

Gulf Sturgeon Spawning Habitat Characterization in the Pearl and Pascagoula River Systems

Notice of Funding Opportunity Number: F19AS00327

Federal Program: Department of the Interior, United States (U.S.) Fish and Wildlife Service, Deepwater Horizon Gulf Restoration Office

Catalog of Federal Domestic Assistance (CFDA) Number:

15.678 Cooperative Ecosystem Studies Units (CESU)

Authorizing Legislation:

Fish and Wildlife Coordination Act, 16 U.S.C. §§661-666

Endangered Species Act, 16 U.S.C. §1531 et seq.

Fish and Wildlife Conservation Act, 16 U.S.C. §2901 et seq.

Fish and Wildlife Act, 16 U.S.C. §742 et seq.

Migratory Bird Treaty Act, 16 U.S.C. §703 et seq.

Coastal Barrier Resources Act, 16 U.S.C. §3501 et seq.

Public Lands Corps Act - Public Lands Corps, 16 U.S.C. §§1721-1726.

15.658 Natural Resource Damage Assessment, Restoration, and Implementation

Authorizing Legislation:

Federal Water Pollution Control Act, 33 U.S.C. §§1251-1387

Oil Pollution Act, 33 U.S.C. §2701 et seq.

Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601, et seq.

Fish and Wildlife Act, 16 U.S.C. §742 et seq.

Paperwork Reduction Act Statement: We are collecting this information in accordance with the authorizing legislation identified above. Your response is required to obtain or retain a benefit. We will use the information you provide to conduct a competitive review and select projects for funding and, if awarded, to evaluate performance. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. We estimate that it will take you on average about 40 hours to complete an initial application, about 3 hours to revise the terms of an award, and about 8 hours per report to prepare and submit financial and performance reports, including time to maintain records and gather information. Actual time for these activities will vary depending on program-specific requirements. You may send comments on the burden estimate or any other aspect of this information collection to the Information Collection Clearance Officer, U.S. Fish and Wildlife Service, MS BPHC, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

OMB Control Number: 1018-0100 (Expiration Date: 7/31/2021)

I. Program Description

The U.S. Fish and Wildlife Service (Service) intends to award one single source cooperative agreement to Northern Arizona University (NAU) through the Desert Southwest Cooperative Ecosystem Studies Unit

(CESU). Through this agreement, Dr. Daniel Buscombe and his staff will assist the Service with efforts to restore the injury sustained by Gulf sturgeon (*Acipenser oxyrinchus desotoi*) by the 2010 oil spill caused by the fire and explosion of the *Deepwater Horizon* (DWH) drilling platform. This project is funded by the Open Ocean Trustee Implementation Group (TIG), which is one of 7 TIGs established as part of the DWH Natural Resource Damage Assessment (NRDA). The Open Ocean TIG is responsible for restoring injured resources not likely to be restored by other TIGs which may be more restricted by geopolitical boundaries.

The Gulf sturgeon is a sub-species of the Atlantic sturgeon and listed as Threatened under the Endangered Species Act. In order to restore the injury sustained by this species during the DWH oil spill, and to facilitate the Service's recovery efforts, it is important that scientists and resource managers have a better understanding of their habitat use, and the location of potentially suitable spawning and resting habitat. Currently, few studies have assessed fish populations over multiple years and at large scales, i.e. entire river systems, and influences of abiotic processes (sediment, hydrology, geomorphology) responsible for feeding, spawning, rearing and resting behaviors are still uncertain. Focusing on the Pearl and Pascagoula River Systems, this project is designed to achieve the following objectives:

- 1) Develop open-source software tools to (semi-) automate classification of substrate and morphologies. Evaluate these tools against a benchmark of human expert interpretation.
- 2) To generate a sonar based physical habitat map of major substrate classes and morphological features of the Pearl and Pascagoula Rivers.
- 3) Identify potential spawning habitat for Gulf sturgeon.

By objecting, this project includes the following planned activities:

Objective 1

The automated substrate mapping software will be developed by the recipient throughout the 4-year project. The software will be built using open source technologies (e.g. GDAL, Mapbox, python), and built on PyHum (an open source tool developed by Dr. Daniel Buscombe) libraries and routines. We envisage the final product to work either from the command line, or through QGIS, in much the same way as the popular GDAL geospatial software. The resulting product will be free to use. The software will include a simple and obvious processing workflow; an interactive map interface to allow users to manually crop scans or select regions of interest, manually remove bad portions of scans, etc; and multiple export formats (maps to GIS formats, geotiff, geoJSON, point cloud, etc, other derived variables to tables/excel, etc, metadata to xml, etc). Users will be able to choose on what level of aggregation they want substrate information (per scan, per km, per 100m, river-left, river-right, user-defined polygon, etc, etc), and what summary statistics they wish to generate.

As well as existing substrate classification algorithms, the new program will incorporate any alternative/additional methods devised by NAU during the course of the project. As improved methods become available, all data will be re-processed. This objective will require basic research into radiometric correction of scans, optimal sidescan mosaicking/merging workflows, as well as acoustic modeling of the substrates. The final software and detailed user manual will be delivered at the end of the Project in 2023. Service partners will assist in software design, debugging and testing. Towards the

end of the project, PI Buscombe and staff will hold a 5-day training workshop to train Service staff to use the software.

Objective 2

The scope of the mapping effort for this project includes the entire main stem Pearl River system (485 km Pearl; 173 km Bogue Chitto) and the entire main stem of the Pascagoula River system (129 km Pascagoula R; 309 km Leaf R; 127 Bouie R; 250 km Chickasawhay R). The scope of effort may be extended to include associated major tributaries and distributaries depending on time available and interest in such areas as important habitat for focal species.

