### **Boater's Tips:**

- ◆ Stay clear of the main ship channel when large ships are approaching. Some vessels entering Tampa Bay are as long as two football fields, carry hazardous materials, and are fairly dif ficult to maneuver. Many clear the 45-foot deep shipping channel by as little as 4 feet, and may require a mile or more to stop. Pilot's vision may be restricted by the large size of the vessel they are captaining. It is up to the small boat operator to keep safely out of the way of these ships.
- ◆ In case of an emergency, use VHF Channel 13 to communicate with commercial ships.
- Be sure your boat is visible at night and in poor weather conditions.
- ◆ The main shipping channels are shown on the map.
- ◆ Keep your boat in good repair with all neces-

sary safety equipment on board.

- ◆ Watch for changing weather conditions.
- ◆ Know your boat's limitations and respect them.
- ◆ Jet skis are boats, too, and must follow all boating regulations.
- ◆ The Coast Guard Auxiliary and Power Squadrons offer free boat inspections and boating safety classes. These are interesting, fun, and informative. See "Resources" for information.
- ◆ Be careful to prevent spills during fueling and when adding oil.

#### **Safety and Security:**

The Coast Guard Marine Safety and Security Task Force is asking boaters to stay well away from all commercial vessels and facilities in Tampa Bay, to increase public safety and reduce the threat of terrorist attacks. Also, a 100-foot security zone extends from the Sunshine Skyway Bridge supports, including all the portions of the bridge having a distinct vertical rise. To report suspicious activities, call 911 or VHF Channel 16. For more information: 727/824-7531.

### **Fishing Tips:**

garbage disposal.

- ◆ Help fish stocks increase by practicing catch and release.
- ◆ Observe regulations and size limits. ◆ Dispose of fishing line properly in closed
- ◆ Use chrome-plated steel, gold-plated steel, or bronze hooks as they corrode quickly in salt water. In contrast, stainless steel hooks do not corrode and will persist in hooked fish and wildlife, harming them. Cadmium/tinplated steel hooks corrode slowly and give off toxic metals as they slowly dissolve, so they shouldn't be used either.
- ◆ If you catch an unwanted animal (bird, turtle, etc.), cut the barb to remove the hook. If the animal is hooked deeply, call Florida Fish and Wildlife Conservation Commission enforcement, 1-888/404-FWCC (3922) to arrange for veterinary assistance. This won't get you in trouble; instead, you'll be a hero because you're helping to save the life of one of these rare animals. If you've caught a turtle, do not lift the turtle using the line; instead use a dip net or its shell (watch out for the flipper claws and beak they are strong biters!). If you've caught a turtle that is too hig to capture or hold cut the line as close as possible to the turtle's mouth before releasing it.
- Don't feed birds. Especially don't feed larger fish skeletons to birds. Bigger bones puncture delicate digestive tissues, causing internal injuries. Put fish carcasses into trash cans, not the water, after cleaning.

## Bay scallops A

These secretive shellfish hide in seagrasses during their short one-year lives. Filter-feeders, they vacuum small particles of algae and organic matter from the water for food. Scallops have many blue eyes to detect threats, and can swim backward to escape predators by expelling water between their shells. An extensive scallop fishery was active in Tampa Bay until the 1960s, but water pollution has eliminated scallops until recently. Tampa Bay Watch and others have begun a scallop reintroduction project for Tampa Bay, mostly in Boca Ciega Bay.

**Commission (FWC)** 

www.mvfwc.com

**Protection** 

Florida Fish and Wildlife Conservation

marine violations, boating accidents, and

Oil spills, disturbance to nesting birds,

sea turtle, manatee or dolphin injuries

or strandings: 888/404-3922. General

863/648-3203 or 888/347-4356.

Florida Marine Research Institute

Fish kills: 800/636-0511. Fisheries

red tide blooms, catastrophes:

questions: **813/632-7600** 

**Egmont Key State Park** 

and Management Program

**Agency on Bay Management** 

**Tampa Bay Estuary Program** 

monitoring and biology, stock assess-

ment, marine habitats restoration, algal/

727/896-8626, www.floridamarine.org

Florida Department of Environmental

Oil spills, environmental regulation

Florida Park Service: 727/893-2627

Egmont Key Alliance: www.egmontkey.org

**Southwest Florida Water Management** 

**District, Surface Water Improvement** 

Habitat restoration and water quality

improvement projects: 813/985-7481

Agencies cooperate to address bay and

Tampa Bay Regional Planning Council,

watershed issues: **727/570-5151 ext. 32** 

Government partnership developing long-

term plan for bay restoration and man-

agement: **727/893-2765**, www.tbep.org

information, hunting & fishing licenses:







**NO ENTRY BEYOND** THIS POINT

COMBUSTION MOTOR **EXCLUSION** 

SHALLOW

DANGER

WATER



**Idle Speed:** A vessel operating in an "Idle Speed No Wake" zone must slow to the minimum speed that will maintain steerage control. An example of this is to put a car's automatic transmission in "Drive" and allow it to idle forward. **Slow Speed:** A vessel operating in a "Slow

**Speed Restrictions** 

Vessel speeds are regulated for many reasons

and to help ensure the safety of swimmers,

zones on the map.

boaters, or manatees. Please refer to motor

exclusion zones and shallow water cautionary

including safety concerns in high traffic areas,

Speed Minimum Wake" zone must come fully off plane and completely settle in the water. The vessel's wake must not be excessive, so as not to create a hazard to other vessels. "Slow Speed Minimum Wake" and "Slow Speed" mean the same thing and require the same operation. The terms are used interchangeably.

**Resume Normal Safe Operation:** When exiting an "Idle Speed" or "Slow Speed" zone, you will see a sign that states "Resume Normal Safe Operation." At this point you may increase your speed to one that is appropriate for the sea and vessel traffic conditions.

