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 National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
 Southeast Regional Office
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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

OCT 31 2017

Dear Sir or Madam:

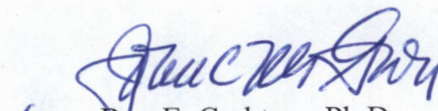
The enclosed Biological Opinion (“Opinion”) responds to your request for consultation with us, the National Marine Fisheries Service (NMFS), pursuant to Section 7 of the Endangered Species Act (ESA) for the following action.

Permit Number	Applicant	PCTS Number	Project Types
SAJ-2012-03284 (LP-AG)	Sunset Aqua 1736, LLC	SER-2017-18443	Dock Removal, Dock Construction

The Opinion considers the potential effects of removal of an existing dock and piles, and construction of a new dock by Sunset Aqua 1736, LLC, on the following listed species and critical habitat: green sea turtle (North Atlantic and South Atlantic distinct population segments [DPSs]), hawksbill sea turtles, Kemp's ridley sea turtles, leatherback sea turtles, loggerhead sea turtles (Northwest Atlantic 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, hawksbill 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

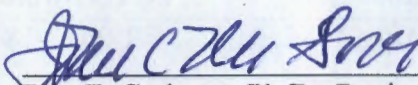
Applicant: Sunset Aqua 1736, LLC

Activity: Removal of a marginal dock and piles, and construction of a new dock, including dolphin clusters and a new boat lift, in Miami Beach, Miami-Dade County, Florida

Consulting Agency: Protected Resources Division
Southeast Regional Office
National Marine Fisheries Service

Consultation Number SER-2017-18443

Approved by:

ba 

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

OCT 31 2017

Date Issued: _____

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Acronyms and Abbreviations

cSEL	cumulative sound exposure level
ESA	Endangered Species Act
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)
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 proposed action’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 January 30, 2017. NMFS requested additional information on March 2 and 7, 2017. A final response was received from the USACE on June 1, 2017, and consultation was initiated on that date.

2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

2.1 Proposed Action

The site of the proposed action consists of a residential lot and adjacent waterway located in Biscayne Bay Aquatic Preserve. The waterway is approximately 247 feet (ft) wide, and depth ranges from 3.4-6.6 ft at mean low water. The site currently includes a 6-ft × 59.5-ft marginal dock that accommodates an 85-ft × 20-ft boat, a boat lift that holds a 20-ft × 10-ft boat, and 2 dolphin pile clusters, each composed of two 12-inch (in)-diameter wood piles (Figure 1). The shoreline consists of a seawall with T- and batter piles and a concrete cap. According to a biological assessment conducted on May 20, 2015, a barren area, approximately 3,303 square feet (ft²), extends approximately 90 ft along the shoreline and 36.7 ft waterward. This area contained the existing dock and dolphin piles and also included a scoured region that was found

to be in violation by the Miami-Dade County Department of Regulatory and Economic Resources. Seagrass beds surrounded the scoured area with cover ranging from 10-70%. The seagrass beds consisted primarily of paddle grass and shoalgrass, though a small bed of manatee grass was found on the western edge of the area.

