Tampa Port Authority

Sovereign Lands Management Initiatives Grant Program


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Frontispiece: American Oystercatchers roosting on Berth 220, Port of Tampa (credit: Florida Coastal Islands Sanctuaries Program, September 26, 2008).
I EXECUTIVE SUMMARY

American Oystercatchers are a rare shorebird in North America. The North American east coast population estimate is 11,000 birds. The Atlantic coast and Texas gulf coast wintering population estimate is 10,971 ± 298 birds. Greater than 25 oystercatchers winter in each of four Christmas Bird Count (CBC) circles in the Tampa Bay area. American Oystercatchers warrant conservation planning because they have low population size, widespread habitat loss, many threats during the breeding and non-breeding seasons, and are a “Species of Special Concern” in Florida (Florida Fish and Wildlife Conservation Commission 2006).

The purpose of this study was to characterize the wintering population of American Oystercatchers in Hillsborough Bay using systematic surveys of oystercatcher flocks, determine the wintering population distribution, and map oystercatcher winter roosting sites. The study is based on results from 18 years (1990-2008) of systematic surveys by the Florida Coastal Islands Sanctuaries for wintering American Oystercatchers.

Historically, American Oystercatchers and other wintering shorebirds used Pinellas County barrier island beaches, oysterbars, and shoreline habitats in Tampa Bay before development made portions of Pinellas and Tampa Bay’s shorelines unsuitable as wintering habitat. Wintering habitats for shorebirds and oystercatchers in Hillsborough Bay are limited because development has made much of the possible wintering habitat unusable.

Oystercatchers were observed on 64 sites on coastal shorelines, island beaches, and exposed oysterbars. Wintering oystercatcher behavior was strongly related to tide height. At low tides, oystercatchers dispersed throughout the bay to forage on exposed oysterbars. At high tide, they roosted on protected sites. The most important roost sites in Hillsborough Bay are:

- the north bay are Berth 220, the CSX loading dock, and Davis Island breakwater;
- the middle bay, Fantasy Island and the Alafia Bank were consistently important winter roost sites;
- the southeast bay, the Kitchen region Green Key and Whiskey Stump Key Bird Sanctuaries, Audubon’s posted bird sanctuaries, provide important foraging habitat;
- the south bay, large flocks of roosting oystercatchers (groups ranging 9-79) sat on the Mosaic Fertilizer LLC seawall in the Port Redwing basin at high tide.

Management recommendations for protecting wintering American Oystercatchers in Hillsborough Bay.

- Identify and protect emerging habitats in Hillsborough Bay.
- Secure “Critical Wildlife Area” status for Sunken Island.
- Post Fishhook Spoil Island with Tampa Port Authority “No Trespassing” and “No Landing” signs.
- Coordinate all dredging, survey, and marine construction projects through the Migratory Bird Protection Committee on spoil islands in Hillsborough Bay to protect and reduce disturbance to roosting oystercatchers.
- Install oyster bar habitat for wintering and foraging oystercatchers in areas with low wave energy near known oystercatcher territories.
- Band the resident breeding oystercatchers so individual resident and migrant birds can be identified.
INTRODUCTION

American Oystercatchers are a rare shorebird in North America. Six subspecies have been described, of which two or five subspecies are currently recognized. The eastern race, *Haematopus palliatus palliatus*, is a large, conspicuous shorebird that inhabits coastal islands and salt marshes, and occurs in the largest concentrations along the Atlantic coast of the United States from Massachusetts to Florida, along the Gulf of Mexico coast to Texas, in Central America to southern Brazil, the West Indies, and Pacific Central America (Nol and Humphrey 1994). The breeding range has expanded since about 1940 and oystercatchers now nest in New England, from where they were extirpated in the mid-1800s, south through the gulf coast (Post and Raynor 1964, Lauro and Burger 1989). The North American east coast population estimate is 11,000 birds.

The South Atlantic Migratory Bird Initiative plan sets population targets to maintain or increase populations of high priority species based on current estimates of population levels (Watson and McWilliams 2004). The plan assumes that current estimates of breeding populations are close to the true values, and that ornithologists can anticipate the appropriate oystercatcher population level necessary to ensure long-term species survival.

The population of American Oystercatchers on the eastern coast of the United States winters regularly on the Atlantic and Gulf coasts from New Jersey through North Carolina, with many wintering birds occurring in Virginia, North and South Carolina, south to southeastern Mexico, and on the west coast from Baja California to South America (Nol and Humphrey 1994). The Atlantic coast and Texas gulf coast wintering population estimate is 10,971 ± 298 birds (Brown et al. 2005). Oystercatchers in latitudinal extremes are thought to be truly migratory, while those in the mid latitudes are short distance, partial migrants, but movements of 2,000 km have been documented. Along the Atlantic coast most birds breeding north of New Jersey move south during the winter. Birds in the southern portion of the species’ range, South Carolina and south, are resident and remain near their breeding regions over the winter (Brown et al. 2005).

