**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
http://sero.nmfs.noaa.gov

NOV 13 2017

F/SER31:TWD

Chief, Miami Permits Section
Jacksonville District Corps of Engineers
Department of the Army
9900 Southwest 107th Avenue, Suite 203
Miami, Florida 33176

Dear Sir or Madam:

The enclosed Biological Opinion ("Opinion") responds to your request for consultation with us, the National Marine Fisheries Service (NMFS), pursuant to Section 7 of the Endangered Species Act (ESA) for the following action.

| Permit Number | Applicant | PCTS Number | Project Types |
|---|---|---|---|
| SAJ-2016-01204 | Michael Thaysen | SER-2016-18314 | Marginal Dock Removal; Seawall Cap Construction; Pier/Dock Construction |

The Opinion considers the effects of a proposal by the Jacksonville District of the U.S. Army Corps of Engineers (USACE) to authorize removal of a marginal dock, installation of a new concrete cap on an existing seawall, and construction of a new dock by Michael Thaysen on the following listed species and critical habitat: green (North Atlantic and South Atlantic distinct population segments [DPSs]), hawksbill, Kemp's ridley, leatherback, and loggerhead (Northwest Atlantic DPS) sea turtles; smalltooth sawfish (U.S. DPS)'; and Johnson's seagrass critical habitat. NMFS concludes that the proposed action is not likely to adversely affect green, hawksbill, Kemp's ridley, or loggerhead sea turtles, or smalltooth sawfish. NMFS also concludes that the proposed action is not likely to result in the destruction or adverse modification of designated critical habitat for Johnson's seagrass.

We look forward to further cooperation with you on other USACE projects to ensure the conservation and recovery of our threatened and endangered marine species. If you have any questions regarding this consultation, please contact Dr. Thomas Dolan, Consultation Biologist, at (727) 551-5741, or by email at thomas.dolan@noaa.gov.

Sincerely,

Roy E. Crabtree, Ph.D.
Regional Administrator

Enc.: Biological Opinion
File: 1514-22.F.4

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

| | |
|---|---|
| **Action Agency:** | United States Army Corps of Engineers, Jacksonville District |
| **Applicant:** | Michael Thaysen |
| **Activity:** | Removal of a marginal dock, installation of a concrete cap on an existing seawall, and construction of a new dock in Miami Beach, Miami-Dade County, Florida |
| **Consulting Agency:** | Protected Resources Division<br>Southeast Regional Office<br>National Marine Fisheries Service |
| | Consultation Number SER-2016-18314 |
| **Approved by:** | Roy E. Crabtree, Ph.D., Regional Administrator<br>NMFS, Southeast Regional Office<br>St. Petersburg, Florida |
| **Date Issued:** | Nov 13, 2017 |

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**Acronyms and Abbreviations**

| | |
|---|---|
| cSEL | cumulative sound exposure level |
| ESA | Endangered Species Act |
| MLW | mean low water |
| NMFS | National Marine Fisheries Service |
| RPMs | reasonable and prudent measures |
| USACE | U.S. Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |

**Units of Measurement**

| | |
|---|---|
| ac | acre(s) |
| ft | foot/feet |
| $ft^2$ | square foot/feet |
| in | inch(es) |
| km | kilometer(s) |
| lin ft | linear foot/feet |
| m | meter(s) |

**Background**
Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 et seq.), requires each federal agency to "insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species." Section 7(a)(2) requires federal agencies to consult with the appropriate Secretary on any such action. National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) share responsibilities for administering the ESA.

Consultation is required when a federal action agency determines that a proposed action "may affect" listed species or designated critical habitat. Consultation is concluded after NMFS determines that the action is not likely to adversely affect listed species or critical habitat or issues a Biological Opinion ("Opinion") that identifies whether a proposed action is likely to jeopardize the continued existence of a listed species, or destroy or adversely modify critical habitat. The Opinion states the amount or extent of incidental take of the listed species that may occur, develops measures (i.e., reasonable and prudent measures - RPMs) to reduce the effect of take, and recommends conservation measures to further the recovery of the species. Notably, no incidental destruction or adverse modification of designated critical habitat can be authorized, and thus there are no RPMs—only reasonable and prudent alternatives that must avoid destruction or adverse modification.

This document represents NMFS's Opinion based on our review of impacts associated with the proposed action to issue a permit within Miami-Dade County, Florida. This Opinion analyzes the project's effects 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 the USACE and other sources of information, including the published literature cited herein.

# 1 CONSULTATION HISTORY

NMFS received a request by email for ESA consultation from the U.S. Army Corps of Engineers (USACE) on October 27, 2016. NMFS requested additional information on November 28, 2016. NMFS received a response from the USACE on November 29, 2016, and initiated consultation on that date.

# 2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

## 2.1 Proposed Action

The site of the proposed project is a single-family residence located on a 525-foot (ft)-wide canal (Figure 1). Structures are present at the site, including an approximately 196-square-foot ($ft^2$) marginal dock (16.6-ft-long × 11.8-ft-wide = 195.88 $ft^2$), supported by 2 round piles, a 50 linear foot (lin ft) seawall, and 2 round, wood, 12-in-diameter mooring piles. The seawall is capped, but the cap does not extend over the water. The piles supporting the dock are within the outline of the dock's decking. Water depth ranges from 1-4 ft at mean low water (MLW), with the -4 ft contour located between 23 and 25 ft waterward of the seawall. A benthic survey conducted on November 5, 2015, found that the benthos supports shoal grass, paddle grass, manatee grass, and turtle grass. The eastern edge of the dock is approximately 16.4 ft west of the eastern property

line, and the western edge of the dock is approximately 33 ft from the eastern property line, as shown in Figure 2, below. West of the dock, seagrass cover is approximately 20%; east of the dock seagrass cover is approximately 15%; and north of the dock, seagrass cover is less than 5%. No corals and no ESA-listed threatened or endangered species were observed. The survey also found a rubble field extending along the seawall from the western edge of the property to the dock. The rubble field does not extend beneath the dock. The dock may have supported the mooring of one vessel, however, we do not know if a vessel was consistently moored at this location.

Figure 1. Image of the Michael Thaysen dock project site showing the approximate work area (outlined in yellow) and existing structures

The applicant proposes to remove the existing marginal dock, supporting piles, fender piles, and mooring piles. The existing 50-lin ft seawall will be buttressed with six 12-inch (in) concrete batter piles, installed at a 3:12 (horizontal:vertical) slope, and capped with a 36-in-wide berm, 18 in of which will extend over water, covering 75 $ft^2$ of overwater area (50-ft length × 1.5-ft overwater width = 75 $ft^2$), shown in Figure 2.

A new, 228-$ft^2$ L-shaped dock will be built, supported 3.06 ft above mean high water by eight 12-in round wood piles (Figure 2). The decking will consist of 2-in by 8-in pressure treated pine boards with no spacing between them. The eastern edge of the dock will be approximately 15 ft west of the eastern property line. The walkway will be approximately 4 ft wide and 17 ft long. The terminal platform will be approximately 20 ft wide and 8 ft long.

