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NATIONAL MARINE FISHERIES SERVICE
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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

AUG 24 2017

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-2012-03448 (LP-AG)	Normandy Ventures, LLC	SER-2017-18472	Dredging and Dock Construction

The Opinion considers the potential effects of dredging and dock construction by Normandy Ventures, LLC, on the following listed species and critical habitat: green sea turtles (North and South Atlantic distinct population segments [DPSs]), hawksbill sea turtles, Kemp's ridley sea turtles, leatherback sea turtles, loggerhead sea turtles (Northwest Atlantic Ocean DPS); smalltooth sawfish (U.S. DPS); and Johnson's seagrass critical habitat. NMFS concludes that the proposed action is not likely to adversely affect green sea turtles, Kemp's ridley sea turtles, 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

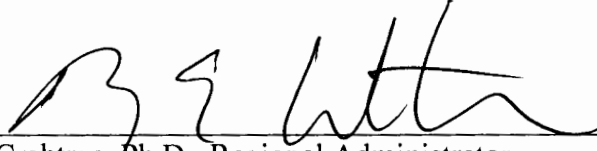


**Endangered Species Act - Section 7 Consultation
Biological Opinion**

Action Agency: United States Army Corps of Engineers, Jacksonville District
Applicant: Normandy Ventures, LLC
Activity: Dredging and Dock Construction in Miami Beach, Miami-Dade County, Florida
Consulting Agency: Protected Resources Division
Southeast Regional Office
National Marine Fisheries Service

Consultation Number SER-2017-18472

Approved by:



Roy E. Crabtree, Ph.D., Regional Administrator
NMFS, Southeast Regional Office
St. Petersburg, Florida

Date Issued:

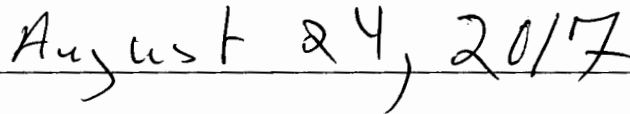


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Acronyms and Abbreviations

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
ft	foot/feet
ft ²	square foot/feet
in	inch(es)
km	kilometer(s)
lin ft	linear foot/feet
m	meter(s)
mi	mile(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 for ESA consultation from the U.S. Army Corps of Engineers (USACE) on February 10, 2017. NMFS requested additional information on March 3, 2017. A response was received from the USACE on March 6, 2017, and consultation was initiated on that date. We requested additional information on June 23, 2017, and received a final response on July 7, 2017.

