

# Appendix A

## Avoidance of Effects of Select Restoration Activities Eligible for Streamlined Project-Level Consultation through Implementation of Specified Project Design Criteria

### 1. Background

As described in the Section 2 of the Biological Opinion (“Opinion”), the DWH PDARP is a comprehensive, integrated, ecosystem restoration portfolio which distributes restoration across a range of different restoration types and locations. The DWH PDARP does not include specific projects at specific sites; rather, it is a framework for a comprehensive programmatic restoration plan that will guide the development of subsequent restoration plans and project-level actions.

Section 8 of the Opinion describes how Endangered Species Act (ESA) consultations for future project-level actions that tier from the DWH PDARP will be accomplished. Those future consultations will be either informal, because NMFS determines that the action is not likely to adversely affect listed resources, or formal because adverse effects cannot be avoided. Sections 8.2 and 8.3 of the Opinion also describe an option for streamlined informal consultation that requires the use of project design criteria (PDCs) for specific restoration activities.

This appendix evaluates potential effects of several well-established restoration activities. These activities have been repeatedly and widely implemented throughout the Gulf of Mexico, and have been repeatedly analyzed in previous ESA consultations with NMFS. When PDCs which are described below are implemented fully, these restoration activities result in projects that are not likely to adversely affect listed species or associated designated critical habitat for ESA-listed resources under NMFS’s jurisdiction. Additionally, this analysis assumes that action agencies will implement the best practices<sup>20</sup> described in Appendix 6.A. of the DWH PDARP, which help to reduce adverse effects to listed species.

The PDCs evaluated in this Appendix represent the current best available science. As the Trustees implement the program and learn through monitoring and evaluation, program-wide best practices may be adjusted, improved, and added to what is in the present DWH PDARP. Likewise, NMFS may update and improve this set of PDCs through a similar process in the future.

---

<sup>20</sup> As defined in Chapter 6 and Appendix 6A in the PDARP, best practices generally include design criteria, best management practices, lessons learned, expert advice, tips from the field, and more. Trustees will use appropriate best practices to avoid or minimize impacts to natural resources, including protected and listed species and their habitats.

PDCs were developed for 5 specific restoration activities that can be readily categorized and evaluated by NMFS to determine effects to ESA-listed resources:

- Marsh creation and enhancement
- Construction of living shorelines
- Removal of derelict fishing gear and other marine debris
- Oyster reef creation and enhancement
- Construction of non-fishing piers

Trustees with projects that fall within one of these activity types and meet the PDCs evaluated in this consultation will submit a BE Form with completed PDC checklist<sup>21</sup> (Appendix B) and any relevant maps and drawings to NMFS via email at [nmfs.ser.esa.consultations@noaa.gov](mailto:nmfs.ser.esa.consultations@noaa.gov). If sufficient information is provided, NMFS will make a final determination as to whether the proposed action falls within the appropriate category of activities covered by the relevant set of PDCs, and whether all of those PDCs are fully incorporated into the project design. If these 2 requirements are met, then NMFS will respond via return email within 60 days confirming that (a) the project is consistent with the PDCs and this framework programmatic Opinion, (b) it is not likely to adversely affect ESA-listed species or their critical habitat, and (c) consultation is concluded.

Trustees are encouraged to request technical assistance from PRD prior to initiating consultation. This will help make the consultation more efficient and insure that potential adverse effects are addressed.

Section 4.1 of the Opinion identified several ESA-listed and proposed species that are not likely to be adversely affected (NLAA) by the DWH PDARP and provided an analysis supporting the NLAA determinations. For those species, we determined that all of the effects of the DWH PDARP are expected to be either discountable, insignificant, or completely beneficial. Those species are not re-evaluated or re-considered in this appendix, and will not be further analyzed in this appendix or in consultations carried out using the process described in this appendix.

---

<sup>21</sup> Endangered Species Act Biological Evaluation Form, Deepwater Horizon Oil Spill Restoration, Fish and Wildlife Service & National Marine Fisheries Service, January 2016 or most recent version available from NMFS

## 2. Effects of the Action

In the following sections, we assess the direct and indirect effects of implementing a defined suite of restoration activities on ESA-listed species and designated critical habitat managed by NMFS. We assess potential effects to the following ESA-listed species and associated designated critical habitat:

- Sperm whales
- 5 species of sea turtles (green, hawksbill, Kemp’s ridley, leatherback, and the Northwest Atlantic Ocean distinct population segment of loggerhead)
- Gulf sturgeon
- U.S. distinct population segment (DPS) of smalltooth sawfish
- Gulf sturgeon critical habitat Units 8-14 (Units 1-7 riverine units are under the purview of USFWS)
- Loggerhead critical habitat units, LOGG-N-31 through LOGG-N-36 and LOGG-S-02
- Smalltooth sawfish U.S. DPS, Charlotte Harbor Estuary and Thousand Islands/Everglades critical habitat units

Each restoration activity eligible for streamlined ESA consultation is subject to one of the following sets of non-discretionary PDCs that avoid adverse effects to listed species and critical habitat.

### 3. PDCs for Marsh Creation and Enhancement

The following PDCs must be met for marsh creation and enhancement activities to qualify for streamlined consultation. The PDCs avoid adverse effects to ESA-listed threatened and endangered species and their designated critical habitats under NOAA Fisheries' jurisdiction. These PDCs apply to activities that occur in or impact marine and estuarine waters.<sup>22</sup> Additional criteria may be required under other statutes (e.g., the Marine Mammal Protection Act, Clean Water Act, and Magnuson Stevens Fishery and Conservation Management Act) and by the U.S. Fish and Wildlife Service for ESA-listed species under their jurisdiction.

Marsh creation/enhancement often involves dredging and disposal of dredged material. These dredged materials are frequently contained by earthen containment dikes or other sediment containment structures. Dredged material is placed within the containment structures to an elevation conducive to the establishment of emergent marsh. Supplemental planting of native marsh vegetation is often utilized to accelerate the establishment of ecological functions provided by marsh habitats.

Marsh creation or enhancement through hydrologic restoration or freshwater or sediment diversions are not evaluated in this analysis and not covered by this PDC.

1. Activities that must be avoided:
  - a. Marshes shall not be created or enhanced in smalltooth sawfish critical habitat.
  - b. Marshes shall not be created or enhanced in Gulf sturgeon critical habitat.
  - c. Marshes shall not be created or enhanced on live bottom.<sup>23</sup>
  - d. Mangroves shall not be trimmed or removed.
  - e. Material used for construction shall not contain trash, debris, or toxic pollutants.
  - f. Completed projects shall not impede ingress, egress, or migration of ESA-listed species between shoreline and open water and between marine habitat and freshwater spawning and rearing habitats.
  
2. General Conditions:
  - a. Follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*.<sup>24</sup>

<sup>22</sup> NOAA Fisheries and the U.S. Fish and Wildlife Service share jurisdiction for Gulf Sturgeon and listed sea turtles. 1977 Memorandum of Understanding regarding the Roles of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in Joint Administration of the Endangered Species Act of 1973 as to Marine Turtles.

<sup>23</sup> Live bottom means low to moderate relief naturally occurring hard or rocky formations with rough, broken, or smooth topography that contain biological assemblages consisting of sessile invertebrates living upon and attached to the hard substrate and may favor the accumulation of turtles, fishes, or other fauna. Definition modified from DOI MMS's *Notice to Lessees and Operators of Federal Oil, Gas, and Sulphur Leases and Pipeline Right-Of-Way Holders Outer Continental Shelf, Gulf of Mexico OCS Region*, dated January 27, 2010  
<http://www.boem.gov/Regulations/Notices-To-Lessees/2009/09-G39.aspx>

<sup>24</sup> NMFS. *Sea Turtle and Smalltooth Sawfish Construction Conditions*. 2006. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf)

- b. Follow NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*.<sup>25</sup>
- c. Conduct all in-water work activities during daylight hours.
- d. Develop and implement a spill prevention and response plan, including cleaning and sealing all equipment that would be used in the water to rid it of chemical residue and conducting daily inspections of all construction and related equipment to ensure there are no leaks of fuel, antifreeze, hydraulic fluid, or other harmful substances. If a spill occurs, report response and outcome in Monitoring Report No. 3, below.
- e. For projects that include sediment placement and/or dredging, fill material shall not be sourced using hopper dredge techniques (including relocation trolling) and shall not be sourced from Gulf sturgeon- or smalltooth sawfish designated critical habitat<sup>26, 27</sup> or from nearshore reproductive habitat areas of critical habitat for loggerhead sea turtles.<sup>28</sup>
  - i. In-water sediment borrow sites shall not, either directly or indirectly, impact turtle nesting beaches.
- f. Design or materials used shall not create an entanglement or entrapment risk to protected species or block migration.
  - i. Follow *Measures for Reducing Entrapment Risk to Protected Species*.<sup>29</sup>
  - ii. Any turbidity curtains or other such equipment/materials shall be installed in a manner that avoids entanglement or entrapment of protected species.
  - iii. For projects that include installation of marker buoys or other floating objects tethered to the sea floor, all in-water lines shall be made of materials and in a manner to minimize the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle.
- g. In-water construction activities shall not impede sea turtle access to or from sea turtle nesting sites, and no artificial lighting shall be visible at night in these areas during nesting season.

