



Environmental Education Program

PRE-VISIT RESPONSIBILITIES

- Prepare your class **before** your visit to the refuge by giving them a basic knowledge of the U.S. Fish and Wildlife Service, The National Wildlife Refuge System, Jay Norwood “Ding” Darling, and estuarine and mangrove habitat. Establishing familiarity with this information is a great way to get the most out of the education program.
- **Use the lessons and activities provided** to help your children understand wildlife and their habitats. These lessons are developed to meet the Sunshine State Standards.
- Discuss with your students in a positive way, how to behave at a National Wildlife Refuge:
 - ✓ No picking or taking of anything from the Wildlife Refuge
 - ✓ No approaching any animals
 - ✓ No quick movements - they will scare the animals away
 - ✓ No feeding of any animals or leaving any food behind in the refuge
 - ✓ No running or yelling-the quieter they are the MORE they may see
 - ✓ Stay with the group and listen to the leader at all times for safety reasons
 - ✓ Behave as if they were learning in their classroom – this is an outdoor classroom.

CONTACT:

Becky Wolff, Environmental Education Refuge Ranger (239) 472-1100 ext. 236 to discuss curriculum OR logistics.

Field Trip Guidelines

LOGISTICS:

- ☉ Most of the tour will be out in the refuge. We will be hiking 6/10 of a mile (round trip) to the NEW! Wildlife Education Boardwalk.
This hike is on a flat surface that is partially boardwalk and partially gravel trail
- ☉ An adult-to-student ratio of at least 1:10 is recommended for students above 4th grade. More adults are suggested for younger children.
- ☉ Teachers are asked to call the Refuge if they are running late.
Ranger Becky's cell phone: 239/940/1198
- ☉ For LUNCH prepare bagged lunches. Groups will be eating in the Refuge classroom and/or outside depending on group size.
- ☉ HAVE STUDENTS BRING BOTTLED WATER, HATS AND INSECT REPELLANT AND PLEASE BE WEARING SUNSCREEN.
- ☉ Please note that Wildlife Drive is CLOSED on Fridays to the public although the education center will still be available for programs. The J.N. "Ding" Darling Education Center is open daily from 9 a.m. to 4 p.m.

SCHEDULE OF THE DAY:

- ☉ Teachers will receive an Environmental Education Program confirmation form prior to arriving at the J.N. "Ding" Darling National Wildlife Refuge. This form will have the schedule for the entire day – if there are issues with logistics/time ratio/or if a problem comes up prior to or during the field trip you must notify a ranger/guide ASAP.

FACILITIES:

- ☉ Restrooms are located at the top of the ramp outside of the Education Center. Everyone will be given a chance to use them ONCE THE TOUR IS OVER and before lunch. Please have an adult accompany students to the restroom.
- ☉ The "Ding" Darling Wildlife Society Bookstore is open daily and is located inside the Education Center. We recommend the **students be divided into small groups to shop and that they have adult supervision AT ALL TIMES.** There are a number of items under \$5.00.

GENERAL INFORMATION:

- ☉ **In a Wildlife Refuge, wildlife comes first.** Please do not stray from designated trails, other authorized areas or your guide. Do not disturb the wildlife - this is their home.

- ☉ Take only memories. The collecting of animals, plants, or other natural materials is NOT permitted in the Wildlife Refuge.
- ☉ Cameras and binoculars are encouraged.
- ☉ If someone becomes injured while visiting the refuge, there is the Sanibel Medical Clinic located at 1715 Periwinkle Way 239/ 395-2005. Please notify a staff member or volunteer immediately.
- ☉ **Websites:** www.fws.gov/dingdarling/
www.dingdarlingsociety.org



US Fish & Wildlife Service

The U.S. Fish and Wildlife Service is the chief conservation agency dedicated to managing endangered species and migratory birds within the United States.

Mission of the United States Fish and Wildlife Service

“To conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.”

Mission of the National Wildlife Refuge System

“To preserve a national network of lands and waters for the conservation and management of the fish, wildlife, and plants of the United States for the benefit of present and future generations.”

Goals of the U.S. Fish and Wildlife Service and National Wildlife Refuge System

1. To preserve, restore and enhance in their natural ecosystems (when practicable) all species of animals and plants that are endangered or threatened with becoming endangered.
2. To perpetuate the migratory bird resource.
3. To preserve the natural diversity and abundance of flora and fauna on refuge lands.
4. To provide an understanding and appreciation of fish and wildlife ecology and peoples’ role in their environment, and to provide refuge visitors with high-quality, safe, wholesome, and enjoyable recreational experiences oriented toward wildlife to the extent that these activities are compatible with the purpose for which the refuge was established.