2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

2.1 Proposed Action

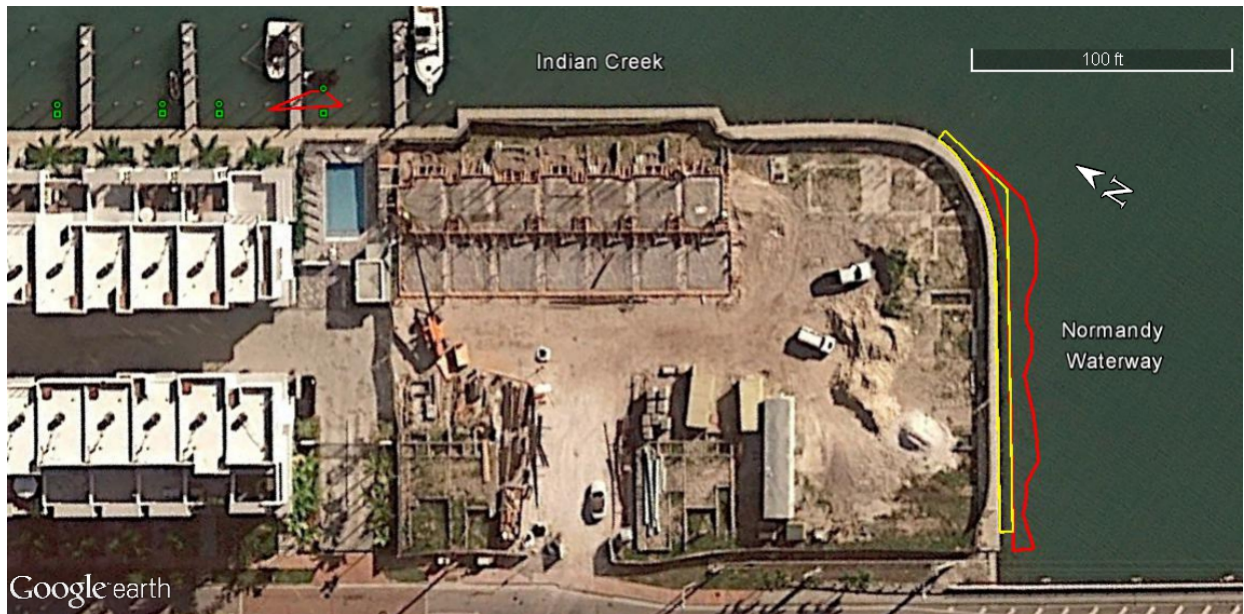


Figure 1. Image showing proposed construction activities: approximate areas to be dredged are shown in red, new dock construction in yellow, and the current and proposed locations of slip-limiting piles are shown in green circles and green squares, respectively (background image ©2017 Google Earth)

The site of the proposed project consists of a commercial docking facility located in Biscayne Bay at the confluence of Normandy Waterway and Indian Creek. Throughout the area, the shoreline is armored by a seawall with a 6-8-ft-wide riprap revetment. A concrete cap on the seawall extends approximately 1.9 ft over the water. On the Indian Creek Shoreline, 4 finger piers, fifteen 12-in-diameter wood mooring piles, and eight 12-in-diameter wood slip-limiting piles provide storage for up to 8 vessels. (Slip-limiting piles are used to prevent vessels from mooring too close to in-water hazards, like shallow water.)

The applicant proposes to conduct dredging in 2 locations, relocate 4 of the slip-limiting piles, and build a new marginal dock (Figure 1). Maintenance dredging will be conducted to remove 6.5 cubic yards (yd^3) of sediment within a ~60-square foot (ft^2) area at the docking facility on Indian Creek, restoring the area to the previously authorized depth of -3 ft at mean low water (MLW). An additional area will be dredged along the Normandy Waterway shoreline, removing approximately 44 yd^3 of sediment in a 1,334- ft^2 area, bringing it to a maximum depth of -6 ft MLW. The dredging will result in a bottom profile with 1:3 vertical:horizontal slope, so will remove less than 2 ft of sediment across the area.

Four of the existing slip-limiting piles will be relocated several feet landward of their current locations to increase the size of each slip. The applicant also proposes to construct a new 719- ft^2 marginal dock along the Normandy Waterway shoreline, supported +5.1 ft MLW by thirty-four 12-in round wood piles. The dock will be 4-ft-wide for most of its length, with a 10-ft-wide portion on the northeast corner, where the shoreline bends. The decking will consist of wood

with 1-inch (in) spacing between boards. The new dock is designed to accommodate one 30-ft vessel (16.5-ft wide), two 35-ft vessels (18-ft wide), and one 40-ft vessel (18-ft wide) (Figure 2).

Prior to dredging, turbidity curtains, anchored by up to 35, 6-8-in-diameter temporary wood piles, will completely surround the areas to be dredged. The temporary piles will be pressed into place using a barge-mounted backhoe. Dredging will then be conducted using a barge-mounted mechanical clamshell dredge. Relocation of the slip-limiting piles will also be accomplished by barge-mounted mechanical equipment, direct-pulling using a backhoe, followed by pile driving using an impact hammer. Supporting piles for the dock will also be driven by a barge-mounted impact hammer. The majority of the supporting piles will be located in the area covered by riprap, but 3 piles will be driven into the sediment beyond the riprap. Framing and decking will be installed following pile driving.

