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NATIONAL MARINE FISHERIES SERVICE
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F/SER31:SG
SERO-2021-01325
SERO-2021-01327

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

Dear Sir or Madam:

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

Permit Number	Applicant	SERO Number	Project Types
SAJ-2021-00791	Peter Zuckerman	SERO-2021-01325	Dock replacement and Shoreline Stabilization
SAJ-2021-00556	Jaime Angel Rubinson Living Trust	SERO-2021-01327	Dock and Shoreline Stabilization

We are responding to your consultation request in a batched format. We have batched these projects based on the location, type of project, construction methods, and species and critical habitat that may be affected. This Opinion analyzes the potential for the projects to affect sea turtles [loggerhead (Northwest Atlantic Distinct Population Segment [DPS]), Kemp’s ridley, hawksbill, green (North and South Atlantic DPSs), and leatherback], smalltooth sawfish, giant manta ray, and designated critical habitat for Johnson’s seagrass. This analysis is based on project-specific information provided by the U.S. Army Corps of Engineers (USACE), the consultant, and NMFS’s review of published literature. We conclude that the projects are likely to adversely affect, but are not likely to destroy or adversely modify Johnson’s seagrass critical habitat. The Opinion includes conservation recommendations for your consideration.



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 Sarah Garvin, Consultation Biologist, by email at Sarah.Garvin@noaa.gov.

Sincerely,

Andrew J. Strelcheck
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 (USACE), Jacksonville District

Applicants:

Permit Number	Applicant
SAJ-2021-00791	Peter Zuckerman
SAJ-2021-00556	Jaime Angel Rubinson Living Trust

Activities: Dock Construction and Shoreline Stabilization, Miami-Dade County, Florida

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

Applicants	SERO Numbers
Peter Zuckerman	SERO-2021-01325
Jaime Angel Rubinson Living Trust	SERO-2021-01327

Approved By:

Andrew J. Strelcheck, Regional Administrator
NMFS, Southeast Regional Office
St. Petersburg, Florida

Date Issued:

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Acronyms and Abbreviations

CFR	Code of Federal Regulations
DPS	Distinct Population Segment
ECO	NMFS Environmental Consultation Organizer
ESA	Endangered Species Act
MHW	Mean High Water
MLW	Mean Low Water
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
Opinion	Biological Opinion
USACE	U.S. Army Corps of Engineers

Units of Measurement

ac	acre(s)
ft	foot/feet
ft ²	square foot/feet

in
km

inch(es)
kilometer

Introduction

Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 et seq.), requires that each federal agency ensure that any action authorized, funded, or carried out by 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 in carrying out these responsibilities. The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service 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. Informal consultation is concluded after NMFS determines that the action is not likely to adversely affect listed species or critical habitat. Formal consultation is concluded after NMFS 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, in which case reasonable and prudent alternatives to the action as proposed must be identified to avoid these outcomes. 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) to reduce the effect of take, and recommends conservation measures to further the recovery of the species.

This document represents NMFS’s Opinion based on our review of impacts associated with the proposed actions within Miami-Dade County, Florida. This Opinion analyzes the proposed actions’ effects on threatened and endangered species and designated critical habitat, in accordance with Section 7 of the ESA. We based our Opinion on individual project information provided by the Jacksonville District of the U.S. Army Corps of Engineers (USACE) and other sources of information, including the published literature cited herein.

1 CONSULTATION HISTORY

The following are consultation histories for the 2 consultations evaluated in this batched biological opinion (Opinion). NMFS batched these 2 consultations into one Opinion due to the similarities in project location, scope, and scale, and effects to ESA-listed species and designated critical habitat.

1. The first consultation history is for NMFS Environmental Consultation Organizer (ECO) identifier number SERO-2021-01325 Zuckerman Biscayne Bay Dock Seawall. On March 30, 2021, NMFS received a request for formal consultation under Section 7 of the ESA from the USACE for construction permit application SAJ-2021-00791. Additional information was requested on June 9, 2021. We received a final response on June 11, and initiated consultation on that same day.
2. The second is the consultation history for ECO identifier number SERO-2021-01327, Rubinson Bay Dr Dock Seawall Riprap. On April 22, 2021, NMFS received a request for formal consultation under Section 7 of the ESA from the USACE for construction permit application SAJ-2021-00556. Additional information was requested on June 14, 2021. We received a final response on June 14, 2021, and initiated consultation the same day.

