

# Turtle River Times

The Newsletter of the A.R.M. Loxahatchee National Wildlife Refuge

Issue 6  
Jan. - Apr. 2004

## Entrance Fees.... Where Does My Money Go?

by Rolf Olson - Deputy Project Leader

Ever wonder what happens to your money after it is collected from you at our entrance station?

In 1965, Congress passed the Land and Water Conservation Fund Act and in 1986, the Emergency Wetlands Resources Act. These acts allowed for the collection of recreation fees in certain national areas including some national parks, forests, wildlife refuges, and other federal recreation lands.

These fees are used on federal lands for conserving our nation's land, wildlife, waterways, and historical sites, and also to develop, maintain, and improve visitor services and recreation opportunities.

A five dollar fee per vehicle is charged for entry at our refuge and one dollar per pedestrian is charged if a visitor comes onto the refuge by foot or bicycle. Commercial groups are charged \$25.00 for 25 or fewer people per vehicle and \$50.00 for vehicles carrying 26 or more people. We also provide seasonal passes that allow frequent visitors a chance to save money.

When you pay your entrance fee, 80% of it comes directly back to the refuge. The other 20% goes to our Regional and Washington Offices where some of it is used on other refuges without a fee program and on specific projects.

At A.R.M. Loxahatchee NWR we use our fee dollars



Fee dollars purchased bridge for impoundments

in two general areas; assisting with the funding of our visitor services employees program and assisting with refuge maintenance and enhancement.

We currently fund two part-time fee collectors and one full-time Park Ranger with entrance fee money.

Your fee dollars are also used to support the refuge in the printing of interpretive signs and brochures such as

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Visit the refuge often on the web at <http://loxahatchee.fws.gov/>

## Is that a swimming pool in the marsh? No—it's an alligator hole!!

by Rena Borkhataria - University of Florida Graduate Student

Imagine you are wading knee-deep through the water in the marsh. You take a step and suddenly there is nothing beneath your feet! You have plunged into a swimming pool-sized hole in the marsh and you wonder, "What on earth just happened?!" Chances are you have stumbled into an alligator hole.



One of many Alligator holes found in the Refuge interior

Alligator holes are depressions in the marsh containing deeper water than the surrounding marsh. They may range in diameter from two to 30 meters, and the water may be over your head. Alligators create these holes by excavating muck from the bottom of the marsh and piling it up around the edges of

the hole they create. By digging in the muck, and then piling it up at the edges, alligators create both low spots and high spots in the marsh. These low spots—the actual alligator holes themselves—are used by alligators for mating and foraging. But they are also important to lots of other species in the Everglades, providing homes or refuges for many aquatic animals, especially during the dry season. The high spots at the edges of the hole may be used by alligators for basking in the sun. Edges of alligator holes are also important to other members of the Everglades ecosystem. Many species of plants and some animals, such as wading birds, may require a shallower environment than that available in the surrounding marsh. These plants or animals colonize or use the elevated areas created by alligators during excavation of the hole. Over time, trees may even take root and grow on these elevated areas, creating tree islands that can eventually be used by nesting alligators in the future.

At the Arthur R. Marshall Loxahatchee National Wildlife Refuge, we are conducting research to help understand the role of alligator holes in the Everglades. The study of alligator holes at the Refuge has two main components: locating the holes and characterizing them. First, potential holes were identified from aerial photographs and these areas were checked by airboat to verify there was an alligator hole present. We also made note of any holes we saw along the way. Next, we had to

characterize the holes by taking measurements of physical and biological characteristics at each alligator hole. To do this, we stretched measuring tapes across the longest and widest parts of the holes to create perpendicular transects. We walked along these transects measuring water depths, peat depths, and plant species. Since June we have sampled 25 holes, and we will have completed 30 holes by the end of December. To compare alligator holes to the surrounding marsh, we have also taken the same kinds of measurements at 15 randomly selected marsh sites.