Objectives for Environmental Education with in the USFWS

1. To foster public understanding and appreciation.
2. To encourage and facilitate thoughtful, safe, and minimum impact of the Refuge.
3. To promote the policies, practices, and programs of the USFWS.
4. To expose students to environmental education problem solving.
5. To support management objectives.

The National Wildlife Refuge System

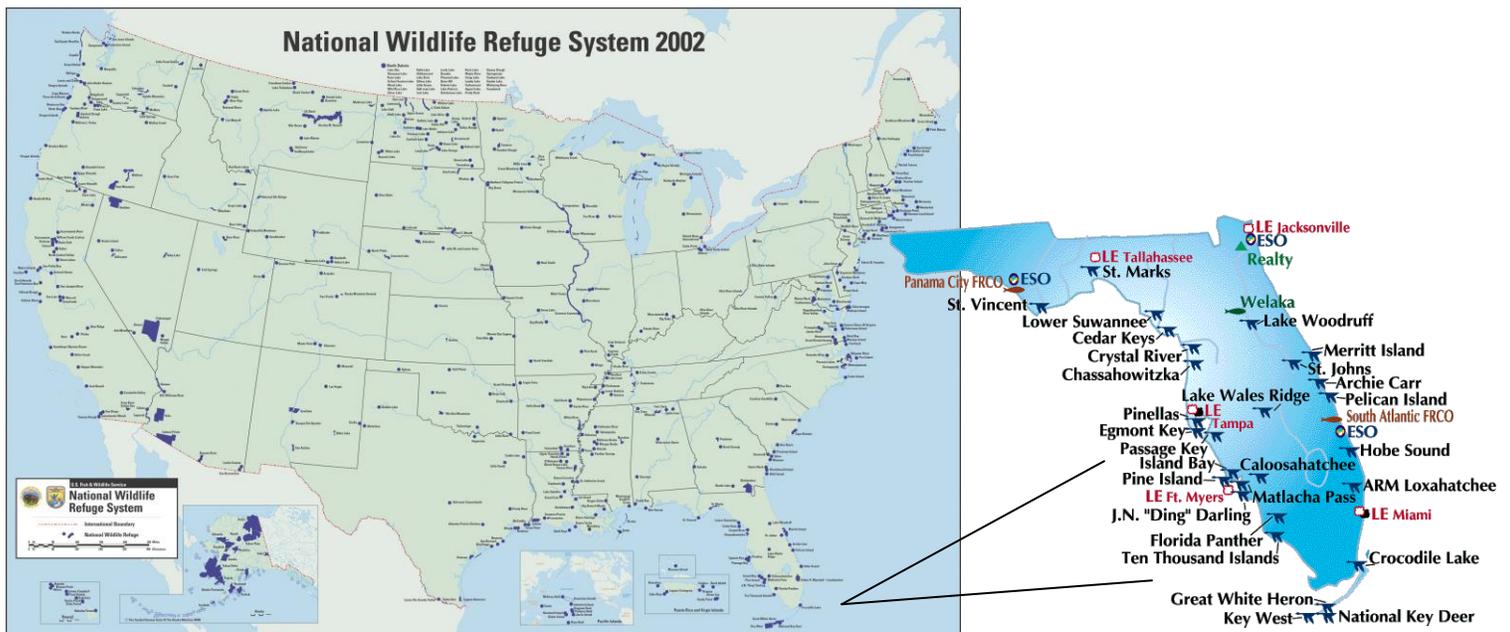
What is a Wildlife Refuge?

A wildlife refuge is a special place for animals - wild lands (habitat) set aside to benefit all wildlife. There is a wildlife refuge located in every state and within 50 miles of every major city in the United States! Wildlife Refuges are placed along four flyways to help migratory birds make their long journeys. These flyways are the Atlantic, Mississippi, Central, and Pacific. Use the activity sheet attached to help your students learn the vocabulary associated with refuges.