Location	Species	Nesting Season
Mississippi, Louisiana, Alabama, and Northern Florida (Escambia to	Loggerhead sea turtles	May 1 – October 31
	Green sea turtles	May 15 – October 31
	Leatherback sea turtles	May 1 – September 30

<sup>25</sup> NMFS. *Vessel Strike Avoidance Measures and Reporting for Mariners*. 2008. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/copy\\_of\\_vessel\\_strike\\_avoidance\\_february\\_2008.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/copy_of_vessel_strike_avoidance_february_2008.pdf)

<sup>26</sup> Federal Register Vol. 68, No. 53. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Gulf Sturgeon*. 2003. Available: <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr68-13370.pdf>

<sup>27</sup> Federal Register Vol. 74, No. 169. *Endangered and Threatened Species; Critical Habitat for the Endangered Distinct Population Segment of Smalltooth Sawfish*. 2009. Available: <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr74-45353.pdf>

<sup>28</sup> Federal Register Vol. 79 (39855 -39912). *Endangered and Threatened Wildlife and Plants; Designation of critical habitat; North Atlantic Ocean loggerhead sea turtle DPS, Final Rule*. Available: [http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat\\_loggerhead.htm](http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat_loggerhead.htm)

<sup>29</sup> NMFS. *Measures for Reducing Entrapment Risk to Protected Species*. 2012. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf)

Location	Species	Nesting Season
Pasco Counties)		
Southern Florida (Pinellas to Monroe Counties)	Loggerhead sea turtles	April 24 – October 31
	Green sea turtles	May 15 – October 31
	Hawksbill sea turtles (Monroe County only)	June 1 – December 31
Texas	Kemp’s ridley sea turtles	May 1 – September 30

- h. To avoid turbidity impacts to ESA-listed species:
- i. Heavy equipment working in wetlands or mudflats shall be placed on mats, or other measures shall be taken to minimize soil disturbance.
  - ii. Appropriate soil erosion and sediment controls shall be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, shall be permanently stabilized at the earliest practicable date.
  - iii. Use floating turbidity curtains around all in-water construction areas, as appropriate.
3. Monitoring:
- a. Monitoring reports shall include:
    - i. Project construction monitoring from PDC No. 2, above
    - ii. As-built project completion drawings and photos
    - iii. Any interactions with protected species listed in PDC No. 4, below
  - b. Final reports from project monitoring shall be submitted with the report in PDC No. 4, below.
4. Reporting:
- a. Report all interactions with, or sightings of stranded, entangled, dead or injured sea turtles, Gulf sturgeon, sawfish, or marine mammals, immediately to:
    - i. Sea turtles and marine mammals:  
Telephone: 1-877-WHALE HELP (1-877-942-5343)
    - ii. Gulf sturgeon - NMFS’s Protected Resources Division:  
Telephone: 1-844-788-7491 (1-844-STURG 911)  
Email: nmfs.ser.sturgeonnetwork@noaa.gov  
When possible provide:
      - 1) the location where the fish was found or caught
      - 2) the condition of the fish
      - 3) the presence of any research tags

- 4) the length of the fish
- 5) a photograph
- iii. Smalltooth sawfish - Fish and Wildlife Research Institute:
  - Telephone: 1-941-255-7403
  - Email: Sawfish@MyFWC.com
- b. Final reports from project monitoring shall be submitted to:
  - NOAA Fisheries Service – Protected Resources Division
  - DWH Restoration Program Monitoring Reports
  - 263 13<sup>th</sup> Avenue South
  - Saint Petersburg, Florida 33701

### 3.1 Effects Analysis for Marsh Creation and Enhancement

Sections 6.1 of the Opinion (General In-Water Construction Activities) and 6.3 of the Opinion (Dredging, Including Placement of Dredged Material) provide detailed descriptions of the potential effects to listed species and critical habitats from marsh creation and enhancement projects related to general construction activities, dredging, and placement of dredged materials in the areas to be restored. The PDCs developed for marsh creation and enhancement include measures to ensure that these potential adverse effects are avoided. A summary of the potential adverse effects and an analysis showing how the PDCs ensure avoidance of those effects follows:

- Marsh creation and enhancement frequently involves the use of heavy construction equipment, barges, and support vessels that can cause temporary, localized adverse impacts from vessel strikes, sediment disturbance, increased turbidity, and noise. These effects can result in physical injury to listed species (e.g., vessel strikes), and/or cause them to avoid the construction area, which could disrupt foraging, sheltering, and other essential activities.

PDC 2.a. requires action agencies to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. These criteria require that all vessels associated with construction projects operate at "no wake/idle" speeds at all times while in the construction area or other shallow water areas, and that operation of any mechanical construction equipment shall cease immediately if a sea turtle is seen within a 50-foot (ft) radius of the equipment. Due to the species' mobility and natural avoidance behaviors, and the action agency's compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, the risk of injury directly related to construction activities is discountable.

PDC 2.b. requires action agencies to adhere to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*. These criteria require that all vessel operators and crews maintain a vigilant watch for marine mammals and sea turtles and maintain appropriate speeds and distances from protected species to avoid striking or otherwise harming these species. Marsh creation activities generally occur in shallow-water areas far from the deepwater habitats occupied by sperm whales. However, if vessels involved in marsh creation do operate in these deepwater areas, adherence to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners* will prevent striking or otherwise harming sperm whales. Due to the species' mobility and natural avoidance behaviors, and the action agency's compliance with these measures, the risk of adverse effects directly related to vessel interactions is discountable.

PDC 2.h. includes several measures to avoid turbidity impacts to water quality. Listed species may be temporarily unable to use the sites for foraging or shelter



habitat due to avoidance of construction activities and related noise. However, NMFS has consulted on numerous marsh creation and enhancement projects, which generally have relatively small footprints and short construction durations. In addition, the areas adjacent to these types of projects generally provide similar foraging and sheltering habitat. Therefore, NMFS expects any effects resulting from temporary avoidance of the area due to construction activities to be insignificant.

- Fuel or chemical leaks from heavy equipment could enter the aquatic environment and impact listed species and their critical habitats.

PDC 2.d. requires action agencies to develop and implement a spill prevention and response plan, including cleaning and sealing all equipment (used in the water to rid it of chemical residue) and conducting daily inspections of all construction and related equipment to ensure there are no leaks of fuel, antifreeze, hydraulic fluid, or other harmful substances. When these measures are implemented fully, the possibility of adverse effects' resulting from fuel or chemical leaks and spills is discountable.

- Deployment of turbidity curtains or other devices that enclose areas of aquatic habitat have the potential to entrap listed species within the enclosed areas. Construction of berms or low-level earthen dikes around areas to be restored can also result in entrapment of listed species inside the diked area.

PDC 2.f.i. requires that action agencies follow NMFS's *Measures for Reducing Entrapment Risk to Protected Species*. When these measures are implemented fully, the possibility of listed species' becoming entrapped within enclosed areas is discountable.

- Marsh creation may involve temporary deployment of turbidity curtains or other materials that have the potential to result in entanglement of listed species within those materials. Deployment of marker buoys related to construction activities can also pose a risk of entanglement in the anchor lines.

PDC 2.f. ii. requires that any turbidity curtains or other such equipment/materials will be installed in a manner that avoids entanglement or entrapment of protected species.

PDC 2.f. iii. requires projects that include installation of marker buoys or other floating objects tethered to the sea floor ensure that all in-water lines be made of materials and in a manner to minimize the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. When these measures are

implemented fully, the possibility of listed species' becoming entangled in construction related materials/equipment is discountable.

- Artificial lighting in construction zones could disorient sea turtles as they approach and/or depart from nesting beaches.

Effects from artificial lighting during nesting season will be avoided by PDC 2.c., which requires action agencies to conduct all in-water work activities during daylight hours as well as PDC 2.g., which ensures that no artificial lighting shall be visible at night in sea turtle nesting areas during nesting season.

- Dredging removes the top layer of material from an area, including vegetation, sediment, topographic features, and any sessile or slow moving benthic organisms. Removal of these elements, particularly repeated dredging of the same area, can result in a reduction in the number of benthic species (both species diversity and species abundance) and a reduction of primary productivity (Lewis et al. 2001). Dredging can also contribute to the formation of localized anoxic or hypoxic conditions depending on the depth and location of the borrow sites. Dredged borrow areas have the potential to increase or alter wave climates by altering the direction and magnitude of waves.

Best practices described in the DWH PDARP include measures to only use suitable areas as borrow sites (i.e., those that do not contain *Sargassum*, SAV, or oysters) and to obtain sediments by beneficially using dredged material from navigation channels or by accessing material from approved offshore borrow areas. Implementation of these best practices along with adherence to PDC 2.e., which prohibits borrow material from being sourced from Gulf sturgeon or smalltooth sawfish critical habitat or from nearshore reproductive habitat areas of critical habitat for loggerhead sea turtles, is expected to ensure that dredging effects on listed species and critical habitat will be insignificant.

