

# An Amphibious Assault

by Cheri M. Ehrhardt



**A loggerhead hatchling emerges from its nest.**

*USFWS photo*

Standing at night atop a dune on Florida's Atlantic coast, you hear the ocean waves rolling onto the sandy shore and feel the sea spray on your face. The moonlight plays and flickers in the waves. It is soothing and peaceful.

Then, the amphibious assault begins. Dark forms move onto the shore. They lumber forward, intent on their target. Elements of the assault force range from the size of a child's tricycle to the occasional small all-terrain vehicle.

As the moonlight brightens, you realize that this amphibious assault force is actually composed of sea turtles. Their target is Archie Carr National Wildlife Refuge, a 20.5-mile (33-kilometer) stretch of beach located in east-central Florida between Melbourne Beach in Brevard County and Wabasso Beach in Indian River County. Congress authorized the refuge in 1989 to protect sea turtle

populations and their nesting habitat. The refuge was named after the late Dr. Archie F. Carr, Jr., in honor of his contributions to the conservation of sea turtles and Florida's ecology. Hosting about 1,000 sea turtle nests per mile, the refuge provides habitat each year for 22,000 nests of loggerhead, green, and leatherback sea turtles. In fact, the refuge protects the most important sea turtle nesting beaches in the United States, with 25 percent of all loggerhead and 35 percent of green sea turtle nests.

Adjacent to the refuge is an important juvenile sea turtle nursery within the Pelican Island National Wildlife Refuge

**Right: A member of the "amphibious assault" team, this female loggerhead prepares to dig her nest.**

*USFWS photo*



and the Indian River Lagoon (which we regard as our nation's most biologically diverse estuary). But these lands are not just for sea turtles. At least 38 federally and state listed threatened and endangered species (including 8 reptiles, 10 birds, 4 mammals, and 16 plants) rely on the mix of lands and waters in the refuge, including maritime hammock, coastal scrub, dune, and beach habitats (see Table 1). It also contains at least 30 archaeological sites (primarily Ais Indian shell middens, with 4 burial mounds).

The Archie Carr Refuge is a unique example of cooperation and partnership for the conservation of unique habitats for endangered species. This is especially evident when looking at the checkerboard of ownership within the refuge's overall acquisition boundary, which includes publicly held natural lands and other lands already converted to use for residential and commercial purposes. Given the ongoing development pressure in this area, the Service recognized the need to protect the remaining natural lands. Those lands purchased prior to the formation of the refuge under the State of Florida's Save Our Coasts and Beach and Riverfront programs served as the nucleus for the refuge. To date, the partner agencies and organizations have spent over \$100 million on land acquisitions for the refuge. Many more agencies and organizations have been involved in the refuge since before its creation (see Table 2).

Today, this stretch of barrier island includes natural lands administered or owned by the Fish and Wildlife Service, State of Florida, Brevard County, Indian River County, the RK Mellon Foundation, and private landowners. Nevertheless, despite the support, dedication, and involvement of the wide variety of partners, over 40 percent of the lands located within the refuge's proposed acquisition boundary have already been developed, predominantly for high end residential and commercial uses. This development is fueled by Florida's human population growth, which has expanded from 13 million in 1990 to



over 16 million today. Scrub habitat has declined such that only one family of Florida scrub-jays remains in the vicinity of the refuge. The foredune habitat of the southeastern beach mouse also has suffered greatly from development and dune erosion.

Human development and disturbances are multiplying, furthering habitat loss and fragmentation. Human impacts to these beaches include an escalation of lighting along the beach, beach access points, nighttime public use of the beach, commercial and residential development on the barrier island, commercial fishing, recreational boating (including the personal watercraft popularly known as jet skis), beach

**Archie Carr NWR, an "island" of habitat on Florida's rapidly developing Atlantic coast.**

*USFWS photo*

**Table 1.** The Archie Carr National Wildlife Refuge supports a variety of federally (FWS) and state (FWC) listed species: at least 15 federally threatened or endangered species and 38 species listed by the State of Florida as endangered, threatened, of special concern, or commercially exploited, including 8 reptile, 10 bird, 4 mammal, and 16 plant species.