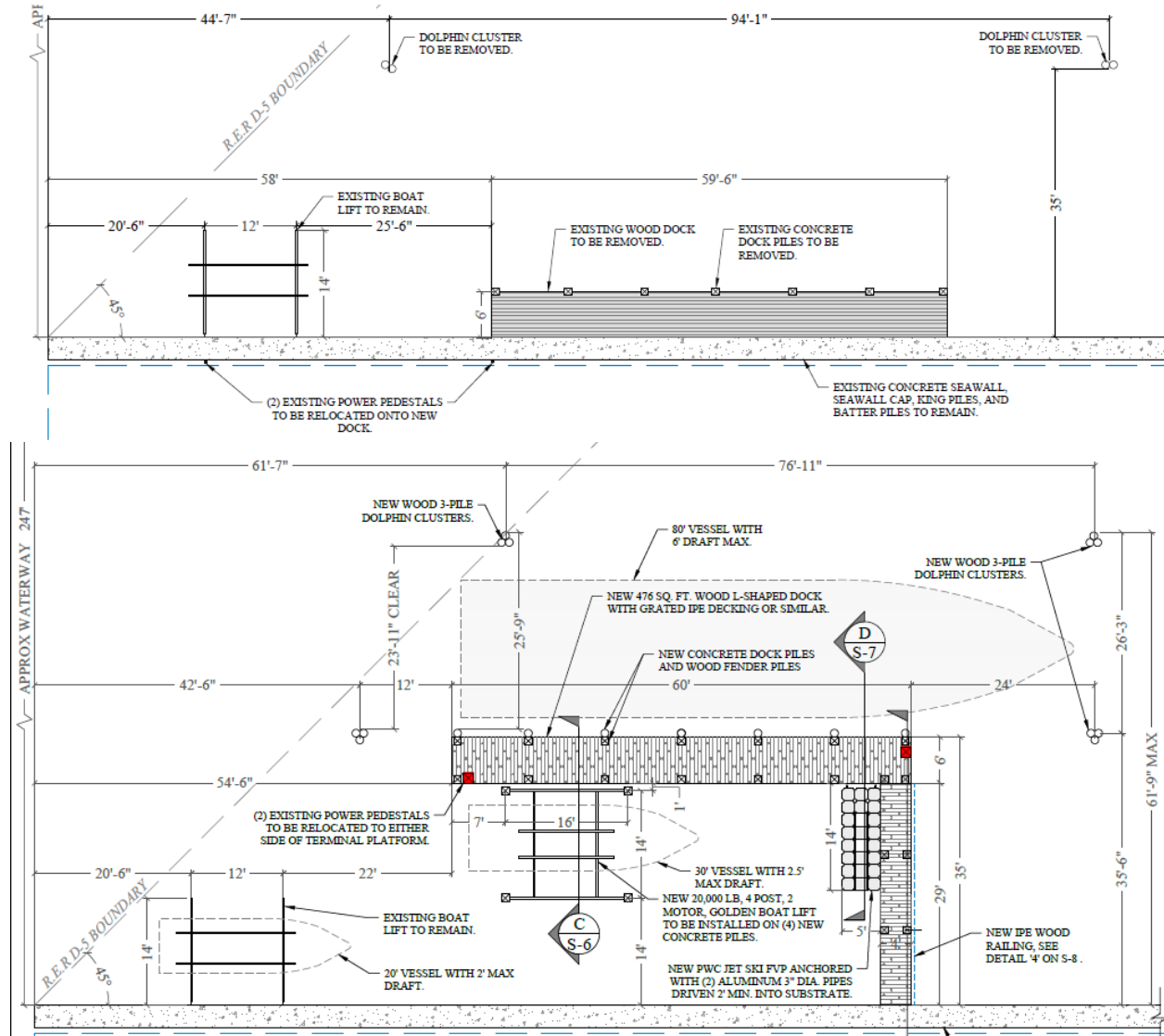


Figure 1. Proposed demolition and construction diagrams (Sheet S-2A [top] and Sheet S-3 [bottom] from Ocean Consulting, LLC, 1736 W. 28th Street Dock and Boat Lift Project)

The applicant proposes to remove the existing marginal dock and dolphin pile clusters, and install a 476-ft² L-shaped dock, 4 dolphin pile clusters, a 66-ft² floating Jet Ski platform, and a 20,000-pound, 4-post, boat lift (see Figure 1, above). The existing seawall and boat lift will remain. The new dock will be supported at an elevation of +2.56 (National Geodetic Vertical Datum of 1929) by nineteen 12-inch concrete piles. The southern edge of the dock will be protected by seven 12-in-diameter wood fender piles. The decking will rest on top of the concrete piles, and will be grated, allowing 49% light transmission. The dolphin pile clusters will each consist of three 12-in-diameter wood piles. The floating Jet Ski dock will be anchored by 2 piles, each consisting of a 2-in-diameter aluminum pipe within a 3-in-diameter plastic pipe.

The new boat lift will be supported by four 12-in concrete piles, and will accommodate a 30-ft × 12-ft vessel.

Following installation of turbidity curtains, the existing dock and piles will be removed by direct-pulling, and will be disposed of off-site. Piles will then be driven by a barge-mounted drop hammer. No more than 6 piles will be driven on any given day (Table 1). The aluminum pipes for the Jet Ski will be driven by hand. Framing and installation of the decking will be completed from land. All work will be completed between 8 a.m. and 4 p.m., Monday-Friday, and is expected to be complete within 4 weeks of commencement.

Table 1. Pile Installation

Material	Shape	Size	Total Number	Installation Method	Piles per Day
concrete	square	12-in	23	impact hammer	6
wood	round	12-in	19	impact hammer	6

In addition, of the area described as having been scoured, approximately 1,174 ft², will be filled with 84.90 cubic yards of clean sand to provide habitat for seagrasses (Figure 2). The fill operation is required by the State of Florida, and was authorized under a separate permit that was considered in a previous biological opinion. Therefore, the effects of the fill operation are considered as part of the Environmental Baseline of this Opinion.

