**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
**NATIONAL MARINE FISHERIES SERVICE**
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
https://www.fisheries.noaa.gov/region/southeast

10/19/2022

F/SER31:SG
SERO-2022-00865

Keegan Kelly, Environmental Planning & Historic Preservation Specialist
FEMA Region IV Mitigation Division
Federal Emergency Management Agency
Department of Homeland Security
3005 Chamblee Tucker Road
Atlanta, Georgia 30341-4112

Dear Keegan Kelly,

Ref: Harrison County, Jim Simpson Fishing Pier Repairs, PA-04-MS-4576-PW-00389-PN-172586, Long Beach, Harrison County, Mississippi

Dear Keegan Kelly,

The enclosed Biological Opinion (Opinion) was prepared by the National Marine Fisheries Service (NMFS), pursuant to Section 7(a)(2) of the Endangered Species Act. The Opinion considers the effects of a proposal by the Federal Emergency Management Authority (FEMA) to provide grant funding for the removal and replacement of an existing fishing pier. This Opinion is a reinitiation and amendment of a previous Opinion (SER-2016-17812) issued for FEMA's funding of repairs to the same fishing pier, and was prepared by the National Marine Fisheries Service (NMFS) pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), resulting from the listing of a new species (giant manta ray). This Opinion amends certain portions of our previous Opinion to address the effects of the proposed action on giant manta ray. NMFS concludes that the proposed action is not likely to jeopardize the continued existence of this species. We base this Opinion on project-specific information provided in the consultation package, NMFS's review of published literature, and the best available data.

We look forward to further cooperation with FEMA on other projects to ensure the conservation and recovery of our threatened and endangered marine species. This project has been assigned the tracking number SERO-2022-00865 in our NMFS Environmental Consultation Organizer (ECO). Please refer to the ECO number in all future inquiries regarding this consultation. If you have any questions regarding this consultation, please contact Sarah Garvin, Consultation Biologist, by phone at 727- 342-0249, or by email at Sarah.Garvin@noaa.gov.

Sincerely,

AMENDOLA.KIMBERLY.BARBARA.1365830769

Digitally signed by AMENDOLA.KIMBERLY.BARBARA.1365830769
Date: 2022.10.19 11:23:13 -04'00'

for Andy J. Strelcheck
Regional Administrator

Enclosure: Biological Opinion

File: 1514-22.o

**Endangered Species Act - Section 7 Consultation**
**Biological Opinion**

**Action Agencies**: Federal Emergency Management Agency (Region IV)

**Applicants:** Harrison County, Mississippi

**Activity**: Reinitiation of Formal Consultation for Funding the Replacement of the Storm-Damaged Jim Simpson Fishing Pier

**Consulting Agency**: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, St. Petersburg, Florida

Tracking Number: SERO-2022-00865

**Approved by:**

AMENDOLA.KIMBERLY.BARBARA.1365830769
Digitally signed by AMENDOLA.KIMBERLY.BARBARA.1365830769
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for Andy J. Strelcheck, Regional Administrator
NMFS, Southeast Regional Office
St. Petersburg, Florida

**Date Issued**: 10/19/2022

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**Acronyms and Abbreviations**

| | |
|---|---|
| CFR | Code of Federal Regulations |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CR | Conservation Recommendations |
| DPS | Distinct Population Segment |
| ESA | Endangered Species Act |
| FEMA | Federal Emergency Management Agency |
| FR | Federal Register |
| ITS | Incidental Take Statement |
| LED | Light Emitting Diode |
| MHW | Mean High Water |
| MMF | Marine Megafauna Foundation |
| MS | Mississippi |
| NA | North Atlantic |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| Opinion | Biological Opinion |
| PA | Public Assistance |

| | |
|---|---|
| PCB | Polychlorinated Biphenyls |
| PCE | Primary Constituent Element |
| PK | Peak Sound Pressure Level, the greatest value of the sound signal |
| PVC | Polyvinyl Chloride |
| PRD | NMFS Protected Resources Division |
| PRM | Post-release mortality |
| RMS | Root Mean Square, the intensity of the sound signal over a given amount of time |
| RPMs | Reasonable and Prudent Measures |
| SA | South Atlantic |
| SEL | Sound Exposure Level, a measure of energy that takes into account both received sound pressure level and duration of exposure |
| SELcum | Cumulative Sound Exposure Level, the measure of energy that takes into account the received sound pressure level over a 24-hour period |
| SERO | NMFS Southeast Regional Office |
| STSSN | Sea Turtle Stranding and Salvage Network |
| T&Cs | Terms and Conditions |
| U.S. | United States of America |
| USACE | United States Army Corps of Engineers |
| USFWS | United States Fish and Wildlife Service |

**Units of Measure**

| | |
|---|---|
| °C | Degrees Celsius |
| °F | Degrees Fahrenheit |
| ft | Foot/feet |
| $ft^2$ | Square Feet |
| in | Inch(es) |
| m | Meter(s) |

**Introduction**

Section 7(a)(2) of the ESA of 1973, as amended (16 U.S.C. §1531 et seq.), requires that each federal agency 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 critical habitat of those species. When the action of a federal agency may affect a protected species or its critical habitat, that agency is required to consult with either the NMFS or the USFWS, depending upon the protected species or critical habitat that may be affected.

Consultations on most listed marine species and their designated critical habitat are conducted between the action agency and NMFS. Consultations are concluded after NMFS determines the action is not likely to adversely affect listed species or critical habitats, or issues a Biological Opinion (hereafter, referred to as an/the Opinion) that determines whether a proposed action is likely to jeopardize the continued existence of a federally listed species, or destroy or adversely modify federally designated critical habitat. The Opinion also states the amount or extent of listed species incidental take that may occur and develops measures that the action agency must take to reduce the effects of the anticipated take. The Opinion may also recommend discretionary conservation measures. No incidental destruction or adverse modification of critical habitat may be authorized. The issuance of an Opinion detailing NMFS's findings concludes ESA Section 7 consultation.

Reinitiation of consultation is required where discretionary Federal involvement or control over the action has been retained or is authorized by law and one of four conditions occurs: (1) the amount of or extent of the incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not previously considered; or (4) if a new species is listed or critical habitat designated that may be affected by the identified action. 50 CFR 402.16

The initial consultation on the funding project under Section 7 of the ESA concluded with the following NMFS's Biological Opinion: SER-2016-17812, signed on November 7, 2016.

The Federal Emergency Management Agency (FEMA) requested to reinitiate consultation on the previous Opinion on April 12, 2022, due to proposed funding for the replacement of the storm-damaged Jim Simpson fishing pier and effects to threatened giant manta ray, which the previous consultation (SER-2016-17812) did not consider. This Opinion analyzes the effect of funding the proposed fishing pier repair/replacement project on threatened and endangered species and designated critical habitat, in accordance with Section 7 of the ESA. We based it on project information provided by FEMA, the Marine Megafauna Foundation (MMF), and the published literature cited herein.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. As a result, the 2019 regulations are once again in effect, and we

are applying the 2019 regulations here. For purposes of this consultation, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

# 1 CONSULTATION HISTORY

On November 7, 2016, NMFS issued a completed consultation (SER-2016-17812) for grant funding of repairs to Jim Simpson fishing pier in Long Beach, Harrison County, Mississippi. The Opinion determined that funding of the repairs is likely to adversely affect green (North Atlantic and South Atlantic DPSs), Kemp's ridley, and loggerhead (Northwest Atlantic Ocean DPS) sea turtles; and may affect but is not likely to affect, Gulf sturgeon and Gulf sturgeon critical habitat; and will not affect hawksbill or leatherback sea turtles. The Opinion issued an ITS for green, Kemp's ridley, and loggerhead sea turtles. The ITS for these species has not been exceeded since the consultation completion date. The previous Opinion is being reinitiated due to effects of to the threatened giant manta ray, which the previous Opinion did not consider.

On March 16, 2022, FEMA notified us of their intent to utilize the previous Opinion (SER-2016-17812) for impacts associated with the proposed funding for the deconstruction and replacement of the storm-damaged Jim Simpson Fishing Pier. FEMA stated that the proposed funding would result in effects similar to those analyzed in that Opinion. The proposed funding would include the previous Opinion's reasonable and prudent measures and terms and conditions.

On March 28, 2022, NMFS responded to FEMA's notification with our determination that reinitiation of consultation would be required because FEMA's proposed funding of the replacement of Jim Simpson Fishing Pier may affect giant manta ray, which was listed as threatened under the ESA in 2018, subsequent to the issuance of the previous Opinion (SER-2016-17812).

On March 31, 2022, FEMA and NMFS further discussed the parameters of reinitiation during a conference call.

On April 12, 2022, FEMA requested formal consultation on their proposed disbursement of financial assistance through the Public Assistance Grant Program (PA) for post-storm repairs and upgrades to multiple pier facilities in Gulf Coast Mississippi.

