduate student and technicians to assist with ground surveys, review and analyze imagery to derive bird counts and lek locations, and produce a thesis on cost-effectiveness and accuracy of aerial survey. Personnel $124,914; Travel $47,040; Tuition $20,196; Equipment $1,500 | | | | 5.01 | | $193,650 |
| | | | | | | | **Sub Total** | **$193,650** |
| **Equipment, Tools, and Supplies** | | | | | | | | |
| | Tools and Supplies | External hard drives | To store video from aerial imagery flights | | | | | $1,345 |
| | | | | | | | **Sub Total** | **$1,345** |
| **Capital Equipment** | | | | | | | | |
| | | | | | | | **Sub Total** | **-** |
| **Acquisitions and Stewardship** | | | | | | | | |
| | | | | | | | **Sub Total** | **-** |
| **Travel In Minnesota** | | | | | | | | |
| | Other | Flights (80 hrs per year at $425/hr for 3 years) | To conduct aerial infrared surveys | | | | | $102,000 |
| | Miles/ Meals/ Lodging | Lodging and per diem for Tactical Flight Officer and Project Manager $175/day/person for 40 nights per year in year 1 and 50 nights per year in both years 2 and 3 | This work will conducted away from work locations and is necessary to support aerial and ground surveys | | | | | $24,500 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Miles/ Meals/ Lodging | Fleet for Project Manager for 1500 miles/year at 0.75/mile for 2 years | To conduct ground surveys | | | | | $2,250 |
| | | | | | | | **Sub Total** | **$128,750** |
| **Travel Outside Minnesota** | | | | | | | | |
| | | | | | | | **Sub Total** | **-** |
| **Printing and Publication** | | | | | | | | |
| | Publication | Fees for journal publication of results from this work | Dissemination of results | | | | | $5,000 |
| | | | | | | | **Sub Total** | **$5,000** |
| **Other Expenses** | | | | | | | | |
| | | Direct and necessary costs for MNDNR | To support people, safety, financial, communication, IT, and planning | | | | | $5,255 |
| | | | | | | | **Sub Total** | **$5,255** |
| | | | | | | | **Grand Total** | **$334,000** |

## Classified Staff or Generally Ineligible Expenses

| Category/Name | Subcategory or Type | Description | Justification Ineligible Expense or Classified Staff Request |
|---|---|---|---|

## Non ENRTF Funds

| Category | Specific Source | Use | Status | Amount |
|---|---|---|---|---|
| **State** | | | | |
| In-Kind | Matching funds for Charlotte Roy (MNDNR, 0.20 FTE for 3 years) | For time spent conducting surveys, writing reports, planning, and project management | Secured | $69,164 |
| In-Kind | Matching funds for pilot and tactical flight officer (0.15 FTE for 3 years) | To fly surveys | Secured | $86,289 |
| | | | **State Sub Total** | **$155,453** |
| **Non-State** | | | | |
| | | | **Non State Sub Total** | **-** |
| | | | **Funds Total** | **$155,453** |

**Total Project Cost: $489,453**

**This amount accurately reflects total project cost?**

Yes

## Attachments

### Required Attachments

*Visual Component*

File: ae55e61a-43c.docx

*Alternate Text for Visual Component*

The graphic contains 6 photos; 1) 2 planes in a hangar, 2) flight paths depicting transects and circling around display grounds, 3) a student conducting ground surveys with binoculars, 4) a sharp-tailed grouse, 5) a prairie-chicken, and 6) thermal infrared imagery with 14 birds depicted as lighter than the ground....

### Supplemental Attachments

*Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other*

| Title | File |
|---|---|
| Minnesota Prairie-chicken Society Support | 1043c666-c0f.pdf |
| Minnesota Sharp-tailed Grouse Society Support | 9f793f81-bac.pdf |

## Administrative Use

**Does your project include restoration or acquisition of land rights?**

No

**Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?**

Yes, I understand the Commissioner's Plan applies.

**Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?**

No

**Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?**

N/A

**Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?**

N/A

**Does your project include original, hypothesis-driven research?**

Yes

**Does the organization have a fiscal agent for this project?**

No

**Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing $10,000 or more or large-scale stream or wetland restoration?**

No

**Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care,**

**treatment, education, training, instruction, or recreation to children")?**

No

**Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:**

Kelly Straka approved this proposal for submission, MNDNR Fish and Wildlife

**Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements**

N/A