Turbidity curtains, required by USACE permit conditions, will be deployed during all in-water work. Activity will take place during daylight hours only. The applicant has also agreed to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*.¹ Accordingly, if a listed species is seen within 100 yards of the active daily construction 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 feet of a listed species. Operation of any mechanical construction equipment shall cease immediately if a listed species is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

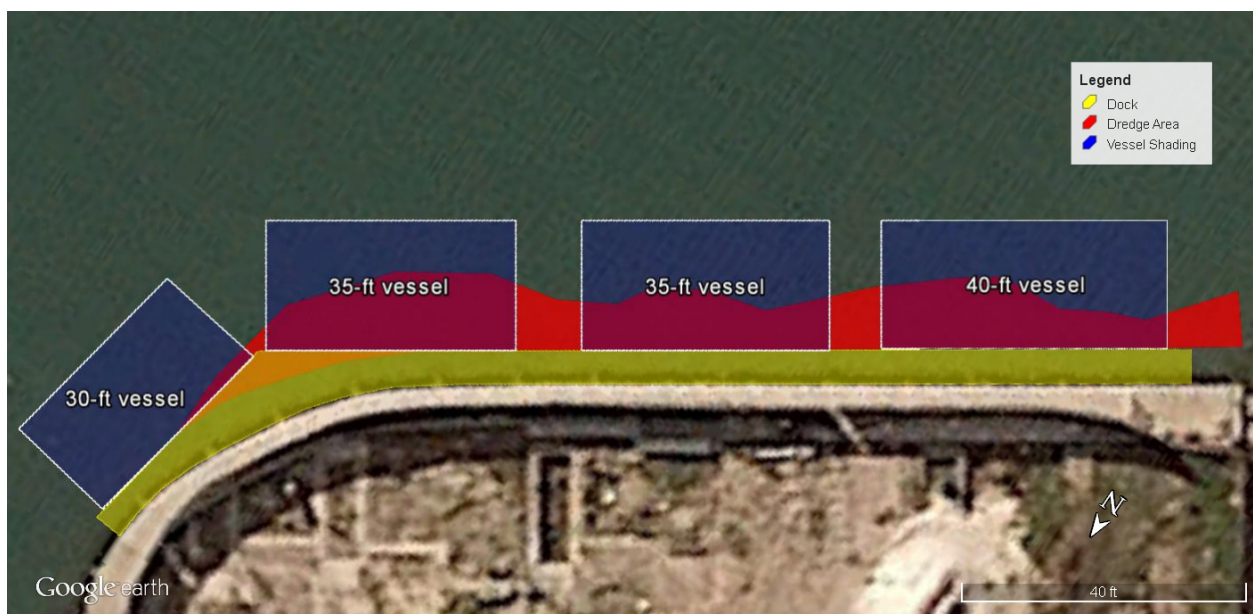


Figure 2. Approximate locations of vessels to be moored along the new dock in relation to the area to be dredged (background image ©2017 Google Earth)

¹ NMFS. 2006. *Sea Turtle and Smalltooth Sawfish Construction Conditions* revised March 23, 2006. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, Saint Petersburg, Florida. http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf, accessed June 2, 2017.

2.2 Action Area

50 CFR 404.02 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 includes the waters adjacent to 25-13 North Shore Drive, Miami Beach, Miami-Dade County, Florida. The approximate central coordinates of the proposed construction activity are 25.85783°N latitude, 80.1289°W longitude (North American Datum 1983). The action area is within the boundary of Johnson's seagrass critical habitat Unit J, Northern Biscayne Bay. The action area includes the waters and submerged lands within and in the immediate vicinity of the construction area, and within a radius of 705 ft around each pile, within which endangered species could be exposed to potentially harmful noise levels caused by pile driving (Figure 3). Normandy Waterway is approximately 147 feet (ft) wide in the action area, and Indian Creek is approximately 190 ft wide. Water depth varies throughout the area from 2-9 ft at mean low water. The bottom consists of silt, rock, and rubble. Sediment probes taken in the area of Normandy Waterway proposed for dredging indicate sediment depth ranges from 2.3-3.8 ft. A benthic survey conducted on September 11, 2013, found paddle grass (<1% cover) in the silt beyond the riprap, and interspersed in the rock and rubble where the shoreline of the Normandy Waterway meets the shoreline of Indian Creek. Another survey, conducted on August 5, 2015, found no seagrasses within the area proposed to be dredged. Both surveys found small, hard corals; macroalgae; and other organisms on the riprap, rock, and rubble. However, neither ESA-listed corals nor Johnson's seagrass were found.