2 DESCRIPTION OF THE PROPOSED ACTIONS AND ACTION AREAS

2.1 Proposed Actions

1. Zuckerman Biscayne Bay Dock Seawall

The USACE proposes to permit the applicant to: remove an existing 225 square foot (ft²) marginal wood dock; remove a seawall-mounted boatlift; repair 60 linear feet (lin ft) of seawall with a new concrete cap, 3 new concrete king piles, 7 concrete batter piles, and new aluminum sheet pile footer; install a new 360 ft² marginal wood dock measuring 45 feet (ft) long by 8 ft wide with 0.25 inch (in) deck spacing supported by 6 new 12-in diameter wood piles; and, install 2 new 12-in diameter wood mooring piles. Removal will be completed from a barge and from the uplands whenever possible. All dock removal materials will be disposed of at an approved upland Miami-Dade County disposal facility or landfill. The new seawall and dock will be installed with a top elevation of 5.04 ft above MLW. The proposed work will result in 1 new vessel slip. Concrete and wood piles will be installed via barge-mounted impact hammer, and no more than 10 piles will be installed per day. Aluminum sheet piles will be installed from the uplands using a vibratory hammer. Total in-water construction time is expected to be 4 weeks, during daylight hours only. The applicant will comply with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*¹ and will use turbidity curtains.

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. <https://www.fisheries.noaa.gov/webdam/download/92937961>

2. Rubinson Bay Dr Dock Seawall Riprap

The USACE proposes to permit the applicant to: remove an existing 100 ft² floating dock, mooring whips, and cleats from an existing seawall; remove 50 lin ft of existing seawall cap; install 50 lin ft of new pre-cast concrete seawall 1 ft waterward of the existing seawall wetface with two, 4-ft return walls; place 59.2 cubic yards (yds³) of 18- to 24-in diameter riprap at the base of the new seawall extending 8 ft waterward; and, install a new 276.7 ft² marginal wood dock supported by four 12-in diameter timber piles with one 12-in diameter mooring pile. Removal will be done from a barge and from the uplands whenever possible. All dock removal materials will be disposed of at an approved upland Miami-Dade County disposal facility or landfill. The new seawall will be supported by 9 new 14-in square concrete king piles and 9 new 12-in square concrete batter piles. A new 2.5 ft wide seawall cap will also be installed. The new seawall and dock will be installed with a top elevation between 5 and 6 ft NGVD. The piles will all be installed with an impact hammer. All work will be completed from both a barge and the uplands. A maximum of 4 piles will be driven per day, for a total of no more than 10 piles per day. In-water work is expected to take up to 4 weeks to complete during daylight hours only and will result in the addition of 1 new vessel slip. The applicant will comply with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* and will use turbidity curtains.

2.2 Action Areas

The action area is defined by regulation as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For the purposes of the Federal actions, the action areas include the shoreline and submerged habitat within the immediate vicinity of the project sites that will be affected by the proposed actions, including the immediate surrounding areas that may be affected by the proposed actions. The action area for each proposed project here is equivalent to the largest radius of noise effects on ESA-listed species based on the proposed installation of piles using an impact hammer, which is 705 ft from each of the proposed actions.

Both project sites fall within the boundaries of Johnson’s seagrass designated critical habitat Unit J, which encompasses the northern portion of Biscayne Bay from Northeast 163rd Street south to Central Key Biscayne at 25°45’N.

1. Zuckerman Biscayne Bay Dock Seawall

The proposed project site is located at 9272 Bay Drive, Surfside, Miami-Dade County, Florida (25.880995°N, 80.128022°W [North American Datum 1983] Figure 1). The project site is a residential property on Biscayne Bay with an existing seawall and boatlift. The project site is located approximately 1.4 miles (mi) southwest of the mouth of Haulover Inlet, the nearest inlet to the Atlantic Ocean (Figure 1).

A benthic assessment was performed by Miami-Dade County on December 4, 2019. The existing substrate in the project area was described as “silty bottom” in the benthic report with water

depths ranging between 3.9 and 6.3 ft at mean low water (MLW). There was no observed seagrass at the project site. There are no mangroves or ESA-listed corals in the project area.



Figure 1. Image showing the project sites in relation to Haulover Inlet, the nearest opening to the Atlantic Ocean (© 2021 Google Earth).