Two new 12-in wood piles will also be installed for mooring. The only mooring area will be the northern edge of the dock platform, with enough space for one 260-$ft^2$ (20 ft × 13 ft) vessel, based on the 15-ft distance between the mooring piles and the proposed dock. A railing will prevent mooring along the sides and behind the dock.

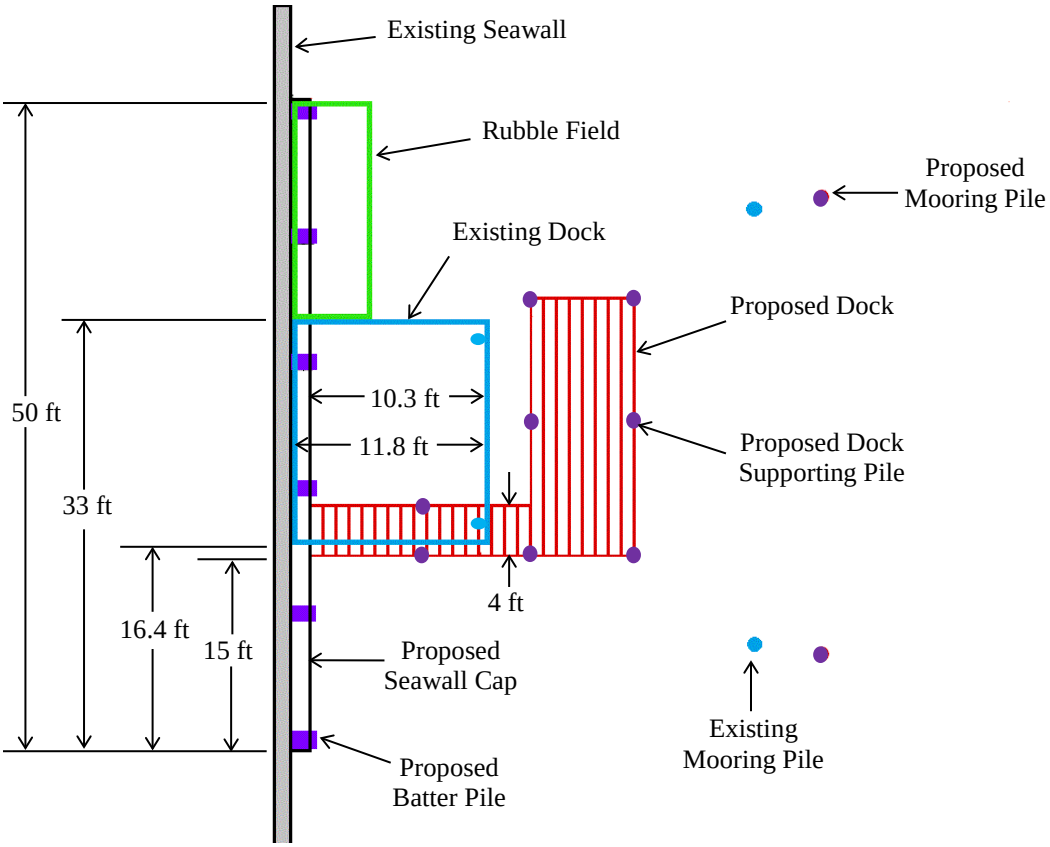


Figure 2. Existing and proposed structures

Following installation of turbidity curtains, the existing dock and piles will be removed by a combination of land- and barge-based equipment, and disposed of in an upland landfill. The new concrete batter piles to support the seawall will be installed by impact hammer. Following installation of batter piles, the new concrete seawall cap will be poured in place. The supporting piles for the dock and the new mooring piles will be installed by barge-mounted impact hammer; then the decking will be installed. In-water work is expected to be completed within 2 weeks of commencement.

All work will take place during daylight hours. The applicant will follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006. This includes the use of turbidity curtains that are made of material in which a sea turtle or smalltooth sawfish cannot become entangled. All construction workers will observe the work area for the presence of these species. All in-water operations will cease if a sea turtle or smalltooth sawfish is observed within 50 ft of construction equipment, and will not resume until the animal leaves of its own accord.

## 2.2 Action Area

50 CFR 402.02 defines action area as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The project site is located at latitude 25.870854°N, longitude 80.127942°W (North American Datum of 1983),

adjacent to 811 86th Street, Miami Beach, Florida. The action area includes the waters and submerged lands within and in the immediate vicinity of the project site, and within a radius of 705 ft around each pile, in which endangered species could be exposed to potentially harmful noise levels caused by pile driving, depicted in Figure 3.

Figure 3. Image showing the approximate action area, outlined in cyan; the project site is marked by a yellow diamond

## 3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

**Table 1. Effect Determinations and Status for Species and Critical Habitat in or Near the Action Areas that Either the Action Agency or NMFS Believes May Be Affected by the Proposed Action**

| Species | ESA Listing Status | Action Agency Effect Determination | NMFS Effect Determination |
|---|---|---|---|
| **Sea Turtles** | | | |
| Green (North and South Atlantic distinct population segments [DPSs]) | T | NLAA | NLAA |
| Kemp's ridley | E | NLAA | NLAA |
| Leatherback | E | NLAA | NE |
| Loggerhead (Northwest Atlantic Ocean DPS) | T | NLAA | NLAA |
| Hawksbill | E | NLAA | NLAA |
| **Fish** | | | |
| Smalltooth sawfish (U.S. DPS) | E | NLAA | NLAA |
| **Critical Habitat** | | | |
| Johnson's seagrass Unit J | | NLAA | LAA/No DAM |
| E = endangered; T = threatened; DAM = destruction or adverse modification; LAA = likely to adversely affect; NLAA = may affect, not likely to adversely affect; NE = no effect | | | |

We believe that smalltooth sawfish and green, hawksbill, Kemp's ridley, and loggerhead sea turtles may be within the action area and may be affected by the proposed action. The USACE determined that leatherback sea turtles also may be affected. However, we believe the proposed action will have no effect on leatherback sea turtles due to their very specific life history strategy, which is not supported in the action area. Leatherback sea turtles have a pelagic,

deepwater life history, wherein they forage primarily on jellyfish. The action area is also within the boundary of Johnson's seagrass Critical Habitat Unit J, but Johnson's seagrass does not occur within the action area.

### 3.1 Species Not Likely to be Adversely Affected

The U.S. DPS of smalltooth sawfish (hereafter, referred to only as "smalltooth sawfish") and green (North and South Atlantic DPSs), hawksbill, Kemp's ridley, and loggerhead (Northwest Atlantic Ocean DPS) sea turtles (hereafter, collectively referred to as "sea turtles") may be found in or near the action area and may be affected by the proposed action. We have identified the following potential effects to these species and concluded that they are not likely to be adversely affected by the proposed action for the reasons described below in Sections 3.1.1-3.1.4.

