



MEMORANDUM FOR: The Record

FROM: Steven Thur, Ph.D.
Acting Director

SUBJECT: Categorical Exclusion for RESTORE Act Science Program Award #NA17NOS4510093, “Gulf-wide assessment of habitat use and habitat-specific production estimates of nekton in turtlegrass (*Thalassia testudinum*)”

NOAA Administrative Order (NAO) 216-6A, Environmental Review Procedures, requires all proposed projects be reviewed with respect to environmental consequences on the human environment. This memorandum addresses the determination that the activities described below for Award #NA17NOS4510093, “Gulf-wide assessment of habitat use and habitat-specific production estimates of nekton in turtlegrass (*Thalassia testudinum*)”, qualifies to be categorically excluded from further National Environmental Policy Act review

Purpose and need

The RESTORE Act Science program is funding a three-year project to University of Southern Mississippi researchers and sub-awardees to examine turtlegrass habitat use by nekton and evaluate the support provided by turtlegrass for blue crabs at sites in Florida, Louisiana, and Texas. They have three objectives: (1) quantify juvenile and adult nekton habitat use of turtlegrass, including assessments of abundance, biodiversity, biomass, age-class and community structure, (2) quantify the relationships between blue crab growth and mortality and turtlegrass structural complexity, and (3) develop habitat- and state-specific production models for blue crabs in turtlegrass.

The following activities are proposed to meet the above project objectives:

- Nekton Community Sampling
 - Epibenthic sled tows
 - Trawl net tows
 - Turtlegrass habitat survey and coring
- Growth and Mortality of Blue Crabs
 - Capture
 - Cage mesocosm experiment
 - Tethering experiment
- Habitat-Specific Production Models



Action Area:

The action area for this project will be turtlegrass bed habitats in Florida, Louisiana, and Texas (Figure 1). Sampling is expected to occur within six general locations throughout the Gulf of Mexico including: Florida (Florida Bay, Florida Big Bend, and Florida Panhandle), Louisiana (the northern extent of the Chandeleur Islands), and Texas (Lower Laguna Madre and the Texas Coastal Bend). Meetings with the Expert Advisory Panel will help determine specific sampling sites within these six general locations after funds for the project are awarded. The researchers will avoid sampling in areas designated as critical habitat for sea turtles. The Florida Bay sampling areas are within the Everglades National Park. Potential protected locations in the Big Bend sampling area include National Wildlife Refuges (Cedar Keys National Wildlife Refuge, Crystal River National Wildlife Refuge, Chassahowitzka National Wildlife Refuge). Potential protected locations in the Florida panhandle include protected areas managed by the Florida Department of Environmental Protection (Apalachicola Bay Aquatic Preserve, St. Joseph Bay Aquatic Preserve, St. Andrews State Park Aquatic Preserve, Fort Pickens Aquatic Preserve), the National Park Service (Gulf Islands National Seashore), or Florida State Parks (Big Lagoon State Park).

