UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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MEMORANDUM FOR: John McGovern
Assistant Regional Administrator
Sustainable Fisheries Division

FROM: Roy E. Crabtree, Ph.D.
Regional Administrator

SUBJECT: Amendment to the 2015 Biological Opinion on the Continued Authorization of the Fishery Management Plan (FMP) for Coastal Migratory Pelagic (CMP) Resources in the Atlantic and Gulf of Mexico under the Magnuson-Stevens Fishery Management and Conservation Act (MSFMCA) (SER-2017-18801)

This responds to your memorandum dated March 14, 2017, requesting that the National Marine Fisheries Service reinitiate ESA consultation on fishing activities authorized by the FMP for CMP Resources in the Atlantic and Gulf of Mexico to address the final rule to list green sea turtle Distinct Population Segments (DPSs) and Nassau grouper under the ESA. On April 6, 2016, NMFS and the U.S. Fish and Wildlife Service (USFWS) published a Final Rule in the Federal Register (81 FR 20057) removing the range-wide and breeding population ESA listings of the green sea turtle, and in their place, listing 8 green sea turtle DPSs as threatened and 3 green sea turtle DPSs as endangered, effective May 6, 2016. In addition, on June 29, 2016, NMFS published a Final Rule in the Federal Register listing Nassau grouper as threatened under the ESA, effective July 29, 2016 (81 FR 42268).

On June 18, 2015, NMFS completed a Biological Opinion (2015 Opinion) regarding the continued authorization of the CMP FMP in the Atlantic and Gulf of Mexico under the MSFMCA (proposed action). In the 2015 Opinion, NMFS concluded that the proposed action is not likely to jeopardize any Endangered Species Act (ESA)-listed sea turtle, Atlantic sturgeon, or the U.S. Distinct Population Segment (DPS) of smalltooth sawfish. NMFS also concluded that the proposed action is not likely to adversely affect any other ESA-listed species or critical habitat.

In the 2015 Opinion, NMFS evaluated the effects of the proposed action on the proposed North Atlantic DPS of green sea turtle; however, NMFS also conducted a final jeopardy analysis for the global population of green sea turtles as listed under the ESA. The 2015 Opinion concluded that the proposed action is not likely to jeopardize the continued existence of green (both the Florida breeding population and non-Florida breeding population, as well as the proposed North Atlantic DPS) sea turtles and issued an Incidental Take Statement for the North Atlantic DPS of green sea turtles.

Genetic analyses show that a small percentage of the South Atlantic DPS of green sea turtles may also occur in the action area. Because the effects of the proposed action are distributed between both the North Atlantic and South Atlantic DPS of green sea turtles, NMFS is amending the 2015 Opinion to evaluate the effects of the proposed action on both DPSs. In addition, NMFS has determined that the proposed action is not likely to adversely affect Nassau grouper and is hereby amending the 2015 Opinion accordingly. The attached document includes the amended sections 1, 3, 5, 7, 8, 9, and 12 of the 2015 Opinion consistent with the green sea turtle DPS listing and the Nassau grouper listing and the respective findings. No additional changes are warranted, so all remaining portions of the 2015 Opinion remain in effect.

File: 1514-22.d.19, GOM/SA – Coastal Migratory Pelagic

1. **Amend Section 1, *Consultation History*, to insert a paragraph before the last paragraph of this section to read as follows:**

On April 6, 2016, NMFS and the USFWS published a Final Rule in the Federal Register (81 FR 20057) removing the range-wide and breeding population ESA listings of the green sea turtle, and in their place, listing 8 green sea turtle DPSs as threatened and 3 green sea turtle DPSs as endangered, effective May 6, 2016. Two of the green sea turtle DPSs, the North Atlantic DPS and the South Atlantic DPS, occur in the South Atlantic Region and may be affected by the proposed action, based on the existing 2015 Opinion analyses for green sea turtles as previously listed. On June 29, 2016, NMFS published a Final Rule in the Federal Register listing Nassau grouper as threatened under the ESA, effective July 29, 2016 (81 FR 42268). In a memo dated March 14, 2017, NMFS requested reinitiation of consultation under Section 7 to address the final rules to list the green sea turtle DPSs and Nassau grouper. In this same memo, NMFS also determined that allowing the continued authorization of the CMP fishery in federal waters to continue during the reinitiation period would not violate Section 7(a)(2) or 7(d) of the ESA.

2. **Replace Table 13 in Section 3, *Status of Species and Critical Habitat*, with the following table that includes green sea turtles from both the North Atlantic and South Atlantic DPSs, removes the footnote on the proposed rule to list the DPSs, and includes Nassau grouper:**

Table 13. Status of Listed Species in the Action Area

Species		Scientific Name	Status	Geographic Area
Whales	Sei whale	*Balaenoptera borealis*	E	South Atlantic
	Blue whale	*Balaenoptera musculus*	E	South Atlantic, EEZ only
	Fin whale	*Balaenoptera physalus*	E	South Atlantic
	North Atlantic right whale	*Eubalaena glacialis*	E	South Atlantic
	Sperm whale	*Physeter macrocephalus*	E	South Atlantic and GOM, EEZ only
	Humpback whale	*Megaptera novaeangliae*	E	South Atlantic
Sea Turtles	Loggerhead sea turtle: Northwest Atlantic (NWA) DPS	*Caretta caretta*	T	South Atlantic and GOM
	Green sea turtle: North Atlantic and South Atlantic DPSs	*Chelonia mydas*	T	North Atlantic, South Atlantic, and GOM
	Leatherback sea turtle	*Dermochelys coriacea*	E	South Atlantic and GOM
	Hawksbill sea turtle	*Eretmochelys imbricata*	E	South Atlantic and GOM
	Kemp's ridley sea turtle	*Lepidochelys kempii*	E	South Atlantic and GOM
Fish	Atlantic sturgeon: all DPSs	*Acipenser oxyrinchus oxyrinchus*	E/T[1]	South Atlantic and Mid-Atlantic
	Gulf sturgeon	*Acipenser oxyrinchus desotoi*	T	GOM
	Smalltooth sawfish	*Pristis pectinata*	E	South Atlantic and GOM
	Nassau grouper	*Epinephelus striatus*	T	South Atlantic

Table 13. continued

Species		Scientific Name	Status	Geographic Area
Invertebrates	Elkhorn coral	*Acropora palmata*	T	South Atlantic[2] and GOM
	Staghorn coral	*Acropora cervicornis*	T	South Atlantic[2]
	Lobed star coral	*Orbicella* (formerly *Montastraea*) *annularis*	T	South Atlantic[2] and GOM
	Mountainous star coral	*Orbicella* (formerly *Montastraea*) *faveolata*	T	South Atlantic[2] and GOM
	Boulder star coral	*Orbicella* (formerly *Montastraea*) *franksi*	T	South Atlantic[2] and GOM
	Pillar coral	*Dendrogyra cylindrus*	T	South Atlantic[2]
	Rough cactus coral	*Mycetophyllia ferox*	T	South Atlantic[2] and GOM

(E= endangered, T=threatened)
[1] The South Atlantic, Carolina, Chesapeake Bay, and New York Bight DPSs are listed as endangered, while the Gulf of Maine DPS is listed as threatened.
[2] Florida.

3. Amend first sentence of Section 3.1, *Analysis of Species and Critical Habitats Not Likely to be Adversely Affected*, to include Nassau grouper and to read as follows:

3.1 Analysis of Species and Critical Habitats Not Likely to be Adversely Affected

We have determined that the proposed action is not likely to adversely affect any listed whales (i.e., blue, sei, sperm, fin, or North Atlantic right whales), Gulf sturgeon, Nassau grouper, or elkhorn and staghorn corals. We have also determined that the proposed action is not likely to adversely affect designated critical habitats for elkhorn and staghorn corals or loggerhead sea turtles, and will have no effect on designated critical habitat for North Atlantic right whale. These species and critical habitats are excluded from further analysis and consideration in this Opinion. The following discussion summarizes our rationale for these determinations.

