

**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-21-SOI-0007

CFDA No: 12.630

Statutory Authority: 10 USC 2358

Program Title: Environmental Life History and Genetic Structure of River Sturgeon (*Scaphirhynchus* spp.) in the Lower Mississippi River.

Announcement Type: Initial announcement

Issue Date: 21 Dec 2020

Statement of Interest/Qualifications Due Date: 20 January 2021 by 5:00 pm CST.

Full Application Package Due Date, if Invited: 10 February 2021 by 5:00 pm CST.

Estimated Award Ceiling: \$50,000.

Estimated Total Program Funding (optional): \$150,000 total over 3 years; \$50,000 for base and each option year.

Expected Number of Awards: The government may issue more than 1 award from this announcement.

Section I: Funding Opportunity Description

Background:

Shovelnose Sturgeon (*Scaphirhynchus platyrhynchus*) and Pallid Sturgeon (*S. albus*), collectively referred to as river sturgeon (*Scaphirhynchus* spp.), inhabit medium to large-sized rivers within the Central United States. The Pallid Sturgeon was listed as Endangered by the USFWS in 1990 and the Shovelnose Sturgeon was listed in 2010 as Threatened under the Similarity-of-Appearance provision of the Endangered Species Act where the two species are sympatric (Jordan et al. 2016; Phelps et al. 2016). Both species inhabit the Lower Mississippi River (LMR).

Evaluating common life history patterns across life stages (e.g. spawning reaches, larval dispersal patterns, large-scale adult movement patterns) within the context of meta-population dynamics of both Pallid and Shovelnose Sturgeon throughout the species range is critical for maintaining their habitat along the Mississippi River.

The primary objective of this project is to utilize archived tissue samples (e.g., fin clip, pectoral ray) collected by ERDC researchers during the course of their past and/or current Pallid Sturgeon monitoring efforts within the LMR to assess common environmental life history patterns and genetic structure of both Shovelnose and Pallid Sturgeon within the LMR.

Brief Description of Anticipated Work:

Required Work Objectives: One approach for evaluating environmental life history patterns is with trace element or stable isotope analysis, which provides a comparative evaluation of unique isotopic signatures between defined sampling units or events. Within aquatic systems, the methodology builds upon the development of a water chemistry signature gradient which is based on discriminating stable isotope components (e.g., Sr:Ca concentrations) which becomes the known reference condition utilized for subsequent comparative purposes. This technique has been applied to multiple taxa (e.g., molluscs, fishes) to address a range of broad based ecological questions such as re-creating historic hydrologic conditions and identifying feeding habitats. More recently, Phelps et al. (2012) utilized stable isotope analysis on fin ray sections to determine origin and environmental history of young-of-year river sturgeon in the Missouri and Middle Mississippi rivers.

Currently, ERDC has nearly 250 unique records representing approximately 500 specimens (larval sturgeon; whole body) and approximately 280 samples (juvenile and adult; pectoral ray) of river sturgeon to be available for stable isotope analyses. ERDC compiled one round of water samples from the LMR in 2014 and those data will be available by the candidates for integration into the water chemistry signature library. In addition, a second set of water chemistry samples will be collected by ERDC to better understand inter-year variability.

Use of molecular techniques in ecology and conservation has grown considerably over the past several decades with the type of technique utilized dependent upon the research question and the details needed (Allan and Max 2010). Understanding the genetic population structure of sturgeon species can provide great insight into conservation-based agendas (Wirgin et al. 1997; Anders et al. 2011) and has become a mainstay within many programs (Dugo et al. 2004; Wirgin et al. 2005; Shrey and Heist 2007). A methodological approach similar to the techniques employed by Jordan et al. (2019) to evaluate congruence between morphological, meristic and molecular assessments of Pallid Sturgeon populations would be an appropriate technique to assess population structure within river sturgeon in the LMR. This approach incorporated microsatellite genotypes at specific loci and the software package STRUCTURE to assess genomic variability within and between sample units.