Sonar habitat mapping will be undertaken by a crew (i.e., the PI, graduate assistant and a field assistant) during the Winter-Spring seasons of 2020. The surveys will be carried out using equipment (boat, trailer, vehicle, and sidescan sonar) provided by the Service, as well as a multibeam sonar and associated sensors (inertial motion unit, sound velocity probe) provided by NAU. The multibeam data will be used for the purposes of Objective 3 but will also be a valuable data set in its own right. For example, the 3D bathymetric information can be used to run detailed 2 or 3D hydraulic models of the river systems.

Initial processing of sonar data will be carried out during the Summer-Fall seasons of 2020 by the graduate assistant. This preliminary data will include generation of 1) rectified sidescan echograms (swath imagery), 2) water depth, temperature, and acoustic hardness/roughness classes for the nadir sonar beam location, and 3) multibeam-sonar bathymetric and acoustic backscatter maps. Generation of 'ground-truth' habitat layers (i.e., habitat mapping) via manual/ocular expert interpretation of sonar imagery, bathymetric maps and other remotely-sensed layers (i.e., air photos) will be undertaken by the recipient during Fall 2020. Further field data collection (sidescan sonar only) will take place in the Winter-Spring seasons of 2021 and possibly 2022 if necessary. A portion of the 2021 imagery will be used to generate more 'ground-truth' habitat layers via manual/ocular expert interpretation of sonar imagery. This will take place during Fall 2021 and will serve to assess the variability of automated methods over multiple years.

During 2021 and 2022, the recipient will develop optimal workflows for minimizing the mismatch between automated and ground-truth habitat maps. Intersection over Union (IoU) will be used as the metric to evaluate the skill of various automated workflows. The outputs of various sidescan-derived substrate classification algorithms will be compared to ground-truth data generated through analysis of sections of sidescan data collected in 2020 and 2021. The most successful approach will be able to capture the full variability of substrates in the presence of occasional submerged objects (such as woody debris), without sensitivity to the full spectrum of covariation between riverbed composition and morphologies.

An investigation will also be made into what additional available variables (aside from the sidescan data) might be strong substrate predictors. Such information might include depth, and estimates of current velocity (e.g. Hou et al., 2019; acquired using a 2D hydraulic model such as iRIC/FastMECH). Various machine learning approaches to this problem will be considered, using probabilistic graphic models such as Bayesian Belief Networks or conditional random fields. These models would refine sonar-based substrates based on other relatively attainable inputs such as bed shear stress (i.e. sediment mobilization potential) and 3D depth, while explicitly accounting for the spatial autocorrelation in riverbed substrates. The latter is achieved by quantifying the observation that nearby locations with similar texture are likely to be in the same substrate class, while assessing the probability of small isolated regions based on external factors such as current and depth.

Objective 3

In order to identify reaches of each river system that are utilized by adult sturgeon during the spawning period, an array of passive acoustic telemetry receivers will be strategically deployed throughout both river systems by a field team employed by the University of Southern Mississippi (USM) to work on the project. The arrangement of the array in year 1 (Spring 2020), and before any habitat mapping has been completed, will be systematic and regular to provide a coarse level outlook on the movements and residency of adult fish migrating upstream during the spawning season. In years 2-4 (Spring of 2021, 2022, and 2023) the receiver arrangement will be guided by data collected in year 1, in combination with physical habitat map data generated by the recipient. Although the USM team will be responsible for deploying and maintaining the array, and downloading data on a regular basis, those data will be analyzed and synthesized by the recipient to illustrate seasonal timing and patterns of habitat use by adult sturgeon in each system. This analysis will consider the spatial attributes of substrate composition within reaches utilized by adult sturgeon relative to reaches with limited residency. This approach will provide a first-cut, coarse level identification of reaches that are putatively used by adult fish during spawning. Future studies may aim to collect eggs or larvae to verify spawning in discrete areas.

In addition to analyzing landscape level telemetry data in both systems, the recipient will examine patterns of upstream passage at both low-head dams (i.e., sills) in the Pearl River system. Receivers will be deployed above and below each of the 2 sills to capture information on the timing of adult fish passage at each sill. This information will be analyzed relative to river discharge to develop predictive models of fish passage at each site, and to hindcast whether these barriers have partially or fully blocked access to upstream habitats in each year for which historic water records are available.

Expected Benefits

Data from this project will be available for USFWS biologists and future researchers on the Pearl and Pascagoula Rivers for a variety of topics and applications, including telemetry projects, habitat associations of other aquatic species, and habitat restoration projects. Data will be provided throughout the entire river system, thereby providing and facilitating a whole-systems perspective and approach. Data on habitat availability for Gulf Sturgeon may be used to guide future conservation efforts. The open-source software tools developed as part of Objective 2 will be designed for generic application of automated substrate characterization in any alluvial channel. Additionally, this project meets the Department of the Interior's priority to "Create a conservation stewardship legacy second only to Teddy Roosevelt", more specifically by "utilizing science to identify best practices to manage land and water resources".

II. Federal Award Information

The Service intends to award a single source cooperative agreement to the CESU with Northern Arizona University (NAU) to implement a component of the NRDA-funded project entitled "Characterizing Gulf Sturgeon Spawning Habitat, Habitat Use, and Origins of Juvenile Sturgeon in the Pearl and Pascagoula River Systems" (hereafter Spawning Habitat Project). The intent of the Service is to issue a single source award to NAU as the only institution possessing the unique qualifications to perform the necessary activities of this project. Dr. Dan Buscombe (NAU- School of Earth and Sustainability) is uniquely qualified to work on this project on the basis of his professional expertise in the fields of hydroacoustics, machine learning and probabilistic modeling, sediment transport and morphodynamics, and the development of computational algorithms and software for benthic imaging using sonar and video, and substrate classification (see references). This expertise also includes developing applications for the processing and analysis of data collected from the recreational-grade, side scan sonar systems that will

be utilized during this study, with a solid publication record that documents these contributions to the field.

