

## **5.F.1 FISH, WILDLIFE, AND PLANTS**

### **5.F.1.1 Biotic Communities**

Section 7 of the Endangered Species Act (ESA), as amended, applies to Federal agency actions and sets forth requirements for consultation to determine if a proposed action could potentially affect a Federally-endangered or threatened species. If an agency determines that an action may affect a Federally-threatened or endangered species, Section 7(a)(2) of the ESA requires consultation with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS), as appropriate, to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any Federally-listed, endangered, or threatened species or result in the destruction or adverse modification of Critical Habitat. The description of the listed species and their potential presence within the Study Area is discussed in this section.

A Biological Assessment is to be prepared to determine whether a proposed action is likely to adversely affect listed species or designated Critical Habitat, jeopardize the continued existence of species that are proposed for listing, or adversely modify a proposed Critical Habitat. The preparation of a Biological Assessment is mandatory for major construction activities. The information and analysis necessary for a Biological Assessment for the runway development alternatives can be found in Section 6.F.1, *Fish, Wildlife, and Plants*, of this EIS. As a result of agency coordination with the NMFS, the FAA prepared a Biological Assessment in accordance with ESA Section 7 for species regulated by the NMFS. This document and agency coordination letters are included in Appendix M, *Biological Resources*.

Under Executive Order (EO) 13112, *Invasive Species* (February 3, 1999), Federal agencies are directed not to carry out proposed actions that are likely to cause or promote the introduction or spread of invasive species unless the benefits of such actions clearly outweigh the potential harm. Agencies are further instructed to use relevant programs, authorities, and resources to prevent the introduction of invasive species as a result of a proposed action, and provide for restoration of native species and habitat conditions in ecosystems that have been invaded. Invasive species are defined as those species whose introduction is known or is likely to cause economic or environmental harm to human health.

FLL is located in southeastern Broward County within a highly urbanized area. Although this part of the County has been largely altered by development, many species of native plants continue to exist in remnant habitats on or around FLL. Within the Detailed Study Area, many of the existing biotic communities, defined as vegetative associations and their associated wildlife, are limited man-made habitats, such as previously disturbed fields and grassy swales, and ditches used for stormwater conveyance and treatment. A review of historic aerial photographs indicated that the large mangrove wetlands to the east of FLL are the result of man's past land management practices (i.e., ditching, farming).

Dominant plant species were recorded and the general boundaries were determined for each sizeable plant community at FLL. Based on its composition, each plant community was classified using the Florida Land Use, Cover and Forms

Classification System (FLUCCS). The FLUCCS codes for the major biotic communities within the Detailed Study Area are listed in **Table 5.F.1-1, FLUCCS Biotic Community Land Cover**.

**Table 5.F.1-1  
FLUCCS BIOTIC COMMUNITY LAND COVER  
Fort Lauderdale Hollywood International Airport Detailed Study Area**

FLUCCS CODE	BIOTIC COMMUNITY DESIGNATIONS	SIZE IN ACRES
190	open land	58
241	tree nurseries	30
422	Brazilian pepper	44
436	upland scrub pine and hardwoods	46
510	streams and waterways	32
530	reservoirs	27
612	mangrove swamps	69
619	exotic wetland hardwoods	19
630	wetland forested mixed	4
640	vegetated non-forested wetlands	4
740	disturbed lands	32

Source: Florida Department of Transportation, Surveying and Mapping, Geographic Mapping Section, Handbook (January 1999).

Some areas represent a composite of FLUCCS codes due to habitat transition and succession. Other FLUCCS land cover types found within the Detailed Study Area were considered urbanized or otherwise impacted. These FLUCCS codes are listed in **Table 5.F.1-2, FLUCCS Urbanized Land Cover**. These man-made cover types provide limited ecological value and are not described in detail.

**Table 5.F.1-2  
FLUCCS URBANIZED LAND COVER  
Fort Lauderdale Hollywood International Airport Detailed Study Area**

FLUCCS CODE	URBANIZED LAND COVER DESIGNATION	SIZE IN ACRES
100	urban and built-up	171
1841	marinas [basins]	16
1851	city parks	30
811	airports	1269
812	railroads	32
814	roads and highways	243
815	port facilities	54

Source: Florida Department of Transportation, Surveying and Mapping, Geographic Mapping Section, Handbook (January 1999).

The various land cover types within the Detailed Study Area are graphically depicted in **Exhibit 5.F.1-1, Land Cover Within the Detailed Study Area Boundary Showing Biotic Community Types by FLUCCS Code.**

### **5.F.1.2 Invasive Plant Species**

Federal and state legal authority exists that address the introduction and subsequent control of invasive species. At the Federal level, the relevant laws and orders are the *Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990*,

<sup>1</sup> the Lacey Act,<sup>2</sup> the Federal Plant Pest Act,<sup>3</sup> the Federal Noxious Weed Act of 1974,<sup>4</sup> the Endangered Species Act of 1973,<sup>5</sup> and EO 13112, *Invasive Species*.<sup>6</sup> The provisions of the Florida Administrative Code (FAC) that address this are FAC 5B-57.007, *Noxious Weed List*, and FAC 62C-52.011, *Prohibited Aquatic Plants*.

