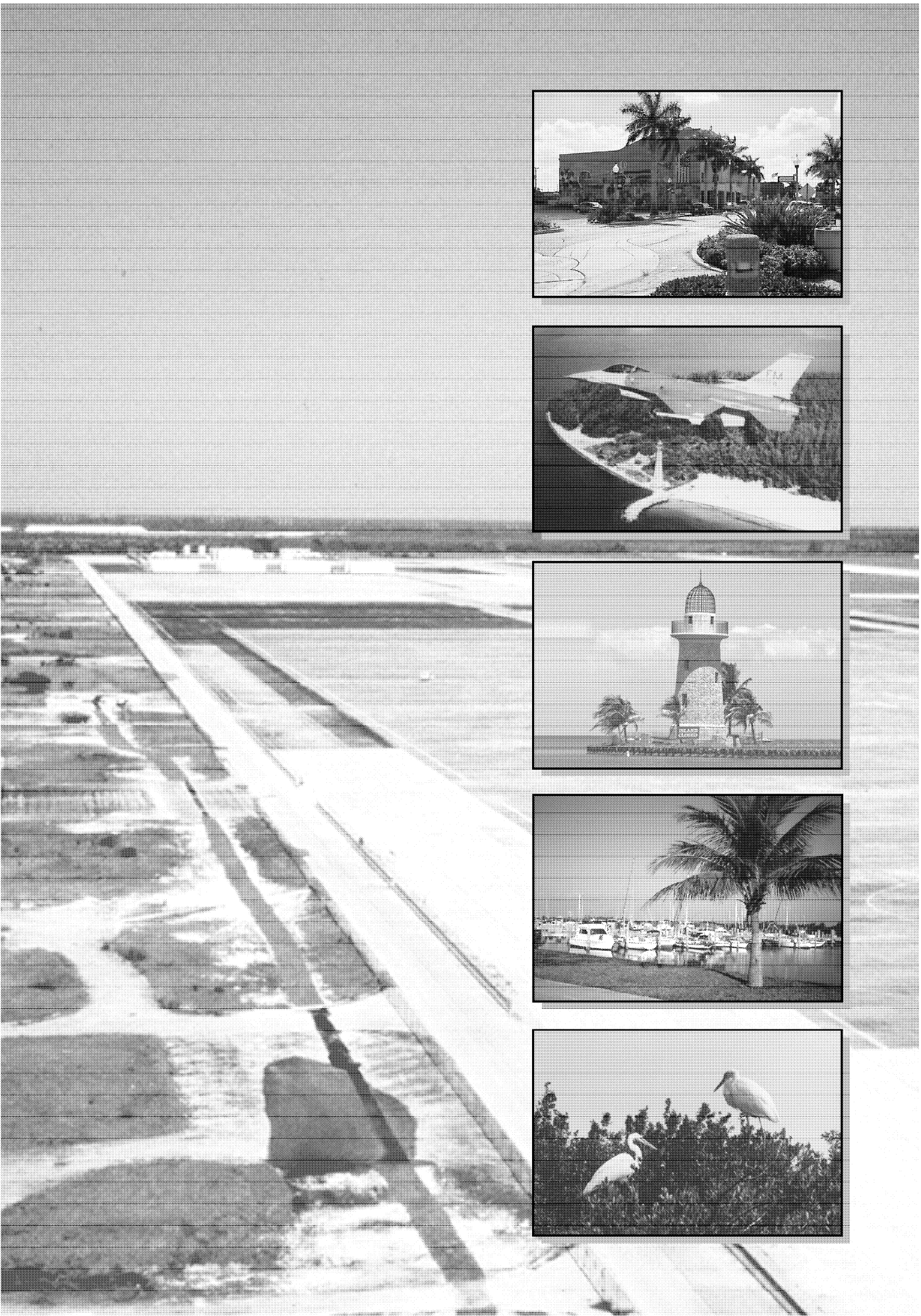
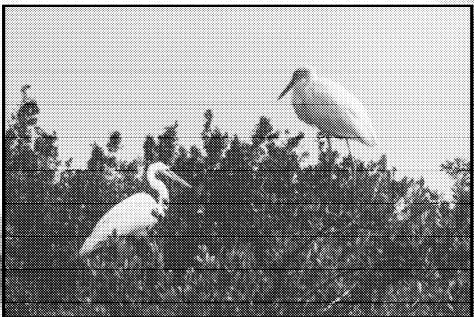


