

**REQUEST FOR STATEMENTS OF INTEREST  
NUMBER W912HZ-19-SOI-0030  
PROJECT TO BE INITIATED IN 2019**

**CESU: Gulf Coast**

**Project Title: Annual Recruitment and Survival of Juvenile Gulf Sturgeon in the Apalachicola River.**

Responses to this Request for Statements of Interest will be used to identify potential investigators for a project to be funded by the U.S. Army Corps of Engineers - Engineer Research and Development Center (USACE-ERDC) related to a multi-year study on Gulf Sturgeon in the Apalachicola River to assess annual recruitment and survival of juvenile sturgeon. Approximately \$65,000 is expected to be available to support this project during Year I. Additional funding may be available for subsequent fiscal years for a continuation of the effort, providing the potential funding of \$195,000 over a three year period (\$65,000 per year) to the successful Recipient/Awardee.

**Background:**

Research supports year class strength of Gulf Sturgeon can be influenced by annual hydrologic patterns. Randall and Sulak (2007) noted that recruitment in the Suwannee River was highly correlated with high monthly mean flows in September and December. High flows during these months were hypothesized to decrease salinity in estuarine zones therefore providing greater foraging area for young sturgeon near river mouths in December, and reducing periods of low dissolved oxygen in lower river reaches during September. Assessing annual recruitment patterns in juvenile Gulf Sturgeon is critical in terms of promoting overall recovery objectives (USFWS and NMFS 2009) but requires long-term monitoring efforts coupled with quantified estimates of annual abundance of juvenile sturgeon. Within the Apalachicola River system, the U.S. Fish and Wildlife Service Panama City Fish and Wildlife Conservation Office (USFWS Panama City FWCO) has coordinated juvenile Gulf Sturgeon sampling since 2013 using targeted netting to monitor abundance and year class strength in addition to utilizing acoustic telemetry to address movement patterns of juvenile Gulf Sturgeon within the estuary. For this effort, year class abundance has been estimated at Age 1 and cohort abundance has varied from about 50-200 fish per year (Marbury 2016).

In 2016, the USFWS issued a Biological Opinion (BO) regarding the USACE update to the Water Control Manual (WCM) for the ACF (Apalachicola-Chattahoochee-Flint system) and determined those operational actions may adversely affect a number of listed species occurring within the basin, including Gulf Sturgeon. One concern that was highlighted was a reduction in the duration and frequency of floodplain inundation following the updated WCM which could

potentially impact young of year and juvenile Gulf Sturgeon survival and growth. The BO identified three Reasonable and Prudent Measures (RPMs) to minimize impacts of incidental take of the listed species. RPM 2016-3 requires USACE to monitor the level of take associated with the ACF WCM by monitoring the distribution, abundance, survival, growth, and fecundity of the listed mussels and Gulf Sturgeon in the action area.

A primary objective of this project is to use the sampling methodology and analytical approaches outlined by USFWS Panama City FWCO to conduct targeted sampling for juvenile Gulf Sturgeon. These data will be used to address concerns highlighted in the BO issued by USFWS regarding USACE ACF WCM operations at Jim Woodruff Lock and Dam and its potential impact to juvenile sturgeon recruitment. These baseline data will provide insight on the potential influences of USACE ACF Water Control Manual operations as well as annual variability in juvenile Gulf Sturgeon growth and recruitment.