Figure 3. Image depicting the Normandy Ventures, LLC, action area (light blue); the existing docking area is above the purple dot (background image ©2017 Google Earth)

3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

Table 1. Effect Determinations and Status for Species and Critical Habitat In or Near the Action Area 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 segment [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
Nassau grouper	T	NLAA	NE
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 green sea turtles (North and South Atlantic distinct population segments [DPSs]), hawksbill sea turtles, Kemp's ridley sea turtles, loggerhead sea turtles (Northwest Atlantic Ocean DPS), and smalltooth sawfish (U.S. DPS) may be within the action area and may be affected by the project. The USACE determined that leatherback sea turtles and Nassau grouper also may be affected. However, we believe this project will have no effect on leatherback sea turtles or Nassau grouper due to their very specific life history strategies, which are not supported at the project site. Leatherback sea turtles have a pelagic, deepwater life history, wherein they forage primarily on jellyfish. Nassau grouper juveniles reside in hard bottom structures and dense seagrass beds near coral reefs; Nassau grouper adults reside on coral reefs, none of which occur in or near the action area. 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

Green sea turtles (North and South Atlantic distinct population segments (DPSs), hawksbill sea turtles, Kemp's ridley sea turtles, and loggerhead sea turtles (Northwest Atlantic Ocean DPS) (collectively hereafter, "sea turtles"), and smalltooth sawfish (U.S. DPS) may be found in or near the action area and may be affected by the proposed action. We have identified the following potential adverse 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 interactions with construction machinery or materials (e.g., entrainment in dredging equipment or being struck by descending piles) because we expect sea turtles and smalltooth sawfish to detect and move away from the disturbance caused by the proposed activities. (Movement to avoid disturbance is also a potential effect of the proposed action, and is addressed below.) NMFS has previously determined in regional biological opinions that the risk of entrainment during non-hopper-type dredging activities, such as clamshell dredging, is discountable, and sea turtles, smalltooth sawfish, and sturgeon are not likely to be adversely affected (NMFS 1997; NMFS 2015). Additionally, the applicant will implement NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, revised March 23, 2006, which will provide additional protection by requiring operation of any mechanical construction equipment to immediately cease if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Construction activities will not resume until the animal has departed the project area of its own volition. Thus, direct, physical injury is extremely unlikely to occur and therefore discountable.

3.1.2 Noise Effects

Noise created by construction activities can physically injure animals or change animal behavior in the affected areas. 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, 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 2014a). The noise analysis in this consultation evaluates effects to sea turtles and smalltooth sawfish identified by NMFS as potentially affected in Table 1, above.

Based on our noise calculations, the installation of thirty-four 12-in-diameter wood dock piles and four 12-in-diameter wood slip-limiting piles by impact hammer will not cause single-strike or peak-pressure injury to sea turtles or smalltooth sawfish. The cumulative sound exposure level of multiple pile strikes over the course of a day may cause injury to sea turtles and smalltooth sawfish at a radius of up to 30 ft. Due to the mobility of sea turtles and smalltooth sawfish, we expect them to move away from noise disturbances. Because we anticipate the animal will move away, we believe that an animal's suffering physical injury from noise is extremely unlikely to occur. 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. 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 cumulative sound exposure effect is discountable.

Based on our noise calculations, impact hammer pile installation could also cause behavioral effects at radii of 151 ft for sea turtles and 705 ft for smalltooth sawfish. Due to the mobility of sea turtles and smalltooth sawfish, 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.

3.1.3 Foraging and Refuge

Sea turtles and smalltooth sawfish may be temporarily unable to use 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, intermittent (occurring during daylight hours only), and small in spatial scale relative to the size of nearby areas of similar habitat. Also, because these species are mobile and forage over large areas, we expect that they will use adjacent areas with similar habitat. Therefore, the effects to sea turtles and smalltooth sawfish from temporary loss of foraging and refuge habitat will be insignificant.

A very small permanent loss of habitat is expected from the installation of the proposed structures, approximately 26.70 ft², due to the placement of pilings ($34 \times \pi \times 0.5 \text{ ft} \times 0.5 \text{ ft} \approx 26.703 \text{ ft}^2$). The loss of this small area of bottom will be insignificant to sea turtles and smalltooth sawfish due to the availability of large areas of similar habitat nearby.

