

Request for Statements of Interest
Funding Opportunity Announcement

Federal Awarding Agency:

U.S. Army Corps of Engineers,
Engineer Research and Development Center
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

Funding Opportunity No: W81EWF-22-SOI-0005

CFDA No: 12.630

Statutory Authority: 10 USC 2358

Project Title: Genotyping to Identify Pallid Sturgeon Broodstock,
Reproduction, and Recruitment using new technology

Announcement Type: Initial announcement

Issue Date: 1 Dec 2021

Statement of Interest/Qualifications Due Date: 31 Dec 2021; 1300
central time zone

Full Application Package Due Date, if Invited: 28 Jan 2022; 1300
central time zone

Estimated Award Ceiling: \$180,000

Estimated Total Program Funding (**optional**): \$900,000

Expected Number of Awards: 1 award (1 agreement with 1 base
including the Platte River with up to 4 additional option years for the
lower Missouri River)

Section I: Funding Opportunity Description

Background:

The pallid sturgeon is an endangered species in the Missouri River and multiple Biological Opinions have been written regarding the Operation of the Missouri River Main Stem Reservoir System, Operation & Maintenance of Missouri River Bank Stabilization and Navigation Project and Operation of the Kansas River Reservoir System (USFWS 2000, 2003, 2018). As a result, state and federal agencies (including the USACE) have collaborated on pallid sturgeon research and hatchery propagation efforts since the early 2000s in an effort to avoid jeopardizing the continued exist of this species and to understand the potential factors that may be limiting population growth. Genetic analysis has been an important component of these past efforts (e.g., identifying the most appropriate individuals for artificial spawning and documenting successful natural reproduction with the identification of age-0 pallid sturgeon individuals from field collections). Additionally, recent technological advances now provide an opportunity to improve genetic identification, including a more robust assessment of hybridization. Understanding the extent of hybridization is an important factor potentially affecting pallid sturgeon recovery as hybridization between a rare and common species (i.e., shovelnose sturgeon) could lead to extinction of the rare species as its genome is subsumed into that of the common species (Rhymer and Simberloff 1996). Therefore, the MRRP has a need to continue using the already established genetic markers for research and propagation efforts while also contributing to the development of additional markers using new technology to better differentiate between pallid sturgeon, closely related shovelnose sturgeon, and hybrids.

Brief Description of Anticipated Work:

The objective of the proposed effort for the Base option is to:

Objective 1: Conduct the new Genotyping in Thousands by Sequencing (GT-Seq, Campbell et al. 2015) analysis on up to 1,000 lower Missouri River samples annually during the 4-year study period (FY 2022-2025), which will contribute to the development of new genetic markers.

The objectives of the proposed effort for the 4 option years include using the previously established genetic markers on up to 15,000 samples annually (FY 2023-2026) to:

Objective 1: Screen Missouri River pallid sturgeon broodstock to ensure genetic purity for the pallid sturgeon propagation and population augmentation project.

Objective 2: Efficiently identify pallid from shovelnose and hybrid sturgeon based on genetic samples provided.

Objective 3: Research and develop a spawning relatedness matrix to help hatcheries avoid crosses between related individuals utilizing results from Objective 1 and genotypes of males from the cryopreserved repository.

Objective 4: Use genetic identification to assess natural reproduction of pallid sturgeon in the LMOR.

The work associated with the Base option for this project includes:

1) Use the GT-Seq genotype analysis (Campbell et al. 2015) and ddRAD sequences to develop new and more powerful markers for the identification of pallid sturgeon, shovelnose sturgeon and hybrids. Once the markers are developed, use a variety of analytical approaches, such as Discriminate Analysis using Principle Components (DAPC, Jombart et al. 2010), STRUCTURE (Pritchard et al. 2000), and NewHybrids (Anderson and Thompson 2002) to provide better resolution of the species status of each individual and identify more reliable criteria for identifying pure pallid sturgeon. The successful applicant will have the genetic baselines to reliably verify purity of pallid sturgeon based on genetic analysis and have access to the equipment necessary to conduct the new GT-Seq genotype analysis.

The work associated with the 4 option years for this project includes:

1) Use the previously established genetic techniques, including Single Nucleotide Polymorphism (SNP) and microsatellite markers, to identify juvenile pallid sturgeon from shovelnose sturgeon and hybrids in samples collected from the Central Lowlands and Interior Highlands Management Units. Pallid sturgeon monitoring crews sample small sturgeon from the Missouri and Mississippi Rivers; some of these sturgeon could be wild pallid sturgeon and would represent natural reproduction. These results will provide the analysis and assessment to determine if small *Acipenseriformes* species sampled by these crews represent recruitment of wild pallid sturgeon.

2) Analyze the genotypes of pallid sturgeon broodstock against established baselines of wild pallid and shovelnose sturgeon from the same river regions from which the broodstock were collected using three analytical tools: STRUCTURE (Pritchard *et al.*, 2000), WhichRun (Banks, Eichert, 2000), and NewHybrids (Anderson, Thompson, 2002). Identify each fish as pallid sturgeon, shovelnose sturgeon, or hybrid (pallid x shovelnose) based on the STRUCTURE-generated Q-value, WhichRun LOD, and NewHybrids scores. This will be done to ensure that only pure pallid sturgeon, based on the available genetic baselines, are utilized for artificial spawning and propagation efforts. Therefore, the progeny produced and stocked will follow genetic recommendations outlined by the Pallid Sturgeon Recovery Team and supported by the U.S. Fish and Wildlife Service relative to the collection and stocking of locally collected specimen for population augmentation. Monitoring and detecting successful reproduction of pallid sturgeon in the Missouri River is a critical factor for assessing the Corps' management actions under the Biological Opinion and to identify critical threats to the population.

