United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
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March 28, 2007

Colonel Paul L. Grosskruger
U.S. Army Corps of Engineers
701 San Marcos Boulevard, Room 372
Jacksonville, Florida 32207-8175

Service Federal Activity No.: 41420-2007-FA-0221
Date Received: May 1, 2006
Formal Consultation Initiation Date: January 16, 2007
Project: Lake Worth Inlet Jetty Repair
Applicant: U.S. Corps of Engineers
County: Palm Beach County

Dear Colonel Grosskruger:

This document transmits the Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed repair to the concrete cap of both the north and south jetty, Lake Worth Inlet, Palm Beach County, Florida, and its effects on the threatened loggerhead sea turtle (*Caretta caretta*), the endangered leatherback sea turtle (*Dermochelys coriacea*), the endangered green sea turtle (*Chelonia mydas*), the endangered hawksbill sea turtle (*Eretmochelys imbricata*), and the endangered Kemp's ridley sea turtle (*Lepidochelys kempii*). Because the proposed repair will be land based, the endangered West Indian manatee (*Trichechus manatus*) and designated critical habitat will not be affected. This Biological Opinion is provided in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*).

In your letter and biological assessment dated April 27, 2006, the U.S. Army Corps of Engineers (Corps) determined the proposed action "may affect," nesting sea turtles. The Service concurs with this determination.

This Biological Opinion is based on information provided in the Corps' letter and biological assessment dated April 27, 2006, and phone and email correspondence with the Corps, Florida Fish and Wildlife Conservation Commission (FWC), and Palm Beach County Department of Environmental Resources Management. A complete administrative record of this consultation is on file at the South Florida Ecological Services Office, Vero Beach, Florida.

Consultation History

On May 1, 2006, the Service received a letter and biological assessment concerning repairs to the south and north jetty concrete caps.

On July 28, 2006, the Service contacted the Corps to provide additional information regarding beach corridors and access.

On November 13, 14, 20, and 29, 2006, the Service emailed the Corps requesting supplemental information.

On November 20, 2006, the Service emailed the FWC requesting their comments with regard to the proposed beach access site 2,500 feet south of the south jetty and potential impacts to nesting turtles.

On January 16, 2007, the Service received the necessary information required to initiate formal consultation.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Corps proposes to repair the entire concrete cap on the south jetty from station 43+05 to station 60+95 and from station 48+10 to station 49+00, and station 40+55 to station 41+05 on the north jetty (Fig. 1). Repairs will consist of preparing forms on the jetties to contain the cement, placing chinking stone or bags of cement into the interstitial spaces between the rocks, and placing cement into the forms. A variety of trucks will be used to construct the forms and temporary barrier, and to deliver the chinking stone or bags of cement. The cement will be placed onto the jetties either by gravity feed (piped or funneled) directly from cement trucks or transported by buggy along the top of the jetties. The purpose of the repairs is to reduce shoaling within the entrance channel and assist in maintaining safe navigation conditions.

For conducting the proposed repairs to the south jetty, the contractor will use the 80-foot government easement at Kuvin's property immediately adjacent to the south jetty. Access to the north jetty will be via uplands, and no beach access will be necessary. Due to adverse weather during winter months which makes repairs at the jetties difficult and dangerous, routine Inlet maintenance dredging which takes place outside of sea turtle nesting season, and the fact that both the dredging and jetty contractors can't be on site at the same time, access to the Federal easement will be year round in order to complete the proposed project. The proposed project is tentatively scheduled to begin in August or September 2007, and take approximately 120 days to complete, although this is subject to change impart due to adverse weather.

Construction activities at both jetties will be limited to daylight hours and a temporary barrier (*e.g.*, staked hay bales) will be placed around the Federal easement associated with the jetties.

The action area is defined as all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action. The Service identifies the action area to include shoreline 200 feet north of the north jetty (DEP monument R-75) and 200 feet south of the south jetty (DEP monument R-76), Lake Worth Inlet, Palm Beach County, Florida.

STATUS OF THE SPECIES/CRITICAL HABITAT

Species/critical habitat description

Loggerhead Sea Turtle

The loggerhead sea turtle, listed as a threatened species on July 28, 1978 (43 Federal Register [FR] 32800), inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian Oceans. Loggerhead sea turtles nest within the continental U.S. from Louisiana to Virginia. Major nesting concentrations in the U.S. are found on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida (Hopkins and Richardson 1984).

No critical habitat has been designated for the loggerhead sea turtle.

Green Sea Turtle

The green sea turtle was federally listed on July 28, 1978 (43 FR 32800). Breeding populations of the green turtle in Florida and along the Pacific Coast of Mexico are listed as endangered; all other populations are listed as threatened. The green turtle has a worldwide distribution in tropical and subtropical waters. Major green turtle nesting colonies in the Atlantic occur on Ascension Island, Aves Island, Costa Rica, and Surinam. Within the U.S., green turtles nest in small numbers in the U.S. Virgin Islands and Puerto Rico, and in larger numbers along the east coast of Florida, particularly in Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties (NOAA Fisheries and Service 1991a). Nesting has also been documented along the Gulf coast of Florida on Santa Rosa Island (Okaloosa and Escambia Counties) and from Pinellas County through Collier County (FWC statewide nesting database). Green turtles have been known to nest in Georgia, but only on rare occasions (Georgia Department of Natural Resources statewide nesting database). The green turtle also nests sporadically in North Carolina and South Carolina (North Carolina Wildlife Resources Commission statewide nesting database; South Carolina Department of Natural Resources statewide nesting database). Unconfirmed nesting of green turtles in Alabama has also been reported (Bon Secour National Wildlife Refuge nesting reports).

Critical habitat for the green sea turtle has been designated for the waters surrounding Culebra Island, Puerto Rico, and its outlying keys.

Leatherback Sea Turtle

The leatherback sea turtle, listed as an endangered species on June 2, 1970 (35 FR 8491), nests on shores of the Atlantic, Pacific and Indian Oceans. Non-breeding animals have been recorded as far north as the British Isles and the Maritime Provinces of Canada and as far south as Argentina and the Cape of Good Hope (Pritchard 1992). Nesting grounds are distributed worldwide, with the Pacific Coast of Mexico supporting the world's largest known concentration of nesting leatherbacks. The largest nesting colony in the wider Caribbean region is found in

French Guiana, but nesting occurs frequently, although in lesser numbers, from Costa Rica to Columbia and in Guyana, Surinam, and Trinidad (NOAA Fisheries and Service 1992, National Research Council 1990).