4. Amend Section 3.1, *Analysis of Species and Critical Habitats Not Likely to be Adversely Affected*, to include the following section on Nassau grouper after the section on Gulf sturgeon:

Nassau grouper

The Nassau Grouper Biological Report (Hill and Sadovy de Mitcheson 2013) provides a detailed description of the species' distribution. The Nassau grouper's confirmed distribution currently includes "Bermuda and Florida (USA), throughout the Bahamas and Caribbean Sea" (*e.g.*, (Heemstra 1993). The Nassau grouper has been documented in the Gulf of Mexico, at Arrecife Alacranes (north of Progreso) to the west off the Yucatan Peninsula, Mexico, (Hildebrand et al. 1964). Nassau grouper is generally replaced ecologically in the eastern Gulf of Mexico by red grouper (*Epinephelus morio*) in areas north of Key West or the Tortugas (Smith 1971). They are considered a rare or transient species off Texas in the northwestern Gulf of Mexico (Gunter and Knapp 1951 in Hoese and Moore 1998).

Analysis of Effects on Nassau Grouper

The current range of the Nassau grouper in U.S. waters relevant to the proposed action extends from approximately Cape Canaveral, Florida to the southernmost part of the Florida Keys. One of the greatest threats to the Nassau grouper is spawning aggregation overfishing (easily taking large numbers of reproducing fish). No spawning aggregations for this species have been documented in the proposed action area.

Adult Nassau grouper tend to be relatively sedentary and are generally associated with high-relief coral reefs or rocky substrate (Sadovy and Eklund 1999). Also, adult Nassau grouper are unspecialized, bottom-dwelling, ambush-suction predators (Randall 1965, Thompson and Munro 1978). No clear distinction can be made between types of adult and juvenile habitats, although a general size segregation with depth occurs; smaller Nassau grouper in shallower inshore waters (3.7-16.5 m) and larger individuals more common near deeper (18.3-54.9 m) offshore banks (Bardach 1958; Bardach et al. 1958; Cervigón 1994; Radakov et al. 1975; Silva Lee 1974; Thompson and Munro 1978). Generally, adults are most common at depths less than 100 m (Hill and Sadovy de Mitcheson 2013) except when at spawning aggregations where they are known to descend to depths of 255 m (Starr et al. 2007). In contrast, king mackerel, Spanish mackerel and cobia are pelagic species that are targeted near the surface of the water or mid-water by hook-and-line gear, spearguns, cast nets and gillnets. Of the different types of gillnet gear, only run-around gillnets are used to target CMP species in the range of the Nassau grouper.

There are no catch records of Nassau grouper in the discard and commercial logbook data that are attributable to the CMP hook-and-line or gillnet fishery. Additionally, as described in the proposed action section, hook-and-line gear used in the CMP fishery is typically pulled through the water at a speed of 4-10 kts, at or near the surface of the water, where it will not interact with benthic habitats or species. Likewise, jigged gear is deployed at or near the surface and constantly reeled and jigged back to the boat, making it very unlikely that this gear will interact with benthic environments. Thus, while Nassau grouper are susceptible to hook-and-line gear, it is extremely unlikely, and therefore discountable, that Nassau grouper will be caught with hook-and-line gear targeting fish managed under the CMP FMP.

Spearguns require the fisher to make visual contact with the target species. Nassau grouper are readily identifiable as non-CMP species, and fishers will be easily able to avoid incidentally catching them with spearguns in the unlikely case they are encountered. Therefore, any effects from speargun gear are extremely unlikely to occur and are discountable.

Cast nets are thrown over visually detected schools of CMP species and the gear is retrieved almost immediately. In the rare event a Nassau grouper is amidst a school of mackerel, it would likely be easy for fishers to detect and avoid their incidental capture. Also, the area these nets cover is relatively small (*e.g.*, maximum 10-12 ft diameter), thus bycatch of Nassau grouper is extremely unlikely. Based on this information, we believe effects on Nassau grouper from fishing with cast nets are discountable.

Run-around gillnets are deployed near the top of the water column to target pelagic species and to avoid entanglement issues with bottom substrate. The limited spatial overlap between CMP run-around gillnet fishing gear and Nassau groupers and their benthic habitats makes interactions with Nassau grouper while targeting fish managed under the CMP FMP with run-around gillnet gear extremely unlikely, and therefore discountable. Additionally, as discussed above, there are no records of interactions between Nassau grouper and run-around gillnets targeting CMP species.

Thus, while Nassau grouper are susceptible to CMP gear, it is extremely unlikely, and therefore discountable, that Nassau grouper will be adversely affected as a result of the proposed action. Based on our understanding of Nassau grouper's range, feeding, and habitat preferences relative to the coastal pelagic nature of the target species and how the target species are caught, NMFS believes continued authorization of fishing under the CMP FMP is not likely to adversely affect Nassau grouper.

5. Replace Section 3.2.3, *Green Sea Turtle*, with the following section that includes information on both the North Atlantic and South Atlantic green sea turtle DPSs and change the numbering on the remaining figures in the Opinion accordingly:

3.2.3 Green Sea Turtle (Information Relevant to All DPSs)

The green sea turtle was originally listed as threatened under the ESA on July 28, 1978, except for the Florida and Pacific coast of Mexico breeding populations, which were listed as endangered. On April 6, 2016, the original listing was replaced with the listing of 11 DPSs (81 FR 20057). The Mediterranean, Central West Pacific, and Central South Pacific DPSs were listed as endangered. The North Atlantic, South Atlantic, Southwest Indian, North Indian, East Indian-West Pacific, Southwest Pacific, Central North Pacific, and East Pacific were listed as threatened. For the purposes of this consultation, only the North Atlantic DPS and the South Atlantic DPS and will be considered, as they are the only two DPSs with individuals occurring in the Atlantic and Gulf of Mexico waters of the U.S.

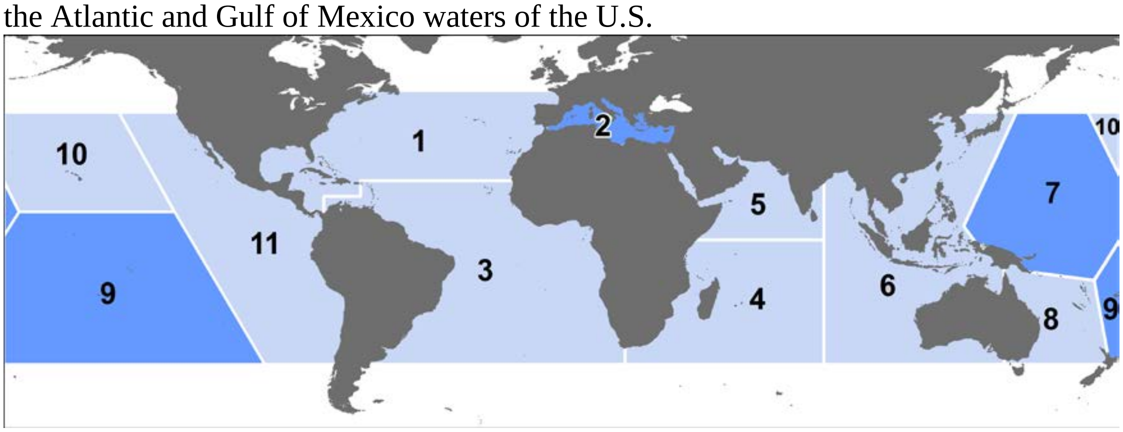

Figure 9. Threatened (light) and endangered (dark) green turtle DPSs: 1. North Atlantic, 2. Mediterranean, 3. South Atlantic, 4. Southwest Indian, 5. North Indian, 6. East Indian-West Pacific, 7. Central West Pacific, 8. Southwest Pacific, 9. Central South Pacific, 10. Central North Pacific, and 11. East Pacific.

