



Panhandle Outdoors

Solutions For Your Natural Resources!
Provided By Your County Extension Agents in Northwest Florida

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Navarre Beach Marine Science Station Established



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The Navarre Beach Marine Science

Station is a newly established marine science station located at the Navarre Beach Park in Santa Rosa County, Florida. In partnership with the Santa Rosa County Board of County Commissioners and the SRC School Board, the center will be the focal point of marine, natural resource and watershed education for Northwest Florida K-16 students, 4-H members, scout groups and the community for years to come. The SRC School Board will manage the science station. High school and dual enrollment marine science classes and

community events will be offered at the science station. Support from the community, the SRC school board and the SRC Board of County Commissioners has been phenomenal and the success of the program will be evident throughout the community.

With the generous donation of the new Marine Science Station from the SRC Board of County Commissioners, students of all ages have the opportunity to discover the many wonders of marine life in environmentally rich Santa Rosa County.

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Navarre Beach Park offers 130 acres of sandy white beaches, lush wetlands, and native vegetation. One-third of the park is completely undeveloped and will remain in its natural state. Located on the Santa Rosa Island, a barrier Island, this is an ideal location along the coasts of the Gulf of Mexico and the Santa Rosa Sound for a marine science program.

Goals of the Navarre Beach Marine Science Station include:

- Offer hands-on marine science classes and field trips to the Navarre Marine Science Station for K-16 students, 4-H and other youth organizations of the NW Panhandle in Florida.
- Involve high school students teaching younger students to increase understanding of watersheds and our local marine resources, to harbor real life skills in maintaining and promoting a marine science station and promote action within the community to promote the importance of our local natural resources.
- Provide teachers with the resources they need to teach marine science in the classroom. Provide teachers and students with hands-on field trips to the marine science station with their students. Develop a list-serve for teachers to discuss challenges and successes of this program, and use for evaluation purposes.
- Provide community outreach and education programs.
- Create ocean literate citizens that can make educated decisions regarding the ocean and its resources.
- Emphasize the importance and power of individual responsibility in protecting oceans for the future.
- To utilize existing inquiry based curricula and adapting to alignment with Florida's Next Generation Sunshine State Standards.
- To increase students' scientific inquiry, literacy, and critical thinking skills through meaningful experiential learning activities.

- To provide a variety of resources and assistance to classroom teachers, enabling them to continue the curriculum after completion of the project.

Renovations have started and partners hope to have the center open by June 2009. Look for upcoming events at the Navarre Beach Marine Science Station!

Sea turtle nesting season



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Loggerhead sea turtle nesting

Photo Credits: Photo by Andrew Diller

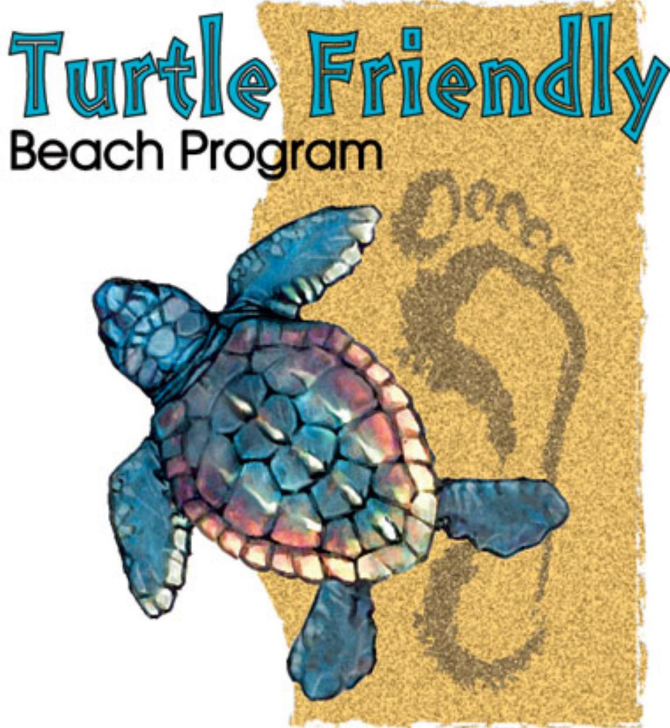
Sea turtle nesting season is May 1st through October 31st!