The leatherback regularly nests in the U.S. in Puerto Rico, the U.S. Virgin Islands, and along the Atlantic coast of Florida as far north as Georgia (NOAA Fisheries and Service 1992). Leatherback turtles have been known to nest in Georgia, South Carolina, and North Carolina, but only on rare occasions (North Carolina Wildlife Resources Commission, South Carolina Department of Natural Resources, and Georgia Department of Natural Resources statewide nesting databases). Leatherback nesting has also been reported on the northwest coast of Florida (LeBuff 1990, FWC statewide nesting database); a false crawl (non-nesting emergence) has been observed on Sanibel Island (LeBuff 1990).

Marine and terrestrial critical habitat for the leatherback sea turtle has been designated at Sandy Point on the western end of the island of St. Croix, U.S. Virgin Islands.

Hawksbill Sea Turtle

The hawksbill sea turtle was listed as an endangered species on June 2, 1970 (35 FR 8491). The hawksbill is found in tropical and subtropical seas of the Atlantic, Pacific, and Indian Oceans. The species is widely distributed in the Caribbean Sea and western Atlantic Ocean. Within the continental U.S., hawksbill sea turtle nesting is rare and is restricted to the southeastern coast of Florida (Volusia through Dade Counties) and the Florida Keys (Monroe County) (Meylan 1992, Meylan et al. 1995). However, hawksbill tracks are difficult to differentiate from those of loggerheads and may not be recognized by surveyors. Therefore, surveys in Florida likely underestimate actual hawksbill nesting numbers (Meylan et al. 1995). In the U.S. Caribbean, hawksbill nesting occurs on beaches throughout Puerto Rico and the U.S. Virgin Islands (NOAA Fisheries and Service 1993).

Critical habitat for the hawksbill sea turtle has been designated for selected beaches and/or waters of Mona, Monito, Culebrita, and Culebra Islands, Puerto Rico.

Kemp’s Ridley Sea Turtle

The Kemp’s ridley sea turtle was listed as endangered on December 2, 1970 (35 FR 18320). The range of the Kemp’s ridley includes the Gulf coasts of Mexico and the U.S., and the Atlantic coast of North America as far north as Nova Scotia and Newfoundland. Most Kemp’s ridleys nest on the coastal beaches of the Mexican states of Tamaulipas and Veracruz, although a very small number of Kemp’s ridleys nest consistently along the Texas coast (Turtle Expert Working Group 1998). In addition, rare nesting events have been reported in Florida, Alabama, South Carolina, and North Carolina. Hatchlings, after leaving the nesting beach, are believed to become entrained in eddies within the Gulf of Mexico, where they are dispersed within the Gulf and Atlantic by oceanic surface currents until they reach about 8 inches in length, at which size they enter coastal shallow water habitats (Ogren 1989). Outside of nesting, adult Kemp's ridleys are believed to spend most of their time in the Gulf of Mexico, while juveniles and subadults also regularly occur along the eastern seaboard of the United States (Service and NOAA Fisheries 1992).

No critical habitat has been designated for the Kemp's ridley sea turtle.

Life history

Loggerhead Sea Turtle

Loggerheads are known to nest from one to seven times within a nesting season (Talbert et al. 1980, Richardson and Richardson 1982, Lenarz et al. 1981); the mean is approximately 4.1 (Murphy and Hopkins 1984). The interval between nesting events within a season varies around a mean of about 14 days (Dodd 1988). Mean clutch size varies from about 100 to 126 eggs along the southeastern United States coast (NOAA Fisheries and Service 1991b). Nesting migration intervals of years are most common in loggerheads, but the number can vary from 1 to 7 years (Dodd 1988). Age at sexual maturity is believed to be about 20 to 30 years (Turtle Expert Working Group 1998).

Green Sea Turtle

Green turtles deposit from one to nine clutches within a nesting season, but the overall average is 3.3. The mean interval between nesting events within a season is 13 days (Hirth 1997). Mean clutch size varies widely among populations. Average clutch size reported for Florida was 136 eggs in 130 clutches (Witherington and Ehrhart 1989). Only occasionally do females produce clutches in successive years. Usually 2, 3, 4, or more years intervene between breeding seasons (NOAA Fisheries and Service 1991a). Age at sexual maturity is believed to be 20 to 50 years (Hirth 1997).

Leatherback Sea Turtle

Leatherbacks nest an average of five to seven times within a nesting season, with an observed maximum of 11 (NOAA Fisheries and Service 1992). The interval between nesting events within a season is about 10 days. Clutch size averages 80 to 85 yolked eggs, with the addition of usually a few dozen smaller, yolkless eggs, mostly laid toward the end of the clutch (Pritchard 1992). Nesting migration intervals of 2 to 3 years were observed in leatherbacks nesting on Sandy Point National Wildlife Refuge, St. Croix, U.S. Virgin Islands (McDonald and Dutton 1996). Leatherbacks are believed to reach sexual maturity in 6 to 10 years (Zug and Parham 1996).

Hawksbill Sea Turtle

Hawksbills nest on average 4.5 times per season at intervals of approximately 14 days (Corliss et al. 1989). In Florida and the U.S. Caribbean, clutch size is approximately 140 eggs, although several records exist of over 200 eggs per nest (NOAA Fisheries and Service 1993). On the basis of limited information, nesting migration intervals of 2 to 3 years appear to predominate. Hawksbills are recruited into the reef environment at about 14 inches in length and are believed to begin breeding about 30 years later. However, the time required to reach 14 inches in length is unknown and growth rates vary geographically. As a result, actual age at sexual maturity is not known.

Kemp's Ridley Sea Turtle

Nesting occurs from April into July during which time the turtles appear off the Tamaulipas and Veracruz coasts of Mexico. Precipitated by strong winds, the females swarm to mass nesting emergences, known as *arribadas* or *arribazones*, to nest during daylight hours. Clutch size averages 100 eggs (Service and NOAA Fisheries 1992). Some females breed annually and nest an average of 1 to 4 times in a season at intervals of 10 to 28 days. Age at sexual maturity is believed to be between 7 to 15 years (Turtle Expert Working Group 1998).

