

PROJECT ANNOUNCEMENT

US Army Corps of Engineers (USACE) Engineer Research and Development Center (ERDC)

Title: Determining drivers of floodplain forest regeneration success and failure on the Upper Mississippi River in Minnesota and Wisconsin

Announcement Type: Initial Announcement

Funding Opportunity Number: W81EWF-23-SOI-0010

Assistance Listing Number: 12.630

Date Issued: 19 April 2023

Key Dates: Phase I announcement will be open to receive statements of interest continuously until 2:00pm Central Time (CT), 19 May 2023, at which point all statements of interest must be received.

If invited to Phase II, full proposal applications will be due at 2:00pm Central Time (CT), 20 June 2023.

Estimated Award Ceiling: \$61,592.73

Estimated Total Program Funding: \$ 272,871.00

Agency Contact: Phoebe Fuller phoebe.v.fuller@usace.army.mil

I. Program Description

A. Short Description of Funding Opportunity

ERDC seeks applications for: Assessment of floodplain forest regeneration dynamics within the Upper Mississippi River floodplain.

B. Background

The floodplain forests of the Upper Mississippi River (UMR) Basin play a critical role in maintaining water quality, wildlife habitat, and recreational opportunities. However, these forest systems are not static. Interactions among shifting climatic patterns, invasive species (especially reed canarygrass (*Phalaris arundinacea*)), forest health (e.g. Dutch elm disease and emerald ash borer), herbivores, low tree species diversity, and aging stands with limited regeneration are threatening to push these forest communities past critical ecological “tipping points.” These tipping points lead to drastic shifts in community composition and structure (e.g. conversion to non-forest conditions), making ecosystem restoration and rehabilitation significantly more difficult and greatly reducing the resilience of these systems. Within the UMR floodplain in Minnesota, Wisconsin and northeast Iowa (UMR Pools 1-10), this problem is particularly acute – current forest inventory data indicates that forest regeneration is completely absent over 57% of inventory plots and of the areas. Of the remaining plots with documented regeneration, almost 25% of plots are dominated by ash or elm regeneration, but both of these species have minimal potential for long-term survival on the sites due to insects and diseases. Without viable regeneration, these forests will convert to non-forest cover types in coming decades as current canopy trees begin to die. Proactive management actions can aid in reducing the chance of future forest loss, but there is limited research or institutional knowledge along the Upper Mississippi available on the mechanisms driving regeneration of key floodplain forest tree species and, therefore, management actions to promote regeneration of trees often result in failure. The current study aims to identify key drivers of regeneration for a handful of currently widespread floodplain forest tree species and to test a set of management techniques to promote the establishment of regeneration from seed. This information is critical for developing management strategies to ensure long-term viability of UMR Floodplain Forests.

C. Program Description/Objective:

The primary goal of this research is to identify factors in existing floodplain forests on the Upper Mississippi River in Minnesota, Wisconsin and northeast Iowa that are associated with establishment and growth of regeneration from seed and planted tree seedlings in the most northern reach of the navigable portion of the Upper Mississippi River. Understanding dynamics of light-seeded species, primarily eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*) and river birch (*Betula nigra*) is critical to this study, but other floodplain species may be incorporated as well. The research will also aim to test a set of silvicultural approaches for promoting natural regeneration in this region based on the current understanding of the silvics of these species. Because light availability, flood inundation, and soil saturation are key drivers of tree species distribution in these floodplains, the research will focus on assessing regeneration conditions across gradients of these drivers. In particular, this study will focus on the following objectives:

Objectives:

1. Develop relationships between tree seedling survival and growth for key tree species across a gradient of site-level physical conditions that drive floodplain forest regeneration: light availability, flooding and soil moisture. These relationships should incorporate seedling size as a component of seedling growth and survival.
2. Evaluate chemical and mechanical site preparation as a means to facilitate the establishment of light-seeded floodplain species from seed (natural and hand-seeded) across the same site-level gradients in Objective 1 and quantify the density of seed-origin regeneration. Establish long-term monitoring plots in study sites to develop baselines for development of stands of light-seeded species from stand initiation through stem exclusion.