J ESSENTIAL FISH HABITAT ASSESSMENT



**ESSENTIAL FISH HABITAT ASSESSMENT
FOR THE DISPOSAL OF PORTIONS OF
FORMER HOMESTEAD AIR FORCE BASE, FLORIDA**

Submitted to:

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Southeast Regional Office
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St. Petersburg, Florida 33702**

Submitted by:

**Air Force Base Conversation Agency
United States Air Force**

August 2000

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FOR THE DISPOSAL OF PORTIONS OF
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1. PROJECT DESCRIPTION

The project is the disposal of portions of former Homestead Air Force Base (AFB) in southern Florida. Homestead AFB was identified for realignment by the Defense Base Realignment and Closure Commission in 1993. The underlying purpose of the Proposed Action and other alternatives is to fulfill the requirement of disposing of property determined to be excess to military needs. The Air Force has determined that 1,631.8 acres at former Homestead AFB are excess to its needs and surplus to the needs of the federal government. The Air Force seeks to dispose of this surplus property in a manner that supports local community plans for economic revitalization of South Florida and protects Biscayne Bay and the nearby national parks (USAF/FAA 1999).

The Proposed Action is to transfer 1,631.8 acres of surplus property at former Homestead AFB to Miami-Dade County for use as a commercial airport. In accordance with the Defense Base Closure and Realignment Act (DBCRA), Miami-Dade County has served as the Local Redevelopment Authority (LRA) responsible for formulating a reuse plan for the former base property. The disposal and reuse alternatives under consideration are described in a Draft Supplemental Environmental Impact Statement (SEIS) prepared by the U.S. Air Force and Federal Aviation Administration (USAF/FAA 1999).

Other reasonable alternatives are also being considered. They include a Commercial Spaceport alternative and a Mixed Use alternative.

During scoping for this action, the Air Force received two proposals from prospective commercial space launch vehicle operators to use former Homestead AFB as a location for launching missions. This alternative reflects those proposals in a plan to develop a Commercial Spaceport for Reusable Launch Vehicles. The new launch vehicles described in these proposals are currently under development and are being designed to take off and land horizontally like airplanes. It is anticipated that these vehicles would be able to use the existing runway at the former base (USAF/FAA 1999).

The Mixed Use alternative reflects the type of reuse that might be expected on surplus property if it were not converted to an airport or spaceport. In that event, the Air Force would retain the 915 acres comprising the airfield for continued military and other government use. This would leave approximately 717 acres of surplus land available for disposal and reuse. A market study was conducted to identify the non-aviation development potential of this property, referred to as the Market-Driven Mixed Use alternative. In addition, two proposals were received by the Air Force from the Collier Resources Company and the Hoover Environmental Group and included in the Draft SEIS. Those proposals were recently combined into a single plan for non-aviation-related redevelopment of the disposal property, referred to as the Collier-Hoover proposal. This proposal is a comprehensive development plan with a mixture of commercial, recreational, and commercial/industrial uses.

For all alternatives, including the Proposed Action, the action being taken by the Air Force is transfer of title to surplus federal property. Actual future development and use the property will be undertaken by the property recipient.

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2. EFFECTS ON ESSENTIAL FISH HABITAT

The potential environmental impacts of the Proposed Action and other alternatives have been analyzed and reported in the Draft SEIS. The analysis found that the potential for the project to affect essential fish habitat (EFH) is related to changes in water inputs to Biscayne Bay and in nutrients and toxic chemicals. These changes would be caused by development on site at the former base (and resulting increase in impervious surface and stormwater runoff) and by aircraft operation associated with the Proposed Action. In addition, the on-site development can be expected to stimulate a certain amount of secondary growth and development off site.

Estimated changes in water inputs would be primarily related to stormwater management practices on and off the former base. With the exception of the Market-Driven Mixed Use alternative, all the alternatives are expected to involve a comprehensive stormwater management system for on-site development that would reduce surface water discharges from the site into Biscayne Bay. No comparable system has been identified for the secondary development off site, which is expected to occur incrementally in scattered locations around the region.

Estimated changes in loadings of nutrients and toxic chemicals due to the Proposed Action and other alternatives would also be related to the extent of on-site and off-site development, to stormwater management practices, and to the kinds of activities that would occur on the former base. There would be no waste discharge or physical alteration of Biscayne Bay associated with the Proposed Action or other alternatives.