- Hopper dredging and associated relocation trawling can capture, entrain, and kill sea turtles and Gulf sturgeon.

Effects from hopper dredging will be avoided by PDC 2.e., which prohibits use of hopper dredging (and associated relocation trawling) to source material for use in marsh creation and enhancement projects.

- Adverse impacts to benthic habitats from placement of dredged sediments may occur from temporary storage of dredged sediments in nearshore habitats, and final placement of sediment in the footprint of marsh creation areas where existing habitats would be permanently covered by the sediment.

PDCs 1.a. and 1.b. prevent these potential adverse effects from occurring in designated critical habitat for smalltooth sawfish and Gulf sturgeon. Marsh creation/enhancement areas outside of these critical habitat designations may be permanently converted. However, NMFS has consulted on numerous marsh creation and enhancement projects, which generally have relatively small footprints and occur in shallow waters that do not provide ideal foraging/sheltering habitat for listed species. In addition, the areas adjacent to these types of projects generally provide similar foraging and sheltering habitat. Therefore, NMFS expects any impacts resulting from conversion of aquatic habitat into marsh habitat to be insignificant.

- The placement of fill for marsh creation could impede movement of listed species between shoreline and open water, and between marine habitat and freshwater spawning and rearing habitats.

PDC 1.f. requires that completed projects do not impede movement of listed species between shoreline and open water, and between marine habitat and freshwater spawning and rearing habitats. Therefore, any potential effects on the movement of listed species from marsh creation and enhancement projects will be insignificant.

## 4. PDCs for Construction of Living Shorelines

The following PDCs must be met for activities to qualify for streamlined consultation. The PDCs avoid adverse effects to ESA-listed threatened and endangered species and their designated critical habitats under NOAA Fisheries' jurisdiction. These PDCs apply to activities that occur in or impact marine and estuarine waters.<sup>30</sup> Additional criteria may be required under other statutes (e.g., the Marine Mammal Protection Act, Clean Water Act, and Magnuson Stevens Fishery and Conservation Management Act) and by the U.S. Fish and Wildlife Service for ESA-listed species under their jurisdiction.

The PDCs below apply to constructing living shorelines. These PDCs do not cover construction of breakwaters, shoreline armoring projects, seawalls, or other hardened features intended for the primary purpose of infrastructure protection. Living shoreline projects involve a variety of shoreline stabilization and habitat restoration techniques that span several habitat zones and utilize a variety of structural and organic materials. Living shorelines include features such as the incorporation of oyster shell to protect shorelines and prevent erosion. The primary features of a living shoreline are that it does not introduce a fixed interruption of a natural water/land continuum, and that it is designed to protect or restore natural shoreline ecosystem services. Projects using these techniques may also include the creation/enhancement of tidal marsh and/or oyster reefs. Such projects must also incorporate the PDCs specified for those techniques.

1. Activities that must be avoided:
  - a. Projects shall not result in removal of red mangroves or filling of shallow euryhaline habitats<sup>31</sup> within smalltooth sawfish critical habitat.<sup>32</sup>
  - b. Living shorelines shall not be constructed in nearshore reproductive habitat of loggerhead sea turtle designated critical habitat.<sup>33</sup>
  - c. Within Gulf sturgeon critical habitat,<sup>34</sup> living shorelines shall not be constructed in areas deeper than -6 ft (2 meters [m]) at mean high water line (MHWL).
  - d. Projects shall not be built on live bottom,<sup>35</sup> seagrass, or coral habitats.

<sup>30</sup> NOAA Fisheries and the U.S. Fish and Wildlife Service share jurisdiction for Gulf Sturgeon and listed sea turtles. 1977 Memorandum of Understanding regarding the Roles of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in Joint Administration of the Endangered Species Act of 1973 as to Marine Turtles.

<sup>31</sup> Shallow euryhaline habitats are characterized by water depths between the Mean High Water line and 3 ft. measured at Mean Lower Low Water (MLLW). See Critical Habitat for the Endangered Distinct Population Segment of Smalltooth Sawfish available at: <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr74-45353.pdf>

<sup>32</sup> Federal Register Vol. 74, No. 169. Endangered and Threatened Species; Critical Habitat for the Endangered Distinct Population Segment of Smalltooth Sawfish. 2009. Available: <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr74-45353.pdf>

<sup>33</sup> Federal Register Vol. 79 (39855 -39912). Endangered and Threatened Wildlife and Plants; Designation of critical habitat; North Atlantic Ocean loggerhead sea turtle DPS, Final Rule. Available: [http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat\\_loggerhead.htm](http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat_loggerhead.htm)

<sup>34</sup> Federal Register Vol. 68, No. 53. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Gulf Sturgeon. 2003. Available: <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr68-13370.pdf>

<sup>35</sup> Live bottom means low to moderate relief naturally occurring hard or rocky formations with rough, broken, or smooth topography that contain biological assemblages consisting of sessile invertebrates living upon and attached to the hard substrate and may favor the accumulation of turtles, fishes, or other fauna. Definition modified from

- e. Mangroves shall not be trimmed or removed.
- f. Material used for construction shall not contain trash, debris, and/or toxic pollutants.
- g. Completed projects shall not impede movement of species protected under the ESA between shoreline and open water (e.g., adult sea turtle movement to and from nesting beaches or hatchlings going to the ocean) and between marine habitat and freshwater spawning and rearing habitats (e.g., Gulf sturgeon's moving between estuarine and riverine habitats).
- h. Projects shall not include pile driving, unless piles are required for navigation or public safety (see 2.b.).

2. General conditions:

- a. Follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*.<sup>36</sup>
- b. Conduct all in-water work activities during daylight hours.
- c. Piles required for navigation or public safety shall be less than 24 inches in diameter and non-metal if driven by impact hammer.
- d. Develop and implement a spill prevention and response plan, including cleaning and sealing all equipment that would be used in or the water to rid it of chemical residue and conducting daily inspections of all construction and related equipment to ensure there are no leaks of fuel, antifreeze, hydraulic fluid, or other harmful substances. If a spill occurs, report response and outcome in Monitoring Report No. 3, below.
- e. For projects that include sediment placement and/or dredging component, fill material shall not be sourced using hopper dredge techniques (including relocation trolling) and shall not be sourced from Gulf sturgeon, or smalltooth sawfish designated critical habitat<sup>37,38</sup> or from nearshore reproductive habitat areas of critical habitat for loggerhead sea turtles.<sup>39</sup>
- f. Design or materials used shall not create an entanglement or entrapment risk to ESA-listed species or block migration.

---

DOI MMS's *Notice to Lessees and Operators of Federal Oil, Gas, and Sulphur Leases and Pipeline Right-Of-Way Holders Outer Continental Shelf, Gulf of Mexico OCS Region*, dated January 27, 2010

<http://www.boem.gov/Regulations/Notices-To-Lessees/2009/09-G39.aspx>.

<sup>36</sup> NMFS. *Sea Turtle and Smalltooth Sawfish Construction Conditions*. 2006. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf).

<sup>37</sup> Federal Register Vol. 74, No. 169. *Endangered and Threatened Species; Critical Habitat for the Endangered Distinct Population Segment of Smalltooth Sawfish*. 2009. Available: <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr74-45353.pdf>

<sup>38</sup> Federal Register Vol. 68, No. 53. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Gulf Sturgeon*. 2003. Available: <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr68-13370.pdf>

<sup>39</sup> Federal Register Vol. 79 (39855 -39912). *Endangered and Threatened Wildlife and Plants; Designation of critical habitat; North Atlantic Ocean loggerhead sea turtle DPS, Final Rule*. Available: [http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat\\_loggerhead.htm](http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat_loggerhead.htm)

- i. Follow NMFS's *Measures for Reducing Entrapment Risk to Protected Species*,<sup>40</sup> where applicable.
  - ii. Any turbidity curtains or other such construction equipment/materials shall be installed in a manner that avoids entanglement or entrapment of protected species.
  - iii. Projects that include installation of marker buoys or other floating objects tethered to the sea floor, shall ensure that all in-water lines be made of materials and in a manner to minimize the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle.
- g. In-water construction activities shall not impede sea turtle access to or from sea turtle nesting sites during nesting season.

Location	Species	Nesting Season
Mississippi, Louisiana, Alabama and Northern Florida (Escambia to Pasco Counties)	Loggerhead sea turtles	May 1 – October 31
	Green sea turtles	May 15 – October 31
	Leatherback sea turtles	May 1 – September 30
Southern Florida (Pinellas to Monroe Counties)	Loggerhead sea turtles	April 24 – October 31
	Green sea turtles	May 15 – October 31
	Hawksbill sea turtles (Monroe County only)	June 1 – December 31
Texas	Kemp's ridley sea turtles	May 1 – September 30

- h. To avoid turbidity impacts to listed species:
- i. Heavy equipment working in wetlands or mudflats shall be placed on mats, or other measures shall be taken to minimize soil disturbance.
  - ii. Appropriate soil erosion and sediment controls shall be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, shall be permanently stabilized at the earliest practicable date.
  - iii. Use floating turbidity curtains around all in-water construction areas as appropriate.
- i. Follow NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*.<sup>41</sup>

<sup>40</sup> NMFS. *Measures for Reducing Entrapment Risk to Protected Species*. 2012. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf).

