

July 23, 2024

Via Electronic and Certified Mail

U.S. Army Corps of Engineers Lt. General Scott A Spellmon, Chief 441 G Street, NW Washington, DC 20314-1000 S.Spellmon@usace.army.mil

Deb Haaland, Secretary
Department of Interior
1849 C Street, NW
Washington, DC 20240-0001
exsec_exsec@ios.doi.gov

Martha Williams, Director U.S. Fish and Wildlife Service 1849 C Street, NW Washington, DC 20240 Martha_Williams@fws.gov Gina Raimondo, Secretary U.S. Department of Commerce 1401 Constitution Ave, NW Washington, DC 20230 TheSec@doc.gov

Samuel D. Rauch III, Deputy Assistant Administrator for Regulatory Programs NOAA Fisheries Directorate 1315 East-West Highway, 14th Floor Silver Spring, MD 20910 samuel.rauch@noaa.gov

Col. Jeremy J. Chapman, District Commander U.S. Army Corps of Engineers, Mobile District P.O. Box 2288

Mobile, AL 36628-0001

CESAM-RD@sam.usace.army.mil

Re: Sixty-day Notice of Intent to Sue for Violations of the Endangered Species Act

Dear Mesdames and Messrs.:

The Center for Biological Diversity (the "Center") and Mobile Baykeeper provide this 60-day notice of intent to sue the U.S. Army Corps of Engineers ("the Corps") for violating the Endangered Species Act, 16 U.S.C. §§ 1531-1544 ("ESA") by failing to fulfill its duty to reinitiate consultation on the impacts of the Mobile Harbor Navigation Project and Upper Bay Channel Widener on the Gulf Sturgeon, which is federally listed as threatened. The Center and Mobile Baykeeper provide this letter in accordance with the 60-day notice requirement of the ESA's citizen suit provision.

The Center is a national non-profit conservation organization with more than 1.7 million members and online activists who are dedicated to the protection of wild places and endangered species, including the Gulf Sturgeon.

-

¹ 16 U.S.C. § 1536(a)(2).

² *Id.* § 1540(g)(1)(A).

Mobile Baykeeper is a non-profit organization based in Mobile, Alabama dedicated to defending and reviving the health of the waters of Coastal Alabama. Mobile Baykeeper is working towards a future when our communities do not have to question whether locally caught fish are safe to eat or whether our waters are safe to swim in, where our oyster and seagrass populations recover, and where our community takes responsibility for these things.

As more fully explained below, the Corps has an obligation to reinitiate endangered species consultation with the U.S. Fish and Wildlife Service ("FWS") and the National Marine Fisheries Service ("NMFS") because a recent study by Greenheck, *et al.* published in November 2023³ contains new information that reveals effects of the Mobile Harbor Navigation Project on Gulf Sturgeon, a federally threatened species, in a manner and to an extent not previously considered. Additionally, the Corps is required to reinitiate consultation because the Upper Bay Channel Widener planned for Phase 6 has modified the Mobile Harbor Navigation Project in a manner that causes effects to Gulf Sturgeon and their critical habitat that were not considered in a prior biological opinion or written concurrence.

I. The Duty to Consult under the ESA

The ESA was enacted to prevent the extinction of fish, wildlife, and plant species. The ESA is the "most comprehensive legislation for the preservation of endangered species ever enacted by any nation." Congress enacted the ESA "to halt and reverse the trend towards species extinction, whatever the cost." Thus, the ESA requires federal agencies "to afford first priority to ... saving endangered species."

The ESA requires each federal agency to "insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary ... to be critical." The ESA requires an "action agency" (here, the Corps) to consult with the "consultation agency" (either FWS or NMFS⁸) if the agency's action "may affect" a listed species, in order to ensure that the action does not jeopardize the continued existence of the species or adversely modify or destroy its critical habitat. The threshold for triggering formal consultation is "very low" and "any possible effect ... triggers formal consultation requirements." Additionally, FWS or NMFS

³ Elizabeth M. Greenheck *et al.*, *Gulf Sturgeon* (Acipenser oxyrinchus desotoi) *in the Mobile Bay Estuary*, *Alabama: Documentation of Use Outside of Designated Critical Habitat*, 39(6) J. Coastal Res. 1021–1043 (2023).

⁴ Tenn. Valley Auth. v. Hill, 437 U.S. 153, 180 (1978).