Population dynamics

Loggerhead Sea Turtle

Total estimated nesting in the Southeast is approximately 50,000 to 90,000 nests per year (FWC statewide nesting database 2004, Georgia Department of Natural Resources statewide nesting database 2004, South Carolina Department of Natural Resources statewide nesting database 2004, North Carolina Wildlife Resources Commission statewide nesting database 2004). In 1998, 85,988 nests were documented in Florida alone. However, in 2001, 2002, 2003, and 2004, this number dropped to 69,657, 62,905, 56,852, and 47,173, respectively. An analysis of nesting data from the Florida Index Nesting Beach Survey (INBS) Program from 1989 to 2004, a period encompassing index surveys that are more consistent and more accurate than surveys in previous years, has shown no detectable trend but, more recently (1998 through 2004), has shown evidence of a declining trend (Blair Witherington, FWC, personal communication, 2005). Given inherent annual fluctuations in nesting and the short time period over which the decline has been noted, caution is warranted in interpreting the decrease in terms of nesting trends.

From a global perspective, the southeastern U.S. nesting aggregation is of paramount importance to the survival of the species and is second in size only to that which nests on islands in the Arabian Sea off Oman (Ross 1982, Ehrhart 1989, NOAA Fisheries and Service 1991b). The status of the Oman loggerhead nesting population, reported to be the largest in the world (Ross 1979), is uncertain because of the lack of long-term standardized nesting or foraging ground surveys and its vulnerability to increasing development pressures near major nesting beaches and threats from fisheries interactions on foraging grounds and migration routes (Earl Possardt, Service, personal communication, 2005). The loggerhead nesting aggregations in Oman, the southeastern U.S., and Australia have been estimated to account for about 88 percent of nesting worldwide (NOAA Fisheries and Service 1991b). About 80 percent of loggerhead nesting in the southeastern U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties) (NOAA Fisheries and Service 1991b).

Green Sea Turtle

About 150 to 2,750 females are estimated to nest on beaches in the continental U.S. annually (FWC 2006). In the U.S. Pacific, over 90 percent of nesting throughout the Hawaiian archipelago occurs at the French Frigate Shoals, where about 200 to 700 females nest each year (NOAA Fisheries and Service 1998a). Elsewhere in the U.S. Pacific, nesting takes place at scattered locations in the Commonwealth of the Northern Marianas, Guam, and American

Samoa. In the western Pacific, the largest green turtle nesting group in the world occurs on Raine Island, Australia, where thousands of females nest nightly in an average nesting season (Limpus et al. 1993). In the Indian Ocean, major nesting beaches occur in Oman where 30,000 females are reported to nest annually (Ross and Barwani 1995).

Leatherback Sea Turtle

Recent estimates of global nesting populations indicate 26,000 to 43,000 nesting females annually (Spotila et al. 1996). The largest nesting populations at present occur in the western Atlantic in French Guiana (4,500 to 7,500 females nesting/year) and Colombia (estimated several thousand nests annually), and in the western Pacific in West Papua (formerly Irian Jaya) and Indonesia (about 600 to 650 females nesting/year). In the United States, small nesting populations occur on the Florida east coast (100 females/year) (FWC 2006), Sandy Point, U.S. Virgin Islands (50 to 190 females/year) (Alexander et al. 2002), and Puerto Rico (30 to 90 females/year).

Hawksbill Sea Turtle

About 15,000 females are estimated to nest each year throughout the world with the Caribbean accounting for 20 to 30 percent of the world's hawksbill population. Only five regional populations remain with more than 1,000 females nesting annually (Seychelles, Mexico, Indonesia, and two in Australia). Mexico is now the most important region for hawksbills in the Caribbean with 3,000 nests per year (Meylan 1999). Other significant, but smaller populations in the Caribbean still occur in Martinique, Jamaica, Guatemala, Nicaragua, Grenada, Dominican Republic, Turks and Caicos Islands, Cuba, Puerto Rico, and U.S. Virgin Islands. In the U.S. Caribbean, about 150 to 500 nests per year are laid on Mona Island, Puerto Rico, and 70 to 130 nests per year on Buck Island Reef National Monument, U.S. Virgin Islands. In the U.S. Pacific, hawksbills nest only on main island beaches in Hawaii, primarily along the east coast of the island of Hawaii. Hawksbill nesting has also been documented in American Samoa and Guam (NOAA Fisheries and Service 1998b).

Kemp's Ridley Sea Turtle

The 40,000 nesting females estimated from a single mass nesting emergence in 1947 reflected a much larger total number of nesting turtles in that year than exists today (Carr 1963, Hildebrand 1963). However, nesting in Mexico has been steadily increasing in recent years - from 702 nests in 1985 to over 10,000 nests in 2005 (Service 2005). Despite protection for the nests, turtles have been and continue to be lost to incidental catch by shrimp trawls (Service and NOAA Fisheries 1992).

Status and distribution

Loggerhead Sea Turtle

Genetic research involving analysis of mitochondrial DNA has identified five different loggerhead subpopulations/nesting aggregations in the western North Atlantic: (1) the Northern Subpopulation occurring from North Carolina to around Cape Canaveral, Florida (about 29° N.);

(2) South Florida Subpopulation occurring from about 29° N. on Florida's east coast to Sarasota on Florida's west coast; (3) Dry Tortugas, Florida, Subpopulation, (4) Northwest Florida Subpopulation occurring at Eglin Air Force Base and the beaches near Panama City; and (5) Yucatán Subpopulation occurring on the eastern Yucatán Peninsula, Mexico (Bowen 1994, 1995, Bowen et al. 1993, Encalada et al. 1998, Pearce 2001). These data indicate gene flow between these five regions is very low. If nesting females are extirpated from one of these regions, regional dispersal will not be sufficient to replenish the depleted nesting subpopulation.

The Northern Subpopulation has declined substantially since the early 1970s. Recent estimates of loggerhead nesting trends from standardized daily beach surveys showed significant declines ranging from 1.5 to 2.0 percent annually (Mark Dodd, Georgia Department of Natural Resources, personal communication, 2005). Nest totals from aerial surveys conducted by the South Carolina Department of Natural Resources showed a 3.3 percent annual decline in nesting since 1980. Overall, there is strong statistical evidence to suggest the Northern Subpopulation has sustained a long-term decline.

Data from all beaches where nesting activity has been recorded indicate the South Florida Subpopulation has shown significant increases over the last 25 years. However, an analysis of nesting data from the Florida INBS Program from 1989 to 2002, a period encompassing index surveys that are more consistent and more accurate than surveys in previous years, has shown no detectable trend and, more recently (1998 through 2002), has shown evidence of a declining trend (Blair Witherington, FWC, personal communication, 2003). Given inherent annual fluctuations in nesting and the short time period over which the decline has been noted, caution is warranted in interpreting the decrease in terms of nesting trends.