In the southeastern United States, Christmas Bird Count (CBC) data show oystercatcher populations wintering annually along the Atlantic and Gulf coasts from North Carolina through Alabama (National Audubon Society 2002). Most wintering flocks are concentrated near Cape Romano, South Carolina, and Nassau Sound, Cedar Key, and the Tampa Bay area in Florida. South Carolina supports the largest number of wintering oystercatchers, estimated to be about one-third of the eastern U.S. population (Sanders et al. 2004). Migrant oystercatchers from states north of Florida have been reported dispersing to and wintering on the Florida gulf coast on the islands of Cedar Key and the Lower Suwannee River in Levy County, the Cross Florida Barge Canal and Citrus County power plant spoil islands in Citrus County, at Ft. DeSoto and other beaches in Pinellas County, and in Hillsborough Bay (A. B. Hodgson and A. F. Paul, Florida Coastal Islands Sanctuaries, pers. comm., P. & D. Leary pers. comm., Brown unpubl. data 2003, S. Schulte unpubl. data, National Audubon Society 2002). Greater than 25 oystercatchers wintered in four CBC circles in 2002-2003 in the Tampa Bay area (Figure 1).

Figure 1. Observations of wintering American Oystercatchers recorded in Christmas Bird Count surveys in eastern North America (National Audubon Society 2002).
Wintering groups move to areas where adequate forage will be available over the winter so that the birds will be in prime breeding condition the next spring when they move back onto their nesting territories. Since they forage on oysters and associated marine invertebrates, oyster shell rakes and oyster bars are highly important habitats in the mid-Atlantic and southeast where they are used by nesting and wintering oystercatchers (Wilke et al. 2005, Murphy and Sanders n. d., B. Winn unpubl. data), and serve as roost sites for the majority of wintering flocks (Brown et al. 2005, P. and D. Leary pers. comm.).

Figure 2. American Oystercatchers roosting on a spoil island at the Crystal River Power Plant intake channel, Crystal River, Florida (photo: Pat Leary, January 3, 2009).

After aggressively defending territories against other pairs throughout the breeding season, paired oystercatchers begin to form small flocks with other oystercatchers in late summer into fall. In some cases, wintering groups with more than 500 individuals have been reported, but flock size may vary once they reach their wintering grounds. These flocks are commonly a mix of birds in full adult plumage, three years or older, and immature birds with dusky-tipped bills, presumed to be first or second year birds. The proportion of adult to immature birds is variable. In South Carolina, flocks had 0-20% immature birds. While oystercatchers do not seem to form groups based on age, it is poorly understood if flocks are divided by sex because of the phenotypic similarity between male and female birds (Sanders et al. 2004).

2.1 Management Status of American Oystercatchers

Due to its apparently declining population, the American Oystercatcher is listed as a “Species of High Concern” in the U. S. Shorebird Conservation Plan (Brown et al 2001). The oystercatcher was placed on the ‘Watchlist’ (Butcher et al. 2007), a listing that is compiled by scientists affiliated with ‘Partners in Flight’, a national avian conservation partnership among U. S. governmental agencies and private organizations, that calls attention to birds whose populations are declining and are at risk before they require federal listing, stressing preventative action to increase populations and survival today, over last-minute species rescue attempts in the future. The ‘Watchlist’ targets bird species with declining populations, limited ranges, and facing threats such as habitat loss on their breeding, migrating, and wintering grounds.

Oystercatchers are one of the rarest and most vulnerable coastal nesting bird species in Florida, and are listed as a “Species of Special Concern” on the Florida Fish and Wildlife Conservation Commission’s (FWC) List of Endangered, Threatened, and Species of Special Concern (Florida Fish and Wildlife Conservation Commission 2006). The state population was estimated at 300-350 pairs statewide in the early 1990s and 400 pairs following a statewide survey conducted in 2001 (Douglass and Clayton 2004, Paul and Below 1991). Regional surveys show that 120 pairs (approximately 30% of the known state nesting population) breed in the Tampa Bay area. About 80 pairs (20% of the population) nest annually on the dredged spoil material islands that were constructed in Hillsborough Bay from the 1930s through the 1980s (Douglass and Clayton 2004, Hodgson et al. 2008).

Conservation threats to American Oystercatchers include coastal development and infringement on historically occupied habitats, human disturbance from increased coastal recreation, nest overwash from commercial shipping traffic, anthropogenically facilitated increases in mammalian and herptile predators, and toxic contaminants.
American Oystercatchers warrant conservation planning for several reasons:

1. Low population size: The North American east coast population is estimated at 11,000 birds (Brown et al. 2005);
2. Widespread habitat loss: Oystercatchers are restricted to a narrow range of coastal habitats and development of barrier islands and coastal marshes is diminishing their habitat;
3. Threats during the breeding and non-breeding seasons: In addition to direct habitat loss, populations face pressure from recreational disturbance (human disturbance of nesting oystercatchers on beaches causing nest failure, loss of eggs, and death of chicks, resulting in reproductive failure across large sections of the species’ range), increases in nest predators, potential contamination of food resources, and alteration of habitat through beach stabilization and renourishment practices.