**No Entry:** Boats, people, and pets prohibited. **Combustion Motor Exclusion: No** gas or diesel powered motor use beyond the sign. Electric motors, poling, and paddling allowed.

**Shallow Water Danger:** The areas behind the signs are very shallow and have healthy seagrass beds. At high tide, proceed with caution to avoid prop scarring and damage to seagrass. At low tide, only poling or paddling across this area is appropriate, to protect seagrasses.

## Seagrasses

Seagrasses are underwater flowering plants that use strong roots to anchor themselves to shallow bay bottoms. Like land plants, seagrasses use photosynthesis to make energy from sunlight. Seagrasses provide critically important food and habitat for many animals, including manatees, turtles, seahorses, seatrout, redfish, tarpon, and shrimp. Seagrasses trap sediment, cleaning the water, and dampen waves near shorelines, reducing erosion. Dense, healthy seagrass beds carpet large portions of lower Boca Ciega Bay. Please note motor exclusion zones and shallow caution areas on the map. Most seagrass beds occur in waters 3–6 feet deep, and at low tides, they are very vulnerable to "prop-scars"—damage caused by boat propellers plowing deep furrows through



### deeper water. Photos of scallop, left, and prop-scar, above,

**Use Caution** 

Seagrass beds are

shown on the map.

Boaters passing over

seagrass beds should

be careful to prevent

you're near a seagrass

tip your motor up as

far as possible. If you

run aground, stop the

way up, and walk, pole

or push your boat to

motor, tip it all the

bed, reduce speed and

prop-scarring. If

**Seagrass Beds!** 

Around

#### Scallops and seagrasses rely on clean estuary waters. You can help:

- ◆ Reduce bay pollution.
- Don't overfertilize lawns.

Tampa Bay Watch

**Pinellas County** 

Emergency: 911

727/464-3347

727/464-3251

941/721-2068

727/582-2267

941/388-3010

727/391-6211

Fort De Soto Park

**Save Our Seabirds** 

www.pinellascounty.org

- ◆ Request the Tampa Bay Estuary Program's "Tampa Bay Repair Kit."
- ◆ Participate in Tampa Bay Watch's Great Scallop Search each fall.

Stewardship program for bay restoration:

727/867-8166, www.tampabaywatch.org

Sheriff Marine Unit: **727/518-3435** 

Environmental Management & Coastal

Public Works, navigational markers:

Planning Department: 727/464-8200

Environmental Lands: 727/453-6900

**Pinellas Aquatic Preserve Program** 

Friends of Fort De Soto: 727/582-2267

Assistance with injured seabirds, wildlife:

This guide is produced by Audubon of

Estuary Program or Audubon's Florida

Florida. For copies, contact the Tampa Bay

Seabird rescue and rehabilitation:

**Suncoast Seabird Sanctuary** 

St. Petersburg Audubon Society www.stpeteaudubon.org

Coastal Islands Sanctuaries.

Parks & Recreation Department:

Coordinator: **727/464-4761** 

## Resources

**U.S. Coast Guard** Emergency, Search and Rescue: 727/896-6187 or 727/896-6188. Pinellas/St. Petersburg: 727/824-7506. Clearwater Beach/Sand Kev Station: **727/596-8540**. Marine Safety & Security Task Force/St. Petersburg: **727/824-7531** 

**Department of Community Affairs** Division of Emergency Management, State Warning Point: Oil spills, major environmental emergencies: 800/320-0519 Non-emergencies: **850/413-9900** 

**National Pollution Response Center** 800/424-8802

**NOAA Weather Service Broadcast** 24-hour weather and marine forecast: 813/645-2506, radio: 162.55 Kz/VHF, www.srh.noaa.gov/tbw

National Wildlife Refuge/U.S. Fish & Wildlife Service Office for Egmont Key, Passage Key, and Pinellas NWRs: 352/563-2088 Friends of the Tampa Bay Refuges:

www.tampabayrefuges.org Audubon of Florida, Florida Coastal **Islands Sanctuaries** National conservation association

www.audubonofflorida.org Bird colony management: 813/623-6826 **Power Squadron** 

Safe boating classes, boat inspections, boating safety education: www.usps.org Anna Maria Island PS: **941/737-2660** Boca Ciega PS: **727/392-6136** Manatee County PS: 941/778-5678

St. Petersburg PS: **727/821-6134** 









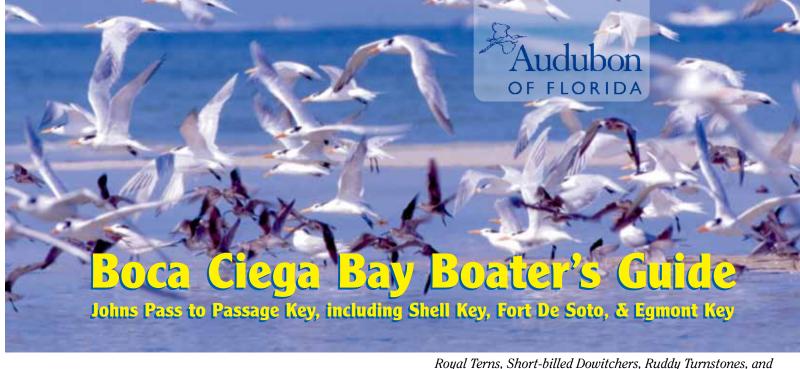












other birds rely on sandbars as resting areas. Photo by Lee Snyder.

Passage Key National Wildlife Refuge (NWR) was the

third "Federal Bird Reservation" created by presidential decree in 1905 by

Teddy Roosevelt. This dynamic sandy barrier island located in the mouth of

Tampa Bay periodically hosts a vibrant ground-nesting bird colony, listed by

Royal and Sandwich Terns, Laughing Gulls, and Black Skimmers nest here

when Passage Key emerges above the high tide line. Storms in 2004 and 2005

moved Passage Key sands, so the island is now below high tide. The area is a

closed to visitors year-round, including an off-shore buffer area. The refuge is

administered as a unit of the Chassahowitzka NWR Complex (352/563-2088).