On May 31, 2022, we requested more information regarding details of the proposed work for each consultation pier. On June 10, 2022, we received a response from FEMA.

On June 30, 2022, we requested clarification of pre- and post-construction dimensions. We received a final response on July 12, 2022, and we initiated consultation on that day.

# 2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

## 2.1 Proposed Action

Using grant funds provided by FEMA, Harrison County, Mississippi, proposes to deconstruct and remove an 11,300 $ft^2$ damaged wood pier (Jim Simpson Fishing Pier), which was damaged by Hurricane Zeta on October 28-29, 2020. The proposed replacement will return the pier to functional use, and additional mitigation will be implemented to further protect the pier from future storm damage. A total of 172 existing 16-in square concrete piles will be removed using a

barge-mounted track hoe and strap. Demolition and removal of the damaged pier will be conducted from both the uplands and barge.

A replacement pier will be constructed in the same location and in the same general configuration as the existing pier. A total of 172 new 16-in square concrete piles will be installed via jetting. A maximum of 8 piles will be installed per day. The pier will have an elevation of 10-ft-above MHW at the farthest point of the deck from shore. Construction will occur both from the uplands and from a barge.

Dredging of a small work channel on the west side of the pier is proposed to allow access for the work barge. The work channel will be 1,000-ft-long by 42-ft-wide, and will be dredged to a depth of 4.5 ft at MLW. Approximately 7,000 cubic yards of sand and silty-sand dredged material will be removed from the access channel by dragline dredge and temporarily placed along the western margin of the work channel. Once the pilings have been installed, the work channel will be filled and returned to pre-project contours.

The final replacement structure will have a total area of 15,312 $ft^2$ and measure 1,065-ft-long by 12-ft-wide, terminating at the edge of the 50-ft-long by 14-ft-wide fishing platform. The work is expected to take 2 months to complete.

### 2.1.1 Construction Conditions

To minimize potential impacts to ESA-listed species, FEMA will add the following conditions to the grants, which will be implemented during construction and following the completion of the proposed work.

- All activities must be completed during daylight hours.
- Use of existing hard-top surfaces for staging of debris and equipment is required.
- Any fill (sand, limestone, etc.) to be replaced will need to be free of any hazardous materials and will be consistent with the existing geological and soil materials at the sites.
- NMFS SERO's *Protected Species Construction Conditions* (NMFS 2021) will be implemented, including measures for vessel strike avoidance and the following:
    - All on-site project personnel are responsible for observing water-related activities for the presence of protected species. All personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing listed species and all marine mammals. To determine which protected species and critical habitat may be found in the transit area, please review the relevant marine mammal and ESA-listed species at "Find A Species" (https://www.fisheries.noaa.gov/find-species) and the consultation documents that have been completed for the project.
    - For construction work that is generally stationary (e.g., barge-mounted equipment dredging a berth or section of river, or shore-based equipment extending into the water):
        - Operations of moving equipment shall cease if a protected species is observed within 150 ft of operations.

        - Activities shall not resume until the protected species has departed the project area of its own volition (e.g., the species was observed departing or 20 minutes have passed since the animal was last seen in the area).
    - The following measures should be taken when they are consistent with safe navigation to avoid causing injury or death of a protected species:
        - Operate at the minimum safe speed when transiting and maintain a vigilant watch for protected species to avoid striking them. Even with a vigilant watch, most marine protected species are extremely difficult to see from a boat or ship, and you cannot rely on detecting them visually and then taking evasive action. The most effective way to avoid vessel strikes is to travel at a slow, safe speed. Whenever possible, assign a designated individual to observe for protected species and limit vessel operation to only daylight hours.
        - Follow deep-water routes (e.g., marked channels) whenever possible.
        - Operate at "Idle/No Wake" speeds in the following circumstances:
            - While in any project construction areas, or, while in water depths where the draft of the vessel provides less than four feet of clearance from the bottom, or, in all depths after a protected species has been observed in and has recently departed the area.
            - When protected species is sighted, attempt to maintain a distance of 150 ft or greater between the animal and the vessel. Reduce speed and avoid abrupt changes in direction until the animal(s) has left the area.
    - Any interaction with a protected species shall be reported immediately to NOAA Fisheries SERO PRD and the local authorized stranding/rescue organization.
        - The applicant shall report to NMFS SERO PRD via the NMFS SERO Endangered Species Take Report Form (https://forms.gle/85fP2da4Ds9jEL829). This form shall be completed for each individual known reported capture, entanglement, stranding, or other take incident. Information provided via this form shall include the title, the issuance date, and relevant NMFS SERO ECO tracking number from this Opinion for the location of the incident (SERO-2022-00865 Jim Simpson Fishing Pier); the species name; the date and time of the incident; the general location and activity resulting in capture; condition of the species (i.e., alive, dead, sent to rehabilitation); size of the individual, behavior, identifying features (i.e., presence of tags, scars, or distinguishing marks), and any photos that may have been taken.
        - To report the interaction to the local stranding/rescue organization, please see the following website for the most up to date information for reporting sick, injured, or dead protected species: https://www.fisheries.noaa.gov/report
- The applicant will be required to obtain all applicable Federal, state, and local permits and will comply with conditions set forth in each. These requirements include all State of Mississippi and USACE Nationwide Permit #3 (Maintenance). Failure to obtain permits or comply with these conditions may jeopardize the applicant's receipt of FEMA funding.

### 2.1.2 Best Management Practices

To minimize the impacts to ESA-listed species primarily from bycatch fishing, FEMA will add the following conditions to the grant to be followed by the applicants or their designated agents, post-construction:

- The applicant will coordinate an agreement with the appropriate State Sea Turtle Stranding Coordinator to assist, as needed, with the handling and rehabilitation of any sea turtle standings due to incidental bycatch and other in-water activities in the area. The State Sea Turtle Stranding Coordinators are provided at the following website: https://www.fisheries.noaa.gov/state-coordinators-sea-turtle-stranding-and-salvage-network.
- The applicant will place trash receptacles with lids along the fishing structure. Trash receptacles will be clearly marked and will be emptied regularly to ensure they do not overfill and that fish carcasses are disposed of properly.
- Fishing line-recycling bins will be placed along the fishing structure in order to prevent fishing line and debris from being disposed of in the water or on the shore. Receptacles will be clearly marked and will be emptied regularly to ensure they do not overfill and that fishing lines are disposed of properly.
- The applicant will conduct out-of-water structure cleanup on a regular basis. In addition, volunteer groups will hold a minimum of two in-water cleanups annually any derelict tackle or fishing line attached to the structure.
- If any the replacement pier will be lit in the future, the applicants will use sea turtle friendly structure lighting (i.e., long wavelength amber, orange, or red light-emitting diode [LED] lighting).
- Upon completion of the pier, NMFS-approved educational signs must be posted in a visible location at least at the entrance to and terminal end of the fishing structure, alerting users of listed species in the area. The applicant will post at the pier the following signs, which are available for download at the following website: https://www.fisheries.noaa.gov/southeast/consultations/protected-species-educational-signs. It is suggested that both English and Spanish versions of the signs are posted.
    - "Save Dolphins, Sea Turtles, and Manta Rays"
    - "Do Not Catch or Harass Sea Turtles"
    - "Report A Sturgeon"

## 2.2 Action Area

The action area is defined by regulation as all areas to be affected by the federal action and not merely the immediate area involved in the action (50 CFR 402.02).

For the purposes of this federal action, the action area and surrounding habitat described in the previous Opinion (SER-2016-17812) is incorporated herein by reference and is shown in Figure 1 below. Additionally, the action area for Jim Simpson Fishing Pier includes the pier's footprint, the surrounding water accessible to recreational anglers upon completion of the proposed action (i.e., 200-ft casting distance).


**Figure 1. Location of Gulf of Mexico-facing Jim Simpson Fishing Pier in Long Beach, Harrison County, Mississippi.**

## 3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

Table 1 provides the effect determinations for species FEMA and NMFS believe may be affected by the proposed actions. Please note abbreviations used in the table below: E = endangered; T = threatened; LAA = likely to adversely affect; NLAA = may affect, not likely to adversely affect.

**Table 1. Effects Determination) for Species the Action Agency and/or the NMFS Believe May Be Affected by the Proposed Action**

| Species | ESA Listing Status | Action Agency Effect Determination | NMFS Effect Determination |
|---|---|---|---|
| **Sea Turtles** | | | |
| Green (North Atlantic [NA] distinct population segment [DPS]) | T | LAA | LAA |
| Green (South Atlantic [SA] DPS) | T | LAA | LAA |
| Kemp's ridley | E | LAA | LAA |
| Loggerhead (Northwest Atlantic [NWA] DPS) | T | LAA | LAA |
| **Fish** | | | |
| Gulf sturgeon | E | NLAA | NLAA |
| Giant Manta Ray | T | NLAA | LAA |

Giant manta ray are prone to foul-hooking (i.e., when an animal is hooked anywhere on the body without having taken the bait in its mouth) by recreational fishing gear used at fishing structures

that are ocean-facing or located in or near inlet/passes. Based on the best available data, we believe that giant manta may be found in the action area and are likely to be affected by construction effects and recreational hook-and-line interactions upon the completion of the repairs to Jim Simpson Fishing Pier, a public, Gulf of Mexico-facing fishing pier in Mississippi.