2.2 Hillsborough Bay Habitats

Historically, American Oystercatchers and other wintering shorebirds used Pinellas County barrier island beaches, and oysterbars and shoreline habitats in Tampa Bay before development and associated disturbances made portions of Pinellas and Tampa Bay’s shorelines unsuitable as wintering habitat. Roost sites without mammalian predators were the most important areas. Hillsborough Bay shorelines were used less because they were not as isolated as Pinellas County barrier island beaches and had more predators and disturbance. As residential and industrial development spread along the bay’s shorelines, much of the coastal habitat was dredged or filled, and good foraging and roosting habitats were lost forever.

Hillsborough Bay originally had several natural island features that possibly provided oystercatcher wintering habitat. Grassy Key, and islets around it, was a large island offshore of the Hillsborough River shoreline where the Davis Islands are now located. These islands were buried in the 1920s with dredged spoil material from the Tampa Bay shipping channel as the Davis Islands were built. Green Key and Whiskey Stump Key are in the southeastern bay, an area referred to as the “Kitchen”. The islands, and several small mangrove keys around them, remain unchanged.

Wintering habitats for shorebirds and oystercatchers in Hillsborough Bay are currently constrained to limited areas because anthropogenic development has made much of the possible wintering habitat on the bay shoreline generally unusable from shoreline development and human disturbance. McKay Bay has been always valuable oystercatcher habitat (Florida Department of Community Affairs 1995). The Licata Causeway bifurcated McKay Bay in the 1920s, and the southern portion of McKay Bay, now known as East Bay, is a very industrialized port with seawalls, port facilities and deep shipping channels that are regularly maintenance dredged. The upper portion of McKay Bay remains less altered, but seawalls were constructed along the Palmetto Beach shoreline and the City of Tampa filled a peninsula into the bay to build the city’s trash incinerator on the northwest shoreline. Oyster bars and shallow mud flats remaining in the upper part of the bay are extremely important foraging areas for oystercatchers and other shorebirds (Florida Department of Community Affairs 1995). The channels around Davis Island and downtown Tampa are extensively developed and the shoreline is rimmed with a seawall. Davis Island and Harbor Island are residential developments, while neighboring Hooker’s Point, Pendola Point, Port Sutton, and East Bay Channel are industrial areas within the Port of Tampa. Most of the port’s shoreline is armored with concrete berths or riprap.

The dredged spoil material island features now present in Hillsborough Bay were created from the 1920s through the 1980s. The shipping channel into the Port of Tampa was first deepened in the 1920s, and a series of small dredged spoil material islands were deposited running parallel to the channel towards the port. These small islands persisted until the 1970s when the U. S. Army Corps of Engineers, in cooperation with the Tampa Port Authority, built two dredged spoil material islands (Spoil Island 2D to
the north, and Spoil Island 3D to the southwest) as deposit sites for material dredged as the Tampa Shipping Channel was deepened.

The Alafia Bank was built from dredged spoil material first pumped in 1929 when the lower reach of the Alafia River was straightened as a shipping channel to connect with the main shipping channel into the Port of Tampa. It was enlarged periodically as the Alafia shipping channel was widened, deepened, and maintenance dredged, and now includes the eastern island (Bird Island) connected by an eroding sand spit to the western island (Sunken Island) built beginning around 1970. Sunken Island was enlarged in the mid-1980s with the addition of the Sunken Island Extension on the west end, and the Extension became an important roosting site for wintering and migrating birds in Hillsborough Bay, especially oystercatchers. Bird Island is a Florida Fish and Wildlife Commission designated “Critical Wildlife Area” and supports large shorebird flocks on the eastern sandbar at low tide. The narrow shorelines of both islands are also valuable foraging sites for oystercatchers.

Southeast of Spoil Islands 2D and 3D, a chain of islands built in the 1970s as Port Redwing was constructed and the Big Bend ship channel was dredged are now eroded below low tide except for Pine Island (also known locally as “Beer Can Island”), owned jointly by Imperial Island LLC and the Tampa Port Authority, and the Tampa Port Authority’s Fishhook Spoil Island. Adjacent to Fishhook Spoil Island, the jetty built from the old Gandy bridge concrete piers to separate the hot water return flow from the TECO intake provides roosts at all tide stages.

The Apollo Beach “hammerhead” was filled in the early 1960s, but the dredged spoil material beaches created by the massive dredging project developed slowly for the next 30 years, and its beach provided roosting habitat until residential development with seawalls and disturbance increased (Figure 3).