So far we have found that plant diversity is significantly higher at the edges of the holes than in the surrounding marsh. We have also found that the edges of the holes tend to have higher elevation than the surrounding marsh, which may help account for the increased plant diversity around alligator holes. In this respect, they are similar to alligator holes in other parts of the Everglades. They differ, however, in the depths of the peat beneath them. In other parts of the Everglades, alligator holes tend to occur where peat depths are small and there are underlying depressions in the bedrock that allow the alligator to create areas that are deeper than the surrounding marsh. At the Refuge, however, the peat layer above the bedrock can be between 10 and 14 feet deep. With such a deep peat layer, it is unlikely that alligators depend on underlying depressions in the limestone when deciding where to place their holes. Instead, they may be better able to select the location of their hole based on the surrounding environment.

Much remains to be learned about alligator holes. For instance, how are alligator holes influenced by water management on the Refuge? How much time do alligators spend in their holes? How important are holes to fish and other wildlife, especially during the dry season? Over time, we hope to answer these questions and many more, so that we can continue to make the Refuge a better place for the alligators, fish, wading birds, and other animals that use alligator holes.

*The refuge system provides important habitat for over 700 bird species, 220 mammal species, 250 reptiles and amphibians species, and over 200 species of fish.*

Continued from page 1...

our general information brochure, hunt brochure, map and basic information sheets, and bird species list. Fee dollars are also used to replace interpretive signs and panels around the refuge.

We currently fund two part-time fee collectors and one full-time Park Ranger with entrance fee money. replace interpretive signs and panels around the refuge.

Your fee money has also helped;

- Pay for the materials that our maintenance volunteers used to build benches around various trails on the refuge.
- Support Everglades Day by paying for the rental of port-a-lets, busses, trolleys, and to purchase informational and directional signs for the event.
- Purchase an aluminum walking bridge that spans the center canal, connecting the various impoundments and trails near our observation tower.
- Provide information kiosks near trail heads and parking lots.
- Purchase and upgrade software programs for the refuge web site.

This year, the Refuge plans to use fee money to improve interpretive signs and information kiosks on the canoe trail, marsh trail, and at the new 20-mile Bend entrance and boat ramp.



Refuge canoe trail is maintained with fee monies

There are a number of passes available to non-commercial visitors who come to the Refuge on a recurring basis. The Golden Eagle Passport can be used for admission to most federal fee areas including national parks, historical sites, monuments, national wildlife refuges, and some Forest Service lands. This yearly pass costs \$65.00 and is used by the card holder and everyone

with the cardholder in a private vehicle.

The Golden Age Passport is available to permanent residents and citizens of the United States who are 62 years of age or older. This \$10.00 life time pass is also used for admission to the same sites as the Golden Eagle but also includes discounts on federal recreation use fees.

The Golden Access Passport is available to permanent residents and citizens receiving or eligible to receive federal disability benefits. This free lifetime passport provides the same benefits as the Eagle and Age Passports.

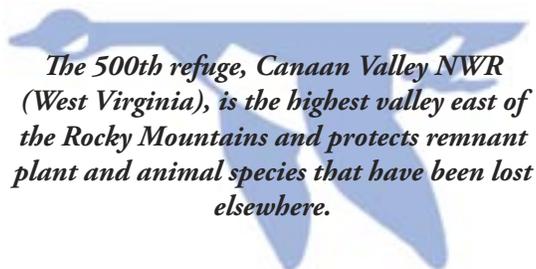
The Federal Duck Stamp costs \$15.00 and serves as an entrance pass to any national wildlife refuge that is open to the public and charges an entrance fee. This pass is valid from July 1 through June 30th of the following year. This is the only pass that is used solely for the purpose of buying or rehabbing wetlands.



Interpretive signs are purchased with fee monies

The A.R.M. Loxahatchee National Wildlife Refuge Specific Pass is only valid at our refuge. This \$12.00 pass is available to the general public and is good for one year from the date of purchase.