Stormwater discharges from the former base and the surrounding area to Biscayne Bay are currently through canals. On-site stormwater is discharged through Military Canal, and stormwater from areas immediately surrounding the former base discharge through Princeton and Mowry Canals. Canal discharge to the bay is controlled by structures that open when canal water levels exceed bay water levels by given amounts and close when canal water levels are more nearly equal to those of the bay. This results in pulses of fresh water that are generally nutrient rich and contain some toxic chemicals at levels that generally comply with Florida State Water Quality Criteria.

Unrelated to redevelopment of the surplus property at former Homestead AFB, studies have been ongoing to characterize contaminated sediments in Military Canal. There is a potential for those sediments to become resuspended, perhaps during severe storm events, and subsequently be discharged to Biscayne Bay.

3. EFH IN BISCAYNE BAY

EFH in Biscayne Bay comprises seagrasses, estuarine mangroves, intertidal flats, estuarine water column, live/hard bottoms, and coral reefs. Seagrasses occur in a broad band near the western and eastern (Key) shores of Biscayne Bay and surround a relatively large area of live/hard bottom. Seagrass areas have been designated as an EFH Area of Particular Concern for postlarval and juvenile shrimp and red drum and juvenile gray snapper. Intertidal flats occur in a narrow band shoreward of the seagrasses, and estuarine mangroves occur as a shoreline fringe, particularly along the western edge of the bay. Once estuarine, Biscayne Bay is now largely marine in character, although reduced salinities occur following major storms or extended periods of rainfall. Isolated coral patches occur on the hard bottom areas of the bay, but coral reefs occur only seaward of the fringing keys on the eastern boundary of the bay.

4. MANAGED SPECIES IN BISCAYNE BAY

Fisheries management plans have been developed for the following species or species groups that occur in Biscayne Bay: shrimp, red drum (*Sciaenops ocellatus*), snapper/grouper, Spanish mackerel (*Scomberomorus maculatus*), spiny lobster (*Panulirus argus*), and sharks. The most common penaeid shrimp in the bay is the pink shrimp (*Penaeus duorarum*), but the brown shrimp (*Penaeus astecus*) also occurs there (**South Atlantic Fishery Management Council 1998**). Of the snapper/grouper group, the species that occurs most frequently is the gray snapper (*Lutjanus griseus*). Most of the other species in this group frequent deeper water around coral reefs throughout the majority of their life cycle. Sharks known to occur in Biscayne Bay include the nurse (*Ginglymostoma cirratum*), bonnethead (*Sphyrna tiburo*), lemon (*Negaprion brevirostris*), bull (*Carcharhinus obscurus*), and black tip (*C. limbatus*).

Shrimp

The following information is taken primarily from South Atlantic Fishery Management Council (1998). Pink shrimp are found most commonly on hard sand and calcareous shell bottom. Pink shrimp apparently spawn at depths between 3.7 and 15.8 m. Off eastern Florida, peak spawning activity seems to occur during summer. Pink shrimp move into estuaries during late spring and early summer, beginning in April and early May. If they behave similar to white shrimp, they move out of estuaries to deeper waters from August to December. Smaller pink shrimp may remain in estuaries during winter.

Pink shrimp occur from southern Chesapeake Bay to the Florida Keys. Along the Atlantic Coast of the U.S., the pink shrimp occurs in sufficient abundance to be of major commercial significance only in North Carolina. Pink shrimp are most abundant in waters of 11–37 m and are common in the estuaries and shallow marine waters surrounding southern Florida. Spawning apparently occurs in water greater than 10 m off the Dry Tortugas. Larvae are swept southwesterly into the Florida Current by way of the Loop Current, and are carried northeasterly along the outer edge of the Florida Reef Tract.

Brown shrimp appear to prefer muddy or peaty bottoms rich in organic matter and decaying vegetation in inshore waters and, as adults, may also be found in areas where the bottom consists of mud, sand, and shell. Brown shrimp appear to spawn in water greater than 13.7 m, with the greatest percentage of ripe females at 45.7 m. Spawning season for brown shrimp is uncertain, although there is an influx of postlarvae into estuaries during February and March. Brown shrimp postlarvae appear to overwinter in offshore bottom sediments.

On the Atlantic Coast, brown shrimp occur from Martha's Vineyard to the Florida Keys, with highest densities off the coast of the Carolinas, Georgia, and northern and central Florida. Breeding populations apparently do not occur north of North Carolina.