#### 3.1.1 Direct Physical Effects

Direct, physical injury to sea turtles and smalltooth sawfish is not expected from construction machinery or materials because we expect sea turtles and smalltooth sawfish to detect and move away from the types of construction activities that are proposed for this project. Additionally, required turbidity controls may act as a physical barrier to species presence during construction. The project will adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006 (enclosed), which will provide additional protection by requiring work to stop if a listed species is observed within 50 ft of operating machinery. Thus, direct physical impacts are considered extremely unlikely to occur and adverse effects are therefore discountable.

#### 3.1.2 Noise Effects

Noise created by construction activities can physically injure animals in the affected areas or change animal behavior in the affected areas. Physically injurious effects can occur in 2 ways. First, immediate adverse effects can occur to listed species if a single noise event exceeds the threshold for direct physical injury. Second, physical effects can result from prolonged exposure to noise levels that exceed the daily cumulative exposure threshold for the animals, and these can constitute adverse effects if animals are exposed to the noise levels for sufficient periods. Behavioral effects can be adverse if such effects prevent animals from migrating, feeding, resting, or reproducing, for example. Our evaluation of effects to listed species as a result of noise created by construction activities is based on the analysis prepared in support of the Opinion for SAJ-82 (NMFS 2014). The noise analysis in this consultation evaluates effects to ESA-listed fish and sea turtles identified by NMFS as potentially affected in Table 1, above.

**Table 2. Summary of Noise-Producing Activities Proposed in the Project**

| Number of Piles | Size and Type of Piles | Installation Method | Confined or Open Space |
|---|---|---|---|
| 6 | 12-in, concrete | impact hammer | open |
| 10 | 12-in, wood | impact hammer | open |

*Installation of wood piles by an impact hammer:*
Based on our noise calculations, the installation of 12-in wood piles by impact hammer will not cause single-strike or peak-pressure injury to sea turtles or ESA-listed fishes. The cumulative

sound exposure level (cSEL) of multiple pile strikes over the course of a day may cause injury to ESA-listed fishes and sea turtles at a radius of up to 30 ft (9 meters [m]). Due to the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances. Because we anticipate the animal will move away, we believe that it is extremely unlikely that an animal will suffer physical injury from noise. However, movement away from the disturbance is a behavioral response, with the effects discussed below. Even in the unlikely event an animal does not vacate the daily cumulative injurious impact zone, the radius of that area is smaller than the 50-ft radius that will be visually monitored for listed species. Construction personnel will cease construction activities if an animal is sighted per NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. Thus, we believe the likelihood of any injurious cSEL effects is extremely low, and the effect is discountable.

Based on our noise calculations, installation of the wood piles by impact hammer could also cause behavioral effects at radii of 151 ft (46 m) for sea turtles and 705 ft (215 m) for ESA-listed fishes. Due to the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances. Because there is similar habitat nearby, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Since installation will occur only during the day, these species will be able to resume normal activities during quiet periods between pile installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

*Installation of up to 10 concrete piles per day by an impact hammer in open water:*
Based on our noise calculations, installation of 12-in concrete piles by impact hammer will not cause single-strike or peak-pressure injurious noise effects. However, the cumulative sound exposure level of multiple pile strikes over the course of a day may cause injury to ESA-listed fishes and sea turtles up to 72 ft (22 m) away from the pile. Due to the mobility of sea turtles and ESA-listed fish species, and because the project occurs in open water[1], we expect them to move away from noise disturbances. Because we anticipate the animal will move away, we believe that it is extremely unlikely that an animal will suffer physical injury from noise and therefore the effect is discountable. An animal's movement away from the injurious sound radius is a behavioral response, with the effects discussed below.

Based on our noise calculations, installation of concrete piles by impact hammer could also result in behavioral effects at radii 705 ft (215 m) for ESA-listed fishes and 151 ft (46 m) for sea turtles. Due to the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances in this open-water environment. Because there is similar habitat nearby, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Since installation will occur only during the day, these species will be able to resume normal activities during quiet periods between pile installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

[1] The project is located within a 525 ft wide canal without obstructions to species movement, and we consider this to be open water per SAJ-82.

### 3.1.3 Foraging and Refuge

Sea turtles and smalltooth sawfish may be temporarily unable to use portions of the action area for forage and shelter habitat due to avoidance of construction activities, related noise, and physical exclusion from areas blocked by turbidity curtains. We expect these effects will be temporary and of short duration (total duration of in-water work will be 2 weeks), intermittent (impact hammering and construction will only occur during daylight hours), and small in spatial scale (turbidity curtains will only be used in the immediate area of impact hammer, and behavioral effects of the hammering will only be felt within 705 ft of impact hammering). Also, because these species are mobile, we expect that they will move away from the construction activities and forage and shelter in adjacent areas with similar available habitat. Therefore, the effects to sea turtles and smalltooth sawfish from the impacts of temporary loss of foraging and shelter habitat will be insignificant.

In addition, green sea turtles, hawksbill sea turtles, loggerhead sea turtles, and smalltooth sawfish foraging behavior may be affected by the potential permanent loss of seagrass habitat for foraging. Green sea turtles feed on seagrasses, and some of the prey species on which loggerhead sea turtles, hawksbill sea turtles, and smalltooth sawfish feed (echinoderms, mollusks, arthropods, and juvenile fishes) can be found in seagrass beds. The proposed action will affect seagrasses by shading and placing piles in an area of sparsely inhabited beds (see Section 5 for a detailed discussion of the areas that will be newly affected by the proposed action). The exact area that would be affected cannot be determined due to uncertainty in the extent of the seagrass beds as described by the biological assessment; therefore, we err in favor of the ESA-listed species that may depend on seagrasses by assuming that the entire area under the overwater structures and piles contains seagrasses that will be affected. Removing the existing dock will reduce shading in the area it currently covers, and seagrasses could colonize this newly unshaded area, potentially benefitting species that forage on or among seagrasses. We believe that shading the seagrass beds under the proposed dock, vessel, and piles will have an insignificant effect on sea turtles and smalltooth sawfish due to the availability of large areas of similar habitat nearby.

### 3.1.4 Risk of Vessel Strike

The proposed action would remove the existing wet-slip and provide a new slip in a different location. Assuming that a vessel had been moored in the original slip, this action will not result in the introduction of a new vessel or increase vessel traffic in the area. However, even if a new vessel is introduced to the area, we conclude, based on a recent NMFS analysis (Barnette 2013), that potential effects on surface-swimming sea turtles resulting from increased vessel traffic associated with the proposed action are discountable. The smalltooth sawfish is a bottom-dwelling species; therefore, we do not expect there to be an increased risk of vessel strike for smalltooth sawfish regardless of any changes in vessel traffic.

## 3.2 Status of Critical Habitat Likely to be Adversely Affected

The term “critical habitat” is defined in Section 3(5)(A) of the ESA as (i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (1) essential to the conservation of

the species and (2) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" is defined in Section 3(3) of the ESA as "…the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which listing under the ESA is no longer necessary."