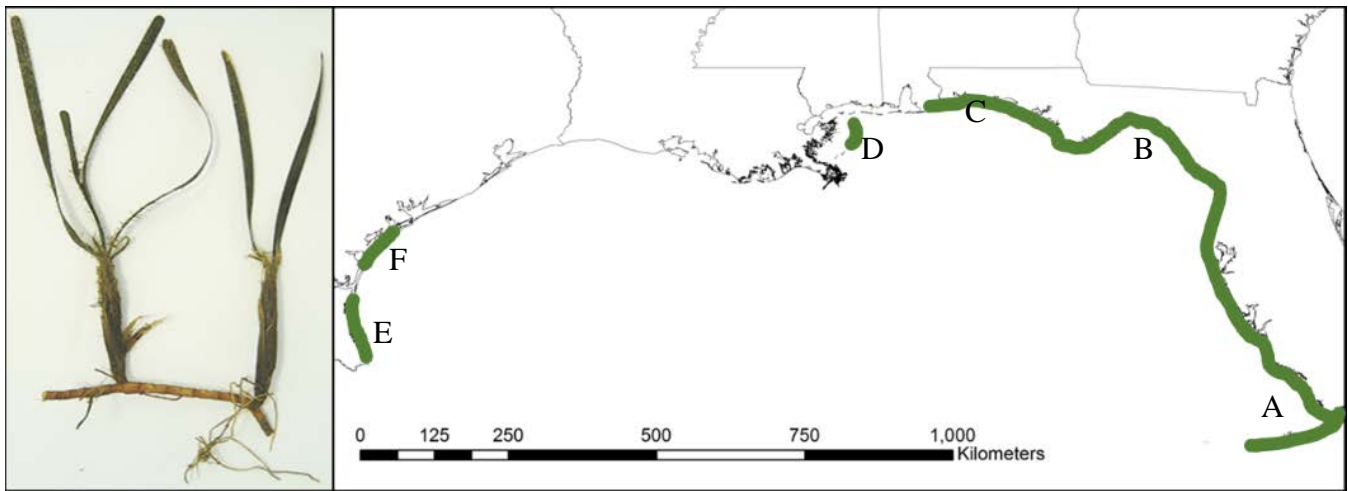


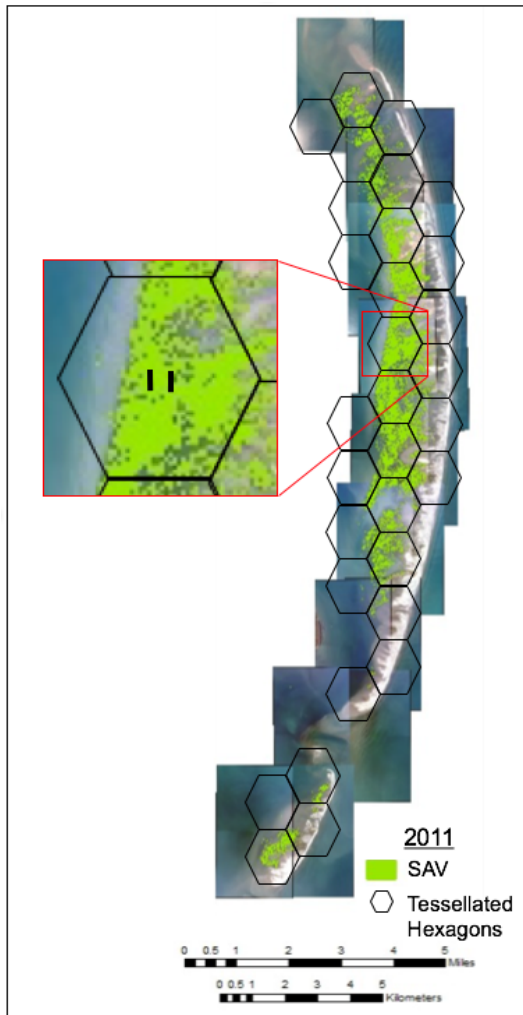
Figure 1. Action Area. Turtlegrass (*Thalassia testudinum*) (left) and its distribution throughout the Gulf of Mexico (in green, right). Expected sampling locations are: (A) Florida Bay, (B) Florida Big Bend, (C) Florida Panhandle, (D) the northern extent of the Chandeleur Islands, (E) Lower Laguna Madre, and (F) the Texas Coastal Bend. Photo from K. Dunton.

Project Activities:

1. Nekton Community Sampling. Nekton abundance will be quantified in turtlegrass beds over no more than 15 days each in each location in early summer (May/June) and late summer (August/September) of the first two years of the project to capture the peak activity season for juvenile nekton and blue crabs. At each of the six locations described above, sampling sites will be selected using the stratified random method of hexagonal tessellation that has been adopted by several seagrass sampling programs across the Gulf and East Coasts of the U.S., including the USGS, the National Estuarine Research Reserve System, and the Texas Statewide Seagrass Monitoring Program. At each of the six locations, a mesh of hexagons (750-m edge) will be created over the mapped areal extent of turtlegrass to ensure that all regions within the area are represented. Turtlegrass areal extent will be obtained from previous survey efforts conducted at these sites and in coordination with Expert Advisory Panel members. Thirty hexagons will be selected at random in each location and one randomly generated site (within the seagrass extent) within each selected hexagon will be sampled for juvenile and adult nekton using an epibenthic

sled and trawl net, as described below (see Figure 2). All field activities will take place from small boats less than 25 ft in length and with an appropriate draft for the water depth. For sampling in Lower Laguna Madre the boat will launch from South Padre Island, TX. For sampling in the Texas Coastal Bend the boat will launch from Port Aransas, TX. For sampling in the Chandeleur Islands, the boat will launch from Ocean Springs, MS. For sampling in the Florida Panhandle the launch location will depend on the exact sampling locations determined in consultation with the EAP. For sampling in the Big Bend region of Florida the boat launch location will depend on the exact sampling locations determined in consultation with the EAP. For sampling in Florida Bay the launch location will be within Everglades National Park, but will depend on the exact sampling locations determined in consultation with the EAP. They anticipate ~30 days of boat use total in each area (15 d per sampling season).

Figure 2. Conceptual example of sampling design at the Chandeleur Islands, LA. A hexagonal tessellation grid will be created over the mapped areal extent of turtlegrass. Thirty hexagons will be selected at random and will be sampled for juvenile and adult nekton along approximately 330-m long paired epibenthic sled and trawling transects. Turtlegrass habitat characteristics will be sampled the beginning, middle and end of each transect.



