Environment and Natural Resources Trust Fund

2024 Request for Proposal

General Information

Proposal ID: 2024-222

Proposal Title: Highly Pathogenic Avian Influenza and Minnesota Raptors

Project Manager Information

Name: Victoria Hall

Organization: U of MN - Raptor Center

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Project Basic Information

Project Summary: Evaluation of Minnesota raptors, in rehabilitation and free ranging settings, for current or previous exposure to highly pathogenic avian influenza virus to better understand outbreak impacts to raptor populations.

Funds Requested: $187,000

Proposed Project Completion: June 30, 2026

LCCMR Funding Category: Small Projects (H)

Secondary Category: Foundational Natural Resource Data and Information (A)

Project Location

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

Statewide

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

Statewide

When will the work impact occur?

During the Project and In the Future

Narrative

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

The Raptor Center (TRC) is uniquely positioned to collect wild bird surveillance data for highly pathogenic avian influenza (HPAI) virus, a disease that has had ongoing devastating impacts on Minnesota raptors. In 2022, one of the longest and most deadly outbreaks of HPAI began, causing substantial mortality in wild and domestic birds. From March–December 2022, TRC detected over 200 HPAI-infected raptors with only one survivor. This current HPAI strain causes widespread illness and death in eagles, hawks, owls, falcons, and vultures, and will likely continue to circulate for the foreseeable future. Therefore, learning more about how the virus is impacting raptor populations is vital and urgent. Admitting over 1,000 birds a year, TRC is well equipped and uniquely positioned to learn about threats to Minnesota's wild raptor populations, while simultaneously providing medical care to birds in critical need. Partnering with Hawk Ridge Bird Observatory (HRBO) in Duluth, we can acquire additional surveillance data from healthy birds obtained for bird banding activities. Leveraging testing data from TRC and HRBO builds foundational information that supports our statewide understanding of virus transmission in Minnesota bird populations and can better inform our efforts to protect and preserve these wild species during outbreaks.

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 propose to collect and test samples for virus surveillance for measurable evidence of current or past HPAI infections in Minnesota raptors from TRC and HRBO, in order to better understand the impact of HPAI on wild raptor populations. By identifying current infections, we can better understand active disease transmission, and by detecting antibodies, or evidence of past infections, we can better understand how many birds are surviving the virus. To collect this critical information, we are seeking funding to utilize best practice diagnostics, including both polymerase chain reaction (PCR) testing (looking for live virus in infected birds) and serology testing (looking for antibodies to indicate the birds previously had the virus and survived). This testing can identify when and where the virus is circulating in our state, and provide a glimpse into the overall picture of disease transmission amongst Minnesota's wild birds. Data collected in 2022 has already proven to be valuable to multiple stakeholders throughout the state of Minnesota including state regulatory agencies, the scientific community, the agricultural industry, wildlife professionals, environmental educators, and the general public. Summary surveillance data will be shared on our public facing website, and shared in stakeholder and scientific meetings.

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?

By conducting disease surveillance, we can demonstrate how HPAI is moving and changing within Minnesota's ecosystems and measure long-term virus impacts on native raptor populations on local, regional, and state-wide levels. PCR and serology testing data will be collected from raptors admitted to TRC over a 2-year time frame and from a subset of birds at HRBO during fall migration. Information such as age, species, time of year, and recovery location all add valuable data that allows us to analyze impacts on sub-populations of raptors. From these data, we can produce meaningful outcomes concerning raptor susceptibility and disease hot spots.

Activities and Milestones

Activity 1: Evaluating Minnesota raptors for active/current HPAI infections, reflecting current disease transmission in Minnesota's wild birds.

Activity Budget: $89,033

Activity Description:
Every raptor admitted to TRC's wildlife hospital (approximately 1,000/year), as well as a subset of birds obtained for bird banding activities at HRBO, will be tested for active HPAI infection. Oral and cloacal samples (i.e., swabs of the mouth and vent) will be collected and tested for avian influenza viruses (AIV) via a polymerase chain reaction (PCR) test. If AIV is detected, the sample is then sent to the National Veterinary Services Laboratory for confirmatory testing to determine pathogenicity and further characterize virus strains. Because samples are collected within a few hours of arrival at the hospital, they accurately represent what is happening in wild raptor populations. This testing provides not only vital information for the medical care of the individual bird, but also data about regional disease transmission where the bird came from. Collecting PCR samples over several years will provide data on how viral transmission is changing in wildlife populations over time. Because HPAI is so infectious and deadly to raptors, and can cause disease in humans, extensive personal protective equipment (PPE) and disinfection protocols must be used to prevent unintentional spread of the virus when managing potentially infected birds.