Desired Outcomes:

Objective 1:

1. A set of preliminary quantitative guidelines for identifying suitable physical conditions for successful regeneration of key floodplain forest species in Pools 1 – 10 of the Upper Mississippi River
2. Quantitative relationships between tree seedling size, survival and growth across the assessed physical gradients to inform future development of target seedling characteristics for floodplain forest regeneration

Objective 2:

1. An assessment of the viability of mechanical and chemical silvicultural site preparation treatments in Upper Mississippi River floodplains to promote natural regeneration of light-seeded species across light and hydrologic gradients
2. Baseline data for potential tree seedling densities and early growth rates for floodplain forest stands originating from seed.

Objective 1 will focus on planting of seedlings of the key floodplain tree species across gradients of light availability, flooding and soil moisture. Survival and growth of these seedlings will be documented at multiple intervals across multiple growing seasons and across the environmental gradients to develop relationships between site conditions and seedling establishment. Particular emphasis will be placed on quantification of biophysical interactions associated with saturated soils within the rooting zone of tree seedlings to describe soil conditions necessary for seedling survival and growth. This portion of the research will focus on understanding basic seedling-site relationships. Resulting data will inform future development of management recommendations for site selection and target seedling characteristics for the key floodplain forest tree species.

Objective 2 will be more applied and will directly test silvicultural site preparation treatments to create seedbeds for natural regeneration, with these treatments applied across the same gradients as in Objective 1. Treatments will include chemical site prep using herbicide, mechanical site prep to break up the soil surface, and a combination of chemical and mechanical site prep. Supplemental seeding of light-seeded species will also be implemented following site prep treatments. In this

component of the research, monitoring will be focused on comprehensive vegetative assessments of the treatment areas rather than detailed measurements of individual seedlings as in Objective 1. Within each treatment area, an adequate number of plots will be established to assess tree seedling density by age and size classes and cover of other vegetation. Seedling density will then be evaluated in the context of site-level gradients and silvicultural treatment to determine the effectiveness of these treatments across light and hydrologic gradients.

Field data will be collected over a minimum of three growing seasons for both components of the project. It is expected that interim data results will be analyzed, but final analyses will be conducted during the fourth year of the project.

Site Location:

Sites will be located within the geographic range of the Upper Mississippi River and tributaries within the St. Paul District of the Corps of Engineers, roughly from the middle of Pool 10 near Prairie du Chien, WI to the north end of Pool 3 near Hastings, MN. Actual sites will be determined by the researcher in collaboration with Corps of Engineers foresters based on the stand type and structure needed to collect the most relevant data. Sites to be selected will encompass the range of forest types that occur regularly within the St. Paul District.

Additional Information:

Successful applicants should have expert knowledge and work experience in silviculture, forest management, and forest ecology. Applicants should have specific experience in assessment of Upper Mississippi River floodplain forest ecology and regeneration. The vendor must have demonstrated experience with surface and groundwater monitoring and application of surface and groundwater data to questions associated with floodplain forest ecology and restoration. In particular, the vendor must have demonstrated experience in assessment of tree-level ecophysiology in relation to variations in light availability and soil saturation. The vendor must be able to ensure that graduate students or staff will be physically located within a 4-hour drive of potential sites between Hastings, MN and Prairie du Chien, WI to conduct field sampling throughout the April 1 – October 31 growing season in 2024, 2025 and 2026.

This project will require interdisciplinary collaboration and input from multiple federal agencies; the successful applicant will also demonstrate experience working across disciplines and with multiple federal and state agencies. The candidates should have demonstrated experience in assessment of artificial and natural forest regeneration, statistical analysis of complex ecological data, and standard forest inventory and monitoring techniques.