Species Description and Distribution

The green sea turtle is the largest of the hardshell marine turtles, growing to a weight of 350 lb (159 kg) with a straight carapace length of greater than 3.3 ft (1 m). Green sea turtles have a smooth carapace with 4 pairs of lateral (or costal) scutes and a single pair of elongated prefrontal scales between the eyes. They typically have a black dorsal surface and a white ventral surface, although the carapace of green sea turtles in the Atlantic Ocean has been known to change in color from solid black to a variety of shades of grey, green, or brown and black in starburst or irregular patterns (Lagueux 2001).

With the exception of post-hatchlings, green sea turtles live in nearshore tropical and subtropical waters where they generally feed on marine algae and seagrasses. They have specific foraging grounds and may make large migrations between these forage sites and natal beaches for nesting (Hays et al. 2001). Green sea turtles nest on sandy beaches of mainland shores, barrier islands, coral islands, and volcanic islands in more than 80 countries worldwide (Hirth 1997). The 2 largest nesting populations are found at Tortuguero, on the Caribbean coast of Costa Rica (part of the North Atlantic DPS), and Raine Island, on the Pacific coast of Australia along the Great Barrier Reef.

Differences in mitochondrial DNA properties of green sea turtles from different nesting regions indicate there are genetic subpopulations (Bowen et al. 1992; FitzSimmons et al. 2006). Despite the genetic differences, sea turtles from separate nesting origins are commonly found mixed together on foraging grounds throughout the species' range. Within U.S. waters individuals from both the North Atlantic and South Atlantic DPSs can be found on foraging grounds. While there are currently no in-depth studies available to determine the percent of North Atlantic and South Atlantic DPS individuals in any given location, two small-scale studies provide an insight into the degree of mixing on the foraging grounds. An analysis of cold-stunned green turtles in St. Joseph Bay, Florida (northern Gulf of Mexico) found approximately 4% of individuals came from nesting stocks in the South Atlantic DPS (specifically Suriname, Aves Island, Brazil, Ascension Island, and Guinea Bissau) (Foley et al. 2007). On the Atlantic coast of Florida, a study on the foraging grounds off Hutchinson Island found that approximately 5% of the turtles sampled came from the Aves Island/Suriname nesting assemblage, which is part of the South Atlantic DPS (Bass and Witzell 2000). All of the individuals in both studies were benthic juveniles. Available information on green turtle migratory behavior indicates that long distance dispersal is only seen for juvenile turtles. This suggests that larger adult-sized turtles return to forage within the region of their natal rookeries, thereby limiting the potential for gene flow across larger scales (Monzón-Argüello et al. 2010). While all of the mainland U.S. nesting individuals are part of the North Atlantic DPS, the U.S. Caribbean nesting assemblages are split between the North Atlantic DPS and South Atlantic DPS. Nesters in Puerto Rico are part of the North Atlantic DPS, while those in the U.S. Virgin Islands are part of the South Atlantic DPS. We do not currently have information on what percent of individuals on the U.S. Caribbean foraging grounds come from which DPS.

<u>North Atlantic DPS Distribution</u>
The North Atlantic DPS boundary is illustrated in Figure 9. Four regions support nesting concentrations of particular interest in the North Atlantic DPS: Costa Rica (Tortuguero), Mexico

(Campeche, Yucatan, and Quintana Roo), U.S. (Florida), and Cuba. By far the most important nesting concentration for green turtles in this DPS is Tortuguero, Costa Rica. Nesting also occurs in the Bahamas, Belize, Cayman Islands, Dominican Republic, Haiti, Honduras, Jamaica, Nicaragua, Panama, Puerto Rico, Turks and Caicos Islands, and North Carolina, South Carolina, Georgia, and Texas, U.S. In the eastern North Atlantic, nesting has been reported in Mauritania (Fretey 2001).

The complete nesting range of North Atlantic DPS green sea turtles within the southeastern U.S. includes sandy beaches between Texas and North Carolina, as well as Puerto Rico (Dow et al. 2007; NMFS and USFWS 1991). The vast majority of green sea turtle nesting within the southeastern U.S. occurs in Florida (Johnson and Ehrhart 1994; Meylan et al. 1995). Principal U.S. nesting areas for green sea turtles are in eastern Florida, predominantly Brevard south through Broward counties.

In U.S. Atlantic and Gulf of Mexico waters, green sea turtles are distributed throughout inshore and nearshore waters from Texas to Massachusetts. Principal benthic foraging areas in the southeastern U.S. include Aransas Bay, Matagorda Bay, Laguna Madre, and the Gulf inlets of Texas (Doughty 1984; Hildebrand 1982; Shaver 1994), the Gulf of Mexico off Florida from Yankeetown to Tarpon Springs (Caldwell and Carr 1957), Florida Bay and the Florida Keys (Schroeder and Foley 1995), the Indian River Lagoon system in Florida (Ehrhart 1983), and the Atlantic Ocean off Florida from Brevard through Broward Counties (Guseman and Ehrhart 1992; Wershoven and Wershoven 1992). The summer developmental habitat for green sea turtles also encompasses estuarine and coastal waters from North Carolina to as far north as Long Island Sound (Musick and Limpus 1997). Additional important foraging areas in the western Atlantic include the Culebra archipelago and other Puerto Rico coastal waters, the south coast of Cuba, the Mosquito Coast of Nicaragua, the Caribbean coast of Panama, scattered areas along Colombia and Brazil (Hirth 1971), and the northwestern coast of the Yucatán Peninsula.

South Atlantic DPS Distribution

The South Atlantic DPS boundary is shown in Figure 9, and includes the U.S. Virgin Islands in the Caribbean. The South Atlantic DPS nesting sites can be roughly divided into four regions: western Africa, Ascension Island, Brazil, and the South Atlantic Caribbean (including Colombia, the Guianas, and Aves Island in addition to the numerous small, island nesting sites).
The in-water range of the South Atlantic DPS is widespread. In the eastern South Atlantic, significant sea turtle habitats have been identified, including green turtle feeding grounds in Corisco Bay, Equatorial Guinea/Gabon (Formia 1999); Congo; Mussulo Bay, Angola (Carr and Carr 1991); as well as Principe Island. Juvenile and adult green turtles utilize foraging areas throughout the Caribbean areas of the South Atlantic, often resulting in interactions with fisheries occurring in those same waters (Dow et al. 2007). Juvenile green turtles from multiple rookeries also frequently utilize the nearshore waters off Brazil as foraging grounds as evidenced from the frequent captures by fisheries (Lima et al. 2010; López-Barrera et al. 2012; Marcovaldi et al. 2009). Genetic analysis of green turtles on the foraging grounds off Ubatuba and Almofala, Brazil show mixed stocks coming primarily from Ascension, Suriname and Trindade as a secondary source, but also Aves, and even sometimes Costa Rica (North Atlantic DPS)(Naro-Maciel et al. 2007; Naro-Maciel et al. 2012). While no nesting occurs as far south as Uruguay and Argentina, both have important foraging grounds for South Atlantic green turtles

(Gonzalez Carman et al. 2011; Lezama 2009; López-Mendilaharsu et al. 2006; Prosdocimi et al. 2012; Rivas-Zinno 2012).