⁵ *Id.* at 184.

⁶ *Id.* at 188.

⁷ 16 U.S.C. § 1536(a)(2).

⁸ FWS and NMFS share responsibility for administering the ESA. 50 C.F.R. § 402.01(b).

⁹ 50 C.F.R. § 402.14(a); Turtle Island Restoration Network v. Nat'l Marine Fisheries Serv., 340 F.3d 969, 974 (9th Cir. 2003).

¹⁰ 51 Fed. Reg. 19926, 19949 (June 3, 1986); see also Ctr. for Biological Diversity v. U.S. Army Corps of Eng'rs, No. 19-cv-14199, 2020 U.S. Dist. LEXIS 252820, at *5 (S.D. Fla. Aug. 28, 2020).

may request that a federal agency enter into consultation if it identifies any action of that agency that may affect listed species or critical habitat and for which there has been no consultation.¹¹

After the initiation of consultation, Section 7(d) of the ESA prohibits an action agency from making "any irreversible or irretrievable commitment of resources ... which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures" until consultation is complete.¹²

A federal agency's obligation to consult with FWS and NMFS is ongoing. Under the applicable regulations, certain triggers require an action agency to re-engage with FWS or NMFS. Reinitiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

- (1) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or
- (4) If a new species is listed or critical habitat designated that may be affected by the identified action.¹³

If an agency fails to fulfill its consultation duties over an action that may affect listed species, the agency is subject to liability under Section 9 of the ESA, which makes unlawful any action that results in the "take" of listed species. ¹⁴ "Take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct." Persons subject to the prohibition on take include individuals and corporations, as well as "any officer, employee, agent, department, or instrumentality of the Federal Government... [or] any State." ¹⁶

Here, the Corps' action on the Mobile Harbor Navigation Project is subject to the ESA. The Corps has an obligation to formally consult with FWS and NWFS because the project and changes to the project affect listed species, and the Corps must ensure that the project does not jeopardize the continued existence of these species or adversely modify or destroy their critical habitats.¹⁷ Moreover, because the Corps retains ongoing discretionary involvement and control

¹² 16 U.S.C. § 1536(d).

¹¹ 50 C.F.R. § 402.14(a).

¹³ 50 C.F.R. § 402.16(a).

¹⁴ 16 U.S.C. § 1538(a)(1)(B).

¹⁵ *Id.* § 1532(19).

¹⁶ *Id.* § 1532(13).

¹⁷ 50 C.F.R. § 402.14(a); Turtle Island Restoration Network, 340 F.3d at 974.

over the Mobile Harbor Navigation Project, it must re-initiate consultation if any of the four statutory triggers are met.

II. The Mobile Harbor Navigation Project and Consultation History

The Mobile Harbor Navigation Project is a project to deepen and widen the shipping channel in Mobile Bay to increase access to the port of Mobile, Alabama for more and larger vessels. This multiphase project is being directed by the Corps. The Alabama State Port Authority ("ASPA") is the non-federal sponsor of the project.

ASPA requested that the Corps initiate a study to evaluate widening and deepening Mobile Harbor as authorized under Section 201 of the Water Resources Development Act ("WRDA") of 1986 (Public Law ("PL") 99-662, Ninety-ninth Congress, Second Session), which was approved on November 17, 1986, and subsequently amended by Section 302 of the WRDA of 1996. 18 Accordingly, the Corps undertook an investigation into modifying the federal navigation system at Mobile Harbor, Alabama. 19 Its findings were presented in a Mobile Harbor General Reevaluation Report with Supplemental Environmental Impact Statement²⁰ ("GRR/SEIS") that it finalized in May 2019. The GRR/SEIS recommended deepening and widening the shipping channel in Mobile Bay.

Originally, a Record of Decision for the project was signed on September 6, 2019. That Record of Decision reported that the Corps had engaged in the following process with respect to the project's effects on endangered species:

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (FWS) concurred with the USACE's may affect but not likely to adversely affect determination on 21 December 2018. Newly listed species, Giant manta ray and Bryde's whale, would not occur in or around the project area given the lack of suitable habitat. Proposed channel improvements are within the congressionally authorized project dimensions; therefore, the USACE, Mobile District will implement terms and conditions for sea turtles and Gulf Sturgeon identified in NMFS – Protected Resources Division's (PRD) Gulf Regional Biological Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining Areas Using Hopper Dredges by COE Galveston, New Orleans, Mobile, and Jacksonville Districts (Consultation Number F/SER/2000/01287) (GRBO) dated November 19, 2003 (amended in 2005 and 2007). These protective measures will be utilized if a hydraulic hopper dredge constructs the improvement features or performs routine future maintenance of

¹⁸ Mobile Harbor General Reevaluation Report with Supplemental Environmental Impact Statement ("GRR/SEIS"), p. 5 (May 2019).