**Egmont Key National Wildlife Refuge and State Park** 

was established in 1974 for the protection of migratory birds and has had

a colorful military past. Five artillery batteries from historic Fort Dade, in

service from 1898 until 1923, are located on the west side of the island and

were armed with 3-, 6-, and 8-inch cannons. Some batteries are in the water

today as the island has eroded eastward (these "reefs" offer excellent diving

and snorkeling experiences). Other batteries have been protected by beach

renourishment projects and may still be visited. The Fort Dade Guardhouse

was constructed in 1910 and will be a Visitor's Center after restoration. Fort

Dade, on the National Register of Historical Places, was home to 300 resident

soldiers and support personnel. The lighthouse, still used for navigation, was

built in 1858. Egmont Key hosts populations of box turtles and state-listed

gopher tortoises, and is a key site for migratory songbirds seeking landfall

head turtles nest annually on the island's sandy beaches. A large colony of

the south end in the bird sanctuary. Black Skimmers and Least Terns have

This nesting site, as well as the two wildlife sanctuary areas (southern end

of the island and along the eastern beach north of the Pilots' Station), are

closed year-round. The seagrasses along the east side of the island are also

protected. Two-thirds of the island is available to boaters and approximately

150,000 visitors arrive annually. The refuge is administered under the Chas-

sahowitzka NWR Complex (352/563-2088). The refuge is co-managed with

The Pinellas National Wildlife Refuge includes Tarpon,

Indian, Little Bird, Mule, Jackass, and Listen keys, and Whale Island. The

refuge was established by executive order in the 1910s, and then reaffirmed

in 1951 to protect nesting colonies of Brown Pelicans, cormorants, herons,

egrets, ibis, and Roseate Spoonbills, and roost sites for Magnificent Frig-

atebirds. The refuge islands are surrounded by extensive grass flats (see

speed zones on map). Public entry to all islands is prohibited because of

their small size and critical importance to coastal bird species. Of note are

1880s, the nesting bird colony on Indian Key was the largest single colony

observed by ornithologist W.E.D. Scott during his trip to Florida. Scott also

noted that the most common bird nesting on Indian Key was the now-rare

Reddish Egret (see description, reverse). This colony was exterminated in

who camped at the mouth of the creek now known as Frenchman's Creek.

The refuge is administered as a unit of the Chassahowitzka NWR Complex

Fort De Soto County Park is one of Florida's most popular

destinations, with 2.7 million visitors annually. Five keys connected by a

causeway to Tierra Verde offer a variety of habitats and recreational oppor-

tunities, and total 1,136 acres including six miles of barrier island beach.

Biologically, Fort De Soto is rich. Bird-watchers from all over the country

the famous "mulberry" trees to search for migrating songbirds. All year,

visit mangrove shorelines, pine flatwoods, beaches, mud and sand flats, and

shorebirds and wading birds of many species are abundant. Over 300 species

have been observed here. Extensive grassflats are protected within Mullet

the late 1880s by a plume hunter, the Frenchman known as Le Chevalier,

diamondback terrapins that also inhabit these mangrove islands. In the early

the Florida Park Service (727/893-2627).

nested on the renourished beach area at the northwest portion of the island

Brown Pelicans, Royal and Sandwich terns, and Laughing Gulls nests on

after flying across the Gulf of Mexico. An average of 44 Atlantic logger-

designated bird protection area, and the island and surrounding waters are

the FWC as among Florida's six most important colonies. Brown Pelicans,

oca Ciega Bay offers a variety of boaters' destinations, special habitats, and spectacular natural resources. The bay is located on the north side of the mouth of Tampa Bay and is bordered by the cities of St. Petersburg, Tierra Verde, St. Pete Beach, Treasure Island, Gulfport, Seminole, and Madeira Beach. Visitors can find historic forts, important natural communities, and some of the largest, most diverse, and most important bird areas in Florida. Nearly all of the Gulf beaches are used by nesting loggerhead turtles. Waterways emptying into Boca Ciega Bay include Lake Seminole (through Long Bayou), Cross Bayou, Bear Creek, Clam Bayou, and Frenchman's Creek. Although major portions of the bay have been altered to provide waterfront homes with docks and boat access, significant natural areas and park lands remain. Key biological sites and other areas of interest are outlined below.

The islands and bay bottoms of Boca Ciega Bay are part of the State of Florida's sovereign lands and are managed by the Florida Department of Environmental Protection's Pinellas Aquatic Preserve Program. Staff are undertaking management and restoration of both the spoil and natural mangrove islands.

**Johns Pass** contains three islands: Little Bird Key (Johns Pass) to the north, Bird Rookery Key (middle), and Eleanor Island (south). These mangrove islands are surrounded by shallow grassflats and sandbars, and provide excellent bird foraging habitat. Brown Pelicans, herons and egrets nest on Little Bird Key and Bird Rookery Key. All three islands are protected as bird sanctuaries. Marinas, restaurants, boat fuel, and shops are located at the mouth of Johns Pass.

**Dogleg Key** is located south of Bay Pines at the mouth of Cross and Long Bayous. The mangroves on this long, narrow island harbor about 500 nests of 12 species of birds, including Brown Pelicans, Double-crested Cormorants, herons, egrets, and Roseate Spoonbills. This island is offlimits and is posted by Audubon's Florida Coastal Islands Sanctuaries (813/623-6826). People interested in watching nesting birds can stay off-shore on their boats, and observe mating behaviors, nest-building, feeding of young birds, and other interesting behaviors from a distance of at least 50 feet away (binoculars recommended). The sand spit on the east end of the island is a good spot to look for migrating shorebirds.