Government Participation:

Both objectives will require assistance from USACE managers for implementation of experimental treatments. USACE foresters will facilitate all tree planting and site preparation treatments. Costs for these management actions will be covered by the sponsoring USACE office's standard operational funding and should not be budgeted for by the University. USACE may provide periodic sampling support as well but most sampling will be conducted by the University.

The Government will work cooperatively with the investigator to identify issues the protocol must address, develop field and training materials, and assist the awardee with field activities. The Government may also assist in data analysis review and provide workspace and equipment as

necessary. The Government will implement all management actions necessary to establish the study sites and will also assist in writing of final peer-reviewed journal articles.

D. Public Benefit

This project will provide multiple public benefits, particularly in relation to improving the effectiveness of local-scale forest management and rehabilitation projects on public lands in floodplains of the Upper Midwest. Results from this research will be used to ensure the long-term viability of forested habitats on Federally-owned land, thus facilitating a range of recreational opportunities for the public on those lands.

E. Authorization: 10 USC 4001

F. Legal Requirements

Each Cooperative Agreement awarded under this announcement will be governed by 2 CFR 200, “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards”, 2 CFR 1100 Subchapter D—Administrative Requirements Terms and Conditions for Cost-Type Grants and Cooperative Agreements to Nonprofit and Governmental Entities and the DoD research general terms and conditions located at <https://www.nre.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions>.

G. Program-Specific Requirements

Final products synthesizing the results of this work include a minimum of two peer reviewed publications and at least two presentations of final results to Upper Mississippi River manager groups. A final, comprehensive report will also be completed as part of this project, and an interim comprehensive report will be required after the second growing season to document progress in the project. The vendor will also be required to coordinate a virtual check-in meeting with St. Paul District Environmental Stewardship staff every other month. One of these meeting should be in-person check-in meeting during the winter each year, for a total of 5 virtual check-in meetings and one in person. Virtual check-in meeting should be used to provide status updates, address uncertainties related to project implementation, and plan for future field work, analysis and writing.

II. Federal Award Information

The following information applies to awards issued under this announcement:

- This is a new program.
- The Government anticipates 1 Federal award from this announcement but reserves the right to award more or fewer.
- The total amount of funding expected to be awarded through this announcement is \$272,871.00.
- The expected amount of funding for each award is \$61,592.73 for Year 1, \$69,093 for Year 2, \$69,093 for Year 3, and \$69,093 for Year 4.
- Award(s) from this announcement will be Cooperative Agreement(s)
- The anticipated period of performance is 4 years.
- Applications for renewal or supplementation of existing projects are eligible to compete

- with applications for new Federal awards.
- The government reserves the right to accept only portions of an application and to negotiate with potential awardees.
- Government's substantial involvement includes participation in study design, site selection, implementation of management actions required for the study, assistance with data collection, and review of products.

III. Eligibility Information

A. Eligible Applicants

This opportunity is restricted to non-federal partners of the Great Lakes / Northern Forest Cooperative Ecosystems Studies Unit (CESU).

Disclosures of current and pending support made in this application may render an applicant ineligible for funding. Prior to award and throughout the period of performance, ERDC may continue to request updated continuing and pending support information, which will be reviewed and may result in discontinuation of funding.

Religious organizations are entitled to compete on equal footing with secular organizations for Federal financial assistance as described in E.O. 13798, "Promoting Free Speech and Religious Liberty."

B. Cost Sharing or Matching

This action will be 100% funded by USACE.

C. Conflict of Interest

a) General Requirement for Disclosure

You and your organization must disclose any potential or actual scientific or nonscientific conflict of interest(s) to us. You must also disclose any potential or actual conflict(s) of interest for any identified sub recipient you include in your application. We may have to ask you more questions if we need more information.

At our discretion, we may ask you for a conflict-of-interest mitigation plan after you submit your application. Your plan is subject to our approval.

b) Scientific Conflict of Interest

Scientific collaborations on research and development projects are generally the result of close collaboration prior to the submission of applications for support. Accordingly, these collaborations should be considered when considering potential conflicts of interest. The potential conflict is mitigated by the disclosure of these

collaborations, and the list of current and pending support you provide for senior and key researchers. Therefore, you must include in your list of current and pending support all collaborators, even if they did not formally provide support.