Dr. Buscombe is also the creator and owner of the program PyHum; the refinement and further development of this program are key objectives of the Spawning Habitat Project. This forward thinking goal aims to deliver an updated version of PyHum as a free software package available to all users interested in processing and analyzing side scan sonar data for purposes such as aquatic habitat mapping. The future benefits of this software package and associated training tools to the community of natural resources professionals are substantial.

The prospect of working with a leading scientist in the field of hydroacoustics, and pursuing a PhD degree in the School of Informatics, Computing, and Cyber Systems, are reasons underpinning our successful recruitment of PhD candidate Cameron Bodine to the CESU project as well. Cameron comes from a background in spatial analysis and Geographic Information Systems, and has spent the last several years of his career working for the Florida Fish and Wildlife Conservation Commission on a state-wide program to map underwater habitats of navigable rivers using low-cost side scan sonar technology. Mr. Bodine's application to NAU has been accepted and he will begin studies in August 2019. As a future member of the NAU graduate staff, Cameron Bodine is also uniquely qualified to work on this project.

The Service expects to make a single award of up to \$250,000 over 4 years.

The Service will be substantially involved. In particular, the Service will be responsible for the following:

- Selection and training of key personnel
- Provide technical guidance on sonar mapping
- Provide field support and training to field crews
- Provide technical review and design assistance for modeling software development
- Provide technical guidance on spawning habitat identification and sturgeon spawning behaviors
- Work in collaboration with NAU staff to interpret and synthesize research findings
- Review and approve each phase of the project before the next phase begins

III. Eligibility Information

A. Eligible Applicants

Applicants must be associated with a CESU Network institution. Associated institutions must be: Federal, State (includes District of Columbia, public institutions of higher education and hospitals), Local (includes State-designated Indian Tribes, excludes institutions of higher education and hospitals), Other public institution/organization, State, Native American Organizations (includes Indian groups, cooperatives, corporations, partnerships, associations).

B. Cost Sharing or Matching

There is no cost sharing or matching requirement

C. Other Eligibility Criteria

No additional eligibility criteria.

Unique Entity Identifier and System for Award Management (SAM.gov) Registration: This requirement does not apply to individuals applying for funds as a private citizen (i.e., unrelated to any business or nonprofit organization you may own or operate in your name) or any entity with an

exception approved by the Service under [2 CFR 25.110\(d\)](#). All other applicants are required to obtain a Data Universal Numbering System (DUNS) number from Dun & Bradstreet and then register in SAM.gov prior to submitting a Federal award application. Federal award recipients must continue to maintain an active SAM.gov registration with current information through the life of their Federal award(s). See the [“Submission Requirements”](#) section of this document below for more information on SAM.gov registration. The Service may not make a Federal award to an applicant that has not completed the SAM.gov registration. If an applicant selected for funding has not completed their SAM.gov registration by the time the Service is ready to make an award, the program may determine that the applicant is not qualified to receive an award. The program can use that determination as a basis for making an award to another applicant.

Prohibition on Issuing Awards to Entities that Require Certain Internal Confidentiality

Agreements: Domestic (U.S.) non-Federal entities requiring their employees or contractors to sign internal confidentiality agreements or statements that prohibit, or otherwise restrict, such employees or contractors from lawfully reporting waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information are not eligible to compete for or receive a Federal award. See [Pub. L. 113-235, Title VII, Division E, Section 743](#) for more information.

Excluded Parties: The Service conducts a review of the SAM.gov Exclusions database for all applicant entities and their key project personnel prior to award. The Service cannot award funds to entities or their key project personnel identified in the SAM.gov Exclusions database as ineligible, prohibited/restricted or otherwise excluded from receiving Federal contracts, certain subcontracts, and certain Federal assistance and benefits, as their ineligibility condition applies to this Federal program.

IV. Application Requirements

Application Form and Content Requirements

To be eligible for funding under this funding opportunity, an application must contain a completed, signed, and dated Application for Federal Assistance form (SF-424, SF-424B). Applicants must submit the following:

1. SF-424, Application for Federal Assistance

Applicants must submit the appropriate Standard Form (SF)-424, Application for Federal Assistance. Individuals applying as a private citizen (i.e., unrelated to any business or nonprofit organization you may own or operate in your name), must complete the [SF-424, Application for Federal Assistance-Individual](#) form. All other applicants must complete the standard [SF-424, Application for Federal Assistance](#). All of the required application forms are available on the “Packages” tab of this Funding Opportunity on Grants.gov. The SF-424, Application for Federal Assistance must be complete, and signed and dated. Please note: Enter only the amount requested from this Federal program in the “Federal” funding box on the SF-424 Application form. Include any other Federal sources of funding in the “Other” box, and provide details on those Federal source(s) and funding amount(s) in the required Budget Narrative (see the “Budget Narrative” section below).

2. SF 424, Assurances

Applicants must submit the appropriate signed and dated Assurances form. Complete either the [SF-424B, Assurances for Non-Construction Programs](#) or the [SF-424D, Assurances for](#)

[Construction Programs](#), as applicable to your project. All of the required application forms are available on the “Packages” tab of this Funding Opportunity on Grants.gov. The SF-424 Assurances forms include a statement that some of the assurances may not be applicable to your organization and/or your project or program. Signing the required SF-424 Assurances form does not make you or your organization subject to laws that are otherwise not applicable to you or your organization. Changing, crossing out, or making notations on the form before signing has no impact on the applicability of law.