Life History Information
Green sea turtles reproduce sexually, and mating occurs in the waters off nesting beaches and along migratory routes. Mature females return to their natal beaches (i.e., the same beaches where they were born) to lay eggs (Balazs 1982; Frazer and Ehrhart 1985) every 2-4 years while males are known to reproduce every year (Balazs 1983). In the southeastern U.S., females generally nest between June and September, and peak nesting occurs in June and July (Witherington and Ehrhart 1989b). During the nesting season, females nest at approximately 2-week intervals, laying an average of 3-4 clutches (Johnson and Ehrhart 1996). Clutch size often varies among subpopulations, but mean clutch size is approximately 110-115 eggs. In Florida, green sea turtle nests contain an average of 136 eggs (Witherington and Ehrhart 1989b). Eggs incubate for approximately 2 months before hatching. Hatchling green sea turtles are approximately 2 inches (5 cm) in length and weigh approximately 0.9 ounces (25 grams). Survivorship at any particular nesting site is greatly influenced by the level of man-made stressors, with the more pristine and less disturbed nesting sites (e.g., along the Great Barrier Reef in Australia) showing higher survivorship values than nesting sites known to be highly disturbed (e.g., Nicaragua) (Campell and Lagueux 2005; Chaloupka and Limpus 2005).

After emerging from the nest, hatchlings swim to offshore areas and go through a post-hatchling pelagic stage where they are believed to live for several years. During this life stage, green sea turtles feed close to the surface on a variety of marine algae and other life associated with drift lines and debris. This early oceanic phase remains one of the most poorly understood aspects of green sea turtle life history (NMFS and USFWS 2007a). Green sea turtles exhibit particularly slow growth rates of about 0.4-2 inches (1-5 cm) per year (Green 1993), which may be attributed to their largely herbivorous, low-net energy diet (Bjorndal 1982). At approximately 8-10 inches (20-25 cm) carapace length, juveniles leave the pelagic environment and enter nearshore developmental habitats such as protected lagoons and open coastal areas rich in sea grass and marine algae. Growth studies using skeletochronology indicate that green sea turtles in the western Atlantic shift from the oceanic phase to nearshore developmental habitats after approximately 5-6 years (Bresette et al. 2006; Zug and Glor 1998). Within the developmental habitats, juveniles begin the switch to a more herbivorous diet, and by adulthood feed almost exclusively on seagrasses and algae (Rebel 1974), although some populations are known to also feed heavily on invertebrates (Carballo et al. 2002). Green sea turtles mature slowly, requiring 20-50 years to reach sexual maturity (Chaloupka and Musick 1997; Hirth 1997).

While in coastal habitats, green sea turtles exhibit site fidelity to specific foraging and nesting grounds, and it is clear they are capable of “homing in” on these sites if displaced (McMichael et al. 2003). Reproductive migrations of Florida green sea turtles have been identified through flipper tagging and/or satellite telemetry. Based on these studies, the majority of adult female Florida green sea turtles are believed to reside in nearshore foraging areas throughout the Florida Keys and in the waters southwest of Cape Sable, and some post-nesting turtles also reside in Bahamian waters as well (NMFS and USFWS 2007a).

Status and Population Dynamics

Accurate population estimates for marine turtles do not exist because of the difficulty in sampling turtles over their geographic ranges and within their marine environments. Nonetheless, researchers have used nesting data to study trends in reproducing sea turtles over time. A summary of nesting trends and nester abundance is provided in the most recent status review for the species (Seminoff et al. 2015), with information for each of the DPSs.

<u>North Atlantic DPS</u>
The North Atlantic DPS is the largest of the 11 green turtle DPSs, with an estimated nester abundance of over 167,000 adult females from 73 nesting sites. Overall this DPS is also the most data rich. Eight of the sites have high levels of abundance (i.e., <1000 nesters), located in Costa Rica, Cuba, Mexico, and Florida. All major nesting populations demonstrate long-term increases in abundance (Seminoff et al. 2015).

Tortuguero, Costa Rica is by far the predominant nesting site, accounting for an estimated 79% of nesting for the DPS (Seminoff et al. 2015). Nesting at Tortuguero appears to have been increasing since the 1970's, when monitoring began. For instance, from 1971-1975 there were approximately 41,250 average annual emergences documented and this number increased to an average of 72,200 emergences from 1992-1996 (Bjorndal et al. 1999). Troëng and Rankin (2005) collected nest counts from 1999-2003 and also reported increasing trends in the population consistent with the earlier studies, with nest count data suggesting 17,402-37,290 nesting females per year (NMFS and USFWS 2007a). Modeling by Chaloupka et al. (2008) using data sets of 25 years or more resulted in an estimate of the Tortuguero, Costa Rica population's growing at 4.9% annually.

In the continental U.S., green sea turtle nesting occurs along the Atlantic coast, primarily along the central and southeast coast of Florida where an estimated 200-1,100 females nest each year (Meylan et al. 1994; Weishampel et al. 2003). Occasional nesting has also been documented along the Gulf Coast of Florida (Meylan et al. 1995). Green sea turtle nesting is documented annually on beaches of North Carolina, South Carolina, and Georgia, though nesting is found in low quantities (nesting databases maintained on www.seaturtle.org).

In Florida, index beaches were established to standardize data collection methods and effort on key nesting beaches. Since establishment of the index beaches in 1989, the pattern of green sea turtle nesting has generally shown biennial peaks in abundance with a positive trend during the 10 years of regular monitoring (Figure 10). According to data collected from Florida's index nesting beach survey from 1989-2016, green sea turtle nest counts across Florida have increased approximately ten-fold from a low of 267 in the early 1990s to a high of 27,975 in 2015. Two consecutive years of nesting declines in 2008 and 2009 caused some concern, but this was followed by increases in 2010 and 2011, and a return to the trend of biennial peaks in abundance thereafter (Figure 10). Modeling by Chaloupka et al. (2008) using data sets of 25 years or more has resulted in an estimate of the Florida nesting stock at the Archie Carr National Wildlife Refuge growing at an annual rate of 13.9%.