2. Rubinson Bay Dr Dock Seawall Riprap

The proposed project site is located at 9056 Bay Drive, Surfside, Miami-Dade County Florida (25.876995°N, -80.130175°W [NAD83]) (Figure 1). The project site is a residential property on Biscayne Bay with an existing seawall with riprap bag footer and an existing floating dock. The project site is located approximately 1.8 mi southwest of the mouth of Haulover Inlet, the nearest opening to the Atlantic Ocean (Figure 2).

A benthic survey was performed by Miami-Dade County on March 5, 2019. The existing substrate in the project area was described as “sandy bottom” in the benthic report with water depths ranging between 4 and 4.5 ft at MLW. Sparse coverage (<5%) of patchy *Halophila decipiens* was observed in the central portion of the project site; however, there is no Johnson’s seagrass at the project site. Several species of macroalgae, invertebrates, and encrusting non-ESA-listed corals were observed on the existing riprap footer. There are no mangroves, Johnson’s seagrass, or ESA-listed corals in the project area.

3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

Table 1 provides the effect determinations for species the USACE and/or NMFS believe may be affected by the proposed action.

Table 1. Effects Determinations for Species the Action Agency and/or NMFS Believe May Be Affected by the Proposed Actions

Species	ESA Listing Status ²	Action Agency Effect Determination	NMFS Effect Determination
Sea Turtles			
Green (North Atlantic [NA] distinct population segment [DPS])	T	NLAA	NLAA
Green (South Atlantic [SA] DPS)	T	NLAA	NLAA
Kemp's ridley	E	NLAA	NLAA
Leatherback	E	NLAA	NE
Loggerhead (Northwest Atlantic [NWA] DPS)	T	NLAA	NLAA
Hawksbill	E	NLAA	NLAA
Fish			
Smalltooth sawfish (U.S. DPS)	E	NLAA	NLAA
Giant manta ray	T	NE	NLAA

We believe the projects will have no effect on leatherback sea turtles due to the species' very specific life history strategy, which is not supported at the site. Leatherback sea turtles have pelagic, deepwater life history, where they forage primarily on jellyfish.

We additionally believe the proposed action will have no effect on Nassau grouper because we do not believe Nassau grouper are present in the nearshore waters north of Government Cut, the federally authorized shipping channel for Port Miami, Miami, Florida.

Table 2 provides the effects determinations for designated critical habitat occurring in the action areas that the USACE and/or NMFS believe may be affected by the proposed actions.

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

Species	Unit	USACE Effect Determination	NMFS Effect Determination
Johnson's seagrass	Unit J	Likely to adversely affect	Likely to adversely affect, will not destroy or adversely modify

3.1 Potential Routes of Effect Not Likely to Adversely Affect Listed Species

Effects to ESA-listed sea turtles and ESA-listed fish species include the potential for injury from construction equipment or materials. We believe this effect is extremely unlikely to occur. Because these species are highly mobile, we expect them to move away from the project sites and into nearby suitable habitat, if disturbed. The applicants have also agreed to adhere to

² E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; NE = no effect

NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, which will further reduce the risk by requiring all construction personnel to watch for sea turtles and smalltooth sawfish. Operation of any mechanical construction equipment will cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of moving equipment. Activities will not resume until the protected species has departed the project area of its own volition. We expect this measure to be protective of giant manta ray, as well, as construction personnel will be watching for certain species and taking care to avoid interactions.

The action areas contain shallow water habitat that may be used by ESA-listed sea turtle species and ESA-listed fish species for foraging and refuge. These species may be affected by their inability to access the action areas due to their avoidance of construction activities and due to their physical exclusion from the project area by the use of turbidity curtains. We believe temporary loss of habitat access for these species will be insignificant given the proposed actions will be temporary and intermittent (i.e., proposed in-water work for each project will take 4 weeks, and construction will occur during daylight hours only for both projects). In addition, because these species are mobile, we expect that they will move away from construction activities and to adjacent areas in Biscayne Bay with similar habitat.

ESA-listed sea turtle species and ESA-listed fish species may be affected by the permanent loss of seagrass habitat for foraging due to riprap and dock placement at the Rubison project site where there is sparse seagrasses present. Green sea turtles feed on seagrasses, and some of the prey species on which Kemp's ridley sea turtles, loggerhead sea turtles, hawksbill sea turtles and ESA-listed fish species feed can be found in seagrass beds. We expect the proposed work will affect 105 ft² of sparse seagrasses (25 ft² affected by riprap placement + 80 ft² affected by dock placement). We believe the permanent loss of 105 ft² of seagrass will have an insignificant effect on sea turtles and ESA-listed fish species due to the availability of large areas of similar habitat nearby in Biscayne Bay.