3. Project Narrative

Applicants should submit a project narrative that includes the following information:

- Project title
- Goals and objectives
- Activities
- Methods
- Timetable or milestones;
- Information on key project personnel
- Roles and responsibilities
- Anticipated future funding needs

4. SF-424, Budget Information

Applicants must submit the appropriate SF-424 Budget Information form. Complete either the [SF-424A, Budget Information for Non-Construction Programs](#) or the [SF-424C, Budget Information for Construction Programs](#), as applicable to your project. All of the required application forms are available on the “Packages” tab of this Funding Opportunity on Grants.gov. Federal award recipients and subrecipients are subject to Federal award cost principles as detailed in the Service’s [“Financial Assistance Award Terms and Conditions”](#). Please note: Show funds requested from this Federal program separately from any other Federal sources of funding. In the “Budget Summary” section, use the first row for funding requested from this Federal program. Use subsequent row(s) for other Federal funding. Enter each Federal program’s CFDA number(s) in the corresponding fields on the form. The CFDA number(s) for this Federal program appears on the first page of this Funding Opportunity.

5. Budget Narrative

Describe and justify requested budget items and costs. Detail how the SF-424 Budget Information, Object Class Category totals were determined. For personnel salary costs, include the baseline salary figures and the estimates of time. Describe any item of cost that requires prior approval under the Federal cost principles. See [2 CFR 200.407](#) “Prior written approval (prior approval)” for more information. If equipment purchased previously with Federal funds is available for the project, provide a list of that equipment and identify the Federal funding source.

6. Indirect Costs: Individuals

Individuals applying for and receiving funds separate from a business or non-profit organization he/she may operate are not eligible to charge indirect costs to their award. If you are an individual applying for funding, do not include any indirect costs in your proposed budget and skip the next section.

7. Indirect Costs: Organizations

Indirect cost rate is capped at 17.5% for the USFWS CESU Program

The Federal awarding agency that provides the largest amount of direct funding to your organization is your cognizant agency for indirect costs, unless otherwise assigned by the White House Office of Management and Budget (OMB). If the Department of the Interior is your organization's cognizant agency, the Interior Business Center will negotiate your indirect cost rate. Contact the Interior Business Center by phone 916-930-3803 or using the [IBC Email Submission Form](#). See the [IBC Website](#) for more information.

Organizations must have an active Federal award before they can submit an indirect cost rate proposal to their cognizant agency. Failure to establish an approved rate during the award period renders all costs otherwise allocable as indirect costs unallowable under the award. Recipients must have prior written approval from the Service to use amounts budgeted for direct costs to satisfy cost-share or match requirements or to cover unallowable indirect costs. Recipients shall not shift unallowable indirect costs to another Federal award unless specifically authorized to do so by legislation.

Required Indirect Cost Statement

All organizations must include the applicable statement from the following list in their application to the Service, and attach to their application any documentation identified in the applicable statement:

We are:

- ☐ A U.S. state or local government entity receiving more than \$35 million in direct Federal funding each year with an indirect cost rate of [insert rate]. We submit our indirect cost rate proposals to our cognizant agency. Attached is a copy of our most recently approved rate agreement/certification.
- ☐ A U.S. state or local government entity receiving less than \$35 million in direct Federal funding with an indirect cost rate of [insert rate]. We have prepared and will retain for audit an indirect cost rate proposal and related documentation.
- ☐ A [insert your organization type; U.S. states and local governments, please use one of the statements above or below] that has previously negotiated or currently has an approved indirect cost rate with our cognizant agency. Our indirect cost rate is [insert rate]. [Insert either: "Attached is a copy of our most recently approved but expired rate agreement. In the event an award is made, we will submit an indirect cost rate proposal to our cognizant agency within 90 calendar days after the award is made." or "Attached is a copy of our current negotiated indirect cost rate agreement."]
- ☐ A [insert your organization type] that has never submitted an indirect cost rate proposal to our cognizant agency. Our indirect cost rate is [insert rate]. If we receive an award, we will submit an indirect cost rate proposal to our cognizant agency within 90 calendar days after the award date.
- ☐ A [insert your organization type] that has never submitted an indirect cost rate proposal to our cognizant agency and has an indirect cost rate that is lower than 10%. Our indirect cost rate is [insert rate; must be lower than 10%]. However, if we receive an award we will not

be able to meet the requirement to submit an indirect cost rate proposal to our cognizant agency within 90 calendar days after award. We request as a condition of award to charge a flat indirect cost rate of [insert rate; must be lower than 10%] against [insert a clear description of the direct cost base against which your rate is charged (e.g., salaries; salaries and fringe benefits; or modified total direct costs). However, please note that your organization cannot charge indirect costs in excess of the indirect costs that would be recovered if applied against modified total direct costs as defined in [2 CFR 200.68](#)]. We understand that we must notify the Service in writing if we establish an approved rate with our cognizant agency at any point during the award period.

- ☐ A [insert your organization type] that has never submitted an indirect cost rate proposal to our cognizant agency and has an indirect cost rate that is 10% or higher. Our indirect cost rate is [insert your organization's indirect rate; must be 10% or higher]. However, if we receive an award we will not be able to meet the requirement to submit an indirect cost rate proposal to our cognizant agency within 90 calendar days after award. We request as a condition of award to charge a flat *de minimis* indirect cost rate of 10% to be charged against modified total direct project costs as defined in [2 CFR 200.68](#). We understand that we must notify the Service in writing if we establish a negotiated rate with our cognizant agency at any point during the award period. We understand that additional Federal funds may not be available to support an unexpected increase in indirect costs during the project period and that such changes are subject to review, negotiation, and prior approval by the Service.
- ☒ A University that is submitting this proposal for consideration under the Cooperative Ecosystem Studies Unit Network, which has a Department of the Interior-approved indirect cost rate cap of 17.5%. If we have an approved indirect cost rate with our cognizant agency, we understand that we must apply this reduced rate against the same direct cost base as identified in our approved indirect cost rate agreement. If we do not have an approved indirect cost rate with our cognizant agency, we understand that we must charge indirect costs against the modified total direct cost base defined in 2 CFR 200.68 "Modified Total Direct Cost (MTDC)". We understand that we must request prior approval from the Service to use the 2 CFR 200 MTDC base instead of the base identified in our approved indirect cost rate agreement. We understand that Service approval of such a request will be based on: 1) a determination that our approved base is only a subset of the MTDC (such as salaries and wages); and 2) that use of the MTDC base will still result in a reduction of the total indirect costs to be charged to the award. In accordance with 2 CFR 200.405, we understand that indirect costs not recovered due to a voluntary reduction to our federally negotiated rate are not allowable for recovery via any other means.
- ☐ A [insert your organization type] that will charge all costs directly.