Summer has arrived, bringing thousands of visitors to the beaches of the Florida Panhandle. Included among these visitors are female sea turtles, returning to the area of their own birth to lay their eggs. Sea turtle nesting season typically begins in May of each year with June and July usually having the most nesting activity.

To nest, the female crawls up the beach and digs an vase shaped cavity using her hind flippers. The turtle depos-

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its between 60 and 160 eggs in the nest and then packs sand over the eggs with her hind flippers. Finally, she uses her front flippers to throw sand over her back to further cover the nest. The mother turtle then crawls back into the sea, leaving the eggs to develop, hatch, and survive on their own. Nests take approximately 60 days to hatch depending on warm sand temperatures.



Upon hatching from the eggs, the turtles need several days to dig their way out of the nest. The hatchlings usually emerge as a group at night to avoid predators. Once at the surface, hatchlings orient to the brightest horizon to find the ocean. Traditionally, the flat horizon over the water would be brighter than the inland sand dunes, shrubs, and trees. Unfortunately, artificial lights often confuse hatchlings and result in hatchlings crawling inland, away from the water. These hatchlings are eaten by predators, run over by cars, or die from heat exposure the following day.

Panhandle beach residents and visitors are urged to keep beachfront lights off when not in use during nesting season from May 1 to October 31. Even adult nesting sea turtles can have difficulty finding their way back to the water if too many lights are visible on the beach. If you

need lighting on the beachfront side of your home, various types of shields and light bulbs are available that can block or reduce the amount of light visible from the beach.

If the hatchlings make it to the water, they attempt to swim out to deep water and hide in floating mats of seaweed for several years. It is believed that only 1 out of 1000 hatchlings survives to adulthood, with most being eaten within the first few days of emergence. As they grow large enough to avoid most predators, the seaweed mats drift throughout the Gulf of Mexico and Atlantic Ocean, often carrying the turtles thousands of miles away from their natal beach. These new areas become the turtle's feeding grounds and home for most of their lives. However, they will migrate back to the area of their birth to mate and lay their own eggs.

If you witness a sea turtle attempting to nest or hatchling emerging, please call the Florida Fish and Wildlife Conservation Commission hotline to report it: 888-404-FWCC. Likewise, dead or injured turtles can also be reported to this number.

Turtle Friendly Beach Program

Individual homeowners, condo associations, hotels, and businesses are able to participate in a voluntary program designed to make Panhandle beaches "friendly" for sea turtle nesting. Waterfront property owners that install wildlife friendly lighting, remove beach furniture, pick up litter, maintain dunes and walkovers, and educate residents and visitors about our marine resources can achieve "Turtle Friendly Beach" designation for their property. Designees will be awarded signage to post on their property and will receive additional sea turtle news, information, and materials. Contact your County Extension Office or Andrew Diller at the Escambia County Extension Office at 850-475-5230 or apdiller@ufl.edu.

Florida Panhandle residents and visitors can help protect sea turtles by:

- Protecting sand dunes. Besides being our primary line of defense from hurricanes and tropical storms, sand

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dunes provide sea turtle nesting locations that are safe from high tides and small storms. The dunes also block the majority of lights from island buildings. Use designated dune walkovers or walkways and direct others to do likewise. Assist in planting and protecting vegetation to stabilize the dune system when possible.

- Keeping the beach “sea turtle friendly”. Shield and/or keep beachfront lights out during nesting season. Remove or stack beach furniture to allow easy navigation around these items. Fill in any large holes dug by beachgoers to avoid trapping turtles. If a turtle nest is nearby, also fill in smaller holes so hatchlings can make it to the Gulf. Keep dogs and cats indoors or restrained so they can’t dig up nests or kill hatchlings.
- Eliminating marine debris. Many turtles die annually from ingestion of plastics. Pick up plastic bags, balloons, and other floating debris that can be mistaken as food by sea turtles. When floating in the Gulf, plastic bags look very much like jellyfish, a favored food for most sea turtles.
- Using safe fishing practices. Recycle used monofilament fishing line that can entangle turtles, birds, and other marine organisms. Look for the new recycling bins at parking lots, fishing piers, and boat launches. Contact the Extension office for information on getting one at your favorite fishing area. Also, do not cast on or near sea turtles while fishing.

mals and invertebrates are listed as either threatened, endangered or species of special concern. As stewards of the land we must question, “What could the loss of a torrey tree, a lupine, a salamander, a butterfly, a woodstork, a right whale, a manatee, a sea turtle or a black bear do to our environment and our quality of life?”