An increase in vessel traffic in the area may result from the addition of 2 new vessel slips (i.e., 1 new vessel slip at each project site). Sea turtles and giant manta rays could be adversely affected by increased vessel traffic in the areas, as it may increase the risk of collision with these species. We believe the potential effect on sea turtles and giant manta rays resulting from increased vessel traffic associated with the proposed actions is extremely unlikely to occur. Based on a recent NMFS analysis,³ it would take an introduction of at least 200 new vessels to an area to result in a take of 1 sea turtle in any single year. While there is limited available information on the giant manta ray, we expect the circumstances and factors resulting in vessel strike injury are similar between sea turtles and the giant manta ray because sea turtles and giant manta rays are both found in nearshore waters (including in the vicinity of inlets where vessel traffic may also be concentrated) and may spend significant time at or near the surface, making them particularly vulnerable to vessel strikes. Stranding returns for sea turtles with vessel strike injuries, as well as numerous observations of giant manta rays with scarring on their dorsal surface that is likely a result of previous boat propeller injury, supports this conclusion. Therefore, we will rely on the more robust available data on sea turtle vessel strike injury to serve as a proxy for the giant

³ Barnette, M. 2013. Threats and Effects Analysis for Protected Resources on Vessel Traffic Associated with Dock and Marina Construction. NMFS Southeast Regional Office Protected Resources Division Memorandum. April 18, 2013.

manta ray. Because this project will result in far fewer than 200 new vessels, we believe it is extremely unlikely that sea turtles or giant manta rays will be injured or killed by new or increased vessel traffic. We believe there would be no effect on smalltooth sawfish associated with vessel traffic because this species is primarily demersal (i.e., bottom-dwelling).

Noise created by pile driving 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 interfere with animals 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-82.⁴ The noise analysis in this consultation evaluates effects to ESA-listed fish species (smalltooth sawfish and giant manta rays) and sea turtles identified by NMFS as potentially affected in the table above. While we have no information regarding noise effects specific to giant manta rays, we believe that effects to giant manta rays from pile driving noise would be very similar to effects on smalltooth sawfish (which are considered in the Opinion for SAJ-82), because both species are elasmobranchs and lack swim bladders.

Based on our noise calculations, the installation of 12-in diameter wood piles by impact hammer will not cause single-strike or peak-pressure injury to sea turtles or ESA-listed fish. The cumulative sound exposure level (cSEL) of multiple pile strikes over the course of a day may cause injury to ESA-listed fishes and sea turtles at a radius of up to 30 ft (9 m). Due to the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances. Because we anticipate the animal will move away, we believe that 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 for listed species. Construction personnel will cease construction activities if an animal is sighted per NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. Thus, we believe the likelihood of any injurious cSEL effects is extremely unlikely to occur. An animal's movement away from the injurious impact zone is a behavioral response, with the same effects discussed below.

Based on our noise calculations, installation of 14-in square concrete piles by impact hammer will not cause single-strike or peak-pressure injurious noise effects. However, the cSEL of multiple pile strikes over the course of a day may cause injury to ESA-listed fishes and sea turtles up to 72 ft (22 m) away from the pile. Due to the mobility of sea turtles and ESA-listed fish species, and because the project occurs in open water, 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. An animal's movement away from the injurious sound radius is a behavioral response, with the same effects discussed below.

⁴ NMFS. Biological Opinion on Regional General Permit SAJ-82 (SAJ-2007-01590), Florida Keys, Monroe County, Florida. June 10, 2014.

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

3.2 Status of Johnson’s Seagrass Designated 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.”

Johnson’s Seagrass Critical Habitat

Description

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

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

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

Table 3. Designated Critical Habitat Units for Johnson’s Seagrass

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

Critical Habitat Unit Impacted by this Action

This consultation focuses on activities 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 6). 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.