8. Conflict of Interest Disclosure

Applicants must state in their application if any actual or potential conflict of interest exists at the time of submission. Conflicts of interest include any relationship or matter that might place the recipient, including their employees and sub-recipients, in a position of conflict, real or apparent, between their responsibilities under the award and any other outside interests. Conflicts of interest include direct or indirect financial interests; close personal relationships; positions of trust in outside organizations; consideration of future employment arrangements with a different organization; and decision-making authority related to the proposed project.

Conflicts of interest are those circumstances real or perceived that would cause a reasonable person with knowledge of the relevant facts to question the impartiality of the applicant, or the applicant's employees or sub-recipients, in matters pertaining to the proposed project. Applicants may not solicit, obtain, or use non-public information that may be of competitive interest to the entity, including information regarding the funding opportunity, evaluation, award, or administration of an award to the entity. Applicants must notify the Service in writing in their application if any employees, including sub-recipient and contractor personnel, are related to, married to, or have a close personal relationship with any Federal employee in the Federal program receiving this application or who otherwise may be involved in the review and selection of their proposal. The term employee means any individual to be engaged in the performance of work pursuant to the Federal award application. Applicants may not have a former Federal employee as a key project official, or in any other substantial role for the proposed project, whose participation puts them out of compliance with the legal authorities addressing post-Government employment restrictions. See the U.S. Office of Government Ethics website at <https://oge.gov/> for more information on these restrictions. The Service will examine each conflict of interest disclosure based on its particular facts and the nature of the proposed project and will determine whether a significant potential conflict exists. If it does, the Service may work with the applicant determine an appropriate resolution. Failure to disclose and resolve conflicts of interest in a manner that satisfies the Service may result in the rejection or disqualification of the application.

9. Single Audit Reporting Statement

All U.S. states, local governments, federally recognized Indian tribal governments, and non-profit organizations expending \$750,000 USD or more in Federal award funds in the applicant's fiscal year must submit a Single Audit report for that year through the [Federal Audit Clearinghouse's Internet Data Entry System](#). U.S. state, local government, federally recognized Indian tribal government, and non-profit applicants must state if your organization was or was not required to submit a Single Audit report for the most recently closed fiscal year. If your organization was required to submit a Single Audit report for the most recently closed fiscal year, provide the EIN associated with that report and state if it is available through the [Federal Audit Clearinghouse](#) website.

10. Certification Regarding Lobbying

Applicants requesting more than \$100,000 in Federal funding must certify to the statements in [43 CFR Part 18, Appendix A-Certification Regarding Lobbying](#). If this application requests more than \$100,000 in Federal funds, the Authorized Official's signature on the appropriate [SF-424, Application for Federal Assistance](#) form also represents the entity's certification of the statements in 43 CFR Part 18, Appendix A.

11. Disclosure of Lobbying Activities

Applicants and recipients must not use any federally appropriated funds (annually appropriated or continuing appropriations) or matching funds under a Federal award to pay any person for lobbying in connection with the award. Lobbying is influencing or attempting to influence an officer or employee of any U.S. agency, a Member of the U.S. Congress, an officer or employee of the U.S. Congress, or an employee of a Member of the U.S. Congress connection with the award. Applicants and recipients must complete and submit the [SF-LLL, Disclosure of Lobbying Activities](#) if the Federal share of the proposal or award is more than \$100,000 and the applicant or recipient has made or has agreed to make any payment using non-appropriated funds for

lobbying in connection with the application or award. The SF-LLL form is available on the “Packages” tab of this Funding Opportunity on Grants.gov. [See 43 CFR, Subpart 18.100](#) for more information on when additional submission of this form is required.

12. Overlap or Duplication of Effort Statement

Applicants must provide a statement indicating if there is any overlap between this Federal application and any other Federal application, or funded project, in regards to activities, costs, or time commitment of key personnel. If no such overlap or duplication exists, state, *“There are no overlaps or duplication between this application and any of our other Federal applications or funded projects, including in regards to activities, costs, or time commitment of key personnel”*. If any such overlap exists, provide a complete description of overlaps or duplications between this proposal and any other federally funded project or application in regards to activities, costs, and time commitment of key personnel, as applicable. Provide a copy of any overlapping or duplicative proposal submitted to any other potential funding entity and identify when that proposal was submitted, to whom (entity name and program), and when you anticipate being notified of their funding decision. When overlap exists, your statement must end with *“We understand that if at any time we receive funding from another source that is duplicative of the funding we are requesting from the U.S. Fish and Wildlife Service in this application, we will immediately notify the U.S. Fish and Wildlife Service point of contact identified in this Funding Opportunity in writing.”*

13. APPLICATION CHECKLIST

- ☐ **SF-424, Application for Federal Assistance or Application for Federal Assistance-Individual**
- ☐ **SF-424B or D, Assurances**
- ☐ **Project Narrative**
- ☐ **SF-424A or C, Budget Information**
- ☐ **Budget Narrative**
- ☐ **Indirect Cost Statement and related documentation (when applicable)**
- ☐ **Conflict of Interest Disclosure (when applicable)**
- ☐ **Single Audit Reporting Statement (when applicable)**
- ☐ **SF-LLL, Disclosure of Lobbying Activities (when applicable)**
- ☐ **Overlap or Duplication of Effort Statement**

Failure to provide complete information may cause delays, postponement, or rejection of the application.