The National Wildlife Refuge System, managed by the U.S. Fish and Wildlife Service, is the largest collection of lands and waters set aside for wildlife conservation in the world. The J.N. "Ding" Darling National Wildlife Refuge System is one of more than 540 National Wildlife Refuges and 93 million acres ranging from the Arctic circle in Alaska to the subtropical waters of the Caribbean and South Pacific. There are 28 different wildlife refuges operated by the USFSW in Florida.

The National Wildlife Refuge System began in 1903, when President Theodore Roosevelt established Pelican Island, near Sebastian Inlet Florida, the country's first National Wildlife Refuge. In the early 1900s, market hunting was taking its toll on many birds and much of America's native wildlife. The protection of this small three-acre rookery island on Florida's east coast was vital for the well being of many wading birds (Egrets, Herons, Pelicans). Market hunters were killing the birds for their plumes in order to make feathered hats.

The first refuge manager for what is now the U.S. Fish and Wildlife Service was Paul Kroegel. Paul was a local boat builder who lived on the Indian River across from Pelican Island. He would watch the island and if he saw anyone out there he would take his boat to the island where he often encountered poachers.



Learning about the Wildlife Refuge

F	E	D	E	R	A	L	D	U	C	K	S	T	A	M	P
C	A	C	V	O	N	M	E	R	I	S	P	M	D	G	H
Y	O	O	R	N	I	O	K	L	W	I	T	R	F	L	B
P	E	N	E	I	K	V	S	E	S	T	U	A	R	Y	I
N	D	K	S	L	W	C	S	W	I	L	K	T	L	L	K
W	A	T	K	E	M	N	O	P	E	R	Q	C	O	D	U
X	V	E	R	T	R	D	I	N	K	L	W	C	W	P	O
H	G	C	W	O	P	V	M	D	E	T	R	I	T	U	S
F	L	Y	W	A	Y	S	A	A	W	E	Y	C	I	I	J
V	E	T	Y	I	N	B	S	T	D	U	I	C	D	V	X
H	I	K	L	E	R	V	C	Q	I	N	R	T	E	B	V
A	D	A	P	T	A	T	I	O	N	O	P	W	E	R	T
B	W	D	F	G	Y	B	H	L	G	S	N	R	H	T	S
I	C	O	M	T	C	I	R	A	D	O	N	I	W	L	T
O	P	U	L	R	M	Y	A	M	A	I	E	N	S	M	A
I	M	J	H	L	E	R	I	C	R	N	D	V	S	T	T
M	A	N	G	R	O	V	E	S	L	E	P	E	A	C	I
L	P	M	N	T	G	J	F	R	I	U	K	L	M	F	B
W	S	G	X	J	H	K	D	O	N	F	C	H	N	F	A
D	E	G	U	F	E	R	E	F	I	L	D	L	I	W	H
C	I	P	W	A	D	I	N	G	B	I	R	D	S	A	W

Ding Darling
 Estuary
 Low Tide
 Wading birds

Federal Duck Stamp
 Mangroves
 Detritus
 Adaptation

Conservationist
 Flyways
 Habitats
 Wildlife Refuge

Jay Norwood “Ding” Darling - Famous cartoonist and wildlife conservationist for whom the refuge is named.

Estuary - Place where fresh and salt water meet, very productive ecosystem.

Low Tide - The lowest level of the tide, many animals can be seen feeding at this time.

Wading birds - Birds such as the Herons, Storks, Ibises, and Spoonbills.

Federal Duck Stamp - Must be purchased by waterfowl hunters to attach to their license, a conservation tool, and as an entrance pass for National Wildlife Refuges. The money collected from the Duck Stamp goes back into conserving habitat for animals.

Mangroves - Trees that live in salt water, basis of the food chain in the marine environment.

Detritus - Decaying leaves, twigs, and animal remains in the water. When broken down, they are food for small organisms. This is the basis for the food chain in an estuary.

Adaptation - Something that an animal has or does that helps it survive in its environment.

Conservationist - Someone who works to protect the environment.

Flyways - Routes birds use to fly (migrate) from winter to summer grounds, four flyways in USA: Atlantic, Mississippi, Central, and Pacific.

Habitats - An animals home, a place where it lives.

Wildlife Refuge - “Safe place” for animals, land set aside to benefit wildlife, managed by USFWS.



Jay Norwood "Ding" Darling

Jay Norwood "Ding" Darling (1876-1962) was born in Norwood, Michigan. He attended college in Beloit, Wisconsin, and South Dakota after which he soon began work as a cartoonist for the Des Moines Register. He was one of the top ranked political cartoonists in the nation and his cartoons were syndicated to 130 daily newspapers.