- 
- j. In addition to criteria described above, PDCs for marsh creation and oyster restoration shall be followed, where appropriate.
3. Monitoring:
- a. Monitoring reports shall include:
- i. Project construction monitoring from PDC No.2, above
  - ii. As-built project completion drawings and photos
  - iii. Any interactions with protected species listed in PDC No.4, below
4. Reporting:
- a. Report all interactions with, or sightings of stranded, entangled, dead or injured sea turtles, Gulf sturgeon, sawfish, or marine mammals, immediately to:
- i. Sea turtles, dolphins and marine mammals - Marine Mammal Stranding:  
Telephone: 1-877-WHALE HELP (1-877-942-5343)
  - ii. Gulf sturgeon - NMFS's Protected Resources Division:  
Telephone: 1-844-788-7491 (1-844-STURG 911)  
Email: nmfs.ser.sturgeonnetwork@noaa.gov  
When possible provide:
    - 1) the location where the fish was found or caught
    - 2) the condition of the fish
    - 3) the presence of any research tags
    - 4) the length of the fish
    - 5) a photograph
  - iii. Smalltooth sawfish - Fish and Wildlife Research Institute:  
Email: Sawfish@MyFWC.com  
Telephone: 1-941-255-7403
- b. Final reports from project monitoring shall be submitted to:
- NOAA Fisheries Southeast Region - Protected Resources Division  
Restoration Project Monitoring Reports  
263 13th Avenue South  
Saint Petersburg, Florida 33701

---

<sup>41</sup> NMFS. Vessel Strike Avoidance Measures and Reporting for Mariners. 2008. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/copy\\_of\\_vessel\\_strike\\_avoidance\\_february\\_2008.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/copy_of_vessel_strike_avoidance_february_2008.pdf)

#### 4.1 Effects Analysis for Construction of Living Shorelines

Sections 6.1 of the Opinion (General In-Water Construction Activities) and Section 6.2 of the Opinion (Construction of Living Shorelines, Rock Groins, and Breakwaters) describe the potential routes of effects through which living shoreline creation projects could adversely affect listed species and critical habitats. Some living shoreline projects may include the placement of dredged sediments on the shoreward side of the living shoreline structure to increase the bottom elevation of those areas. Effects related to dredging and placement of dredged material are described in Section 6.3 of the Opinion (Dredging, Including Placement of Dredged Material). The PDCs developed for living shorelines include measures to ensure that any such effects are avoided. A summary of the potential adverse effects and an analysis showing how the PDCs ensure avoidance of those effects follows:

- Living shoreline creation frequently involves the use of heavy construction equipment, barges, and support vessels that can cause temporary localized adverse impacts from vessel strikes, sediment disturbance, increased turbidity, and noise. These effects can result in physical injury to listed species (e.g., vessel strikes), and/or cause them to avoid the construction area, which could disrupt foraging, sheltering, and other essential activities.

PDC 2.a. requires action agencies to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. These criteria require that all vessels associated with construction projects operate at "no wake/idle" speeds at all times while in the construction area or other shallow water areas, and that operation of any mechanical construction equipment shall cease immediately if a sea turtle is seen within a 50-ft radius of the equipment. Due to the species' mobility and natural avoidance behaviors, and the action agency's compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, the risk of injury directly related to construction activities is discountable.

PDC 2.g. includes several measures to avoid turbidity impacts to water quality. Listed species may be temporarily unable to use the sites for foraging or shelter habitat due to avoidance of construction activities and related noise. However, NMFS has consulted on numerous living shoreline creation projects, which generally have relatively small footprints and short construction durations. In addition, the areas adjacent to these types of projects generally provide similar foraging and shelter habitat. Therefore, NMFS expects any impacts resulting from temporary avoidance of the area due to construction activities to be insignificant.

PDC 2.h. requires action agencies to adhere to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*. These criteria require that all vessel operators and crews maintain a vigilant watch for marine mammals and sea turtles and maintain appropriate speeds and distances from protected species to avoid



striking or otherwise harming these species. Living shoreline construction activities generally occur in shallow-water areas far from the deepwater habitats occupied by sperm whales. However, if vessels involved in living shoreline construction do end up in these deepwater areas, adherence to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners* will prevent striking or otherwise harming sperm whales. Due to the species' mobility and natural avoidance behaviors, and the action agency's compliance with these measures, the risk of adverse effects directly related to vessel interactions is discountable.

- Fuel or chemical leaks from heavy equipment could enter the aquatic environment and impact listed species and their critical habitats.

PDC 2.d. requires action agencies to develop and implement a spill prevention and response plan, including cleaning and sealing all equipment that would be used in the water to rid it of chemical residue and conducting daily inspections of all construction and related equipment to ensure there are no leaks of fuel, antifreeze, hydraulic fluid, or other harmful substances. When these measures are implemented fully, the possibility of adverse effects resulting from fuel or chemical leaks and spills is discountable.

- Deployment of turbidity curtains or other devices that enclose areas of aquatic habitat have the potential to entrap listed species within the enclosed areas. Construction of berms or low-level dikes to protect shorelines can also result in entrapment of listed species inside the diked area.

PDC 2.f.i. requires that action agencies follow NMFS's *Measures for Reducing Entrapment Risk to Protected Species*. When these measures are implemented fully, the possibility of listed species' becoming entrapped within enclosed areas is discountable.

- Living shoreline creation may involve temporary deployment of turbidity curtains or other materials that have the potential to result in entanglement of listed species within those materials. Deployment of marker buoys related to construction activities can also pose a risk of entanglement in the anchor lines.

PDC 2.f. ii. requires that any turbidity curtains or other such equipment/materials be installed in a manner that avoids entanglement or entrapment of protected species.

PDC 2.f. iii. requires projects that include installation of marker buoys or other floating objects tethered to the sea floor, to ensure that all in-water lines be made of materials and in a manner to minimize the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. When these measures are

implemented fully, the possibility of listed species becoming entangled in construction related materials/equipment is discountable.

- Dredging removes the top layer of material from an area, including vegetation, sediment, topographic features, and any sessile or slow moving benthic organisms. Removal of these elements, particularly repeated dredging of the same area can result in a reduction in the number of benthic species (both species diversity and species abundance) and a reduction of primary productivity (Lewis et al. 2001). Dredging can also contribute to the formation of localized anoxic or hypoxic conditions depending on the depth and location of the borrow sites. Dredged borrow areas have the potential to increase or alter wave climates by altering the direction and magnitude of waves.

Best practices described in the DWH PDARP include measure to only use suitable areas as borrow sites (i.e., those that do not contain *Sargassum*, SAV, or oysters) and to obtain sediments by beneficially using dredged material from navigation channels or by accessing material from approved offshore borrow areas. Implementation of these best practices along with adherence to PDC 2.e., which prohibits borrow material from being sourced from Gulf sturgeon or smalltooth sawfish critical habitat or from nearshore reproductive habitat areas of critical habitat for loggerhead sea turtles, is expected to ensure that dredging effects on listed species and critical habitat will be insignificant.

- Hopper dredging and associated relocation trawling can capture, entrain, and kill sea turtles and Gulf sturgeon.

Effects from hopper dredging will be avoided by PDC 2.e., which prohibits use of hopper dredging (and associated relocation trawling) in marsh creation and enhancement projects.

- Adverse impacts to benthic habitats from placement of living shorelines (and potentially from placement of dredged sediments in areas landward of the living shoreline structure) may occur in the footprint of the project areas where existing habitats would be permanently covered, removed, or modified by the living shoreline (and associated sediment fill).

PDC 1.a. prohibits adverse effects to red mangroves and shallow euryhaline habitats within smalltooth sawfish critical habitat, PDC 1.b. prohibits adverse effects in nearshore reproductive habitat of loggerhead sea turtle designated critical habitat, and PDC 1.c. requires living shoreline projects within Gulf sturgeon critical habitat to be built in shallow water (< 6 ft) to avoid the preferred foraging habitat for Gulf sturgeon (Gulf sturgeon generally occupy shoreline areas between 6.5-13 ft [2-4 m] of depth characterized by low-relief sand substrate (Fox et al. 2002). This PDC will help to minimize impacts to essential features of Gulf

sturgeon critical habitat such as abundant prey items, sediment quality and water quality by preventing effects on these essential features in the areas preferred by Gulf sturgeon. In addition to these explicit protections, living shoreline creation projects consulted on in the past generally have relatively small footprints and occur in shallow waters that do not provide ideal foraging/sheltering habitat for listed species. Also, the areas adjacent to these types of projects generally provide similar foraging and sheltering habitat. Therefore, NMFS expects any impacts resulting from alteration of existing habitats by the proposed living shoreline projects to be insignificant.