ERDC has approximately 500 tissue samples (400 adult sturgeon, fin clips; 100 larval sturgeon, ETOH whole body) primarily from the LMR to be included in the sturgeon molecular assessment.

Identified project tasks are:

1. Construct environmental life history attributes for larval, juvenile and adult river sturgeon to evaluate common life history patterns. Isotope profiles obtained from sampled fish will be compared to the stable isotope library obtained from the LMR water samples to determine origin and environmental life history.
2. Compare those life history patterns with similar samples from the Middle Mississippi and Missouri Rivers.
3. Evaluate meta-population dynamics and genetic structure of Pallid and Shovelnose Sturgeon from the LMR using genetic markers and compare those results with similar studies from throughout both species ranges to provide a greater knowledge base for range-wide conservation and management planning.

Deliverables will include written products that address the following:

1. Comparative assessment of environmental life history patterns of Shovelnose and Pallid Sturgeon within the LMR, and compare these patterns to published data throughout the species range.
2. Genetic identification of all samples included in the molecular analysis component.
3. Genetic population structure of Pallid and Shovelnose Sturgeon within the LMR.

Successful applicants should have a familiarity of sturgeon life history strategies and a general understanding of range-wide issues for both species. The candidates should have sufficient experience with elemental microchemistry and genetic analyses and a record that demonstrates research experience with collecting and analyzing these types of data. Candidates will adhere to recognized standards according to USFWS recommended data acquisition and quality control protocols for all laboratory processes and subsequent analyses.

The candidates will be required to prepare a Statement of Work and Work Plan regarding the research to be conducted. The candidates will also be required to submit status reports to accompany billing invoices (monthly or quarterly) and one (1) annual report each year of the cooperative agreement to provide updates on data collection and analysis.

Public Benefit:

Success in these studies will benefit the public by promoting the recovery of the endangered Pallid Sturgeon. Successful integration of study results will maintain, improve and eventually expand critical habitat features necessary for recovery of the species and ultimately respond in increases in population levels across the species range.

Section II: Award Information

Responses to this Request for Statements of Interest will be used to identify potential investigators for studies about the Environmental Life History and Genetic Structure of River Sturgeon (*Scaphirhynchus* spp.) in the Lower Mississippi River sponsored by the Engineer Research and Development Center. The estimated level of funding for FY21 is approximately \$50,000. Additional funds of \$50,000 per year for 2 additional years may be available, providing the potential funding of \$150,000 over 3 years to the successful Recipient/Awardee. Depending on findings in the early years of this effort, funding needs may increase above the anticipated \$50,000 per year in subsequent years of this project; however, total funding will not exceed \$150,000 over the life of this cooperative agreement.

Government Involvement:

The USACE will provide archived tissue samples, results from previous water chemistry samples and participate in study design, logistics and work plan development. In addition, USACE will conduct additional water chemistry samples to be included in the proposed study and can conduct additional sturgeon sampling if needed to fill distributional data gaps. USACE will review status reports and provide input to

data interpretation for final reports. USACE will assist in the dissemination of study results through local scientific presentations and website postings. USACE will incorporate the data and analyses into a centralized database that will be used to evaluate project outcomes and provide guidance and justification for proposed restoration measures.

Section III: Eligibility Information

1. Eligible Applicants – This opportunity is restricted to non-federal partners of the Great Rivers Region 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: Anna.Crawford@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 Anna Crawford, 601-634-5320;
Anna.Crawford@usace.army.mil

2. Statement of Interest/Qualifications shall be submitted NO LATER THAN 20 January 2021 by 5:00 pm CST.

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 Anna Crawford, 601-634-5320,
Anna.Crawford@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. 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 10 February 2021 by 5:00 pm CST.

4. Submission Instructions

Applications may be submitted by 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 Anna.Crawford@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

Anna Crawford, Grants Specialist

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