As you can see, there are a myriad of ways your fee dollars provide help to our refuge. For additional information, you may call our visitor center at 561-734-8303.



*The 500th refuge, Canaan Valley NWR (West Virginia), is the highest valley east of the Rocky Mountains and protects remnant plant and animal species that have been lost elsewhere.*

## “Putting Faces to Names”

by Mindy Gautreaux

### Stefani Melvin, Refuge Biologist



Stefani began working as the new Refuge Biologist in September 2003. She will be responsible for the refuge's Biology Program and staff of five to seven other biologists. She comes to us from Ecological Services in Vero Beach, which is the Refuge's sister division within the U.S. Fish and Wildlife Service. Stefani had already been stationed at Loxahatchee while she was with Ecological Services, working as one of the refuge's liaisons for Everglades Restoration issues. Prior to her work with the Service, Stefani worked for the South Florida Water Management District on the Kissimmee Restoration Project. Stefani is originally from Idaho, but has lived in Florida for eight years.

### Krista Markwardt, Refuge Ranger



Our newest addition to the Visitor Services Program is Refuge Ranger Krista Markwardt. Krista will fill an important role by assisting Ranger Chapman in the Visitor Center, and with many other public use related projects. Krista began working at the refuge on November 2, 2003, just in time for the busy winter season to begin. She is originally from Oregon where she worked previously for the North Clackamas Parks and Recreation District. Along with her experience in working with the public and volunteers, Krista also brings a positive, “can-do-it” attitude to the Visitor Services staff. Welcome on board Krista!

## Calling All Volunteers

We have positions available for people interested in working in our Visitor Center on weekends. The Visitor Center is staffed with a morning and an afternoon shift. Each shift is four hours in length with a special need for both the morning and afternoon shifts on Saturdays. Additional help is occasionally needed for Sunday shifts.

If you are a current volunteer or would like to be one, contact Volunteer Coordinator Lois Chapman for these and other opportunities at 561-735-6030 or email her at [lois\\_chapman@fws.gov](mailto:lois_chapman@fws.gov).

## Meet the Staff

- Project Leader....** Mark Musaus
- Deputy Project Leader....** Rolf Olson
- Refuge Operation Specialist....** Mindy Gautreaux
- Administration....** Kim Arserio, Jean Ryan
- Everglades Program Team....** Nick Aumen, Matt Harwell, Leslie MacGregor, Michael Waldon
- USFWS Ecological Services....** Cindy Brashear, Susan Teel
- Law Enforcement....** William Calvert, Shawn Cottingham, Jared Klein
- Wildlife and Habitat Management....** Bruce Arrington, Laura Brandt, Erynn Call, Camille Darby, Jennifer Hinckley, Gayle Martin, Stefani Melvin, George Pelt, William Thomas, Jr.
- Maintenance Operations....** Manuel Garcia, Jerry Grist, Allan Hansen, Steve Matzkow
- Environmental Education & Interpretation....** Lois Chapman, Krista Markwardt, Serena Rinker
- Fee Staff....** Keith Boliek, Lew Hecker, Marie Pohl
- LILA On-site Manager ...** Eric Cline (SFWMD)

*Which refuge has the most endangered species? Loggerhead turtles coexist with high-tech space shuttles at Merritt Island NWR (Florida), which has more endangered species than any other refuge, including bald eagles, peregrine falcons, wood storks, and manatees.*

## Congress Appropriates 5 Million to the Refuge

by Rolf Olson

Have you heard the big news? This past November, Congress passed a bill, which the President signed, that provides a one time allocation of \$32 million dollars to the Department of the Interior for Everglades's restoration activities. Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge) was specifically named in the bill and will be receiving five million dollars. Four million dollars will be going to exotic plant management and one million dollars will be spent on water quality monitoring. The remaining \$27 million will be used for water quality improvements and threatened and endangered species management on Department of Interior lands in South Florida. The bill directs that the money must be used on Department of the Interior lands so the majority of this money will be going to projects on U.S. Fish and Wildlife Service Refuges or the National Park Service.