### **Brief Description of Anticipated Work:**

We propose that juvenile Gulf Sturgeon sampling occur periodically during seasonal windows that maximize catch using anchored monofilament gill nets and targeted sampling conducted in the lower reaches of the Apalachicola River including sections of the Brothers River where netting has been successful in the past (Marbury 2016). Nets should consist of three, 50m panels of 7.6-cm, 8.9-cm, and 10.2-cm monofilament mesh (stretch measure) and effort should include the deployment of six to 12 nets daily during the overall sampling period. Captured sturgeon will be weighed (nearest 0.1 kg) and measured (FL, TL cm), and assessed for previous capture by the presence of external tags and/or internal passive integrated transponder (PIT) tags. New captures will be tagged with T-bar and PIT tags. A genetic tissue sample (e.g., fin clip) will be taken from each processed sturgeon and handled according to Dugo et al. (2004). A section of secondary pectoral fin ray will be removed from near the basal articulating process of the fin and retained for subsequent aging assessments (Baremore and Rosati 2013, 2014; Andres et al. 2018). A subsample of processed fish will be equipped with internal acoustic telemetry tags following standard procedures (USFWS 1993; Kahn & Mohead 2010). Following recovery, fish will be released downstream of the original capture location. In addition, the awardee will construct, deploy, maintain, download and retrieve an acoustic telemetry array within the lower portion of the Apalachicola River and estuary. Final number of receivers and locations will be decided following consultation with ERDC before the contract has been awarded. The array will be deployed prior to the netting/tagging phase in 2019, downloaded quarterly and maintained in position until the completion of the project.

Identified project tasks are:

1. Quantify the recruitment of Age-1 Gulf Sturgeon in the Apalachicola River using a standardized mark-recapture survey. The awardee will evaluate age and size structure of processed Gulf Sturgeon based on annual monitoring efforts to address recruitment dynamics (Peterson et al. 2000; Neumann and Allen 2007; Schueller and Peterson 2010; Paukert and Spurgeon 2017). These data will assist in evaluating environmental and WCM operational influences on Age-1 cohorts and determine if any variations in cohort abundance are in response to existing USACE project operations.

2. Quantify overwinter survival of Age-1 Gulf Sturgeon in Apalachicola Bay. Telemetry tagged fish will be monitored by passively tracking individuals through a deployed acoustic array to evaluate overall movement patterns within the lower river and associated estuary. Understanding the movement of these fish within the estuarine environment and their association with specific habitat and/or zones (e.g., upper, middle, lower bay; nearshore, open water) will provide important information to address the concern on whether WCM operations influences estuarine invertebrate production which is critical to juvenile sturgeon growth and survival, particularly the Age-1 cohort.

Successful applicants should have expert knowledge of Gulf Sturgeon life history and extensive familiarity and experience with netting and handling of endangered fish species. Netting within riverine habitats and tagging will follow the general guidelines recommended by the USFWS and NOAA. The candidates should have sufficient experience with telemetry-based projects and a record that demonstrates research experience with collecting and analyzing these types of data. In addition, the candidates will secure all necessary permits (state and/or federal) required for conducting the proposed research. 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.

Deliverables will include written products that address the following:

1. Age-1 recruitment estimates for the Apalachicola River Gulf Sturgeon population during the overall project period.
2. An analysis of the effects of flow on Gulf Sturgeon recruitment, based on this study and data collected by previous studies in the river.
3. Timing and duration of juvenile Gulf Sturgeon occurrences within the Apalachicola acoustic telemetry array.
4. Estimates of juvenile Gulf Sturgeon overwinter survival rates.

### **Government Participation:**

The USACE will provide acoustic telemetry tags and participate in study site selection, design, logistics and work plan development. USACE will participate in field data collection efforts as appropriate, 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.

### **Public Benefits:**

Success in these studies will benefit the public through development of guidance and best management practices which will promote improved recovery guidelines for the endangered Gulf Sturgeon. These guidelines will provide advances for successful management actions that will result in a reduction in future costs for recovery actions thus providing cost saving measures for the public. Successful integration of these actions will maintain, improve and eventually expand critical habitat features necessary for recovery of this federally protected species and ultimately respond in increases in population levels across the species range.