Figure 3. Dredging construction of the Apollo Beach “hammerhead” in 1960 (left) and c. 1964 (photos courtesy of Gandy Aerial Photography, from the Sandy Gandy Historical Archives).

Wintering American Oystercatchers have been observed regularly in Hillsborough Bay, but their population dynamics and behaviors have not been previously described. The purpose of this study was to characterize the wintering population of American Oystercatchers in Hillsborough Bay using systematic surveys of oystercatcher flocks, determine wintering population distribution, and map oystercatcher winter roosting sites. Our study presents an analysis of habitat use and provides management recommendations for wintering oystercatchers.
2.3 Study Area

The study area included four sections of Hillsborough Bay, and the outer shoreline of the Apollo Beach “hammerhead” in the Middle Tampa Bay segment of Tampa Bay, Florida (Lewis and Estevez 1988; Figures 4, 5):

1. the north bay: McKay Bay, East Bay, Harbor Island, Davis Island, Port of Tampa channels, Davis Island, Port Sutton, and Pendola Point;
2. the middle bay: Spoil Islands 2D and 3D, Fantasy Island, and the Richard T. Paul Alafia Bank Bird Sanctuary (Bird Island and Sunken Island);
3. the southeast bay: the “Kitchen”, Green Key Bird Sanctuary, Whiskey Stump Key Bird Sanctuary, and mangrove islets;
4. the south bay: Fishhook Spoil Island, the TECO jetty, Mosaic Fertilizer LLC loading facility, and Apollo Beach.

Figure 4. Tampa Bay estuary; Hillsborough Bay is the northeastern bay.

3 METHODS

3.1 Field Surveys

We surveyed wintering American Oystercatchers from 1990-2008 by cruising in boats and observing oystercatchers with binoculars and spotting scopes as they roosted on island beaches or shoreline features. We defined the post-nesting period as August 15-October 30, and the wintering period as November 1-March 15, but aggregated the periods as “wintering” for this study. On each survey, we recorded locations, numbers of individuals, behaviors, and descriptions of roosting and foraging habitats of wintering birds. We conducted surveys from 1990-2006 incidentally to other work and did not cover the entire bay on each survey.

In 2007 and 2008, we conducted weekly surveys over a range of diurnal times and tides. From December 3, 2007 to March 1, 2008, we searched Spoil Islands 2D and 3D, the Alafia Bank, the Kitchen, Fishhook Spoil Island, and the TECO Jetty during low to mid-tides and counted oystercatchers foraging on exposed oyster beds and shell rakes. We modified our survey method to obtain counts of maximum flock size by searching between one hour before and after high tide, when foraging habitats were submerged and the oystercatcher flocks were concentrated onto higher and more isolated roosts in the north and south ends of the bay, and added the port facilities and the Davis Island Airport, boat ramp, and seaplane basin as study areas. In winter 2008, we surveyed roost sites from August 25, 2008 to December 30, 2008, beginning when most birds in the Tampa Bay area had completed nesting and begun to form winter flocks.

3.2 Roost Site Identification

We compiled field notes accumulated during the study period using Microsoft Excel 2003 software (Redmond, WA), and mapped roost site locations occupied at least once by overlaying them on a base map of high altitude aerial photographs (Google Earth 2008).
Summer 2008

This map is intended as a handy guide to some of the wonderful wildlife and places of Hillsborough Bay. Whether you are fishing, picnicking, sailing or just plain enjoying the water, we hope you will use it to increase your awareness and appreciation of the islands, wildlife, shorelines and special places of the bay.
3.3 Animal Welfare Protocols

We did not capture or restrain oystercatchers during our research (Sherwin 2006).

4 RESULTS

4.1 Roosting Sites

Oystercatchers were observed on 64 sites on coastal shorelines, island beaches, and exposed oysterbars (Figure 7). Wintering oystercatcher behavior was strongly related to tide height. At low tides, oystercatchers dispersed throughout the bay to forage on exposed oysterbars at McKay Bay, East Bay shoreline (Berths 150-152), Harbor Island, Port Sutton, Pendola Point, Spoil Islands 2D and 3D, Fantasy Island, the Alafia Bank, Green Key, Whiskey Stump Key, the small bars in the Kitchen, and Fishhook Spoil Island. As the tide rose, they moved from oyster bars being inundated by the rising tide to still exposed oyster bars, and at highest tides to preferred roosts remaining above water. In the north bay, the
largest flocks were observed on Port of Tampa Berth 220 at the main port on the east side of the Cut D Channel, and the CSX berth in East Bay. In the middle bay, the Alafia Bank was a consistently important winter roost site. In the southeast bay, the Kitchen is an important foraging area, and the Mosaic Fertilizer LLC seawall in the Port Redwing basin supported very large flocks of roosting oystercatchers.

Figure 7. Locations of American Oystercatcher winter roosting and foraging sites in Hillsborough Bay (photo: Google Earth 2008).