- a. Epibenthic sled tows. Juvenile nekton (crustaceans and fish, typically <5 cm in length/width) will be sampled using an epibenthic sled (1-m wide x 0.8-m high aluminum frame on two 0.8-m long skids), which is effective for collecting small demersal nekton and crustaceans. The sled will be towed once for 3 minutes at a speed of 2–3 kts in each hexagon, resulting in a sampling area of ~231.5 m² per sample, and each sample will be terminated by lifting the sled mouth vertically out of the water to ensure retention of collected organisms. Epibenthic sled tows will be oriented in a North to South direction,

and each tow will cover an approximate distance of 330 m. Samples collected using the epibenthic sled will be bagged, frozen and returned to the Ocean Springs, MS Gulf Coast Research Laboratory (GCRL) of the University of Southern Mississippi. In the lab, all animals collected will be identified to the species level, counted, measured and total biomass will be determined for each species present in each sample.

- b. Trawl net tows. Larger nekton will be sampled using a 16-ft trawl net towed once for 3 minutes at a speed of 2–3 kts in each hexagon. Epibenthic sled and trawl tows will be separated from one another by approximately 100 m to prevent disturbance. Trawl tows will also be oriented in a North to South direction, and each tow will cover an approximate distance of 330 m. All animals collected will be identified to the species level, counted, measured and total biomass will be determined for each species present in each sample. Animals collected in the trawls will be identified, weighed and measured on the boat upon collection and released at the collection site.
- c. Turtlegrass habitat survey and coring. Turtlegrass habitat characteristics will be recorded following each epibenthic sled and trawl tow. Using standardized methods, turtlegrass plant structural complexity and relevant environmental parameters will be measured at the start, middle, and ending locations of each tow. Percent cover of seagrass by species will be quantified in each of four replicate 0.25 m² quadrats thrown from the four cardinal directions of the boat. In each of the four replicate quadrats, turtlegrass leaf length (providing canopy height) and width will be measured on three replicate plants, from which leaf specific area will be calculated.

Plant aboveground biomass and epiphyte biomass will be quantified by collecting one core (9-cm diameter x 10-cm deep) in each of the quadrats, using standardized methods that include scraping epiphytes from the leaves and obtaining dry weights of leaf tissue and epiphytes.

Water quality parameters including salinity (PSU), temperature (°C), and dissolved oxygen (% and mg/L) will be recorded using a handheld YSI meter. Surface irradiance and irradiance at depth will be measured with a LI-COR light meter to assess light availability to turtlegrass, from which the light attenuation coefficient (k) will be calculated. Water depth will be measured to the nearest centimeter using a meter stick or graduated pole, and notes will be recorded on sediment characteristics, grazing occurrence, and macroalgal abundance.

2. Growth and Mortality of Blue Crabs.

- a. Capture. Juvenile crabs of the appropriate size class will be collected from nearby habitats using an epibenthic sled, throw trap, or seine immediately prior to initiation of the experiments. Individuals will be measured for carapace width and tagged with visible implant elastomer (VIE) tags injected into the basal segment of the right swimming leg. VIE tags have been used successfully with juvenile blue crabs and do not affect growth or mortality.
- b. Cage mesocosm experiment. Growth of juvenile blue crabs in turtlegrass habitat will be measured in 10 sites at each of the 6 locations. The 10 sites will be a randomly selected subset of the 30 hexagons used in the Nekton Community Sampling (see above). Growth will be measured in replicate cage mesocosms in the field, allowing captive crabs access

to natural prey resources. The size class of juvenile crabs used will be determined following initial surveys of abundance and size structure. Growth will be measured in cage mesocosms that will be a 1-m diameter bottomless cylinder (height to be determined by water depth) constructed of PVC pipe and 3.2 mm nylon mesh. Each enclosure will be deployed 2 days before initiating growth experiments, and will be pushed into the sediment ~15 cm to prevent escape of captive crabs. At the time of mesocosm deployment, three sediment cores (2.5-cm deep × 5-cm diameter) will be collected adjacent to the mesocosm to quantify potential benthic prey densities. Core samples will be sieved in the field and returned or shipped to GCRL to identify benthic invertebrates to the lowest taxonomic level possible and determine species abundances.

Tagged crabs will be weighed (wet weight) and placed in mesocosms at densities approximating natural densities. Crabs in the mesocosms will not be fed, but instead will rely on food items present in the mesocosm at the time of deployment. Growth experiments will run for approximately one month (30 d), which is a sufficient amount of time for at least 1–2 molts. At the conclusion of the experiment, crabs will be collected from the mesocosm using a dip net and again measured for carapace width and wet weight. Growth rates will be calculated as mm/d by subtracting initial carapace width from final carapace width and dividing by the duration of the experiment (in days) and also as g/d by subtracting initial wet weight from final wet weight and dividing by the duration of the experiment (in days). Growth experiments will take place within 10 randomly-selected hexagons at each of the 6 locations. The number of mesocosms used will depend on stocking densities, determined from surveys of crab abundance. Sufficient mesocosms will be deployed such that growth will be measured on at least 10 individuals per hexagon at each site. This sample size should ensure that multiple mesocosms will be used in each hexagon, based on previously observed crab densities in seagrass beds. We will thus have a total sample size of 100 crabs per location (10 hexagons × 10 individuals per hexagon), or 600 crabs total across the Gulf.