The Florida Exotic Pest Plant Council's 2005 List (EPPC List) of Florida's Invasive Species was reviewed. This list categorizes invasive species as Category I or Category II. These invasive species are prohibited by the Florida Department of Environmental Protection (Florida DEP), defined as noxious weeds by the Florida Department of Agriculture and Consumer Services, and defined as noxious weeds by U.S. Department of Agriculture (USDA). Category I species are invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. Category II species are invasive exotics that have increased in abundance or frequency, but have not yet altered Florida plant communities to the extent shown by Category I species.

Several of these listed exotics were observed during field investigations conducted in the Detailed Study Area: Australian pine (*Casuarina equisetifolia*, *C. glauca*), bishopwood (*Bischofia javanica*), torpedo grass (*Panicum repens*), Brazilian pepper (*Schinus terebinthifolius*), seaside mahoe (*Thespesia populnea*), oyster plant (*Tradescantia spathacea*), Para grass (*Urochloa mutica*), sea hibiscus (*Hibiscus tiliaceus*), lead tree (*Leucaena leucocephala*), Senegal date palm (*Phoenix reclinata*), Chinese brake fern (*Pteris vittata*), castor bean (*Ricinus communis*), bowstring hemp (*Sansevieria hyacinthoides*), wedelia (*Sphagneticola trilobata*), and puncture vine (*Tribulus cistoides*). These species and others are good indicators of previously-disturbed habitats or those that are undergoing hydrologic change.

Some invasive species, such as Brazilian pepper, can dominate wetlands and lead to the degradation of wetland structure and function. Agencies regulating wetlands and wetland mitigation typically require that wetland mitigation areas be maintained free of invasive exotic pest plant species. The USDA Forest Service

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<sup>1</sup> 16 USC 4701 *et seq.*

<sup>2</sup> 18 USC 42

<sup>3</sup> 7 USC 150aa *et seq.*

<sup>4</sup> 47 USC 2801 *et seq.*

<sup>5</sup> 16 USC 1531 *et seq.*

<sup>6</sup> 64 Federal Register 6183 (1999)

Invasive Plants List<sup>7</sup> recognizes the Brazilian pepper as an invasive species. See Section 6J, *Conceptual Mitigation Measures Considered in the Draft EIS*, for a discussion of conceptual mitigation measures for the control of invasive and exotic plant species.

### **5.F.1.3 Vegetation**

The vegetative community types identified for this EIS are briefly described below by the assigned FLUCCS codes.

#### **5.F.1.3.1 OPEN LAND (190)**

To the west of FLL are parcels of land that have been previously impacted or disturbed by a variety of activities and are now left fallow. These areas are either infrequently mowed or maintained, or not maintained at all. In some cases, these parcels are relatively open, however, over time some are coalescing with mixed vegetation, often including ruderal<sup>8</sup> or exotic pest plant species. Consequently, these open spaces can still provide low quality habitat to a number of fauna typical of ruderal areas, and possible forage for transient birds.

#### **5.F.1.3.2 TREE NURSERIES (241)**

An active landscape nursery is situated to the east and southeast of Runway 27L and U.S. Highway 1. Elevated activity and maintenance within nurseries generally limit the habitat value of this land use type for nesting or sanctuary, but it could provide possible forage for migratory species. A portion of an existing tree nursery has been determined to be jurisdictional wetland (discussed in more detail in Section 6.E.2).

#### **5.F.1.3.3 BRAZILIAN PEPPER (422)**

A limited number of small dense stands of Brazilian pepper (*Schinus terebinthifolius*) were found within the limits of the Study Area. The dense nature of the canopy coupled with little or no ground cover reduces the habitat value of this community type. This plant is considered a Category I invasive exotic by the EPPC and as both a Prohibited and Noxious pest plant species by the State of Florida.

#### **5.F.1.3.4 UPLAND SCRUB, PINE AND HARDWOODS (436)**

This category represents an assortment of species found at several disturbed sites that have re-vegetated naturally. No pristine upland communities occur within or in the immediate vicinity of FLL. A few remnant stands of sparse native trees, such as live oak (*Quercus virginiana*), are found within the western portions of FLL. A tree association similar to a native hammock<sup>9</sup> — comprised of white stopper (*Eugenia*

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<sup>7</sup> The U.S. Department of Agriculture Forest Service Invasive Plants List is provided on the internet at: <http://www.fs.fed.us/database/feis/plants/weed/index.html>.

<sup>8</sup> Ruderal is defined as growing where the natural vegetation cover has been disturbed by humans.

<sup>9</sup> A hammock is defined as a fertile area that is usually higher than its surroundings and that is characterized by hardwood vegetation and deep humus-rich soil.

*axillaris*), wild coffee (*Psychotria nervosa*), and West Indian mahogany (*Swietenia mahagoni*) — is located near the southwest corner of FLL between the Dania Cut-Off Canal and the perimeter road.

#### **5.F.1.3.5 AUSTRALIAN PINE (437)**

The most significant stands of Australian pine (*Casuarina equisetifolia*) were found limited to small areas within the eastern Detailed Study Area boundary. These stands comprise a small component of available habitat, have little or no ground cover, and typically provide low habitat value. This plant is considered a Category I invasive exotic by the EPPC and as a Prohibited pest plant species by the State of Florida.