Biological diversity is the variety and variability of species present in an ecosystem including the complex interactions of the many species. Regardless of their size or apparent significance, each species has a role in the circle of life and the food web. Preservation of all species is important. No one knows which ones hold the answers to the future of human existence on this planet.

Many significant developments in medicine have come from obscure plant and animal species. Modern day research includes a vaccine against leprosy being developed because of the nine-banded armadillo and horseshoe crabs being used in developing laboratory tests and finding remedies for several bacterial diseases. In agriculture, genes from wild species may provide the resistance for plant diseases, insects or even weather extremes that could save us from crop failure or possible starvation. There is an interdependence among living things. The extinction of one species may have a domino-like effect on other species. Stability of an ecosystem depends on bio-diversity.

To protect our future and the future of wildlife, the Endangered Species Act became federal law in 1976. This act is intended to protect and promote recovery of plants and animals that are in danger of becoming extinct as a result of human activity. The Environmental Protection Agency is responsible for ensuring the endangered species are protected from pesticides.

Pesticides can kill endangered plants and animals directly or indirectly. Birds mistaking them for food may eat granules, baits or treated seeds. Water contaminated with pesticides ranging in concentrations of less than 0.1 to 1.0 parts per million (ppm) can kill fish. Animals that eat treated crops, drink or wade in contaminated water or feed on tainted prey can be killed indirectly. Some

Protecting Precious Species From Pesticides



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There are more than 100 species of plants and animals living in Florida that are in danger of extinction. These trees, flowers, reptiles, amphibians, birds, fish, mam-

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pesticides can build up to lethal levels as predators consume multiple poisoned prey species.

There are certain things you can do to lessen the harmful effects of pesticides on fish and wildlife. Read all pesticide labels carefully to find out whether the use of the product requires special steps to protect endangered species. Determine if the site is designated as the current habitat of an endangered species. Find out this information by visiting <http://www.epa.gov/espp/> and <http://myfwc.com>. When you have a choice of pesticides to use, choose one that is less or non-toxic to fish and wildlife. Read and follow the "Environmental Hazards" section and use the special precautions and measures to minimize harmful effects. Treat only the areas that need to be treated. Leave a buffer zone (untreated area) between bodies of water and treated areas. It is your legal and moral responsibility to protect endangered species by careful use of pesticides in and around their key habitat areas.

Information for this article was derived from University of Florida publications "

Pesticide Effects on Nontarget Organisms" by Frederick Fishel and "Applying Pesticides Correctly" by Thomas Dean and Norman Nesheim.

Rain Gardens



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Do you have an area in your yard where water always runs after a storm and washes out your property? If so, you may want to consider a rain garden for that spot. Rain gardens work similarly to swales and stormwater retention ponds in that they are designed to temporarily hold rainwater and allow it to soak into the ground. However, they are quite different aesthetically, because they are planted with water-tolerant trees, shrubs,

groundcovers and flowers to provide an attractive alternative to the eroding gully that once inhabited the area! Rain gardens are not "created wetlands", but landscaped beds that can handle both wet and drier soil. Many of the plants best suited for rain gardens are also attractive to wildlife, adding another element of beauty to the landscape.

A perfect spot for a rain garden might be downhill from a rain gutter, an area notorious for excess water and erosion. To build a rain garden, the rainwater leaving a particular part of the property (or rooftop), is directed into a gently sloping, 4"-8" deep depression in the ground, the back and sides of which are supported by a berm of earth. The rain garden serves as a catch basin for the water and is usually shaped like a semi-circle. The width of the rain garden depends on the slope and particular site conditions in each yard. Within the area, native plants are placed into loose, sandy soil and mulched. Care should be taken to prevent the garden from having a very deep end where water pools, rather allowing water to spread evenly throughout the basin.