They anticipate ~4 field days to set up growth experiments, ~2 days of maintenance to remove fouling and repair any cage damage mid-way through the experiment, and ~4 field days to break down the experiment at the end.

Habitat characteristics will be recorded at the beginning and end of each growth experiment. At the beginning of the experiment, seagrass percent cover by species within each mesocosm will be recorded, and at the conclusion of the experiment turtlegrass structural complexity will be assessed as described above.

- c. Tethering experiment. Predation rates on juvenile blue crabs will be measured at each location using a tethering experiment. Juvenile blue crabs of the the size class collected in epibenthic sled surveys will be measured. Tethers will consist of 30-cm lengths of monofilament fishing line attached to the carapace using a small amount of cyanoacrylate glue. Once the glue is hardened, the free end of the tether will be attached to PVC stakes pushed entirely into the sediment. Experimental crabs will thus be free to move within a 0.6-m diameter area, but will be limited to the assigned habitat and can easily be recovered. Each tethered crab will be at least 20 m from any other tethered crab to ensure independence. All crabs no longer attached to tethers can be assumed to have been eaten, based on previous experiments. Crabs will be tethered in the morning and recovered 24 h later. This tethering technique has been used extensively in previous studies of predation rates on blue crabs. Tethering experiments will be conducted in 10 randomly selected

hexagons within each of the six locations. Ten crabs will be tethered in each hexagon, for a total sample size of 100 crabs per location (10 hexagons × 10 individuals per hexagon) or 600 crabs total across the Gulf.

The percent cover by species of seagrass will be quantified in a 1-m² area surrounding each PVC stake at the beginning of each experiment, and at the conclusion of the experiment turtlegrass structural complexity will be assessed as described above.

3. Habitat-Specific Production Models. Data on blue crab abundance, growth and mortality from the field work will be used to develop habitat-specific production models for blue crabs in turtlegrass. Separate models will be developed for Florida, Louisiana, and Texas, and a combined regional model will be developed to provide detailed predation and production estimates for blue crabs inhabiting turtlegrass-dominated habitats in the northern Gulf of Mexico. Because the distributional form of, and relationship among, predictor variables obtained from the field work cannot be known ahead of time, we propose to examine a variety of statistical modeling approaches, each following literature-established methods. In brief, the spatially nested relationships between landscape metrics of seagrass cover, plant structural complexity, water quality parameters, predation pressure, and growth rates will be quantified using a relevant technique. This work will be implemented using R version 3.2.4. Results will be presented as GIS data layers, graphical representations of univariate functions, and complete statistical equations for multivariate relationships between response and predictor variables.
4. Anchoring. Anchoring will be necessary when installing growth cages and predation tethers, or for other reasons, such as avoidance of adverse weather conditions or in the unlikely event of an engine malfunction. While the choice of anchoring location is at the discretion of the ship's crew, when anchoring is necessary, vessel operators would select the anchor location based on depth, protection from seas and wind, and bottom type. Preferred bottom types include sticky mud or sand; they would not anchor on rocky or coral reefs.
5. Office activities. Office activities will consist of meetings with an Expert Advisory Panel and developing habitat-specific production models as described above. In addition, data analyses, writing, outreach and publication will occur in an office setting.

Effects of the Project, Environmental Statutes & NCCOS Determination of Effects:

Endangered Species Act (ESA) Section 7 (a)(2) requires that each Federal agency, in consultation with NMFS and/or the U.S. Fish and Wildlife Service (USFWS), ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat.

The field research activities potentially occur in the range of one ESA listed species under the authority of USFWS. That species is the West Indian manatee (*Trichechus manatus*). The West Indian manatee is currently listed as endangered but is proposed to be downlisted to threatened. The manatee has critical habitat designated in Florida waters in the Gulf of Mexico (Figure 3). The project will avoid sampling in designated critical habitat; therefore, NCCOS determines that research activities and vessel transit would not adversely affect West Indian manatees or destroy or adversely modify designated critical habitat.

There are a total of seven (7) species of corals, five (5) marine mammal species (details under MMPA section below), five (5) turtle species and six (6) fish species listed under ESA within the Gulf of

Mexico (GOM) (Table 1). These species are listed as either endangered, threatened, candidate, or proposed. The distribution of corals is not expected to overlap with the research action area and vessel transit will have no adverse impacts on these species. Therefore, corals will not be analyzed further in this memorandum. The research activities and vessel transit are not expected to have adverse impacts on the listed fish species. The primary concern is effects from the sled and net tows. The sled and nets are small, and the tows are short in duration and at low speeds habitats away from the normal habitat of many the listed fishes. The only exceptions in the fishes are the trawling will occur in the critical habitat of smalltooth sawfish and gulf sturgeon (see below).