#### **5.F.1.3.6 STREAMS AND WATERWAYS (510)**

A series of catch basins, ditches, detention areas, canals, and other linear waterbodies comprise each of the main drainage basins that serve FLL. These include the Northern Basin, Eastern/Terminal Basin, Western Basin, and Ravenswood Watershed. The Dania Cut-Off Canal is the predominant waterway in the region and is located immediately south and parallel to FLL, and bends to the northwest near the western terminus of Runway 9R/27L. The canal flows are diurnally influenced by tide and seasonally affected by freshwater releases from upstream flood control structures.

These man-made water features provide habitat to a variety of aquatic species (i.e., Mayan cichlid [*Cichlasoma urophthalmus*], mullet [*Mugil sp.*]) and semi-aquatic animals (e.g., softshell turtle [*Apalone ferox*], red-bellied turtles [*Pseudemys nelsoni*]), as well as foraging areas for a variety of wading birds (i.e., green heron [*Butorides virescens*], common egret [*Ardea alba*]). Depending on their location, some of these features exhibit freshwater characteristics (bottoms populated with musk grass [*Chara sp.*], hydrilla [*Hydrilla verticillata*], and pond weeds [*Pontamogeton sp.*]), while others have salt or brackish water characteristics (bottoms populated with wigeongrass [*Ruppia maritima*]).

#### **5.F.1.3.7 RESERVOIRS (530)**

Reservoirs are artificial impoundments of water. Most are related to the stormwater conveyance or treatment systems that serve FLL or the surrounding roadway systems. A few larger water features appear to be former borrow pits. Generally steep-sided, they support limited woody or emergent wetlands along their shores but maintain an open-water character year-round. These reservoirs provide habitat to the same aquatic/semi-aquatic species described above in *Streams and Waterways (510)*.

#### **5.F.1.3.8 MANGROVE SWAMPS (612)**

The largest area of mangrove swamp (or mangrove forest/wetland) within the Detailed Study Area is located immediately east of FLL beyond NE 7<sup>th</sup> Avenue. Several small mangrove wetlands to the west of NE 7<sup>th</sup> Avenue appear isolated from the larger eastern mangrove system; a series of culverts were observed in the field that no longer provide surface water flushing or exchange. The mangrove systems

may have been connected by the existing on-airport drainage system and ultimately to the Dania Cut-Off Canal. Based on field work completed for this EIS, this connection no longer appears to be functioning.

In other areas, mangroves were found to be associated with the Dania Cut-Off Canal and the lesser man-made tributaries that comprise FLL's stormwater drainage. Dominant cover species observed within the mangrove forests were red mangroves (*Rhizophora mangle*) as the predominant mangrove species, white mangroves (*Laguncularia racemosa*), black mangroves (*Avicennia germinans*), and buttonwood (*Conocarpus erectus*). The larger forested areas generally had relatively low plant species diversity, typical of dense mangrove systems with little or no ground cover in the interior portions.

#### **5.F.1.3.9 EXOTIC WETLAND HARDWOODS (619)**

Brazilian pepper and, to a lesser extent, Australian pine characterize this wetland feature. Both the seaside mahoe (*Thespesia populnea*) and the sea hibiscus (*Hibiscus tiliaceus*) comprise one exotic dominated polygon and can be found thinly distributed through other wetland types. These two tree species are designated as Category I and Category II invasive exotics by the EPPC, respectively. Other native wetland tree and herbaceous species may be present, but are often out-competed by these and other exotic species. This cover type was relatively small and limited in distribution within the Detailed Study Area. Due to its monotypic nature, dense canopy, and location, such wetlands provide relatively low habitat value.

#### **5.F.1.3.10 WETLAND FORESTED MIXED (630)**

An isolated freshwater wetland created through wetland mitigation as part of a stormwater treatment system best represents this community type. Predominant woody wetland trees include pond cypress (*Taxodium ascendens*), swamp bay (*Persea palustris*), red maple (*Acer rubrum*), willow (*Salix caroliniana*), and pond apple (*Annona glabra*).

#### **5.F.1.3.11 VEGETATED NON-FORESTED WETLANDS (640)**

A variety of freshwater wetlands have evolved in association with man-made ditches and stormwater retention areas that have been constructed in and around FLL. Because these types of wetlands have a low frequency of inundation and are seldom flooded for extended periods of time, they can be periodically mowed and maintained. These freshwater wetlands are colonized by herbaceous plants resulting from periodic flooding of the associated low-lying areas. These wetlands are characterized by species such as spikerush (*Eleocharis spp.*), primrose willow (*Ludwigia spp.*), broomsedge (*Andropogon spp.*), arrowhead (*Sagittaria spp.*), flat-sedge (*Cyperus spp.*), and torpedo grass (*Panicum repens*), listed by EPPC as a Category I invasive plant; Para grass (*Urochloa mutica*), listed by EPPC as a Category I invasive plant; hurricane grass (*Fimbristylis cymosa*); cattail (*Typha domingensis*); and others.

