

Environment and Natural Resources Trust Fund

2026 Request for Proposal

General Information

Proposal ID: 2026-391

Proposal Title: Landscapes, Humans, Fish: Synergizing Brook Trout Habitat Restoration

Project Manager Information

Name: Daniel Dauwalter Organization: Trout Unlimited, Inc. Office Telephone: (208) 345-8339 Email: daniel.dauwalter@tu.org

Project Basic Information

Project Summary: This project will synergize Minnesota Brook Trout conservation by developing a Conservation Portfolio geospatial assessment, identify how restoration is designed for the species, and study habitat use in the field

ENRTF Funds Requested: \$515,000

Proposed Project Completion: December 31, 2029

LCCMR Funding Category: Fish and Wildlife (D)

Project Location

What is the best scale for describing where your work will take place? Region(s): SE

What is the best scale to describe the area impacted by your work? Region(s): SE

When will the work impact occur?

Narrative

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

Trout fishing is an economic driver of rural communities in Minnesota. Southeastern Minnesota's Driftless Area accounts for 33% of coldwater fishing trips and 75% of stream fishing trips in the state. With this economic driver in mind, coupled with degraded stream conditions from poor historical land use, stream habitat restoration projects are key conservation actions to improve both ecological condition and trout fishing. In Minnesota's Driftless Area alone, restoration expenditures were recently estimated at \$1.5 million.

The Brook Trout is native to northeastern and southeastern Minnesota and is a Species of Greatest Conservation Need. A recent angler survey noted both an interest in Brook Trout and the desire for more trout stamp proceeds to be spent on Brook Trout management. Although stream habitat improvement and restoration techniques have changed over time, the understanding of Brook Trout habitat needs in southeastern Minnesota is incomplete. As a result, restoration designs cannot account for these species-specific habitat needs, and some habitat projects have led to counterintuitive responses by trout populations. For example, a recent habitat improvement project, using standard designs for the region, on Pine Creek in Wisconsin was intended to benefit Brook Trout; however, the project benefited non-native Brown Trout..

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.

Trout Unlimited, Inc. proposes to synergize Brook Trout habitat restoration in Minnesota with three separate yet linked activities. First, we will develop a Brook Trout Conservation Portfolio, which is a landscape-scale assessment that characterizes population and habitat diversity so that gaps in the portfolio can be identified and then addressed through strategic conservation investments, such as habitat restoration. Identification of Brook Trout reserves, watersheds that confer climate resiliency of Brook Trout habitats, is one important element of the portfolio. Second, we will characterize the human dimensions of how stream restoration goal setting and restoration designs favor native Brook Trout, and identify barriers to doing so. This will help practitioners adjust decision-making to better ensure restoration outcomes are favorable for native Brook Trout. Last, there is a lack of understanding of Brook Trout habitat needs to inform stream restoration design to benefit the species. We will fill this knowledge gap by partnering with Winona State University to synthesize the scientific literature on Brook Trout habitat needs, and conduct a field study on Brook Trout habitat use when they occur alone and together with non-native Brown Trout so that restoration can be designed to favor Brook Trout when faced with non-native competitors.

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?

Our project will advance habitat restoration for Minnesota's Brook Trout with these 3 outcomes:

1: A Brook Trout Conservation Portfolio assessment, and identification of Brook Trout reserves, to inform strategic habitat restoration.

Characterization of how stream restoration practitioners identify projects, define project goals, and design projects, for Brook Trout, and identification of barriers to doing so, to improve certainty around project outcomes for the species.
Identification of key habitat needs for Brook Trout through a science synthesis and a field study of habitat use by Brook Trout to inform habitat restoration designs in Minnesota's Driftless Area.