¹⁹ *Id*.

²⁰ The SEIS is a supplement to the Environmental Impact Statement (EIS) originally prepared for the Corps' 1980 Report on Mobile Harbor. See Available https://www.sam.usace.army.mil/Portals/46/docs/foia/pages%200001-0285.pdf (Appendix 1). The sediment dredging and placement impacts associated with the widening and deepening activities were not evaluated in the 1980 EIS. GRR/SEIS, at 6-9.

the navigation channel. The project area is outside of designated Gulf Sturgeon critical habitat, and placement of material will not breach the water surface. Thus, based upon this previous coordination, NMFS-PRD concluded these activities will not likely jeopardize the continued existence of these species.²¹

The federal navigation system expansion was planned for implementation in six phases. Phases 1, 3, and 4 are complete, while Phases 2, 5, and 6 are incomplete. After issuance of the Mobile Harbor GRR/SEIS in May 2019, there were design changes to Phase 6 of the Mobile Harbor Navigation Project. Phase 6 was changed to add the Upper Bay Channel Widener, a 100-foot widener along a portion of the Upper Bay Channel across from the McDuffie Coal Terminals. The widener extends approximately 3,500 feet south from the turning basin before it begins to taper back to the normal channel width. The tapered area extends approximately 3,400 feet ending just north of the federally-authorized Arlington Channel. The widener would result in dredging approximately 1.4 million cubic yards (mcy) of additional material.

Due to the changes to Phase 6, the Corps completed a further Supplemental Environmental Assessment ("SEA") in September 2023. The SEA included a statement that the Corps had consulted with FWS and NMFS about the Mobile Harbor Navigation Project's impacts on endangered species. Section 3.6 of the SEA provides, "The most recent Section 7 coordination occurred in 2019 when the USACE, Mobile District sought consultation as part of the Mobile Harbor GRR/SEIS for improvements to the existing Mobile Harbor Federal Navigation Project, Mobile County. By letter dated 21 December 2018, the U.S. Fish and Wildlife Service (USFWS) provided concurrence (2016-CPA-0130) with the USACE effects determination that the project actions may affect but are not likely to adversely affect the identified listed species."²²

The SEA also states that the Corps engaged in endangered species consultation with FWS and NMFS regarding the changes to Phase 6 in 2023. Appendix B to that package contains these agencies' letters from 2023 regarding the Upper Bay Channel Widener modifications to Phase 6.

Specifically, on July 27, 2023, FWS issued a letter concurring with the Corps' determination that Phase 6 "may affect, but is not likely to adversely affect" federally listed species, including the Gulf Sturgeon. The letter stated that the Corps' consultation obligations had been met unless certain triggering events occurred, *including if new information revealed that the action would affect federally protected species in a manner or to an extent not previously considered*. No concurrence letter from NMFS is included in the package, but there is an email dated August 22, 2023 wherein NMFS responds to the public notice for Phase 6 by stating that it does not object to the permit. 25

²¹ Record of Decision – Integrated General Reevaluation Report with Supplemental Environmental Impact Statement, Mobile Harbor, Mobile, Alabama (Sept. 6, 2019) (emphasis added).

²² SEA § 3.6 (emphasis added).

²³ SEA, Appendix B.

²⁴ *Id*.

²⁵ SEA, Appendix C.

These materials demonstrate that, to the extent ESA consultation has occurred, consultation regarding the Mobile Harbor Navigation Project took place in 2018 or 2019, at the latest, and consultation regarding the changes to Phase 6 of the project took place in Summer 2023, at the latest.

III. The Gulf Sturgeon



Photo credit: Ryan Hagerty/USFWS

a. The Gulf Sturgeon is a federally threatened fish that lives in rivers and coastal waters surrounding the Gulf of Mexico.

The Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) is a unique subspecies of the Atlantic Sturgeon that lives in the coastal waters of the Gulf of Mexico from the Suwannee River in Florida to the Pearl River in Louisiana. Gulf Sturgeon spend their winters (from October to April) foraging for food in bays and estuaries. In spring, they migrate upriver to spawn and remain there until fall, when they return to the bays and estuaries to overwinter. Their overwintering grounds are critical to successful spawning: the Sturgeon must fatten up before their migration because they do not feed once upriver. Gulf Sturgeon eat benthic (bottom-dwelling) macroinvertebrates (e.g., polychaetes, callianassids, isopods, and amphipods) that live in bays and estuaries.

²⁶ Greenheck *et al.*, p. 1021.

²⁷ *Id.* at 1022.

²⁸ *Id.* at 1030.

²⁹ *Id*.

³⁰ *Id.* at 1022.

Overfishing, dam construction, and habitat degradation has greatly reduced or eliminated the Gulf Sturgeon throughout much of its range. In 1991, the Gulf Sturgeon was listed as federally threated under the ESA.³¹ NMFS and FWS are jointly responsible for managing and protecting the Gulf Sturgeon.³²

When a species like the Gulf Sturgeon is listed as threatened, federal agencies have an obligation to protect its critical habitat.³³ In 2003, all seven rivers where spawning populations of Gulf Sturgeon remained, and all of the marine and estuarine environments adjacent to them, were protected as critical habitat – with one exception.³⁴ The Mobile River system and Mobile Bay were not included in the critical habitat designation because of a lack of data indicating an extant spawning population at the time of listing.³⁵ This resulted in a gap of critical habitat coverage for the Gulf Sturgeon at the very center of its range.³⁶

b. In November 2023, a study was published that documented the importance of Mobile Bay to Gulf Sturgeon for the first time.

In November 2023, Greenheck *et al.* published *Gulf Sturgeon* (Acipenser oxyrinchus desotoi) *in the Mobile Bay Estuary, Alabama: Documentation of Use Outside of Designated Critical Habitat*, 39(6) J. Coastal Res. 1021–1043 (2023). The objective of this study was to document use of habitats outside of Gulf Sturgeon critical habitat designation in the Mobile Bay Estuary.³⁷

The study detected 210 adult and subadult Gulf Sturgeon utilizing Mobile Bay during the period of 2016 to 2021.³⁸ These sturgeons hailed from natal river systems both east and west of Mobile Bay.³⁹ Each year of the study, Gulf Sturgeon were detected from October to late May or early June.⁴⁰ The study found indications that Gulf Sturgeon use Mobile Bay as foraging habitat, which was supported by the presence of their prey in the estuary system and the fact that half of the sturgeon returned annually between 2 to 6 years of the monitoring period and stayed up to four months.⁴¹ Acoustic detections also supported the use of the ship channel for fish passage into and out of Mobile Bay proper.⁴²

Based on consistent findings of Gulf Sturgeon during the six years of the study period, Greenheck *et al.* concluded that Gulf Sturgeon should at minimum be considered reliable winter

³¹ *Id.* at 1022; 56 Fed. Reg. 49653 (Sept. 30, 1991).

³² https://www.fisheries.noaa.gov/species/gulf-sturgeon (Accessed 5/10/2024).

³³ 16 U.S.C. 1533(a)(3).

³⁴ Greenheck *et al.*, p. 1022; 68 Fed. Reg 13370 (Mar. 19, 2003).

³⁵ Greenheck et al., p. 1022.

³⁶ *Id*.

³⁷ *Id.* at 1023.

³⁸ *Id.* at 1026.

³⁹ *Id*.

⁴⁰ *Id*.

⁴¹ *Id.* at 1030.