3.1.4 Risk of Vessel Strike

Sea turtles may be injured or killed as a result of being struck by vessels accommodated by the proposed addition of 4 new wet-slips. However, we believe this effect is discountable. The addition of 4 new slips to this area will not necessarily introduce new vessels or increase vessel traffic in the area, as it may relocate existing vessels or provide slips for vessels that were previously trailered. Still, even if 4 new vessels are introduced to the area, we conclude, based on a recent NMFS analysis (Barnette 2013), that potential effects on sea turtles resulting from increased vessel traffic associated with the proposed project are discountable. Smalltooth sawfish is a demersal (i.e., bottom-dwelling) species; therefore, we do not expect there to be an increased risk of vessel strike for smalltooth sawfish.

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 2). The total range-wide acreage of critical habitat for Johnson’s seagrass is roughly 22,574 acres (ac) (NMFS 2002).

Table 2. 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 meters [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 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 163rd Street south to Central Key Biscayne at 25°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.

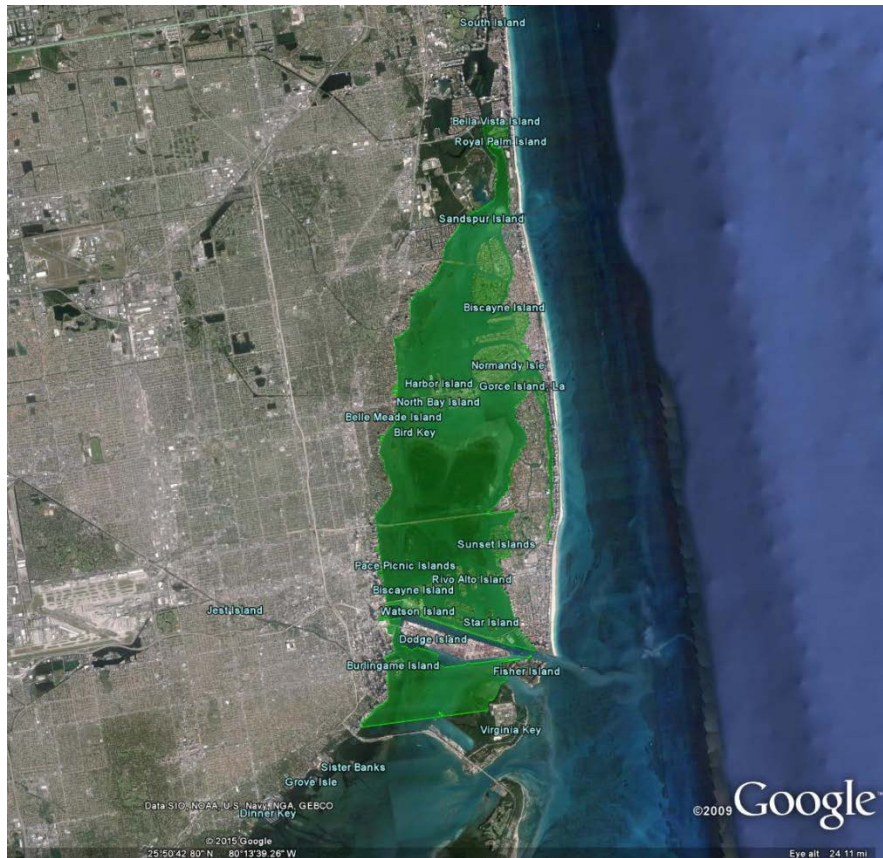


Figure 4. Johnson's seagrass critical habitat Unit J (©2015 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

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 an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat), and the ecosystem, within the action area. It does not include the effects of the action under review in this consultation.

By regulation, environmental baselines for Biological Opinions include the past and present impacts of all state, federal, or private actions and other human activities in the action area. We identify the anticipated impacts of all proposed federal projects in the specific action area of the consultation at issue, that have already undergone formal or early Section 7 consultation as well as the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