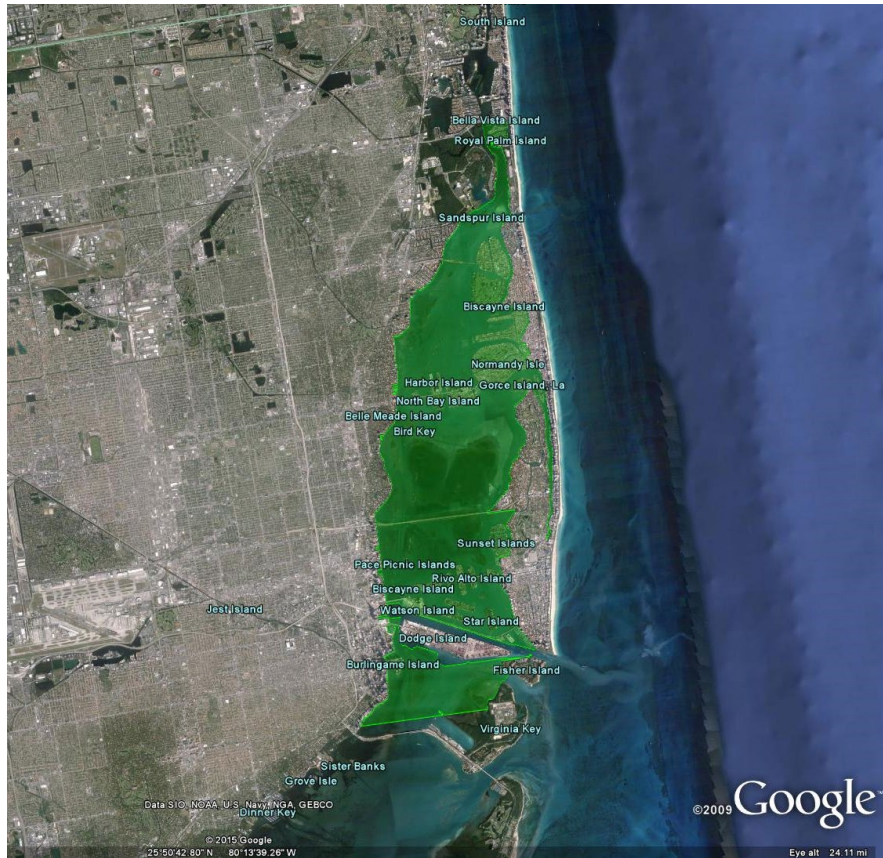


Figure 2. Johnson's seagrass critical habitat Unit J (©2015 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

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.

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

By regulation, the environmental baseline for an Opinion refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline

includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process. The consequences to the listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

4.1 Status of Johnson's Seagrass Critical Habitat Within the Action Areas

As discussed above, this Opinion focuses on an activities occurring in Unit J of Johnson's seagrass designated critical habitat, which encompasses the northern portion of Biscayne Bay from North East 163rd Street south to Central Key Biscayne at 25°45'N. The project sites are residential properties with existing docks, seawalls, and/or riprap. These sites are adjacent to other residential properties with existing seawalls, docks, and boat slips. Biological surveys were performed at both proposed project sites, and Johnson's seagrass was not present within the survey areas. Non-ESA-listed seagrass was observed in patches with <5% coverage at the Rubinson project site. Water depths within the action areas range from 3.8 to 6.3 ft at MLW.

4.2 Factors Affecting Johnson's Seagrass and its Designated Critical Habitat in the Action Areas

Federal Actions

A wide range of activities funded, authorized, or carried out by federal agencies may affect Johnson's seagrass and its designated critical habitat. 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. These projects are located in Miami-Dade County. The Miami-Dade programmatic (SAJ-42) authorizes docks that may affect Johnson's seagrass and its designated critical habitat. NMFS issued an Opinion concerning the Programmatic General Permit on February 10, 2011, and the USACE issued the permit on April 29, 2013. As per a review of NMFS PRD's completed consultation database by the consulting biologist on August 10, 2021, there are no other projects with adverse effects to Johnson's seagrass critical habitat within each of the action areas.

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 and could result in propeller dredging. As mentioned above, suspended sediments are known to adversely affect Johnson's seagrass critical habitat by reducing the water transparency essential feature. Shading from docks and vessels also affects the water transparency essential feature of the designated critical habitat. Propeller dredging and installation of piles and bridge support structures may

adversely affect Johnson's seagrass and permanently removes the unconsolidated sediments essential feature of the critical habitat.