Activity Milestones:

Description	Approximate Completion Date
PCR sample collection from wild raptors admitted for wildlife rehabilitation and from migratory raptors	May 31, 2026
PCR laboratory results from sampled raptors and data analysis	June 30, 2026
Creation and maintenance of a central data management system for TRC/HRBO testing results	June 30, 2026

Activity 2: Identifying HPAI survivors- understanding past exposures of Minnesota raptors to HPAI through serology testing

Activity Budget: $65,503

Activity Description:
In 2022, the vast majority of raptors that presented to TRC infected with HPAI did not survive, but there are emerging reports of HPAI positive raptors with mild symptoms recovering from the disease. By conducting serology testing on birds that come into TRC for reasons other than HPAI, and healthy birds at HRBO, we can better define if wild raptors are surviving the virus and in what numbers. In order to answer this question about immunity and survival, we will collect blood to test for the presence of avian influenza antibodies. The majority of raptor patients admitted to TRC will be sampled within the first few weeks of care. Additionally, blood will be collected from a subset of birds at HRBO at the time of banding during fall migration. Samples will be analyzed with an enzyme-linked immunosorbent assay (ELISA) test to check for antibodies to avian influenza virus. When antibody data is collected over several years, we can also monitor disease trends as the virus changes and the wildlife populations develop immunity. When analyzed together, PCR, antibody, and demographic surveillance data, will provide an accurate temporal and regional picture of the outbreak in wild raptor populations and subpopulations.

Activity Milestones:

Description	Approximate Completion Date
Blood sample collection from wild raptors at TRC	December 31, 2025
Blood sample collection from migrating raptors during banding	December 31, 2025

Laboratory testing and data analysis	April 30, 2026

Activity 3: Sharing surveillance data with collaborators and stakeholders to increase disease knowledge and improve response strategies to better protect Minnesota wildlife

Activity Budget: $32,464

Activity Description:

Avian influenza response efforts involve a multitude of stakeholders including the Minnesota Department of Natural Resources, Minnesota Department of Health, Minnesota Board of Animal Health, Minnesota Turkey Growers Association, and the general public. Scientific data has limited impact when viewed in isolation. We plan to engage with stakeholders and collaborators in three ways so that the data generated can help improve overall disease knowledge and response strategies. First, we will maintain a public facing summary website so that Minnesotans can better understand what is happening with Minnesota wildlife. Second, we will engage in a stakeholder meeting, including governmental and industry partners, so that we can better integrate wild bird data into overall agriculture, human, and wildlife health outbreak response efforts. Third, we will share the data in scientific settings to advance the scientific community's overall understanding of HPAI in raptors. These dissemination efforts will better protect the health of Minnesota ecosystems and advance future scientific collaborations.

Activity Milestones:

Description	Approximate Completion Date
Maintain summary data (monthly) on public facing website	June 30, 2026
Conduct stakeholder engagement meeting to report/discuss findings and plan next steps	June 30, 2026
Presentation to wildlife/scientific audience	June 30, 2026

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Matthew Etterson	Hawk Ridge Bird Observatory	Collecting samples of healthy wild birds during migration	No

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 results of this project will provide real-time data that can be used by Minnesota's state agencies to direct outbreak responses. Additionally, this research provides invaluable, foundational data about virus behavior within Minnesota, how the virus affects raptors, impact on wildlife populations, and what we can expect in the future as this virus changes and continues to circulate in our wildlife for the foreseeable future. The data will be shared with stakeholders via multiple venues, including the scientific community, rehabilitation community, regulatory agencies, and general public. As results are generated, research will be sustained through additional grants.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Expanding Access To Environmental Education For Underserved Communities	M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 05g	$178,000

Project Manager and Organization Qualifications

Project Manager Name: Victoria Hall

Job Title: Assistant Professor - College of Veterinary Medicine; Executive Director The Raptor Center

Provide description of the project manager's qualifications to manage the proposed project.