V. Submission Requirements

A. Unique Entity Identifier and System for Award Management (SAM.gov) Registration

These requirements do not apply to any individual applying for funds as a private citizen or any entity with an exception approved by the Federal awarding agency under [2 CFR 25.110\(d\)](#). All other applicants are required to obtain a Data Universal Numbering System (DUNS) number from Dun & Bradstreet and provide that number in the application; complete SAM.gov registration before submitting an application; and continue to maintain an active SAM.gov registration with current information at all times when the entity has an active Federal award or application under

consideration. **There is NO COST to register with Dun & Bradstreet or SAM.gov.** There are third-party vendors who will charge a fee in exchange for registering entities with Dun & Bradstreet and SAM.gov; **please be aware you can register and request help for free.**

1. Obtain a DUNS Number

Request a DUNS Number through the [Dun & Bradstreet website](http://fedgov.dnb.com/webform). The official website address is <http://fedgov.dnb.com/webform>. For technical difficulties, send an email to the [D&B SAM Help Desk](mailto:SAMHelp@dnb.com). Please ensure that you are able to receive emails from SAMHelp@dnb.com. The [Grants.gov "Obtain a DUNS Number" webpage](#) also provides detailed instructions. Once assigned a DUNS number, your organization must maintain up-to-date information with Dun & Bradstreet. Applicants must enter their DUNS number in the "Organizational DUNS" field on the [SF-424, Application for Federal Assistance](#) form.

2. Register with SAM

Register on the [SAM.gov website](http://www.sam.gov). The official website address is <http://www.sam.gov>. The "Help" tab on the website contains User Guides and other information to assist you with registration. The [Grants.gov Register with SAM" webpage](#) also provides detailed instructions. You can also contact the supporting [Federal Service Desk](#) for help registering in SAM. Once registered in SAM, entities must renew and revalidate their SAM registration at least once every 12 months from the date previously registered. Entities are strongly encouraged to revalidate their registration as often as needed to ensure their information is up to date and reflects changes that may have been to the entity's DUNS or IRS information. Foreign entities who want to receive payment directly to a U.S. bank account must enter and maintain valid, current banking information in SAM.

B. Submission Dates and Times

Opens on XX/XX/2019, closes 5 days later

C. Intergovernmental Review

Prior to application submission, U.S. state and local government applicants should visit the [OMB Office of Federal Financial Management website](#) and view the "State Point of Contact (SPOC) List" to determine whether their application is subject to the state intergovernmental review process under Executive Order (E.O.) 12372 "Intergovernmental Review of Federal Programs." States not on the list do not participate in the intergovernmental review process, and therefore do not have a SPOC. If you are located within a State that does not have a SPOC, you may send application materials directly to a Federal awarding agency. If your state is on the list, contact the designated entity for more information on the state's prior review requirements for Federal assistance applications.

D. Funding Restrictions

None

E. Submission Instructions

This program encourages applicants to submit their applications online through Grants.gov. Follow these steps to apply through Grants.gov.

1. Register with Grants.gov

Applicants must first [register an account with Grants.gov](#) and complete all steps of the registration process before they can apply through Grants.gov. Grants.gov registration requires the entity to create an account, create an account profile, and establish authorized profile roles, including the applicant's authorized representative. Registration can take three to five business days or longer, if you do not complete the required steps in a timely manner.

2. Grants.gov Workspace Application

Grants.gov applicants apply online using Workspace. Workspace is a shared, online environment where members of a grant team may simultaneously access and edit different webforms within an application. For each funding opportunity announcement, you can create individual instances of a workspace. To apply, the applicant will [create, complete, and submit a Workspace application package for this Funding Opportunity directly on Grants.gov](#). Grants.gov recommends submitting your application package at least 24-48 hours prior to the close date to allow time to correct any potential technical issues that may disrupt the application submission. When attaching files to the Grants.gov application, please do not assign file names longer than 20 characters, including spaces. File names longer than 20 characters will prevent your application received by Grants.gov from automatically downloading into the Service's financial assistance management system. Applicants using slow internet, such as dial-up connections, should be aware that the transmission of the application to Grants.gov takes time. Grants.gov sends either an error message or a "successfully received" message by email to the applicant's authorized representative once the transmission is complete. Please do not end the transmission process before receiving that message.

3. Proof of Timely Submission

Grants.gov automatically generates an electronic date and time stamp in the system upon application receipt. Grants.gov sends an acknowledgement of receipt with the date and time stamp and a unique Grants.gov application tracking number to the authorized representative by email. This email from Grants.gov serves as your proof of timely submission.

VI. Application Review Information

A. Criteria

The successful recipient must have extensive experience in the fields of hydroacoustics, machine learning and probabilistic modeling, sediment transport and morphodynamics, and the development of computational algorithms and software for benthic imaging using sonar and video, and substrate classification. The ability to synthesize information across these diverse disciplines will be critical to the successful completion of this project.

B. Review and Selection Process

During the planning process for restoration The Open Ocean Restoration Plan 1, the TIG's initial screening process removed project ideas that were already funded, required to meet other legal obligations, duplicated other project ideas, or provided insufficient information for evaluation. The Oil Pollution Act (OPA) regulations allow trustees to establish additional incident-specific evaluation and selection factors to use in developing a reasonable range of alternatives and restoration projects (15 CFR §990.54). The DWH Trustees determined that preferred alternatives and subsequent restoration plans and projects must also be consistent with the Trustee programmatic restoration goals outlined in Section 5.3.1 of the Final PDARP/PEIS, Programmatic Trustee Goals, and with the Restoration Types described in Section 5.5, Alternative A: Comprehensive Integrated Ecosystem Restoration (Preferred Alternative).