A near census of the Florida Panhandle Subpopulation undertaken from 1989 to 2002 reveals a mean of 1,028 nests per year, which equates to about 251 females nesting per year (FWC 2006). Evaluation of long-term nesting trends for the Florida Panhandle Subpopulation is difficult because of changed and expanded beach coverage. Although there are now 8 years (1997 to 2004) of INBS data for the Florida Panhandle Subpopulation, the time series is too short to detect a trend (Blair Witherington, FWC, personal communication, 2005).

A near census of the Dry Tortugas Subpopulation undertaken from 1995 to 2001 reveals a mean of 213 nests per year, which equates to about 50 females nesting per year (FWC 2006). The trend data for the Dry Tortugas Subpopulation are from beaches that were not part of the State of Florida's INBS program prior to 2004, but have moderately good monitoring consistency. There are 7 continuous years (1995 to 2001) of data for this Subpopulation, but the time series is too short to detect a trend (Blair Witherington, FWC, personal communication, 2005).

Nesting surveys in the Yucatán Subpopulations have been too irregular to date to allow for a meaningful trend analysis (Turtle Expert Working Group 1998, 2000).

Threats include incidental take from channel dredging and commercial trawling, longline, and gill net fisheries; loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by native

and non-native predators; degradation of foraging habitat; marine pollution and debris; watercraft strikes; and disease. There is particular concern about the extensive incidental take of juvenile loggerheads in the eastern Atlantic by longline fishing vessels from several countries.

Green Sea Turtle

Total population estimates for the green turtle are unavailable, and trends based on nesting data are difficult to assess because of large annual fluctuations in numbers of nesting females. For instance, in Florida, where the majority of green turtle nesting in the southeastern U.S. occurs, estimates range from 150 to 2,750 females nesting annually (FWC 2006). Populations in Surinam, and Tortuguero, Costa Rica, may be stable, but there is insufficient data for other areas to confirm a trend.

A major factor contributing to the green turtle's decline worldwide is commercial harvest for eggs and food. Fibropapillomatosis, a disease of sea turtles characterized by the development of multiple tumors on the skin and internal organs, is also a mortality factor and has seriously impacted green turtle populations in Florida, Hawaii, and other parts of the world. The tumors interfere with swimming, eating, breathing, vision, and reproduction, and turtles with heavy tumor burdens may die. Other threats include loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; watercraft strikes; and incidental take from channel dredging and commercial fishing operations.

Leatherback Sea Turtle

Declines in leatherback nesting have occurred over the last two decades along the Pacific coasts of Mexico and Costa Rica. The Mexican leatherback nesting population, once considered to be the world's largest leatherback nesting population (historically estimated to be 65 percent of the worldwide population), is now less than 1 percent of its estimated size in 1980. Spotila et al. (1996) estimated the number of leatherback sea turtles nesting on 28 beaches throughout the world from the literature and from communications with investigators studying those beaches. The estimated worldwide population of leatherbacks in 1995 was about 34,500 females on these beaches with a lower limit of about 26,200 and an upper limit of about 42,900. This is less than one third the 1980 estimate of 115,000. Leatherbacks are rare in the Indian Ocean and in very low numbers in the western Pacific Ocean. The largest population is in the western Atlantic. Using an age-based demographic model, Spotila et al. (1996) determined leatherback populations in the Indian Ocean and western Pacific Ocean cannot withstand even moderate levels of adult mortality and even the Atlantic populations are being exploited at a rate that cannot be sustained. They concluded leatherbacks are on the road to extinction and further population declines can be expected unless we take action to reduce adult mortality and increase survival of eggs and hatchlings.

The crash of the Pacific leatherback population is believed primarily to be the result of exploitation by humans for the eggs and meat, as well as incidental take in numerous commercial

fisheries of the Pacific. Other factors threatening leatherbacks globally include loss or degradation of nesting habitat from coastal development; disorientation of hatchlings by beachfront lighting; excessive nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; and watercraft strikes.

Hawksbill Sea Turtle

The hawksbill sea turtle has experienced global population declines of 80 percent or more during the past century and continued declines are projected (Meylan and Donnelly 1999). Most populations are declining, depleted, or remnants of larger aggregations. Hawksbills were previously abundant, as evidenced by high-density nesting at a few remaining sites and by trade statistics. The decline of this species is primarily due to human exploitation for tortoiseshell. While the legal hawksbill shell trade ended when Japan agreed to stop importing shell in 1993, a significant illegal trade continues. It is believed individual hawksbill populations around the world will continue to disappear under the current regime of exploitation for eggs, meat, and tortoiseshell, loss of nesting and foraging habitat, incidental capture in fishing gear, ingestion of and entanglement in marine debris, oil pollution, and boat collisions. Hawksbills are closely associated with coral reefs, one of the most endangered of all marine ecosystem types.

Kemp's Ridley Sea Turtle

The decline of this species was primarily due to human activities, including the direct harvest of adults and eggs and incidental capture in commercial fishing operations. Today, under strict protection, the population appears to be in the early stages of recovery. The recent nesting increase can be attributed to full protection of nesting females and their nests in Mexico resulting from a bi-national effort between Mexico and the U.S. to prevent the extinction of the Kemp's ridley, and the requirement to use turtle excluder devices in shrimp trawls both in the United States and Mexico.

The Mexican government also prohibits harvesting and is working to increase the population through more intensive law enforcement, by fencing nest areas to diminish natural predation, and by relocating all nests into corrals to prevent poaching and predation. While relocation of nests into corrals is currently a necessary management measure, this relocation and concentration of eggs into a "safe" area is of concern since it makes the eggs more susceptible to reduced viability due to movement-induced mortality, disease vectors, catastrophic events like hurricanes, and marine predators once the predators learn where to concentrate their efforts.

Analysis of the species/critical habitat likely to be affected

Suitable habitat is present for listed sea turtle species that are known to occur within and/or adjacent to the proposed location. FWC's statewide sea turtle nesting data indicate that the loggerhead, green, and hawksbill sea turtles nest in Palm Beach County, but the loggerhead, green, and leatherback turtles are the most common. Though the Kemp's ridley sea turtle may occur in Florida waters, only seven nests have been documented in the State of Florida from 1997 through 1999 (Johnson et al. 1999). Critical habitat has not been designated in the continental U.S. for sea turtles; therefore, no critical habitat will be affected.