**Boca Ciega Millennium Park** is a 185-acre county park situated on northern Boca Ciega Bay that showcases considerable habitat diversity, including pine flatwoods, wetlands, salt marsh, mangrove swamp, freshwater ponds, and coastal oak hammock. Over 170 species of birds have been seen here, notably White Pelicans, Reddish Egrets, Roseate Spoonbills, ducks, herons, and rails. The park is managed by Pinellas Parks & Recreation Department (727/588-4882).

**Shell Key Preserve** comprises 1,755 acres, and includes the 180-acre barrier island Shell Key, and the mangrove islands, mudflats, and seagrass meadows found east of the key. Shell Key is listed by the Florida Fish and Wildlife Conservation Commission (FWC) as one of Florida's most important sites for nesting, wintering, and migrating birds. The center of Shell Key is a bird preservation area, off-limits to the public to protect nesting, foraging, and resting birds. Loggerhead turtles nest on the beach. The north-

east corner and south portion are popular recreational areas, open for shelling, picnicking, swimming, and walking. Camping, by permit only, is available on the south portion. Speed zones (see map) help protect shallow seagrass flats. Shell Key is managed by Pinellas County Environmental Lands (727/453-6900). The Shell Key Preserve Visitors Guide is available at www.pinellascounty.org.

**Don Cesar Hotel**, an historic pink "castle" on St. Pete Beach, was built in 1928 and features Mediterranean and Moorish architecture. Listed on the National Register of Historic Places, the hotel has also served as a hospital and a Veterans Administration office. Renovated in 1993-1994. 727/360-1881.

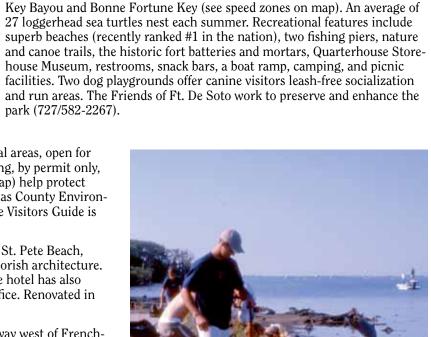
**Eckerd College** is located on the Pinellas Bayway west of Frenchman's Creek. The college is an accredited private liberal arts college, with 1,500 resident students and over 90 faculty. Thirty-five majors and continuing education are offered (727/864-8288).

The Sunshine Skyway Bridge connects Pinellas and Manatee counties and carries Interstate 275 across the mouth of Tampa Bay. Constructed from 1982–1987 for \$245 million, this 4-mile long bridge is a main span cable-stayed structure, with a precast deck superstructure. The main span stretches 1,200 feet, has a vertical clearance of 193 feet and four lanes of traffic, and carries 200,000 cars/day across Tampa Bay. Fishing piers offer full facilities. This bridge replaced one damaged when a freighter knocked down a main span on May 9, 1980, a major bridge disaster in which 35 people lost their lives. On the northwest approach, the Blackthorn Memorial commemorates the loss of the U.S. Coast Guard Cutter Blackthorn and 23 sailors who died when the ship collided with a tanker on January 28, 1980.

**Habitat Restoration Projects** restore coastal habitats, develop tidal channels and lagoons, remove non-native invasive vegetation (especially Australian pine, Brazilian pepper and melaleuca), create saltwater marshes, and enhance low salinity habitats especially important for juvenile fish. The Southwest Florida Water Management District's Surface Water Improvement and Management projects include:

Students from Seminole High School grew and planted cordgrass to control erosion on Tarpon Key NWR with Refuge Staff, Audubon staff, and Tampa Bay Watch. Photo by Rich Paul.

Clam Bayou: two projects 10 acres, plus Osgood Point 10 acres, and Long/Cross Bayou 2 acres, and Boca Ciega Bay: Joe's Creek Schoolhouse 20 acres, 125th street 3.5 acres, and Boca Ciega Millenium Park 7 acres. Restoration Partners have included Pinellas County, cities of Gulfport and St. Petersburg, Tampa Bay Watch, Friends of Tampa Bay NWR, and others. Audubon, Tampa Bay Watch, and National Wildlife Refuge staff have led volunteer saltmarsh plantings to retard erosion on Tarpon Key NWR.





### Birds of the Bay

Pelicans, herons, ibis, spoonbills, gulls, terns, and skimmers that nest in groups (called colonies) are among the most visible, beautiful, and popular wildlife species in Florida. The breeding population in Tampa Bay, including Boca Ciega Bay and Passage and Egmont Keys, totals 40,000-50,000

nesting pairs annually of 29 species. This is one of the largest bird populations in Florida, outside of the Everglades. Important nesting sites include Tarpon Key, Egmont Key, Passage Key, Shell Key, and Dogleg Key, among others.



Black Skimmer nests are simple shallow scrapes in sand or shell on the beach. Skimmer family and eggs, above, by Bonnie Shed, Etcetera Photography.

Black Skimmer Only 2,000 pairs of Black Skimmers, a state-listed "species of special concern," nest in Florida; three nesting colonies in Boca Ciega Bay account for about one-quarter of the state's population. Skimmers nest on sandy beaches just above the high tide line. These colonies are very vulnerable to washout by high tides and storms. Human disturbance forces adults off nests leaving eggs to cook on the hot sand—another major cause of nest failure.



Brown Pelican nest, above, by Peter Clark, Tampa Bay Watch.

#### **Brown Pelican**

An expert fisherman and one of Florida's most recognizable birds, the Brown Pelican dives powerfully into the water to scoop up unwary fish into its expandable pouched bill. Pelicans nest on Egmont Key, the Pinellas National Wildlife Refuge Islands. and Dogleg Key in Boca Ciega Bay. Chicks hatch out naked, with gray skin, but quickly grow white downy feathers. They reach sexual maturity at three or four years old.