Figure 3. West Indian manatee critical habitat.

Smalltooth sawfish (*Pristis pectinata*) have critical habitat designated in southern Florida ([see here](#)). Two physical and biological features are identified as essential to the conservation of the smalltooth sawfish. The two features are: red mangroves and shallow euryhaline habitats characterized by water depths between the Mean High Water line and 3 ft (0.9 m) measured at Mean Lower Low Water (MLLW). Trawl samples will not occur in areas of either of these essential features. Epibenthic sled sampling will not occur in areas adjacent to mangroves, but may sample in waters as shallow as 2 feet, overlapping with the edge of the essential feature for water depth. The sampling in these areas will only be a portion of the samples, will be of short duration, and will have no long term impacts; therefore, NCCOS determines that research activities and vessel transit would not adversely affect smalltooth sawfish or destroy or adversely modify designated critical habitat. However, these tows may capture a small number of small tooth sawfish. If this occurs they will be returned to the water as soon as possible

Gulf sturgeon (*Acipenser oxyrinchus desotoi*) have critical habitat designated in the panhandle and Big Bend areas of Florida ([see here](#)). Primary constituent elements (PCEs) essential for the conservation of the Gulf sturgeon include the following: (1) Abundant food items, (2) Riverine spawning sites, (3) Riverine aggregation areas, (4) Adequate riverine flow regime, (5) Adequate water quality, (6) Adequate sediment quality, and (7) Safe and unobstructed migratory pathways. The proposed research activities

would not affect PCEs #2 through 7 and would involve short duration intrusions into the critical habitat areas. The nekton sampling may collect small numbers of potential Gulf sturgeon food, but the nekton sampling covers a very small temporal and spatial scale, and thus would have negligible impacts on gulf sturgeon food supplies. Therefore, NCCOS determines that research activities and vessel transit would not destroy or adversely modify designated critical habitat for Gulf sturgeon. However, these tows may capture a small number of Gulf sturgeon. If this occurs, they will be returned to the water as soon as possible.

The research activities will take place within the range and in the habitat of the ESA candidate dwarf seahorse. The primary concern is effects from the sled and net tows. These tows may capture a small number of dwarf seahorses. Dwarf seahorses are currently legal to catch and there is a commercial harvest of dwarf seahorses in Florida, where they are part of the aquarium and curio trade domestically and internationally. Thus, NCCOS determines the research would have negligible impact on the dwarf seahorse.

Research activities are not expected to have adverse impacts on turtles. The primary concerns are capture in tow nets or a boat strike during transit between stations and to the various ports. The sled and nets are small, and the tows are short in duration and at low speeds. Capture and harm to turtles is thus highly unlikely.

In addition, loggerhead sea turtles (*Caretta caretta*) have critical habitat designated throughout the Gulf ([see here](#)). The only component of critical habitat that overlaps the research area is the nearshore reproductive habitat in Florida. No research activities will take place within these critical habitat areas, but there may be transit through critical habitat. The physical and biological features of nearshore reproductive habitat is “a portion of the nearshore waters adjacent to nesting beaches that are used by hatchlings to egress to the open-water environment as well as by nesting females to transit between beach and open water during the nesting season.” Primary Constituent Elements that support this habitat are “the following:

- (1) Nearshore waters directly off the highest density nesting beaches and their adjacent beaches as identified in 50 CFR 17.95(c) to 1.6 km (1 mile) offshore;
- (2) Waters sufficiently free of obstructions or artificial lighting to allow transit through the surf zone and outward toward open water; and
- (3) Waters with minimal manmade structures that could promote predators (i.e., nearshore predator concentration caused by submerged and emergent offshore structures), disrupt wave patterns necessary for orientation, and/or create excessive longshore currents.

The proposed research activities would not affect any of the PCEs and would involve short duration intrusions into the critical habitat areas. Therefore, NCCOS determines that research activities and vessel transit would not adversely affect sea turtles or destroy or adversely modify designated critical habitat for loggerhead sea turtles.

Marine Mammal Protection Act (MMPA) - All marine mammals are protected under the MMPA. Sections 101 (a)(5)(A) and (D) allow the incidental take of marine mammals only under special circumstances, where “take is defined as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal” (16 U.S.C. §1361-1421h). Harassment includes any annoyance which has the potential to injure a marine mammal or stock (Level A) or disrupt its behavioral patterns (Level B). Similar to the risk of vessel strike for turtles, cruise research activities are not expected to have adverse impacts on any marine mammal species. The primary concern is for a vessel strike during ship transit between stations or to and from the various ports.