ENVIRONMENTAL BASELINE

Palm Beach County is located within the most densely populated nesting range for three species of sea turtles: loggerhead, green, and leatherback sea turtles that regularly nest along the beaches of southeast Florida. Between 1998 and 2003, Palm Beach County beaches supported approximately 18 percent of the overall sea turtle nesting in Florida. Only one other Florida county, Brevard, supports a greater percentage of sea turtle nesting. In total, 11,893 and 13,327 sea turtle nests were recorded in 2004 and 2005, respectively, along the 42 miles of Palm Beach County beach included in the FWC's Florida Statewide Nesting Beach Survey (Table 1). The distribution of nests among species in 2004 included 10,759 loggerhead sea turtles, 968 green sea turtles, and 166 leatherback sea turtles; and in 2005 the distribution included 10,791 loggerhead sea turtles, 2,252 green sea turtles, and 284 leatherback sea turtles (Table 1). Only false crawls have been recorded for Kemp's Ridley sea turtles in Palm Beach County (Meylan et al. 1995)

Status of the species/critical habitat within the action area

In Palm Beach County an average of 283 and 317 sea turtle nests were laid per mile in 2004 and 2005, respectively (Table 1). The nesting density within the action area did not exceed the County average in 2004 or in 2005, with an average of 125 and zero nests per mile in 2004 and 2005, respectively (Table 2).

Loggerhead Sea Turtle

The loggerhead sea turtle nesting and hatching season for Palm Beach County extends from March 15 through November 30. Incubation ranges from about 45 to 95 days.

Along the Florida east coast between 1995 and 2005, Palm Beach County had the second highest average nesting of loggerhead sea turtles, with approximately 13,000 nests laid (Palm Beach County 2006a). In 2004, a total of 10,759 loggerhead sea turtle nests, or 256 nests per mile, were laid in Palm Beach County (Table 1). In 2005, a total of 10,791 nests, or 257 nests per mile, were laid. Loggerhead sea turtles laid 10 nests in 2004 and zero nests in 2005, along the 400 feet of beach within the action area (Table 2).

Loggerhead sea turtles made 15,822 false crawls in 2004 and 14,345 in 2005, in Palm Beach County. Within the action area, loggerhead turtles made 15 false crawls in 2004, and 37 in 2005 (Table 2). In all cases, there were more false crawls than nests laid.

Green Sea Turtle

The green sea turtle nesting and hatching season for Palm Beach County extends from May 1 through November 30. Incubation ranges from about 45 to 75 days.

Between 1995 and 2005, Palm Beach County had the second highest average green sea turtle nesting along the Florida east coast; with a little more than 1,000 nests laid per year (Palm Beach County 2006b). In Palm Beach County, a total of 968 green sea turtle nests were laid in 2004,

which is equivalent to 23 nests per mile (Table 1). A total of 2,252 green sea turtle nests were laid in 2005, for an average nesting density of 54 nests per mile (Table 1). Along the 400 feet of beach within the action area, no green sea turtle nests were laid in 2004 and 2005 (Table 2). These values are less than the County average.

In Palm Beach County, 1,283 green sea turtle false crawls were made in 2004, and 3,142 in 2005. Within the action area, there were no false crawls in 2004 and one in 2005 (Table 2). Within the action area, zero and one false crawl was made by green turtles in 2004 and 2005, respectively (Table 2).

Leatherback Sea Turtle

The leatherback sea turtle nesting and hatching season for Palm Beach County extends from February 15 through November 30. Incubation ranges from about 55 to 75 days.

Palm Beach County had the highest average leatherback sea turtle nesting along the Florida east coast from 1995 to 2005 (Palm Beach County 2006c). The total number of leatherback sea turtle nests laid in Palm Beach County was 166 in 2004, and 284 in 2005 (Table 1). The average nesting density was four nests per mile in 2004, and seven nests per mile in 2005. Within the action area, no leatherback sea turtle nests were laid in 2004 and 2005 (Table 2). Leatherback sea turtles made 25 false crawls 2004 and 52 in 2005, in Palm Beach County (Table 1). Within the action area, zero and one false crawl was made by leatherback turtles in 2004 and 2005, respectively (Table 2).

Hawksbill Sea Turtle

The hawksbill sea turtle nesting and hatching season for Palm Beach County extends from June 1 through December 31. Incubation lasts about 60 days.

Although no nesting has been reported from the action area with regard to hawksbill sea turtles, nesting by this species has been documented five times in Palm Beach County since 1985 (Meylan et al. 1995, FWC 2006). The most recent record is from 2004.

Kemp's Ridley Sea Turtle

Although no nesting has been reported in Palm Beach County for Kemp's ridley turtles, four false crawls at Phipps Ocean Park were reported in 1989 (Meylan et al. 1995).

The majority of nesting surveys conducted in Florida occur during the morning hours and are based on interpretation of the tracks left by the turtles as they ascend and descend the beach; the turtles themselves are rarely observed. Because both hawksbill and Kemp's ridley turtle tracks are difficult to discern from loggerhead tracks, it is likely that nesting by both species is underreported (Meylan et al. 1995).

Factors affecting the species habitat within the action area

The action area is defined as the project area which lies within 200 feet north of the north jetty and 200 feet south of the south jetty, where repairs to both jetties are proposed upon the dry

beach. A primary threat to sea turtles along nesting shorelines immediately south and north of the jetties includes sea turtle hatchling disorientation as a result of artificial lighting along the beach and jetties, and possible entrapment within the rock jetties. Typically, sea turtle hatchlings will emerge from the nest and orient themselves towards the brighter, open horizon of the ocean (Salmon et al. 1992). If artificial lights are visible from the beach or jetty, sea turtle hatchlings tend to travel toward the artificial lights instead of the ocean. Disorientation events often result in hatchling mortality as a result of dehydration, predation, motor vehicle strikes, and entrapment within the rock jetty. Plastics, styrofoam, and fishing line are pollutants that may negatively impact nesting and hatchling success, and nearshore foraging.

Lighting

Except for shoreline under public ownership, much of the remaining coast in Palm Beach County is developed. The majority of development consists of multi-family residences, with smaller sections containing commercial and single-family residences. Palm Beach County has a Sea Turtle Protection Ordinance that includes measures to reduce impacts of coastal lighting on sea turtles. The proposed project area is subject to this ordinance.

EFFECTS OF THE ACTION

The analysis of the direct and indirect effects of the proposed action on sea turtles and the interrelated and interdependent activities of those effects was based on beneficial and detrimental factors.