D. Other

a) Licensure or Certification

You must include the Acknowledgment of Support and Disclaimer on all materials created or produced under our awards. This language may be found in the Terms and Conditions included in the award documents.

E. Certifications, representations, and assurances

1. To apply for grants and other funding opportunities the applicant entity must have an active registration in the System for Award Management (SAM). Applications will not be accepted through Grants.gov or other methods unless the entity is registered in SAM. Registration in SAM now includes the acceptance of Certifications and Assurances. See <https://www.grants.gov/web/grants/grantors/grantor-standard-language.html> for details on how to register in SAM, and Grants.gov
2. The Federal Assistance Certifications Report is an attestation that the entity will abide by the requirements of the various laws and regulations; therefore, as applicable, you are still required to submit any documentation, including the SF-LLL Disclosure of Lobbying Activities (if award value exceeds \$100,000.00), and, if applicable, informing DoD of unpaid delinquent tax liability or a felony conviction under any Federal law.
3. Certification Regarding Disclosure of Funding Sources. By checking "I Agree" on the SF 424 (R&R) block 17 you agree to abide by the following statement: "By signing this application, I certify the proposing entity is in compliance with Section 223(a) of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 which requires that: (a) the PI and other key personnel certify that the current and pending support provided on the proposal is current, accurate and complete; (B) agree to update such disclosure at the request of the agency prior to the award of support and at any subsequent time the agency determines appropriate during the term of the award; and (c) the PI and other key personnel have been made aware of the requirements under Section 223(a)(1) of this Act. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. code, Title 218, Section 1001)."

IV. Application and Submission Information (2 Phase Process)

A. Phase I: Submission of Statement of Interest (SOI)

1. Materials Requested for Statement of Interest/Qualifications:

a. Please provide the following via e-mail attachment to: Phoebe Fuller, phoebe.v.fuller@usace.army.mil (Maximum length: 2 pages, single-spaced 12 pt. font).

i. Name, Organization and Contact Information

ii. Brief Statement of Qualifications (including):

- Biographical Sketch,
- Relevant past projects and clients with brief descriptions of these projects,
- Staff, faculty or students available to work on this project and their areas of expertise,
- Any brief description of capabilities to successfully complete the project you may wish to add (e.g. equipment, laboratory facilities, greenhouse facilities, field facilities, etc.).

Note: A proposed budget is NOT requested at this time.

The administrative point of contact is Phoebe Fuller, phoebe.v.fuller@usace.army.mil.

2. ERDC will only accept SOIs submitted on or before 19 May 2023, by 2:00pm Central Time (CT).

Based on a review of the Statements of Interest received, an investigator or investigators will be invited to move to Phase II which is to prepare a full study proposal. Statements will be evaluated based on the investigator's specific experience and capabilities in areas related to the study requirements.

B. Phase II (if invited): Submission of Full Application Package

1. Address to Request Application Package

The complete funding opportunity announcement, application forms, and instructions are available for download at Grants.gov.

The administrative point of contact is Phoebe Fuller, phoebe.v.fuller@usace.army.mil.

2. Content and Form of Application Submission

All mandatory forms and any applicable optional forms must be completed in accordance with the instructions on the forms and the additional instructions below.

a. SF 424 R&R - Application for Federal Assistance

b. Full Technical Proposal – Discussion of the nature and scope of the research

and technical approach. Additional information on prior work in this area, descriptions of available equipment, data and facilities, and resumes of personnel who will be participating in this effort should also be included.