### 3.2.1 Johnson's seagrass critical habitat

*Description*
NMFS designated Johnson's seagrass critical habitat on April 5, 2000 (65 FR 17786; see also, 50 CFR 226.213). The specific areas occupied by Johnson's seagrass and designated by NMFS as critical habitat are those with 1 or more of the following criteria:

1. Locations with populations that have persisted for 10 years
2. Locations with persistent flowering populations
3. Locations at the northern and southern range limits of the species
4. Locations with unique genetic diversity
5. Locations with a documented high abundance of Johnson's seagrass compared to other areas in the species' range

Ten areas (Units) within the range of Johnson's seagrass (approximately 200 kilometers (km) of coastline from Sebastian Inlet to northern Biscayne Bay, Florida) are designated as Johnson's seagrass critical habitat (Table 3). The total range-wide acreage of critical habitat for Johnson's seagrass is roughly 22,574 acres (ac) (NMFS 2002).

**Table 3. Designated Critical Habitat Units for Johnson's Seagrass**

| | |
|---|---|
| Unit A | A portion of the Indian River, Florida, north of the Sebastian Inlet Channel |
| Unit B | A portion of the Indian River, Florida, south of the Sebastian Inlet Channel |
| Unit C | A portion of the Indian River Lagoon, Florida, in the vicinity of the Fort Pierce Inlet |
| Unit D | A portion of the Indian River Lagoon, Florida, north of the St. Lucie Inlet |
| Unit E | A portion of Hobe Sound, Florida, excluding the federally marked navigation channel of the Intracoastal Waterway |
| Unit F | A portion of the south side of Jupiter Inlet, Florida |
| Unit G | A portion of Lake Worth, Florida, north of Bingham Island |
| Unit H | A portion of Lake Worth Lagoon, Florida, located just north of the Boynton Inlet |
| Unit I | A portion of northeast Lake Wyman, Boca Raton, Florida, excluding the federally marked navigation channel of the Intracoastal Waterway |

| | |
|---|---|
| Unit J | A portion of northern Biscayne Bay, Florida, including all parts of the Biscayne Bay Aquatic Preserve excluding the Oleta River, Miami River, and Little River beyond their mouths, the federally marked navigation channel of the Intracoastal Waterway, and all existing federally authorized navigation channels, basins, and berths at the Port of Miami to the currently documented southernmost range of Johnson's seagrass, Central Key Biscayne |

The physical habitat that supports Johnson's seagrass includes both shallow intertidal and deeper subtidal zones. The species thrives either in water that is clear and deep (2-5 m) or in water that is shallow and turbid. In tidal channels, it inhabits coarse sand substrates. The spread of the species into new areas is limited by its reproductive potential. Johnson's seagrass possesses only female flowers; thus vegetative propagation, most likely through asexual branching, appears to be its only means of reproduction and dispersal. If an established community is disturbed, regrowth and reestablishment are extremely unlikely. This species' method of reproduction impedes the ability to increase distribution as establishment of new vegetation requires considerable stability in environmental conditions and protection from human-induced disturbances.

*Essential Features of Critical Habitat*

NMFS identified 4 habitat features essential for the conservation of Johnson's seagrass: (1) adequate water quality, defined as being free from nutrient over-enrichment by inorganic and organic nitrogen and phosphorous or other inputs that create low oxygen conditions; (2) adequate salinity levels, indicating a lack of very frequent or constant discharges of fresh or low-salinity waters; (3) adequate water transparency, which would allow sunlight necessary for photosynthesis; and (4) stable, unconsolidated sediments that are free from physical disturbance. All 4 essential features must be present in an area for it to function as critical habitat for Johnson's seagrass.

Critical Habitat Unit Impacted by this Action

This consultation focuses on an activity that occurs in Unit J, which encompasses the northern portion of Biscayne Bay from Northeast 163$^{rd}$ Street south to Central Key Biscayne at 25º45´N (Figure 4). This portion of Biscayne Bay is bound by heavy residential and commercial development, though a few areas of mangrove shoreline remain. Dredge and fill projects have resulted in a number of spoil islands and channels too deep for seagrass growth. Biscayne Bay supports a diversity of biological communities including intertidal wetlands, seagrasses, hard bottom, assemblages, and open water. Unit J is wholly within the Biscayne Bay Aquatic Preserve.

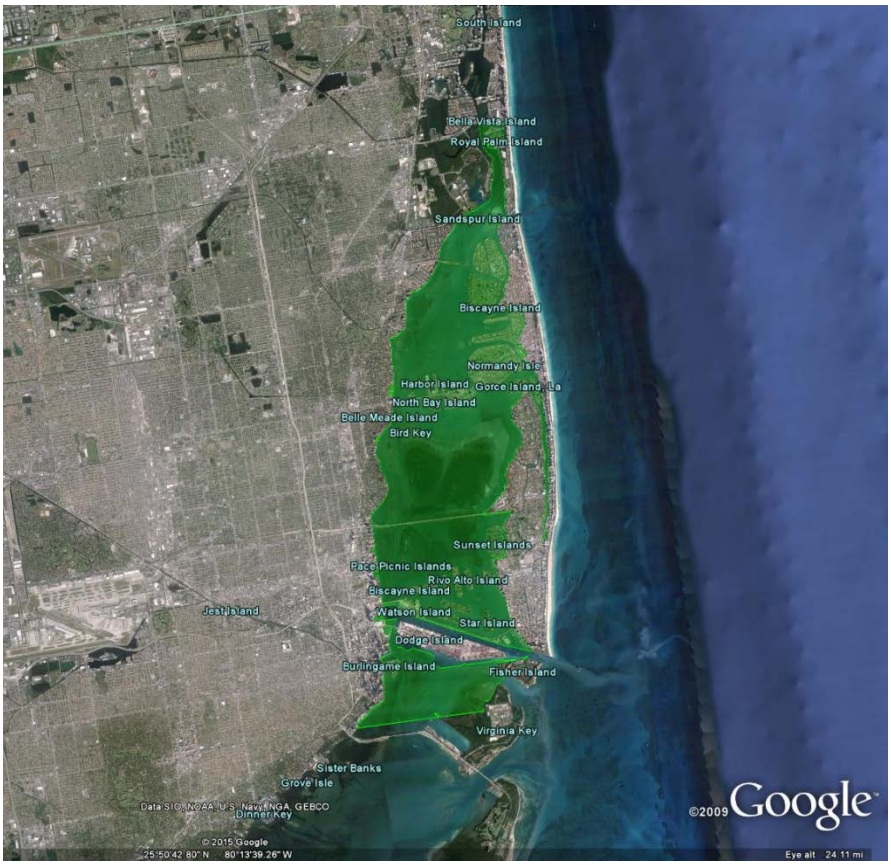


Figure 4. Johnson's seagrass critical habitat Unit J (©2015 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

*Status and Threats*

A wide range of activities, many funded authorized or carried out by federal agencies, have and will continue to affect the essential habitat requirements of Johnson's seagrass. These are generally the same activities that may affect the species itself, and include: (1) vessel traffic and the resulting propeller dredging; (2) dredge and fill projects; (3) dock, marina, and bridge construction; (4) water pollution; and (5) land use practices (shoreline development, agriculture, and aquaculture).