Table 2 provides the effects determinations for designated critical habitat occurring in the action area that the FEMA or NMFS believe may be affected by the proposed action.

**Table 2. Effects Determinations for Designated Critical Habitat the Action Agency and/or NMFS Believe May Be Affected by the Proposed Action**

| Critical Habitat | Unit | Action Agency Effect Determination | NMFS Effect Determination |
|---|---|---|---|
| Gulf sturgeon | Unit 8, Lake Pontchartrain and Mississippi Sound | NLAA | NLAA |

## 3.1 Potential Routes of Effect Not Likely To Adversely Affect Listed Species

The previous Opinion (SER-2016-17812) addressed several potential routes of effect not likely to adversely affect ESA-listed sea turtles and Gulf sturgeon and those analyses are incorporated herein by reference. Updates to those analyses and information regarding giant manta rays are described below.

Because the proposed repairs to Jim Simpson Fishing Pier include the dredging of a work channel, an activity that was not analyzed in the previous consultation for this pier (SER-2016-17812), we include analyses of the effects of this proposed activity on all affected ESA-listed species in the action area.

### 3.1.1 Potential Routes of Effect Not Likely To Adversely Affect ESA-Listed Sea Turtles and Gulf Sturgeon

ESA-listed sea turtles and Gulf sturgeon may be physically injured if struck or entrained during dredging. This is extremely unlikely to occur due to these species' mobility and the type of dredge used for this project. NMFS has previously determined in dredging Opinions (e.g., (NMFS 2007)) that, while ocean-going hopper-type dredges may lethally entrain these species, non-hopper type dredging methods, such as the dragline dredging method used in this project, are slower and extremely unlikely to adversely affect ESA-listed sea turtles and Gulf sturgeon. Additionally, the applicant's implementation of NMFS SERO's *Protected Species Construction Conditions* (NMFS 2021) will require all construction workers to observe in-water related activities for the presence of these species. If a sea turtle is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 ft of a sea turtle. Operation of any mechanical construction equipment shall cease immediately if a sea turtle is seen within a 150-ft radius of the equipment. Activities may not resume until the species has departed the project area of its own volition or 20 minutes have passed since the animal was last seen in the area. Further, construction will be

limited to daylight hours, which will assist construction workers in seeing listed species and, if present, avoiding interactions with them.

### 3.1.2 Potential Routes of Effect Not Likely To Adversely Affect Giant Manta Rays

Giant manta rays may be physically injured if struck by construction or dredging equipment, or by materials during demolition and construction activities. However, we believe that this is extremely unlikely to occur. As noted above, the dragline dredge is slow and this species is expected to exhibit avoidance behavior by moving away from physical disturbances. In addition, the implementation of NMFS Southeast Region's *Protected Species Construction Conditions* (NMFS 2021) will require all construction workers to observe in-water activities for the presence of this species. Operation of any mechanical equipment shall cease immediately if a protected species is seen within 150 ft of operations. Activities may not resume until the protected species has departed the project area of its own volition or 20 minutes have passed since the animal was last seen in the area. Further, demolition and construction will be limited to daylight hours so construction workers would be more likely to see listed species, if present, and avoid interactions with them.

Giant manta rays may be injured due to entanglement in improperly discarded fishing gear resulting from future use of the replacement Jim Simpson Fishing Pier after completion of the proposed action. We believe this route of effect is extremely unlikely to occur. To the best of our knowledge, there has never been a reported entanglement from improperly discarded fishing gear with this species at the Jim Simpson Fishing Pier. To help further reduce the risk of entanglement in improperly discarded fishing gear, the applicant will install and maintain fishing line recycling receptacles and trashcans with lids at the piers to keep debris out of the water, and we expect that anglers will appropriately dispose of fishing gear when disposal bins are available. The receptacles will be clearly marked and will be emptied regularly to ensure they are not overfilled and that fishing lines are disposed of properly. The applicant will also perform annual in-water and out-of-water fishing debris cleanups, minimizing the accumulation of fishing line over time.

The NMFS educational sign *"Save Dolphins, Sea Turtles, Sawfish and Manta Ray",* will be installed in visible locations at Jim Simpson Fishing Pier upon completion of the proposed action. We believe the placement of educational signs is a beneficial effect to giant manta ray. The sign will provide information to the public on how to avoid and minimize encounters with this species as well as proper handling techniques. The sign will also encourage anglers to report sightings and interactions, thus providing valuable distribution and abundance data to researchers and resource managers. Accurate distribution and abundance data allows management to evaluate the status of the species and refine conservation and recovery measures.

## 3.2 Potential Routes of Effect Not Likely To Adversely Affect Designated Critical Habitats

The previous Opinion (SER-2016-17812) addressed the potential routes of effect not likely to adversely affect designated critical habitat and that analysis is incorporated herein by reference. Updates to that analysis are described below.

Because the proposed repairs to Jim Simpson Fishing Pier include the dredging of a work channel, an activity that was not analyzed in the previous consultation for this pier (SER-2016-17812), we include an analysis of the effects of this proposed activity on designated critical habitat in the action area.

The dredging proposed for Jim Simpson Fishing Pier will occur within Unit 8 (Lake Pontchartrain and Mississippi Sound) of designated critical habitat for Gulf sturgeon. The primary constituent elements (PCEs) essential for the conservation of Gulf sturgeon are those habitat components that support feeding, resting and sheltering, reproduction, migration, and physical features necessary for maintaining the natural processes that support these habitat components. The PCEs relevant to estuarine and marine areas are:

(1) Abundant prey items within estuarine and marine habitats and substrates for juvenile, subadult, and adult life stages;
(2) Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages;
(3) Sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and
(4) Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., a river unobstructed by any permanent structure, or a dammed river that still allows for passage).

Dredging may remove substrates containing sturgeon prey items (PCE 1), and placement of dredged material may affect PCE 1 by covering bottom substrates containing sturgeon prey species. We believe these effects to PCE 1 from dredging and placement of dredged material will be insignificant. The estimated impact is relatively small (i.e., 7,000 cubic yards) compared to the surrounding area available along the Gulf of Mexico coastline and prey items will still be present in the areas outside the dredging footprint. Effects to PCE 1 are also expected to be temporary and short-term in nature, consisting of a temporary loss of benthic invertebrate populations in the dredged areas. Observed rates of benthic community recovery after dredging range from 3-24 months (Culter and Mahadevan 1982; Saloman et al. 1982; Wilber et al. 2007).

Localized and temporary reductions in water quality (PCE 2) through increased turbidity may result from dredging and dredged material placement. We believe the effect to PCE 2 from localized and temporary increased turbidity will be insignificant because the action area contains naturally turbid water and dredging and dredged material placement in this area will not notably decrease the water quality in the area.

Dredging and dredged material placement can affect sediment quality (PCE 3). We believe the effect to PCE 3 from dredging and material placement will be insignificant. The composition of materials that will be dredged from and relocated to (i.e., sidecast) other portions of the project area are likely to be the same as those remaining in the dredge footprint and the placement area; therefore, no permanent alteration of habitat composition will occur within the action area. Because similar habitat is expected to be present pre- and post-dredging and placement, it is

anticipated that the benthic biota in the dredging areas will have the ability to recover and re-colonize over a relatively short time.

## 3.3 Status of Species Likely To Be Adversely Affected

The previous Opinion (SER-2016-17812) addressed the status of species likely to be adversely affected and that information is incorporated herein by reference. The status of giant manta ray is described below.

### 3.3.1 Giant manta ray

NMFS listed the giant manta ray (*Manta birostris*) as threatened under the ESA (83 FR 2916, Publication Date January 22, 2018) and determined that the designation of critical habitat is not prudent on (84 FR 66652, Publication Date December 5, 2019). On December 4, 2019, NMFS published a recovery outline for the giant manta ray (NMFS 2019), which serves as an interim guidance to direct recovery efforts for giant manta ray.

#### 3.3.1.1 Species Description and Distribution

The giant manta ray is the largest living ray, with a wingspan reaching a width of up to 7 m (23 ft), and an average size between 4-5 m (15-16.5 ft). The giant manta ray is recognized by its large diamond-shaped body with elongated wing-like pectoral fins, ventrally placed gill slits, laterally placed eyes, and wide terminal mouth. In front of the mouth, it has 2 structures called cephalic lobes that extend and help to introduce water into the mouth for feeding activities (making them the only vertebrate animals with 3 paired appendages). Giant manta rays have 2 distinct color types: chevron (mostly black back dorsal side and white ventral side) and black (almost completely black on both ventral and dorsal sides). Most of the chevron variants have a black dorsal surface and a white ventral surface with distinct patterns on the underside that can be used to identify individuals (Miller and Klimovich 2017). There are bright white shoulder markings on the dorsal side that form 2 mirror image right-angle triangles, creating a T-shape on the upper shoulders.