Besides reducing a problematic area of the lawn, a rain garden can play an important role in improving water quality. With increasing populations come more pavement, roads, and rooftops, which do almost nothing to absorb or treat stormwater, contributing to the problem. Vegetation and soil do a much better job at handling that water. Excess sediment, which can fill in streams and bays, and chemicals from fertilizers and pesticides are just some of the pollutants treated within a rain garden via the natural growth processes of the plants.

A handful of well-known plants that work great in rain gardens include: Louisiana iris, cinnamon fern, button-bush, Virginia willow, black-eyed Susan, swamp lily, tulip poplar, oakleaf hydrangea, wax myrtle, Florida azalea, river birch, holly, and Southern magnolia. For a complete list of rain garden plants appropriate for our area, visit the "Rain Garden" section of Tallahassee's "Think About Personal Pollution" website, www.tappwater.org

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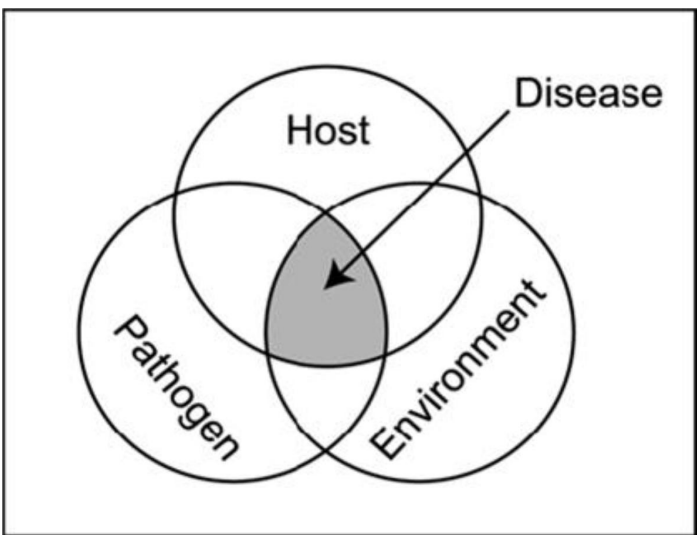
Fish Get Sick Too



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In simple terms, fish health (and human health too) can be broken down into three factors - host, environment and pathogen. Below is a diagram that illustrates how the three factors overlap. The area where the three factors (circles) overlap each other is where you have disease. However, the three factors are constantly changing over time. For example, if you have a host in “top” physical condition, in an ideal environment, with a weak pathogen, the overlap of the three factors is very small to nonexistent.

Thus, the chance of a healthy host, living in a suitable environment, becoming ill from being exposed to a pathogen is small. However, a highly stressed/weak host, in an environment that isn’t very good for the host, in the presence of a pathogen can mean “major” health problems for the host.



This is exactly what happened recently in the Indian Creek area of Franklin County where “sick” silver mullet began to appear. In this case, FL Fish & Wildlife Commission (FWC) biologists believe that cold winter,

along with the low salinity in that portion of Apalachicola Bay, weakened the mullet and provided the pathogen, *Aphanomyces invadans*, a water mold, the opportunity to infect the fish.

As a result, large ulcers formed on the skin of the fish, making it easy to see that something was wrong with them. Thus, when local fishermen began catching mullet that had open sores, they knew immediately something was wrong and they notified County officials. Within days, samples of the infected fish were sent to the FWC Fish & Wildlife Research Institute (FWRI) in St. Petersburg, for analysis. FWC biologists quickly identified the cause of the sores as “water mold.” However, additional tests are being done, histopathology and DNA sequencing, to make sure that no other pathogens are involved in the illness outbreak.

Although this is the first documented case of fish infected with water mold in Franklin County, the pathogen has a long history in Florida. In fact, estuarine fish with sores/ulcers have been observed since the late 1970’s and a major outbreak of water mold occurred in 1998.

Research on the pathogen has found that water mold has a life cycle consisting of three different stages: hyphae, zoospore, and cyst. Changes in the aquatic environment (such as changes in salinity or water temperature) cause the water mold to undergo rapid asexual reproduction. During this time thousands of swimming “spores” are released into the water. These “spores” then search for a fish host. The “spores” infect the skin of the fish and cause the development of bloody skin ulcers. If a host is not found, the zoospores become cysts and sink to the mud or sediment.