⁴² *Id.* at 1032.

residents of the Mobile Bay Estuary and river system.⁴³ Greenheck *et al.* demonstrated that the Mobile Bay Estuary represents important Gulf Sturgeon habitat, which had not been documented previously.⁴⁴ It also concluded that the Mobile Bay Estuary and Mobile River system warrant further investigation as critical habitat.⁴⁵

IV. The Federal Agencies' Duty to Reinitiate Consultation for Mobile Bay

Greenheck *et al.*'s study showed that Gulf Sturgeon consistently and extensively use the Mobile Bay Estuary, ⁴⁶ and it found that both adult and subadult Gulf Sturgeon from five of the seven natal river systems (*i.e.*, the Pearl, Pascagoula, Escambia, Yellow and Blackwater, and Choctawhatchee Rivers) co-occur in overwintering habitats there. ⁴⁷ Prior to Greenheck *et al.*, no studies had investigated the frequency and duration of Gulf Sturgeon presence within the Mobile Bay Estuary and the lower portion of the Mobile River system. ⁴⁸ This new information about the presence of Gulf Sturgeon in Mobile Bay and their seasonal habits reveals that the Mobile Harbor Navigation Project will affect them, both through its remaining phases of construction and through annual maintenance dredging. Moreover, it demonstrates that Mobile Bay is habitat that is in fact essential to the conservation of the Gulf Sturgeon although it has yet to be designated as critical.

Because their presence in Mobile Bay has not previously been documented or studied, neither the project's impacts on Gulf Sturgeon nor the extent of those impacts have been previously considered. Documents published by the Corps suggest that the last ESA Section 7 consultations for the Mobile Harbor Navigation Project and the Upper Bay Channel Widener were completed in 2019 and summer 2023, respectively. The Center and Mobile Baykeeper are informed and believe that no consultation has occurred since publication of the Greenheck *et al.* study in November 2023. Accordingly, the Corps has a duty to reinitiate consultation with NMFS and FWS about the Mobile Harbor Project because the Greenheck *et al.* study reveals new information not previously considered about the impacts on this listed species.⁴⁹

Additionally, the Corps is required to reinitiate consultation because the Upper Bay Channel Widener planned for Phase 6 has modified the Mobile Harbor Navigation Project in a manner that will cause an effect to Gulf Sturgeon and their critical habitat that was not considered in the prior consultations.⁵⁰ The Upper Bay Channel Widener planned for Phase 6 would result in 1.4 mcy of sediment being dredged and placed in Mobile Bay and offshore into the Bar Channel.⁵¹ Maintenance of the Mobile Bay Channel would require dredging of 4 mcy of sediment annually.⁵²

⁴⁵ *Id*.

⁴³ *Id.* at 1033.

⁴⁴ *Id*.

⁴⁶ *Id.* at 1029.

⁴⁷ *Id*.

⁴⁸ Id

⁴⁹ 50 C.F.R. § 402.16 (a)(2); see also 16 U.S.C. § 1536(a)(2).

⁵⁰ 50 C.F.R. § 402.16 (a)(3); see also 16 U.S.C. § 1536(a)(2).

⁵¹ SEA § 2.2, Figure 3.

⁵² SEA § 3.1.2.

Dredging affects Gulf Sturgeon in a number of ways. It disrupts the benthic infauna that serves as the sturgeon's food sources,⁵³ increases saltwater intrusion through the dredged channel,⁵⁴ and alters the hydrography of riverine habitat.⁵⁵ Gulf Sturgeon can also be killed directly by hopper dredge, which was documented at the mouth of Mobile Bay in 2004.⁵⁶

Because the consistent and extensive use of the Mobile Bay Estuary by Gulf Sturgeon had not been documented prior to November 2023, the effects of dredging on these sturgeon has not been considered in a prior biological opinion or written concurrence.⁵⁷ Moreover, based on Greenheck *et al.*'s findings that Gulf Sturgeon from natal river systems both east and west of Mobile Bay use the estuary for overwintering and foraging, any effects on Gulf Sturgeon in Mobile Bay have the potential to impact their survival as a subspecies. The Corps must reinitiate consultation with FWS and NMFS on these effects. The Corps is prohibited from making any irreversible or irretrievable commitment of resources which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures to protect Gulf Sturgeon until consultation is complete.⁵⁸

V. Notice of Intent

The new information about the extensive presence of Gulf Sturgeon and their seasonal habits in Mobile Bay published in Greenheck *et al.*'s November 2023 study, and the modifications made to Phase 6 of the project, trigger the Corps' duty to reinitiate consultation with FWS and NMFS about the effects of the Mobile Harbor Navigation Project and Upper Bay Channel Widener on Gulf Sturgeon.