There are five (5) total species of threatened and endangered marine mammals whose potential ranges overlap with the action area of the research activities (Table 2). These include, Blue Whale (*Balaenoptera musculus*), Fin Whale (*Balaenoptera physalus*), Sei Whale (*Balaenoptera borealis*), Sperm Whale (*Physeter microcephalus*), and Bryde's Whale (*Balaenoptera edonii*). The proposed research activities do not overlap with the typical habitat of these species, so NCCOS determines the effects to marine mammals are negligible. Nevertheless, we will incorporate protective measures and Best Management Practices into this project to further minimize risks (see below).

Magnuson-Stevens Fishery Conservation and Management Act (see [this](#)) requires that Federal agencies consult with NMFS on actions that “may adversely affect” Essential Fish Habitat (EFH) (16 U.S.C. §1855(b)(2)).

NCCOS examined two sources from the NOAA Office of Habitat Conservation (OHC) to conduct this analysis of potential impacts to EFH. NCCOS consulted the NOAA OHC, [EFH mapper](#) and the 2015 [Final Essential Fish Habitat 5-Year Review for Atlantic Highly Migratory Species](#). The EFH Mapper sources indicated that there is no coral EFH within the research activity area. However, both sources indicated the following species groups or taxa potentially have EFH designated within the research activity area (Figure 1) as follows:

Species or Taxa within Research area:

1. Red Drum
2. Shrimp
3. Coastal Migratory Pelagics
4. Reef fish
5. Longfin Mako Shark
6. Angel Shark
7. Bignose shark
8. Blacknose shark
9. Bonnethead shark
10. Finetooth sharks
11. Greater Hammerhead
12. Lemon shark
13. Scalloped hammerhead shark
14. Smooth dogfish
15. Spinner shark
16. White sharks

Based on the planned research activities and the potential EFH that could be encountered, NCCOS determines that no adverse effects to EFH, either direct or indirect, would occur within the proposed research action or transit area as the epibenthic sled and nekton net are small and will cover a limited area of habitat and would not reduce the quantity or quality of essential fish habitat. NCCOS would use BMPs (last section) when anchoring is needed to avoid impacting EFH.

In addition, there are 18 Habitat Areas of Particular Concern (HAPC) within the GOM (see [EFH mapper](#)). None of these areas overlaps with the area of research activities (Figure 1) and vessel transit actions are not likely to adversely impact the HAPC. In addition, no EFH areas closed to fishing overlap with vessel transit or research activity areas. Based on this analysis, NCCOS determines that no adverse impacts are likely from the research, vessel transit or potential anchoring activities of this project.

National Marine Sanctuaries Act (NMSA) - Section 304(d) of the National Marine Sanctuaries Act requires the “action agency” to consult with the Office of National Marine Sanctuaries if the action is “likely to destroy, cause the loss of, or injure a sanctuary resource” (16 U.S.C. §1431 et seq.). However, no activities will be conducted within a National Marine Sanctuary; therefore, we will not be requesting a letter of concurrence pursuant to this Act.

National Historic Preservation Act (NHPA) - Section 106 requires Federal agencies to take into account the effects of their actions on historic resources (16 U.S.C. §470 et seq.). After review of the National Historic Registry Database, NCCOS found no known Historic resources that are within the action area of research activities. Further, no adverse impacts to cultural resources are expected as a result of either vessel transit or research activities, thus NCCOS will not be requesting a Section 106 consultation. However, according to NOAA nautical charts there are known shipwrecks within the research activities region, which will be avoided as hazards to navigation as appropriate.

Protected Areas: The Florida Bay sampling will take place within the Everglades National Park. The investigators will obtain permits from the park that consider the effects of the research on park resources for this sampling. They will obtain this permit prior to initiating fieldwork there and will provide it to the Federal Program Officer prior to initiating this work. For other sampling locations the work may occur in a variety of protected areas (listed next), but specifics will depend on advice from the EAP. Potential protected locations in the Big Bend sampling area include National Wildlife Refuges (Cedar Keys National Wildlife Refuge, Crystal River National Wildlife Refuge, Chassahowitzka National Wildlife Refuge). Potential protected locations in the Florida panhandle include protected areas managed by the Florida Department of Environmental Protection (Apalachicola Bay Aquatic Preserve, St. Joseph Bay Aquatic Preserve, St. Andrews State Park Aquatic Preserve, Fort Pickens Aquatic Preserve), the National Park Service (Gulf Islands National Seashore), or Florida State Parks (Big Lagoon State Park). The investigators will notify the Federal Program Officer once the sampling locations are determined. In addition, the investigators will obtain permits from the protected areas as required to ensure compliance with all protected area rules and regulations. They will obtain these permits prior to initiating fieldwork there and will provide copies of the permits to the Federal Program Officer prior to initiating this work.