Activities and Milestones

Activity 1: Development of a Conservation Portfolio, and identification of Brook Trout Reserves, to Inform strategic landscape-level conservation

Activity Budget: \$90,262

Activity Description:

Strategic conservation requires an understanding of populations and habitats across landscapes. The Brook Trout is native to Minnesota, which is the western extent of the species' range in the U.S. Trout Unlimited proposes to develop the Brook Trout Conservation Portfolio assessment for the Driftless Area as a strategic planning and decision support tool for Brook Trout habitat restoration; a portfolio has already been completed for Great Lakes Brook Trout, including Minnesota's North Shore. The Conservation Portfolio inventories elements of diversity within a species' range and identifies essential and missing elements – gaps in the portfolio – for protection or restoration. Like a stock portfolio, a diverse Conservation Portfolio that can be protected or restored to give a species the highest likelihood of long-term persistence in an uncertain and warmer future. Key to the portfolio, is identification of Brook Trout Reserves in Minnesota, which have already been identified in Wisconsin, as climate resilient watersheds where focused conservation can help ensure that they remain suitable for Brook Trout in a warming climate and remain free of competing non-native trout.

Activity Milestones:

| Description | Approximate | |
|---|-------------------|--|
| | Completion Date | |
| Complete geospatial data requests and compilation | December 31, 2026 | |
| Identify interconnected patches of habitat between barriers, and initiate data summaries | December 31, 2027 | |
| Finalize Brook Trout reserves and Conservation Portfolio assessment and initiate partner review | June 30, 2028 | |
| Finalize Brook Trout reserves, Conservation Portfolio assessment and decision support tool | December 31, 2028 | |
| (12/31/2028) | | |

Activity 2: Human Dimensions of Stream Restoration Goals, Design and Maintenance to improve Brook Trout outcomes from habitat restoration in Minnesota

Activity Budget: \$168,367

Activity Description:

Stream restoration has historically been fraught with vague goals, relied on common techniques, and has lacked clear connections between project design and species-specific habitat needs. Additionally, many measures of stream restoration "success" exist, but these metrics and assessments largely exist outside the social context where project goals, implementation practices, and assessment approaches were originally developed. While restoration projects are increasingly evaluated across the Midwest, an understanding of how human dimensions shape those projects remains limited. This is true in Minnesota, where millions have been invested in stream habitat for trout populations and human dimensions approaches have been applied to better understand angler preferences.

With strong efforts to evolve and evaluate stream restoration projects ongoing, one of the largest remaining needs is work focused expressly with stream restoration practitioners. Without understanding critical decision points and barriers to key decisions, it will remain difficult for practitioners to shift practice and adapt designs and will hinder species-specific outcomes. Through a combination of qualitative and quantitative social science techniques (structured interviews and surveys), this activity will elicit practitioner processes around project goal development and project design elements connected to Brook Trout habitat needs and identify barriers to better ensure Brook Trout outcomes from restoration.

Activity Milestones:

| Description | Approximate Completion Date |
|--|--------------------------------|
| Confirm participants for study inclusion | October 31, 2026 |
| Complete semi-structured interviews | June 30, 2027 |
| Complete report and share with participants for feedback | December 31, 2027 |
| Complete activity manuscript with contributed feedback from participants | December 31, 2028 |

Activity 3: Brook Trout Habitat Needs Science Review and Field Study to Inform Stream Restoration Design

Activity Budget: \$256,371

Activity Description:

Restoration designed to benefit native Brook Trout requires better information on Brook Trout habitat needs when they occur both alone and together with Brown Trout. Minnesota stream restoration projects are designed and implemented using techniques known to benefit non-native Brown Trout but, in some cases, may be injurious to Brook Trout. This leads to the question: are common designs for stream habitat improving habitat for both Brown and Brook Trout, or are habitat projects improving habitat for non-native Brown Trout to the detriment of Brook Trout, and why?

By funding a graduate student at Winona State University and in cooperation with Minnesota DNR, we propose to: 1) synthesize the scientific literature on Brook Trout habitat use by life stage, season, and spatial scale in the Driftless Area, and 2) conduct a field study to document seasonal habitat use by Brook Trout in a Driftless Area stream where Brown Trout are absent, and in a second stream that Brown Trout co-inhabit. This dual study design will elucidate how Brook Trout use habitat in the absence of Brown Trout and when they occur together with Brown Trout, so that habitat restoration can be designed to enhance competitive advantage for native Brook Trout.