4.2 Wintering Populations

From 1990-2006, we conducted 69 surveys (1,552 oystercatchers) and flocks of wintering oystercatchers ranging up to 70 birds were observed (Table 1). Most of these surveys were at the Alafia Bank. During 2007 and 2008, we conducted 27 surveys and observed 1,393 oystercatchers. In 2007 and 2008, the largest flock was 54 individuals observed in the Kitchen (December 20, 2007) and 98 individuals at the “Channels” site (November 14, 2008) (Table 1, Figure 7). We observed more oystercatchers and larger flocks in winter 2008 than in winter 2007 as we timed the surveys to the high tide. In these two winters, dusky-tipped bill individuals accounted for 12.4-12.7% of observed birds (n=56 surveys, individuals aged=93%, dusky-tipped bills=12.4%; in 52/56 surveys, individuals aged=100%, dusky tipped bills=12.7%).
Table 1. Summary of surveys conducted at 14 study sites from 1990-2008.

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</table>

4.2.1 North Hillsborough Bay

The northern section of Hillsborough Bay includes McKay Bay south to Pendola Point. McKay Bay and East Bay (the shoreline along Berths 150-152) provide foraging on oysterbars in shallow areas. In the Harbor Island channel, the riprap face at the northeast end of the island and the 400 m long riprap breakwater along the east face of the island were commonly used roosts. These sites are emergent at normal high tides, and oystercatchers commonly foraged on the oysterbars around the breakwater (Figures 8 a, b).

Figures 8 a, b. Harbor Island roost sites; overview of Harbor Island (a); close view of the 400 m long riprap breakwater running along the east shoreline (b).

The Harbor Island oyster bars are exposed only during a very low tide; however, when exposed, mixed flocks of wading birds and shorebirds foraged along the oyster bars and flats behind them (Figure 9).

Figure 9. Foraging shorebirds on the oysterbars along the east side of Harbor Island in the Sparkman Channel.
At high tides, the most frequently used wintering roosts were on the breasting dolphins, docks, and riprap shorelines at the Port of Tampa, especially Berth 220 and the CSX terminal (Figures 10 a-b). Berth 220 and the CSX terminal provide relatively secure roost sites because they are buffered from frequent disturbance by the channel security zones that exclude the public and the majority of port traffic.

Berth 220 frequently supports 50-100 roosting oystercatchers, and birds have been observed resting on the dolphins when a cargo ship is in port and being loaded or unloaded (Figures 11 a, b). Both adults and juveniles (dusky bills) were observed roosting on the breasting dolphins, and the oystercatcher flocks are often joined by other species of roosting birds such as Brown Pelicans *Pelecanus occidentalis*, Royal Terns *Thalasseus maximus*, Laughing Gulls *Larus atricilla*, Ring-billed Gulls *Larus delawarensis*, Willets *Tringa semipalmata*, Ruddy Turnstones *Arenaria interpres*, and shorebirds (sandpiper species, Sanderlings *Calidris alba*, Short-billed Dowitchers *Limnodromus griseus*, and Dunlin *Calidris alpine*).

Oystercatchers roosted on the wave break on the southeast end of Davis Island, the riprap shoreline that protects the Davis Island Yacht Club and the seaplane basin, and the riprap on the west shoreline facing the seaplane basin channel (Figure 10 b). Riprap exposed during high tides in the seaplane basin provides a roosting site for these birds, and these areas were the highest elevation and least disturbed by human activity sites in the bay at high tide. The Davis Island boat ramp breakwater at the City of Tampa park on the east side of Davis Island also supported roosting flocks of 10–20 oystercatchers, and oystercatchers
foraged frequently on the riprap along the shorelines of Peter O. Knight Airport and the seaplane basin during low tides.

At Pendola Point, the promontory is edged with small clusters of mangroves perched above a rocky beach surrounded by small oysterbars. The point is isolated and provided roosting and foraging.

Oystercatchers also foraged occasionally at low tide where oysters occurred along the concrete seawall bordering Bayshore Boulevard, running south to MacDill Air Force Base (AFB) along the western shoreline of Hillsborough Bay. On MacDill AFB, oystercatchers roost in large numbers (up to 200 birds) on the base beach and forage on the Catfish Point and Gadsden Point riprap and oysterbar shorelines (J. Kirkpatrick, Del-Gen, pers.comm.).

4.2.2 Middle Hillsborough Bay

The two large dredged spoil material islands in Hillsborough Bay, Spoil Island 2D to the north and 3D to the south, are very important sites for breeding oystercatchers, offering oystercatchers a range of habitats including shoreline beaches, mangrove forests, and mudflats on the interior, but have proven to be less important as wintering oystercatcher habitat (Hodgson et al. 2008). Some wintering oystercatchers foraged during low tide where oysters occurred along the eastern shoreline and southeastern bar. Wintering oystercatchers used Fantasy Island regularly, even though it is open to the public year-round. They roosted on the pier on the northern shoreline and foraged at low tide on the experimental oysterbars on the south side of the island (Figures 12 a, b).