Marine Pollution and Environmental Contamination

The projects are all located in a highly-developed coastal area with extensive canal systems. This can lead to freshwater discharges and nutrient over-enrichment due to coastal runoff and canal discharges into the Bay. Freshwater discharge affects the salinity essential feature of the designated critical habitat while excess nutrients can lead to decreased water transparency and decreased dissolved oxygen content in the water.

State and Federal Activities That May Benefit Johnson's Seagrass Critical Habitat in the Action Area

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). 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 ACTIONS ON CRITICAL HABITAT

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

5.1 Johnson's Seagrass Critical Habitat

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

of 1 essential feature of Johnson's seagrass critical habitat will result in a total loss in the conservation function of the critical habitat in that area.

Adequate Salinity Levels

We believe the proposed actions will have no effect on the adequate salinity levels essential feature of Johnson's seagrass critical habitat because the proposed actions lack any potential to affect adequate salinity levels in the action areas.

Adequate Water Quality

The adequate water quality essential feature of Johnson's seagrass critical habitat may be affected by increased turbidity due to pile and riprap installation; however we believe this effect will be insignificant. Turbidity is expected to be temporary (not more than 2 months) and contained in the immediate area by turbidity curtains.

Adequate Water Transparency

The adequate water transparency essential feature of Johnson's seagrass critical habitat may be affected by increased turbidity due to pile and riprap installation; however, we believe this effect will be insignificant. Turbidity is expected to be temporary (not more than 2 months) and contained to the immediate area by the use of turbidity curtains.

The adequate water transparency essential feature of Johnson's seagrass critical habitat may be adversely affected by shading from approximately 15 lin ft (approximately 30 ft² [15 lin ft of exposed seawall X 2 ft wide seawall cap]) of the Zuckerman seawall cap that is not adjacent to the new dock. The remaining 45 lin ft of the Zuckerman seawall cap that is adjacent to the new dock will have shading effects that are coextensive with the area that will be covered by the replacement dock; therefore, impacts to that area are considered below, to avoid double counting losses of critical habitat. Further, shading impacts from the Rubinson seawall cap are considered coextensive with the area that will be covered by riprap at that project site; therefore, impacts to that area of the Rubinson project site also are considered below, to avoid double counting losses of critical habitat. Therefore, we believe the proposed installation of the Zuckerman seawall cap will adversely affect 30 ft² of Johnson's seagrass critical habitat by removal of the water transparency essential feature.

To calculate the amount of water transparency essential feature lost due to shading caused by the new docks not built to the dock construction guidelines, as mentioned in Section 3, we first look at the amount of shading caused by the existing docks. The existing Zuckerman dock has an overwater area of 225 ft², and the existing Rubinson dock has an overwater area of 100 ft², for a total of 335 ft² of existing shading. Removal of these existing structures will temporarily restore the water transparency essential feature of Johnson's seagrass designated critical habitat. However, following this removal of existing overwater dock structures at each of the project sites, the newly constructed docks will each cover an area that completely subsumes the footprint of the previous structures, and the adequate water transparency essential feature will not function under the new dock structures. We only expect adverse effects in the area immediately underneath the dock, as any shading to nearby areas will be temporary in nature (i.e., shading and light transmission will change over the course of the day) and therefore insignificant. The new Zuckerman dock structure will have an overwater area of 360 ft², and the new Rubinson

dock will have an overwater area of 276.7 ft², for a total area of 636.7 ft². Because the new docks will completely overlap the footprints of the existing structures, we calculate the overall impact to the water transparency essential feature by calculating the difference between the shading caused by the proposed replacement dock structures and the current shading caused by the existing dock structures (i.e., 636.7 ft² – 335 ft² = 301.7 ft²). In sum, the total area of Johnson's seagrass critical habitat that will be adversely affected by the loss of the water transparency essential feature due to permanent shading by the new docks is 301.7 ft².

Next, we consider the potential impact of shading from the storage of 2 new vessels. We believe that shading due to new vessels will adversely affect the adequate water transparency essential feature of Johnson's seagrass designated critical habitat. When we do not know the size of the new vessels, we estimate each vessel to be 176 ft², based on the average vessel size in Florida used in the analysis for the Statewide Programmatic Biological Opinion (SWPBO).⁵ Since the proposed action will result in 2 new vessel slips, the total impact by shading from vessel storage will be 352 ft² (i.e., 176 ft² X 2 vessels).