The giant manta ray can be found in all ocean basins. In terms of range, within the Northern hemisphere, the species has been documented as far north as southern California and New Jersey on the United States west and east coasts, respectively, and Mutsu Bay, Aomori, Japan, the Sinai Peninsula and Arabian Sea, Egypt, and the Azores Islands (CITES 2013; Gudger 1922; Kashiwagi et al. 2010; Moore 2012). In the Southern Hemisphere, the species occurs as far south as Peru, Uruguay, South Africa, New Zealand and French Polynesia (CITES 2013; Mourier 2012). Within its range, the giant manta ray inhabits tropical, subtropical, and temperate bodies of water and is commonly found offshore, in oceanic waters, and near productive coastlines (Figure 2) (Kashiwagi et al. 2011; Marshall et al. 2009).

**Figure 2. The Extent of Occurrence (dark blue) and Area of Occupancy (light blue) based on species distribution (Lawson et al. 2017).**

#### 3.3.1.2 Life History Information

Giant manta rays make seasonal long-distance migrations, aggregate in certain areas and remain resident, or aggregate seasonally (Dewar et al. 2008; Girondot et al. 2015; Graham et al. 2012; Stewart et al. 2016). The giant manta ray is a seasonal visitor along productive coastlines with regular upwelling, in oceanic island groups, and at offshore pinnacles and seamounts. The timing of these visits varies by region and seems to correspond with the movement of zooplankton, current circulation and tidal patterns, seasonal upwelling, seawater temperature, and possibly mating behavior. They have also been observed in estuarine waters near oceanic inlets, with use of these waters as potential nursery grounds (Adams and Amesbury 1998; Medeiros et al. 2015; Milessi and Oddone 2003)  J. Pate, Florida Manta Project, unpublished data).

Giant manta rays are known to aggregate in various locations around the world in groups usually ranging from 100-1,000 (Graham et al. 2012; Notarbartolo di Sciara and Hillyer 1989; Venables 2013). These sites function as feeding sites, cleaning stations, or sites where courtship interactions take place (Graham et al. 2012; Heinrichs et al. 2011; Venables 2013). The appearance of giant manta rays in these locations is generally predictable. For example, food availability due to high productivity events tends to play a significant role in feeding site aggregations (Heinrichs et al. 2011; Notarbartolo di Sciara and Hillyer 1989). Giant manta rays have also been shown to return to a preferred site of feeding or cleaning over extended periods of time (Dewar et al. 2008; Graham et al. 2012; Medeiros et al. 2015). In addition, giant and reef manta rays in Keauhou and Ho”ona Bays in Hawaii, appear to exhibit learned behavior. These manta rays learned to associate artificially lighting with high plankton concertation (primary food source) and shifted foraging strategies to include sites that had artificially lighting at night (Clark 2010). While little is known about giant manta ray aggregation sites, the Flower Garden Banks National Marine Sanctuary and the surrounding region might represent the first documented nursery habitat for giant manta ray (Stewart et al. 2018). Stewart et al. (2018) found that the Flower Garden Banks National Marine Sanctuary provides nursery habitat for juvenile giant manta rays because small age classes have been observed consistently across years at both the population and individual level. The Flower Garden Banks National Marine Sanctuary may

be an optimal nursery ground because of its location near the edge of the continental shelf and proximity to abundant pelagic food resources. In addition, small juveniles are frequently observed along a portion of Florida's east coast, indicating that this area may also function as a nursery ground for juvenile giant manta rays. Since directed visual surveys began in 2016, juvenile giant manta rays are regularly observed in the shallow waters (less than 5 m depth) from Jupiter Inlet to Boynton Beach Inlet (J Pate, Florida Manta Project, unpublished data). However, the extent of this purported nursery ground is unknown as the survey area is limited to a relatively narrow geographic area along Florida's east coast.

The giant manta ray appears to exhibit a high degree of plasticity in terms of its use of depths within its habitat. Tagging studies have shown that the giant manta rays conduct night descents from 200-450 m depths (Rubin et al. 2008; Stewart et al. 2016) and are capable of diving to depths exceeding 1,000 m (A. Marshall et al. unpublished data 2011, cited in Marshall et al. (2011)). Stewart et al. (2016) found diving behavior may be influenced by season, and more specifically, shifts in prey location associated with the thermocline, with tagged giant manta rays (n=4) observed spending a greater proportion of time at the surface from April to June and in deeper waters from August to September. Overall, studies indicate that giant manta rays have a more complex depth profile of their foraging habitat than previously thought, and may actually be supplementing their diet with the observed opportunistic feeding in near-surface waters (Burgess et al. 2016; Couturier et al. 2013).

Giant manta rays primarily feed on planktonic organisms such as euphausiids, copepods, mysids, decapod larvae and shrimp, but some studies have noted their consumption of small and moderately sized fishes (Miller and Klimovich 2017). While it was previously assumed, based on field observations, that giant manta rays feed predominantly during the day on surface zooplankton, results from recent studies (Burgess et al. 2016; Couturier et al. 2013) indicate that these feeding events are not an important source of the dietary intake. When feeding, giant manta rays hold their cephalic lobes in an "O" shape and open their mouth wide, which creates a funnel that pushes water and prey through their mouth and over their gill rakers. They use many different types of feeding strategies, such as barrel rolling (doing somersaults repeatedly) and creating feeding chains with other mantas to maximize prey intake.

The giant manta ray is viviparous (i.e., gives birth to live young). They are slow to mature and have very low fecundity and typically give birth to only one pup every 2 to 3 years. Gestation lasts approximately 10-14 months. Females are only able to produce between 5 and 15 pups in a lifetime (CITES 2013; Miller and Klimovich 2017). The giant manta ray has one of the lowest maximum population growth rates of all elasmobranchs (Dulvy et al. 2014; Miller and Klimovich 2017). The giant manta rays generation time (based on *M. alfredi* life history parameters) is estimated to be 25 years (Miller and Klimovich 2017).

Although giant manta rays have been reported to live at least 40 years, not much is known about their growth and development. Maturity is thought to occur between 8-10 years of age (Miller and Klimovich 2017). Males are estimated to mature at around 3.8 m disc width (slightly smaller than females) and females at 4.5 m disc width (Rambahiniarison et al. 2018).

#### 3.3.1.3 Status and Population Dynamics

There are no current or historical estimates of global abundance of giant manta rays, with most estimates of subpopulations based on anecdotal observations. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 2013) found that only ten populations of giant manta rays had been actively studied, 25 other aggregations have been anecdotally identified, all other sightings are rare, and the total global population may be small. Subpopulation abundance estimates range between 42 and 1,500 individuals, but are anecdotal and subject to bias (Miller and Klimovich 2017). The largest subpopulations and records of individuals come from the Indo-Pacific and eastern Pacific. Ecuador is thought to be home to the largest identified population (n=1,500) of giant manta rays in the world, with large aggregation sites within the waters of the Machalilla National Park and the Galapagos Marine Reserve (Hearn et al. 2014). Within the Indian Ocean, numbers of giant manta rays identified through citizen science in Thailand's waters (primarily on the west coast, off Khao Lak and Koh Lanta) was 288 in 2016. These numbers reportedly surpass the estimate of identified giant mantas in Mozambique (n=254), possibly indicating that Thailand may be home to the largest aggregation of giant manta rays within the Indian Ocean (MantaMatcher 2016). Miller and Klimovich (2017) concluded that giant manta rays are at risk throughout a significant portion of their range, due in large part to the observed declines in the Indo-Pacific. There have been decreases in landings of up to 95% in the Indo-Pacific, although similar declines have not been observed in areas with other subpopulations, such as Mozambique and Ecuador. In the U.S. Atlantic, the giant manta rays appear to have a seasonal pattern of occurrence along the east coast of Florida, showing up with greater frequencies (and in greater numbers) in the spring and summer months (84 FR 66652; Publication Date December 5, 2019). Available sightings data indicates the seasonal visitation of manta rays to Florida's inshore waters, possible juvenile habitat, and possible residency. The numbers, location, and peak timing of the manta rays to this area varies by year (H. Webb unpublished data). In 2015, aerial survey conducted by the Georgia Aquarium peaked at 1,144 manta ray sighted in the inshore waters of northeast Florida, but with notable decline in manta rays observed in the study area since 2015 (H. Webb unpublished data). In addition, juvenile giant manta rays have also been regularly observed inshore off the southeast Florida. Since 2016, researchers with the Marine Megafauna Foundation (MMF) have been conducting annual surveys along a small transect off Palm Beach, Florida, between Jupiter Inlet and Boynton Beach Inlet (~44 km, 24 nautical miles) (J. Pate, MMF, pers. comm. to M. Miller, NMFS OPR, 2018). Results from these surveys indicate that juvenile manta rays are present in these waters for the majority of the year (observations span from May to December), with re-sightings data that suggest some manta rays may remain in the area for extended periods of time or return in subsequent years (J. Pate unpublished data). In the Gulf of Mexico, within the Flower Garden Banks National Marine Sanctuary, 95 unique individuals have been recorded between 1982 and 2017 (Stewart et al. 2018).