Essential fish habitat for both species includes inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity, and all interconnecting water bodies. Inshore nursery areas include tidal freshwater, estuarine, and marine emergent wetlands (e.g., intertidal marshes); tidal palustrine forested areas; mangroves; tidal freshwater, estuarine, and marine submerged aquatic vegetation (e.g., seagrass); and subtidal and intertidal non-vegetated flats.

Appropriate habitat for both species in Biscayne Bay include the mangrove fringe, seagrass beds, and subtidal non-vegetated flats. The redevelopment of former Homestead AFB could result in increased nutrient inputs from off-site secondary development near the former base and increased nitrogen deposition from aircraft emissions. Increased nutrients would probably not affect the coastal mangroves or the non-vegetated bottom habitats of the bay, but could contribute to epiphytic growth on nearshore

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seagrasses, reducing their productivity and possibly reducing their viability. The relatively small increase in nutrient inputs—estimated at less than 2 percent of current surface water nutrient inputs to southern Biscayne Bay, an amount well within the expected annual variation of inputs—suggests that overall impact on the seagrass beds is not likely to be discernible and shrimp populations would probably not be appreciably affected. The largest increase in nutrient inputs would occur with the Proposed Action, with other alternatives contributing less. With anticipated population growth in the area unrelated to redevelopment of the former base, however, nutrient inputs could increase by almost double those associated with the Proposed Action.

Similarly, while stormwater discharges of toxic chemicals from the former base are projected to decrease under all alternatives except the Market-Driven Mixed Use alternative, secondary development would lead to increased toxic chemical inputs from stormwater runoff. Because most of the toxic chemicals would attach to sediments and be deposited relatively near canal mouths, the nearshore mangrove fringe and seagrasses could become less desirable as shrimp habitat. Offshore effects are likely to be small. As with nutrients, changes in inputs of toxic chemicals would be primarily related to increases in water flows, which would be less than 1 percent of current canal inputs to southern Biscayne Bay.

Mitigation of potential impacts from increased nutrient and toxic chemical inputs have already been incorporated into on-site stormwater management plans for the Proposed Action and all alternatives except the Market-Drive Mixed Use alternative. The Air Force is presently conducting a Feasibility Study to determine remediation actions for Military Canal, which could eliminate the potential for resuspended contaminants from being discharged to Biscayne Bay.

Potential mitigation measures for reducing stormwater discharges generated by off-site secondary development could include aggressive stormwater management (retention and possible treatment) on all developed lands in southern Miami-Dade County. These types of controls would have to be implemented by the South Florida Water Management District and Miami-Dade County's Department of Environmental Resources Management, and could not be implemented by the Air Force or FAA.

Red Drum

Red drum spawn in the ocean along beaches and in the vicinity of inlets and passes and possibly in high salinity estuaries. Eggs and larvae are carried through tidal and current movement into estuarine systems. Juveniles remain in the estuarine system through perhaps the first two years, and then move to more offshore areas. In North Carolina, juveniles are found in abundance in seagrass flats inside barrier islands.

Red drum juveniles are abundant in the Indian River Inlet and the St. Johns River in Florida, but are rare in Biscayne Bay. This is presumably because of the larval preference for lower salinity waters, which are only present intermittently in the bay, and the tendency for juveniles to stay in one area for up to two years. In general, juveniles move to higher salinity waters as they mature, but it is not clear how this general trend would be evidenced in the relatively high salinity of Biscayne Bay. They may then move to deeper waters outside of the bay.

Red drum essential fish habitat includes the following habitats to a depth of 50 meters offshore: tidal freshwater; estuarine emergent vegetated wetlands (flooded salt marshes, brackish marsh, and tidal creeks); estuarine scrub/shrub (mangrove fringe); submerged rooted vascular plants (sea grasses); oyster reefs and shell banks; unconsolidated bottom (soft sediments); ocean high salinity surf zones; and artificial reefs. The area covered includes Virginia through the Florida Keys. In Biscayne Bay, the areas most likely to be inhabited by red drum include the mangrove fringe and seagrasses.