- c. Cost Proposal/Budget – Clear, concise, and accurate cost proposals reflect the offeror’s financial plan for accomplishing the effort contained in the technical proposal. As part of its cost proposal, the offeror shall submit a full budget in sufficient detail so that a reasonableness determination can be made. A recommended template will be included in the invitation to Phase II. The SF 424 Research & Related Budget Form can be used as a guide but is required if the sub-recipient uses it. The cost breakdown should include the following, if applicable:

1. Direct Labor: Direct labor should be detailed by level of effort (i.e. numbers of hours, etc.) of each labor category and the applicable labor rate. The source of labor rates shall be identified and verified. If rates are estimated, please provide the historical based used and clearly identify all escalation applied to derive the proposed rates.
2. Fringe Benefit Rates: The source of fringe benefit rate shall be identified and verified.
3. Travel: Travel costs must include a purpose and breakdown per trip to include destination, number of travelers, and duration.
4. Materials/Equipment: List all material/equipment items by type and kind with associated costs and advise if the costs are based on vendor quotes and/or engineering estimates; provide copies of vendor quotes and/or catalog pricing data.
5. Subrecipient costs: Submit all subrecipient proposals and analyses. Provide the method of selection used to determine the subrecipient.
6. Tuition: Provide details and verification for any tuition amounts proposed.
7. Indirect Costs: Currently the negotiated indirect rate for awards through the CESU is 17.5%.
8. Any other proposed costs: The source should be identified and verified.

- d. R&R Senior/Key Person Profile

1. Biographical Sketch
2. Disclosure of Current and Pending Support:
 - i. A list of all current projects the individual is working on, in addition to any future support the individual has applied to receive, regardless of the source.

- ii. Title and objectives of the other research projects.
- iii. The percentage per year to be devoted to the other projects.
- iv. The total amount of support the individual is receiving in connection to each of the other research projects or will receive if other applications are awarded.
- v. Name and address of the agencies and/or other parties supporting the other research projects.
- vi. Period of performance for the other research projects.

e. SF-LLL Disclosure of Lobbying Activities (if award value exceeds \$100,000.00)

f. Data Management Plan:

A data management plan is a document that describes which data generated through the course of the proposed research will be shared and preserved, how it will be done, or explains why data sharing or preservation is not possible or scientifically appropriate, or why the costs of sharing or preservation are incommensurate with the value of doing so. See also: DoD Instruction 3200.12.

<https://www.esd.whs.mil/Directives/issuances/dodi/>

Data management plans are generally 2 pages in length, and must include the following considerations:

- (1) The types of data, software, and other materials to be produced.
- (2) How the data will be acquired.
- (3) Time and location of data acquisition, if scientifically pertinent.
- (4) How the data will be processed.
- (5) The file formats and the naming conventions that will be used.
- (6) A description of the quality assurance and quality control measures during collection, analysis, and processing.
- (7) A description of dataset origin when existing data resources are used.
- (8) A description of the standards to be used for data and metadata format and content.
- (9) Appropriate timeframe for preservation.
- (10) The plan may consider the balance between the relative value of data preservation and other factors such as the associated cost and administrative burden. The plan will provide a justification for such decisions.

3. ERDC will only accept full application packages submitted on or before 20 June 2023, 2:00pm Central Time (CT).

4. Submission Instructions

Choose **ONE** of the following submission methods:

a. E-mail:

Format all documents to print on Letter (8 ½ x 11”) paper. E-mail proposal to Phoebe Fuller, phoebe.v.fuller@usace.army.mil.

- b. Grants.gov: <https://www.grants.gov/>:

Applicants are not required to submit proposals through Grants.gov. However, if applications are submitted via the internet, applicants are responsible for ensuring that their Grants.gov proposal submission is received in its entirety.

All applicants choosing to use Grants.gov to submit proposals must be registered and have an account with Grants.gov. It may take up to three weeks to complete Grants.gov registration. For more information on registration, go to <https://www.grants.gov/web/grants/applicants.html>.

Organizations must have a Unique Entity Identifier (UEI) and active System for Award Management (SAM) registration to apply for Federal financial assistance.