Activity Milestones:

| Description | Approximate Completion Date |
|---|--------------------------------|
| WSU graduate student start date | June 30, 2026 |
| Complete year 1 fieldwork (100 radio telemetry tags, macro- microhabitat assessments, etc.) | October 31, 2026 |
| WSU graduate student completes Brook Trout habitat literature review | June 30, 2027 |
| Complete year 2 fieldwork (100 radio telemetry tags, macro- microhabitat assessments, etc.) | October 31, 2027 |
| Complete data analysis, report, and activity manuscript | December 31, 2029 |

Project Partners and Collaborators

| Name | Organization | Role | Receiving Funds |
|---------------------|----------------------------|---------------------------------|--------------------|
| Dr. Neal Mundahl | Winona State University | Advisor to WSU graduate student | 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 Brook Trout Conservation Portfolio assessment will be served in a publicly available webmap, decision support tool, and report that can be accessed by managers, agency and non-profit partners, and volunteer groups for strategic habitat restoration decision making and restoration implementation. The human dimensions activity will directly engage stream restoration practitioners, and critical decision points and identified barriers to identification, design, and implementation of restoration to benefit Brook Trout will be communicated back via reports and peer-reviewed publication. Brook Trout habitat use literature synthesis and field study will be communicated by oral presentation, report, and publication.

Project Manager and Organization Qualifications

Project Manager Name: Daniel Dauwalter

Job Title: Fisheries Science Director

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

Dan is Fisheries Science Director in Trout Unlimited's national Science Program, a position he's held since 2016 (employed by Trout Unlimited since 2008). A graduate of Chaska High School (Chaska, MN), Dan received a B.A. in Biology / Environmental Studies in 1999 from Gustavus Adolphus College (St. Peter, MN), a M.S. in Aquaculture/Fisheries in 2002 from the University of Arkansas at Pine Bluff (Pine Bluff, AR), and he received his Ph.D. in Wildlife and Fisheries Ecology from Oklahoma State University in 2006 (Stillwater, OK). As a scientist in TU's science program, Dan has experience and training in fisheries ecology, remote sensing, and GIS. He oversees projects ranging from geospatial conservation prioritization and planning to species status assessments for native salmonids, including the application of TU's Conservation Success Index to Brook Trout in the Driftless Area and Great Lakes regions as decision support tools for TU's restoration programs. Dan has led multispecies spatial conservation prioritizations for native fishes across large river basins for use in decision-making for regional funding programs for stream and river restoration. Dan has direct experience evaluating species' habitat needs at various spatial scales, including how imperiled species use habitats associated with beaver dams. Dan has also developed angler science programs to leverage TU's grassroots volunteers to crowdsource water quality information in the Driftless Area of southeast Minnesota and neighboring states. Dan has 60 peer-reviewed publications on these topics.

Organization: Trout Unlimited, Inc.

Organization Description:

Trout Unlimited, inc. is a national non-governmental organization with a mission to bring together diverse interests to care for and recover rivers and streams so children can experience the joy of wild and native trout and salmon. Founded in 1959, TU is now comprised of 300,000 members and supporters, 400 chapters, and over 350 full-time staff nationwide. Since its founding, TU has worked to protect and restore streams and rivers across the county, and stream and river restoration remains TU's bread and butter conservation action. TU's science program is comprised of scientists with expertise in conservation genetics, fluvial geomorphology, fisheries science and ecology, human dimensions, and geographic information systems. The science program is a national leader in conservation and salmonid science that

generally works in four main areas: conservation planning, conservation research, monitoring and evaluation, and science engagement. View Trout Unlimited's 2021 Strategic Plan here: https://www.tu.org/conservation/our-approach/strategic-plan-2021/