### **Materials Requested for Statement of Interest/Qualifications:**

Please provide the following via e-mail attachment to:  
Deberay.R.Carmichael@usace.army.mil

1. Name, Organization and Contact Information
2. Brief Statement of Qualifications (including):
  - a. Biographical Sketch,
  - b. Relevant past projects and clients with brief descriptions of these projects,
  - c. Staff, faculty or students available to work on this project and their areas of expertise,
  - d. 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.).
3. Pre-proposal with objectives, methods, deliverables. A proposed budget is optional but will be required for the full proposal.

**Review of Statements Received:** Based on a review of the Statements of Interest received, an investigator or investigators will be invited 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.

**Please send responses or direct questions to:**

Deberay R. Carmichael  
U.S. Army Engineer Research and Development Center (ERDC)  
ERDC Contracting Office (ECO)  
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**Timeline for Review of Statements of Interest:** Review of Statements of Interest will begin after the SOI has been posted on the CESU website for 10 working days.

**Literature Cited:**

Andres, M.J., W.T. Slack, M.S. Peterson, K.D. Kimmel, B.R. Lewis and P.O. Grammer. 2018. Growth estimation of western population segment Gulf Sturgeon using length-at-age and mark-recapture data. *Transactions of the American Fisheries Society* 147(1): 139-150. DOI: 10.1002/tafs.10007

Baremore, I.E. and J.D. Rosati. 2013. Gulf sturgeon standardized abundance and mortality 391 study: Year two report. NOAA Technical Memorandum NMFS-SEFSC-642, 25p.

Baremore, I.E. and J.D. Rosati. 2014. A validated, minimally deleterious method for aging sturgeon. *Fishery Bulletin* 112(4):274-282.

Dugo, M.A., B.R. Kreiser, S.T. Ross, W.T. Slack, R.J. Heise and B.R. Bowen. 2004. Fine-scale genetic structure of Gulf sturgeon, emphasizing the Pascagoula River drainage, Mississippi, USA, with identification of non-natal riverine habitat use; as inferred from microsatellite markers. *Journal of Applied Ichthyology* 20(4):243-251.

Kahn, J. and M. Mohead. 2010. A protocol for use of shortnose, Atlantic, Gulf, and Green Sturgeons. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-OPR-45, March 2010. 62 pp.

Marbury, J.A. 2016. Assessing Gulf Sturgeon recruitment in the Apalachicola-Chattahoochee-Flint River basin. Unpublished Master's thesis, The University of Georgia, Athens, GA. 105 p.

Neumann, R.M. and M.S. Allen. 2007. Size structure. Pages 375-421 in C.S. Guy and M.L. Brown, editors. Analysis and interpretation of freshwater fisheries data. American Fisheries Society, Bethesda, MD.

Paukert, C.P. and J.J. Spurgeon. 2017. Age structure. Pages 221-232 in M.C. Quist and D.A. Isermann, editors. Age and growth of fishes: principles and techniques. American Fisheries Society, Bethesda, MD.

Peterson, D.L., M.B. Bain, and N. Haley. 2000. Evidence of declining recruitment of Atlantic Sturgeon in the Hudson River. North American Journal of Fisheries Management 20:231–238.

Randall, M.T. and K.J. Sulak. 2007. Relationship between recruitment of Gulf Sturgeon and water flow in the Suwannee River, Florida. Pages 69-83 in J. Munro, D. Hatin, J. E. Hightower, K. McKown, K.J. Sulak, A.W. Kahnle and F. Caron, editors. Anadromous sturgeons: habitats, threats, and management. American Fisheries Society, Symposium 56, Bethesda, MD.

Schueller, P. and D.L. Peterson. 2010. Abundance and recruitment of juvenile Atlantic Sturgeon in the Altamaha River, Georgia. Transactions of the American Fisheries Society 139:1526-1535.

United States Fish and Wildlife Service (USFWS). 1993. Standard operating procedures for Sturgeon. Panama City, FL: USFWS, Panama City Field Office. 24 pp.

United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). 2009. Gulf Sturgeon, *Acipenser oxyrinchus desotoi*, 5-year review: Summary and evaluation. 49 pp.