### **5.F.1.3.12 DISTURBED LANDS (740)**

A variety of facilities and a number of grassy, ruderal areas are located within the Detailed Study Area. Some are actively maintained and mowed. While not a sensitive habitat, some do provide potential foraging for a variety of birds and other fauna, particularly those in association with drainage ditches and depressional areas that form a part of the FLL stormwater collection systems. Most disturbed lands are characterized by ruderal grasses and forbs such as smutgrass (*Sporobolus indicus*), common wireweed (*Sida acuta*), ragweed (*Ambrosia artemisiifolia*), and punctureweed (*Tribulus cistoides*), listed by EPPC as a Category II invasive plant; Spanish needles (*Bidens alba*); Mexican clover (*Richardia grandiflora*); crabgrass (*Digitaria spp.*); bristlegass (*Setaria spp.*); cheesytoes (*Stylosanthes hamata*); and others.

### **5.F.1.4 Wildlife**

The environs at FLL and the immediate surrounding areas offer relatively limited habitat to a number of animal species due to the heavily urbanized nature of the region. The majority of these species are typical for ruderal and urbanized areas in South Florida. Detailed lists of current and previously observed fauna, and those expected to occur within the FLL Study Area are provided in Appendix M, *Biological Resources*.

Species commonly observed during field surveys<sup>10</sup> included:

- mosquitofish (*Gambusia sp.*)
- topminnow (*Fundulus spp.*)
- Mayan cichlid
- mullet
- basilisk lizard (*Basiliscus vittatus*)
- green iguana (*Iguana iguana*)
- soft-shelled turtle
- red-bellied turtle
- Eurasian collared-dove (*Streptopelia decaocto*)
- rock dove (*Columba livia*)
- green heron
- cattle egret (*Bubulcus ibis*)
- common egret
- great blue heron (*A. herodias*)
- tri-colored heron (*Egretta tricolor*)
- little blue heron (*E. caerulea*)
- white ibis (*Eudocimus albus*)
- osprey (*Pandion haliaetus*)
- American coot (*Fulica americana*)
- common moorhen (*Gallinula chloropus*)
- double-crested cormorant (*Phalacrocorax auritus*)
- pied-billed grebe (*Podilymbus podiceps*)
- anhinga (*Anhinga anhinga*)
- boat-tailed grackle (*Quiscalus major*)
- kingfisher (*Ceryle alcyon*)
- red-winged blackbird (*Agelaius phoeniceus*)
- loggerhead shrike (*Lanius ludovicianus*)
- mockingbird (*Mimus polyglottos*)
- meadowlark (*Sturnella magna*)

<sup>10</sup> The field surveys conducted for this EIS occurred in November 2004.

A wood stork (*Mycteria americana*) was observed foraging in a roadside swale adjacent to U.S. Highway 1 immediately east of FLL and outside of the Detailed Study Area. The wood stork and other protected species are addressed in greater detail below, as well as in Chapter Six, *Environmental Consequences*, Section 6.F.1, *Fish, Wildlife, and Plants*.

### **5.F.1.5 Endangered and Threatened Species**

#### **5.F.1.5.1 LEGAL AND REGULATORY REQUIREMENTS**

**Federal:** The ESA, as amended, protects Federally-listed species, including species proposed for listing and their habitats. Section 7 of the ESA, as amended, sets forth requirements for consultation to determine if the proposed action “may affect” an endangered or threatened species. If an agency determines that an action “may affect” a threatened or endangered species, Section 7(a)(2) requires each agency, to consult with the USFWS or the NMFS, as appropriate, to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any Federally-listed endangered or threatened species or result in the destruction or adverse modification of Critical Habitat.

The USFWS coordinates activities for terrestrial and freshwater species protected under the ESA; while the NMFS is responsible for the management, conservation, and protection of living marine resources within the U. S. Exclusive Economic Zone<sup>11</sup> and coordinates activities and assessments that affect protected marine species including the small-toothed sawfish (*Pristis pectinata*) and Johnson seagrass (*Halophila johnsonii*).

**State:** The state list of species for wildlife is maintained by the Florida Fish and Wildlife Conservation Commission (FFWCC) under Florida Administrative Code (FAC) Rules 68A-47, while the Florida Department of Agriculture and Consumer Services (FDA) lists plants under FAC 5B-40.

#### **5.F.1.5.2 EXISTING CONDITIONS**

Due to urban built-up character of the area around FLL, natural communities and the wildlife they support are limited to upland areas within the Detailed Study Area. These habitats are comprised of grassy or landscaped berms, disturbed fields, grassy swales, and ditches used for stormwater treatment and conveyance. The mangrove swamp that is present east of FLL, while currently providing the structure and function of a natural wetland, is an artifact of previous agricultural impacts, ditching, and regionalized changes in water regimes.

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<sup>11</sup> The U.S. exclusive economic zone (EEZ) extends 200 nautical miles offshore, encompassing diverse ecosystems and vast natural resources, such as fisheries and energy and other mineral resources. The U.S. EEZ is the largest in the world, spanning over 13,000 miles of coastline and containing 3.4 million square nautical miles of ocean — larger than the combined land area of all fifty states. (A square nautical mile is equal to 1.3 square miles.) Source: [http://www.nmfs.noaa.gov/mediacenter/aquaculture/docs/12a\\_USCOP%20EEZ%20Map%203.pdf](http://www.nmfs.noaa.gov/mediacenter/aquaculture/docs/12a_USCOP%20EEZ%20Map%203.pdf).

