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CELEBRATING A
CENTURY
of CONSERVATION

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Pelican Island


*National Wildlife
Refuge*

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Pelican Island National Wildlife Refuge holds a unique place in American history, because on March 14, 1903, tiny Pelican Island became the first national wildlife refuge in the United States. From this small beginning has grown a National Wildlife Refuge System of over 500 refuges, encompassing over 93 million acres, which is administered by the U.S. Fish and Wildlife Service.



This blue goose, designed by J.N. Ding Darling, has become the symbol of the National Wildlife Refuge System.

History

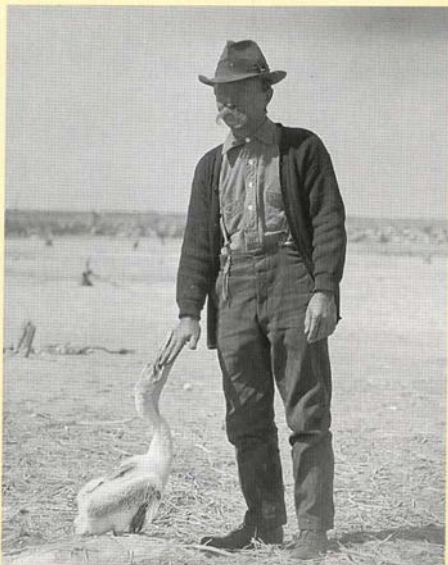
About ten thousand years ago, the Indian River Lagoon formed along the east central coast of Florida.

The Native "Ais" Indians occupied the area that is now the refuge for thousands of years. The arrival of American settlers increased in the mid-1800's, as a result of improved steamboat and rail transportation.

Settlement also brought greater attention to the thriving bird rookeries in and around the lagoon. By the late 19th Century, an expanding market for bird feathers for the fashion industry resulted in the slaughter of beautiful herons, egrets, spoonbills and pelicans. In 1858 Dr. Henry Bryant witnessed the slaughter of sixty spoonbills a day on Pelican Island. But the last of Pelican Island's birds was about to be saved by the arrival of a concerned German immigrant.

In 1881, Paul Kroegel arrived in the Sebastian area and homesteaded with his father on an ancient shell midden overlooking the Indian River Lagoon. "Barker's Bluff", as the midden was

Paul Kroegel



George Nelson

*Previous page:
Pelican Island
rookery*



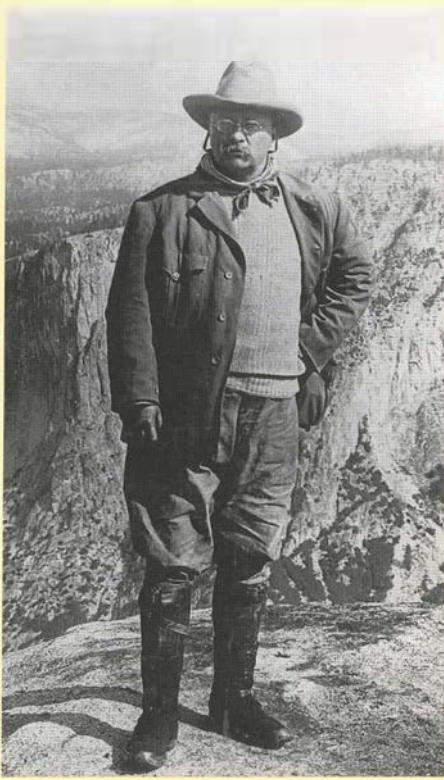
George Nelson

brown pelicans

called locally, provided a great view to keep watch over Pelican Island. Kroegel took an active interest in protecting the island's birds and was visited by many influential naturalists who stayed at the nearby Oak Lodge, from the 1880's to the early 1900's. One of these naturalists was a well-known ornithologist, Frank Chapman, who was curator at the American Museum of Natural History in New York. Chapman discovered that Pelican Island was the last rookery for brown pelicans on the East Coast of Florida, and pledged his support for protecting the birds.