Vessel traffic has the potential to affect Johnson's seagrass critical habitat by reducing water transparency. Operation of vessels in shallow water environments often leads to the suspension of sediments due to the spinning of propellers on or close to the bottom. Suspended sediments reduce water transparency and the depth to which sunlight penetrates the water column. Populations of Johnson's seagrass that inhabit shallow water and water close to inlets where vessel traffic is concentrated are likely to be most affected. This effect is expected to worsen with increases in boating activity.

The dredging of bottom sediments to maintain, or in some cases create, inlets, canals, and navigation channels can directly affect essential features of Johnson's seagrass critical habitat. Dredging results in turbidity through the suspension of sediments. As discussed previously, the suspension of sediments reduces water transparency and the depth to which sunlight can penetrate the water column. The suspension of sediments from dredging can also re-suspend

nutrients, which could result in over-enrichment and/or reduce dissolved oxygen levels. Further, dredging can destabilize sediments and alter both the shape and depth of the bottom within the dredged footprint. This may affect the ability of the critical habitat to function through the removal or modification of essential features.

Dock, marina, and bridge construction leads to loss of habitat via construction impacts (e.g., pile installation) and shading. Similar to dredging, installation of piles for docks or bridges can result in increased turbidity that can negatively impact water transparency over short durations. Additionally, installed piles also replace the stable, unconsolidated bottom sediments essential for the species. Completed structures can have long-term effects on critical habitat in the surrounding area because of the shade they produce. While shading does not affect water transparency directly, it does affect the amount and/or duration of sunlight that can reach the bottom. The threat posed by dock, marina, and bridge construction is especially apparent in coastal areas where Johnson's seagrass is found.

Other threats include inputs from adjacent land use. Johnson's seagrass critical habitat located in proximity to rivers, canal mouths, or other discharge structures is affected by land use within the watershed. Waters with low salinity that are highly colored and often polluted are discharged to the estuarine environment. This can impact salinity, water quality, and water transparency, all essential features of Johnson's seagrass critical habitat. Frequent pulses of freshwater discharge to an estuarine area may decrease salinity of the habitat and provoke physiological stress to the species. Nutrient over-enrichment, caused by inorganic and organic nitrogen and phosphorous loading via urban and agricultural land run-off, stimulates increased algal growth, decreased water transparency, and diminished oxygen content within the water. Low oxygen conditions have a demonstrated negative impact on seagrasses and associated communities. Discharges can also contain colored waters stained by upland vegetation or pollutants. Colored waters released into these areas reduce the amount of sunlight available for photosynthesis by rapidly reducing the amount of shorter wavelength light that reaches the bottom. In general, threats from adjacent land use will be ongoing, randomly occurring events that follow storm events.

# 4 ENVIRONMENTAL BASELINE

This section is a description of the past and ongoing human and natural factors leading to the current status of the species and its designated critical habitat within the action area. 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 Johnson's seagrass and its designated critical habitat 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 or its critical habitat. This Opinion describes these activities in the sections below.

## 4.1 Status of Johnson's seagrass critical habitat within the Action Area

As discussed above, this consultation focuses on activities occurring in Unit J, which encompasses the northern portion of Biscayne Bay from NE 163rd Street south to Central Key Biscayne at 25º 45´N (Figure 4). This portion of Biscayne Bay is bound by heavy residential and commercial development, though a few areas of mangrove shoreline remain. Dredge-and-fill

projects have resulted in a number of spoil islands and channels too deep for seagrass growth. Biscayne Bay supports a diversity of biological communities including intertidal wetlands, seagrasses, hard bottom, assemblages, and open water. Unit J is wholly within the Biscayne Bay Aquatic Preserve.

## 4.2 Factors Affecting Johnson's seagrass critical habitat within the Action Area

### 4.2.1 Federal Actions

A wide range of activities funded, authorized, or carried out by federal agencies may affect the essential features of critical habitat for Johnson's seagrass. These include actions permitted or implemented by the USACE such as dredging; dock/marina construction; bridge/highway construction; residential construction; shoreline stabilization; breakwaters; and the installation of subaqueous lines or pipelines. Other federal activities that may affect Johnson's seagrass critical habitat include actions by the Environmental Protection Agency and the USACE to manage freshwater discharges into waterways; management of National Parks; regulation of vessel traffic to minimize propeller dredging and turbidity; and other activities by the U.S. Coast Guard and U.S. Navy. Although these actions have probably affected Johnson's seagrass critical habitat, none of these past actions have destroyed or adversely modified Johnson's seagrass critical habitat.

According to NMFS's Public Consultation Tracking System database, there have been no ESA Section 7 consultations completed on activities with the potential to affect Johnson's seagrass critical habitat within the action area.

### 4.2.2 State or Private Actions

#### 4.2.2.1 Development and Urbanization

The project is located in a highly developed coastal area with an extensive canal system. Freshwater discharges and nutrient over-enrichment due to coastal runoff and discharge into the bay may be increased by upland development. Freshwater discharge may reduce salinity to inadequate levels for survival of Johnson's seagrass, thus affecting the second essential feature of the designated critical habitat. Similarly, nutrient over-enrichment can lead to planktonic algae blooms, decreasing water transparency, the third essential feature of the designated critical habitat. Death and decomposition of the algal bloom typically decrease dissolved oxygen content in the water, thus affecting another essential feature of the designated critical habitat, adequate water quality, defined as being free from nutrient over-enrichment by inorganic and organic nitrogen and phosphorous or other inputs that create low oxygen conditions.

#### 4.2.2.2 Recreational Vessel Traffic

Marina and dock construction increases recreational vessel traffic within areas of Johnson's seagrass critical habitat, which increases suspended sediments from propellers. As mentioned above, suspended sediments are known to adversely affect Johnson's seagrass critical habitat by reducing water transparency, which is one of the essential features. Increases in vessel traffic may also result in an increase in propeller dredging and vessel grounding incidents. Propeller

dredging and grounding incidents in soft bottom disturb the sediment, and, thus may adversely affect another essential feature of Johnson's seagrass critical habitat: stable, unconsolidated sediments that are free from physical disturbance.

### 4.2.3 Conservation and Recovery Actions Shaping the Environmental Baseline

State and federal conservation measures exist to protect Johnson's seagrass and its habitat under an umbrella of management and conservation programs that address seagrasses in general (Kenworthy et al. 2006). Johnson's seagrass habitat is also included in the designation of critical habitat for the Florida manatee and is therefore subject to ESA Section 7 consultation by the USFWS, which has ESA jurisdiction over that species. These conservation measures must be continually monitored and assessed to determine if they will ensure the long-term protection of the species and the maintenance of environmental conditions suitable for its continued existence throughout its geographic distribution.

## 5 EFFECTS OF THE ACTION ON JOHNSON'S SEAGRASS CRITICAL HABITAT

Effects of the action include direct and indirect effects of the action under consultation. Indirect effects are those that result from the proposed action, occur later in time (i.e., after the proposed action is complete), but are still reasonably certain to occur.

Effects of the proposed action also include effects of other activities that are interrelated or interdependent with the proposed action. Interrelated actions are those that are part of a larger action and depend on that larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Thus these actions are also described and their effects on listed species and critical habitat are evaluated as effects of the proposed action. We have identified no interrelated or interdependent actions relative to the proposed action.