American White Pelican Like a lot of snowbirds. White Pelicans spend the winter in the Tampa Bay area. The White Pelicans that winter in Florida nest near lakes in North Dakota and Minnesota.

#### **Laughing Gull** Two-thirds of all

the Laughing Gulls in Florida nest on Egmont and Shell Keys. They form large nesting colonies in dune grasses on islands. They are named for their wellknown laughing call.

#### Reddish Egret A

The rarest heron in North America, the Reddish Egret has shaggy head and neck feathers and mating plumes that stretch past its tail. During nesting season, its bill is pink with a black tip. Most are rusty-headed with blue-gray bodies, but a small proportion of Reddish Egrets hatch out as white birds

and remain white all their lives. Hunted to near extinction for their breeding plumes, this species is making a slow recovery (about 375 pairs in Florida) and returned to nest in Tampa Bay in 1974. In Boca Ciega Bay, small numbers of Reddish Egrets nest at Tarpon Key, both Little Bird Keys, and Dogleg Key. They can often be seen foraging on sand and mud flats at Shell Key and Ft. De Soto.



#### American Oystercatcher

With fewer than 400 pairs in Florida, this is one of our rarest birds. A large black and white sandpiperlike bird with a giant red-orange bill, oystercatchers nest in shallow scrapes just above the flotsam line on beaches. American Oystercatchers are listed by the Wildlife Commission as a "species of special concern."

#### **Shorebirds**

Large numbers of shorebirds visit beaches, mudflats, and sandbars of Tampa and Boca Ciega Bays during migration and over the winter. Long-distance migrants that nest far north in Canada and sometimes even above the Arctic Circle, shorebirds stop here to refuel for these trips. Key stopovers include Shell Key, the flats on Ft. De Soto Park, and the shorelines of Egmont Key and Passage



Key, and Pinellas County beaches. Repeated disturbance of resting and feeding shorebirds may hinder their ability to successfully complete these incredible journeys; please leave these marathoners in peace.

**Red Knot** 

Red Knots nest on the Arctic tundra and upland

glacial gravel. This gregarious species forms dense

a few sites, including Shell Key and Ft. De Soto, as

they travel from the Arctic Circle to the southern

between staging posts; knots that leave Shell Key

probably don't stop until they reach the New Jersey

tip of Argentina! Knots often fly long distances

and spectacular feeding and roosting flocks, at only

# Roseate Spoonbill

These spectacular pink wading birds have broad, flat, spoon-shaped bills that they sweep side to side in shallow water to catch small fish. Only about 900 pairs nest in Florida. A few pairs have been found nesting in Boca Ciega Bay, at both Little Bird Keys, Tarpon Key, and Dogleg Key.

The photos of Least Tern, Reddish Egret, Longbilled Curlew, American *Oystercatcher, Roseate* Spoonbill, and Snowy Plover (above) are by Arthur Morris, www.birdsasart.com.



Passage Key, Tarpon Key, Whale Island, Little Bird Key, Indian Key, Dogleg Key, the islands in Johns Pass, and portions of Egmont Key and Shell Key are posted bird sanctuaries. Egmont Key and Shell Key are off-limits to dogs year-round. Fort De Soto has designated leash-free playgrounds for use by people and their pets.

#### **Boaters can help. Please:**

- Comply with bird nesting signs on islands and beaches, and stay out of posted areas.
- ◆ Never let dogs run on nesting colony islands. Birds regard dogs as serious predators and dogs cause major disturbance to nesting birds and their young.
- ♦ Between April and August, gulls, terns and skimmers may nest on unmarked sites. If you notice birds circling noisily over your head, you may be near a nesting colony. Leave quietly, and enjoy the colony from a distance. Call the Florida Fish & Wildlife Conservation Commission to report the colony: 863/648-3205.
- Birds resting and feeding on sandbars and mudflats should not be disturbed. Migrating birds depend on the Bay's resources to provide a nourishing and restful stop-over. Disturbance of birds on sandbars can interfere with feeding behavior, reducing weight gain and the endurance needed for long flights and survival.



#### **Least Tern**

The smallest tern in North American, this "threatened" species nests on sandy, unvegetated barrier island beaches. Since so many of these beaches in Pinellas County have been developed, some Least Terns nest on gravel rooftops instead. In fact, Pinellas County has about 30 colonies on rooftops, more than any other county in Florida. To report unposted beach colonies, call the Florida Fish and Wildlife Conservation Commission: 863/648-3205: to report rooftop colonies, contact St. Petersburg Audubon Society: www.stpeteaudubon.org.



#### Magnificent Frigatebird

Magnificent Frigatebirds visit Boca Ciega Bay after their winter nesting season in the Dry Tortugas has ended. They sometimes form large roosts on Whale Island and Tarpon and Little Bird Keys in the summer and fall. These birds can fish for themselves, often on the schools of fish that dolphins have driven to the surface; sometimes they



#### Snowy Plover

Tiny relatives of killdeer, Snowy Plovers are very rare in Florida, with perhaps only 50 pairs from Pasco County south to Marco Island. The sandcolored Snowy Plovers depend upon remarkable camouflage to hide in plain sight with their tiny chicks on open beach nests. They nest on white sand in late spring and forage for tiny crustaceans, flies, and insects on mud and sand flats.



**ike all estuaries.** Boca Ciega Bay is a place where freshwater and saltwater mix. This dynamic system sustains constantly changing tides, water levels, salinity, and water temperatures. Special adaptations of the plants and animals that live here help them survive in this demanding ecosystem. More than 95% of Florida's recreationally and commercially important fish, crustaceans, and shellfish live in estuaries for part of their life cycle, including Boca Ciega Bay. The shallow waters of the bay, its salt marshes, mangroves, and seagrasses provide places for young sealife to hide from larger predators. Estuaries, often called the "nurseries of the sea," are among the most productive landscapes in the world. Rivers and streams drain into them, bringing nutrients and sediments that foster growth of salt marsh plants, mangroves, and seagrasses. These plants drop their leaves, which become food for billions of microscopic animals, beginning the food web.