With the few exceptions discussed below, the heavily altered condition of these habitat types indicates that the upland and wetland areas within the Detailed Study Area do not likely provide the natural habitats typically considered suitable for the wildlife and plant species listed in **Table 5.F.1-3, Protected Wildlife Potentially Present In Southern Broward County**, and **Table 5.F.1-4, Protected Plants Potentially Present In Southern Broward County**. Both lists were developed from existing available data and ongoing coordination with regulatory agencies.<sup>12</sup> No Federally-designated Critical Habitats, as described in the Federal Register, are listed or mapped within or near the Detailed Study Area.

### **5.F.1.5.3 LISTED SPECIES**

**Wildlife Species:** **Table 5.F.1-3, Protected Wildlife Potentially Present In Southern Broward County**, presents the Federal and state-listed wildlife species with a potential for occurrence within southern Broward County. This table was developed based on historic distribution records, review of the previously published documents for FLL, and field work conducted for this EIS. The list includes 27 animal species and summarizes their current protective status. Several of these species, have been observed in the region, but are not expected to be found within the Detailed Study Area, due to limited availability of suitable habitat. The potential impacts of the runway development alternatives on these species and/or their habitats are described in Chapter Six, *Environmental Consequences*.

The Dania Cut-Off Canal, a Broward County drainage canal and the predominant waterway in the region, borders FLL on the south and west. The water regime within the Dania Cut-Off Canal is influenced by tidal flows and provides limited habitat for the Federally-endangered West Indian manatee (*Trichechus manatus*).

Based on known accounts, the West Indian manatee has previously been sighted within the Dania Cut-Off Canal and within the shallow waters of West Lake, located approximately 1.5 miles southeast of the Detailed Study Area.

Recent accounts indicate that the Federally-endangered American crocodile (*Crocodylus acutus*) inhabits residential communities adjacent to West Lake Park. West Lake Park is a wetland preserve located about one mile southeast of the Detailed Study Area.

The smalltooth sawfish (*Pristis pectinata*), recently listed as Endangered by NMFS, was documented in the Florida Power and Light (FPL) discharge canal east of FLL (NMFS, 2006).<sup>13</sup> This fish species may be occasionally found within the reaches of the Dania Cut-Off Canal included in the Detailed Study Area.

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<sup>12</sup> *Federally-Listed and Candidate Species in Broward County Florida*; updated May 8, 2006. U.S. Fish and Wildlife Service. Phone conversation with John Wrublik, U.S. Fish and Wildlife Service; August 18, 2006. Florida Administrative Code Rules 68A-27.003, 68A-27.004 (wildlife); and 68A-27.005 Florida Administrative Code Rules 5B-40.0055 (amended 4-22-04) (plants).

<sup>13</sup> Summary of telephone conversation with and subsequent email from Shelly Norton, National Marine Fisheries Service (NMFS) and George Feher, Sandra Walters Consultants; July 24, 2006.

**Table 5.F.1-3  
PROTECTED WILDLIFE POTENTIALLY PRESENT IN  
SOUTHERN BROWARD COUNTY  
Fort Lauderdale-Hollywood International Airport**

Species		Designated Status <sup>A</sup>		Preferred Habitat General Description
Common Name	Scientific Name	Federal	State	
<b>FISH</b>				
Mangrove rivulus	<i>Rivulus marmoratus</i>	-	SSC	Mangrove forests in crab burrows, stagnant pools, sloughs, or ditches
Smalltooth sawfish	<i>Pristis pectinata</i>	E	Prohibited <sup>B</sup>	Estuaries and shallow coastal waters; brackish streams and canals
<b>REPTILES AND AMPHIBIANS</b>				
American alligator	<i>Alligator mississippiensis</i>	T (S/A)	SSC	Swamps, marshes, streams, rivers, lakes; sometimes brackish water habitats
American crocodile	<i>Crocodylus acutus</i>	E	E	Saltwater sections of rivers, lagoons, mangrove swamps; sometimes reservoirs
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T	T	All terrestrial habitats which have not suffered high density urban development; mosaic of upland and wetland habitats for foraging
Gopher tortoise	<i>Gopherus polyphemus</i>	-	T	Habitats with well-drained upland soils, including longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies, and coastal dunes, as well as grassy man-made pastures and fields
Gopher frog	<i>Rana capito</i>	-	SSC	Dry, sandy uplands, chiefly sandhill and scrub, that include isolated seasonally flooded wetlands or large ponds within about one mile
<b>BIRDS</b>				
American oystercatcher	<i>Hamaetopus palliatus</i>	-	SSC	Coastal isolated beaches, spoil islands, shell bars, salt marshes
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	T <sup>C</sup> (to be delisted)	Tall tree snags for nesting; waterbodies for foraging
Black skimmer	<i>Rhynchops niger</i>	-	SSC	Beaches, sandflats, inlets, and estuaries
Brown pelican	<i>Pelecanus occidentalis</i>	-	SSC	Coastal nearshore habitats, such as along beaches, sandbars, docks, spoil islands
Florida burrowing owl	<i>Athene cunicularias</i>	-	SSC	Native prairies and open herbaceous areas such as pastures, golf courses, fallow agricultural fields, vacant lots, airports, and athletic fields
Florida sandhill crane	<i>Grus canadensis pratensis</i>	-	T	Wet and dry prairies, small herbaceous wetlands
Kirtland's warbler	<i>Dendroica kirtlandii</i>	E	E	Migrates over Florida in late fall and spring; no Broward County records, extremely rare sightings in Florida
Least tern	<i>Sterna antillarum</i>	-	T	Sandy beaches of barrier islands and along isolated stretches of the mainland shore
Limpkin	<i>Aramus guarauna</i>	-	SSC	Rivers, lakes, and marshes with aquatic snails and bivalves
Little blue heron	<i>Egretta caerulea</i>	-	SSC	Canals, streams, rivers, lakes, marshes, saltwater habitats

