

U.S. Fish & Wildlife Service

# Florida Keys

*National Wildlife  
Refuges*



*The National Wildlife Refuges of the Florida Keys are unmatched anywhere in the world. They are a part of the National Wildlife Refuge System—an extensive network of lands and waters protected and managed especially for wildlife and its habitat.*

*A branch of the U.S. Fish and Wildlife Service, the National Wildlife Refuge System protects more than 92 million acres of land and water from Alaska to the Florida Keys and from the South Pacific to Maine, preserving critical habitat for 170 federally listed threatened or endangered species and other wildlife. Symbolized by the Blue Goose, these national treasures inspire more than 30 million visitors a year.*

## Florida Keys National Wildlife Refuges



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



*Mangrove*

Welcome to the Florida Keys! There are four National Wildlife Refuges located in this extraordinary and seemingly endless expanse of sea, islands and sky—the National Key Deer Refuge, Great White Heron, Key West and Crocodile Lake National Wildlife Refuges. These refuges are part of a vast subtropical ecosystem. This distinctive chain of islands stretches almost 150 miles from the southeastern tip of Florida, curving gently westward dividing the aqua-green waters of the Gulf of Mexico from the distant deep blue Atlantic Ocean. These refuges support several habitats that sustain a wide variety of plants and animals, some of which do not exist anywhere else on earth.

The four refuges include more than 416,000 acres of land and open water. Most keys are fringed along the shoreline by red and black mangroves. On larger keys, this gives way to a wide variety of tropical and subtropical trees and shrubs on slightly higher ground. These lands maintain a unique biodiversity by protecting and preserving important freshwater wetlands, mangroves, tropical hardwood forests (hammocks), and pine rockland forests. Together, these habitats provide the four basic components of a habitat—food, water, shelter and open space—necessary for the survival of 22 federally listed threatened or endangered species and other native wildlife. As commercial and residential development in the Keys increases, pressure on limited land and water resources become more crucial to the survival of this fragile ecosystem.



*Snowy Egret*



*Pelican*

The bird life on the refuges include a variety of long legged wading birds such as egrets and rare species such as the roseate spoonbill. One can occasionally see these wading birds on their spindly legs patiently stalking the flats, stabbing the water for fish in the company of pelicans. One may also find more elusive birds such as the white-crowned pigeon. A birding checklist is available at the refuge visitor center.

Visitors may also see diminutive Key deer, toothy alligators and colorful butterflies. You might even catch a glimpse of a leaping dolphin or a ray gliding along the bottom of the shallow flats. The waters teem with brilliantly colored tropical fish. Anglers have opportunities to catch challenging sportfish such as bonefish, tarpon and permit. Catch and release of these sportfish is an encouraged tradition.



*Osprey chick*

*Dowitcher*



### **Visitor Center/Headquarters**

The visitor center for the Florida Keys National Wildlife Refuges is located in the Big Pine Key Plaza on Key Deer Boulevard, 1/4 mile north of the traffic light on US 1 at mile marker 30. Visitors are encouraged to stop in for more information about the refuges and see the wildlife displays. The center is accessible to the disabled. The administrative headquarters for the Florida Keys National Wildlife Refuges are located on Big Pine Key at the west end of Watson Boulevard.

### **Managing the National Wildlife Refuge System**

The National Wildlife Refuge Improvement Act of October 9, 1997 recognizes as law that the primary function of a National Wildlife Refuge is to conserve fish, wildlife, plants and their habitat for the long-term benefit of the American people. Public use of a refuge may be allowed only when the activity is compatible with the mission of the System and purpose of the individual refuge. Wildlife-dependent activities such as fishing, hunting, environmental education, photography, and wildlife observation will take precedent over other public use activities. Your cooperation in obeying refuge regulations will help protect you, the wildlife and wildlife habitat. They are printed toward the end of this brochure for your reference.



## *National Key Deer Refuge*

National Key Deer Refuge is located in the Lower Keys and consists of a patchwork of small and large tracts of pine rockland forest, dense mangrove forest flooded by salt water, hardwood hammocks and freshwater wetlands. Most of the refuge is open to the public. The refuge has three self interpreted areas—the Blue Hole, the Jack Watson Wildlife Trail and the Fred Manillo (wheelchair accessible) Wildlife Trail. Refer to the map for their location. Also, visitors are welcome to hike refuge fire roads that are open for access. There are additional hiking trails on Cudjoe Key, Upper Sugarloaf Key, Lower Sugar Key and the trail locations are shown on the map.