In 1900, the first federal law, called the Lacy Act, was passed to protect birds and other wildlife from illegal interstate commerce. In 1901, The State of Florida, through the efforts of the fledgling Florida Audubon Society and the American Ornithologists' Union, successfully fought to pass a state law protecting non-game birds.

In 1902, Kroegel was hired as an Audubon warden to protect Pelican Island from the feather hunters and egg collectors. A year later, Chapman and his colleague William Dutcher, convinced their acquaintance and



fellow conservationist, President Theodore Roosevelt to protect Pelican Island. On March 14, 1903, President Roosevelt, with the stroke of his executive pen, created the country's first national wildlife refuge, and by so doing, established the national wildlife refuge system. On April 1, Paul Kroegel was hired as the first federal wildlife warden.

While the threat from plume hunters diminished during the first decade of the 20th century, another threat to Pelican Island's inhabitants emerged. Market fishermen, convinced that their livelihood was being harmed, mistakenly argued that pelicans were eating too much fish and competing with them for a dwindling fishery. This controversy reached a climax in the spring of 1918, when over 400 defenseless pelican chicks were clubbed to death on Pelican Island.

The Florida Audubon Society was subsequently able to prove that the bulk of the pelican's diet consisted of commercially unimportant baitfish, thereby defeating an attempt to weaken newly enacted bird protection laws. After years of protection, many species of birds returned to Pelican Island by the mid 1900's.

In 1960's, Pelican Island was once again threatened- this time by attempts to sell surrounding wetlands and islands to developers. Local citizens again led the fight to protect Pelican Island by stopping the sale of these important wetlands.

The Indian River Area Preservation League, formed by local citrus growers, commercial fishermen, and sportsmen, joined with the Florida Audubon Society to convince the State of Florida to include 422 acres of mangrove islands as part of the refuge. In 1963, Pelican Island was designated as a national historic landmark by the Secretary of the Interior because of its status as the first federal area set aside specifically to protect wildlife.

In 1968, the State of Florida agreed to expand the lease with the refuge to include 4,760 acres of mangrove islands and submerged lands. In 1970, Pelican Island became the smallest wilderness area (six acres) in the National Wilderness Preservation System. Pelican Island received another honor in 1993 when it was recognized as a Wetland of International Importance.

The refuge has since acquired over 500 acres through purchases, management agreements, and conservation easements along its eastern boundary to provide a buffer against encroaching development, and provide a link to the Archie Carr National Wildlife Refuge.



From top:
magnificent
frigatebird,
great egret,
roseate spoonbill,
double-crested
cormorant

Birds of Pelican Island

Over thirty species of birds use Pelican Island as a rookery, roost, feeding ground, or loafing area. Sixteen different species of birds nest on Pelican Island, which include the:

- Brown pelican
- Wood stork
- Great egret
- Snowy egret
- Reddish egret
- Cattle egret
- Great blue heron
- Little blue heron
- Tricolored heron
- Green-backed heron
- Black-crowned night heron
- Double-crested cormorant (resident)
- Anhinga
- White ibis
- American oystercatcher
- Common moorhen

Species that nest elsewhere in the refuge or nearby include:

- Least tern
- Royal tern
- Black skimmer
- Osprey

Summer visitors include:

- Roseate spoonbill
- Magnificent frigatebird



wood stork

Wintering birds include:

- White pelican
- Double-crested cormorant (migratory)
- Blue-wing teal
- Lesser scaup
- Red-breasted merganser
- Ring-billed gull
- Laughing gull
- Forster's tern
- Common loon

Endangered Species

- Wood storks
- Florida manatee
- Green sea turtle
- Hawksbill sea turtle
- Kemp's ridley sea turtle

Threatened Species

- Loggerhead sea turtle
- Eastern indigo snake
- Bald eagle
- Piping plover



From top:
tricolored heron,
green sea turtle



Wetland Habitats

Pelican Island National Wildlife Refuge is located within the Indian River Lagoon, the most biologically diverse estuary in the United States. The refuge lies in a zone of overlap between the temperate Carolinian zone and the subtropical Caribbean zone, thus the flora and fauna include both temperate and subtropical species. This results in an ecosystem with diverse habitats including seagrass beds, oyster bars, mangrove islands, salt marsh, and maritime hammocks.