The essential features of Johnson's seagrass are (1) adequate water quality, defined as being free from nutrient over-enrichment by inorganic and organic nitrogen and phosphorous or other inputs that create low oxygen conditions; (2) adequate salinity levels, indicating a lack of very frequent or constant discharges of fresh or low-salinity waters; (3) adequate water transparency, which would allow sunlight necessary for photosynthesis; and (4) stable, unconsolidated sediments that are free from physical disturbance. The presence of seagrass species that are less tolerant of low light transmission, disturbance, poor water quality, and low salinity than Johnson's seagrass indicates that the essential features of Johnson's seagrass critical habitat are present in the majority of the action area. However, adequate water transparency, which would allow sunlight necessary for photosynthesis, does not occur in the area shaded by the existing dock, approximately 196 $ft^2$. Shading reduces transmission of sunlight necessary for photosynthesis, and removes that essential feature. In addition, stable, unconsolidated sediments that are free from disturbance do not exist in the area of the rubble field, nor in the areas currently occupied by the mooring piles. If one or more of the essential features are not present in the area, the area is unable to support Johnson's seagrass and ceases to function as critical habitat. Thus, any part of a structure that overlaps with the existing dock or extends over the rubble field would affect an area that is not functioning as critical habitat.

Construction of a seawall cap and dock will affect water transparency by shading, and installation of dock supporting piles, mooring piles, and batter piles will affect stable, unconsolidated sediments that are free from disturbance by replacing sediments with piles. Similarly, these essential features may be restored by removal of existing overwater structures and piles. However, these structures will partially overlap the areas of the existing dock and the rubble field, described above. Figure 2, in Section 2.1, shows the existing structures and the proposed dock reconfiguration with the structural dimensions. Figure 5, below shows the overlapping and non-overlapping regions of each of the structures and the areas of each region that were calculated from the dimensions shown in Figure 2. We will use this diagram to explain those portions of the actions that will potentially adversely affect functioning critical habitat (i.e., critical habitat that has not been affected by the existing structures), or potentially restore the essential features and functionality to the critical habitat.

In the foregoing discussion, we describe approximate areas because the exact dimensions and placement of the proposed structures cannot be known and to simplify the mathematics where it is reasonable to do so. We are also directed to resolve any uncertainty in favor of protecting the species or critical habitat. Therefore, we round values upward if an effect may reduce the functional area of the critical habitat, and to round values downward if an effect may restore functionality to an area of critical habitat.

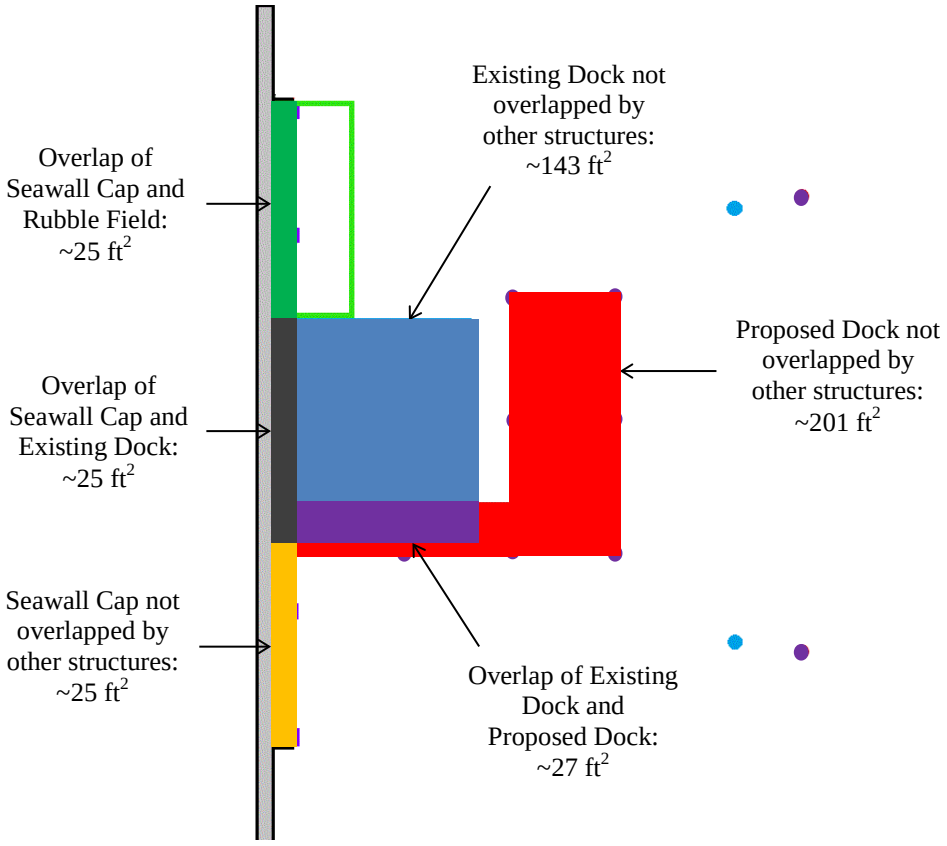


Figure 5. Diagram showing overlapping and non-overlapping areas of the proposed and existing structures

The proposed seawall cap will affect transmission of light by shading the area beneath it. However, part of that area is shaded by the existing dock, and part of it extends over the rubble field (see Figure 5). Shading from the dock affects the water transparency essential feature, and the area covered by the rubble field does not have the stable, unconsolidated sediments essential feature. As we noted above, if one or more of the essential features are not present in the area, the area is unable to support Johnson's seagrass and ceases to function as critical habitat. Thus, the area that overlaps with the dock or extends over the rubble field already was not functioning as critical habitat. Thus, the proposed seawall cap is expected to shade approximately 25 $ft^2$ of functioning critical habitat (the yellow rectangle in Figure 5), removing the water transparency essential feature in that area, and affecting the same amount of functioning critical habitat.

Because the decking of the new dock will have no spacing, it also will prevent transmission of light through its entire area (228 $ft^2$). As shown in Figure 5, however, the proposed dock will also partially overlap the footprint of the existing dock, in an area of approximately 27 $ft^2$. Because this area is already shaded by the existing dock, it was not functioning as critical habitat and the shading of this area by the proposed dock is not an effect to functioning critical habitat. Thus, the proposed dock will only affect the water transparency essential feature in an area of approximately 201 $ft^2$.

Round, wooden piles with a 12-in diameter are proposed for use as dock supporting piles and mooring piles. Although we recognize that the area of bottom occupied by a single, round 12-in-diameter pile is less than 1 $ft^2$, it is very close (approximately 0.8 $ft^2$). In addition, piles are not uniformly shaped (they are tapered and are not perfectly round) and may be installed at varying angles, all of which affect the actual area of bottom they may cover. Therefore, we believe it is reasonable to approximate the area affected by a single pile, while erring in favor of protecting the critical habitat, as 1 $ft^2$.