#### 3.3.1.4 Threats

The giant manta ray faces many threats, including fisheries interactions, environmental contaminants (microplastics, marine debris, petroleum products, etc.), vessel strikes, entanglement, and global climate change. Overall, the predictable nature of their appearances, combined with slow swimming speed, large size, and lack of fear towards humans, may increase their vulnerability to threats (Convention on Migratory Species 2014; O'Malley et al. 2013). The

ESA status review determined that the greatest threat to the species results from fisheries related mortality (Miller and Klimovich 2017); (83 FR 2916, Publication Date January 22, 2018).

*Commercial Harvest and Fisheries Bycatch*

Commercial harvest and incidental bycatch in fisheries is cited as the primary cause for the decline in the giant manta ray and threat to future recovery (Miller and Klimovich 2017). We anticipate that these threats will continue to affect the rate of recovery of the giant manta ray. Worldwide giant manta ray catches have been recorded in at least 30 large and small-scale fisheries covering 25 countries (Lawson et al. 2017). Demand for the gills of giant manta rays and other mobula rays has risen dramatically in Asian markets. With this expansion of the international gill raker market and increasing demand for manta ray products, estimated harvest of giant manta rays, particularly in many portions of the Indo-Pacific, frequently exceeds numbers of identified individuals in those areas and are accompanied by observed declines in sightings and landings of the species of up to 95% (Miller and Klimovich 2017). In the Indian Ocean, manta rays (primarily giant manta rays) are mainly caught as bycatch in purse seine and gillnet fisheries (Oliver et al. 2015). In the western Indian Ocean, data from the pelagic tuna purse seine fishery suggests that giant manta and mobula rays, together, are an insignificant portion of the bycatch, comprising less than 1% of the total non-tuna bycatch per year (Chassot et al. 2009; Romanov 2002). In the U.S., bycatch of giant manta rays has been recorded in the coastal migratory pelagic gillnet, gulf reef fish bottom longline, Atlantic shark gillnet, pelagic longline, pelagic bottom longline, and trawl fisheries. Incidental capture of giant manta ray is also a rare occurrence in the elasmobranch catch within U.S. Atlantic and Gulf of Mexico, with the majority that are caught released alive. In addition to directed harvest and bycatch in commercial fisheries, the giant manta ray is incidentally captured by recreational fishers using vertical line (i.e., handline, bandit gear, and rod-and-reel). Researchers frequently report giant manta rays having evidence of recreational gear interactions along the east coast of Florida (i.e., manta rays have embedded fishing hooks with attached trailing monofilament line) (J. Pate, Florida Manta Project, unpublished data). Internet searches also document recreational interactions with giant manta rays. For example, recreational fishers will search for giant manta rays while targeting cobia, as cobia often accompany giant manta rays (anglers will cast at manta rays in an effort to hook cobia). In addition, giant manta rays are commonly observed swimming near or underneath public fishing piers where they may become foul-hooked. The current threat of mortality associated with recreational fisheries is expected to be low, given that we have no reports of recreational fishers retaining giant manta ray. However, bycatch in recreational fisheries remains a potential threat to the species.

*Vessel Strike*

Vessel strikes can injure or kill giant manta rays, decreasing fitness or contributing to non-natural mortality (Couturier et al. 2012; Deakos et al. 2011). Giant manta rays can be frequently observed traveling just below the surface and will often approach or show little fear toward humans or vessels (Coles 1916a), which can also make them extremely vulnerable to vessel strikes (Deakos 2010). Five giant manta rays were reported to have been struck by vessels from 2016 through 2018; individuals had injuries (i.e., fresh or healed dorsal surface propeller scars) consistent with a vessel strike. These interactions were observed by researchers conducting surveys from Boynton Beach to Jupiter, Florida (J. Pate, Florida Manta Project, unpublished data). The giant manta ray is frequently observed in nearshore coastal waters and feeding at

inlets along the east coast of Florida. As vessel traffic is concentrated in and around inlets and nearshore waters, this overlap exposes the giant manta ray in these locations to an increased likelihood of potential vessel strike injury. Yet, few instances of confirmed or suspected mortalities of giant manta ray attributed to vessel strike injury (e.g., via strandings) have been documented. This lack of documented mortalities could also be the result of other factors that influence carcass detection (i.e., wind, currents, scavenging, decomposition etc.).

*Microplastics*

Filter-feeding megafauna are particularly susceptible to high levels of microplastic ingestion and exposure to associated toxins due to their feeding strategies, target prey, and, for most, habitat overlap with microplastic pollution hotspots (Germanov et al. 2019). Giant manta rays are filter feeders, and, therefore can ingest microplastics directly from polluted water or indirectly through-contaminated planktonic prey (Miller and Klimovich 2017). The effects of ingesting indigestible particles include blocking adequate nutrient absorption and causing mechanical damage to the digestive tract. Microplastics can also harbor high levels of toxins and persistent organic pollutants, and introduce these toxins to organisms via ingestion. These toxins can bioaccumulate over decades in long-lived filter feeders, leading to a disruption of biological processes (e.g., endocrine disruption), and potentially altering reproductive fitness (Germanov et al. 2019). Jambeck et al. (2015) found that the Western and Indo- Pacific regions are responsible for the majority of plastic waste. These areas also happen to overlap with some of the largest known aggregations of giant manta rays. For example, in Thailand, where recent sightings data have identified over 288 giant manta rays (MantaMatcher 2016), mismanaged plastic waste is estimated to be on the order of 1.03 million tonnes annually, with up to 40% of this entering the marine environment (Jambeck et al. 2015). Approximately 1.6 million tonnes of mismanaged plastic waste is being disposed of in Sri Lanka, again with up to 40% entering the marine environment (Jambeck et al. 2015), potentially polluting the habitat used by the nearby Maldives aggregation of manta rays. While the ingestion of plastics is likely to negatively affect the health of the species, the levels of microplastics in manta ray feeding grounds and frequency of ingestion are presently being studied to evaluate the impact on these species (Germanov et al. 2019).

*Mooring and Anchor Lines*

Mooring and boat anchor line entanglement may also wound giant manta rays or cause them to drown (Deakos et al. 2011; Heinrichs et al. 2011). There are numerous anecdotal reports of giant manta rays becoming entangled in mooring and anchor lines (C. Horn, NMFS, unpublished data), as well as documented interactions encountered by other species of manta rays (C. Horn, NMFS, unpublished data). For example, although a rare occurrence, reef manta rays on occasion entangle themselves in anchor and mooring lines. Deakos (2010) suggested that manta rays become entangled when the line makes contact with the front of the head between the cephalic lobes, the animal's reflex response is to close the cephalic lobes, thereby trapping the rope between the cephalic lobes, entangling the manta ray as the animal begins to roll in an attempt to free itself. In Hawaii, on at least 2 occasions, a reef manta ray was reported to have died after entangling in a mooring line (A. Cummins, pers. comm. 2007, K. Osada, pers. comm. 2009; cited in Deakos (2011)). In Maui, Hawaii, Deakos et al. (2011) observed that 1 out of 10 reef manta rays had an amputated or disfigured non-functioning cephalic lobe, likely a result of line entanglement. Mobulid researchers indicate that entanglements may significantly affect the

manta rays fitness (Braun et al. 2015; Convention on Migratory Species 2014; Couturier et al. 2012; Deakos et al. 2011; Germanov and Marshall 2014; Heinrichs et al. 2011). However, there is very little quantitative information on the frequency of these occurrences and no information on the impact of these injuries on the overall health of the species.

*Climate Change Effects*

Because giant manta rays are migratory and considered ecologically flexible (e.g., low habitat specificity), they may be less vulnerable to the impacts of climate change compared to other sharks and rays (Chin et al. 2010). However, as giant manta rays frequently rely on coral reef habitat for important life history functions (e.g., feeding, cleaning) and depend on planktonic food resources for nourishment, both of which are highly sensitive to environmental changes (Brainard et al. 2011; Guinder and Molinero 2013), climate change is likely to have an impact on their distribution and behavior. Coral reef degradation from anthropogenic causes, particularly climate change, is projected to increase through the future. Specifically, annual, globally averaged surface ocean temperatures are projected to increase by approximately 0.7 °C by 2030 and 1.4 °C by 2060 compared to the 1986-2005 average (Intergovernmental Panel on Climate Change 2013), with the latest climate models predicting annual coral bleaching for almost all reefs by 2050 (Heron et al. 2016). Declines in coral cover have been shown to result in changes in coral reef fish communities (Jones et al. 2004) (Graham et al. 2008). Therefore, the projected increase in coral habitat degradation may potentially lead to a decrease in the abundance of fish that clean giant manta rays (e.g., *Labroides* spp., *Thalassoma* spp., and *Chaetodon* spp.) and an overall reduction in the number of cleaning stations available to manta rays within these habitats. Decreased access to cleaning stations may negatively affect the fitness of giant manta rays by hindering their ability to reduce parasitic loads and dead tissue, which could lead to increases in diseases and declines in reproductive fitness and survival rates.