The Corps' failure to reinitiate consultation with FWS and NMFS on the effects to Gulf Sturgeon and other endangered species and critical habitat violates the substantive and procedural requirements of the ESA. The Corps has failed to consider new information and project modifications that were not considered in its previous consultations; therefore, the Corps is failing to ensure that the Mobile Harbor Navigation Project is not likely to jeopardize the continued existence of endangered species or destroy or adversely modify their critical habitat, in violation of Section 7(a)(2) of the ESA.⁵⁹ Furthermore, because the Corps' approval of the Mobile Harbor Navigation Project and the Upper Bay Channel Widener will result, and has likely already resulted, in the take of Gulf Sturgeon, and the agency has failed to comply with

⁵³ Mark S. Peterson *et al.*, *Macrobenthic prey and physical habitat characteristics in a western Gulf Sturgeon population: differential estuarine habitat use patterns*, 22(2) Endangered Species Res. 159-174 (2013).

⁵⁴ Zhilong Liu *et al.*, *Influence of Wind on Stratification and Mixing in Mobile Bay, Alabama, a Wide Microtidal Estuary*, Authorea Preprints (2022).

⁵⁵ Greenheck et al., p. 1033; Wout M. van Dijk et al., The vulnerability of tidal flats and multi-channel estuaries to dredging and disposal, 4(1) Anthropocene Coasts 36-60 (2021).

⁵⁶ Greenheck *et al.*, p. 1033.

⁵⁷ *Id.* at 1029.

⁵⁸ 16 U.S.C. § 1536(d).

⁵⁹ *Id.* § 1536(a)(2).

ESA Section 7, the agency is also in violation of Section 9 of the ESA for this unauthorized take and Section 7(d) for irreversible or irretrievable commitment of resources.⁶⁰

The Corps is required to reinitiate and complete consultation on the effects of authorizing the Mobile Harbor Navigation Project, including the effects of the Upper Bay Channel Widener and other connected and cumulative effects of actions in the area, because it is likely to adversely affect the Gulf Sturgeon and other endangered species and harm their critical habitats in a manner not previously considered.⁶¹ If the Corps does not undertake the required consultation or contact us to develop a timeline for undertaking consultation within the next 60 days, we intend to file suit to enforce the ESA.

We would like to request a meeting to discuss this matter further. Please contact us at your earliest convenience so that we can find a mutually agreeable time and date.

Sincerely,

/s/ Lindsay E. Reeves
Lindsay E. Reeves
Center for Biological Diversity
3436 Magazine Street, FRNT PMB 539
New Orleans, LA 70130
lreeves@biologicaldiversity.org

/s/ Cade Kistler
Cade Kistler
Mobile Baykeeper
450C Government Street
Mobile, AL 36602
ckistler@mobilebaykeeper.org

cc:

Jeremy LaDart Chief, Planning and Environmental Division U.S. Army Corps of Engineers, Mobile District Post Office Box 2288 Mobile, Alabama 36628-0001

^{60 16} U.S.C. §§ 1538(a), 1536(d).

⁶¹ See 50 C.F.R. §§ 402.14(f)(4); 402.02.

Jeff Powell FWS Deputy Field Supervisor Alabama Ecological Services Office 1208 Main St. Daphne, AL 36526 jeff_powell@fws.gov

NMFS Southeast Regional Office Endangered Species Act Section 7 Consultation 263 13th Avenue South St. Petersburg, FL 33701 nmfs.ser.esa.consultations@noaa.gov

Attachments:

Elizabeth M. Greenheck et al., *Gulf Sturgeon (Acipenser oxyrinchus desotoi) in the Mobile Bay Estuary, Alabama: Documentation of Use Outside of Designated Critical Habitat*, 39(6) J. Coastal Res. 1021–1043 (2023).

Zhilong Liu et al., *Influence of Wind on Stratification and Mixing in Mobile Bay, Alabama, a Wide Microtidal Estuary*, Authorea Preprints (2022).

Mark S. Peterson *et al.*, *Macrobenthic prey and physical habitat characteristics in a western Gulf Sturgeon population: differential estuarine habitat use patterns*, 22(2) Endangered Species Res. 159-174 (2013).

U.S. Fish and Wildlife Service & National Marine Fisheries Service, *Gulf Sturgeon (Acipenser oxyrinchus desotoi) – 5-Year Review: Summary and Evaluation* (2022). USFWS South Atlantic-Gulf and Mississippi Basin Regions, Panama City Fish and Wildlife Conservation Office. NMFS Southeast Region, Protected Resources Division.