**Table 5.F.1-3, Continued  
PROTECTED WILDLIFE POTENTIALLY PRESENT  
IN SOUTHERN BROWARD COUNTY  
Fort Lauderdale-Hollywood International Airport**

Species		Designated Status <sup>A</sup>		Preferred Habitat General Description
Common Name	Scientific Name	Federal	State	
Peregrine falcon	<i>Falco peregrinus</i>	-	E <sup>C</sup> (undergoing status reevaluation)	Open coastal wetlands such as saltmarshes, mudflats, sloughs, etc. that consistently attract abundant birds
Piping plover	<i>Charadrius melodus</i>	T	T	Ocean and barrier island beaches, mudflats, and sandflats
Roseate spoonbill	<i>Ajaia ajaja</i>	-	SSC	Marine tidal flats and ponds, coastal marshes, mangrove-dominated inlets and pools, and freshwater sloughs and marshes
Snail kite	<i>Rostrhamus sociabilis plubeus</i>	E	E	Freshwater marshes and the shallow vegetated edges of lakes (natural and man-made) with apple snails
Snowy egret	<i>Egretta thula</i>	-	SSC	Canals, streams, rivers, lakes, marshes, saltwater habitats
Southeastern American kestrel	<i>Falco sparverius paulus</i>	-	T	Open areas such as pastures, fields, open woodlands
Tricolored heron	<i>Egretta tricolor</i>	-	SSC	Canals, streams, rivers, lakes, marshes, saltwater habitats
White ibis	<i>Eudocimus albus</i>	-	SSC	Canals, streams, rivers, lakes, marshes, saltwater habitats
Wood stork	<i>Mycteria americana</i>	E	E	Freshwater and estuarine habitats, such as freshwater marshes and stock ponds, shallow, roadside or agricultural ditches, tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs
<b>MAMMALS</b>				
West Indian Manatee	<i>Trichechus manatus</i>	E	E <sup>C</sup> (to be reclassified to T)	Brackish streams and canals; estuaries and coastal waters

Notes

- A. SSC = Species of Special Concern; T = Threatened; E = Endangered; T(S/A) = listed as Similar in Appearance to a Threatened Taxon (American Crocodile); all statuses were verified July 2006 with Federal Register 50 CFR Part 17 and Florida Administrative Code Rules 68A-27.003, 68A-27.004 and 68A-27.005
- B. The smalltooth sawfish is protected by Florida Administrative Code Rule 68B-44.008 as a "prohibited" species.
- C. Reclassification will not occur until FFWCC approves a management plan for each species. Management plans have been completed for the bald eagle (September 2007), and West Indian manatee (April 2007), but both are still undergoing finalization and have yet to receive FFWCC final approval. Approval for the bald eagle management plan is expected February 2008. Finalization of the West Indian Manatee management plan, as well as the peregrine falcon reevaluation, is ongoing.

The Federally- and state-protected wood stork (*Mycteria americana*) was observed during a November 2004 site visit to FLL. It was foraging in a roadside swale adjacent to U.S. Highway 1 immediately east of FLL. The closest wood stork nesting area, as identified by the USFWS, is located approximately 14 miles to the northwest of FLL.<sup>14</sup> See Appendix M, *Biological Resources*, for the exhibit depicting the location of the wood stork core foraging area closest to FLL.

Potentially suitable nesting habitat for the Florida burrowing owl (*Athene cunicularia*), a state species of special concern, is present on-airport. The Florida burrowing owl was formerly reported to be nesting in open grassy areas associated with the runways at FLL. During field surveys conducted in November 2004, no evidence of burrowing owls or their burrows was observed within the airfield.<sup>15</sup>

**Plant Species:** Table 5.F.1-4, *Protected Plants Potentially In Southern Broward County*, presents the Federal- and state-listed plant species for southern Broward County with the potential for occurrence based on historic distribution records. This table lists 36 species and summarizes their current protective status. Several of these species, have been observed in the region, but are not expected to be found within the Detailed Study Area due to limited availability of suitable habitat. The impacts of the runway development alternatives on these species and/or their habitats are described in Chapter Six, *Environmental Consequences*.

Johnson's seagrass (*Halophila johnsonii*), a Federally-listed threatened species, is known to occur in the Intracoastal Waterway near where the Dania Cut-Off Canal enters it from the west (i.e., Nova University shoreline, Whiskey Creek), approximately two miles east of FLL. At the request of NMFS,<sup>16</sup> underwater observations were conducted on September 19, 2006 within the triangular waterbody associated with the Dania Cut-Off Canal, located off the west end of Runway 9R/27L. No submerged aquatic vegetation (SAV), including Johnson's seagrass, was observed. No verified observations of Johnson's seagrass have been made within the Detailed Study Area.