Budget Summary

| Category / | Subcategory | Description | Purpose | Gen. | % | # | Class | \$ Amount |
|---------------|-------------|--|---------|-------|--------|------|--------|-----------|
| Name | or Type | | | Ineli | Bene | FTE | ified | |
| | | | | gible | fits | | Staff? | |
| Personnel | | | | | | | | |
| Dr. Daniel | | Overall project management and coordination. Lead | | | 47.06% | 0.4 | | \$61,529 |
| Dauwalter | | development of geospatial data products and | | | | | | |
| (Principal | | assessment, reporting Activity #1. Assist Co-I | | | | | | |
| Investigator) | | Lundberg with coordination and implementation of | | | | | | |
| | | human dimensions Activity #2. Coordinate with | | | | | | |
| | | Winona State University and MN DNR on design and | | | | | | |
| | | implementation of field study Activity #3. | | | | | | |
| Dr. Emma | | Lead human dimensions activity #2. Conduct | | | 47.06% | 1 | | \$124,860 |
| Lundberg | | interviews with restoration practitioners, develop | | | | | | |
| (Co- | | survey instrument, lead data analysis, lead | | | | | | |
| Investigator) | | reporting. Assist with coordination, data requests | | | | | | |
| | | and compilation for Brook Trout geospatial | | | | | | |
| | | assessment (Activity #1), and assist and coordinate | | | | | | |
| | | with Winona State University with design and | | | | | | |
| | | implementation of field study Activity #3. | | | | | | |
| Dr. Jennifer | | Assist in coordination with regional restoration | | | 47.06% | 0.2 | | \$24,768 |
| Biederman, | | practitioners for Activity #2. Assist with design and | | | | | | |
| MN TU | | implementation of field study with Winona State U., | | | | | | |
| Restoration | | and coordination with MN DNR (Activity #3 | | | | | | |
| Practitioner | | | | | | | | |
| GIS Analyst | | Assist PI with outreach, data requests and | | | 47.06% | 0.2 | | \$22,866 |
| (Matt | | compilation, and lead geospatial analysis for Activity | | | | | | |
| Mayfield) | | #1 | | | | | | |
| Driftless | | Assist in coordination of data requests and | | | 47.06% | 0.2 | | \$28,557 |
| Area | | compilation, analysis framework, and application of | | | | | | |
| Program | | Brook Trout conservation portfolio assessment | | | | | | |
| Manager | | (Activity #1). Facilitate coordination of restoration | | | | | | |
| (Sara | | practitioners for human dimensions characterization | | | | | | |
| Strassman) | | (Activity #2) | | | | | | |
| Field | | Assist Winona State U. graduate student with set up | | | 9% | 0.75 | | \$30,676 |
| Technician | | and implementation of field study of Brook Trout | | | | | | |
| | | habitat use each summer | | | | | | |
| Protessional | | Graduate student will lead literature synthesis on | | | 7.76% | 1.25 | | \$83,100 |
| Science | | Brook Trout habitat needs, and lead all aspects of | | | | | | |
| Master's | | field study of Brook Trout habitat use | | | | | | |
| student at | | | | | | | | |

| | 1 | | | 1 | 1 | | |
|--------------|---------------|--|--|---|---|-------|------------------|
| Winona | | | | | | | |
| State | | | | | | | |
| University | | | | | | | |
| (stipend and | | | | | | | |
| summer | | | | | | | |
| salary) | | | | | | | |
| | | | | | | Sub | \$376 356 |
| | | | | | | Total | <i>4070,0000</i> |
| Contracts | | | | | | Total | |
| and Services | | | | | | | |
| and services | | | | | | Cult | |
| | | | | | | Sub | - |
| | | | | | | Total | |
| Equipment, | | | | | | | |
| Tools, and | | | | | | | |
| Supplies | | | | | | | |
| | Tools and | Radiotags (200 tags total, 100/year, \$185/tag) | Radiotags to track Brook Trout habitat | | | | \$37,000 |
| | Supplies | | use | | | | |
| | Tools and | Field supplies for WSU graduate student and field | Waders and boots, blaze orange, | | | | \$2,270 |
| | Supplies | technician | snorkel and mask, and other supplies | | | | |
| | | | for graduate student fieldwork | | | | |
| | Tools and | WSU graduate student laptop access/ lease (\$485 / | Project organization, data | | | | \$2,250 |
| | Supplies | semester x 4.5) | management, analysis, and writing. | | | | . , |
| | | , | | | | Sub | \$41.520 |
| | | | | | | Total | . , |
| Capital | | | | | | | |
| Expenditures | | | | | | | |
| | | | | | | Sub | - |
| | | | | | | Total | |
| Acquisitions | | | | | | Total | |
| Acquisitions | | | | | | | |
| anu | | | | | | | |
| Stewardship | | | | | | | |
| | | | | | | Sub | - |
| | | | | | | Total | |
| Travel In | | | | | | | |
| Minnesota | | | | | | | |
| | Miles/ Meals/ | WSU pool vehicle @ \$30/day + 0.36/mi for round | Travel from WSU to track movement | | | | \$9,810 |
| | Lodging | trip to various study streams (est. 120 miles/trip) for | and habitat use of Brook Trout | | | | |
| | | field work (Activity #3) | multiple times a year (seasonally) | | | | |
| | Miles/ Meals/ | 5 trips from Minneapolis to field sites in SE, MN; 300 | Travel of PI and Co-I from Minneapolis | | | | \$4,950 |
| | Lodging | mi (round trip) x \$0.7 /mi (GSA rate) x 5 trips = | to SE Minnesota to study streams to | | | | |
| | | \$1050 ; 4 nights lodging / trip x \$110 / night (GSA) x | organize field study with WSU student | | | | |
| | | 5 trips = \$2200; \$68 / day (GSA M&IE) x 5 days x 5 | and MN DNR | | | | |