- Construction of living shorelines could impede movement of listed species between shoreline and open water, and between marine habitat and freshwater spawning and rearing habitats.

The definition of living shorelines in the PDCs excludes breakwaters and sea walls that could impede the free movement of listed species, and PDC 1.g. requires that completed projects not impede movement of listed species between shoreline and open water, and between marine habitat and freshwater spawning and rearing habitats. Therefore, any potential effects on the movement of listed species or the essential features of Gulf sturgeon critical habitat (i.e., safe and unobstructed migratory pathways) from living shoreline projects will be insignificant.

- Living shorelines constructed within nearshore reproductive habitat of critical habitat for loggerhead sea turtles could create obstructions or artificial lighting (during construction activities) that adversely affect hatchlings as they transit through the surf zone and outward toward open water. Living shorelines could also promote nearshore predator concentration caused by submerged and emergent offshore structures, disrupt wave patterns necessary for orientation, and/or create excessive longshore currents.

Any effects to nearshore reproductive habitat for loggerhead sea turtles from living shorelines will be avoided by PDC 1.b., which prohibits living shorelines from being constructed in these areas.

## 5. PDCs for Removal of Derelict Fishing Gear and Other Marine Debris

The following PDCs must be met for activities to be qualified for streamlined consultation. The PDCs avoid adverse effects to ESA-listed threatened and endangered species and their designated critical habitats under NOAA Fisheries' jurisdiction. These PDCs apply to activities that occur in or impact marine and estuarine waters.<sup>42</sup> Additional criteria may be required under other statutes (e.g., the Marine Mammal Protection Act, Clean Water Act, and Magnuson Stevens Fishery and Conservation Management Act) and by the U.S. Fish and Wildlife Service for ESA-listed species under their jurisdiction.

The PDCs described below pertain to derelict fishing gear and other marine debris removal<sup>43</sup> operations.

### 1. Activities that must be avoided:

- a. Vessels and other equipment involved in marine debris removal activities shall not block or impede the movement of listed species at major ingress or egress points in channels, rivers, passes, and bays.
- b. To avoid harassment of listed species, aerial debris surveys shall not be conducted below 1,000 ft (305 m) altitude (for any type of piloted aircraft).
- c. Debris removal activities shall not affect access by sea turtles to or from nesting sites, thus, they shall not occur adjacent to sea turtle nesting sites during nesting season.

Location	Species	Nesting Season
Mississippi, Louisiana, Alabama and Northern Florida (Escambia to Pasco Counties)	Loggerhead sea turtles	May 1 – October 31
	Green sea turtles	May 15 – October 31
	Leatherback sea turtles	May 1 – September 30
Southern Florida (Pinellas to Monroe Counties)	Loggerhead sea turtles	April 24 – October 31
	Green sea turtles	May 15 – October 31
	Hawksbill sea turtles (Monroe County only)	June 1 – December 31
Texas	Kemp's ridley sea turtles	May 1 – September 30

<sup>42</sup> NOAA Fisheries and the U.S. Fish and Wildlife Service share jurisdiction for Gulf Sturgeon and listed sea turtles. 1977 Memorandum of Understanding regarding the Roles of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in Joint Administration of the Endangered Species Act of 1973 as to Marine Turtles.

<sup>43</sup> Best Management Practices obtained in part from the NOAA Marine Debris Program (MDP) NEPA compliance and marine debris removal efforts in the aftermath of Super Storm Sandy Protocols.

2. General conditions:

- d. All on-water operations shall take place during daylight hours.
- e. Follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*.<sup>44</sup>
- f. Follow NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*.<sup>45</sup>
- g. If approached by a marine mammal or sea turtle, cease activity and allow the animal to pass or move your vessel away slowly.
- h. Trash and other debris materials should be disposed of at an appropriate upland location.

3. Monitoring:

- a. Monitoring reports shall include:
  - i. Total amount of materials removed
  - ii. Type of materials removed
  - iii. Any interactions with protected species listed in PDC No. 4 below.

4. Reporting:

- a. Report all interactions with, or sightings of stranded, entangled, dead or injured sea turtles, Gulf sturgeon, sawfish, or marine mammals, immediately to:
  - i. Sea Turtles, dolphins and marine mammals - Marine Mammal Stranding Network: 1-877-WHALE HELP (1-877-942-5343)
  - ii. Gulf sturgeon - NMFS's Protected Resources Division:  
Telephone: 1-844-788-7491 (1-844-STURG 911)  
Email: nmfs.ser.sturgeonnetwork@noaa.gov

When possible provide:

- 1) the location where the fish was found or caught
- 2) the condition of the fish
- 3) the presence of any research tags
- 4) the length of the fish
- 5) a photograph
- iii. Smalltooth sawfish - Fish and Wildlife Research Institute:  
Email: Sawfish@MyFWC.com

<sup>44</sup> NMFS. *Sea Turtle and Smalltooth Sawfish Construction Conditions*. 2006. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf)

<sup>45</sup> NMFS. *Vessel Strike Avoidance Measures and Reporting for Mariners*. 2008. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/copy\\_of\\_vessel\\_strike\\_avoidance\\_february\\_2008.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/copy_of_vessel_strike_avoidance_february_2008.pdf)

Telephone: 1-941-255-7403

- b. Final reports from project monitoring shall be submitted to:

NOAA Fisheries Southeast Region - Protected Resources Division  
Restoration Project Monitoring Reports  
263 13th Avenue South  
Saint Petersburg, Florida 33701

## 5.1 Effects Analysis for Removal of Derelict Fishing Gear and Other Marine Debris

Section 6.9 describes the potential routes of effects through which marine debris removal projects could adversely affect listed species and critical habitats. In summary, potential effects include increased boating interactions and vessel strikes; harassment/startling of individuals on the water surface by debris survey aircraft; disturbance of sediments and other habitat features; and displacement of listed species from preferred habitats and/or disruption of essential behaviors due to noise and disturbance resulting from marine debris removal activities. The PDCs developed for this technique include measures to ensure that adverse effects are avoided. A summary of the potential adverse effects and an analysis showing how the PDCs ensure avoidance of those effects follows:

- Large-scale marine debris removal projects involving multiple vessels concentrated in major ingress or egress points in channels, rivers, passes, and bays could impede listed species' movement between shoreline and open water (e.g., adult sea turtle movement to and from nesting beaches or hatchlings going to the ocean) and between marine habitat and freshwater spawning and rearing habitats (e.g., Gulf sturgeon moving between estuarine and riverine habitats).

PDC 1.a. requires action agencies to avoid blocking major ingress or egress points in channels, rivers, passes, and bays, and PDC 1.c. requires action agencies to avoid blocking access by sea turtles to or from nesting sites by ensuring activities do not occur adjacent to sea turtle nesting sites during nesting season. Adherence to these criteria will ensure that the potential for marine debris removal activities to impede or block the movement of listed species is discountable.

- Increased vessel traffic related to marine debris removal operations could increase the likelihood of adverse interactions between program vessels and listed species (vessel strikes, harassment, etc.).

PDC 2.b. requires action agencies to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. These criteria require that all vessels associated with marine debris removal projects operate at "no wake/idle" speeds while in the debris removal area or other shallow water areas, and that operation of any mechanical equipment shall cease immediately if a sea turtle is seen within a 50-ft radius of the equipment. Due to the species' mobility and natural avoidance behaviors and the action agency's compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, the risk of injury directly related to marine debris removal activities is discountable.

PDC 2.c. requires action agencies to adhere to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*. These criteria require that all vessel operators and crews maintain a vigilant watch for marine mammals and sea turtles

and maintain appropriate speeds and distances from protected species to avoid striking or otherwise harming these species. Marine debris removal activities generally occur in shallow-water areas far from the deepwater habitats occupied by sperm whales. However, if vessels involved in marine debris removal do end up in these deepwater areas, adherence to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners* will prevent striking or otherwise harming sperm whales. Due to the species' mobility and natural avoidance behaviors, and the action agency's compliance with these measures, the risk of adverse effects directly related to vessel interactions is discountable.

- Low altitude aerial marine debris surveys could result in startling/harassment of listed species on the water surface by debris survey aircraft.

PDC 1.b. prohibits aerial surveys from being conducted at altitudes below 1,000 ft (305 m) for any type of piloted aircraft. Maintaining altitude above 1,000 ft for piloted survey aircraft will avoid startling/harassment of listed species on the water surface and ensure that effects on listed species from survey aircraft will be insignificant.

- Removal of partially or entirely buried marine debris may cause disturbance of sediments and other habitat features such as submerged aquatic vegetation. In-water activities could also result in temporary displacement of listed species from preferred habitats and/or disruption of essential behaviors.