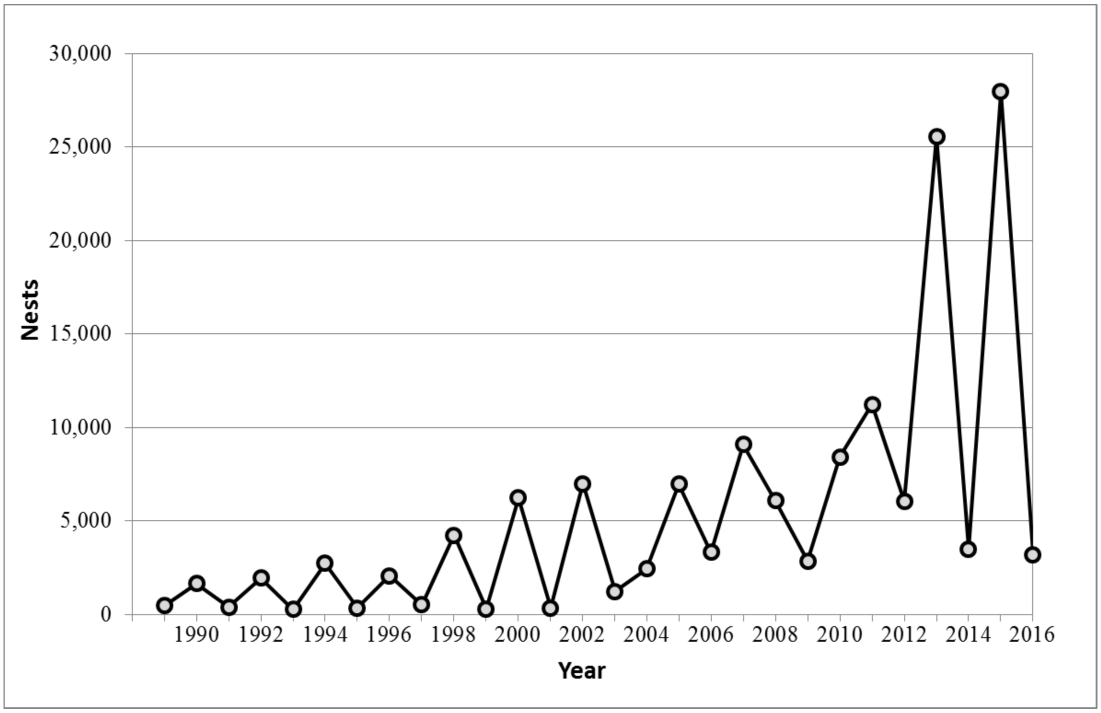

Figure 10. Green sea turtle nesting at Florida index beaches since 1989

Similar to the nesting trend found in Florida, in-water studies in Florida have also recorded increases in green turtle captures at the Indian River Lagoon site, with a 661 percent increase over 24 years (Ehrhart et al. 2007), and the St Lucie Power Plant site, with a significant increase in the annual rate of capture of immature green turtles (SCL<90 cm) from 1977 to 2002 or 26 years (3,557 green turtles total; M. Bressette, Inwater Research Group, unpubl. data; (Witherington et al. 2006).

South Atlantic DPS

The South Atlantic DPS is large, estimated at over 63,000 nesters, but data availability is poor. More than half of the 51 identified nesting sites (37) did not have sufficient data to estimate number of nesters or trends (Seminoff et al. 2015). This includes some sites, such as beaches in French Guiana, which are suspected to have large numbers of nesters. Therefore, while the estimated number of nesters may be substantially underestimated, we also do not know the population trends at those data-poor beaches. However, while the lack of data was a concern due to increased uncertainty, the overall trend of the South Atlantic DPS was not considered to be a major concern as some of the largest nesting beaches such as Ascension Island, Aves Island (Venezuela), and Galibi (Suriname) appear to be increasing. Others such as Trindade (Brazil), Atol das Rocas (Brazil), and Poilão and the rest of Guinea-Bissau seem to be stable or do not have sufficient data to make a determination. Bioko (Equatorial Guinea) appears to be in decline but has less nesting than the other primary sites (Seminoff et al. 2015).

In the U.S., nesting of South Atlantic DPS green turtles occurs on the beaches of the U.S. Virgin Islands, primarily on Buck Island. There is insufficient data to determine a trend for Buck Island nesting, and it is a smaller rookery, with approximately 63 total nesters utilizing the beach (Seminoff et al. 2015).

Threats
The principal cause of past declines and extirpations of green sea turtle assemblages has been the overexploitation of the species for food and other products. Although intentional take of green sea turtles and their eggs is not extensive within the southeastern U.S., green sea turtles that nest and forage in the region may spend large portions of their life history outside the region and outside U.S. jurisdiction, where exploitation is still a threat. Green sea turtles also face many of the same threats as other sea turtle species, including destruction of nesting habitat from storm events, oceanic events such as cold-stunning, pollution (e.g., plastics, petroleum products, petrochemicals), ecosystem alterations (e.g., nesting beach development, beach nourishment and shoreline stabilization, vegetation changes), poaching, global climate change, fisheries interactions, natural predation, and disease. A discussion on general sea turtle threats can be found in Section 3.2.1.

In addition to general threats, green sea turtles are susceptible to natural mortality from Fibropapillomatosis (FP) disease. FP results in the growth of tumors on soft external tissues (flippers, neck, tail, etc.), the carapace, the eyes, the mouth, and internal organs (gastrointestinal tract, heart, lungs, etc.) of turtles (Aguirre et al. 2002; Herbst 1994; Jacobson et al. 1989). These tumors range in size from 0.04 inches (0.1 cm) to greater than 11.81 inches (30 cm) in diameter and may affect swimming, vision, feeding, and organ function (Aguirre et al. 2002; Herbst 1994; Jacobson et al. 1989). Presently, scientists are unsure of the exact mechanism causing this disease, though it is believed to be related to both an infectious agent, such as a virus (Herbst et al. 1995), and environmental conditions (e.g., habitat degradation, pollution, low wave energy, and shallow water (Foley et al. 2005). FP is cosmopolitan, but it has been found to affect large numbers of animals in specific areas, including Hawaii and Florida (Herbst 1994; Jacobson 1990; Jacobson et al. 1991).

Cold-stunning is another natural threat to green sea turtles. Although it is not considered a major source of mortality in most cases, as temperatures fall below 46.4°-50°F (8°-10°C) turtles may lose their ability to swim and dive, often floating to the surface. The rate of cooling that precipitates cold-stunning appears to be the primary threat, rather than the water temperature itself (Milton and Lutz 2003). Sea turtles that overwinter in inshore waters are most susceptible to cold-stunning because temperature changes are most rapid in shallow water (Witherington and Ehrhart 1989a). During January 2010, an unusually large cold-stunning event in the southeastern U.S. resulted in around 4,600 sea turtles, mostly greens, found cold-stunned, and hundreds found dead or dying. A large cold-stunning event occurred in the western Gulf of Mexico in February 2011, resulting in approximately 1,650 green sea turtles found cold-stunned in Texas. Of these, approximately 620 were found dead or died after stranding, while approximately 1,030 turtles were rehabilitated and released. During this same time frame, approximately 340 green sea turtles were found cold-stunned in Mexico, though approximately 300 of those were subsequently rehabilitated and released.

Whereas oil spill impacts are discussed generally for all species in Section 3.3.3, specific impacts of the DWH spill on green sea turtles are considered here. Impacts to green sea turtles occurred to offshore small juveniles only. A total of 154,000 small juvenile greens (36.6% of the total small juvenile sea turtle exposures to oil from the spill) were estimated to have been exposed to oil. A large number of small juveniles were removed from the population, as 57,300 small juveniles greens are estimated to have died as a result of the exposure. A total of 4 nests (580 eggs) were also translocated during response efforts, with 455 hatchlings released (the fate of which is unknown) (DWH Trustees 2015). Additional unquantified effects may have included inhalation of volatile compounds, disruption of foraging or migratory movements due to surface or subsurface oil, ingestion of prey species contaminated with oil and/or dispersants, and loss of foraging resources which could lead to compromised growth and/or reproductive potential. There is no information currently available to determine the extent of those impacts, if they occurred.

While green turtles regularly use the northern Gulf of Mexico, they have a widespread distribution throughout the entire Gulf of Mexico, Caribbean, and Atlantic, and the proportion of the population using the northern Gulf of Mexico at any given time is relatively low. Although it is known that adverse impacts occurred and numbers of animals in the Gulf of Mexico were reduced as a result of the DWH oil spill, the relative proportion of the population that is expected to have been exposed to and directly impacted by the DWH event, as well as the impacts being primarily to smaller juveniles (lower reproductive value than adults and large juveniles), reduces the impact to the overall population. It is unclear what impact these losses may have caused on a population level, but it is not expected to have had a large impact on the population trajectory moving forward. However, recovery of green turtle numbers equivalent to what was lost in the northern Gulf of Mexico as a result of the spill will likely take decades of sustained efforts to reduce the existing threats and enhance survivorship of multiple life stages (DWH Trustees 2015).