*The Blue Hole on Big Pine Key*



*Poisonwood*

Big Pine Key has extensive growths of Florida slash pine, silver palms, thatch palm and poisonwood. Poisonwood produces an oil which can cause a rash to humans similar to poison ivy. To identify it, look for telltale “burn” marks on the leaves.



*Bromeliads in  
Buttonwood tree*

Orchids, cactus, and air-plants add to the rich variety of plants. At least 466 species of plants have been found on Big Pine Key alone. Within the Key’s underlying rock are natural solution holes created by rainfall dissolving the island’s limestone substrate.

These natural depressions act as efficient rain water collectors and historically have enabled the Key deer to thrive on Big Pine Key when other islands were dry.

The Blue Hole is an abandoned limestone quarry. The rock material removed was used to build many of the original roads on Big Pine Key. Since there is no inlet or outlet to the Blue Hole, its existence is dependent on rainfall and from salt water which flows through the surrounding limestone. Fish, turtles, alligators and the occasional wading bird can be found in the Blue Hole. Alligators can often be seen hugging the shoreline, lazily sunning themselves. **Do not feed or molest the alligators—it is dangerous and illegal!** Access for the disabled is provided.



*Alligator*



*Jack C. Watson  
Wildlife Trail*

The Jack C. Watson Wildlife Trail is a 2/3 mile loop through pine rockland forest and freshwater wetlands. The Fred C. Manillo Wildlife Trail is an 800-foot wheelchair accessible pathway, ending at an observation platform overlooking a freshwater wetland. Both trail heads are in a parking lot located approximately 1/4 mile north of the Blue Hole on Key Deer Blvd.

All wildlife and plants on a National Wildlife Refuge are protected. Endangered and threatened wildlife as listed on the federal Endangered Species List receives priority protection. This refuge protects the

endangered Key deer, Lower Keys marsh rabbit and the silver rice rat to name a few.

Key deer are found on approximately 30 islands in the lower keys. The Key deer is the smallest sub-species of the Virginia white-tailed deer. They were isolated here about 4,000-10,000 years ago when the Wisconsin glacier melted and ocean levels rose, creating a chain of islands. They are geographically and genetically isolated from other populations of white-tail deer and have evolved and adapted to a subtropic environment. Because the Key deer population is low and remains under threat of extinction from human interaction, the subspecies is listed as endangered, receiving protection under the Endangered Species Act. This increased human interaction is having many influences on the Key deer and causing changes in their behavior. Feeding them causes them to congregate making them more susceptible to disease. Loss of alarm and flight response makes the deer more vulnerable to harassment or death from dogs, cars, and poachers.



*Key Deer*



Under federal and state law, it is illegal to feed or disturb endangered or threatened species and refuge regulations prohibit feeding or disturbing any wildlife on a national Wildlife Refuge. The least obtrusive way to observe wildlife while traveling along the roads is to remain fully within your vehicle. If you are out of your vehicle or hiking on the refuge, do not approach wildlife, extend your arms towards them or attempt to call them to you. National Wildlife Refuges are havens for wild animals. **Please do not treat wildlife as pets or expect them to behave as pets!** For more information about the Key deer, see the refuge brochure *Facts on the Key Deer* available at the refuge visitor center.



*Eastern Diamondback*

Also, protected are such wildlife species as the Eastern diamondback rattlesnake, songbirds, wading birds, shorebirds and a variety of unique West Indian plants. For more information on birds of the Keys, a checklist, and suggested places to observe birds, see the refuge brochure *Birds of the Florida Keys National Wildlife Refuges* which is available at the refuge visitor center.

*Turkey vulture*



*Key West and  
Great White  
Heron National  
Wildlife Refuges*

Encompassing numerous islands known locally as the Backcountry, Key West and Great White Heron National Wildlife Refuges are among the oldest refuges in the nation. These areas were set aside for the primary purpose of maintaining a preserve and breeding ground for native birds. In contrast to the “main” Keys (linked by the Overseas Hwy/US 1), the Backcountry, with a few exceptions, is a pristine, uninhabited area of islands scattered amidst the biologically rich waters of the Florida Bay and the Gulf of Mexico. In 1975, Congress recognized the special qualities of these refuges by designating many of the islands as part of the National Wilderness Preservation System, providing them with additional protection. Both refuges are of great interest scenically and scientifically, exemplifying a subtropical region unlike any other part of the United States.

Peering westward from Key West, the southernmost point in the continental U.S., one gazes upon Key West National Wildlife Refuge. This refuge was the first National Wildlife Refuge designated in the Florida Keys. It was established by Theodore Roosevelt in 1908 to curtail the slaughter of birds whose feathers were highly valued in the hat industry. Wading birds were threatened with extinction before this refuge began providing a safe haven for them and other threatened plant and animal species.