Menhaden with sore caused by water mold

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Photo Credits: Photo by UMD Aquatic Pathobiology Center

Distributions of Ulcerated fish

Estuarine fish with skin ulcers have been collected in coastal areas throughout Florida. Scientists at FWRI have found that several types of pathogens can cause the ulcers. However, at this time, only water mold has been found statewide.

Routine monitoring of the health of fish in Florida estuaries is conducted monthly by a partnership between FWRI's Fisheries Independent Monitoring (FIM) group and Fish and Wildlife Health group. Fish with gross external abnormalities, including ulcers, fin rot, tumors, and skeletal abnormalities are culled by FIM during monthly random fisheries assessment sampling trips in Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, South Indian River Lagoon, North Indian River Lagoon, and the St. Johns River. These culled fish are sent to FWRI headquarters in St. Petersburg for diagnosis. Data from these random samplings show that out of the thousands of fish examined in the field, less than 0.1% of the fish in Florida estuaries suffer from water mold infections, and less than 1% experience gross external abnormalities.

A variety of species are affected

The most commonly affected estuarine fish are striped mullet, silver mullet, and sheepshead. Other affected species include, black drum, pinfish, American shad, pigfish, red drum, Atlantic croaker, and gray snapper.

Mortality and fungal infections

Fish don't necessarily die from infections of water mold. Scientists have observed the sores in various stages of the healing in different species of fish. These fish are frequently found in higher salinity water that may have helped, along with the fish's immune system, to eliminate the fungus. However, it is very difficult to obtain data on fish mortalities because weakened, dying, or dead

fish may be eaten by predators, or be found when decomposition interferes with determining the cause of death. Secondary bacterial infections in the open sore can also increase the likelihood of the fish dying.

How can I help?

If you see or catch any ulcerated fish, please call the Fish Kill Hotline (1-800-636-0511), or fill out an online report at <http://research.myfwc.com/fishkill/submit.asp>. Report what type of fish had an ulcer, how many fish have them, the location where you caught, or saw the "sick" fish, and the best way for FWC to contact you for additional information.

Frozen samples can be used to identify this fungus using genetic techniques. FWC will accept frozen ulcerated fish in good condition that have the following information: location (GPS coordinates preferred) and date of capture, species, and standard length, total length, or fork length. Contact the Fish Kill Hotline for more information on providing samples.

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Oysters in Santa Rosa County



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Santa Rosa County, Florida is home to the East Bay oyster. This delicious bivalve is a favorite of locals and tourists alike. The East Bay oyster is found in shallow waters in Santa Rosa County. The East Bay Oysters depend on a supply of freshwater from the Blackwater and Yellow Rivers and saline waters from the Gulf of Mexico. Oysters are filter feeders and have been known to filter as much as fifty gallons of water in one day. Functional oyster reefs provide valuable fishery habitats for

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numerous species of fish, shrimp and crabs, are important in the food web of countless more species, contribute substantially to water quality, stabilize bay bottoms, and maintain water circulation patterns.

Oysters form living reef structure that offer protection, food and habitat to many types of marine organisms. Oysters get food and oxygen by pumping large quantities of water across their gills. During feeding, oysters take in phytoplankton, algae, bacteria, and sediments.

A female oyster may release 70 to 170 million eggs. The fertilized eggs are mobile in the water column during the larval stage and move with currents and tides, until they select a place to “set.” The larvae are selective (in the final larval stage they develop eye spots and a foot) and prefer a clean hard surface that is not covered with film, detritus, soft mud or oil and grease. When an appropriate site is found, the larvae secrete a fluid that cements the larvae to the surface. Once the oysters have set, they are known as “spat,” and may become adults within a few weeks of setting. Oyster spat are mostly males, although the sex of oysters may change at least once during the life of an oyster, and may change annually. Environmental conditions determine whether the oyster changes from a male to an egg producing female.



An oyster “clump” with oyster spat and live barnacles.

East Bay and parts of Escambia Bay are monitored on a regular basis to determine that water quality parameters

are met for harvesting oysters. For more information about shellfish regulations check out:

http://www.floridaaquaculture.com/SEAS/SEAS_Intro.htm.

In order to protect this valuable fishery, residents can reduce stormwater runoff by creating (or leaving) a buffer of native plants along their shorelines, use fertilizers and pesticides correctly and maintain septic tanks.