Ten 12-in-diameter wooden piles will be installed, 8 to support the proposed dock and 2 as mooring piles, but one of those piles will be installed in the area that is shaded by the existing dock (see Figure 2 in Section 2.1, above). Therefore, only 9 of the wooden piles, occupying an area of approximately 9 $ft^2$, will affect stable, unconsolidated sediments that are free from disturbance in a functional area of critical habitat. Although the supporting piles for the proposed dock appear to be partially inset into the decking, we believe it is reasonable to consider the areas that they will cover to be outside of the area that will be affected by the decking, due to uncertainty in their exact placement and to err in favor of protecting the critical habitat. Thus, we believe that the piles will remove 9$ft^2$ of functioning critical habitat.

The 6 concrete batter piles will be installed under the seawall cap, but are oriented at an angle, with 3:12 horizontal:vertical slope. Thus, they will extend partially beyond the area covered by the seawall cap. Four of the batter piles will be driven in the footprint of the existing dock and rubble field, areas that already lack one of the essential features of critical habitat and no longer function as critical habitat (see Figure 2 in Section 2.1, above). Therefore, the batter piles will only remove the stable, unconsolidated bottom sediments essential feature in an area under 2 of the piles. Each pile is 1ft wide. Although, given the angle of installation and the length of the pile, the area underneath and covered by the piles will be slightly less than the area of the piles, those areas will be close, and we assume the piles will cover 2 $ft^2$ of waterbottom containing the

stable, unconsolidated sediments essential feature, 1 $ft^2$ per pile, and remove the same amount of functioning critical habitat.

As noted in Section 2.1, the placement of mooring piles 15 ft from the dock will restrict the size of vessel that may be moored at the dock to approximately 13 ft × 20 ft. Thus it is likely that a vessel will affect water transparency in an area of approximately 260 $ft^2$ of previously functioning critical habitat. Erring in favor of protecting the species and critical habitat, we assume a vessel will consistently be moored at this new structure and will affect critical habitat.

As previously noted, the area of the existing dock is approximately 196 $ft^2$, and its removal will reduce shading and could restore functionality to the water transparency essential feature. However, this area will be partially covered by the proposed dock and seawall cap, as shown in Figure 5. In addition, 1 supporting pile for the new dock, occupying approximately 1 $ft^2$ of bottom, will be placed in the area previously occupied by the existing dock (see Figure 2 in Section 2.1, above). As noted above, we assume the piles supporting the new dock will be adjacent to the dock structure. Therefore, removal of the existing dock is expected to restore functionality to the water transparency essential feature in an area of approximately 143 $ft^2$ (196 $ft^2$ - 27 $ft^2$ overlap with proposed dock - 25 $ft^2$ overlap with proposed seawall cap - 1 $ft^2$ overlap with pile = 143 $ft^2$).

Removal of the supporting piles for the existing dock and the existing mooring piles could restore functionality to the stable, unconsolidated bottom sediments essential feature. However, the removal of the piles by direct pulling will result in deep, 12-in-diameter holes. Unlike methods that loosen sediment around the piles, e.g., jetting or vibration, direct pulling does not necessarily result in backfilling of the void left by the pile, and it is not clear how long it will take for sediment to naturally fill the void. In addition, small diameter holes, such as these, may be kept open by organisms that use them for shelter, or it might be overgrown by sessile organisms, either of which would prevent natural in-filling. Therefore, NMFS believes that removing the existing piles will not restore the stable, consolidated sediments that are free from disturbance.

The existing dock may have supported a vessel, however, we do not know if a vessel was consistently moored there and shaded the area. The low density of seagrasses in the area suggests that shading may have reduced growth rates or increased mortality of certain seagrasses (other than Johnson's seagrass, which is not present in the area). However, the persistence of other seagrass species in the area indicates that, at this time, the essential features of Johnson's seagrass critical habitat are present in the area. To be conservative, we will assume that relocating the vessel will not have a benefit to the area that, presumably, had been shaded.

Based on the preceding discussion, the proposed action will affect an area of 497 $ft^2$ that had been functioning as Johnson's seagrass critical habitat (25 $ft^2$ by the seawall cap + 201 $ft^2$ by the dock + 9 $ft^2$ by the dock supporting and mooring piles + 2 $ft^2$ by the seawall batter piles + 260 $ft^2$ by the vessel = 497 $ft^2$). It will also remove shading, restoring water transparency, over an area of approximately 143 $ft^2$ that was previously shaded by the existing dock. Therefore, the expected results of the proposed action are the loss of function of approximately 497 $ft^2$ and restoration of function of approximately 143 $ft^2$ of Johnson's seagrass critical habitat.

## 6 CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, or local private actions that are reasonably certain to occur in the action area considered in this Opinion. Future federal actions that are unrelated to the proposed actions are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA.

No categories of effects beyond those already described are expected in the action area. Dock and marina construction will likely continue at current rates, with concomitant loss and degradation of seagrass habitat, including Johnson's seagrass. However, these activities are subject to USACE permitting and thus the ESA Section 7 consultation requirement. Furthermore, NMFS and the USACE have developed protocols to encourage the use of light-transmitting materials in future construction of docks within the range of Johnson's seagrass. However, even if all new docks are constructed in full compliance with the NMFS and USACE's *Construction Guidelines for Minor Piling-Supported Structures in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat*, there will still be shading impacts to Johnson's seagrass from new docks (but shading impacts would be reduced if guidelines are followed). As previously stated, Landry et al. (2008) found that Johnson's seagrass persisted under docks constructed of grated decking versus non-grated decking. Although it was reduced in frequency under grated docks, Johnson's seagrass was observed in higher densities under grated versus non-grated docks. In summary, NMFS acknowledges that shading impacts to Johnson's seagrass will continue via dock construction. As NMFS and the USACE continue to encourage permit applicants to design and construct new docks in full compliance with the NMFS and USACE's *Construction Guidelines for Minor Piling-Supported Structures in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat*, the NMFS and USACE's *Key for Construction Conditions for Docks or Other Minor Structures Constructed in or Over Johnson's seagrass (Halophila johnsonii),* and the recommendations in Landry et al. (2008) and Shafer et al. (2008), NMFS believes that shading impacts to Johnson's seagrass will be reduced in the short- and long-term.

Upland development and associated runoff will continue to degrade water quality and decrease water clarity necessary for growth of seagrasses. Flood control and imprudent water management practices will continue to result in freshwater inputs into estuarine systems, thereby degrading water quality and altering salinity. Long-term, large-scale reduction in salinity has been identified as a potentially significant threat to the persistence and recovery of Johnson's seagrass.