Changes in climate and oceanographic conditions, such as acidification, are also known to affect zooplankton structure (size, composition, and diversity), phenology, and distribution (Guinder and Molinero 2013). As such, the migration paths and locations of both resident and seasonal aggregations of giant manta rays, which depend on these animals for food, may similarly be altered (Couturier et al. 2012). As research to understand the exact impacts of climate change on marine phytoplankton and zooplankton communities is still ongoing, the severity of this threat has yet to be fully determined (Miller and Klimovich 2017).

## 4 ENVIRONMENTAL BASELINE

This section describes the effects of past and ongoing human and natural factors contributing to the current status of giant manta ray. The environmental baseline includes state, tribal, local, and private actions already affecting the species and its critical habitat that will occur contemporaneously with the consultation in progress. Unrelated federal actions affecting giant manta ray that have completed formal or informal consultation are also part of the environmental baseline, as are federal and other actions within the action area that may benefit the species. This Opinion describes these activities' effects in the sections below.

Focusing on the impacts of the activities in the action areas specifically allows us to assess the prior experience and state (or condition) of the endangered and threatened individuals. This

consideration is important because in some states or life history stages, or areas of their ranges, listed individuals will commonly exhibit, or be more susceptible to, adverse responses to stressors than they would be in other states, stages, or areas within their distributions. These localized stress responses or stressed baseline conditions may increase the severity of the adverse effects expected from the proposed action.

## 4.1 Status of Species Likely to be Adversely Affected within the Action Areas

### 4.1.1 ESA-Listed Sea Turtles

The sections of the previous Opinion (SER-2016-17812) regarding the status of the NA and SA DPSs of green sea turtles, Kemp's ridley sea turtles, and loggerhead sea turtles within the action areas are incorporated herein by reference. Updates to that information regarding giant manta rays is described below.

### 4.1.2 Giant Manta Ray

NMFS is not aware of any reported recreational hook-and-line captures, including entanglements, of a giant manta ray at Jim Simpson Fishing Pier; however, as stated above, this species is prone to foul-hooking by recreational fishing gear used at fishing structures that are ocean-facing or located in or near inlet/passes. Giant manta rays occur in coastal bays, ICWs, tidal inlets, and in estuarine systems (e.g., sounds and lagoons). Giant manta rays are observed feeding in tidal outflows, inlets, and river mouths (feeding around outfall plumes) (Adams and Amesbury 1998; Milessi and Oddone 2003; Pate and Marshall 2020; Farmer et al. 2022). They are also commonly observed swimming near or underneath public fishing piers. Due to the Gulf of Mexico-facing position of Jim Simpson Fishing Pier, we believe giant manta rays may be adversely affected by recreational fishing that will occur at this pier upon completion of the proposed action. NMFS believes that no individual giant manta ray is likely to be a permanent resident of the action areas, although some individuals may be present at any given time. These same individuals will migrate into coastal and offshore waters of the Gulf of Mexico, and thus may be affected by activities occurring there. Therefore, the status of giant manta rays in the action areas, including the threats, are the same as those discussed in Section 3.3.1 of this Opinion (Status of Species).

## 4.2 Factors Affecting Species within the Action Areas

The following analysis examines actions that may affect giant manta rays within the action areas. The factors affecting the NA and SA DPSs of green sea turtles, Kemp's ridley sea turtles, and loggerhead sea turtles in the action areas are discussed in the previous opinion (SER-2016-17812) and are hereby incorporated by reference.

### 4.2.1 Federal Actions

*ESA Section 7 Consultations*

Other than the proposed work at Jim Simpson Fishing Pier considered in this Opinion and in the previous Opinion (SER-2016-17812), no other federally permitted projects are known to have

occurred within the action area, as per a review of the NMFS Protected Resources Division's completed consultation database by the consulting biologist on August 10, 2022.

### 4.2.2 State or Private Actions

*Recreational Fishing*

Recreational fishing as regulated by the State of Mississippi can affect giant manta rays within the action areas. Pressure from recreational fishing in and adjacent to the action areas is likely to continue.

Giant manta ray is incidentally captured by recreational fishers using vertical line (i.e., handline, bandit gear, and rod-and-reel). Researchers frequently report giant manta rays having evidence of recreational gear interactions along the east coast of Florida (i.e., manta rays have embedded fishing hooks with attached trailing fishing line) (J. Pate, Florida Manta Project, unpublished data). Internet searches also document recreational interactions with giant manta rays. In the absence of data specific to the action areas in Mississippi, we will assume similar recreational gear interactions in the action areas as reported along the East Coast of Florida. For example, recreational fishers will search for giant manta rays while targeting cobia, as cobia often accompany giant manta rays. Giant manta rays are commonly observed swimming near or underneath public fishing piers where they may become foul-hooked.

### 4.2.3 Marine Debris and Acoustic Effects

A number of activities that may affect giant manta ray in the action areas include anthropogenic marine debris and acoustic effects. The effects from these activities are difficult to measure. Where possible, conservation actions are being implemented to monitor or study the effects to sea turtles from these sources.

Sources of pollutants along the coast that may affect giant manta ray include PCB loading, stormwater runoff from coastal towns and cities into rivers and canals emptying into bays and the ocean, and groundwater and other discharges (Vargo et al. 1986). Although pathological effects of oil spills have been documented in laboratory studies of marine mammals and sea turtles (Vargo et al. 1986), the impacts of many other anthropogenic toxins have not been investigated in the giant manta ray.

The development of marinas and docks in inshore waters can negatively affect nearshore habitats. An increase in the number of docks built increases boat and vessel traffic. Fueling facilities at marinas can sometimes discharge oil, gas, and sewage into sensitive estuarine and coastal habitats. Although these contaminant concentrations do not likely affect the more pelagic waters, the species analyzed in this Opinion travel between near shore and offshore habitats and may be exposed to and accumulate these contaminants during their life cycles within the action areas.

### 4.2.4 Stochastic Events

Stochastic (i.e., random) events, such as hurricanes or cold snaps, occur in the action areas and can affect giant manta ray in the action areas. These events are unpredictable and their effect on the recovery of giant manta ray is unknown; yet, they have the potential to impede recovery if animals die as a result or indirectly if important habitats are damaged.

## 5 EFFECTS OF THE ACTIONS ON ESA-LISTED SPECIES

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02).

We determined previously that hook-and-line gear commonly used by recreational anglers fishing from the Jim Simpson Fishing Pier may adversely affect green sea turtle (NA and SA DPSs), Kemp's ridley sea turtle, and loggerhead sea turtle (NWA DPS). None of the ITSs issued for these species at Jim Simpson Fishing Pier have been exceeded. We believe the original take estimates for each of the sea turtle species is adequate to cover the recreational fishing that will resume once the proposed action is completed. The effects analyses included in the previous opinion are hereby incorporated by reference (SER-2016-17812, issued November 7, 2016). Updates to that analysis and information regarding giant manta rays within the action areas are below.

As discussed above in Section 3.3, we believe hook-and-line gear commonly used by recreational anglers fishing from the Jim Simpson Fishing Pier may adversely affect giant manta ray. In Sections 5.1.1-5.1.3, we provide more detail on the potential effects of entanglement, hooking, and trailing line to this species from hook-and-line gear. Section 5.2 addresses how we estimate future captures of giant manta ray.

### 5.1 Effects of the Actions on the Species

#### 5.1.1 Entanglement

Fishing line entanglement can cause effects to giant manta ray, including injury to cephalic fins (Deakos et al. 2011), stress, deep lacerations to the body (Gallagher et al. 2014), and impaired feeding or swimming (Marshal et al. 2008). The effects from entanglement are considered non-lethal to giant manta ray because they do not immediately result in death, with documented evidence that manta rays can recover and survive post-injury (Pate and Marshall 2020).

#### 5.1.2 Hooking

Hook-and-line gear commonly used by recreational anglers fishing from fishing piers can adversely affect giant manta ray via foul-hooking (i.e., a method that catches a fish using hooks without having the fish take the bait in its mouth). The effects from foul-hooking are considered

non-lethal to giant manta ray because they do not immediately result in death, with documented evidence that manta rays can recover and survive post-injury (Pate and Marshall 2020).

### 5.1.3 Trailing Line

The effects to giant manta ray from trailing line are the same as those discussed above under Entanglement (Section 5.1.1).