Thus, we believe the new seawall, docks, and vessels will adversely affect 683.7 ft² (30 ft² [Zuckerman seawall] + 301.7 ft² [dock shading] + 352 ft² [vessel shading]) of Johnson's seagrass critical habitat through removal of the adequate water transparency essential feature.

Adequate Stable, Unconsolidated Sediments

The adequate stable, unconsolidated sediments essential feature of Johnson's seagrass critical habitat may be adversely affected by the placement of 399.2 ft² of riprap at the Rubinson dock project site (49.9 lin ft of riprap x 8 ft waterward extension = 399.2 ft²). A portion of this square footage of impacts is coextensive with the shading effects of the new 276.7 ft² Rubinson dock. Therefore, the area of riprap overlapping the new dock will not be included in calculating the impacts to Johnson's seagrass critical habitat by removal of the stable, unconsolidated sediments essential feature to avoid double-counting impacts already considered by shading from the dock. In summary, placement of riprap at the Rubinson project site will adversely affect 122.5 ft² (399.2 ft² [riprap] – 276.7 ft² [dock]) of Johnson's seagrass critical habitat by removal of the stable, unconsolidated sediments essential feature

The proposed actions are also likely to adversely affect Johnson's seagrass critical habitat by permanently removing the stable, unconsolidated sediments essential feature as a result of the installation of piles. Per the drawings, there will be a total of 41 piles installed between the 2 project sites.⁶ All of the concrete piles at both project sites will be 100% subsumed under the new seawall, docks, and/or riprap (i.e., 28 piles). All 10 of the wood dock support piles at both project sites will be 50% subsumed under the new docks (i.e., about 50% of each pile falls outside of the framing for the dock). Last, the 3 mooring piles fall completely outside of the footprints of the new docks and riprap at both project sites. The area of the concrete king and batter piles that will be completely subsumed by the docks, riprap, and/or seawall cap at each project site will not be included in calculating the impacts to Johnson's seagrass critical habitat

⁵ Florida Statewide Programmatic Biological Opinion (SWPBO) issued by NMFS on December 4, 2015 (SER-2013-12540).

⁶ Zuckerman dock = 10 battered/king concrete piles + 6 dock support piles + 2 mooring piles = 18 total piles
Rubinson dock = 18 battered/king concrete piles + 4 dock support piles + 1 mooring pile = 23 total piles

by removal of the stable, unconsolidated sediments essential feature to avoid double-counting impacts already considered by shading from the new docks and by displacement from the riprap.

At the Rubinson project site, there are 4 wood dock support piles that are 50% subsumed under the new dock and 1 mooring pile completely outside of the footprint of the new dock. At the Zuckerman project site, there are 6 wood dock support piles that are 50% subsumed under the dock and 2 mooring piles completely outside of the footprint of the new dock. Each 12-in wood dock support pile impacts 1 ft² of the stable, unconsolidated sediments essential feature. There are 10 wood dock support piles in total between the 2 project sites (10 ft²); however, these dock support piles will be only 50% subsumed by the new docks. Thus, a total of 5 ft² of stable, unconsolidated sediments will be impacted by the wood dock support piles. The 3 mooring piles outside the footprints of the new docks will impact an additional 3 ft² of stable, unconsolidated sediments. Therefore, we believe the installation of wood dock support piles and wood mooring piles will adversely affect 8 ft² of Johnson’s seagrass critical habitat by removing the stable, unconsolidated sediments essential feature⁷.

The following breakdown shows the total adverse effects to Johnson’s seagrass critical habitat from the loss of the stable, unconsolidated sediments essential feature and the adequate water transparency essential feature, as calculated above.

Essential Feature Impacted	Area Impacted (ft²)	Area Impacted (acres [ac])¹
Water Transparency (Shading)	683.7	0.016
Stable, Unconsolidated Sediments (Removal/displacement)	130.5	0.003
Total Loss	814.2	0.019

Because the area of Johnson’s seagrass designated critical habitat is measured in acres, we will use acres, not square feet, in our analysis below.

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 subject to 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, and we are not aware of any other future state, tribal or local private actions that are reasonably certain to occur within the action area.