Focusing on the impacts of the activities in the action area specifically allows us to assess the prior experience and state (or condition) of the designated critical habitat in an action area, which will be exposed to effects from the actions under consultation. This consideration is important because in some areas, critical habitat features will commonly exhibit, or be more susceptible to,

adverse responses to stressors than they would be in other areas. 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 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 25° 45' N (Figure 4). Unit J is wholly within the Biscayne Bay Aquatic Preserve. Normandy Isle was initially developed c. 1926 (DPNPD 2004). As part of the development, Normandy Waterway and Indian Creek, both natural waterways, were dredged and channelized. In some areas, dredging has resulted in channels that are too deep for seagrass growth. High levels of boat traffic and disturbance associated with heavy residential and commercial development have also resulted in areas in Indian Creek, including the part of the action area containing the existing docks, which are not suitable for Johnson's seagrass, i.e., stable, unconsolidated sediments that are free from disturbance and adequate water transparency, which would allow sunlight necessary for photosynthesis, are not present. However, because it is more sensitive to low light levels, water quality, and disturbance than Johnson's seagrass, the presence of paddle grass in the 2013 survey indicates that the essential features of Johnson's seagrass critical habitat were present in some parts of the action area at that time, including some portion of the area in Normandy Waterway in which dredging and pile installation are proposed. The apparent absence of seagrasses in the 2015 survey suggests that the essential features of Johnson's seagrass critical habitat may no longer be present in that area. However, because Johnson's seagrass is less sensitive than paddle grass, it may be able to persist in some areas that are not capable of supporting paddle grass. Thus, there is some uncertainty regarding the continued presence of the essential features. We resolve this uncertainty in favor of the species by assuming that all of the essential features of Johnson's seagrass critical habitat are currently present in the part of the action area within Normandy Waterway in which dredging and some of the pile installation is proposed.

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 (NMFS 2017), there has been 1 ESA Section 7 consultation completed on activities with the potential to affect Johnson's seagrass critical habitat within the action area. That was a USACE permit, number SAJ-2012-03448, which was issued to authorize construction of the 4 piers and installation of the associated mooring and slip-limiting piles described in Section 2.1 of this Opinion. NMFS determined that the action would likely adversely affect Johnson's seagrass critical habitat due to the loss of 3,649.48 ft² from installation of piles (49.48 ft²) and shading by vessels (3,600 ft²), but that the critical habitat would not be destroyed or adversely modified (NMFS 2014b).

Other authorizations have been issued under the USACE permit for this project location (SAJ-2012-03448), for which the USACE did not request Section 7 consultation with NMFS. Although the records of these authorizations are not available, they likely included construction of the existing seawall, installation of the existing riprap revetment, and dredging in the adjacent channels.

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 stable, unconsolidated sediments that are free from physical disturbance.

4.2.3 Other Potential Sources of Effects to the Environmental Baseline

Random events, such as tropical storms and hurricanes, may affect the action area. The occurrence of these events is, by nature, unpredictable, as is their effect on the critical habitat; but, they have the potential to suspend and redistribute sediments, resulting in resuspension of nutrients, increased turbidity, and areas of scour. Between 1916 and 2015, 39 hurricanes have approached Southeast Florida closely enough to affect Biscayne Bay (Gamio 2016). The most recent hurricanes to affect the area were Rita and Wilma in 2005. Although these storms

affected sediments, water quality, and water transparency in the action area, most of the effects were of short duration, and the area appears to have recovered.

4.2.4 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.

All four essential features of Johnson's seagrass critical habitat must be present for an area to function as critical habitat. As discussed in Section 4.1, high levels of boat traffic and disturbance associated with heavy residential and commercial development are occurring in areas in Indian Creek, including the part of the action area containing the existing docks. As a result, the Indian Creek portion of the action area lacks both stable, unconsolidated sediments that are free from disturbance and adequate water transparency; thus, the essential features are not present, and the area is not suitable habitat for Johnson's seagrass. Therefore, the dredging and movement of piles proposed within the docking area along Indian Creek will not be considered further.

All four essential features are present in the Normandy Waterway portion of the project. Project activities have no potential routes of effect to water quality and salinity, as they involve only construction and small vessel mooring activities that lack the potential to affect such features. However, construction and vessel mooring activities do present potential routes of effect to sediment quality and water transparency. The placement of an overwater structure may affect water transparency by shading the water below, but the proposed wooden decking with 1-in spacing between boards is not expected to reduce transmission of sunlight below the level necessary for photosynthesis. Therefore, we believe this effect will be insignificant. Similarly, although the placement of up to 35 temporary piles to anchor turbidity curtains will temporarily

affect up to 10.7 ft^2 of stable, unconsolidated sediments that are free from disturbance ($35 \times \pi \times 4 \text{ in} \times 4 \text{ in} \approx 1,539.4 \text{ in}^2 \approx 10.69 \text{ ft}^2$), we believe that this effect will be insignificant. These piles will be removed upon completion of the work, and the relatively small, shallow holes left behind are expected to quickly fill with sediment.