Factors to be considered

The proposed action has the potential to adversely affect nesting sea turtles, nests, and hatchlings within the proposed project area which is anticipated to occur over a 4 month period. The effects of the proposed action on sea turtles will be considered further in the remaining sections of this Biological Opinion. Potential affects include destruction of nests deposited within the boundaries of the proposed project, harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities, or disorientation of emerging hatchlings or behavior modification of nesting turtles due to the placement of a barrier (*e.g.*, hay bales) around the project area during nesting season. In regard to nesting turtles, the barrier could result in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs.

Analyses for effects of the action

Beneficial effects

There are no known beneficial effects to sea turtles from the proposed project.

Direct effects

Potential adverse impacts from the proposed project include disturbance of existing nests, which may have been missed, disturbance of females attempting to nest due to the presence of the barrier (*e.g.*, hay bales) surrounding the action area, and disorientation of emerging hatchlings.

Heavy equipment will be required to conduct the jetty repairs, and this equipment will have to traverse the sandy beach to the action area, which could result in harm to nests.

Jetty repairs during the nesting season, particularly on or near high density nesting beaches, can cause increased loss of eggs and hatchlings and, along with other mortality sources, may impact the long-term survival of the species. For instance, projects conducted during the nesting and hatching season could result in the loss of sea turtles through disruption of adult nesting activity and by burial or crushing of nests or hatchlings. While a nest monitoring and egg relocation program would reduce these impacts, nests may be inadvertently missed (when crawls are obscured by rainfall, wind, and/or tides) or misidentified as false crawls during daily patrols. Even under the best of conditions, about 7 percent of the nests can be misidentified as false crawls by experienced sea turtle nest surveyors (Schroeder 1994).

1. Nest relocation

Besides the potential for missing nests during a nest relocation program, there is a potential for eggs to be damaged by their movement, particularly if eggs are not relocated within 12 hours of deposition (Limpus et al. 1979). Nest relocation can have adverse impacts on incubation temperature (and hence sex ratios), gas exchange parameters, hydric environment of nests, hatching success, and hatchling emergence (Limpus et al. 1979, Ackerman 1980, Parmenter 1980, Spotila et al. 1983, McGehee 1990). Relocating nests into sands deficient in oxygen or moisture can result in mortality, morbidity, and reduced behavioral competence of hatchlings. Water availability is known to influence the incubation environment of the embryos and hatchlings of turtles with flexible-shelled eggs, which has been shown to affect nitrogen excretion (Packard et al. 1984), mobilization of calcium (Packard and Packard 1986), mobilization of yolk nutrients (Packard et al. 1985), hatchling size (Packard et al. 1981, McGehee 1990), energy reserves in the yolk at hatching (Packard et al. 1988), and locomotory ability of hatchlings (Miller et al. 1987).

In a 1994 Florida study comparing loggerhead hatching and emergence success of relocated nests with *in situ* nests, Moody (1998) found hatching success was lower in relocated nests at 9 of 12 beaches evaluated and emergence success was lower in relocated nests at 10 of 12 beaches surveyed in 1993 and 1994.

2. Entrapment/physical obstruction

Adult female turtles approaching the nesting beach may encounter the jetty structures and either go around them, abort nesting for that evening, and/or move to another section of beach to nest.

3. Equipment

The placement of hay bales as use as a barrier around the project area and the use of heavy machinery on the beach during the project may have adverse effects on sea turtles. They can create barriers to nesting females emerging from the surf and crawling up the beach, causing a higher incidence of false crawls and unnecessary energy expenditure.

Indirect effects

Many of the direct effects of jetties may persist over time and become indirect impacts. These indirect effects include increased susceptibility of relocated nests to catastrophic events, the formation of escarpments, and future sand migration.

1. Increased susceptibility to catastrophic events

Nest relocation may concentrate eggs in an area making them more susceptible to catastrophic events. Hatchlings released from concentrated areas also may be subject to greater predation rates from both land and marine predators, because the predators learn where to concentrate their efforts (Glenn 1998, Wyneken et al. 1998).

2. Downdrift erosion

Jetties, similar to groins, in conjunction with beach nourishment, can help stabilize U.S. east coast barrier island beaches (Leonard et al. 1990). However, jetties, groins, and breakwaters often result in accelerated beach erosion downdrift of the structures (Komar 1983, National Research Council 1987, Corps 1992) and corresponding degradation of suitable sea turtle nesting habitat (NOAA Fisheries and Service 1991a, 1991b, 1992). Impacts first are noted and greatest changes are observed close to the structures, but effects eventually may extend great distances along the coast (Komar 1983). Beach nourishment only partially alleviates impacts of groin construction on downdrift beaches (Komar 1983).

3. Escarpment formation

Escarpments may develop on the crenulate beaches located south of the jetty as the beaches equilibrate to their final positions. These escarpments can hamper or prevent access to nesting sites (Nelson and Blihovde 1998). Researchers have shown that female turtles coming ashore to nest can be discouraged by the formation of an escarpment, leading to situations where they choose marginal or unsuitable nesting areas to deposit eggs (*e.g.*, in front of the escarpments, which often results in failure of nests due to prolonged tidal inundation). This impact can be minimized by leveling any escarpments prior to the nesting season.

4. Jetty breakdown

As the jetty structures fail and break apart, they spread debris on the beach which may further impede nesting sea turtles from accessing suitable nesting sites, which may result in a higher incident of false crawls, and trapping of hatchlings and nesting turtles (NOAA Fisheries and Service 1991a, 1991b, 1992, 1993).

Species' response to a proposed action

The jetty repair is expected to take approximately 120 days, although there may be delays due to adverse weather. Nesting and nesting success is expected to return to levels found prior to repairs.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Biological Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service has considered potential cumulative effects of this project on sea turtles and, in this instance, there are no cumulative effects.

CONCLUSION

After reviewing the current status of the loggerhead, green, leatherback, hawksbill and Kemp's ridley sea turtles, the environmental baseline for the action area, the effects of the proposed jetty repairs, and the cumulative effects, it is the Service's biological opinion that the jetty repair, as proposed, is not likely to jeopardize the continued existence of these sea turtles. No critical habitat has been designated for the loggerhead, green, leatherback, Kemp's Ridley, and hawksbill sea turtles in the continental United States; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the Corps so that they become binding conditions of any grant or permit issued to them, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or, (2) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impacts on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

The Service anticipates 400 feet of nesting beach habitat could be taken as a result of this proposed action. The incidental take is expected to be in the form of: (1) destruction of all nests that may be constructed and eggs that may be deposited and missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) destruction of all nests deposited from October 1 through February 28 (or 29 as applicable) when a nest survey and egg relocation program is not required to be in place within the boundaries of the proposed project; (3) reduced hatching success due to egg mortality during relocation and adverse conditions at the relocation site; (4) harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities; (5) behavior modification of nesting females or hatchlings due to the presence of the jetty, which may act as barriers to movement; (6) behavior modification of nesting females if they dig into shallowly buried jetty material, resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs; (7) behavior modification of nesting females due to escarpment formation within the project area during a nesting season, resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs; and (8) destruction of nests from escarpment leveling within a nesting season when such leveling has been approved by the Service.