Encompassing more than 300 square miles of open water and 2,019 acres of land on 26 islands, the refuge protects habitat for a wide variety of birds, including nesting and/or wintering populations of terns, frigate birds, white-crowned pigeons, ospreys and great white herons. The sandy beaches are nesting areas for the endangered





**Legend**



**Visitor Center**



**Walking Trails**



**Deer Viewing**



**Wildlife Viewing**

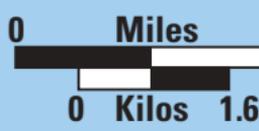


**Refuge Lands.  
Look for Refuge  
Boundary Signs**



**Private Property.  
Respect Private  
Property rights.**

To Key West  
←





No Name Key

Watson Blvd.

Wilder Rd.

940

1

To Marathon

Long Beach Road

N

Miles

1

0 Kilos 1.6

Atlantic green and loggerhead turtles and is the only breeding site in the U.S. for the endangered hawksbill turtle.

Great White Heron National Wildlife Refuge is a vast array of pristine, isolated keys extending more than 290 square miles of open water in the Gulf of Mexico from Key West to Marathon. Refuge lands total 6,297 acres. The habitats of these keys are almost without exception, low mangroves and are not easily accessible. Established in 1938, the refuge provides permanent protection to the largest of North America's wading birds—the great white heron. With long graceful plumes, this color variation of the great blue heron is found only in the Florida Keys and south Florida. The only known breeding colony of laughing gulls in the Lower Keys also nest here as well. Equally significant, the few beaches on the islands of this refuge also provide nesting habitat for loggerhead and green turtles. The marine waters are habitat for leatherback and Kemp's ridley turtles and the occasional manatee. These waters are vital nursery grounds for hundreds of species of fish and shellfish. The refuge also preserves the scenic, wild character of the Florida Keys Backcountry. For more information about boating in these two refuges, please obtain a copy of the *Key West and Great White Heron National Wild Refuges Backcountry regulations brochure*.

L. Page Brown



*Laughing gull*



*Green and Loggerhead nestlings*

*Crocodile Lake  
National  
Wildlife Refuge*

Crocodile Lake National Wildlife Refuge was established in North Key Largo on April 2, 1980 to protect and preserve critical habitat for the endangered American crocodile. The mangrove wetlands of the refuge provide habitat, solitude, and the only known nesting area on Key Largo for this shy reptile. Mangrove forests fringing the shoreline also support a wide variety of wildlife including wading birds and songbirds, as well as serving as important nursery habitats for many fish species.



*Crocodile*

The refuge also protects a unique tropical hardwood hammock, which supports a high diversity of plant species, 80% of which are of West Indian origin. The refuge and the adjacent Key Largo Hammock State Botanical Site contain the largest continuous tract of hardwood forest remaining in the Florida Keys. Nearly 100 species of native trees and shrubs can be found in these hammocks, more than found in some entire states! These forests are home to several endangered and threatened species including the Key Largo woodrat, Key Largo cotton mouse, Schaus swallowtail butterfly, Eastern indigo snake and

*P. Frank*



*Key Largo woodrat*

*Tom Wilmers*



*Schaus Swallowtail  
butterfly*

Stock Island tree snail. Hardwood hammocks also provide important seasonal habitat for migratory neotropical songbirds and permanent homes to colorful tree snails and butterflies.

Due to the small size of the refuge and sensitivity of the habitat and wildlife to human disturbance, the refuge is closed to general public use. Access to the refuge for research and organized educational groups is by Special Use Permit only. An interpreted butterfly garden is open to public access next to the refuge headquarters. The garden and office are located on County Road 905 in Key Largo, approximately two miles north of the US 1/C-905 intersection (Card Sound Road turnoff at mile marker 106.3). The public can visit the self-guided nature trail located at the Key Largo Hammocks State Botanical Site adjacent to the refuge to see similar habitat and wildlife species. For further information, contact the Refuge Manger. The address is found on the back cover.



*Gumbo Limbo tree*

### **Wildlife Management— Part Science and Part Art**

Wildlife management is not a pure science though management uses the best scientific information available at that time. Usually, the results are what is expected, however, not always. Some techniques in wildlife management are still experimental. However, learning comes from experimentation and changes are made for the better. Also, a proven wildlife management technique used in one area of the country may not work in another area of the country. The first rule in wildlife management is, if it isn't broken, don't fix it. Human interaction quite often changes the balance of nature. Long before humans began manipulating the habitat in the Keys, habitat and wildlife evolved adapting to the forces of nature—wildfires and floods for example.