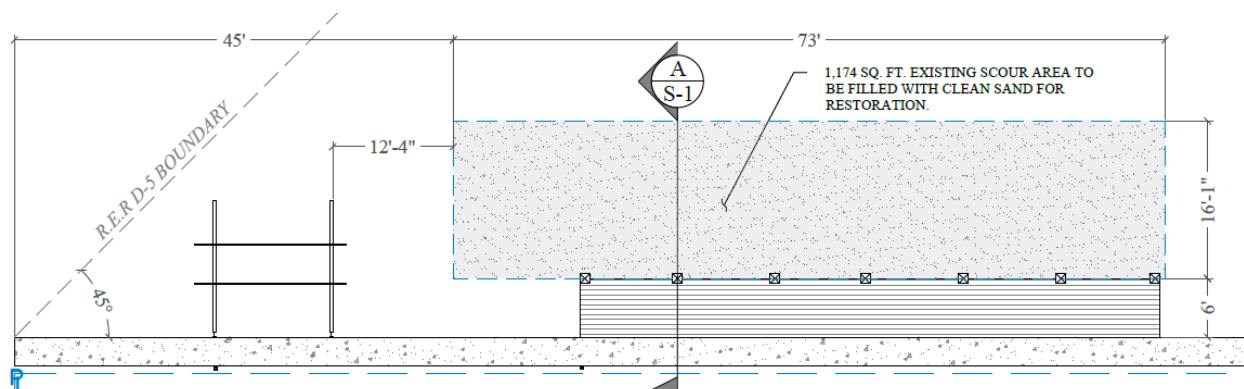


Figure 2. Scour fill area diagram (Sheet S-2B from Ocean Consulting, LLC, 1736 W. 28th Street Dock and Boat Lift Project)

2.1.1 Construction Conditions

Turbidity curtains will be deployed during all in-water work. 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

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.

listed species is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the area of its own volition.

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 is located at latitude 25.803784°N, longitude 80.146045°W (North American Datum of 1983) adjacent to 1736 West 28th Street, Miami Beach, Miami-Dade County, Florida, approximately 2.3 miles from the nearest inlet on the Atlantic Ocean. 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, within which listed species could be exposed to potentially harmful noise levels caused by pile driving (Figure 3). The action area is entirely within the boundary of Johnson's seagrass critical habitat Unit J, but no Johnson's seagrass occurs within the demolition or construction footprints.



Figure 3. Images depicting the approximate action area: the extent of the action area, based on the area affected by pile driving noise, is depicted in light blue (top), and the boundaries of Johnson's seagrass critical habitat are depicted with green lines to the east and west of the action area (bottom)

3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

Table 2. 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	NE
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 green sea turtles from the North and South Atlantic DPSs, Kemp's ridley sea turtles, loggerhead sea turtles from the Northwest Atlantic Ocean DPS, and smalltooth sawfish from the U.S. DPS may be within the action area and may be affected by the proposed action.

The USACE determined that hawksbill sea turtles and leatherback sea turtles also may be affected. However, we believe the proposed action will have no effect on hawksbill sea turtles or leatherback sea turtles due to their very specific life history strategies, which are not supported in the action area. Hawksbill sea turtles typically inhabit inshore reef and hard bottom areas where they forage primarily on encrusting sponges. Leatherback sea turtles have a pelagic, deepwater life history, wherein they forage primarily on jellyfish.

The action area is 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 from the North and South Atlantic DPSs, Kemp's ridley sea turtles, loggerhead sea turtles from the Northwest Atlantic Ocean DPS (collectively, "sea turtles," hereafter), and smalltooth sawfish from the 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 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., being struck by pile driving equipment or 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.) 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 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 in the affected areas 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 interfere with 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 the table above. The applicant proposes to install 12-in-diameter wood piles and 12-in-square concrete piles. Because the area affected by the noise of driving concrete piles is greater than or equal to the area affected by the noise of driving wood piles, and will contain the area affected by the noise of driving wood piles, the analysis, below, considers only the area affected by the noise of driving concrete piles.

Installation of concrete piles, up to 24-inch diameter, by an impact hammer in open water:

Based on our noise calculations, installation of 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 sea turtles and smalltooth sawfish up to 72 ft (22 meters [m]) away from the pile. Due to the mobility of sea turtles and smalltooth sawfish, and because the project occurs in open water, 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 and is therefore discountable. An animal's movement away from the injurious sound radius is a behavioral response, with the same effects discussed below.