<i>Scientific Name</i>	<i>Common Name</i>	<i>FWS (15)</i>	<i>FWC (38)</i>
<b>Reptiles (8)</b>			
<i>Caretta caretta</i>	Atlantic Loggerhead Sea Turtle	T	T
<i>Chelonia mydas mydas</i>	Atlantic Green Sea Turtle	E	E
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	E	E
<i>Drymarchon corais couperi</i>	Eastern Indigo Snake	T	T
<i>Lepidochelys kempii</i>	Kemp's Ridley Sea Turtle	E	E
<i>Eretmochelys imbricata imbratica</i>	Atlantic Hawksbill Sea Turtle	E	E
<i>Gopherus polyphemus</i>	Gopher Tortoise		SSC
<i>Nerodia clarkii taeniata</i>	Atlantic Salt Marsh Snake*	T	T
<b>Birds (10)</b>			
<i>Aphelocoma coerulescens</i>	Florida Scrub-jay	T	T
<i>Charadrius melodus</i>	Piping Plover	T	T
<i>Falco sparverius paulus</i>	Southeastern American Kestrel		T
<i>Falco peregrinus tundrius</i>	Arctic Peregrine Falcon		E
<i>Haematopus palliatus</i>	American Oystercatcher		SSC
<i>Haliaeetus leucocephalus</i>	Southern Bald Eagle	T	T
<i>Mycteria americana</i>	Wood Stork	E	E
<i>Pelecanus occidentalis</i>	Brown Pelican		SSC
<i>Rynchops niger</i>	Black Skimmer		SSC
<i>Sterna antillarum</i>	Least Tern		T
<b>Mammals (4)</b>			
<i>Balaena glacialis</i>	Right Whale	E	E
<i>Megaptera novaeangliae</i>	Humpback Whale	E	E
<i>Peromyscus polionotus niveiventris</i>	Southeastern Beach Mouse*	T	T
<i>Trichechus manatus</i>	West Indian Manatee	E	E
<b>Plants (16)</b>			
<i>Acrostichum danaeifolium</i>	Giant Leather Fern		CE
<i>Asclepias curtissii</i>	Curtis' (Sandhill) Milkweed		E
<i>Crossopetalum ilicifolium</i>	Christmas Berry		E
<i>Encyclia tampensis</i>	Butterfly Orchid		CE
<i>Ernodea littoralis</i>	Beach Creeper		T
<i>Hexalectris spicata</i>	Crested Coralroot		E
<i>Lantana depressa</i>	Pineland Lantana		E
<i>Myrcianthes fragrans (= Eugenia simpsonii)</i>	Simpson Stopper		T
<i>Opuntia stricta</i>	Shell Mound Prickly Pear Cactus		T
<i>Osmunda cinnamomea</i>	Cinnamon Fern		CE
<i>Peperomia humilis</i>	Pepper (no common name)		E
<i>Scaevola plumieri</i>	Inkberry		T
<i>Tillandsia balbisiana</i>	Inflated (Reflexed) Wild Pine		T
<i>Tillandsia utriculata</i>	Giant Wild Pine; Giant Air Plant		E
<i>Verbena maritima</i>	Coastal Vervain		E
<i>Verbena tampensis</i>	Tampa Vervain		E

\*Historically (but not recently) found at the Refuge

**Key:** E = Endangered T = Threatened SSC = Species of Special Concern CE = Commercially Exploited



erosion, and elevated nutrient loading and pollution in nearby waterways. Other threats include large storms and nest predation; the main predators at sea turtle nests are raccoons and ghost crabs, while ground nesting birds are heavily affected by feral and free ranging domestic cats. In some sections within the developed areas of the beach, predation claims up to 100 percent of sea turtle nests.

But things are looking up for the refuge. Historically, the Archie Carr and Pelican Island refuges were managed by just one man and one boat. More recently, they received permanent staff to assist the Refuge Manager: a Biologist, a Biological Technician, and a Refuge Ranger. Term or temporary staff include an Administrative Assistant, seasonal Biological Technician, and a Refuge Operations Specialist. Working with the partners, the new staff will help ensure that we continue to protect these special beaches.

Later in the summer, when the amphibious assault is just a memory, millions of sea turtle hatchlings will bubble out of the sand from their warm underground nests. The moon's glow on the water will guide them back to the ocean and the Gulf Stream to begin the process anew.

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*For more information about the Archie Carr NWR, contact the Refuge Manager, Paul Tritaik at 772/562-3909, ext. 244. Cheri M. Ebrhardt, AICP, is the Natural Resource Planner at the Merritt Island NWR Complex.*



**Observing a nesting loggerhead.**

*USFWS photo*

**Table 2. Refuge Partners**

- Brevard Zoo
- California Turtle and Tortoise Society
- Caribbean Conservation Corporation
- Columbus Zoo
- Defenders of Wildlife
- Disney Corporation
- Florida Affinity, Inc.
- Florida Defenders of the Environment
- Friends of the Carr Refuge
- Greenpeace
- Hubbs-Sea World Research Institute
- Indian River Land Trust
- International Fund for Animal Welfare
- Marine Resources Council
- national, Florida, and local Audubon societies
- national, Florida, and local Sierra clubs
- National Wildlife Federation
- The Nature Conservancy
- New York Turtle and Tortoise Society
- Ocean Conservancy
- RK Mellon Foundation
- The Sea Turtle Center
- Sea Turtle Preservation Society
- Sea Turtle Survival League
- The Wilderness Society