Many of the PDCs are designed to minimize disruption of benthic habitats or harassment of listed species and marine debris removal activities generally have relatively small footprints and short operational durations. In addition, the areas adjacent to the disturbed areas generally provide similar foraging and sheltering habitat. Therefore, NMFS expects any effects resulting from temporary disturbance of essential features of critical habitat or avoidance of the area due to debris removal activities to be insignificant.



## 6. PDCs for Oyster Reef Creation and Enhancement

The following PDCs must be met for activities to be qualified for streamlined consultation. The PDCs avoid adverse effects to ESA-listed threatened and endangered species and their designated critical habitats under NOAA Fisheries' jurisdiction. These PDCs apply to activities that occur in or impact marine and estuarine waters.<sup>46</sup> Additional criteria may be required under other statutes (e.g., the Marine Mammal Protection Act, Clean Water Act, and Magnuson Stevens Fishery and Conservation Management Act) and by the U.S. Fish and Wildlife Service for ESA-listed species under their jurisdiction.

The following PDCs apply to Oyster Reef Creation or Enhancement. Cultch material generally consists of limestone rock, crushed concrete, oyster shell, or other similar material that, when placed in oyster spawning areas, provides a substrate on which free swimming oyster larvae can attach and grow into oysters. The goal of these projects is to restore and enhance the ecological functions provided by healthy oyster reef habitat.

1. Activities that must be avoided:
  - a. Oyster reefs shall not be constructed in smalltooth sawfish critical habitat.
  - b. Oyster reefs shall not be constructed in nearshore reproductive habitat of loggerhead sea turtle designated critical habitat.<sup>47</sup>
  - c. Oyster reefs shall not be built on submerged aquatic vegetation, live bottom,<sup>48</sup> and hard or soft coral.
  - d. Mangroves shall not be trimmed or removed.
  - e. Oyster reefs shall not be built with materials that may create an entanglement risk to ESA-listed species.
  
2. General Conditions:
  - a. Follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*,<sup>49</sup> where applicable.
  - b. Follow NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*.

<sup>46</sup> NOAA Fisheries and the U.S. Fish and Wildlife Service share jurisdiction for Gulf Sturgeon and listed sea turtles. 1977 Memorandum of Understanding regarding the Roles of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in Joint Administration of the Endangered Species Act of 1973 as to Marine Turtles.

<sup>47</sup> Federal Register Vol. 79 (39855 -39912). Endangered and Threatened Wildlife and Plants; Designation of critical habitat; North Atlantic Ocean loggerhead sea turtle DPS, Final Rule. Available:

[http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat\\_loggerhead.htm](http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat_loggerhead.htm)

<sup>48</sup> Live bottom means low to moderate relief naturally occurring hard or rocky formations with rough, broken, or smooth topography that contain biological assemblages consisting of sessile invertebrates living upon and attached to the hard substrate and may favor the accumulation of turtles, fishes, or other fauna. Definition modified from DOI MMS's *Notice to Lessees and Operators of Federal Oil, Gas, and Sulphur Leases and Pipeline Right-Of-Way Holders Outer Continental Shelf, Gulf of Mexico OCS Region*, dated January 27, 2010

<http://www.boem.gov/Regulations/Notices-To-Lessees/2009/09-G39.aspx>

<sup>49</sup> NMFS. *Sea Turtle and Smalltooth Sawfish Construction Conditions*. 2006. Available:

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf)

- c. In-water construction activities shall not impede sea turtle access to or from sea turtle nesting sites during nesting season.

<b>Location</b>	<b>Species</b>	<b>Nesting Season</b>
Mississippi, Louisiana, Alabama and Northern Florida (Escambia to Pasco Counties)	Loggerhead sea turtles	May 1 – October 31
	Green sea turtles	May 15 – October 31
	Leatherback sea turtles	May 1 – September 30
Southern Florida (Pinellas to Monroe Counties)	Loggerhead sea turtles	April 24 – October 31
	Green sea turtles	May 15 – October 31
	Hawksbill sea turtles (Monroe County only)	June 1 – December 31
Texas	Kemp's ridley sea turtles	May 1 – September 30

- d. Within Gulf sturgeon critical habitat, oyster reef creation and enhancement shall occur only on existing shell substrata or relic reef locations.
- e. Cultch material shall be free of debris and contaminants.
- f. Fresh shell shall be aged or quarantined for not less than 6 months before deployment.
- g. During deployment, cultch material shall be placed in a manner minimizing the disturbance of surrounding sediments. Use a clamshell or similar apparatus as the preferred method and only employ high-pressure water spray to distribute cultch materials if absolutely necessary.
- h. To avoid turbidity impacts to listed species:
- i. Heavy equipment working in wetlands or mudflats shall be placed on mats, or other measures shall be taken to minimize soil disturbance.
  - ii. Appropriate soil erosion and sediment controls shall be used and maintained in effective operating condition during construction and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, shall be permanently stabilized at the earliest practicable date.
  - iii. Use floating turbidity curtains around all in-water construction areas.
- i. Provide a plan for intermittent breaks between oyster reef segments to avoid impeding movement of ESA-listed species between marine habitat and shoreline/freshwater spawning and rearing habitats and prevent entrapment of ESA-listed species.
- j. Develop and implement a spill prevention and response plan, including cleaning and sealing all equipment that would be used in or the water to rid it of chemical residue

- and conducting daily inspections of all construction and related equipment to ensure there are no leaks of fuel, antifreeze, hydraulic fluid, or other harmful substances. If a spill occurs, report response and outcome in Monitoring Report No. 3, below.
- k. Design or materials used shall not create an entanglement or entrapment risk to ESA-listed species or block migration.
    - i. Follow NMFS's *Measures for Reducing Entrapment Risk to Protected Species*,<sup>50</sup> where applicable.
    - ii. Any turbidity curtains or other such construction equipment/materials shall be installed in a manner that avoids entanglement or entrapment of protected species.
    - iii. Projects that include installation of marker buoys or other floating objects tethered to the sea floor, shall ensure that all in-water lines be made of materials and in a manner to minimize the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle.
3. Monitoring:
- a. Monitoring reports shall include:
    - i. Project construction monitoring from PDC No. 2, above
    - ii. As-built project completion drawings and photos
    - iii. Any interactions with protected species listed in PDC No. 4, below
4. Reporting:
- a. Report all interactions with, or sightings of stranded, entangled, dead or injured sea turtles, Gulf sturgeon, sawfish, or marine mammals, immediately to:
    - i. Sea turtles and marine mammals:  
Telephone: 1-877-WHALE HELP (1-877-942-5343)
    - ii. Gulf sturgeon - NMFS's Protected Resources Division:  
Telephone: 1-844-788-7491 (1-844-STURG 911)  
Email: [nmfs.ser.sturgeonnetwork@noaa.gov](mailto:nmfs.ser.sturgeonnetwork@noaa.gov)  
When possible provide:
      - 1) the location where the fish was found or caught
      - 2) the condition of the fish
      - 3) the presence of any research tags
      - 4) the length of the fish
      - 5) a photograph

---

<sup>50</sup> NMFS. Measures for Reducing Entrapment Risk to Protected Species. 2012. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf).

iii. Smalltooth sawfish - Fish and Wildlife Research Institute:

Telephone: 1-941-255-7403

Email: Sawfish@MyFWC.com

c. Final reports from project monitoring shall be submitted to:

NOAA Fisheries Service - Protected Resources Division

Restoration Project Monitoring Reports

263 13th Avenue South

Saint Petersburg, Florida 33701

## 6.1 Effects Analysis for Oyster Reef Creation and Enhancement

Sections 6.1 of the Opinion (General In-Water Construction Activities) and Section 6.4 of the Opinion (Placement of Oyster Shells/Cultch Material) describe the potential routes of effects through which oyster reef creation/enhancement projects could adversely affect listed species and critical habitats. The PDCs developed for oyster reef creation include measures to ensure that any such effects are avoided. A summary of the potential adverse effects and an analysis showing how the PDCs ensure avoidance of those effects follows:

- Oyster reef creation/enhancement frequently involves the use of heavy construction equipment, barges, and support vessels that can cause temporary localized adverse impacts from vessel strikes, sediment disturbance, increased turbidity, and noise. These effects can result in physical injury to listed species (e.g., vessel strikes), and/or cause them to avoid the construction area, which could disrupt foraging, sheltering, and other essential activities.

PDC 2.a. requires action agencies to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. These criteria require that all vessels associated with construction projects operate at "no wake/idle" speeds at all times while in the construction area or other shallow water areas, and that operation of any mechanical construction equipment shall cease immediately if a sea turtle is seen within a 50-ft radius of the equipment. Due to the species' mobility and natural avoidance behaviors, and the action agency's compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, the risk of injury directly related to construction activities is discountable.

PDC 2.h. includes several measures to avoid turbidity impacts to water quality. Listed species may be temporarily unable to use the sites for foraging or shelter habitat due to avoidance of construction activities and related noise. However, NMFS has consulted on numerous oyster reef creation/enhancement projects, which generally have relatively small footprints and short construction durations. In addition, the areas adjacent to these types of projects generally provide similar foraging and shelter habitat. Therefore, NMFS expects any impacts resulting from temporary avoidance of the area due to construction activities to be insignificant.