## 7 CRITICAL HABITAT DESTRUCTION/ADVERSE MODIFICATION ANALYSIS

NMFS's regulations define destruction or adverse modification to mean "a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features" (50 CFR § 402.02). Alterations that may destroy or adversely modify critical habitat may include impacts to the area itself, such as those that would impede access to or use of the essential features. We intend the phrase "significant delay" in development of essential features to encompass a delay that interrupts the likely natural

trajectory of the development of physical and biological features in the designated critical habitat to support the species' recovery. NMFS will generally conclude that a federal action is likely to "destroy or adversely modify" designated critical habitat if the action results in an alteration that diminishes the quantity or quality of the essential physical or biological features of designated critical habitat or that precludes or significantly delays the capacity of that habitat to develop those features over time, and if the effect of the alteration is to appreciably diminish the value of critical habitat for the conservation of the species. This analysis takes into account the geographic and temporal scope of the proposed action, recognizing that "functionality" of critical habitat necessarily means that it must now and must continue in the future to support the conservation of the species and progress toward recovery. Destruction or adverse modification does not depend strictly on the size or proportion of the area adversely affected, but rather on the role the action area serves with regard to the function of the overall designation, and how that role is affected by the action.

Recovery for Johnson's seagrass as set forth in the final recovery plan (NMFS 2002), will be achieved when the following recovery objectives are met: (1) the species' present geographic range remains stable for at least 10 years, or increases; (2) self-sustaining populations are present throughout the range at distances less than or equal to the maximum dispersal distance to allow for stable vegetative recruitment and genetic diversity; and (3) populations and supporting habitat in its geographic range have long-term protection (through regulatory action or purchase acquisition). We evaluated the projects' expected impacts on critical habitat to determine whether it will be able to continue to provide its intended functions in achieving these recovery objectives and supporting the conservation of the species.

The first recovery criterion for Johnson's seagrass is for its present range to remain stable for 10 years or to increase during that time. NMFS's 5-year review (2007) of the status of the species concluded that the first recovery objective had been achieved as of 2007. In fact, the range had increased slightly northward, and we have no information indicating range stability has decreased since then. In Section 5, we determined that the proposed action will result in the loss of approximately 497 $ft^2$, approximately 0.011 ac, of Johnson's seagrass critical habitat by placement of piles and shading by non-grated, overwater structures and vessels, and restore function to 143 $ft^2$, approximately 0.003 ac, resulting in a net loss of function to 354 $ft^2$, approximately 0.008 ac, of Johnson's seagrass critical habitat within the proposed action area. However, the action area is not at a boundary of the species' range; the area that will be impacted is very small; and the loss of the area for potential colonization will not affect the stability of the species' range now or in the future. Thus, we believe the proposed action will not reduce the ability of the critical habitat to contribute to range stability for Johnson's seagrass.

The second recovery criterion for Johnson's seagrass requires that self-sustaining populations be present throughout the range at distances less than or equal to the maximum dispersal distance for the species to allow for stable vegetative recruitment and genetic diversity. Due to its asexual reproductive mode, self-sustaining populations are present throughout the range of species. Drifting fragments of Johnson's seagrass can remain viable in the water column for 4-8 days (Hall et al. 2006), and can travel several kilometers under the influence of wind, tides, and waves. The proposed action will result in the loss of functionality of critical habitat in an area of approximately 497 $ft^2$, which is much smaller than the potential dispersal distance for the species, thus, will not affect the conservation value of the available critical habitat to the extent

that it would reduce recruitment or gene flow. The restoration of functionality to 143 $ft^2$ of critical habitat adjacent to the area of loss may provide additional space for colonization by Johnson's seagrass. This could allow for the expansion of a nearby population, which would increase its ability to be self-sustaining, or could allow colonization by more distant populations, thereby enhancing gene flow. Therefore, we believe that the proposed action will not appreciably diminish the conservation value of critical habitat in supporting self-sustaining populations.

The final recovery criterion is for populations and supporting habitat in the geographic range of Johnson's seagrass to have long-term protection (through regulatory action or purchase acquisition). As discussed in Section 3.2.1, there are approximately 22,574 ac of Johnson's seagrass critical habitat. The loss of 0.008 ac of designated critical habitat for Johnson's seagrass in Unit J would equate to a reduction in available functioning critical habitat of 0.000035% ($0.008 \times 100 / 22{,}574 = 3.54 \times 10^{-5}$). Though the affected portions of the project site will not be available for long-term protection, thousands of acres of designated critical habitat would still be available for long-term protection, including areas adjacent to the action area.

The proposed action will not affect the stability of the geographic range of the species; it will not appreciably diminish the conservation value of the critical habitat in supporting self-sustaining populations; and it will not prevent the long-term protection of the species and its supporting habitat in the remainder of its geographic range. Therefore, we conclude that the adverse effects of the proposed action on Johnson's seagrass critical habitat will not impede achieving the recovery objectives listed above and will, therefore, not appreciably diminish the value of the critical habitat for the conservation of the species.

## 8 CONCLUSION

We have analyzed the best available scientific and commercial data, the current status of the species, environmental baseline, effects of the proposed actions, and cumulative effects to determine whether the proposed action is likely to destroy or adversely modify Johnson's seagrass critical habitat. Because the proposed action will not appreciably diminish the value of the critical habitat for the conservation of Johnson's seagrass, it is our Opinion that the proposed action is likely to adversely affect, but not likely to destroy or adversely modify Johnson's seagrass critical habitat.

## 9 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 are discretionary agency activities 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 are reasonable, necessary, and appropriate to conserve and recover Johnson's seagrass. NMFS strongly recommends that these measures be considered and adopted.

1. NMFS recommends that a report of all current and proposed USACE projects in the range of Johnson's seagrass be prepared and used by the USACE to assess impacts on the species from these projects, to assess cumulative impacts, and to assist in early consultation that will avoid and/or minimize impacts to Johnson's seagrass and its critical habitat. Information in this report should include location and scope of each project and identify the federal lead agency for each project. The information should be made available to NMFS.

2. NMFS recommends that the USACE conduct and support research to assess trends in the distribution and abundance of Johnson's seagrass. Data collected should be contributed to the Florida Fish and Wildlife Conservation Commission's Florida Wildlife Research Institute to support ongoing GIS mapping of Johnson's and other seagrass distribution.

3. NMFS recommends that the USACE, in coordination with seagrass researchers and industry, support ongoing research on light requirements and transplanting techniques to preserve and restore Johnson's seagrass, and on collection of plants for genetics research, tissue culture, and tissue banking.

4. NMFS recommends that the USACE prepare an assessment of the effects of other actions under its purview on Johnson's seagrass for consideration in future consultations.

5. NMFS recommends that the USACE continue promoting the use of the October 2002 *Key for Construction Conditions for Docks or other Minor Structures Constructed in or over Johnson's Seagrass* as the standard construction methodology for proposed docks located in the range of Johnson's seagrass.

6. NMFS recommends that the USACE review and implement the recommendations in the July 2008 report, *The Effects of Docks on Seagrasses, With Particular Emphasis on the Threatened Seagrass, Halophila johnsonii* (Landry et al. 2008).

7. NMFS recommends that the USACE review and implement the Conclusions and Recommendations in the October 2008 report, *Evaluation of Regulatory Guidelines to Minimize Impacts to Seagrasses from Single-family Residential Dock Structures in Florida and Puerto Rico* (Shafer et al. 2008).

## 10 REINITIATION OF CONSULTATION

As provided in 50 CFR 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 taking specified in the proposed action 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 Biological Opinion, or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

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