## 5.2 Giant Manta Ray

The MMF conducts annual visual surveys between Jupiter and Boynton Beach Inlet, Florida. This is a known area of high abundance for juvenile giant manta ray. From 2016-2019, MMF documented 59 unique giant manta ray in the survey area, of which 16 were entangled in fishing line or foul hooked (J. Pate, MMF, unpublished data). In the absence of better data, we assume that all giant manta ray observed entangled or foul-hooked during this time were due to recreational fishing interactions from fishing piers. There are 4 public fishing piers between Jupiter Inlet and Boynton Beach Inlet, Florida. Because these piers are similar in size and location (i.e., relatively large, public, ocean-facing or inlet piers), they likely have similar angler effort. We also assume anglers fishing from these piers use similar baits, equipment, and fishing techniques. Therefore, if we believe that the potential for interactions with giant manta ray is likely the same at all 4 piers in the survey area, then approximately 1 animal per year was entangled or foul-hooked per pier (16 unique animals over entangled or foul-hooked in 4 years ÷ 4 piers in survey area). This is likely an overestimate of giant manta ray interactions that may occur at the Jim Simpson Fishing Pier because the survey occurred in an area of known high abundance; however, it is the best available data we have and most conservative to the species.

The number of captures in any given year can be influenced by sea temperatures, species abundances, fluctuating salinity levels in estuarine habitats where piers may be located, and other factors that cannot be predicted. For these reasons, we believe basing our future capture estimate on a 1-year estimated capture is largely impractical. Using our experience monitoring other fisheries, a 3-year time period is appropriate for meaningful evaluation of future impacts and monitoring. The triennial takes are set as 3-year running sums (i.e., 2022-2024, 2023-2025, 2024-2026, and so on) and not for static 3-year periods (i.e., 2022-2024, 2025-2027, 2027-2029, and so on). This approach reduces the likelihood of reinitiation of the formal consultation process because of inherent variability in captures, while still allowing for an accurate assessment of how the proposed action is performing versus our expectations. Therefore, up to 3 interactions with giant manta ray at the Jim Simpson Fishing Pier may occur in any consecutive 3-year period. Based on the best available science (Pate and Marshall 2020), we believe that all captures of giant manta ray will be non-lethal with no PRM.

# 6 CUMULATIVE EFFECTS

ESA Section 7 regulations require NMFS to consider cumulative effects in formulating its Opinions (50 CFR 402.14). Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action areas considered in this Opinion (50 CFR 402.02).

At this time, we are not aware of any non-federal actions, beyond those discussed in the Environmental Baseline section, being planned or under development in the action area that would have effects to giant manta ray. Within the action area, major future changes in these ongoing human activities are not anticipated. The present, major human uses of the action areas are expected to continue at the present levels of intensity in the near future.

Many threats to giant manta ray are expected to be exacerbated by the effects of global climate change. These threats are the same as those previously discussed in Section 3.3.

## 7 JEOPARDY ANALYSIS

The analyses conducted in the previous sections of this Opinion serve to provide a basis to determine whether the proposed action is likely to jeopardize the continued existence of giant manta ray. In the Effects of the Action (Section 5), we outlined how the proposed action would affect this species at the individual level and the extent of those effects in terms of the number of associated interactions, captures, and mortalities of the species to the extent possible based on the best available data. Now we assess the species' response to this impact, in terms of overall population effects, and whether those effects of the proposed actions, when considered in the context of the Status of the Species, the Environmental Baseline, and the Cumulative Effects, are likely to jeopardize the continued existence of this ESA-listed species in the wild. To "jeopardize the continued existence of" means to "engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and the recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02). Thus, in making this determination for each species, we must look at whether the proposed actions directly or indirectly reduce the reproduction, numbers, or distribution of a listed species. Then, if there is a reduction in one or more of these elements, we evaluate whether it would be expected to cause an appreciable reduction in the likelihood of both the survival and the recovery of the species.

The NMFS and USFWS's ESA Section 7 Handbook (USFWS and NMFS 1998) defines survival and recovery, as they apply to the ESA's jeopardy standard. Survival means "the species' persistence . . . beyond the conditions leading to its endangerment, with sufficient resilience to allow recovery from endangerment." Survival is the condition in which a species continues to exist into the future while retaining the potential for recovery. This condition is characterized by a sufficiently large population, represented by all necessary age classes, genetic heterogeneity, and number of sexually mature individuals producing viable offspring, which exists in an environment providing all requirements for completion of the species' entire life cycle, including reproduction, sustenance, and shelter. Recovery means "improvement in the status of a listed species to the point at which listing is no longer appropriate under the criteria set out in Section 4(a)(1) of the Act." Recovery is the process by which species' ecosystems are restored and/or threats to the species are removed so self-sustaining and self-regulating populations of listed species can be supported as persistent members of native biotic communities.

The sections of the previous Opinion regarding the jeopardy determinations for the NA and SA DPSs of green sea turtles, Kemp's ridley sea turtles, and loggerhead sea turtles are incorporated

herein by reference (SER-2016-17812, issued November 7, 2016). Updates to those analyses and information regarding giant manta rays are described below.

The status of giant manta ray likely to be adversely affected by the proposed action is reviewed in the Status of the Species. For any species listed globally, a jeopardy determination must find that the proposed actions will appreciably reduce the likelihood of survival and recovery at the global species range (i.e., in the wild).

## 7.1 Giant Manta Ray

The proposed action is expected to result in the capture of up to 3 giant manta rays over any consecutive 3-year period at public, Gulf of Mexico-facing Jim Simpson Fishing Pier included in this Opinion. We expect all captures to be non-lethal with no associated PRM.

### 7.1.1 Survival

The non-lethal captures of giant manta ray at the Jim Simpson Fishing Pier over any consecutive 3-year period is not expected to have any measurable impact on the reproduction, numbers, or distribution of this species. The individuals captured are expected to fully recover such that no reductions in reproduction or numbers of this species are anticipated. Since these captures may occur in the small, discrete action areas and would be released within the general areas where caught, no change in the distribution of giant manta ray is anticipated.

### 7.1.2 Recovery

A recovery plan for giant manta ray has not yet been developed; however, NMFS published a recovery outline for the giant manta ray (NMFS 2019). The recovery outline serves as an interim guidance to direct recovery efforts for giant manta ray. The recovery outline identifies two primary interim goals:

1) Stabilize population trends through reduction of threats, such that the species is no longer declining throughout a significant portion of its range; and
2) Gather additional information through research and monitoring on the species' current distribution and abundance, movement and habitat use of adult and juveniles, mortality rates in commercial fisheries (including at-vessel and PRM), and other potential threats that may contribute to the species' decline.

The major threats affecting the giant manta ray were summarized in the final listing rule (83 FR 2619, Publication Date January 22, 2018). The most significant threats to the giant manta ray are overutilization by foreign commercial and artisanal fisheries in the Indo-Pacific and Eastern Pacific and inadequate regulatory mechanisms in foreign nations to protect this species from the heavy fishing pressure and related mortality in these waters outside of U.S. jurisdiction. Other threats that potentially contribute to long-term risk of the species include: (micro) plastic ingestion rates, increased parasitic loads as a result of climate change effects, and potential disruption of important life history functions as a result of increased tourism. However, due to the significant data gaps, the likelihood and impact of these threats on the status of the species is highly uncertain. Recreational fishing interactions are not considered a major threat to this

species and we do not believe the proposed action will appreciably reduce the recovery of giant manta ray, by significantly exacerbating effects of any of the major threats identified in the final listing rule.

The giant manta ray suffering non-lethal capture due to the proposed actions are expected to fully recover such that no reductions in reproduction or numbers are anticipated. The non-lethal captures will occur at in discrete locations and the action areas encompasses only a portion of the overall range or distribution of giant manta rays. Any incidentally caught animal would be released within the general area where caught and no change in the distribution of giant manta rays would be anticipated. Therefore, the non-lethal captures of giant manta rays associated with recreational fishing at the Jim Simpson Fishing Pier is not expected to cause an appreciable reduction in the likelihood of recovery of the giant manta rays in the wild.

### 7.1.3 Conclusion

Over any consecutive 3-year period, the potential non-lethal capture of 3 giant manta rays associated with the proposed action is not expected to cause an appreciable reduction in the likelihood of either the survival or recovery of giant manta ray in the wild.

## 8 CONCLUSION

After reviewing the Status of the Species, the Environmental Baseline, the Effects of the Action, and the Cumulative Effects using the best available data, it is NMFS's Biological Opinion that the proposed reinitiated action is not likely to jeopardize the continued existence of giant manta rays.

## 9 INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and protective regulations issued pursuant to Section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption.

*Take* is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. *Incidental take* is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that would otherwise be considered prohibited under Section 9 or Section 4(d), but which is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA, provided that such taking is in compliance with the reasonable and prudent measures and the terms and conditions of the Incidental Take Statement (ITS) of the Opinion.