Initially, the Open Ocean TIG screened project ideas based on the extent to which the project idea met the goals of one or more Restoration Types identified for the Open Ocean Restoration Area (Birds, Sturgeon, Sea Turtles, Marine Mammals, Fish and Water Column Invertebrates, and Mesophotic and Deep Benthic Communities). Project ideas needed to be consistent with at least one of these Restoration Types in order to be considered beyond this stage of the screening process. As this first Restoration Plan was limited to two restoration types (Birds and Sturgeon), project objectives needed to be consistent with at least one of these two Restoration Types. Trustee goals for the Sturgeon Restoration Type include: 1) Restoring and protecting Gulf sturgeon through improved access to spawning areas; and 2) Increasing the reproductive success of Gulf sturgeon.

For this project to be successful, the Service requires a partner with extensive knowledge in the fields of hydroacoustics, machine learning and probabilistic modeling, sediment transport and morphodynamics, and the development of computational algorithms and software for benthic imaging using sonar and video, and substrate classification. Given the diverse nature of these disciplines and the prominent place Dr. Buscombe holds in these fields, it is unlikely that another entity could provide the same level expertise.

Prior to award, the Service will review any applicant statement regarding potential overlap or duplication between the project to be funded and any other funded or proposed project in terms of activities, funding, or time commitment of key personnel. Depending on the circumstances, the Service may request modification to the application, other pending applications, or an active award, as needed to eliminate any duplication of effort, or the Service may choose not to fund the selected project. The work conducted as part of this project will provide information necessary to improve access to spawning areas and increase reproductive success.

The Service may not make a Federal award to an applicant that has not completed the SAM.gov registration. If an applicant selected for funding has not completed their SAM.gov registration by the time the Service is ready to make an award, the program may determine that the applicant is not qualified to receive an award. The program can use that determination as a basis for making an award to another applicant.

Prior to award, the Service will evaluate the risk posed by applicants as required in [2 CFR 200.205](#). Service programs document applicant risk evaluations using the Service's "[Financial Assistance Recipient Risk Assessment](#)" form. Prior to approving awards for Federal funding in excess of the simplified acquisition threshold (currently \$250,000), the Service is required to review and consider any information about or from the applicant found in the [Federal Awardee Performance and Integrity Information System](#). The Service will consider this information when completing the risk review. The Service uses the results of the risk evaluation to establish monitoring plans, recipient reporting frequency requirements, and to determine if one or more of the specific award conditions in [2 CFR 200.207](#) should be applied the award.

VII. Federal Award Administration

A. Federal Award Notices

Awards are based on the application submitted to and approved by the Service and are subject to the terms and conditions incorporated into the Notice of Award either by direct citation or by reference to the following: Federal regulations; program legislation or regulation; and special award terms and conditions. Recipient acceptance of a Federal award from the Service carries with it the responsibility to be aware of and comply with all terms and conditions applicable to the award.

Recipients indicate their acceptance of the Federal award by starting work, drawing down funds, or accepting the award via electronic means.

B. Award Terms and Conditions

See the Service's ["Financial Assistance Award Terms and Conditions"](#) for the administrative and national policy requirements applicable to Service awards. The "Department of the Interior (DOI) Award Provisions" attached to this Funding Opportunity also apply to Service awards (Attachment A).

C. Payments

Domestic recipients are required to register in and receive payment through the U.S. Treasury's Automated Standard Application for Payments (ASAP), unless approved for a waiver by the Service program. Foreign recipients receiving funds to a final destination bank outside the U.S. are required to receive payment through the U.S. Treasury's International Treasury Services (ITS) System. Foreign recipients receiving funds to a final destination bank in the U.S. are required to enter and maintain current banking details in their SAM.gov entity profile and receive payment through the Automated Clearing House network by electronic funds transfer (EFT). The Service will include recipient-specific instructions on how to request payment, including identification of any additional information required and where to submit payment requests, as applicable, in all Notices of Award.

D. Reporting Requirements

The Service will include recipient-specific reporting requirements, including the required reports, reporting frequency, and report due dates in all Notices of Award, as applicable.

1. Financial Reports

All recipients must use the [SF-425, Federal Financial Report](#) form for financial reporting. At a minimum, all recipients must submit a **final** financial report. Final reports are due no later than 90 calendar days after the award period of performance end date or termination date. For awards with periods of performance longer than 12 months, recipients are required to submit **interim** financial reports on the frequency established in the Notice of Award. See Service policy [516 FW 1, Monitoring Financial and Performance Reporting for Financial Assistance](#) for more information.

2. Performance Reports

Performance reports must contain a comparison of actual accomplishments with the established goals and objectives of the award; a description of reasons why established goals were not met, if appropriate; and any other pertinent information relevant to the project results. At a minimum, all recipients must submit a **final** performance report. Final reports are due no later than 90 calendar days after the award period of performance end date or termination date. For awards with periods of performance longer than 12 months, recipients are required to submit **interim** financial reports on the frequency established in the Notice of Award. See Service policy [516 FW 1, Monitoring Financial and Performance Reporting for Financial Assistance](#) for more information.

3. Significant Developments Reports

Events may occur between the scheduled performance reporting dates that have significant impact upon the supported activity. In such cases, recipients are required to notify the Service in writing as soon as the recipient becomes aware of any problems, delays, or adverse

conditions that will materially impair the ability to meet the objective of the Federal award. This disclosure must include a statement of any corrective action(s) taken or contemplated, and any assistance needed to resolve the situation. The recipient should also notify the Service in writing of any favorable developments that enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more or different beneficial results than originally planned.