With its current high salinity regime, Biscayne Bay is apparently only marginal habitat for juvenile red drum, with the smallest fish probably using the nearshore mangroves and seagrasses and larger fish moving to the deeper seagrass beds inside and outside of the keys that form the eastern boundary of the bay. If this is the case, then red drum recruitment could be limited by lowered nearshore seagrass productivity caused by increased nutrient inputs associated with the Proposed Action and other alternatives. The limitation is not likely to be measurable, because discernible changes in seagrasses are not expected with the magnitude of estimated changes in nutrient inputs to the southern bay (about 2 percent of current inputs). Toxic chemical inputs could potentially reduce the abundance of prey species such as copepods, mysids, and fish that form the dominant prey of smaller juveniles. Again, the magnitude of estimated changes is small, on the order of 1 percent of current inputs to the southern bay. Mitigation of these impacts would be the same as those described above for shrimp.

Snapper/Grouper

The gray snapper occurs in marine and estuarine waters from North Carolina and Bermuda through Brazil. Spawning activity occurs offshore and peaks during the summer and early fall. Eggs and larvae are planktonic and occur offshore.

Juvenile gray snapper are euryhaline and occur at salinities from 0-37 ppt. Gray snapper are carnivorous at all life stages. Juveniles primarily prey on crustaceans, but can also consume fish, mollusks and polychaetes. Adults are typically nocturnal predators, consuming mostly fish, but also taking shrimp and crabs. Adults may show seasonal spawning migrations.

In the Biscayne Bay area, newly settled stages commonly occur in grassbeds, are consistently absent from mangrove and hard bottom habitats, and are uncommon or rare from all habitats exceeding 5 m in depth. Early juvenile stages (2.5–7 cm) were more widely distributed, particularly on the habitat scale, occurring among a variety of hard structures as well as mangroves and grass beds.

Early stages occur in estuaries and shallow marine areas. Bottom types of high value include seagrass flats; soft marl bottoms, fine marl mud with shell and rock outcrops; mangrove roots; hard bottom structures; and shallow basins with seagrasses adjacent to mud banks. Adults are primarily marine and occur in deeper waters than juveniles, but can occur in estuaries and rivers. Adults are euryhaline, ranging from 0-47 ppt waters. Bottom types of high value for adults are diverse and include coral reefs and hard bottom offshore, ledges of channels, artificial structures, mangroves and grass beds, alcyonarians, and sponges.

Essential fish habitat for the gray snapper that occur in Biscayne Bay include nearshore hard bottom areas, mangrove habitat, and seagrass habitat. The effects of the Proposed Action and alternatives on these habitats and potential mitigation measures would be the same as described above for shrimp.

Spanish Mackerel

Spanish mackerel are fast swimming fish that inhabit the coastal ocean waters of the eastern U.S. and the Gulf of Mexico. They live from five to eight years, and females spawn by age two. Older fish may attain a weight of several pounds. Along the east coast, Spanish mackerel range from the Florida Keys to New York and occasionally to New England. These fish winter off Florida and move northward to North Carolina in early April and to New York in June. Later in the year, as waters cool, there is a reverse southern migration and return to Florida waters.

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Juvenile Spanish mackerel are depicted as common in Biscayne Bay from May through July. Essential fish habitat for Spanish mackerel includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf stream shoreward, including Sargassum. Essential fish habitat occurs in the South Atlantic and Mid-Atlantic Bights. In addition, it includes all coastal inlets and all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas). Biscayne Bay contains essential fish habitat because of the density of prey species that are taken by juveniles.

The impacts of the Proposed Action and other alternatives on Spanish mackerel essential fish habitat and potential mitigation measures would be the same as described above for shrimp.

Spiny Lobster

Spiny lobster begin their existence in the Keys as larvae that arrive on oceanic currents. As planktonic larvae, they pass through 11 life stages in more than six months. They then metamorphose into a transitional swimming stage (puerulus) that is found along Florida's southeast coast all year long.

Pueruli travel through channels between the Keys and enter nursery areas in Florida Bay and the Gulf, where they preferentially settle into clumps of the red alga *Laurencia*. In seven to nine days, they metamorphose into juveniles and take a solitary residence in the algal clumps for two to three months.

When juvenile spiny lobster reach a carapace length of 15 to 16 mm, they leave the algal clumps and reside individually within rocky holes, crevices, coral, and sponges. They remain solitary until carapace length reaches approximately 25 to 35 mm, when they begin congregating in rocky dens. They remain in these nurseries for 15 months to two years.

Adult lobsters move to deeper waters in the coral reef environment and move to the offshore reef to spawn.