The take of the giant manta ray by the proposed action is not prohibited, as no Section 4(d) Rule for the species has been promulgated. However, a 9$^{th}$ Circuit Court case held that non-prohibited incidental take must be included in the Incidental Take Statement (CBD v. Salazar, 695 F.3d 893 [9th Cir. 2012]). Though the Salazar case is not a binding precedent for this action outside of the 9th Circuit, SERO finds the reasoning persuasive and is following the case out of an abundance of caution and anticipates the ruling will be more broadly followed in future cases. Providing an

exemption from Section 9 liability is not the only important purpose of specifying take in an Incidental Take Statement. Specifying incidental take ensures we have a metric against which we can measure whether or not reinitiation of consultation is required. It also ensures that we identify Reasonable and Prudent Measures we believe are necessary or appropriate to minimize the impact of such incidental take.

### 9.1.1 Anticipated Amount of Extent of Incidental Take

The sections of the previous Opinion regarding the anticipated amount of extent of incidental take of green, Kemp's ridley, and loggerhead sea turtles are incorporated herein by reference (SER-2016-17812, issued November 7, 2016). Updates to those analyses and information regarding giant manta rays are described below.

The take limit prescribed in this Opinion that will trigger the requirement to reinitiate consultation is based on the amount of take that we expect *to be reported* as it is not possible to directly monitor the incidents that go unreported. Section 5.2 describes how we calculate the take limit for giant manta ray in the absence of annual reporting data. Therefore, the take limit shown in Table 3 is our best estimate of the amount of giant manta ray take expected to be reported over any consecutive 3-year period at Jim Simpson Fishing Pier. Again, we expect all interactions with giant manta ray to be non-lethal with no associated PRM.

**Table 3. Incidental Take Limits of Giant Manta Ray for Any Consecutive 3-Year Period**

| Species | Total Estimated Reported Captures | Incidental Take Limit that will Trigger Reinitiation |
|---|---|---|
| Giant manta ray | Up to 3 | No more than 3 reported captures |

### 9.1.2 Effect of the Take

NMFS has determined that the anticipated incidental take is not likely to jeopardize the continued existence of the giant manta ray.

### 9.1.3 Reasonable and Prudent Measures (RPMs)

Section 7(b)(4) of the ESA requires NMFS to issue a statement specifying the impact of any incidental take on a ESA-listed species, which results from an agency action otherwise found to comply with Section 7(a)(2) of the ESA. It also states that the RPMs necessary to minimize the impacts of take and the terms and conditions to implement those measures must be provided and must be followed to minimize those impacts. "Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take" (50 CFR 402.02). Only incidental taking by the federal action agency or applicant that complies with the specified terms and conditions is authorized.

The RPMs, and terms and conditions are specified as required by 50 CFR 402.14(i)(1)(ii) and (iv) to document the incidental take by the proposed action and to minimize the impact of that take ESA-listed species. These RPMs and terms and conditions must be implemented by the federal action agency in order for the protection of Section 7(o)(2) to apply. If the applicant fails to adhere to the terms and conditions of this ITS through enforceable terms, and/or fails to retain

oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse. To monitor the impact of the incidental take, the applicant must report the progress of the action and its impact on the species to NMFS as specified in this ITS [50 CFR 402.14(i)(3)].

NMFS has determined that the following RPMs and associated Terms and Conditions are necessary and appropriate to minimize impacts of the incidental take of ESA-listed species related to the proposed action. These are the same RPMs included in the previous Opinion (SER-2016-17812, issued November 7, 2016):

1. FEMA must ensure that the applicants provide take reports regarding all interactions with ESA-listed species at Jim Simpson Fishing Pier.
2. FEMA must ensure that the applicants minimize the likelihood of injury or mortality to ESA-listed species resulting from hook-and-line capture or entanglement by activities at Jim Simpson Fishing Pier.
3. FEMA must ensure that the applicants reduce the impacts to incidentally captured ESA-listed species.
4. FEMA must ensure that the applicants coordinate periodic fishing line removal (i.e., cleanup) events with non-governmental or other local organizations.

### 9.1.4 Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the ESA, FEMA must comply (or must ensure that any applicant complies) with the following terms and conditions. The following terms and conditions implement the above RPMs, **supersede those contained within the previous Opinion, and apply to all ESA-listed species likely to be adversely affected by the proposed actions:**

1. To implement RPM 1, the federal action agency must ensure that the applicants report all known angler-reported hook-and-line captures of ESA-listed species and any other takes of ESA-listed species to the NMFS SERO PRD.
   a. If and when the applicant becomes aware of any known reported capture, entanglement, stranding, or other take, the applicant must report it to NMFS SERO PRD via the NMFS SERO Endangered Species Take Report Form (https://forms.gle/85fP2da4Ds9jEL829).
      i. This form must reference this Opinion by the NMFS tracking number (SERO-2022-00865 Jim Simpson Fishing Pier) and date of issuance.
      ii. This form shall be completed for each individual known reported capture, entanglement, stranding, or other take incident.
      iii. Information provided via this form shall include the species name; the date and time of the incident; the general location and activity resulting in capture; condition of the species (i.e., alive, dead, sent to rehabilitation); size of the individual, behavior, identifying features (i.e., presence of tags, scars, or distinguishing marks), and any photos that may have been taken.
   b. Every year, the applicants must submit a summary report of capture, entanglement, stranding, or other take of ESA-listed species at Jim Simpson Fishing Pier to NMFS SERO PRD by email: nmfs.ser.esa.consultations@noaa.gov.

i. Emails and reports must reference this Opinion by the NMFS tracking number (SERO-2022-00865 Jim Simpson Fishing Pier) and the date of issuance.
ii. The report will contain the following information: the total number of ESA-listed species captures, entanglements, strandings, or other take that was reported at or adjacent to Jim Simpson Fishing Pier.
iii. The report will contain all information for any sea turtles taken to a rehabilitation facility holding an appropriate USFWS Native Endangered and Threatened Species Recovery permit. This information can be obtained from the appropriate State Coordinator for the STSSN (https://www.fisheries.noaa.gov/state-coordinators-sea-turtle-stranding-and-salvage-network)
iv. The first report will be submitted by January 31, 2023, and will cover the period from pier opening until December 31, 2022. The second report will be submitted by January 31, 2024, and cover the calendar year 2024 and the information in the first report. Thereafter, reports will be prepared every year, covering the prior rolling three-year time period, and emailed no later than January 31 of any year.
v. Reports will include current photographs of signs and bins required in the terms and conditions in 2, below, and records of the clean-ups required in the terms and conditions in 3, below.

2. To implement RPMs 2 and 3, FEMA must ensure that the applicants must:
   a. Install and maintain the following NMFS Protected Species Educational Sign: 'Save Dolphins, Sea Turtles, Sawfish, and Manta Ray'.
      i. Signs will be posted at least at the entrance to and terminal end of the pier.
      ii. Signs will be installed prior to opening of the pier for public use.
      iii. Photographs of the installed signs will be emailed to NMFS's Southeast Regional Office (nmfs.ser.esa.consultations@noaa.gov) with the NMFS tracking number (SERO-2022-00865 Jim Simpson Fishing Pier) and date of issuance for this Opinion.
      iv. Sign designs and installation methods are provided at the following website: https://www.fisheries.noaa.gov/southeast/consultations/protected-species-educational-signs.
      v. Current photographs of the signs will be included in each report required by T&C 1, above.
   b. Install and maintain monofilament recycling bins and trash receptacles at the pier to reduce the probability of trash and debris entering the water.
      i. Monofilament recycling bins and trash receptacles will be installed prior to opening of the pier for public use.
      ii. Photographs of the installed bins will be emailed to NMFS's Southeast Regional Office by email (nmfs.ser.esa.consultations@noaa.gov) with NMFS SERO ECO tracking number for (SERO-2022-00865 Jim Simpson Fishing Pier) and date of issuance for this Opinion.
      iii. At the pier, the applicant must regularly empty the bins and trash receptacles and make sure they are functional and upright.
      iv. Additionally, current photographs of the bins will be included in each report required by T&C 1, above.

3. To implement RPMs 2, 3, and 4, the federal action agency must ensure that the applicants must:
   a. Conduct out-of-water structure cleanup on a regular basis. In addition, volunteer groups will hold a minimum of two in-water cleanups annually any derelict tackle or fishing line attached to the structure.
   b. Submit a record of each cleaning event in the report required by T&C 1 above.

## 10 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation Recommendations CRs are designed to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

NMFS believes the following Conservation Recommendations further the conservation of the listed species that will be affected by the proposed action. NMFS strongly recommends that these measures be considered and implemented by the federal action agency:

Giant manta ray

- Conduct or fund outreach designed to increase the public's knowledge and awareness of giant manta ray.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, NMFS requests notification of the implementation of any of these or additional conservation recommendations.

## 11 REINITIATION OF CONSULTATION

As provided in 50 CFR Section 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of take specified in the ITS is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the Opinion, or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

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