PDC 2.b. requires action agencies to adhere to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*. These criteria require that all vessel operators and crews maintain a vigilant watch for marine mammals and sea turtles and maintain appropriate speeds and distances from protected species to avoid striking or otherwise harming these species. Oyster reef creation/enhancement construction activities generally occur in shallow-water areas far from the deepwater habitats occupied by sperm whales. However, if vessels involved in oyster reef creation/enhancement do end up in these deepwater areas, adherence

to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners* will prevent striking or otherwise harming sperm whales. Due to the species' mobility and natural avoidance behaviors, and the action agency's compliance with these measures, the risk of adverse effects directly related to vessel interactions is discountable.

- Fuel or chemical leaks from heavy equipment could enter the aquatic environment and impact listed species and their critical habitats.

PDC 2.j. requires action agencies to develop and implement a spill prevention and response plan, including cleaning and sealing all equipment that would be used in the water to rid it of chemical residue and conducting daily inspections of all construction and related equipment to ensure there are no leaks of fuel, antifreeze, hydraulic fluid, or other harmful substances. When these measures are implemented fully, the possibility of adverse effects' resulting from fuel or chemical leaks and spills is discountable.

- Deployment of turbidity curtains or other devices that enclose areas of aquatic habitat have the potential to entrap listed species within the enclosed areas.

PDC 2.1.i. requires that action agencies follow NMFS's *Measures for Reducing Entrapment Risk to Protected Species*. When these measures are implemented fully, the possibility of listed species' becoming entrapped within enclosed areas is discountable.

- Oyster reef creation/enhancement may involve temporary deployment of turbidity curtains or other materials that have the potential to result in entanglement of listed species within those materials. Deployment of marker buoys related to construction activities can also pose a risk of entanglement in the anchor lines.

PDC 2.1. ii. requires that any turbidity curtains or other such equipment/materials be installed in a manner that avoids entanglement or entrapment of protected species.

PDC 2.1. iii. requires projects that include installation of marker buoys or other floating objects tethered to the sea floor, to ensure that all in-water lines be made of materials and in a manner to minimize the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. When all of these measures are implemented fully, the possibility of listed species' becoming entangled in materials/equipment is discountable.

- Adverse impacts to benthic habitats from placement of oyster cultch material may occur in the footprint of the project areas where existing habitats would be permanently covered by the oyster reef.

PDC 1.a. prohibits oyster reef creation/enhancement within smalltooth sawfish critical habitat, PDC 1.c. prohibits oyster reef creation/enhancement on submerged aquatic vegetation, live bottom, and hard or soft coral, PDC 2.g. requires that cultch material be placed in a manner minimizing the disturbance of surrounding sediments, and PDC 2.d. requires that oyster reef creation/enhancement within Gulf sturgeon critical habitat must occur only on existing shell substrata or relic reef locations. When all of these criteria are followed, NMFS expects any impacts to listed species or their designated critical habitats by the restoration/enhancement of oyster reefs to be insignificant.

- Constructed oyster reefs could impede movement of listed species between shoreline and open water and between marine habitat and freshwater spawning and rearing habitats.

PDC 1.b. prohibits oyster reef construction in nearshore reproductive habitat of loggerhead sea turtle designated critical habitat, PDC 2.b. prohibits construction activities that could impede sea turtle access to or from sea turtle nesting sites during nesting season, and PDC 2.i. requires that all oyster reef designs include intermittent breaks between oyster reef segments to avoid impeding movement of ESA-listed species. Implementation of these criteria will ensure that any potential effects from oyster reef creation/enhancement on the movement of listed species or the essential features/PCEs of critical habitat related to free movement will be insignificant or discountable.

- Oyster reef creation/enhancement within nearshore reproductive habitat of critical habitat for loggerhead sea turtles could promote nearshore predator concentration caused by submerged and emergent offshore structures, disrupt wave patterns necessary for orientation, and/or create excessive longshore currents.

Any effects to nearshore reproductive habitat for loggerhead sea turtles from oyster reef creation/enhancement will be avoided by PDC 1.b., which prohibits oyster reef creation/enhancement in these areas.

## 7. PDCs for Construction of Non-Fishing Piers

The following PDCs must be met for activities to be qualified for streamlined consultation. The PDCs avoid adverse effects to ESA-listed threatened and endangered species and their designated critical habitats under NOAA Fisheries' jurisdiction. These PDCs apply to activities that occur in or impact marine and estuarine waters.<sup>51</sup> Additional criteria may be required under other statutes (e.g., the Marine Mammal Protection Act, Clean Water Act, and Magnuson Stevens Fishery and Conservation Management Act) and by the U.S. Fish and Wildlife Service for ESA-listed species under their jurisdiction.

These PDCs cover piers built for access to the water such as boating, bird and wildlife viewing, or walking. These PDCs do not cover piers built to provide fishing from the structure or fish-cleaning stations, as those types of projects have a potential for unavoidable adverse effects (e.g., hooking ESA-listed sea turtles or attracting protected species to improperly disposed fish parts) that need to be evaluated individually by NMFS.

1. Activities that must be avoided:
  - a. Piers shall not be constructed within smalltooth sawfish critical habitat.
2. General conditions:
  - a. Develop and implement a spill prevention and response plan, including cleaning and sealing all equipment that would be used in the water to rid it of chemical residue and conducting daily inspections of all construction and related equipment to ensure there are no leaks of fuel, antifreeze, hydraulic fluid, or other harmful substances. If a spill occurs, report response and outcome in Monitoring Report No. 3 below.
  - b. Design or materials used shall not create an entanglement or entrapment risk to ESA-listed species or block migration.
    - i. Follow NMFS's *Measures for Reducing Entrapment Risk to Protected Species*,<sup>52</sup> where applicable.
    - ii. Any turbidity curtains or other such construction equipment/materials shall be installed in a manner that avoids entanglement or entrapment of protected species.
    - iii. Projects that include installation of marker buoys or other floating objects tethered to the sea floor, shall ensure that all in-water lines be made of materials and in a manner to minimize the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle.
  - c. Follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*,<sup>53</sup>

<sup>51</sup> NOAA Fisheries and the U.S. Fish and Wildlife Service share jurisdiction for Gulf Sturgeon and listed sea turtles. 1977 Memorandum of Understanding regarding the Roles of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in Joint Administration of the Endangered Species Act of 1973 as to Marine Turtles.

<sup>52</sup> NMFS. *Measures for Reducing Entrapment Risk to Protected Species*. 2012. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf).



- d. Follow NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*.<sup>54</sup>
- e. Follow *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat*. U.S. Army Corps of Engineers/National Marine Fisheries Service August 2001.<sup>55</sup>
- f. In-water construction activities shall not impede sea turtle access to or from sea turtle nesting sites during nesting season.

Location	Species	Nesting Season
Mississippi, Louisiana, Alabama and Northern Florida (Escambia to Pasco Counties)	Loggerhead sea turtles	May 1 – October 31
	Green sea turtles	May 15 – October 31
	Leatherback sea turtles	May 1 – September 30
Southern Florida (Pinellas to Monroe Counties)	Loggerhead sea turtles	April 24 – October 31
	Green sea turtles	May 15 – October 31
	Hawksbill sea turtles (Monroe County only)	June 1 – December 31
Texas	Kemp's ridley sea turtles	May 1 – September 30

- g. Pile driving:
- i. Jetting, augering, or vibratory hammer methods are preferred.
  - ii. Use of impact hammers in Gulf sturgeon critical habitat shall be limited to May 1 - September 30.
  - iii. No steel piles shall be driven by impact hammer.
  - iv. Noise abatement measures shall be required (e.g., bubble curtains, TNAP<sup>56</sup>) if 6 or more concrete piles are installed within any single day by impact hammer in a confined space.<sup>57</sup>

<sup>53</sup> NMFS. Sea Turtle and Smalltooth Sawfish Construction Conditions. 2006. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf)

<sup>54</sup> NMFS. Vessel Strike Avoidance Measures and Reporting for Mariners. 2008. Available: [sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/copy\\_of\\_vessel\\_strike\\_avoidance\\_february\\_2008.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/copy_of_vessel_strike_avoidance_february_2008.pdf)

<sup>55</sup> RS – on NMFS website at:

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/dockguidelines2001.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/dockguidelines2001.pdf)

<sup>56</sup> Temporary Noise Attenuation Piles (TNAP) are sleeves placed over the pile during installation consisting of a casing lined with noise-insulating foam.