Table 1. Gulf of Mexico's Threatened and Endangered Species. Species list received from NMFS OPR Colette Cairns 3/21/2017

Status	Species Name	Critical Habitat (in Gulf of Mexico)
Corals		
T	Elkhorn Coral (<i>Acropora palmata</i>) ¹	None in GOM
T	Staghorn Coral (<i>Acropora cervicornis</i>)	None in GOM
T	Lobed Star Coral (<i>Orbicella annularis</i>)	N/A
T	Boulder Star Coral (<i>Orbicella franksi</i>)	N/A
T	Rough Cactus Coral (<i>Mycetophyllia ferox</i>)	N/A
T	Pillar Coral (<i>Dendrogyra cylindrus</i>)	N/A

T	Mountainous Star Coral (<i>Orbicella faveolata</i>)	N/A
Mammals		
E	Blue Whale (<i>Balenoptera musculus</i>)	N/A
E	Fin Whale (<i>Balaenoptera physalus</i>)	N/A
E	Sei Whale (<i>Balaenoptera borealis</i>)	N/A
E	Sperm Whale (<i>Physeter macrocephalus</i>)	N/A
PE	Bryde's Whale (<i>Balaenoptera edonii</i>)	N/A
Sea Turtles		
T	Green Turtle (<i>Chelonia mydas</i>)	N/A
E	Hawksbill Turtle (<i>Eretmochelys imbricata</i>)	N/A
E	Kemp's Ridley Turtle (<i>Lepidochelys kempii</i>)	N/A
E	Leatherback Sea Turtle (<i>Dermochelys coriacea</i>)	N/A
T	Loggerhead Sea Turtle (<i>Caretta caretta</i>)	Yes linked here 38 designated marine areas in the southeast (includes South Atlantic & GOM)
Fishes		
T	Gulf Sturgeon (<i>Acipenser oxyrinchus desotoi</i>)	Yes, linked here
E	smalltooth sawfish (<i>Pristis pectinata</i>)	Yes, linked here
T	Nassau grouper (<i>Epinephelus striatus</i>)	N/A
PT	Giant Manta (<i>Manta birostris</i>)	N/A
C	Dwarf Seahorse (<i>Hippocampus zosterae</i>)	N/A
PT	Oceanic Whitetip Shark (<i>Carcharinus longimanus</i>)	N/A

E = Endangered, T = Threatened, C = Candidate, P = Proposed.

¹ Colonies at Flower Gardens Banks

Protective Measures and Best Management Practices Incorporated into the Action

In the event of unauthorized incidental take of protected species, NCCOS would suspend all activities causing such take and immediately contact NMFS Office of Protected Resources (see contact below). NCCOS would request ESA Section 7 reinitiation in the event of unauthorized take, systematic noncompliance, unanticipated adverse effects, or modification of the action.

NMFS POC - Colette Cairns, colette.cairns@noaa.gov, 301-427-8414, NMFS OPR ESA-ICD

BMPs are required to be incorporated within project instructions, cruise plans and NEPA documentation including financial assistance awards and environmental review memoranda. All applicable BMPs must be communicated to the principal investigators, boat operators and field staff in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

1. Minimize vessel disturbance and ship strike potential
 - a. Reduced speeds (<13 knots) when transiting through ranges of ESA-listed cetaceans (unless otherwise required, e.g., NOAA Sanctuaries)
 - b. Reduced speeds (<13 knots) while transiting through designated critical habitat (unless slower speeds are required, e.g., < 10 knots in West Indian manatee critical habitat and management areas)
 - c. Trained observers aboard all vessels; 100% observer coverage
 - d. Species identification keys (for sea turtles and dwarf seahorses– as applicable) will be available on all vessels
2. Minimize noise
 - a. Reduced speed (see above)
3. Minimize vessel discharges (including aquatic nuisance species)
 - a. Meet all Coast Guard requirements.
 - b. Clean hull regularly to remove aquatic nuisance species.
 - c. Avoid cleaning of hull in critical habitat.
 - d. Avoid cleaners with nonylphenols.
4. Minimize anchor impact to corals, seagrass or other EFH
 - a. Use designated anchorage area when available
 - b. Use mapping data to anchor in mud or sand, to avoid anchoring on corals
 - c. Minimize anchor drag
5. Cetaceans
 - a. Avoid approaching within 200 yards (182.9 m)
6. Sea Turtles and Manatees
 - a. Avoid approaching within 50 yards.
 - b. Avoid sampling within designated critical habitat for logger head sea turtles.
7. Entanglement Protective Measures

- a. Use stiffer line materials for towing and keep taut during operations to reduce potential for entanglement
 - b. Reduce knots in the line as much as possible
 - c. Clearly mark lines in the event an animal does become entangled so that NMFS experts can identify the gear.
8. Habitat Protection
- a. Avoid unnecessary contact of gear, towed or lowered, with the sensitive bottom habitat (e.g. submerged aquatic vegetation (SAV) and hard bottom).
9. Protected Area and State Collecting Permits
- a. Required protected area access and state collecting permits for each state will be maintained and provided to the Federal Program Officer before field work starts and annually thereafter (as needed) before out-year funds are released.