6. Amend Section 5.3.1, *Effects on Sea Turtles*, to include the following section on North Atlantic and South Atlantic Green Sea Turtle DPSs after the section on Sea Turtle Mortality Estimate:

North Atlantic and South Atlantic Green Sea Turtle DPSs

As described in Section 3.2.3, information suggests that the vast majority of the anticipated green sea turtles caught in the Gulf of Mexico and South Atlantic regions are likely to come from the North Atlantic DPS. However, it is possible that animals from the South Atlantic DPS could be captured during the proposed action. We assume based on Bass and Witzell (2000) that 95% of animals captured during the proposed action are from the North Atlantic DPS. Our analysis of the South Atlantic DPS will consider that 5% of the green sea turtles affected by the proposed action are from the South Atlantic DPS. Applying these percentages to our estimated takes of 31 green sea turtles every 3 years and rounding in such a way as to conservatively assume the most lethal captures, results in an estimated catch of up to 30 green sea turtles from the North Atlantic DPS (31*0.95=29.45, rounded up), of which 9 are expected to be lethal (29.45*0.286=8.42, rounded up) and an estimated catch of up to 2 green sea turtle from the South Atlantic DPS (31*0.05= 1.55, rounded up), of which 1 is expected to be lethal (2*0.286=0.572, rounded up). Ultimately, we only expect a total of 31 green turtle takes of both DPSs combined, but of those 31 total, no more than 30 will be from the North Atlantic DPS, and no more than 2 will be from the South Atlantic DPS.

7. **Replace Table 22 in Section 5.5, *Summary*, with the following table that shows the Total and Lethal Take for North Atlantic and South Atlantic Green DPSs:**

Table 22. Summary of Anticipated 3-Year Take and Mortality Estimates

Species	Take	Total
Green sea turtle North Atlantic DPS	Total	30*
	Lethal	9
Green sea turtle South Atlantic DPS	Total	2*
	Lethal	1
Loggerhead sea turtle NWA DPS	Total	27
	Lethal	7
Kemp's ridley sea turtle	Total	8
	Lethal	2
Hawksbill sea turtle	Total	1
	Lethal	1
Leatherback sea turtle	Total	1
	Lethal	1
Smalltooth sawfish	Total	1
	Lethal	0
Atlantic sturgeon GM DPS	Total	2 (12)
	Lethal	0
Atlantic sturgeon NYB DPS	Total	4 (12)
	Lethal	0
Atlantic sturgeon CB DPS	Total	3 (12)
	Lethal	0
Atlantic sturgeon Carolina DPS	Total	4 (12)
	Lethal	0
Atlantic sturgeon SA DPS	Total	10 (12)
	Lethal	0

*****We expect a total of 31 green turtle takes of both DPSs combined, but of those 31 total, no more than 30 can be from the North Atlantic DPS, and no more than 2 can be from the South Atlantic DPS.

8. **Replace Section 7.2, *Green Sea Turtle*, with the following jeopardy analysis for both the North Atlantic DPS and South Atlantic DPS of green sea turtle:**

7.2 Green Sea Turtles (North Atlantic and South Atlantic DPS)

Mixed-stock analyses of foraging grounds show that green sea turtles from multiple nesting beaches commonly mix at feeding areas across the Caribbean and Gulf of Mexico, with higher contributions from nearby large nesting sites and some contribution estimated from nesting populations outside the DPS (Bass et al. 1998; Bass and Witzell 2000; Bjorndal and Bolten 2008; Bolker et al. 2007). In other words, the proportion of animals on the foraging grounds from a given nesting beach is proportional to the overall importance of that nesting beach to entire DPS. For example, Tortuguero, Costa Rica, is largest nesting beach in the North Atlantic DPS and the number of animals from that nesting beach on foraging grounds were higher than from any other nesting beach. More specifically, Lahanas et al. (1998) showed that juvenile green sea turtles in the Bahamas originate mainly from western the Caribbean (Tortuguero, Costa Rica) (79.5%) (North Atlantic DPS) but that a significant proportion may be coming from the eastern Caribbean (Aves Island/Suriname; 12.9%) (South Atlantic DPS).

Flipper tagging studies provide additional information on the co-mingling of turtles from the North Atlantic DPS and South Atlantic DPS. Flipper tagging studies on foraging grounds and/or nesting beaches have been conducted in Bermuda (Meylan et al. 2011), Costa Rica (Troeng et al. 2005), Cuba (Moncada et al. 2006), Florida (Johnson and Ehrhart 1996; Kubis et al. 2009), Mexico (Zurita et al. 2003; Zurita et al. 1994), Panama (Meylan et al. 2011), Puerto Rico (Collazo et al. 1992; Patricio et al. 2011), and Texas (Shaver 1994; Shaver 2002). Nesters have been satellite tracked from Florida, Cuba, Cayman Islands, Mexico, and Costa Rica. Troeng et al. (2005) report that while there is some crossover of adult female nesters from North Atlantic DPS into the South Atlantic DPS, particularly in the equatorial region where the DPS boundaries are in closer proximity to each other, North Atlantic DPS nesters primarily use the foraging grounds within the North Atlantic DPS.

As discussed in 3.2.3, within U.S. waters individuals from both the North Atlantic and South Atlantic DPSs can be found on foraging grounds. While there are currently no in-depth studies available to determine the percent of North Atlantic and South Atlantic DPS individuals in any given location, an analysis of cold-stunned green turtles in St. Joseph Bay, Florida (northern Gulf of Mexico) found approximately 4% of individuals came from nesting stocks in the South Atlantic DPS. On the Atlantic coast of Florida, a study on the foraging grounds off Hutchinson Island found that approximately 5% of the turtles sampled came from the South Atlantic DPS (Bass and Witzell 2000). All of the individuals in both studies were benthic juveniles.

Taken together, this information suggests that the vast majority of the anticipated captures in the Gulf of Mexico and South Atlantic regions are likely to come from the North Atlantic DPS. However, it is possible that animals from the South Atlantic DPS could be captured during the proposed action. For these reasons, we will act conservatively and conduct 2 jeopardy analyses, 1 for each DPS. The North Atlantic DPS analysis will assume, based on Bass and Witzell (2000) that 95% of animals captured during the proposed action are from that DPS. Our analysis of the South Atlantic DPS will consider that 5% of the green sea turtles affected by the proposed action are from the South Atlantic DPS.

Applying these percentages to our estimated takes of 31 green sea turtles every 3 years and rounding in such a way as to conservatively assume the most lethal captures, results in an estimated catch of up to 30 green sea turtles from the North Atlantic DPS (31*0.95=29.45, rounded up), of which 9 are expected to be lethal (29.45*0.286=8.42, rounded up) and an estimated catch of up to 2 green sea turtle from the South Atlantic DPS (31*0.05= 1.55, rounded up), of which 1 are expected to be lethal (2*0.286=0.572, rounded up). We note rounding when splitting the take into the two DPSs results in a slightly higher combined total (i.e., 32 instead of 31) than the 3-year actual estimate.

7.2.2.1 North Atlantic DPS

The proposed action may result in 30 green sea turtle takes from the North Atlantic DPS (21 nonlethal, 9 lethal) every 3 years. The potential nonlethal capture of 21 green sea turtles from the North Atlantic DPS every 3 years is not expected to have any measurable impact on the reproduction, numbers, or distribution of these species. The individuals suffering nonlethal injuries are expected to fully recover such that no reductions in reproduction or numbers of green

sea turtles are anticipated. The takes may occur anywhere in the action area, which encompasses only a tiny portion of green sea turtles' overall range/distribution within the North Atlantic DPS. Because any incidentally caught animal would be released within the general area where caught, no change in the distribution of North Atlantic DPS green sea turtles is anticipated.
The potential lethal take of 9 green sea turtles from the North Atlantic DPS every 3 years would reduce the number of North Atlantic green sea turtle DPS, compared to their numbers in the absence of the proposed action, assuming all other variables remained the same. Lethal takes would also result in a potential reduction in future reproduction, assuming some individuals would be females and would have survived otherwise to reproduce. For example, an adult green sea turtle can lay 1-7 clutches (usually 2-3) of eggs every 2-4 years, with 110-115 eggs/nest, of which a small percentage is expected to survive to sexual maturity. The anticipated lethal takes are expected to occur anywhere in the action area, and sea turtles generally have large ranges in which they disperse; thus, no reduction in the distribution of green sea turtles within the North Atlantic DPS is expected from these captures.