- h. When possible, build the pier out from land using the pier itself as a work platform (e.g., “end-on” construction method). Terminal structures shall be located in sufficiently deep waters to avoid prop-washing of bottom sediments. If it is necessary to work from barges or small boats, use small outboard motors and exercise extreme care to assure that no prop-washing occurs.
- i. Water depths shall not be altered through dredging or filling activities in association with pier construction.
- j. Any piers constructed on or adjacent to sea turtle nesting beaches shall implement the following lighting specifications:
  - i. Lighting of pier structures projecting over the beach or water shall be:
    - 1) Long wavelength and fully shielded, and
    - 2) Mounted as low to the deck as possible to prevent light pollution or spillage beyond the walking surface, and shall consist of:
      - a. Recessed railing down-light fixtures, equipped with downward-directed louvers and interior dark-colored, non-reflective baffles, or
      - b. Bollard-type fixtures, which do not extend more than 42 inches above the adjacent floor or deck, measured from the bottom of fixture, equipped with downward-directed louvers that completely hide the point source of light, and externally shielded on the side facing the beach, or
      - c. Embedded lighting systems.
- k. Post and maintain “No Fishing Allowed” signs on the pier. NMFS-approved, educational signage shall be posted and maintained in highly-frequented areas at the pier that provides the appropriate contact information in the event of a dolphin, sea turtle, Gulf sturgeon, or smalltooth sawfish stranding. Signage templates for NMFS species can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/protected\\_species\\_educational\\_signs/index.html](http://sero.nmfs.noaa.gov/protected_resources/section_7/protected_species_educational_signs/index.html)
- l. To avoid turbidity impacts to listed species:
  - i. Heavy equipment working in wetlands or mudflats shall be placed on mats, or other measures shall be taken to minimize soil disturbance.
  - ii. Appropriate soil erosion and sediment controls shall be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, shall be permanently stabilized at the earliest practicable date.
  - iii. Use floating turbidity curtains around all in-water construction areas.

### 3. Monitoring:

---

<sup>57</sup> A confined space is defined as any area that has another solid object (e.g., a shoreline) that creates a constricted passage area such that species attempting to move through the area would be forced to pass within 150 ft of the pile installation site.

- a. Monitoring reports shall include
  - i. Project construction monitoring from PDC No. 2, above
  - ii. As-built project completion drawings and photos
  - iii. Any interactions with protected species listed in PDC No. 4, below.

4. Reporting:

- a. Report all interactions with, or sightings of stranded, entangled, dead or injured sea turtles, Gulf sturgeon, sawfish, or marine mammals, immediately to:
  - i. Sea turtles and marine mammals:  
Telephone: 1-877-WHALE HELP (1-877-942-5343)
  - ii. Gulf sturgeon - NMFS's Protected Resources Division:  
Telephone: 1-844-788-7491 (1-844-STURG 911)  
Email: nmfs.ser.sturgeonnetwork@noaa.gov  
When possible provide:
    - 1) the location where the fish was found or caught
    - 2) the condition of the fish
    - 3) the presence of any research tags
    - 4) the length of the fish
    - 5) a photograph
  - iii. Smalltooth sawfish - Fish and Wildlife Research Institute:  
Telephone: 1-941-255-7403  
Email: Sawfish@MyFWC.com
- c. Final reports from project monitoring shall be submitted to:  
NOAA Fisheries Service - Protected Resources Division  
Restoration Project Monitoring Reports  
263 13th Avenue South  
Saint Petersburg, Florida 33701

## 7.1 Effects Analysis for Construction of Non-fishing Piers

Section 6.8 (Enhancing Recreational Public Access) describes several potential routes of effects through which construction of piers could adversely affect listed species and critical habitats. The PDCs developed for construction of non-fishing piers include measures to ensure that any such effects are avoided or minimized to the point of insignificance. A summary of the potential adverse effects and the PDCs that ensure avoidance or minimization of those effects follows:

- Pier construction may involve the use of heavy construction equipment, barges, and support vessels that can cause temporary localized adverse impacts from vessel strikes, sediment disturbance, increased turbidity, and noise. These effects can result in physical injury to listed species (e.g., vessel strikes), and/or cause them to avoid the construction area, which could disrupt foraging, sheltering, and other essential activities.

PDC 2.c. requires action agencies to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. These criteria require that all vessels associated with construction projects operate at "no wake/idle" speeds at all times while in the construction area or other shallow water areas, and that operation of any mechanical construction equipment shall cease immediately if a sea turtle is seen within a 50-ft radius of the equipment. Due to the species' mobility and natural avoidance behaviors and the action agency's compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, the risk of injury directly related to construction activities is discountable.

PDC 2.d. requires action agencies to adhere to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners*. These criteria require that all vessel operators and crews maintain a vigilant watch for marine mammals and sea turtles and maintain appropriate speeds and distances from protected species to avoid striking or otherwise harming these species. Pier construction activities generally occur in shallow-water areas far from the deepwater habitats occupied by sperm whales. However, if vessels involved in pier construction do end up in these deepwater areas, adherence to NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners* will prevent striking or otherwise harming sperm whales. Due to the species' mobility and natural avoidance behaviors, and the action agency's compliance with these measures, the risk of adverse effects directly related to vessel interactions is discountable.

PDC 2.1. includes several measures to avoid turbidity impacts to water quality. Listed species may be temporarily unable to use the sites for foraging or shelter habitat due to avoidance of construction activities and related noise. However, NMFS has consulted on numerous living shoreline creation projects which generally have relatively small footprints and short construction durations. In addition, the areas adjacent to these types of projects generally provide similar

foraging and shelter habitat. Therefore, NMFS expects any impacts resulting from temporary avoidance of the area due to construction activities to be insignificant.

- Fuel or chemical leaks from construction equipment could enter the aquatic environment and impact listed species and their critical habitats.

PDC 2.a. requires action agencies to develop and implement a spill prevention and response plan, including cleaning and sealing all equipment that would be used in the water to rid it of chemical residue and conducting daily inspections of all construction and related equipment to ensure there are no leaks of fuel, antifreeze, hydraulic fluid, or other harmful substances. When these measures are implemented fully, the possibility of adverse effects resulting from fuel or chemical leaks and spills is discountable.

- Deployment of turbidity curtains or other devices that enclose areas of aquatic habitat have the potential to entrap listed species within the enclosed areas.

PDC 2.b.i. requires that action agencies follow NMFS's *Measures for Reducing Entrapment Risk to Protected Species*. When these measures are implemented fully, the possibility of listed species becoming entrapped within enclosed areas is discountable.

- Pier construction may involve temporary deployment of turbidity curtains or other materials that have the potential to result in entanglement of listed species within those materials. Deployment of marker buoys related to construction activities can also pose a risk of entanglement in the anchor lines.

PDC 2.b. ii. requires that any turbidity curtains or other such equipment/materials be installed in a manner that avoids entanglement or entrapment of protected species.

PDC 2.b. iii. requires projects that include installation of marker buoys or other floating objects tethered to the sea floor, to ensure that all in-water lines be made of materials and in a manner to minimize the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. When these measures are implemented fully, the possibility of listed species becoming entangled in construction related materials/equipment is discountable.

- Noise generated during pile driving for piers could affect listed species in the immediate area through behavioral changes or direct physical injury from high pressure energy generated by impact hammer pile driving.

PDC 2.g. includes several measures designed to avoid or minimize impacts of pile driving to listed species and critical habitat. With implementation of these criteria, any effects of pile driving are expected to be insignificant.

- Piers constructed over sensitive habitat features such as SAV can cause permanent displacement of these habitat types in the footprint of the piles supporting the structure and loss or thinning of the vegetation under the structure from shading of sunlight. Pier construction activities can also result in impacts to sensitive habitat features from prop-washing by work vessel motors and removal or covering of surface layers through dredging activities. Widespread and persistent impacts to these keystone habitat features can eventually disrupt the functions of the ecosystems upon which listed species rely.

PDC 1.a. prohibits construction of piers within smalltooth sawfish critical habitat, and PDC 2.c. requires adherence to guidelines developed by NMFS and the U.S. Army Corps of Engineers: *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat*. PDC 2.h requires vessel operators to exercise extreme care to assure that no prop-washing occurs, and PDC 2.i prohibits dredging or filling activities in association with pier construction. Adherence to these criteria will ensure any effects to sensitive habitats and the essential features of Gulf sturgeon critical habitat (i.e., sediment quality and abundant food items) from the construction of piers will be insignificant.

- If fishing were to be allowed on piers, fishing activities could adversely affect listed species via incidental hooking and entanglement in actively-fished lines, as well as in lost and discarded line. Heavily used fishing areas such as fishing piers are known to attract sea turtles that learn to forage there for discarded bait and fish carcasses, increasing their vulnerability to hooking and entanglement.

PDC 2.k. requires action agencies to post and maintain “No Fishing Allowed” signs on piers. Adherence to these criteria will ensure that the potential for adverse effects from fishing-related interactions with listed species will be discountable.

- If pier designs were to include permanent lighting, and those piers were to be constructed on or adjacent to sea turtle nesting beaches, the lighting on those piers could alter the behavior of nesting adults (Witherington 1992) and could disorient emerging hatchlings causing them to be drawn away from, instead of toward, the water (Witherington and Bjorndal 1991).

PDC 2.j. requires several measures designed to minimize any potential effects to sea turtles from pier lighting. Implementation of these criteria is expected to ensure that any such effects would be insignificant.