*Key deer fawn*

Humans have interrupted these natural occurrences by suppressing wildfires to provide a more comfortable life. To correct this on the refuges of the Florida Keys, management techniques such as controlled prescribed burns are used to mimic natural wildfires. A side benefit to this controlled burn is a reduction in forest fuels making a wildfire a lesser threat to adjacent homes. Another management technique is to educate boaters about how to minimize disrupting wildlife. Where public opinion favors stronger action or when the need for stronger action is apparent, some public use activities may be restricted if they disrupt wildlife. Where restriction is not enough, then the activity may be banned. For example, public opinion generated the banning of personal watercraft from Key West and Great White Heron National Wildlife Refuges.

*Prescribed burn*



## **Natural History of the Florida Keys**

It has taken 100,000 years for geological, environmental, and physical processes to set the stage for the current natural environment of the Florida Keys. Specific physical conditions had to exist before this region's biological communities could become established and flourish into the unique plant and animal communities that comprise this intricate and dynamic ecosystem. During periods of warm climates, the present day Keys lay under the surface of the ocean, flourishing at times as coral reefs. When the climate became cooler, polar ice caps grew and the oceans receded to expose vast areas of the sea floor. Terrestrial plants and animals colonized what was a sea bed.



The sea level remained low until about 15,000 years ago when the climate began to warm, releasing water held in the ice caps and causing the sea to rise. About 4,000 years ago islands were created in this area and resulted in what we call the Florida Keys.

*Excerpt, courtesy of the Monroe County Environmental Education Advisory Council and their publication, the Florida Keys Environmental Story, Geological History of the Florida Keys by Eric Mueller, PhD, and George O. Winston.*



## **Cultural History**

The Tequesta and Calusa native American tribes arrived in South Florida approximately 5,000 years ago, but did not expand into the Keys until 800 A.D. There they remained, living off the land and sea for another 1,000 years until European explorers discovered the Keys. The 18<sup>th</sup> century saw changes in ownership as the islands passed from Spain to Britain, back to Spain and finally to the United States. Enslavement and European diseases greatly reduced the number of Native Americans. Survivors fled to Cuba, resulting in the loss of 5,000 years of prehistoric culture in the Keys. Over the next 100 years, hardy Europeans, Americans, Cubans, and Bahamians, known as conchs, made their homes in the Keys. They survived by salvaging wrecks, hunting turtles, sponging, rum-running, perfecting cigars, farming pineapples and logging the hardwood hammocks.

In 1904, Henry Flagler extended his railroad service from Miami down to Key West and 20 years later, the first ever road-ferry route followed. During the depression of the 1930's, the Federal Emergency Management Agency (FEMA) encouraged a change toward a tourism-based

*Women Key*



economy. The 1935 Labor Day hurricane swept into the Keys, destroying the Flagler railroad and killing more than 400 people. By the 1950's, the Overseas Highway was built, followed by electricity, water, and better roads. In 1980, the new Overseas highway was completed, spurring a jump in development that significantly increased the population of the Keys over the next two decades.



Tom Wilmers

### **Calendar of Events**

Wildlife viewing is available year round. Visitors have opportunities to see Key deer, alligators, turtles, birds including great white herons and pelicans, lizards, and an occasional snake. Other birds migrate through in October and April.

*Spring* - Key deer fawns, ospreys, wading birds, gulls and song birds. Earth Day cleanup late April.

*Summer* - Key deer fawns and some waterfowl.

*Fall* - Raptors, wading birds, gulls, and song birds. Guided walks.

September - Beach Cleanup Day

October - Florida Keys Birding and Wildlife Festival, Fall migration and National Wildlife Refuge Week activities.

*Winter* - Raptors, wading birds, gulls and songbirds. Guided walks and programs. Volunteer meetings





## Public Use Management

Public access is permitted on almost all of the lands of National Key Deer Refuge, many of the beaches of Key West National Wildlife Refuge, and with a Special Use permit several of the islands in Great White Heron National Wildlife Refuge. For more information on Key West and Great White Heron National Wildlife Refuges, please obtain a copy of the *Key West and Great White Heron National Wildlife Refuges* Backcountry regulations brochure available at the visitor center. In recent years though, large increases in the number of people living and vacationing in the Florida Keys has resulted in conflicts with wildlife and degradation of wildlands. By law, the primary purpose of a National Wildlife Refuge is managing, protecting and enhancing habitat for wildlife. Public use is permitted so long as it is compatible with primary purpose of the refuge. Wildlife can best be viewed quietly from a distance. If you observe a problem on **your** refuge, please let us know. Enjoy your visit to the Florida Keys National Wildlife Refuges.