Determination Summary and Extraordinary Circumstances

Project activities described above would be temporally (less than 4 weeks) and spatially small in scale (small footprint of sled and net tows with short tow times). Collecting permits are required for this sampling from each state and will be maintained throughout the course of the project field work. Sampling protocols are routine and have occurred hundreds of times in the past. It is not likely that any listed species will be collected because of the habitat being sampled and the small size and slow tow speeds used, and if so, they will be returned to the water as soon as it is practicable and NMFS OPR would be immediately notified. No activities will be conducted in areas where children may congregate. These activities are not the subject of controversy based on potential environmental consequences and do not establish a precedent or decision in principle about future proposals. There are no uncertain environmental impacts or unknown risks as project activities are routine and non-intrusive there will be negligible impact on geographically or ecologically critical areas, (sanctuaries, wetlands, watersheds), National Historic Sites, and no adverse impacts to marine mammals, essential fish habitat (marsh, wetlands, seagrasses, corals, etc.) or threatened and endangered species or their critical habitat. In addition activities do not include bird nesting areas, marine mammal nursery or feeding areas. The proposed project activity does not involve air, noise, or water quality impacts; and does not otherwise have a significant impact on the human environment. No adverse environmental impacts are anticipated from laboratory activities. Laboratory activities will follow all appropriate safety and disposal regulations. Waste chemicals from this project will be disposed of through a licensed hazardous waste Treatment, Storage, and Disposal (TSD) facility, transported by a licensed transportation contractor. The proposed project has no potential to generate, use, store, transport, or dispose of hazardous or toxic substances in a manner that may have a significant effect on the environment. The proposed project does not have a disproportionately high and adverse effect on the health or the environment of minority or low-income communities, compared to the impacts on other communities (EO 12898). The project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or involve actions that may promote the introduction, growth, or expansion of the range of the species. The applicants will have approval for all activities regarding vertebrate animals from their Institutional Animal Care and Use Committee(s) under the Animal Welfare Act and related policies and regulations. Thus, there is no potential to violate Federal, State, or local law or requirements imposed for protection of the environment. There are no highly controversial environmental effects. Thus, there are no extraordinary circumstances present that may require further analysis in an EA or EIS.

- Pursuant to Section 7 of the Endangered Species Act (ESA) and the above analysis, NCCOS determines that this project's activities are not likely to adversely affect any listed (threatened or endangered) species or designated critical habitat.
- Pursuant to Section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA) and the above analysis, NCCOS determines that this project's activities will not result in an unauthorized take of any marine mammals. Therefore we are not seeking authorization under Section 101(a)(5)(A) of the MMPA for this action.
- Pursuant to Section §305(b) of the Magnuson-Stevens Fishery Consultation and Management Act (MSA; 16 U.S.C. 1855(b)) and the above analysis, NCCOS determines that no adverse impacts are likely from the research, vessel transit or potential anchoring activities of this project.
- This project's activities will not result in any impact to National Historic Sites as no named Historic underwater cultural sites are in the area where the sampling will occur according to a search on the following website, <http://focus.nps.gov/nrhp>. The NOAA nautical charts document the location of shipwrecks within the research activities region, these sites will be avoided as they potentially represent hazards to navigation.

Special Award Condition

NCCOS initiated informal EFH and ESA Section 7 consultations with NMFS and an ESA Section 7 consultation with the USFWS. Special award conditions have been placed on the award to ensure work does not begin until the consultations have been completed, protected measures (if any) have been incorporated, and required permits obtained. An addendum to this memorandum will be completed once the consultations are concluded that includes any required protective measures resulting from the consultations. The special award conditions for the consultations will be removed once the addendum is complete.

Categorical Exclusion Determination

The Program Office has determined that the Categorical Exclusion E5 likely covers the project activities described above since these activities would not result in any changes to the human environment. As Defined in Section 4 and Appendix E of NAO 216-6A Companion Manual E5, activities involving invasive techniques or methods that are conducted for scientific purposes, when such activities are conducted in accordance with all applicable provisions of the Endangered Species Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, and Magnuson-Stevens Fishery Conservation and Management Act. Such activities will be limited to impacting living resources on a small scale relative to the size of their populations, and limited to methodologies and locations to ensure that there are no long-term adverse ecosystem impacts. The proposed project falls within the scope of the E5 categorical exclusion. Cumulative effects are negligible. A final determination will be made in an addendum to this memorandum once any consultations described above (see **Special Award Conditions**) are complete.