**Barrier Islands:** Long, narrow strips of sand protect the mainland and coastal lagoons behind them from storm impacts. Constantly reshaped by wind, waves, and tides, the sandy beaches of barrier islands are crucial nesting sites for sea turtles, Laughing Gulls, terns, Snowy and Wilson's plovers, American Oystercatchers and Black Skimmers. Sea oats, railroad vine, and dune grasses stabilize dunes. On the back side of barrier islands, seagrasses flourish, and mudflats, sandflats, and salt marshes host crabs, mollusks, foraging birds, and juvenile fish.

Photo above: Royal and Sandwich Tern colonies on Egmont Key and Passage Key are the largest in Florida; these terns nest at only six colonies in the state. Resembling streamlined gulls, Royal and Sandwich Terns lay one egg. They take care of this single young until the next spring. Photo right: Red mangroves and oyster beds provide important wildlife habitat. Both photos by Rich Paul.

### Fishing Line: A Wildlife Killer

Fishing line and other trash that entangles birds, manatees, fish, turtles and other wildlife is a big problem in the environment. Some birds get caught when they chase fishing bait on a line, hooking themselves accidentally. Carelessly discarded fishing line and nets can get wrapped around birds' legs or wings. Sometimes birds actually carry the material back to line their nests, perhaps mistaking it for straw

or grass. In the colony, the line becomes a persistent killer, as one bird after another becomes ensnarled, doomed to a slow death from dehydration and starvation. Hundreds of adult and young birds die each year from entanglement in fishing line. Sea turtles and manatees, as well as fish, are also killed.

#### What can we do?

- ◆ Dispose of fishing line, nets, and other line which could entangle wildlife, in a closed trash container.
- Pick up fishing line if you see it in the bay and
- ◆ If you are fishing and catch a bird by accident, reel it in carefully and remove the fishing line as gently as possible. Note: The bird won't know you are trying to help and will try to defend itself. Wear sunglasses to protect your eyes and cover the bird's eves with a piece of cloth to calm it. Hold the wings and legs firmly and put your hat or other object in the bird's beak so it will bite that and not your hand. Once the fishing line is removed, release the bird, head pointing away from you.
- ◆ Participate in the Annual Monofilament Cleanup of Bird Nesting Colonies, held each fall when the birds are not breeding. Call the Audubon Society (813/ 623-6826) or Tampa Bay Watch (727/867-8166).

# Snook

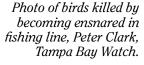
Photos of tarpon, right, and snook, below, by Captain Russ Shirley, Snook are large, silvery, www.captruss.com. predatory fish with a dark lateral stripe

pointed snouts, and protruding lower jaws. Snook frequent shallow bay waters but are susceptible to cold (water temperatures below 60° F). Snook spawn from April through December, lurking in passes near islands and at river mouths, the same loca-

tions where they lie in wait of small fish and crustaceans. Nursery habitats for young snook are shallow, brackish streams and canals with overhanging vegetation and flooded marsh grasses. Snook can weigh up to 50 pounds; females can produce about 50,000 eggs/pound of body weight.

## Redfish

Redfish or Red Drum, among Florida's most popular game fish, are large-bodied fish that can reach five feet in length. They are red-tinged with a prominent black spot near their tails. Crabs, shrimp, and smaller fish are food for redfish. Redfish spawn offshore in fall and winter, and females can lay 2-3 million eggs each. The newly hatched larvae drift with incoming tides back into sheltered bays, where seagrass meadows act as redfish nurseries. Small redfish seek out creeks with mucky bottoms and low oxygen levels, where they can safely hide from larger fish predators while feeding on sediment invertebrates. As redfish mature, their mouths shift in location to the front of their bodies, allowing them to catch swimming fish.



## **Red Tide**

the red tide in Florida is a natural process, not caused by pollution. Dinoflagellate olooms\_\_microsconi plant cells that under the right conditions can reproduce to tremendous numbers—secrete powerful neurotoxins (nerve poisons) that cause extensive fish kills, contaminate shellfish, and produce severe respiratory irritation in mammals, including

# Scientists believe that

dolphins, manatees, and

people.

**Salt marshes** occur in the shoreline zone between high and low tide water levels. Many of Florida's marine fish, shellfish, and crustaceans spend the early part of their lives safely hiding from predators in the thick vegetation of the salt marsh nursery. The leaves of the salt marsh grasses die each year, becoming detritus and the basis for the food web, feeding microscopic animals. The extensive root systems of salt marshes can withstand storm surges and help protect shorelines from coastal erosion. Salt

marsh plants can also trap nutrients, pollution, and

sediments, keeping bay waters cleaner.

**Mangrove and Salt** 

The Tampa Bay area has lost more than 40% of its

original mangrove and salt-marsh acreage due to

and land-fill development. To participate in restor-

**Mangroves** are trees that thrive in the salty

including salt-excreting leaves and roots that can

block salt, allow them to live in salty water where

other plants cannot survive. Mangrove shorelines

and forests are vital for healthy coastal ecosystems.