He reached audiences all over the country with cartoons noted for their political satire and conservation messages. In 1934, the country's leading newspaper editors named him the best cartoonist. He also was awarded the Pulitzer Prize in 1923 and 1942. He drew over 15,000 cartoons in his lifetime.

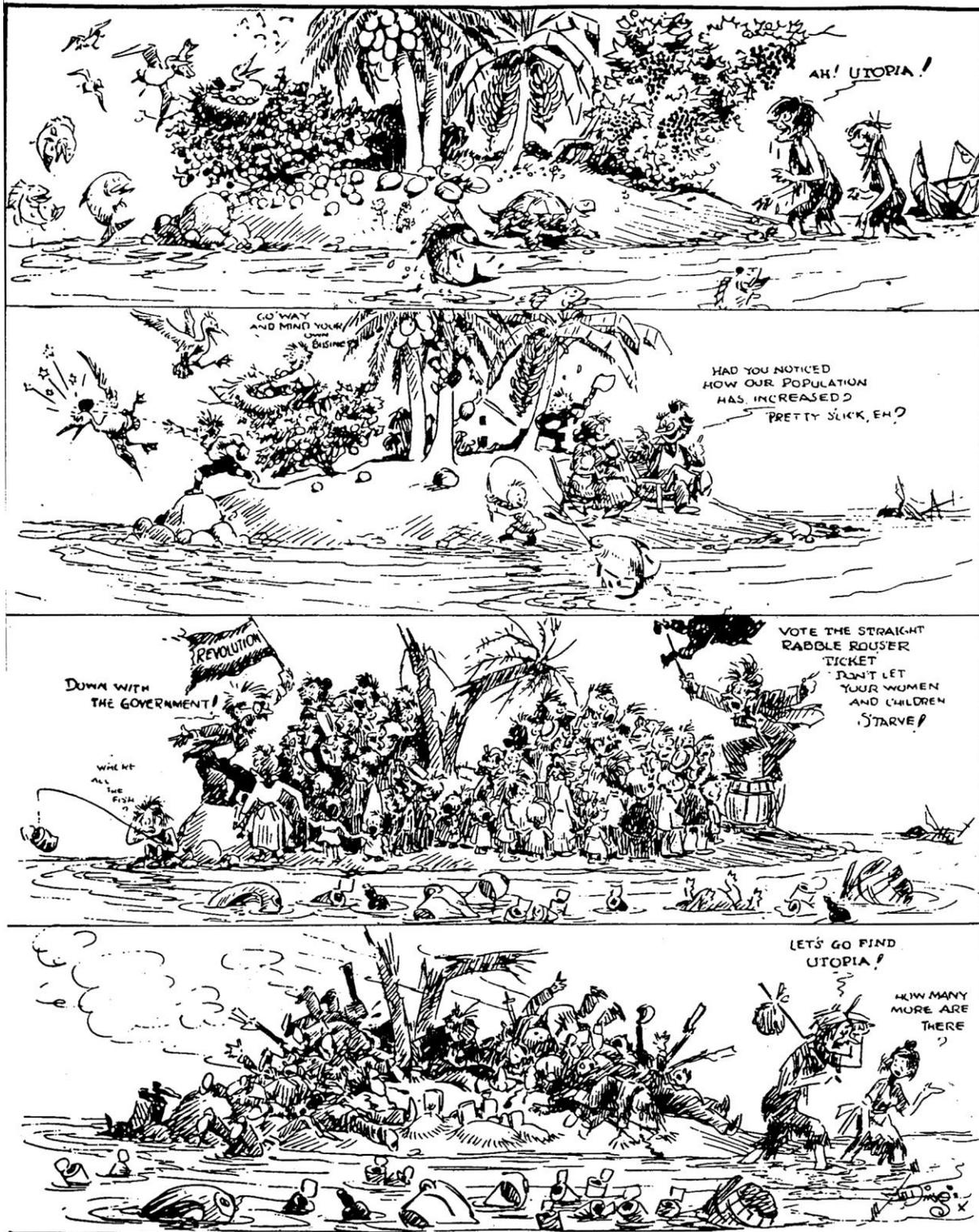
Darling's love for wildlife and his concern about extinction led him to draw many cartoons about the conservation of our natural resources. Darling signed each of his cartoons with his nickname "Ding;" the first letter and last three letters of his last name.