Some of the most extensive sea grass beds of the Lagoon are found within the refuge, including manatee grass, turtle grass, shoal grass and the threatened Johnson's sea grass, found nowhere else in the world. These sea grass communities provide spawning, nursery, and foraging habitat for many aquatic species. Manatees and juvenile sea turtles are commonly found foraging in these areas.

Oyster bars, made up of the filter-feeding mollusks, help cleanse the estuary and stabilize shorelines. Salt marshes with the associated tidal creeks and mud flats consist of such marsh plants as smooth cordgrass, saltgrass, saltwort and glasswort. Salt marshes also provide abundant food and cover for a wide variety of resident and transient wildlife, including fiddler crabs, marsh rabbits, many wading birds, and shorebirds.



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*From top:
diamondback
terrapin, ten-spot
dragonfly, marsh
rabbit*

*Below, left to
right: wood stork,
reddish egret in
smooth cordgrass
and brown
pelican*



Mangrove Habitats

The mangrove habitat includes three true species of mangroves that play a vital role in the food chain of the Indian River Lagoon and also in the growth and development of many aquatic organisms. Microorganisms, which feed on decaying mangrove leaves, become food for shrimp, crabs, snails, and worms. They in turn become food for many species of fish, which support numerous wading birds in the refuge.



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red mangrove

Mangrove trees contain several different communities of life from their roots to their canopy. The distinctive roots of the mangroves provide habitat for oysters and barnacles and sheltering habitat for many species of juvenile fish. The trunk and branches of the tree provide habitat for periwinkle snails, mangrove crabs, and mangrove snakes. The tree canopies provide nesting habitat for many species of birds.

Each mangrove species have unique adaptations to survive in the harsh saltwater environment. Red mangroves are most common along the shorelines and basins. They have prop roots that help provide oxygen, exclude salt and provide a stable foundation. Their distinctive cigar-shaped propagules are actually



seeds that have already germinated before hitting the ground.

The black mangroves, predominant on natural islands (including Pelican Island) just above the tide line, have a lateral root system with pneumatophores that thrust above the ground, giving the appearance of standing on a bed of spikes. They excrete salt through the underside of their leaves. The white mangrove is found further ashore and excretes salt through pores at the base of their leaves.

Hardwood Hammock Habitats

Hammocks are dense stands of hardwood trees that grow on natural rises of only a few inches.

Maritime hammocks are found on barrier islands near coastal strand. Maritime hammocks in the Refuge generally consist of a canopy mixture of live oaks, red bays, cabbage palms, gumbo limbos, mastic, graytwig, red mulberry, and strangler figs, with an understory of nakedwood, wild coffee, beauty berry, coral bean, laurel cherry, and marlberry. These forests support populations of wood rats, cotton mice, short-tailed shrews, bobcats, opossums, raccoons, gray squirrels, spotted skunks, great-horned owls and migratory songbirds.

Hydric and mesic hammocks are generally found at lower elevations where they are occasionally inundated with fresh or brackish water. In the Refuge these typically contain cabbage palms, wax myrtles, myrsine, palmettos, royal ferns and leather ferns. They provide habitat for land crabs, green anoles, and migratory songbirds.

At right: top left: American redstart; top right: zebra longwing; and bottom: hardwood hammock



From top: cotton mouse, bobcat, land crab, common yellowthroat



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Nick Milam

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Shoreline Stabilization

Pelican Island has changed dramatically over the years. In the mid 1800's, it was lush with mangroves and populated with varieties of nesting birds. At the beginning of the 20th Century, after several years of hard freezes and a build up of bird droppings (guano), the island became a barren sand spit. The island experienced a resurgence in the vegetation by the mid 1900's. By the end of the 20th century, however, the island once again began to die back, but this time the overall size of the island was also diminishing. From 1970 to 2000, Pelican Island lost 55% of its former size to erosion.