The installation of piles using an impact hammer could also result in behavioral effects at radii 705 ft (215 m) for smalltooth sawfish and 151 ft (46 m) for sea turtles. Due to the mobility of sea turtles and smalltooth sawfish, 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.

3.1.3 Foraging and Refuge

Sea turtles and smalltooth sawfish may be temporarily unable to use the project site for forage and shelter habitat due to avoidance of construction activities, related noise, and physical exclusion from areas blocked by turbidity curtains. We expect that this effect will be insignificant because the proposed activities will be temporary and of short duration (total duration of in-water work will be less than 4 weeks), intermittent (pile driving and construction will only occur between 8:00 a.m. and 4:00 p.m. and will occur only during weekdays [Monday-Friday]), and will occur in a very small area, relative to the sizes of nearby areas of similar habitat. Also, because these species are mobile, we expect that they will forage in adjacent areas with similar available habitat, well within their normal range of daily movement.

In addition, green sea turtles, loggerhead sea turtles, and smalltooth sawfish foraging behavior may be affected by the permanent loss of forage habitat. Green sea turtles feed on seagrasses, and some of the prey species on which loggerhead sea turtles and smalltooth sawfish feed (echinoderms, mollusks, arthropods, and juvenile fishes) can be found in seagrass beds. However, this effect is expected to be insignificant due to the small area (< 1 ac) that will be affected relative to the large areas of similar habitat nearby.

3.1.4 Risk of Vessel Strike

The project proposes to provide mooring space for 2 new vessels: a 30-ft boat and a Jet Ski. Providing mooring space does not necessarily indicate that a new vessel will be introduced to the area, thereby increasing local vessel traffic. Instead, the vessel could be moved from another mooring in the same area or could have previously been stored on land. However, even if 2 new vessels are introduced to the area, we conclude, based on a 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 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 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.

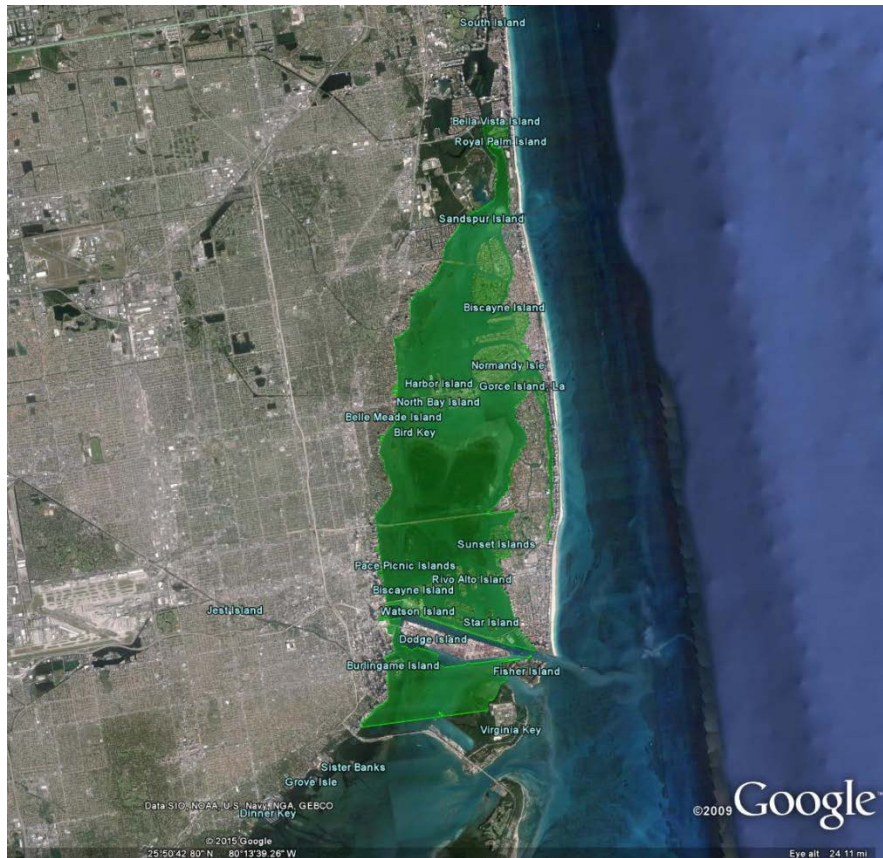


Figure 4. Johnson's seagrass critical habitat Unit J (©2015 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

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 critical habitat 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). 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 (NMFS 2017), 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 action area 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 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 hurricane to affect the area was Irma in 2017. Although these storms may have affected sediments, water quality, and water transparency in the action area, most of the effects were of short duration. In imagery of the southern portion of Biscayne Bay, provided by the National Geodetic Survey,² 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

² NGS. 2017. Hurricane IRMA: Emergency Response Imagery of the Surrounding Regions. NOAA's Ocean Service, National Geodetic Survey, Remote Sensing Division. Silver Spring, Maryland. <https://storms.ngs.noaa.gov/storms/irma/index.html#12/25.4417/-80.1871>, accessed October 23, 2017.