Incidental take is anticipated for only 400 feet of beach that has been identified for jetty repair-related activities. The Service anticipates incidental take of sea turtles will be difficult to detect for the following reasons: (1) the turtles nest primarily at night and all nests are not found because [a] natural factors, such as rainfall, wind, and tides may obscure crawls and [b] human-caused factors, such as pedestrian and vehicular traffic, may obscure crawls, and result in nests being destroyed because they were missed during a nesting survey and egg relocation program; (2) the total number of hatchlings per undiscovered nest is unknown; (3) the reduction in percent hatching and emerging success per relocated nest over the natural nest site is unknown; (4) an unknown number of females may avoid the project beach and be forced to nest in a less than optimal area; and (5) escarpments may form and keep an unknown number of females from accessing a suitable nesting site. However, the level of take of these species can be anticipated by the disturbance of suitable turtle nesting beach habitat because: (1) turtles nest within the project site; and (2) jetty repairs will likely take place during a portion of the nesting season.

EFFECT OF THE TAKE

In the accompanying Biological Opinion, the Service determined this level of anticipated take is not likely to result in jeopardy to the species. Critical habitat has not been designated in the project area; therefore, the project will not result in destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of loggerhead, green, leatherback, hawksbill, and Kemp's ridley sea turtles in the proposed jetty repair action area.

1. Since the jetty repair will be conducted during the sea turtle nesting season, surveys for early nesting sea turtles must be conducted. If nests are constructed in the action area, the nests will be marked and avoided. Only if the nests can not be avoided will the eggs be relocated.

2. A barrier sufficient to prevent adult and hatchling sea turtles from accessing the project site must be placed around the perimeter of the project site.

3. Since the jetty repair will be conducted during the sea turtle nesting season, construction equipment and materials must be stored in a manner that will minimize impacts to sea turtles to the maximum extent practicable.

4. Access to the project area and repairs to the jetties will only take place during daylight hours.

5. The Corps must ensure that contractors involved in the project fully understand the sea turtle protection measures detailed in this incidental take statement.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. Jetty repair will be conducted up to 120 days during the sea turtle nesting season (March 1 through October 31) due to scheduling conflicts with routine Inlet maintenance dredging activities, and weather-related restraints, therefore, daily early morning surveys for sea turtle nests must be conducted. The barrier required under Term and Condition #2 should prevent turtles from nesting in the project area (*i.e.*, from 200 feet north of the north jetty to 200 feet south of the south jetty). However, if turtles do manage to access the project area and nest, nests will be marked and avoided. Only if the nests cannot be avoided will the eggs be relocated. Also, in the event a sea turtle nest is excavated during construction activities, all work shall cease in that area immediately and the permitted person responsible for egg relocation for the project should be notified so the eggs can be relocated. Any egg relocation will be conducted per the following requirements:

    1a. Nesting surveys and egg relocations will only be conducted by personnel with prior experience and training in nesting survey and egg relocation procedures. Surveyors must perform under the supervision of a qualified professional with a valid FWC Marine Turtle Permit. Nesting surveys must be conducted daily between sunrise and 9 a.m. Surveys must be performed in such a manner so as to ensure that construction activity does not occur in any location prior to completion of the necessary sea turtle protection measures and

1b. Only those nests laid within the project area (*i.e.*, from 200 feet north of the north jetty to 200 feet south of the south jetty) and that can not be avoided thus may be affected by construction activities will be relocated. Nests requiring relocation must be moved no later than 9 a.m. the morning following deposition to a nearby self-release beach site in a secure setting where artificial lighting will not interfere with hatchling orientation. Nest relocations in association with construction activities must cease when construction activities no longer threaten nests. Nests deposited within areas where construction activities have ceased or will not occur for 65 days must be marked and left in place unless other factors threaten the success of the nest. Any nests left in the active construction zone must be clearly marked, and all mechanical equipment must avoid nests by at least 10 feet.

2. A barrier sufficient to prevent adult and hatchling sea turtles from accessing the project site must be in place around the perimeter of the project site (*e.g.*, hay bales). The barrier must be placed shore-parallel and shore perpendicular to the project site, at MHW, as close to the jetty as practicable, particularly during the period from sunset to sunrise.

3. Construction equipment and materials must be stored as far landward as possible within the construction perimeter.

4. If any nesting turtles are sighted on the beach during daylight hours, construction activities must cease immediately until the turtle has returned to the water, and the sea turtle permit holder responsible for nest monitoring has marked any nest that may have been laid for avoidance.

5. Beach access to conduct repairs at the south jetty will be restricted to the 80-foot government easement at Kuvin's property immediately adjacent to the jetty. Access to the north jetty will be via upland, and no beach access will be necessary.

6. The Applicant must arrange a meeting between representatives of the contractor, the Service, the FWC, and the permitted person responsible for egg relocation at least 30 days prior to the commencement of work on this project. At least 10 days advance notice must be provided prior to conducting this meeting. This will provide an opportunity for explanation and/or clarification of the sea turtle protection measures.

7. Staging areas for construction equipment must be located off the beach to the maximum extent practicable. Nighttime storage of construction equipment not in use must be off the beach to minimize disturbance to sea turtle nesting and hatching activities during this period.

8. A report describing the actions taken to implement the terms and conditions of this incidental take statement must be submitted to the FWC, Imperiled Species Management Section, Tequesta office and the Tallahassee office as well as the South Florida Ecological Services Office, Vero Beach, Florida within 60 days of completion of the proposed work for each year when the activity has occurred. This report will include the dates of actual construction activities, names and qualifications of personnel involved in

nest surveys and relocation activities, descriptions and locations of self-release beach sites, nest survey and relocation results, and hatching success of nests.

9. In the event a sea turtle nest is excavated during construction activities, the permitted person responsible for egg relocation for the project must be notified so the eggs can be moved to a suitable relocation site.

10. Upon locating a dead, injured, or sick endangered or threatened sea turtle specimen, initial notification must be made to the FWC at 1-888-404-3922, and the South Florida Ecological Services Office biologist listed at the end of this Biological Opinion. Care should be taken in handling sick or injured specimens to ensure effective treatment and care and in handling dead specimens to preserve biological materials in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure evidence intrinsic to the specimen is not unnecessarily disturbed.