President Franklin D. Roosevelt had appointed Darling in 1934 as chief of the Bureau of U.S. Biological Survey, a predecessor of the U.S. Fish and Wildlife Service. In that position, Darling was instrumental in the conception and development of a stamp to be bought by all waterfowl hunters that would generate funds to pay for acquiring and preserving habitat for ducks, geese and swans.



On March 16, 1934, Congress passed and President Roosevelt signed the Migratory Bird Hunting Stamp Act. Popularly known as the Duck Stamp Act, it required all waterfowl hunters 16 years or older to buy a stamp annually. The revenue generated was earmarked for the Department of the Agriculture, and then five years later transferred the authority to the Department of Interior and the U.S. Fish and Wildlife Service to buy or lease waterfowl sanctuaries. Since then, many stamps have been designed to help other wildlife: turkey stamp, trout stamp, etc.

"Ding" had a fish camp on the island, and was instrumental in establishing the Sanibel National Wildlife Refuge in 1945. After his death in 1962, his island neighbors pushed to change the name of the refuge on Sanibel Island after him.



This cartoon was created by Jay Norwood "Ding" Darling and was published in newspapers across the United States in 1936. **What do you think Ding is trying to say? What is utopia? What island(s) do you think he might be talking about? Use the back or separate sheet of paper to explain.**

Wonderful Wetlands

Wetland simply put, a wetland is just as it sounds—wet land. Wetlands cover about six percent of the earth’s surface. They are found in all continents except Antarctica. There are many types of wetlands: estuary, marsh, bog, fen, moor, peatlands, playa lakes, potholes, swamps, sloughs and wet meadows.

A wetland has these three characteristics:

- **It is covered by water** or has waterlogged soil for at least seven days during the growing season. Waterlogged soil is soil that contains so much water that there is no room for oxygen.
- **The plant life is adapted.** Special plants have adapted to life in the wetlands, and are called *hydrophytes* (this means that they are "water loving". These special plants can grow without much oxygen from the hydric soil.
- **The soil is hydric.** *Hydric* soil is means that it does not have enough oxygen for some plants to grow, such as big evergreen trees.

Coastal Wetland is any land that is flooded or submerged during an average high tide.

Estuaries are special ecosystems where the freshwater rivers meet the saltwater Oceans. The mixture of fresh and saltwater is called **brackish**. Estuarine waters are usually full of nutrients and sediments that have been washed down from the rivers that feed them. They are some of the most productive habitats on Earth! About 70% of the sea food we eat gets its start in estuaries. Also called the “Nursery of the Sea” or “Cradle of the Ocean”

The refuge is a hotspot for birding because it is an estuary. Numerous animals are associated with mangrove estuaries here at the refuge, ranging from 220 species of fish, 24 species of reptiles and amphibians, 18 species of mammals, 181 species of birds and who knows how many invertebrate and plant species! The high diversity of animals here is not an accident, as one species often depends on another for survival - an idea usually referred to as a food web.

Discuss how wetlands have been perceived through out history. They have been given a bad rap! People saw wetlands as wasteland because it was uninhabitable by people. These were wet, dark, unfamiliar places that could not be developed and used by humans. Thus people filled in these areas to be built on. It wasn’t until later that people began to see them as very useful habitat for wildlife.

Exploring Wetlands Extension

Talk to students about wetlands. Have them list wetlands found in your area or around the world. (See list above) Take them on a trip using guided imagery! Have the students close their eyes... have them picture in their minds a wetland. What does it smell like? What sounds do you hear? What animals are there? Have them write five words describing their place they “traveled” to.

- Be descriptive and share them with the class.
- Have them list both negative and positive words describing wetlands.
- Negative words: dark, smelly, grim, desolate, wasteland
- Positive: life, animals, nursery, diversity, green

Benefits of an Estuary:

- Provides Food for both humans and other animals,
- Provides Protection from predators for small and juvenile animals,
- Provides Recreation opportunities,
- Protects the mainland from storms,
- Filters pollutants from our waters.

Mangrove ecosystem and Salt Marshes are a special community of plants and animals. List the types of plants and animals that live in these areas?

Mangrove trees
Red Fish
Alligators
Crocodiles
Osprey

Mangrove crab
Blue crab
Wood Stork
Florida Manatee
Sea grasses

Shrimp
Hérons
Egrets
Snook
Crown Conch