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.

Within the action area, the presence of other seagrasses indicates that the essential features of Johnson's seagrass critical habitat are present throughout most of the area. However, there are several areas in which one or more of the essential features are absent. These include a 357 ft² area (6-ft × 59.5-ft) shaded by the marginal dock, a 1,700 ft² area (85-ft × 20-ft) shaded by a vessel, a 200 ft² area (20-ft × 10-ft) shaded by another vessel and boat lift, and an area of approximately 10ft² of sediment that has been replaced by piles (7 × 1-ft-square piles + 4 × 1-ft-round piles [$\pi \times 0.5 \text{ ft} \times 0.5 \text{ ft} \approx 0.7854$] $\approx 10.14 \text{ ft}^2$). In addition, an area of approximately 1,174 ft² from which sediment had been scoured is or will be filled with clean sand prior to construction, restoring stable, unconsolidated sediment that are free from disturbance. However, this area is within the area currently shaded by the larger vessel, so will remain incapable of supporting Johnson's seagrass until the vessel is removed.

The installation of grated decking is not expected to reduce sunlight transmission below the level necessary for photosynthesis, so the effect of the new dock on water transparency is expected to be insignificant. However, removal of the current marginal dock will reduce shading by 357 ft², which is expected to be a beneficial effect with regard to water transparency. The placement of the floating Jet Ski platform will result in shading in an area of 66 ft². Similarly, the addition of a 30-ft × 12-ft vessel will result in shading in an area of 360 ft². The Jet Ski will be stored on the floating platform, so will have no effect. Therefore, the proposed action is expected to increase the area shaded by a total of approximately 69 ft² (360 ft² vessel + 66 ft² platform – 357 ft² marginal dock), affecting water transparency by reducing transmission of sunlight necessary for photosynthesis.

We believe that, with the required filling of the scoured area, stable, unconsolidated sediments that are free from disturbance (hereafter "stable sediments") will be present throughout the area in which demolition and construction will take place, with the exception of the areas occupied by piles. The removal of the piles associated with the existing marginal dock and dolphin clusters by direct pulling will result in deep (approximately 12 ft) holes. Unlike methods that loosen sediment around the piles, e.g., jetting or removal with a vibratory hammer, 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 it for shelter, or it might be overgrown by sessile organisms, either of which would prevent natural in-filling. Therefore, NMFS believes that the effect of the existing piles on stable, consolidated sediments that are free from disturbance will continue after their removal. The installation of new concrete piles will result in the loss of approximately 23 ft² of stable sediments (23 piles × ~1 ft²); installation of fender piles will result in a loss of approximately 14.92 ft² (19 piles × $\pi \times [0.5 \text{ ft}]^2 \approx 14.922565 \text{ ft}^2$); and installation of piles for the Jet Ski platform will result in a loss of approximately 0.39 ft² (2 piles × $\pi \times [0.25 \text{ ft}]^2 \approx 0.3927 \text{ ft}^2$). Thus, a total area of 38.31 ft² of stable sediments will be replaced by piles (calculated as the sum of each of the previous 3 calculated areas).

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, the proposed action is expected to result in the loss of approximately 107.31 ft² (~0.0025 ac) of Johnson's seagrass critical habitat (69 ft² shaded + 38.31 ft² replaced by piles).

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 areas. 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 proposed action's expected effects 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 proposed action will result in the loss of approximately 0.0025 ac of Johnson's seagrass critical habitat by placement of piles and shading by the Jet Ski platform and vessels. 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 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. 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 0.0025 ac of designated critical habitat for Johnson's seagrass in Unit J would equate to a loss of 0.000011% of Johnson's seagrass critical habitat ($0.0025 \text{ ac} \times 100 / 22,574 \text{ ac} \approx 0.00001107\%$). 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 kilometers under the influence of wind, tides, and waves. Because of this, we believe that the removal of approximately 0.0025 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 action area 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 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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