Essential fish habitat for spiny lobster includes nearshore shelf/oceanic waters; shallow subtidal bottom; seagrass habitat; unconsolidated bottom (soft sediments); coral and live/hard bottom habitat; sponges; algal communities (*Laurencia*); and mangrove habitat (prop roots). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse spiny lobster larvae.

Areas that meet the criteria for essential fish habitat-habitat areas of particular concern for spiny lobster include Florida Bay, Biscayne Bay, Card Sound, and coral/hard bottom habitat from Jupiter Inlet through the Dry Tortugas.

Because of its reliance on seagrass, the impacts of the Proposed Action and other alternatives on essential fish habitat for the spiny lobster would be the same as described for shrimp. Hard bottom habitats, because of their distance from nutrient and toxic chemical inputs, are unlikely to be affected by changes in discharge associated with the Proposed Action and other alternatives. Potential mitigations for spiny lobster essential fish habitat would be the same as described for shrimp.

Sharks

The managed sharks that occur in Biscayne Bay are classified by National Marine Fisheries Service (NMFS) as Coastal Sharks, and all but the bonnethead are classified as large coastal sharks. The following information is taken from National Marine Fisheries Service (1999).

Adult sharks usually congregate in specific areas to mate, and females travel to specific nursery areas to pup. Nurseries are discrete geographic areas, usually in waters shallower than those inhabited by adults. Frequently, nursery areas are in highly productive coastal or estuarine waters where abundant small fishes and crustaceans provide food for the growing pups. These areas also may have few large predators, thus enhancing the chances of survival of young sharks. In temperate zones, the young leave the nursery with the onset of winter; in tropical areas, young sharks may stay in the nursery area for a few years.

Coastal species inhabit estuaries, the nearshore and waters of the continental shelves, and possibly wetland tidal creeks.

Blacktip Sharks. The blacktip shark is a fast moving shark that is often seen at the surface, frequently leaping and spinning out of the water. It often forms large schools that migrate seasonally north-south along the coast. Neonate blacktip sharks are found in very shallow waters, juvenile blacktip sharks inhabit a variety of coastal habitats, and adults are found in both coastal and oceanic waters.

Blacktip sharks have been captured in salinities ranging from 15.8 to 37.0 ppt. Other factors must contribute significantly to the distribution of sharks, and some likely parameters include light levels, pressure, substrate, dissolved oxygen, and probably others.

Blacktip sharks have been reported in Bulls Bay, South Carolina and in Charlotte Harbor, Florida, by Hueter. In South Carolina, the sharks are found over shallow muddy bottoms, while in Florida, blacktip sharks are found over shallow, clear seagrass beds.

As temperatures warm in the spring or summer, blacktip sharks move north along the coast. Pups (neonates) are born in specific areas (e.g., estuaries or coastal habitats), and they typically remain in the same general area until the arrival of cooler temperatures in the late fall or early winter. At that time, they typically move offshore and/or southward, although the extent of these movements is not well defined. The following year, their seasonal movements change, more closely mimicking the migrations of the adults, until they join the adult migrations in subsequent years.

No essential fish habitat for the blacktip shark has been designated in Biscayne Bay, but essential fish habitat is included in Florida Bay and west of the Florida Keys.

Bull Sharks. The bull shark is a large, shallow water shark that is cosmopolitan in warm seas and estuaries. It often enters fresh water and may penetrate hundreds of kilometers upstream.

Nursery areas are in low-salinity estuaries of the Gulf Coast and the coastal lagoons of the east coast of Florida. Off the Florida West Coast, neonates were found in Yankeetown, Tampa Bay, and Charlotte Harbor from May to August. The neonates were found in temperatures of 28.2–32.2°C, salinities of 18.5–28.5 ppt. Juveniles have been found off the Florida West Coast in temperatures of 21.0–34.0°C, salinities of 3.0 to 28.3 ppt, and dissolved oxygen (DO) of 3.7–8.4 ml/l. Generally, bull sharks, while present in Biscayne Bay, would not use this area as a primary nursery ground.

Biscayne Bay is included in essential fish habitat for late juvenile/subadult bull sharks: shallow coastal waters, inlets and estuaries in waters less than 25 m deep, from Savannah Beach, Georgia at 32°N southward to the Dry Tortugas, Florida. Presumably, the habitat preference for the bull shark is the seagrass areas of the bay, and impacts on this habitat are described above for shrimp.