The fallen leaves and branches provide nutrients for

the intricate food web of the estuary. Mangroves offer

wading birds, Brown Pelicans, and cormorants. Man-

groves also diminish wave action, protecting shore-

lines from erosion and storm damage. The Interna-

tional Ramsar Convention on Wetlands has identified

mangrove forests as one of the most threatened habi-

the Philippines, Ecuador, and Vietnam. Some of Boca

Ciega Bay's southern shorelines and islands still host

tats worldwide, with widespread losses in Thailand,

healthy mangrove shorelines and forests.

refuge and nursery grounds for juvenile fish, crabs,

shrimps, and mollusks, plus nesting substrate for

and estuaries. These trees' special adaptations,

intertidal zones of sheltered tropical shores, islands,

ing salt marshes and oyster beds in Tampa Bay, call

shell harvest for roads, dredging, channel deepening,

**Marsh Wetlands** 

Tampa Bay Watch 727/867-8166.



### **Tarpon**

Tarpons' size and fighting prowess have made them highly prized as sportfish. These magnificent fish can grow to be 8 feet long and weigh 280 pounds. They spawn millions of eggs off shore in the Gulf of Mexico; larval tarpon move into estuaries within 30 days, where they develop as juveniles in marshes and mangrove habitats. Females are sexually mature at 10 years old; records show most tarpon caught are 15–30 years old, although biologists have found individuals older than 50 years. Tarpon tournaments are popular in Florida, and one in Tampa Bay has been conducted annually since before World War II. Most tarpon fishing today is catch and release, to protect these extraordinary "silver kings."

# **Dolphins and Whales**

Bottle-nosed dolphins are large, intelligent, active aquatic mammals with sleek, grev-brown bodies, a large dorsal fin, and a distinctive, rounded snout. Family groups can be found year-round in Boca Ciega Bay waters. Scientists have used photo-identification of distinctive marks on dolphins to study the Tampa Bay population since 1975, in what is apparently a relatively "closed" population, genetically distinct from Gulf dolphins. There are several stable, resident groups of dolphins in Tampa Bay. Dolphins use the same regions of the bay throughout their lifetimes. Studies estimate a dolphin population for Tampa Bay of about 550 animals. Other species of dolphins and whales that use the Gulf of Mexico and occasionally venture into waters near Tampa Bay include spotted, striped, roughtoothed, spinner, Risso's, and Fraser's dolphins and sperm, dwarf sperm, pygmy sperm, and Bryde's whales.

#### **Manatees**

The West Indian Manatee is a large, grayish brown aquatic mammal with a tubeshaped body and a flat, rounded tail. Its head has a blunt snout with prominent nostrils and a few coarse whiskers. Manatees are a listed species, protected by state and federal laws. Manatees are commonly seen in Boca Ciega Bay, so boat-



Manatee individuals that spend a lot of time in salty estuary or Gulf waters sometimes grow barnacles on their hides. Photo by Rich Paul.

ers should always be alert for their presence here. Collision with boats is a major cause of death for manatees in Florida. Grassflats are important feeding sites for these vegetarians. Manatees seek quiet areas with seagrass patches and deep "holes" for safe retreats where they can avoid boat collisions. They also travel between sites, so can be found year-round in Boca Ciega Bay.

Because manatees feed in shallow water on seagrasses, and tend to swim near the surface (as mammals, they breathe air and rise to the surface regularly to inhale), most manatees in Florida have been hit by boat propellers and have scars on their thick skin. Manatees are susceptible to cold and may die if stranded in cold water in the winter. When bay temperatures drop in the fall and winter, manatees in the Tampa Bay area rely on the warm-water outfalls from power plants, such as the Weedon Island Progress Energy Plant. They leave these warm water sites during the day to forage. Please note the special manatee speed zones on the map.

### Shrimp

Shrimp are highly valued as food and commercially fished in Florida waters. Shrimp spawn in the Gulf, then the tiny larvae float into bays and estuaries with incoming tides, where they hide in seagrass meadows and salt marsh nurseries. Shrimp larvae molt several times, changing shape during their developmental stages. Adult shrimp return to the offshore Gulf waters to spawn.

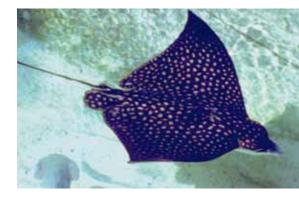


turtles, right, race for the safety of Gulf waters. Females will return years later to nest on the very same beach where they hatched. Photos by Blair Witherington.

### **Sharks** and Rays

Sharks that occur in and around Boca Ciega Bay include hammerheads, juvenile black-tipped sharks and bonnethead sharks. The last fatal shark attack in Boca Ciega Bay occurred in 2000 (a very unusual event) and involved a bull shark, so these large sharks also occur here. Nurse sharks are the sharks most often observed by divers in Gulf waters. Tag and recapture studies show nurse sharks remain in the same area most of their lives. Nighttime foragers, nurse sharks eat spiny lobsters, crabs, mollusks, catfish, and mullet. They give live birth to about 25 "pups" in spring and summer. The area also hosts cow-nosed rays, southern and Atlantic stingrays, butter rays, and large spectacular spotted eagle rays. Photo of spotted eagle ray, below,

courtesy of Florida Fish & Wildlife Conservation Commission



#### Horseshoe crabs **y**

Horseshoe crabs aren't really crabs. Surprisingly, they are related to spiders, scorpions, and ticks. Our horseshoe crabs occur along the Atlantic and Gulf coasts as far south as Mexico. The blood of horseshoe crabs uses a copper-containing molecule to carry oxygen, so they are literally "blue bloods." Horseshoe crabs eat clams, worms, dead fish and algae. They have a 19-year life span and reach sexual maturity between 9–12 years. During spring high tides, females towing their mates swim high onto sandy beaches to lay 2,000-30,000 eggs. Most horseshoe crabs don't travel far in their lifetimes, staying about four miles from the beaches where they hatched. Migrating shorebirds such as Red Knots, Dunlin, and Short-billed Dowitchers depend on the energy-rich eggs of horseshoe crabs to power their long trips.

Horseshoe crab photo, below, by Dan Warner, Florida Fish & Wildlife Conservation Commission.