Figures 12 a, b. American Oystercatcher roosting sites on Spoil Island 2D and Fantasy Island (a), and 3D (b).

The Richard T. Paul Alafia Bank Bird Sanctuary consistently supports wintering oystercatchers. Bird Island, to the east, features a prominent sandbar that stretches up to 800 feet eastward towards the mainland at low tide, and is exposed normally through most phases of the tide. Oystercatchers forage and roost there. In addition to the oystercatchers, American White Pelicans *Pelecanus erythrorhynchos*, terns, gulls, and other wintering shorebirds (Marbled Godwits *Limosa fedoa*, sandpiper species, Dunlin, Willets, plover species, and Short-billed Dowitchers) roost and forage on the bar throughout the winter. Oystercatchers also roost on the extension bar and the southern shoreline on the western end of Sunken Island Alafia Bank. This roost provides a more sheltered location than shorelines on the north side of the Alafia Bank and flocks of wintering oystercatchers regularly roost there (Figures 13 a, b).

Oysterbars at the mouths of Delaney Creek Popoff and Archie Creek, and on the shallow flats in front of the Mosaic Fertilizer LLC closed gypsum stack and the South Parcel also provide some foraging.
4.2.3 Southeast Hillsborough Bay

South of the Alafia Bank, a complex of small mangrove islands, oyster bars, and mudflats are speckled through the Kitchen. American Oystercatchers tend to congregate on three oysterbars just east of Green Key at low and mid-tide. These oysterbars are generally isolated and free from disturbance because the shallow seagrass beds and mudflats surrounding them limit approach by boaters and fishermen.

Green Key and Whiskey Stump Key Bird Sanctuaries, Audubon’s two natural mangrove islands, both posted bird sanctuaries, provide foraging habitat on their mangrove roots and oysterbars (Figure 14 a).

4.2.4 South Hillsborough Bay

South of the Kitchen, the seawall along the west end of the Port Redwing shoreline, Fishhook Spoil Island, the Mosaic Fertilizer LLC shipping docks, and the TECO jetty are used regularly by roosting oystercatchers. The largest flocks of oystercatchers (groups ranging 9-79) observed in south Hillsborough Bay sat on the Mosaic seawall at high tide. The shoreline of the dredged spoil material island and the
concrete bridge supports of the jetty also were used constantly as roosting sites. Both the island and the jetty have small, dense oyster bars around them (the submerged bars are visible in Figure 14 b) and the birds foraged at low tide on the bars. Infrequently, oystercatchers also roosted on the sandy shoreline at the Apollo Beach Nature Park.

4.3 Banded Migrant American Oystercatchers

We have no records of banded oystercatchers before 2007. Virginia band 1F (banded on Metompkin Island, Virginia in July 2005) was seen at the Harbor Island breakwater September 19, 2008, and three more times (September 26 at Berth 220, October 9 at the CSX berth, and November 7 foraging along the Davis Island riprap; Figures 15 a, b). Virginia band MK is a dusky-tipped hatch-year bird (banded on Metompkin Island, Virginia in June 2007), and was re-sighted once loafing on the Mosaic loading berth seawall on September 26, 2008 (Figures 16 a, b). Massachusetts band 59 was banded as a breeding adult on South Beach, a barrier island on Cape Cod running south from Chatham, Massachusetts near Monomoy Island National Wildlife Refuge in summer 2007. It was re-sighted on November 14, 2007 on the Mosaic Fertilizer LLC seawall (Figure 17).

Figure 15 a, b. Virginia band “1F”, banded July 2005 at Metompkin Island, re-sighted at Harbor Island on September 19, 2008.

Figure 16 a, b. Oystercatcher flock roosting on the Mosaic seawall (a) including an oystercatcher with Virginia band “MK” resighted on September 26, 2008.
Wintering oystercatcher populations on larger barrier islands in the Tampa Bay region (i.e. South St. Petersburg Beach, Madeira Beach, and Ft. DeSoto Beach in Pinellas County, and Anna Maria Island in Sarasota County) have decreased due to coastal development and constant human disturbance from beach walkers, boaters (including jet skiers and kayakers), and predators. Oystercatchers have roosted on the many small estuarine islands formed during construction of the Intracoastal Waterway, but these have been eroding (from boat wakes, wind, waves, and sea level rise) since they were deposited, and now provide less available habitat. The smallest islands tend to be lower in elevation and susceptible to overwashing by storm tides. Although small islands (<20 ha in particular) are important to the conservation of a diverse group of waterbirds, many of these never had oysterbars near them, which made them less desirable (Erwin et al. 1995). The decrease in natural or man-made habitat value mostly because of human disturbance partly explains why wintering birds are now concentrated in Hillsborough Bay.