Whether the reductions in numbers and reproduction of this species would appreciably reduce its likelihood of survival depends on the probable effect the changes in numbers and reproduction would have relative to current population sizes and trends. In Section 3.2.3, we presented and discussed information on estimates of the number of nesting females and nesting trends at primary nesting beaches.

Seminoff et al. (2015) estimated that there are greater than 167,000 nesting females in the North Atlantic DPS. The nesting at Tortuguero, Costa Rica, accounts for approximately 79% of that estimate (approximately 131,000 nesters), with Quintana Roo, Mexico, (approximately 18,250 nesters; 11%), and Florida, USA, (approximately 8,400 nesters; 5%) also accounting for a large portion of the overall nesting (Seminoff et al. 2015).

At Tortuguero, Costa Rica, the number of nests laid per year from 1999 to 2003, was approximately 104,411 nests/year, which corresponds to approximately 17,402-37,290 nesting females each year (Troëng and Rankin 2005). That number increased to an estimated 180,310 nests during 2010; corresponding to 30,052-64,396 nesters. This increase has occurred despite substantial human impacts to the population at the nesting beach and at foraging areas (Campell and Lagueux 2005; Troëng 1998; Troëng and Rankin 2005).

Nesting locations in Mexico along the Yucatan Peninsula also indicate the number of nests laid each year has increased (Seminoff et al. 2015). In the early 1980s, approximately 875 nests/year were deposited, but by 2000 this increased to over 1,500 nests/year (NMFS and USFWS 2007a). By 2012, more than 26,000 nests were counted in Quintana Roo (J. Zurita, CIQROO, unpublished data, 2013, in Seminoff et al. 2015).

In Florida, most nesting occurs along the Atlantic coast of eastern central Florida, where a mean of 5,055 nests were deposited each year from 2001 to 2005 (Meylan et al. 2006) and 10,377 each year from 2008 to 2012 (B. Witherington, Florida Fish and Wildlife Conservation Commission, pers. comm., 2013). As described in the Section 3.2.3 nesting has increased substantially over the last 20 years and peaked in 2015 with 27,975 nests statewide in 2015. In-water studies conducted over 24 years in the Indian River Lagoon, Florida, suggest similar increasing trends, with green sea turtle captures up 661% (Ehrhart et al. 2007). Similar in-water work at the St Lucie Power Plant site revealed a significant increase in the annual rate of capture of immature green sea turtles over 26 years (Witherington et al. 2006).

In summary, nesting at the primary nesting beaches has been increasing over the course of decades. We believe these nesting trends are indicative of a species with a high number of sexually mature individuals. Since the abundance trend information for North Atlantic DPS green sea turtles is clearly increasing, we believe the potential lethal take of 9 North Atlantic DPS green sea turtles every 3 years attributed to the proposed action will not have any measurable effect on that trend. Therefore, we believe the proposed action is not reasonably expected to cause an appreciable reduction in the likelihood of survival of the North Atlantic DPS of green sea turtle in the wild.

The North Atlantic DPS of green sea turtles does not have a separate recovery plan at this time. However, an Atlantic Recovery Plan for the population of Atlantic green sea turtles (NMFS and USFWS 1991) does exist. Since the animals within the North Atlantic DPS all occur in the Atlantic Ocean and would have been subject to the recovery actions described in that plan, we believe it is appropriate to continue using that Recovery Plan as a guide until a new plan, specific to the North Atlantic DPS, is developed. The Atlantic Recovery Plan lists the following relevant recovery objectives over a period of 25 continuous years:

> *Objective: The level of nesting in Florida has increased to an average of 5,000 nests per year for at least 6 years.*

> *Objective: A reduction in stage class mortality is reflected in higher counts of individuals on foraging grounds.*

According to data collected from Florida's index nesting beach survey from 1989-2015, green sea turtle nest counts across Florida have increased approximately ten-fold from a low of 267 in the early 1990s to a high of 27,975 in 2015 (http://myfwc.com/research/wildlife/sea-turtles/nesting/2015-nesting-trends/). There are currently no estimates available specifically addressing changes in abundance of individuals on foraging grounds. Given the clear increases in nesting, however, it is likely that numbers on foraging grounds have increased.

The potential lethal take of up to 9 North Atlantic DPS green sea turtles every 3 years will result in a reduction in numbers when captures occur, but it is unlikely to have any detectable influence on the recovery objective and trends noted above. Nonlethal captures of these sea turtles would not affect the adult female nesting population or number of nests per nesting season. Thus, the proposed action will not impede achieving the recovery objectives above and will not result in an appreciable reduction in the likelihood of North Atlantic DPS green sea turtles' recovery in the wild. Additionally, our estimate of future captures is based on our belief that the same or a similar level of capture occurred in the past and that we have still seen positive trends in the status of this species with that level.

Conclusion
The effects associated with the proposed action are not expected to cause an appreciable reduction in the likelihood of either the survival or recovery of the North Atlantic DPS of green sea turtle in the wild.

7.2.2.3 South Atlantic DPS

The proposed action may result in up to 2 green sea turtle captures from the South Atlantic DPS (1 nonlethal, 1 lethal) every 3 years. The potential nonlethal capture of 1 South Atlantic DPS green sea turtles every 3 years is not expected to have any measurable impact on the reproduction, numbers, or distribution of these species. The individuals suffering nonlethal injuries are expected to fully recover such that no reductions in reproduction or numbers of green sea turtles are anticipated. The takes may occur anywhere in the action area and the action area encompasses a tiny portion of green sea turtles' overall range/distribution within the South Atlantic DPS. Since any incidentally caught animal would be released within the general area where caught, no change in the distribution of South Atlantic DPS green sea turtles is anticipated.

The potential lethal take of 1 South Atlantic DPS of green sea turtle every 3 years would reduce the number of green sea turtles, compared to their numbers in the absence of the proposed action, assuming all other variables remained the same. Lethal interactions would also result in a potential reduction in future reproduction, assuming the individuals caught would at least in some years be female and would have survived otherwise to reproduce. For example, an adult green sea turtle can lay 1-7 clutches (usually 2-3) of eggs every 2-4 years, with 110-115 eggs/nest, of which a small percentage is expected to survive to sexual maturity. The anticipated lethal interactions are expected to occur anywhere in the action area and sea turtles generally have large ranges in which they disperse; thus, no reduction in the distribution of green sea turtles within the South Atlantic DPS is expected from these captures.

Whether the reductions in numbers and reproduction of this species would appreciably reduce its likelihood of survival depends on the probable effect the changes in numbers and reproduction would have relative to current population sizes and trends. In Section 3.2.3, we summarized available information on number of nesters and nesting trends at South Atlantic DPS beaches. Seminoff et al. (2015) estimated that there are greater than 63,000 nesting females in the South Atlantic DPS, though they noted the adult female nesting abundance from 37 beaches could not be quantified. The nesting at Poilão, Guinea-Bissau, accounted for approximately 46% of that estimate (approximately 30,000 nesters), with Ascension Island, United Kingdom, (approximately 13,400 nesters; 21%), and the Galibi Reserve, Suriname (approximately 9,400 nesters; 15%) also accounting for a large portion of the overall nesting (Seminoff et al. 2015).