Lemon Sharks. The lemon shark is common in the American tropics, inhabiting shallow coastal areas, especially around coral reefs. It is reported to use coastal mangroves as some of its nursery habitats,

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although this is not well documented in the literature. The primary population in continental U.S. waters is found off south Florida, although adults stray north to the Carolinas and Virginia in the summer. Its nurseries are in shallow waters around mangrove islands off tropical Florida and the Bahamas. Lemon shark neonates have been found in Tampa Bay, Florida during May, at temperatures of 22.0° to 25.4° C, salinities of 26.8 to 32.6 ppt, and DO of 5.9 to 9.6 ml/l. Juveniles have also been found over a wider area off western Florida and in a wider range of temperatures and salinities.

Biscayne Bay has been designated essential fish habitat for all life stages of the lemon shark (neonates/early juveniles, late juveniles/subadults, and adults). Minimal impacts are expected from the Proposed Action and other alternatives on mangroves and coral reefs, but small, probably indiscernible impacts on seagrasses could occur through nutrient discharge. Available information, however, indicates that seagrass might not be an important habitat for this species.

Nurse Sharks. The nurse shark inhabits littoral waters in both sides of the tropical and subtropical Atlantic, ranging from tropical West Africa and the Cape Verde Islands in the east, and from Cape Hatteras, North Carolina to Brazil in the west. It is also found in the east Pacific, ranging from the Gulf of California to Panama and Ecuador. It is a shallow water species, often found lying motionless on the bottom under coral reefs or rocks. It often congregates in large numbers in shallow water.

Its nurseries are in shallow turtle grass (*Thalassia*) beds and shallow coral reefs. However, juveniles are also found around mangrove islands in south Florida. Numerous juveniles were found along the west coast of Florida, in temperatures of 17.5° to 32.1° C, salinities of 28.5 to 35.1 ppt, and DO of 4.7 to 9.7 ml/l. Large numbers of nurse sharks often congregate in shallow waters of the Florida Keys and the Bahamas at mating time in June and July. A small area has been set up for protection of mating sharks at Fort Jefferson in the Dry Tortugas. It is not certain, however, whether this area is a primary mating ground or a refuge for mated females.

Biscayne Bay is included in essential fish habitat all life stages (neonates/early juveniles, late juveniles/subadults, adults) for the nurse shark. Minimal impacts are expected from the Proposed Action and other alternatives on mangroves and coral reefs, but small, probably indiscernible impacts on seagrasses could occur through nutrient discharge.

Bonnethead Shark. The bonnethead is a small hammerhead that inhabits shallow coastal waters where it frequents sandy or muddy bottoms. It is confined to the warm waters of the western hemisphere. “Young of the year” and juveniles were found in the west coast of Florida, at temperatures of 16.1° to 31.5° C, salinities of 16.5 to 36.1 ppt, and DO of 2.9 to 9.4 ml/l.

Biscayne Bay is included in essential fish habitat for late juveniles/subadults of the bonnethead shark, but there is very limited sandy or muddy bottoms in this area, and impacts to these habitats from the Proposed Action and other alternatives are expected to be minimal.

5. SUMMARY

Biscayne Bay contains essential fish habitat that could be affected, but is unlikely to be appreciably affected by changes in nutrient and toxic chemical discharges associated with the Proposed Action and other alternatives. The greatest of the impacts would be associated with off-site secondary development induced by activities on the former base. The impacts of on-site development would be minimized through the implementation of a stormwater management system. Mitigating the impacts of the induced off-site development would require retaining and possibly treating the stormwater that would be generated by newly developed areas. This could only be accomplished through imposition of increased

controls by the South Florida Water Management District and Miami-Dade County's Department of Environmental Management. The Air Force and FAA do not have the means to implement mitigations outside the former base property.

Independent of the disposal and redevelopment of surplus property at former Homestead AFB, the Air Force is conducting a Feasibility Study to identify remediation measures for contaminated sediments in Military Canal.

6. REFERENCES

National Marine Fisheries Service. 1999. Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks. April.

South Atlantic Fishery Management Council. 1998. Final Habitat Plan for The South Atlantic Region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council (Shrimp; Red Drum; Snapper Grouper; Coastal Migratory Pelagics; Golden Crab; Spiny Lobster; Coral, Coral Reefs, And Live/Hard Bottom; Sargassum; and Calico Scallop). Charleston, SC. October.

USAF/FAA. 1999. Draft Supplemental Environmental Impact Statement Disposal of Portions of the Former Homestead Air Force Base, Florida. December.