Wintering oystercatcher surveys in Hillsborough Bay from 1990-2006 were sporadic but generally indicated the importance of the bay for wintering oystercatchers. We knew that flocks remained in the bay, and observed them repeatedly foraging on exposed oyster bars during the winter, but we did not know if they were nesting oystercatchers that had remained in the bay after nesting or represented an influx of migrant oystercatchers from other areas of their range. In 2008, nesting season surveys showed that approximately 142 oystercatchers were present in Hillsborough Bay (Hodgson et al. 2008). From this study, we determined that the wintering population is approximately the same number of individuals or greater. We identified that emergent oysterbars are foraging locations, and high tide wintering roosts on concentrated in the Port of Tampa and at Port Redwing. Oystercatcher movements were controlled by tide stage, and large flock sizes typically occurred at high-tide roost sites. We do not know if the oystercatchers present in Hillsborough Bay outside of the nesting season are resident or migrant birds since the resident birds are not banded, and we do not know if all resident birds stay in the bay year-around or move to winter at other locations. The movements of individual birds could be followed if the resident population was banded, and we propose in future studies to initiate a banding program to define the regional population dynamics.

Over-wintering oystercatchers must maintain energetic equilibrium and increase their body weights to the physiological optimum before the nesting season. Thus, their time is spent either foraging or resting at roost sites. Any additional activity is energetically disadvantageous and causes them to lose rather than gain body weight. The roost sites occupied during high tide allow oystercatchers to rest safely from predators and most other disturbance factors, until the tides drop and foraging sites are again available.
On roosts, undisturbed flocks of birds showed little inter-individual antagonistic behavior within the group and were packed tightly into the roost. Common behaviors included sleeping with their bills tucked under their wings, resting with their heads relaxed downward, preening, or walking idly. If they were disturbed, they raised their heads and became alert. With further disturbance, they became agitated and finally flew off the roost. When the birds left the roost to forage, they flew out singly, in pairs, or in small, loose flocks as they fanned out to forage in the bay.

In comparison to observations on the eastern Atlantic shell rakes where flocks up to 500 birds were observed, we saw flocks ranging from 50-100 birds (Brown 2005, P. Leary pers. comm.). Throughout the bay both natural and man-made features were important:

- **North bay:** The Berth 220 breasting dolphins and CSX berth at the main port are the most important roost sites. The breakwater at the Davis Island city boat ramp is also important, but subject to more disturbance.
- **Middle bay:** The shorelines of 2D, 3D and the Alafia Bank provide foraging habitat and the bar east of Bird Island and the Sunken Island Extension Cove bar are valuable winter roost sites. The pier at Fantasy Island was often used as a roost site.
- **Southeast bay:** The Kitchen region provides important foraging habitat.
- **South bay:** The Mosaic Fertilizer LLC seawall is a very important roost site. Fishhook Spoil Island and the TECO jetty provide foraging habitat when the rocky shoreline and oysterbars are exposed. Shorelines on the Apollo Beach “hammerhead” and canals, including the Mira Bay Channel, are privately owned and abut residential properties so they are continuously subject to high disturbance and are insignificant for roosting.

The effects of human disturbance on oystercatchers are partially documented and further research will be useful. Three main categories of human disturbance affect oystercatchers in Hillsborough Bay: scientific researchers (staff of the Tampa Port Authority, Audubon’s Florida Coastal Islands Sanctuaries Program, or other agencies), ecotourists (e.g., kayakers, wildlife photographers, and local boat tours), and recreators (e.g., fishermen, boaters, picnickers, and campers).

Local researchers are collaborating closely to plan for, reduce, or eliminate disturbance events, and methods in use have been widely reviewed for their impacts.

Ecotourists are a larger problem. Several local kayak outfitters commonly guide trips around the Alafia Bank Bird Sanctuary and have been repeatedly observed traveling close enough to the shoreline to cause birds to respond to their presence and force roosting oystercatchers to leave roosting sites, as well as landing on the island, despite large “No Trespassing” signs. Several wildlife photographers also have not been cooperative in staying at appropriate distances from islands shorelines, particularly at the Alafia Bank. The Florida Aquarium ecotour boat has a route that encircles the Alafia Bank, enters into the cove on the south side of Sunken Island, then runs at high speed between Fantasy Island and 2D, creating a large boat wake that washes shorelines where oystercatchers roost and forage.

Recreators are a significant disturbance factor in the bay. Both commercial and recreational fishermen approach island shorelines at close distances. They either drift by a location, causing a short-term temporary disturbance, or remain stationary for an extended period causing a longer-term disturbance. Drift boats typically cause an alert reaction and energetic expenditure. Mullet and bait fishermen impacts are even more significant because they anchor next to the shoreline and wade on the sandbars.