Of the state-listed plant species, only the royal palm (*Roystonea elata syn. Roystonea regia*) was observed in the Detailed Study Area during the field visits conducted for the EIS. The royal palms observed within the Detailed Study Area are located on a tree farm east of U.S. Highway 1. These palms are presumed to be farm-raised. The golden leather fern (*Acrostichum aureum*) is listed by the State of Florida as Threatened; although, only the congeneric species *A. danaefolium* was observed within the Detailed Study Area.

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<sup>14</sup> U.S. Fish and Wildlife Service, Allen D. Webb for Paul Souza, Field Supervisor South Florida Ecological Services Office. Letter to Virginia Lane, FAA Orlando Airports District Office, dated December 20, 2007. Reply to FAA letter dated December 6, 2007 regarding affect determinations for the Airport Sponsor's Proposed Action for species under USFWS jurisdiction.

<sup>15</sup> Carney, Stephen. Memorandum to File Fort Lauderdale Airport, Draft EIS, Subject No Observations Reported of the Burrowing Owl at FLL, September 20, 2005.

<sup>16</sup> Technical Memorandum to FLL EIS File from Stephen Carney; *September 19, 2006 Field Survey Within Triangular-shaped Dredged Lake Associated with Dania Cutoff Canal Immediately West of Fort Lauderdale-Hollywood International Airport (FLL), Broward County, Florida*. September 30, 2006.

**Table 5.F.1-4  
PROTECTED PLANTS POTENTIALLY PRESENT IN  
SOUTHERN BROWARD COUNTY  
Fort Lauderdale-Hollywood International Airport**

Species		Designated Status <sup>A</sup>		Preferred Habitat
Common Name	Scientific Name	Federal	State	General Description <sup>B</sup>
<b>DRY HABITATS</b>				
Largeflower false rosemary	<i>Conradina grandiflora</i>	-	T	Scrub, scrubby flatwoods, coastal strand, disturbed areas
Curtiss' hoarypea	<i>Tephrosia angustissima</i> var. <i>curtissii</i>	-	E	Coastal strand, beach dunes, pine rockland, ruderal
<b>MOIST HABITATS</b>				
Marsh's dutchman's-pipe	<i>Aristolochia pentandra</i>	-	E	Hammocks
Satinleaf	<i>Chrysophyllum oliviforme</i>	-	T	Hammocks, thickets, and pinelands
Florida silver palm	<i>Coccothrinax argentata</i>	-	T	Pine rocklands, hammocks, coastal strand
Guiana plum	<i>Drypetes lateriflora</i>	-	T	Hammocks
Skyblue clustervine	<i>Jacquemontia pentanthos</i>	-	E	Hammocks
Twinberry; Simpson's stopper	<i>Myrcianthes fragrans</i>	-	T	Hammocks
Giant sword fern	<i>Nephrolepis biserrata</i>	-	T	Mesic hammocks, roadsides, clearings, swamps
Pineland passionflower	<i>Passiflora pallens</i>	-	E	Hammocks
Florida Keys blackbead	<i>Pithecellobium keyense</i>	-	T	Hammocks, pinelands, sand dunes on beaches
Leafless-beaked ladies'-tresses	<i>Sacola lanceolata</i> (syn. <i>Stenorhynchos lanceolatus</i> )	-	T	Open pastures, roadside, wet pine flatwoods, sandhills
Lace-lip ladies tresses	<i>Spiranthes laciniata</i>	-	T	Swamps, marshes, flatwoods, wet sandy soils, shores
Abrupt-tip maiden fern	<i>Thelypteris augescens</i>	-	T	Hammocks, sides of lime sinks, abandoned phosphate mines
Hoopvine	<i>Trichostigma octandrum</i>	-	E	Disturbed areas, moist hammocks
<b>MOIST OR WET HABITATS</b>				
Many-flowered airplant	<i>Catopsis floribunda</i>	-	E	Tropical hammocks, cypress swamps
Nodding clubmoss	<i>Lycopodium cernuum</i>	-	C	Wet depressions, ditches, moist areas
Hand fern	<i>Ophioglossum palmatum</i>	-	E	Hydric hammocks/strand swamps in bases of cabbage palms
Cinnamon fern	<i>Osmunda cinnamomea</i>	-	C	All types of wetlands
Royal fern	<i>Osmunda regalis</i>	-	C	All types of wetlands
Star-scaled fern	<i>Pleopeltis astrolepis</i>	-	E	In swamps on pond apple
Southern matchsticks	<i>Phyla stoechadifolia</i>	-	E	Swamps, glades, low pinelands

**Table 5.F.1-4, Continued  
PROTECTED PLANTS POTENTIALLY PRESENT IN SOUTHERN BROWARD  
COUNTY  
Fort Lauderdale-Hollywood International Airport**