This sign indicates the boundary of the refuge. The Refuge Manager has authorized this area open during daylight hours to public access for wildlife-dependent activities



This sign means that there is NO public access permitted in the area beyond this sign. Access is prohibited to protect wildlife and habitat and/or to protect visitors.

*To enhance your visit, the following wildlife-dependent activities are permitted:*



Fishing on Key West and Great White Heron NWRs



Environmental education



Wildlife and wildlands observation



Personal photography



Hiking on designated trails



Pets on leashes



Bicycling is permitted on refuge trails and fires roads, except where prohibited, to protect pedestrians.

---

*To protect you, other visitors and the environment, the following activities are prohibited:*



Weapons are prohibited unless cased and left in vehicles or boats. Discharging of firearms is prohibited in the county except at authorized ranges. Hunting is not permitted in the Florida Keys.



The use of metal detectors to search for antiquities, artifacts, or treasure is prohibited. Cultural resources belong to everyone. Removal for personal use prohibits the opportunity for anyone else to experience our cultural heritage.



Horses are prohibited on refuge lands. Bicycling is prohibited on the Fred Mannillo, Jack Watson and Blue Hole Trails.



Pets are prohibited on refuge managed lands within Key West and Great White Heron National Wildlife Refuges. Pets leave waste that is a nuisance to visitors and may attract fire ants and carry diseases injurious to wildlife. **Seeing-eye dogs for the visually disabled are permitted.**



Camping on Refuge lands is prohibited. There are no sanitary facilities and tent poles on beaches can intrude into turtle nests.



Fires on refuge lands are prohibited. Fires can start destructive wildfires or destroy turtle nests.



No poles or pipes (such as beach umbrellas) may be stuck into the ground. These can penetrate turtle nests and destroy eggs.

Feeding, injuring, molesting or removing wildlife, or natural items is prohibited. Feeding is harmful to wildlife and molesting an animal may cause it to attack. Bones are used by small rodents as a food source. Seashells are used as homes for certain animals such as hermit crabs and help form beaches.

Disturbing, injuring or removing plants and shells is illegal. Plants are food and shelter for wildlife and help prevent erosion. Some plants are threatened or endangered. Unauthorized removing increases the risk of extinction. Introducing plants or animals onto the refuge is prohibited. Exotic plants and animals compete for resources with native plants and animals. Introducing additional native wildlife will also cause competition with the local wildlife populations or may introduce disease or parasites.

Storing equipment or property on refuge lands is prohibited. Abandoned property is unsightly and costs taxpayers for its removal.

Commercial activity on refuge lands without a refuge permit issued is prohibited.



*Volunteers at Blue Hole*

Organized groups visiting the refuges should make reservations at the refuge visitor center at least two weeks prior to their visit. Reservations may be made by calling the refuge visitor center at 305/872 0774. Commercial activities require a month's notice for consideration and may only be conducted by the issuance of a Special Use Permit. To receive information on how to apply for a Permit, contact the refuge visitor center by writing to the address on the back cover or calling 305/872 0774.



**Volunteering—  
Doing the Keys a FAVOR**

There are many things you can do to help preserve and protect the Keys unique natural resources. One way you can help is by volunteering your time, expertise and services and by volunteering with the Friends And Volunteers of Refuges (FAVOR)—a nonprofit organization that supports the National Wildlife Refuges of the Florida Keys in fulfilling refuge management goals. If you would like more information about FAVOR or volunteering, contact:

FAVOR  
P. O. Box 431840  
Big Pine Key, FL 33043-1840  
305/872 0645

**National Key Deer Refuge, Key West &  
Great White Heron National Wildlife  
Refuges**

**P. O. Box 430510**

**Big Pine Key, Florida 33043 - 0510**

**Visitor center: 305/872 0774**

**FAX: 305/872 2154**

**Administrative office: 305/872 2239**

**FAX: 305/872 3675**

**fw4\_rw\_key\_deer@fws.gov**

**Crocodile Lake National Wildlife Refuge**

**P. O. Box 370**

**Key Largo, Florida 33037**

**phone: 305/451 4223**

**FAX: 305/451 1508**

**fw4\_rw\_crocodilelake@fws.gov**

**June 2002**



CELEBRATING A  
**CENTURY**  
of CONSERVATION