Boaters, picnickers, and campers are a persistent disturbance factor in Hillsborough Bay because Pine Island and Fantasy Island are the only two legal island landing locations in the bay. On a summer weekend day, Pine Island can have dozens of boats anchored around it, and oystercatchers have not been recorded to roost regularly on the island. Fantasy Island, similarly, can have many boats. Neither of the islands supports a significant number of roosting oystercatchers.
Despite Audubon and its conservation partners having distributed approximately 50,000 free Hillsborough Bay Boaters Guides to the public boaters are still landing on the restricted sandy beaches of 2D, 3D and, intermittently, the Alafia Bank. Audubon hires a Seasonal Warden to patrol these islands on the weekends and holidays during the nesting season (March-August), but the warden cannot be a daily continuous presence on the bay. A greater patrol presence throughout all seasons of the year and more intensive level of law enforcement will be necessary to protect wintering oystercatchers and other birds in the bay.

6 MANAGEMENT RECOMMENDATIONS

We have developed management recommendations for protecting wintering American oystercatchers in Hillsborough Bay. These recommendations are consistent with management throughout the oystercatcher’s range in the eastern United States (Schulte, Brown, and the American Oystercatcher Working Group 2006):

1. **Identify and protect emerging habitats in Hillsborough Bay.** Manage emerging sandbars and sand spits around the main oystercatcher activity areas and shorelines of Spoil Islands 2D and 3D, the Alafia Bank, and Fishhook Spoil Island and the Tampa Electric Company jetty in the Big Bend Channel area of Hillsborough Bay. Post emerging habitats as appropriate “No Trespassing” and “No Landing”.

2. **Protect key areas of existing important habitat that are currently vulnerable.**
   a. **Install “No Landing” signs in addition to the current signs.** The shorelines of Spoil Islands 2D and 3D are posted with “No Trespassing” signs above the mean high water (MHW) tideline, which are placed there to prevent the signs from washing away. Boaters often walk onto the beaches below the MHW line to read the signs and also misinterpret the signs’ meaning. Because the lettering is small, readers must be close to read it, and trespassers do not interpret the signs’ intent as “No Trespassing on the beach”, but choose to believe the signs mean “No Trespassing beyond this point”. Unfortunately, with the signs being placed above MHW, this means that the trespassers have already affected American oystercatcher roosting sites.
   b. **Secure FWC-designated “Critical Wildlife Area” status for Sunken Island.** The Alafia Bank is similarly posted with large 3x4 foot wooden signs and yellow metal sanctuary signs identifying the sanctuary. Bird Island is currently a FWC-designated “Critical Wildlife Area”, Sunken Island is not.
   c. **Post Fishhook Spoil Island with Tampa Port Authority “No Trespassing” and “No Landing” signs.** Fishhook Spoil Island was posted with Audubon “No Trespassing” in 2008. Tampa Port Authority signs should also be installed.

3. **Establish and post offshore buffers because oystercatchers are disturbed when boaters approach the beach during the wintering season.** The FWC recommended distance is 100 m; about 30-50 m may be adequate in some areas.

4. **Use boater environmental education to reduce disturbance at key wintering areas.** Recreational use on Spoil Islands 2D and 3D, Alafia Bank, Fishhook Spoil Island and the TECO jetty should be further limited through an integrated program of signage, education, and enforcement control, with reprinting and additional distribution of the “Hillsborough Bay Boater’s Guide” and interagency law enforcement cooperation. Regionally, resident and tourist beach users are disrupting roosting bird aggregations. These user groups must be more assertively educated and managed by the respective land managers of the colony sites to ensure compliance with the Migratory Bird Treaty Act. Unless disruptions are controlled during the winter, the birds cannot enter the spring breeding season in satisfactory physiological condition.
5. Closely coordinate all dredging, survey, and marine construction projects through the Migratory Bird Protection Committee on spoil islands in Hillsborough Bay to protect and reduce disturbance to roosting oystercatchers.

6. Implement vegetative habitat management as necessary annually to establish bare substrate as suitable habitat for oystercatcher and other beach-nesting birds.

7. Install oyster bar habitat for wintering and foraging oystercatchers in areas near known oystercatcher territories with low wave energy, to promote oyster growth and survival.

8. Prosecute trespassers year-around to protect bird nesting, migrating, and wintering use.

9. **Band the resident breeding oystercatchers so individual resident and migrant birds can be identified.** We are presently soliciting funds to band the resident breeding birds so the population dynamics of resident and migrant birds can be determined.

There is a large ecological overlap with other wintering species common in the bay. Implementation of these conservation measures for oystercatcher and other wintering species will provide benefits for the bay’s entire avian community.

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### Data Ownership

The data presented in this report are managed by the Florida Coastal Islands Sanctuaries, Audubon of Florida. A manuscript of this study is in preparation for publication. Contact: Sanctuaries Manager, 410 Ware Blvd., Suite 702, Tampa, FL 33619, telephone 01-813-623-6826, email ahodgson@audubon.org.

### 8 LITERATURE CITED