C. Application Withdrawal:

An applicant may withdraw an application at any time before award by written notice via email. Notice of withdrawal shall be sent to the agency point of contact identified in this announcement and are effective upon receipt.

D. Funding Restrictions

Per 2 CFR § 200.216, funds may not be used to procure telecommunications equipment or video surveillance services or equipment produced by

- Huawei Technologies Company,
- ZTE Corporation Hytera Communications Corporation,
- Hangzhou Hikvision Digital Technology Company,
- Dahua Technology Company
- any subsidiary or affiliate of such entities

Funds from an award may not be used to attain fee or profit.

V. Application Review Information

A. Selection Criteria

Applications will be evaluated using the following criteria, listed in descending order of importance:

- Technical merits of the proposed research and development; and
- Potential relationship of the proposed research and development to Department of Defense missions
- Relevant experience as required by Section I.

B. Review and Selection Process:

Each application will be reviewed based on the selection criteria above rather than against other applications submitted under this Announcement.

Based on the Peer or Scientific Review, proposals will be categorized as Selectable or Not Selectable (see definitions below). The selection of the source for award will be based on the Peer or Scientific Review, as well as importance to agency programs and funding availability.

- i. Selectable: Proposals are recommended for acceptance if sufficient funding is available.
- ii. Not Selectable: Even if sufficient funding existed, the proposal should not be funded.

Note: The Government reserves the right to award some, all, or none of proposals. When the Government elects to award only a part of a proposal, the selected part may be categorized as Selectable, though the proposal as a whole may not merit such a categorization.

In addition to the technical/program review, the DoD performs a budget review and a risk review as directed by 2 CFR 200.206, including a review of the Federal Awardee Performance and Integrity Information System (FAPIIS). Applicants may review information in FAPIIS and comment on any information entered into that system. Comments made by applicants will be taken into account in addition to other information in considering applicants' integrity, business ethics, and record of performance.

VI. Federal Award Administration Information

The notification e-mail regarding a selection is not authorization to commit or expend DoD funds. A DoD grants officer is the only person authorized to obligate and approve the use of federal funds. This authorization is in the form of a signed Notice of Award. Applicants whose applications are recommended will be contacted by a DoD grants officer to discuss any additional information required for award. This may include representations and certifications, revised budgets or budget explanations, or other information as applicable to the proposed award. The award start date will be determined at this time.

VII. Reporting Requirements

The terms and conditions of the award will provide the specifics on how to submit the reports and any required sections for those reports.

In accordance with 2 CFR 200.328 (Financial Reporting) and 2 CFR 200.329 (Program Performance)

Report	Requirements/Form	Frequency	Means of Submission
ERDC Progress Report		Upon SF-270 submission	E-mail
Research Performance Progress Reports (Interim and Final)	OMB Control Number: 0704-0527	Annually	E-mail
Financial Report	SF 425	Bi-annually	E-mail
Payment Report	SF 270	Monthly	E-mail

Closeout Report		Once	E-mail
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Awardees will need to comply with the reporting requirements in 2 CFR 170: Reporting Subaward and Executive Compensation Information.

The terms and conditions of the award will provide the specifics on how to submit the reports and any required sections for those reports.

VIII. Federal Contacts

Questions should be directed to:

Phoebe Fuller
Grants Specialist
Phoebe.v.fuller@usace.army.mil

Chelsea Whitten
Grants Officer
Chelsea.m.whitten@usace.army.mil

Questions regarding Grants.gov should be directed to 1-800-518-4726 and email at support@grants.gov.

IX. Other Information

The Federal government is not obligated to make any Federal award as a result of the announcement. Only grants officers can bind the Federal government to the expenditure of fund.

Applicants are advised to monitor Grants.gov for potential amendments to this Notice of Funding Opportunity. You can also elect to be automatically notified by Grants.gov whenever there is a change to the opportunity.

Applications must not include any information that has been identified as classified national security information under authorities established in Executive Order 12958, Classified National Security Information.