The Service believes incidental take will be limited to 400 feet of beach that has been identified for conducting repairs to the Lake Worth Inlet north and south jetties. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. The Service believes no more than the following types of incidental take will result from the proposed action: (1) destruction of all nests that may be constructed and eggs that may be deposited and missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) destruction of all nests deposited during the period when a nest survey and egg relocation program is not required to be in place within the boundaries of the proposed project; (3) reduced hatching success due to egg mortality during relocation and adverse conditions at the relocation site; and (4) harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities.

The amount or extent of incidental take for sea turtles will be considered exceeded if the project results in repairs to the Inlet's north and south jetty beyond the 400 feet of beach that has been identified in the present project. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Corps must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act 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.

1. Auxillary lights should not be authorized on the jetty at night during the sea turtle nesting season.

2. Provide fishing line recycle tubes for fishing line and trash receptacles on the jetties and adjacent to the beach.

3. Educational signs should be placed where appropriate at beach access points explaining the importance of the area to sea turtles and/or the life history of sea turtle species that nest in the area.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the request. 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 incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Should you have additional questions or require clarification, please contact Jeff Howe at 772-562-3909, extension 283.

Sincerely yours,

Paul Souza
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cc:
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Table 1. Summary of sea turtle nesting data for Palm Beach County, Florida from 2000 to 2005. Data accessed: http://research.myfwc.com/features/view_article.asp?id=7630 on December 12, 2006.

Year	Loggerhead Nests	Loggerhead False Crawls	Green Nests	Green False Crawls	Leatherback Nests	Leatherback False Crawls
2000	14187	16124	1942	1931	160	33
2001	13757	12957	175	103	334	36
2002	13032	12841	2339	2824	250	47
2003	12963	15050	767	846	306	50
2004	10759	15822	968	1283	166	25
2005	10791	14345	2252	3142	284	52
Mean	**12581.5**	**14523.2**	**1407.2**	**1688.2**	**250**	**40.5**

Table 2. Summary of sea turtle nesting data for the project area (DEP Monument R-75 +200 feet north to R-76 + 200 feet south), Palm Beach County, Florida from 2000 to 2005. Data provided from Palm Beach County Department of Environmental Resources Management.

Year	Loggerhead Nests	Loggerhead False Crawls	Green Nests	Green False Crawls	Leatherback Nests	Leatherback False Crawls
2000	12	73	0	1	0	0
2001	10	18	0	0	0	1
2002	13	18	0	0	0	0
2003	7	28	0	0	1	0
2004	10	15	0	0	0	0
2005	0	37	0	1	0	1
Mean	**8.7**	**31.5**	**0**	**0.3**	**0.2**	**0.3**

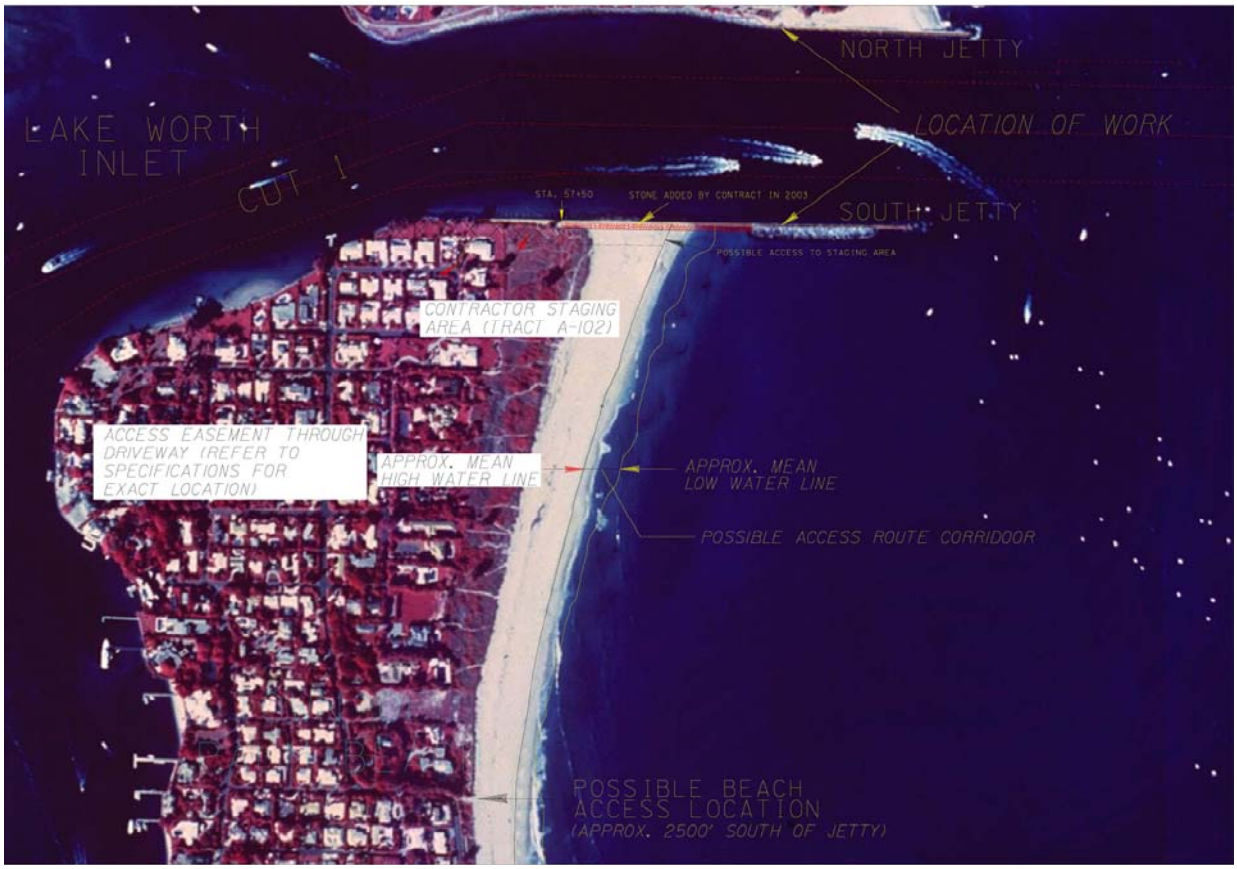

Figure 1. Location of the proposed project to repair the concrete caps on the north and south jetties, Lake Worth Inlet, Palm Beach County, Florida.