Dock and marina construction will likely continue at current rates, with associated loss and degradation of seagrass habitat, including Johnson’s seagrass critical habitat. Because these

⁷ 5 ft² + 3 ft² = 8 ft² total pile impact outside of new docks

activities are subject to USACE permitting and thus, the ESA Section 7 consultation requirement, they do not lead to cumulative non-federal effects to be discussed in this section. NMFS and the USACE have developed protocols to encourage the use of light-transmitting materials in future construction of docks constructed in or over submerged aquatic vegetation (SAV), marsh or mangrove habitat, namely the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat*, and for docks within the range of Johnson's seagrass, namely NMFS and USACE's *Key for Construction Conditions for Docks or Other Minor Structures Constructed in or over Johnson's Seagrass (Halophila johnsonii)*. Even if all new docks are constructed in full compliance with the NMFS and USACE's guidance, NMFS acknowledges that shading impacts (and thus, impacts to the water transparency essential feature) 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 construction guidelines discussed above, and the recommendations in Landry et al. (2008b) and Shafer et al. (2008), NMFS believes that shading impacts to Johnson's seagrass critical habitat will be reduced in the short- and long-term. Moreover, even with some shading from grated construction materials, researchers have found all 4 essential features necessary for Johnson's seagrass to persist under docks constructed of grated decking (Landry et al. 2008b).

Upland development and associated runoff will continue to affect the water quality and water clarity essential features of Johnson's seagrass critical habitat. 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 Johnson's seagrass and may lead to the destruction or adverse modification of Johnson's seagrass critical habitat.

7 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 as a whole for the conservation of a listed species" (50 CFR § 402.02). 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 of the quantity or quality of the essential physical or biological features of designated critical habitat, or if the alteration 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. We intend the phrase "significantly 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. This analysis takes into account the geographic and temporal scope of the proposed actions, 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.
- (3) Populations and supporting habitat in its geographic range have long-term protection (through regulatory action or purchase acquisition).

We evaluated the proposed actions' 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 objective 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 at that time, and we have no information indicating range stability has decreased since then. NMFS has determined that the proposed actions will adversely affect a total of 814.2 ft² of Johnson's seagrass critical habitat. But the action areas are not a boundary of the species' range. The action areas that will be impacted are very small and the loss of potential areas for colonization will not affect the stability of the species' range now or in the future. Thus, we believe the proposed actions' effects will not impact the critical habitat's ability to contribute to range stability for Johnson's seagrass.

The second recovery objective 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 814.2 ft² (0.019 ac) of designated critical habitat for Johnson's seagrass in Unit J would equate to a loss of 0.00008% of Johnson's seagrass critical habitat (0.019 ac x 100/22,574 ac). 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 km under the influence of wind, tides, and waves. Because of this, we believe that the removal of 814.2 ft² of critical habitat for these 2 projects combined will not appreciably diminish the conservation value of critical habitat in supporting self-sustaining populations.

The final recovery objective 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 portion of the project site will not be available for the long-term, thousands of acres of designated critical habitat are still available for long-term protection, which would include areas surrounding the action areas.

Based on the above analysis, we conclude that the proposed actions' adverse effects on Johnson's seagrass critical habitat will not impede achieving the recovery objectives listed above and will, therefore, not appreciably diminish the value of critical habitat for the conservation of the species.

8 CONCLUSION

We have analyzed the best available data, the current status of the species and the critical habitat, environmental baseline, effects of the proposed action, and cumulative effects, it is our opinion that the loss of 814.2 ft² (0.019 ac) from the proposed actions, when considering the baseline and cumulative effects, will not interfere with achieving the relevant habitat-based recovery objectives for Johnson's seagrass. It is our opinion that the proposed actions will not impede the critical habitat's ability to support Johnson's seagrass conservation, despite permanent adverse effects. Therefore, we conclude that the actions, as proposed, are likely to adversely affect, but are not likely to destroy or adversely modify, Johnson's seagrass designated critical habitat.

9 INCIDENTAL TAKE STATEMENT

NMFS does not anticipate that the proposed action will incidentally take any species and no take is authorized. Nonetheless, any take of any ESA-listed species shall be immediately reported to takereport.nmfsser@noaa.gov. Refer to the present Biological Opinion by title, issuance date, NMFS ECO identifier numbers SERO-2021-01325 and SERO-2021-01327. At that time, consultation must be reinitiated.

10 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations 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 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.
2. 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.

3. 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. 2008a).
4. 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).
5. 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.
6. 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 seagrass and other seagrass distribution.
7. 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.

11 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 actions is exceeded, (2) new information reveals effects of the actions that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the identified actions are 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 actions.

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