4. Real Property Reports

Recipients and sub-recipients are required to submit status reports on the status of real property in which the Federal government retains an interest. The required frequency of these reports will depend on the anticipated length of the Federal interest period. The Service will include recipient-specific real property reporting requirements, including the required data elements, reporting frequency, and report due dates, as applicable.

5. Conflict of Interest Disclosures

Recipients must notify the Service immediately in writing of any conflict of interest that arise during the life of their Federal award, including those reported to them by any sub-recipient under the award. Recipients must notify the Service in writing if any employees, including sub-recipient and contractor personnel, are related to, married to, or have a close personal relationship with any Federal employee in the Federal funding program or who otherwise may have been involved in the review and selection of the award. The term employee means any individual engaged in the performance of work pursuant to the Federal award. Recipients may not have a former Federal employee as a key project official, or in any other substantial role related to their award, whose participation put them out of compliance with the legal authorities addressing post-Government employment restrictions. See the U.S. Office of Government Ethics website at <https://oge.gov/> for more information on these restrictions. The Service will examine each conflict of interest disclosure based on its particular facts and the nature of the project and will determine if a significant potential conflict exists. If it does, the Service will work with the recipient to determine an appropriate resolution. Failure to disclose and resolve conflicts of interest in a manner that satisfies the Service may result in any of the remedies described in [2 CFR 200.338 Remedies for Noncompliance](#), including termination of the award.

6. Other Mandatory Disclosures

The non-Federal entity or applicant for a Federal award must disclose, in a timely manner, in writing to the Federal awarding agency or pass-through entity all violations of Federal criminal law involving fraud, bribery, or gratuity violations potentially affecting the Federal award. Non-Federal entities that receive a Federal award including the term and condition outlined in [2 CFR 200, Appendix XII—Award Term and Condition for Recipient Integrity and Performance Matters](#) are required to report certain civil, criminal, or administrative proceedings to SAM. Failure to make required disclosures can result in any of the remedies described in [2 CFR 200.338 Remedies for Noncompliance](#), including suspension or debarment.

VIII. Federal Awarding Agency Contact(s)

For questions and/or submissions contact:

Robin Donohue, Restoration Biologist
USFWS, Deepwater Horizon Gulf Restoration Office
341 Greeno Road N., Suite A

Fairhope, Alabama 36532
251-517-8008
robin_donohue@fws.gov

Attachment A: DOI Award Provisions

I. Conflicts of Interest

(a) Applicability.

(1) This section intends to ensure that non-Federal entities and their employees take appropriate steps to avoid conflicts of interest in their responsibilities under or with respect to Federal financial assistance agreements.

(2) In the procurement of supplies, equipment, construction, and services by recipients and by subrecipients, the conflict of interest provisions in 2 CFR 200.318 apply.

(b) Requirements.

(1) Non-Federal entities must avoid prohibited conflicts of interest, including any significant financial interests that could cause a reasonable person to question the recipient's ability to provide impartial, technically sound, and objective performance under or with respect to a Federal financial assistance agreement.

(2) In addition to any other prohibitions that may apply with respect to conflicts of interest, no key official of an actual or proposed recipient or subrecipient, who is substantially involved in the proposal or project, may have been a former Federal employee who, within the last one (1) year, participated personally and substantially in the evaluation, award, or administration of an award with respect to that recipient or subrecipient or in development of the requirement leading to the funding announcement.

(3) No actual or prospective recipient or subrecipient may solicit, obtain, or use non-public information regarding the evaluation, award, or administration of an award to that recipient or subrecipient or the development of a Federal financial assistance opportunity that may be of competitive interest to that recipient or subrecipient.

(c) Notification.

(1) Non-Federal entities, including applicants for financial assistance awards, must disclose in writing any conflict of interest to the DOI awarding agency or pass-through entity in accordance with 2 CFR 200.112, Conflicts of Interest.

(2) Recipients must establish internal controls that include, at a minimum, procedures to identify, disclose, and mitigate or eliminate identified conflicts of interest. The recipient is responsible for notifying the Financial Assistance Officer in writing of any conflicts of interest that may arise during the life of the award, including those that have been reported by subrecipients.

(d) Restrictions on Lobbying. Non-Federal entities are strictly prohibited from using funds under this grant or cooperative agreement for lobbying activities and must provide the required certifications and disclosures pursuant to 43 CFR Part 18 and 31 USC 1352.

(e) Review Procedures. The Financial Assistance Officer will examine each conflict of interest

disclosure on the basis of its particular facts and the nature of the proposed grant or cooperative agreement, and will determine whether a significant potential conflict exists and, if it does, develop an appropriate means for resolving it.

(f) Enforcement. Failure to resolve conflicts of interest in a manner that satisfies the Government may be cause for termination of the award. Failure to make required disclosures may result in any of the remedies described in 2 CFR 200.338, Remedies for Noncompliance, including suspension or debarment (see also 2 CFR Part 180).

II. Data Availability

(a) Applicability. The Department of the Interior is committed to basing its decisions on the best available science and providing the American people with enough information to thoughtfully and substantively evaluate the data, methodology, and analysis used by the Department to inform its decisions.

(b) Use of Data. The regulations at 2 CFR 200.315 apply to data produced under a Federal award, including the provision that the Federal Government has the right to obtain, reproduce, publish, or otherwise use the data produced under a Federal award as well as authorize others to receive, reproduce, publish, or otherwise use such data for Federal purposes.

(c) Availability of Data. The recipient shall make the data produced under this award and any subaward(s) available to the Government for public release, consistent with applicable law, to allow meaningful third party evaluation and reproduction of the following:

- (1) The scientific data relied upon; (2) The analysis relied upon; and
- (3) The methodology, including models, used to gather and analyze data.