Species		Designated Status <sup>A</sup>		Preferred Habitat
Common Name	Scientific Name	Federal	State	General Description <sup>B</sup>
Yellow-flowered butterwort	<i>Pinguicula lutea</i>	-	T	Sandy-peat soils, pine flatwoods, seepage bogs, ditches, roadsides
Florida clamshell orchid	<i>Prosthechea cochleata</i>	-	E	Rockland hammocks, dome swamps, strand swamps
Swamp plume polypody	<i>Polypodium ptilodon</i> (syn. <i>Pecluma ptilodon</i> )	-	E	Hammocks and swamps
Florida royal palm	<i>Roystonea regia</i> (syn. <i>Roystonea elata</i> )	-	E	Rockland hammocks, shell middens, strand swamp; cultivated
Cardinal airplant; stiff-leaved wild pine	<i>Tillandsia fasciculata</i> var. <i>densispica</i>	-	E	Hammocks, cypress swamps, pinelands
Giant wild pine	<i>Tillandsia utriculata</i>	-	E	Hammocks, cypress swamps, pinelands
Soft-leaved wild pine	<i>Tillandsia valenzuelana</i>	-	T	Hammocks and swamps
WET HABITATS				
Golden leather fern	<i>Acrostichum aureum</i>	-	T	Low coastal hammocks, mangrove swamps, tidal marshes, sometimes on brackish ditch banks
Brown-hair comb fern	<i>Ctenitis submarginalis</i>	-	E	Cypress swamps, rockland hammocks, spoil banks
Florida butterfly orchid	<i>Encyclia tampensis</i>	-	C	Mangrove swamps, cypress/hardwood swamps and hammocks
Dingy-flowered star orchid	<i>Epidendrum anceps</i>	-	E	Rockland hammocks, cypress swamps, strand swamps, hammocks
Johnson's seagrass	<i>Halophila johnsonii</i>	T	-	Tidal deltas inside inlets, sandy shoals, and mouths of canals; at water depths from shallow intertidal to nine feet deep
ALL MOISTURE REGIMES				
Inflated wild pine	<i>Tillandsia balbisiana</i>	-	T	Hammocks, cypress swamps, pinelands, scrub
Twisted air plant	<i>Tillandsia flexuosa</i>	-	T	Shell ridges or mounds, hammocks, swamps, mangrove, pinelands, scrub

Notes A. T = Threatened; E = Endangered; all statuses were verified with Federal Register 50 CFR Part 17 and Florida Administrative Code Rules 5B-40.0055 (amended 4-22-04).

B. Sources for habitat information: Coile, Nancy. 2000. Notes on Florida's Endangered and Threatened Plants. Florida Dept. of Agriculture and Consumer Services. Bureau of Entomology, Nematology, and Plant Pathology – Botany Section. Contribution No. 38, 3rd edition, FNAI online field guide to the Rare Plants and Animals of Florida: <http://www.fnai.org/FieldGuide>, USF Atlas of Vascular Plants. USF Institute for Systematic Botany: <http://www.plantatlas.usf.edu>, record of vouchered specimens of listed plants for Broward County.

### **5.F.1.6 Essential Fish Habitat**

The Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) were made final January 17, 2002 (67 FR 2343). As defined in that final rule, EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of EFH, "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle. In Section 303(a)(7) of the amended Magnuson-Stevens Act, Congress directs the NMFS and the eight regional Fishery Management councils, under the authority of the Secretary of Commerce, to:

- Describe EFH and identify EFH in each fishery management plan,
- Minimize to the extent practicable the adverse effects of fishing on EFH, and
- Identify other actions to encourage the conservation and enhancement of EFH.

The South Atlantic Fisheries Management Council (SAFMC) has developed a listing of species' complexes for which Fishery Management Plans (FMPs) have been developed. These include the snapper-grouper complex (inclusive of triggerfish, jacks, grunts, snappers, tilefish, groupers, porgies, and wrasses), coastal migratory pelagics, dolphin wahoo, spiny lobster, shrimp, sargassum, coral, coral reefs, and live/hard bottom habitat.

The SAFMC has developed a listing of current EFH designations and the FMPs to which they pertain. Those habitats identified by SAFMC and that may be found within or in close proximity to the Detailed Study Area include:

- Tidal freshwater (palustrine) (Shrimp, Red drum)
- Estuarine and marine emergent wetlands (e.g., intertidal marshes) (Shrimp, Red drum, Snapper-Grouper)
- Tidal palustrine forested areas (Shrimp)
- Estuarine scrub/shrub (mangroves and mangrove fringe) (Shrimp, Red drum, Snapper-Grouper, Spiny lobster)
- Estuarine and marine submerged aquatic vegetation (e.g., seagrass) (Shrimp, Red drum, Snapper-Grouper, Spiny lobster)
- Subtidal and intertidal non-vegetated flats (Shrimp)
- Oyster reefs and shell banks (Red drum, Snapper-Grouper)
- Unconsolidated bottom (Red drum, Snapper-Grouper, Spiny lobster)

These habitats may occur within the man-altered mangrove wetlands to the east of FLL and within the Dania Cut-Off Canal that flanks the airport to the south and the west.

Section 305(b)(2) of the Magnuson-Stevens Act requires Federal action agencies to consult with NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH. The consultation process can be integrated into existing environmental review procedures in accordance with the National Environmental Policy Act (NEPA) of 1969, ESA, or Fish and Wildlife Coordination Act. NMFS provides the Federal agency with EFH Consultation Recommendations for any action that would adversely affect EFH. These recommendations are advisory in nature. See Section 6.F.1.5 of this document for the EFH Assessment for the runway development alternatives. As a result of agency coordination NMFS, the FAA prepared additional information for the EFH Assessment for species regulated by the NMFS. This document and agency coordination letters are included in Appendix M, *Biological Resources*.