A shoreline restoration project has begun to stabilize the existing shoreline. This project involves placing tons of oyster shells around stressed mangroves and the eroded shoreline to act as a natural wavebreak. Behind the oyster reef, smooth cordgrass and red mangroves were planted to trap sediment and stabilize the soil with their roots. The aim is to reduce wave action on the island, stimulate natural processes of native plant recruitment and succession, thereby creating a stable environment for shoreline accretion.



Aerial Pelican Island

Volunteers planting cortina (smooth cordgrass)



lesser yellowlegs

Another goal is to provide additional foraging habitat in the cordgrass flats and the oyster reef for wading birds and shorebirds. Eventually, mangroves will increase and provide additional nesting habitat for the birds.

This shoreline stabilization is made possible through a partnership with St. John's River Water Management District, Florida Inland Navigation District, the National Park Service, U.S. Army Corps of Engineers, Lewis Environmental Services, and Florida Tech University.

Habitat Restoration

Habitat restoration is underway on the buffer lands acquired to protect the boundary of the Refuge. These lands contain a high density of exotic plant species including Brazilian pepper, Australian pine and Orchid Island grapefruit trees. Brazilian pepper was introduced a century ago as an ornamental winter fruit-bearing tree. Australian pines were brought in to provide windbreaks for citrus groves and other farms. The Orchid Island citrus trees produced world-famous grapefruit for many years. But as market conditions worsened for the citrus farmers, these lands were put up for sale for development. Only a quarter mile from Pelican Island itself, these groves became highly important for acquisition to prevent encroaching development.

Habitat restoration begins with eradication and control of invasive exotics. Brazilian pepper, Australian pines and citrus trees will be removed and the area will be replanted with native plants to restore natural communities, including salt marsh, mangrove swamp, coastal dune lake, hydric hammock, mesic hammock and maritime hammock. The water table will be restored to historic levels and



Orchid Island grapefruit tree

*Top: Brazilian
pepper; below:
Australian pine*



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soils will be excavated to appropriate depths necessary to support both freshwater and estuarine plant communities. These habitats will be managed for the long-term benefit of a diversity of wildlife species.

The refuge includes two salt marsh impoundments, totaling about 300 acres, which are cooperatively managed for wading bird foraging habitat, mosquito control, and natural tidal exchange.

The habitat restoration on the Refuge will be made possible through a partnership with Florida Department of Environmental Protection, Indian River County and Lewis Environmental Services.



Mark Tambllyn

Pelican Island and its array of birds can be viewed by boat only. Access to the island is restricted to outside of the posted closed area around the island. Boating is permitted elsewhere in the open water areas of the refuge. Boaters are cautioned to observe posted slow speed zones in the Refuge.

Fishing is permitted in the open water areas of the Refuge. There are good fishing opportunities for redfish, snook, sea trout, mangrove snapper, Jack Crevalle and other popular sport fish. State fishing regulations apply. Fishermen can recycle or discard their used monofilament fishing lines at area boat ramps. Fishermen are encouraged to use biodegradable cotton braided fishing line where available.

Recreational shellfish harvesting is permitted in the Refuge, but outside of the designated commercial shellfish leases. Updated state harvest maps and regulations are available at most tackle shops.

Other wildlife-oriented recreation includes wildlife photography and wildlife observation. These opportunities are available through local boat tours. Public access and use in the impoundments and upland areas of the Refuge is restricted until public facilities are in place.

Future visitor facilities will include a boardwalk and observation tower to view Pelican Island, nature trails, and wildlife drive. These facilities will be integrated with the restored natural communities to provide visitors the experience of travelling along tree-lined trails and into habitat openings and edges where they can view wading birds, shorebirds, and waterfowl. These facilities will be made possible through a partnership with Indian River County.

Equal opportunity to participate in and benefit from programs and activities of the U.S. Fish and Wildlife Service is available to all individuals regardless of physical or mental disability. For more information please contact: The U.S. Department of the Interior; Office for Equal Opportunity, 1849 C Street, NW, Washington, DC 20240