Reach Out With Science (ROWS) Program



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The Okaloosa and Walton County Extension offices are kicking off a new program in the 2009 summer to teach children science education through non-traditional methods. The Reach Out With Science (ROWS) program will be a series of day and overnight camps focused around environmental education through recreation, with an emphasis on rowing. This program will target at-risk youth, providing opportunities that will enhance their skills, knowledge and social skills. Participants from all income brackets will have the opportunity to develop life skills such as teamwork, goal setting, personal safety, self-discipline, self-esteem, social skills, and responsible citizenship.

ROWS will combine various science curriculums and recreation activities from the marine science, 4-H and family and consumer sciences program areas. The start-up of this program was made possible due to equipment donations and discounts from various rowing programs around the country. Northeastern University and Tallahassee Area Crew helped to secure two eight-man rowing shells, 16 oars, and a trailer to help get our program off the ground. Stanford Crew in Jacksonville provided transport for the boats from Boston to Florida and Nor-

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walk River Rowing Association out of Connecticut provides continual support and supplies.



Children learning to row through an outreach rowing program.

There are still some repairs and maintenance needs for the equipment, so fundraisers are being planned throughout the year. The first is an adult camp, Adults Unplugged, which will occur May 30-May 31, 2009. This is a chance for adults to get outdoors and have their own camp experience. The proceeds from this program will go to the ROWS program to fund boat preparation for the youth camps. The first camp for the ROWS youth program, Outdoor Adventure Camp, will occur June 29-July 3, 2009 at Camp Timpooshee. Through a grant from the 4-H foundation, we are able to provide one full scholarship to each of the counties in the Northwest District for qualified low-income youth. Camp participants will receive instruction in marine and upland

environments within the classroom and then experience activities such as rowing, ATV safety, and shooting sports. Combining these subjects will enhance learning and increase youth's appreciation of the environment in which they live.

ROWS allows youth to experience activities, such as rowing, that they may not get a chance otherwise. This program will grow into providing opportunities for multiple camps and school programs throughout the coming years. For more information on this program please email bsaari@ufl.edu or to sign up for camps go to <http://okaloosa.ifas.ufl.edu>.

Living in Florida's Environment Program moves to Wakulla County



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The Wakulla County 4-H program is transitioning the coordination of the Living in Florida's Environment Program from Leon County to Wakulla County. The program has been in existence in Wakulla County for four years and has been previously coordinated by Will Sheftall in the Leon County Extension Office.

The original program for each site is piloted by the Department of Environmental Protection's Office of Environmental Education. This program is coordinated from Tallahassee by Greg Ira and has various sites throughout the state of Florida. According to the L.I.F.E. program website:

"The LIFE - Wakulla Springs Service Learning Program is a partnership between the DEP's Wakulla Springs State Park, the Wakulla County School District, the University of Florida IFAS Extension (Wakulla and Leon Counties), and Dr. Dave LaHart (FSU Institute of Science and Public Affairs). The Program targets all seventh grade students at Riversprings Middle School and

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involves up to three separate field experience. Each field experience involves a number of distinct field labs led by DEP staff, IFAS Extension staff, volunteers, and participating teachers. Field sites include the Wakulla Springs State Park, St. Marks National Wildlife Refuge and the Leon Sinks Geological Area. This Program has a special focus on service learning and water quality monitoring of Wakulla Springs using the GLOBE protocols."

The Office of Environmental Education seeks to cultivate and support environmental citizenship: the awareness, understanding and appreciation of Florida's environment; and the capacity to think critically and participate constructively in its protection. Together with other government agencies, non-profits, the academic and the private sector, the Office of Environmental Education contributes structure and funding of environmental education in Florida.

The Office of Environmental Education serves as a liaison between teachers and community organizations and the technical and outreach specialists in the department by providing support services to teachers and non-formal educators. Participating teachers include Mr. Jeff Dutrow, Mrs. M.J. Stallings, Mrs. Susan Lassiter, Mr. Louis Hernandez, Mr. John Madden and Ms. Savannah Boege.



In addition to the core program, the LIFE Program, the Office of Environmental Education provides support to educational initiatives within the Department of Environmental Protection, as well as those conducted by a diverse community of environmental education providers throughout the state.

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