Seminoff et al. (2015) reported that while trends cannot be estimated for many nesting populations due to the lack of data, they could discuss possible trends at some of the primary nesting sites. Seminoff et al. (2015) indicated that the nesting concentration at Ascension Island (United Kingdom) is one of the largest in the South Atlantic DPS and the population has increased substantially over the last 3 decades (Broderick et al. 2006; Glen et al. 2006). Mortimer and Carr (1987) counted 5,257 nests in 1977 (about 1,500 females), and 10,764 nests in 1978 (about 3,000 females) whereas from 1999–2004, a total of about 3,500 females nested each year (Broderick et al. 2006). Since 1977, numbers of nests on 1 of the 2 major nesting beaches, Long Beach, have increased exponentially from around 1,000 to almost 10,000 (Seminoff et al. 2015). From 2010 to 2012, an average of 23,000 nests per year was laid on Ascension (Seminoff et al. 2015). Seminoff et al. (2015), caution that while these data are suggestive of an increase, historic data from additional years are needed to fully substantiate this possibility.

Seminoff et al. (2015) reported that the nesting concentration at Galibi Reserve and Matapica in Suriname was stable from the 1970s through the 1980s. From 1975–1979, 1,657 females were counted (Schulz 1982), a number that increased to a mean of 1,740 females from 1983–1987 (Ogren 1989b), and to 1,803 females in 1995 (Weijerman et al. 1998). Since 2000, there appears to be a rapid increase in nest numbers (Seminoff et al. 2015).

In the Bijagos Archipelago (Poilão, Guinea-Bissau), Parris and Agardy (1993 as cited in Fretey, 2001) reported approximately 2,000 nesting females per season from 1990 to 1992, and Catry et al. (2002) reported approximately 2,500 females nesting during the 2000 season. Given the typical large annual variability in green sea turtle nesting, Catry et al. (2009) suggested it was premature to consider there to be a positive trend in Poilão nesting, though others have made such a conclusion (Broderick et al. 2006). Despite the seeming increase in nesting, interviews along the coastal areas of Guinea-Bissau generally resulted in the view that sea turtles overall have decreased noticeably in numbers over the past two decades (Catry et al. 2009). In 2011, a record estimated 50,000 green sea turtle clutches were laid throughout the Bijagos Archipelago (Seminoff et al. 2015).

Nesting at the primary nesting beaches has been increasing over the course of the decades. We believe these nesting trends are indicative of a species with a high number of sexually mature individuals. Since the abundance trend information for green sea turtles is clearly increasing, we believe the potential lethal take of 1 South Atlantic DPS of green sea turtles every 3 years attributed to the proposed action will not have any measurable effect on that trend. Therefore, we believe the proposed action is not reasonably expected to cause an appreciable reduction in the likelihood of survival of the South Atlantic DPS of green sea turtle in the wild.

Like the North Atlantic DPS, the South Atlantic DPS of green sea turtles does not have a separate recovery plan in place at this time. However, an Atlantic Recovery Plan for the population of Atlantic green sea turtles (NMFS and USFWS 1991) does exist. Since the animals within the South Atlantic DPS all occur in the Atlantic Ocean and would have been subject to the recovery actions described in that plan, we believe it is appropriate to continue using that Recovery Plan as a guide until a new plan, specific to the South Atlantic DPS, is developed. In our analysis for the North Atlantic DPS, we stated that the Atlantic Recovery Plan lists the following relevant recovery objectives over a period of 25 continuous years:

> *Objective: The level of nesting in Florida has increased to an average of 5,000 nests per year for at least 6 years.*
>
> *Objective: A reduction in stage class mortality is reflected in higher counts of individuals on foraging grounds.*

The nesting recovery objective is specific to the North Atlantic DPS, but demonstrates the importance of increases in nesting to recovery. As previously stated, nesting at the primary South Atlantic DPS nesting beaches has been increasing over the course of the decades. There are currently no estimates available specifically addressing changes in abundance of individuals on foraging grounds. Given the clear increases in nesting; however, it is likely that numbers on foraging grounds have increased.

The potential lethal take of up to 1 South Atlantic DPS green sea turtle every 3 years will result in a reduction in numbers when captures occur, but it is unlikely to have any detectable influence on the trends noted above. Nonlethal captures of sea turtles would not affect the adult female nesting population or number of nests per nesting season. Thus, the proposed action is not in opposition to the recovery objectives above and will not result in an appreciable reduction in the likelihood of the South Atlantic DPS of green sea turtles' recovery in the wild. Additionally, our estimate of future captures is based on our belief that the same or a similar level of capture occurred in the past, and yet we have still seen positive trends in the status of this species.

Conclusion

The effects associated with the proposed action are not expected to cause an appreciable reduction in the likelihood of either the survival or recovery of the South Atlantic DPS of green sea turtle in the wild.

9. Amend Section 8, *Conclusion*, to include the North Atlantic DPS and the South Atlantic DPS of green sea turtle, and to read as follows:

We have analyzed the best available data, the current status of the species, the environmental baseline, the effects of the proposed action, and cumulative effects to determine whether the proposed action is likely to jeopardize the continued existence of any listed species. It is our Opinion that the proposed action is not likely to jeopardize the continued existence of loggerhead (the NWA DPS) or the green (North Atlantic DPS or South Atlantic DPS), Kemp's ridley, hawksbill, or leatherback sea turtles, Atlantic sturgeon (GM, NYB, CB, Carolina, or SA DPSs), or smalltooth sawfish (U.S. DPS).

10. **Replace Table 23 with the following Table:**

Table 23. Summary of Anticipated 3-Year Take and Mortality Estimates

Species	Take	Total
Green sea turtle North Atlantic DPS	Total	30*
	Lethal	9
Green sea turtle South Atlantic DPS	Total	2*
	Lethal	1
Loggerhead sea turtle NWA DPS	Total	27
	Lethal	7
Kemp's ridley sea turtle	Total	8
	Lethal	2
Hawksbill sea turtle	Total	1
	Lethal	1
Leatherback sea turtle	Total	1
	Lethal	1
Smalltooth sawfish	Total	1
	Lethal	0
Atlantic sturgeon GM DPS	Total	2 (12)
	Lethal	0
Atlantic sturgeon NYB DPS	Total	4 (12)
	Lethal	0
Atlantic sturgeon CB DPS	Total	3 (12)
	Lethal	0
Atlantic sturgeon Carolina DPS	Total	4 (12)
	Lethal	0
Atlantic sturgeon SA DPS	Total	10 (12)
	Lethal	0

*****We expect a total of 31 green turtle takes of both DPSs combined, but of those 31 total, no more than 30 can be from the North Atlantic DPS, and no more than 2 can be from the South Atlantic DPS.

11. Replace the first paragraph following Table 23 with the following:

Sea Turtle Captures and Mortalities Subject to Consultation

Our best estimate is that during consecutive 3-year periods there will be 31 green sea turtle captures of both DPSs combined (no more than 30 captures with 9 mortalities will be North Atlantic DPS of green sea turtles and no more than 2 captures with 1 mortality will be South Atlantic DPS of green sea turtles), 27 captures with 7 mortalities for NWA DPS of loggerhead sea turtles, 8 captures with 2 mortalities for Kemp's ridley sea turtles, and 1 lethal capture for both hawksbill and leatherback sea turtles associated with the federal CMP fisheries. We will not consider our take estimates exceeded if no more than the aforementioned lethal or nonlethal take occurs for each species.

12. Replace Section 9.2, *Effect of the Take,* with the following:

NMFS has determined that the level of anticipated take associated with the proposed action and exempted from ESA Section 9 take prohibitions in this ITS is not likely to jeopardize the continued existence of the North Atlantic DPS of green, South Atlantic DPS of green, hawksbill, Kemp's ridley, leatherback, or the NWA DPS of loggerhead sea turtles, as well as Atlantic sturgeon (any DPS) or smalltooth sawfish (U.S. DPS).

13. Amend Section 2, *Literature Cited,* to include the following references:

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