| | | trips = \$1700; \$1050+2200+1700 = \$4950 (Activity | | | |
|--------------------------------|--|--|--|----------------|-----------|
| | | #3) | | | |
| | Miles/ Meals/ Lodging | 5 trips by Restoration Practitioner from Stockton, MN to field sites in SE, MN; 100mi (round trip) x \$0.7/mi(GSA rate) x 5 =\$350 ; 4 nights lodging / trip x \$110 / night (GSA) x 5 trips = \$2200; \$68 / day (GSA M&IE) x 5 days x 5 trips = \$1700; \$350+2200+1700 = \$4250 (Activity #2, Activity #3) | Assist project PI and Co-I, WSU student and faculty, and MN DNR on setting up field study and assisting with field work logistics | | \$4,250 |
| | Conference Registration Miles/ Meals/ Lodging | Upper Midwest Stream Restoration Symposium. Registration \$450, 4 days (4 nights lodging \$110/night + M&IE 68 / day x 4 days = \$1162) | Interview stream restoration practitioners for human dimensions study (Activity #2) and disseminate study results | | \$1,162 |
| | | | | Sub Total | \$20,172 |
| Travel Outside Minnesota | | | | | |
| | | | | Sub Total | - |
| Printing and Publication | | | | | |
| | Publication | Page charges for 3 peer-reviewed publications (\$1500 / publication x 3) | Journal page charges for publication of manuscripts in peer-reviewed journal for demonstration of scientific credibility and communication of results. | | \$4,500 |
| | | | | Sub Total | \$4,500 |
| Other Expenses | | | | | |
| | | ATS radio telemetry receiver maintenance | Refurbish radio telemetry receiver loaned from MN DNR by Advanced Telemetry Systems | | \$416 |
| | | CITI Training for working with human subjects | Certification for project collaborators to maintain high standard of research with human subjects (\$249/person x 4 = \$996) | | \$996 |
| | | indirect expenses | Administrative costs | | \$71,040 |
| | | | | Sub Total | \$72,452 |
| | | | | Grand Total | \$515,000 |

Classified Staff or Generally Ineligible Expenses

| Category/Name S T | 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 | | | | |
| Cash | Trout Unlimited Coldwater Conservation Fund | Grant for data collection at road-stream crossings required for development of Brook Trout Conservation Portfolio Assessment in the Driftless Area. | Secured | \$50,000 |
| Cash | U.S. Fish and Wildlife Service | Data request and data compilation for development of Brook Trout Conservation Portfolio assessment for strategic habitat restoration in the 4-state Driftless Area. | Secured | \$10,000 |
| | | | Non State | \$60,000 |
| | | | Sub Total | |
| | | | Funds | \$60,000 |
| | | | Total | |

Total Project Cost: \$575,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component File: 02bcc583-d31.pdf

Alternate Text for Visual Component

Screenshot of TU brook trout conservation portfolio and decision support tool for the Great Lakes region. https://trout.maps.arcgis.com/apps/webappviewer/index.html?id=63870ecf17a14d1a9d11ba4328bcef3f...

Financial Capacity

| Title | File | | |
|----------------------------------|-------------------------|--|--|
| Financial statement and capacity | 05c8c6cb-3aa.pdf | | |
| Board Resolution or Letter | | | |
| Title | File | | |
| Authorization letter | <u>9f3417e1-546.pdf</u> | | |

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:

Dr. Emma Lundberg, Trout Unlimited

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