Dr. Hall is a faculty member at the University of Minnesota College of Veterinary Medicine and serves as Executive Director for The Raptor Center. Dr. Hall is a veterinary expert actively working at the One Health intersection of human, animal, and environmental health challenges through applied epidemiologic work with birds, research, and education and outreach programming for professionals and the general public. She has previously worked as an epidemiologist for organizations including the Smithsonian Institution and the Centers for Disease Control and Prevention and has extensive experience managing projects both in the United States and internationally. She has a diversity of current ongoing projects including creating wildlife health surveillance systems for emerging zoonotic diseases, developing effective global ecosystem health training programs for use at the country level around the world, and developing new methods for environmental education at the undergraduate and general public level. She is well versed working with both non-profits and governmental agencies.

Organization: U of MN - Raptor Center

Organization Description:

The Raptor Center (TRC) is a University research and outreach center focused on raptor medicine, conservation, environmental education, and one-health issues that impact our local ecosystem and beyond. TRC provides medical care for over 1,000 injured and ill raptors each year, trains veterinarians and veterinary students from around the world in conservation medicine, and has extensive experience in outreach and environmental education, averaging over 1,000

programs reaching more than 200,000 people throughout Minnesota, Wisconsin, and Iowa annually. For over 30 years, staff at TRC has studied health issues in raptors. In addition, the veterinarians at The Raptor Center have appointments in the College of Veterinary Medicine, University of Minnesota, a research university.

The University of Minnesota is a highly ranked public research university with a mission that encompasses research and discovery, teaching and learning, and outreach and public service. A land-grant university, it supports research and discovery benefiting the conservation and management of Minnesota's natural resources. It has well-established systems and processes for management of research awards and financial oversight of grants.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Project manager		Project oversight, coordination, reporting, manuscript writing			36.8%	0.1		$20,253
Wildlife veterinary researcher		Sampling, medical evaluation of birds, oversees biosecurity processes, data management, data analysis, manuscript writing			36.8%	0.4		$48,119
Animal technician		Sample collection, handling, oversees all processes of bird admission at The Raptor Center, carries out biosecurity and disinfection protocols			32%	0.4		$26,368
Laboratory technician		Sample preparation, processing, and laboratory testing for PCR and serology tests			36.8%	0.1		$12,001
							Sub Total	**$106,741**
Contracts and Services								
							Sub Total	**-**
Equipment, Tools, and Supplies								
	Tools and Supplies	Personal protective equipment (PPE) and disinfectant	Disinfectant to kill HPAI virus and daily PPE for two years, including tyvex suits, respirators, gloves to protect animals and staff					$25,559
	Tools and Supplies	Confirmatory Veterinary Diagnostic Lab Tests	Testing to confirm positive results from research lab at the state lab, since this is a federally reportable disease					$14,000
	Tools and Supplies	Testing and research laboratory supplies	Materials to collect samples, process, and reagents and supplies to run the initial PCR and ELISA testing					$40,700
							Sub Total	**$80,259**
Capital Expenditures								
							Sub Total	**-**

Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
							Sub Total	**-**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$187,000**

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				
			State Sub Total	**-**
Non-State				
In-Kind	Waived facilities and administrative costs	The University of Minnesota is waiving the income normally generated from extramural research grants that contribute Facilities and Administrative (F&A). The current full rate is 35% of direct costs.	Secured	$65,450
			Non State Sub Total	**$65,450**
			Funds Total	**$65,450**

Attachments

Required Attachments

Visual Component

File: af00b494-236.pdf

Alternate Text for Visual Component

Photos of the testing of raptors with HPAI and birds ill with HPAI as we learn more about the virus and how to better responding to protect Minnesota Wildlife....

Optional Attachments

Support Letter, Photos, Media, Other

Title	File
UMN SPA approval letter	ede6077c-a53.pdf
Hawk Ridge Support Letter	2103f351-413.pdf
UG Audit	e4a200dd-891.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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

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?

Yes, Sponsored Projects Administration

Does your project include the design, construction, or renovation of a building, trail, campground, or other capital asset costing $10,000 or more?

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?

No