### Mullet

Mullet congregate in shallow portions of Boca Ciega Bay from January through April to spawn. During the spawning season, a female can produce nearly a pound of eggs, increasing her weight by nearly 20%. This cigar-shaped, round-headed, foot-long plus fish is a well-known jumper. Mullet are vegetarians, feeding on seagrasses and algae, and, with their eggs and small juvenile young, are themselves the prey of larger predatory fish, part of the estuary's food chain.

#### **Help protect manatees:** • Be on the lookout for manatees, especially in shallow water. Watch for "swirls" or "glassy" areas on the water, and the backs, tails, and

- snouts of manatees at the surface. ◆ Wear polarized sunglasses that cut the glare,
  - allowing visibility beneath the water's surface. Stay within marked channels to avoid shallow
  - waters where manatees feed and rest. Go slowly in shallow water or over seagrasses.
  - Pole, paddle, or use a trolling motor. Recycle your trash and dispose of it properly, especially fishing line, gear, ropes and plastics, that can tangle around manatees and injure them. Manatees can mistake floating plastic for seagrass and eat it by accident.
  - It is illegal to feed or provide fresh water to manatees. Their natural diet is best.
  - Report dead or injured manatees to the Florida Fish and Wildlife Conservation Commission: 888/404-FWCC or 888/404-3922

(Mobile phone: \*FWC) **PLEASE:** Do not chase or approach manatees; let

these curious and friendly creatures come to you.

Be gentle with these wild animals.



# **Sea Turtles**

Sea turtles are air-breathing reptiles remarkably suited to life at sea. Essentially unchanged for 110 million years, their hydrodynamic shapes and powerful front flippers allow them to dive to great depths and swim long distances. Once male turtles reach the water as tiny hatchlings, they never return to shore. Females climb out onto Florida's beaches three or four times in the summer to lay about 100 eggs in sandy pits dug with their back flippers. After about two months of incubation, 2-inch hatchlings emerge from the sand all at once, usually at night, and scramble frantically for the relative safety of the seawater. Sea turtles can remain underwater for hours while resting or sleeping; while active, they typically surface several times each hour to breathe. Turtles have no teeth, but crush, bite, and tear their food with powerful jaws. Data from stranding records, aerial surveys, incidental catches, and other sources indicate that sea turtles are common inhabitants of Tampa Bay. Mortality factors include boat collisions (causing 25% of deaths), entanglement in fishing line and other line, incidental catch in nets, and disease. Scientists believe that marine turtle populations in the Tampa Bay area were once quite robust; turtles were overharvested for food, resulting in severe population declines by 1900.

**Loggerheads** are listed as "threatened" by the U.S. Fish and Wildlife Service and can be found year-round in the Tampa Bay area. They nest on the beaches of Egmont Key, Passage Key, Ft. De Soto Park, Shell Key, and the Pinellas coast. These are among the largest sea turtles, weighing 275 pounds with shells 3 feet long. Loggerheads have large, block-shaped heads. They eat clams, crabs, whelks, and other mollusks and animals.

**Green turtles**, listed as endangered, are more streamlined than loggerheads, but they are larger, weighing about 350 pounds with a shell (carapace length of 31/3 feet. Not green at all, this olive-brown turtle with a yellow belly shell (plastron) is an herbivore, foraging on seagrasses in shallow water and algae. Green turtles are found mostly at the mouth of Tampa Bay and in Boca Ciega Bay. Green turtles often suffer from a virus causing growth of many tumors, called fibropapillomatosis. This disease can be fatal. Biologists suspect that water pollution makes turtles more susceptible to the virus.

**Kemp's Ridley turtles** are listed as endangered by the federal government and as one of the twelve most endangered animals in the world by the International Union for the Conservation of Nature, with fewer than 1,000 females. They nest in Mexico but juvenile ridleys seek shelter year-round in Tampa Bay. They eat mostly crabs and crustaceans, finding them in shallow, muddy-bottomed waters. These small turtles are  $2-2^{1/2}$  feet long and weigh only 85–100 pounds.

**Hawksbill turtles**, another species of turtle listed as endangered, are small, agile animals with lovely tortoise-colored black, brown and amber, oval shells. They weigh from 100–200 pounds as adults. Hawksbill turtles have narrow heads and sharp jaws, perfect for collecting sponges, their preferred food. These tropical turtles only occasionally occur in Tampa Bay.

**Diamondback terrapins** are the only brackish water turtles in the eastern U.S., ranging from New England to Mexico. This small (8–10 inch shell length as adults) well-camouflaged, yellow-headed reptile lives in estuaries and saltwater marshes. Terrapins eat crabs, snails and mollusks, and dead fish. Females can lay eggs at 7 years of age. They dig nests in the sandy beach dunes of islands and shores in Boca Ciega Bay.

#### Help protect turtles:

◆ As baby turtles emerge from nests in the beach sand, they move toward the light reflected off of Gulf waves. However, artificial lighting can confuse them. To help

baby turtles head in the right direction, beach lighting, even flashlights in the dark, should be turned off at night.

- Coastal construction, shoreline hardening, and beach renourishment projects replace or change sandy beach habitats for turtle nesting. Help turtles by keeping beaches natural.
- Watch for turtle nest exclosures. Don't use beach umbrellas that could impale eggs hidden in sandy nests.
- Wear polarized sunglasses to see beneath waves, avoiding boat collisions with turtles.

Diamondback terrapins, above, are long-lived, active estuary turtles. Generally believed to be a species in decline, terrapins can get caught in crab traps and drown. Photo by

Dispose of trash properly, in a trash

can—especially plastics, fishing

line, balloons on strings, and other entangling debris. Turtles can mistake these things for food. Help keep Tampa Bay water clean by disposing of yard waste prop-

erly. Don't overfertilize lawns and plants, and don't pour oil or other poisons into gutters or waterways leading to the bay.