Dredging in the Normandy Waterway will affect $1,334 \text{ ft}^2$ of stable, unconsolidated sediments that are free from disturbance (hereafter "stable sediment") by removing approximately 44 yd^3 . Although unconsolidated sediment will remain in the dredged area, we believe that the area will continue to be disturbed. The proposed dredging in this area is needed to comply with local laws, and the depth must be maintained. Because the property is currently in need of maintenance dredging, we expect that maintenance dredging will be required in the future (and likely will be covered under a programmatic consultation). Therefore, we believe the dredging in this area will result in a permanent loss of $1,334 \text{ ft}^2$ of stable sediment.

The placement of piles to support the marginal dock may also affect stable sediments. Of the 34 piles that will be installed, 31 will be installed in the riprap revetment, and will not affect stable sediment. Installation of the remaining 3 piles will result in the permanent loss of approximately 2.36 ft^2 of stable, unconsolidated sediments that are free from physical disturbance ($3 \text{ piles} \times \pi \times 0.5 \text{ ft} \times 0.5 \text{ ft} \approx 2.3562 \text{ ft}^2$).

The proposed dock will provide storage space for one $30\text{-ft} \times 16.5\text{-ft}$ wide vessel, two $35\text{-ft} \times 18\text{-ft}$ vessels, and one $40\text{-ft} \times 18\text{-ft}$ vessel. This will affect water transparency by shading an area of approximately $2,475 \text{ ft}^2$ ($[30 \times 16.5] + [35 \times 18] + [35 \times 18] + [40 \times 18] = 2,475$).

A permanent loss of any one of the essential features renders the area incapable of supporting Johnson's seagrass and constitutes a total loss of the conservation function of the critical habitat in the area of the loss. Therefore, because the 3 piles supporting the dock will be in the dredged area, their effect is not added to the effect of dredging. Similarly, all of the vessels moored along the marginal dock, except the $30\text{-ft} \times 16.5\text{-ft}$ wide vessel, will be partially above the dredged area (see Figure 2 in Section 2.1). Based on the plans provided, the dredged area will be approximately 8.9-ft -wide, on average. Therefore the moored vessels will shade an area of approximately 979 ft^2 that will also be dredged ($8.9 \text{ ft} \times [35 \text{ ft} + 35 \text{ ft} + 40 \text{ ft}]$), and this area is not added to the effect of the dredging. However, the vessels will also shade an area of $1,496 \text{ ft}^2$ that will not be dredged ($2,475 - 979 = 1,496$), and that area is an additional effect of the action. Therefore, the proposed action will result in the loss of approximately $2,830 \text{ ft}^2$ ($\sim 0.065 \text{ ac}$) ($1,334 \text{ ft}^2$ dredged + $1,496 \text{ ft}^2$ shaded) 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 this project will result in the loss of approximately 0.065 ac of Johnson's seagrass critical habitat by placement of piles and shading by non-grated, overwater structures. But 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 potential areas for colonization will not affect the stability of the species' range now or in the future. Thus, we believe the project 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. Due to its asexual reproductive mode, self-sustaining populations are present throughout the range of species. As discussed in Section 3.2.1, there are approximately 22,574 ac of Johnson's seagrass critical habitat. The loss of approximately 0.065 ac of designated critical habitat for Johnson's seagrass in Unit J would equate to a loss of ~0.00029% of Johnson's seagrass critical habitat ($0.065 \text{ ac} \times 100 / 22,574 \text{ ac} \approx 0.0002878\%$). This loss will not affect the conservation value of available critical habitat to an extent that it would impact Johnson's seagrass self-sustaining populations by adversely affecting the availability of suitable habitat in which the species can spread/flow in the future. 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 miles under the influence of wind, tides, and waves. Because of this, we believe that the removal of approximately 0.065 ac of critical habitat by this project 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). Though the affected portions of the project sites will not be available for the long-term, thousands of acres of designated critical habitat are still available for long-term protection, which include areas surrounding the action areas.

The proposed project 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 Geographic Information System 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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