Public Benefit:

Public Benefit: Research and monitoring results will provide public benefit through enhanced understanding of factors that may limit recruitment of pallid sturgeon, a threatened and endangered fish species in the Missouri River. Through these efforts, these fish and their habitat will be conserved and preserved so as to maintain these natural resource services for future generations. Additionally, this research and data collection will provide the first unbiased examination of the numbers of pallid, shovelnose and hybrid sturgeon spawned and will provide benchmarks for determining the extent, and in future years the trajectory, of hybridization and successful pallid sturgeon reproduction, which will aid in the recovery of an endangered species. This work will also support ongoing pallid sturgeon population monitoring and evaluation efforts for the Missouri River Recovery Program and provide critical genetic information for the hatchery propagation of this endangered species.

Section II: Award Information

Responses to this Request for Statements of Interest will be used to identify potential investigators for studies to be sponsored by the US Army Corps of Engineers - Omaha and Kansas City Districts and the Engineer Research and Development Center to provide sturgeon genetic analyses. The estimated level of funding for the base option from FY22 to FY25 is approximately \$180,000. The estimated level of funding for the 4 option years (FY23, FY24, FY25, and FY26) is \$180,000/year. Thus, the potential total funding to the successful Recipient/Awardee is \$900,000 over the 4-year period.

Government Involvement:

The Omaha and Kansas City Districts will participate in study setup and sampling activities as appropriate. The Omaha and Kansas City District will participate in infrastructure development to address prioritized objectives. The Omaha and Kansas City Districts will participate in the review/selection of proposed methods to accomplish the prioritized objectives. The Omaha and Kansas City Districts will provide technical review of data and reports to offer opinion on presentations and publications that disseminate the results of accomplished work. The Omaha and Kansas City Districts, along with participating States and the U.S. Fish and Wildlife Service, will provide sturgeon samples for analyses.

Section III: Eligibility Information

1. Eligible Applicants – This opportunity is restricted to non-federal partners of Great Rivers Cooperative Ecosystems Studies Unit (CESU).
2. Cost Sharing – This action will be 100% funded by USACE.

Section IV: Application and Submission Information – Two Phase Process

Phase I: Submission of a Statement of Interest/Qualifications.

1. Materials Requested for Statement of Interest/Qualifications:
 - a. Please provide the following via e-mail attachment to:
Chelsea.M.Whitten@usace.army.mil
(Maximum length: 2 pages, single-spaced 12 pt. font).
 1. Name, Organization and Contact Information
 2. 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 Chelsea Whitten, 601-634-4679;
Chelsea.M.Whitten@usace.army.mil

2. Statement of Interest/Qualifications shall be submitted NO LATER THAN 31 Dec 2021; 1300 central time zone.

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.

Phase II: Submission of a complete application package to include a full technical proposal including budget, if invited.

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 Chelsea Whitten, 601-634-4679;
Chelsea.M.Whitten@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 cost element breakdowns in sufficient detail so that a reasonableness determination can be made. The SF 424 Research & Related Budget Form can be used as a guide but is required if you chose to utilize the subaward budget form. 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.

3. Application package shall be submitted NO LATER THAN 28 Jan 2022; 1300 central time zone

4. Submission Instructions

Applications may be submitted e-mail or Grants.gov. 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 Chelsea.M.Whitten@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>.

Section V: Application Review Information

1. **Peer or Scientific Review Criteria:** In accordance with DoDGARs 22.315(c), an impartial peer review will be conducted. Subject to funding availability, all proposals will be reviewed using the criteria listed below (technical and cost/price). All proposals will be evaluated under the following two criteria which are of descending importance.

- a. **Technical (items i. and ii. are of equal importance):**
 - i. Technical merits of proposed R&D.
 - ii. Potential relationship of proposed R&D to DoD missions.
- b. **Cost/Price:** Overall realism of the proposed costs will be evaluated.

2. Review and Selection Process

a. **Categories:** 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.

- b. No other criteria will be used.
- c. Prior to award of a potentially successful offer, the Grants Officer will make a determination regarding price reasonableness.

Section VI: Award Administration Information

1. Award Notices

Written notice of award will be given in conjunction with issuance of a cooperative agreement signed by a Grants Officer. The cooperative agreement will contain the effective date of the agreement, the period of performance, funding information, and all terms and conditions. The recipient is required to sign and return the document before work under the agreement commences. **Work described in this announcement SHALL NOT begin without prior authorization from a Grants Officer.**

2. Administrative Requirements

The cooperative agreement issued as a result of this announcement is subject to the administrative requirements in 2 CFR Subtitle A; 2 CFR Subtitle B, Ch. XI, Part 1103; and 32 CFR Subchapter C, except Parts 32 and 33.

3. Reporting

See 2 CFR Sections 200.327 for financial reporting requirements, 200.328 for performance reporting requirements, and 200.329 for real property reporting requirements.

Section VII: Agency Contact

Chelsea Whitten, Grants Officer

US Army Corps of Engineers, Engineer Research and Development Center

3909 Halls Ferry Road

Vicksburg, MS 39180-6199

Chelsea.M.Whitten@usace.army.mil

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