The exotic plant control budget for Arthur R. Marshall National Wildlife Refuge is usually around \$270,000. The Refuge received one million dollars in 2002 and was able to remove Melaleuca and Old World Climbing Fern from more than 17,000 acres of the Refuge. The funding received this year will enable the refuge to continue its efforts to control exotics and reduce their impact on the Everglades habitats. The strategy has been to work from outlying areas of the refuge and work our way in to the interior of the refuge, using exotics control contractors. Other "tools in the tool basket" that we can use include using a refuge team of laborers that control exotics, aerial spraying, and the use of bio-controls, insects that feed specifically on one of the invasive exotic plant species. There is still much to learn about these invasive species that are causing such a problem, both on and off the refuge. It is important to combine research and monitoring so we can learn how effective certain control measures are, spend appropriated dollars wisely, and get the most benefit. Specifically, we plan to use this money to develop methods for controlling Old World Climbing Fern throughout the Everglades system. The final acreage treated will be determined by the density of exotic plants per acre and the final bids submitted by private contractors.

We will use the one million dollars to set up monitoring stations around the Refuge and in the Refuge interior. Information from these stations will allow us to determine the effectiveness of clean up efforts and the

distance that contaminated water is infiltrating the pristine interior of the Refuge. Scientist's may also use this money to develop a computer model to track water levels and high phosphorus water flow throughout the refuge.

We are currently developing plans on how best to use the funding and excited about the opportunities to restore and protect the diverse habitats that make up the northern part of the Everglades system.

We will keep you posted on what and how we are doing over the next couple of years.



Aerial picture of dying melaleuca

## Impoundment update January – March 2004

C6 will be drawdown slowly throughout January to optimize foraging conditions for wading birds and to provide habitat for migrating shorebirds. Water will be kept low through February. At the end of February, water levels will be brought back up to allow prey to recover and to retard vegetation growth. Water will be kept high in April.

C7 (the Marsh trail) will be drawdown in late January and kept low through mid-February. Water levels will be brought back up in late February to retard vegetation growth. Water levels will be kept high through March.

Water will be kept at intermediate depths in C8 to provide foraging habitat for wading birds, raptors, and ducks. This is our most diverse impoundment, with varying water depths and a diversity of vegetation.

Volunteers will be sampling aquatic organisms in C6, C7, and C8 during December and January. The purpose of the project is to assess the availability of food organisms for wading birds in the impoundments.

## 'Buzz on Bugs': Establishment of Two Biological Control Insects in the War against Melaleuca

by Bill Thomas, Jr - Wildlife Biologist (Exotics/Fire Mgmt.)

The exciting news from the exotics program is that two insects, the melaleuca snout beetle and the melaleuca psyllid, intentionally released by U.S. Department of Agriculture scientists with the consent of refuge management, were recently discovered feeding on re-sprouting melaleuca saplings and seedlings in the NE interior following a 2,300 acre prescribed burn. Yes, believe it or not, the USDA is purposely releasing exotic insects to help contain the spread of melaleuca in the refuge interior and throughout South Florida.



Adult  
melaleuca  
psyllid

Plants were originally introduced without their insect pests, thus permitting their rampant spread throughout the Everglades and on the Refuge. The melaleuca is classified as an endangered species in its homeland of Australia. Seedlings are virtually non-existent, and adult trees appear non-healthy due to the presence of hundreds of pest insects controlling their growth, flowering capability, and spread.

The insects being released in South Florida are host-



Adult  
melaleuca  
snout beetle

specific to melaleuca. Before actual release, insects are tested on a variety of native plants and important agricultural crops, to ensure they won't damage, develop upon, or impact these species. The insects' entire life cycle must occur on the targeted plant, i.e., melaleuca. If the insect shows development, or causes adverse impacts on any native species, it is removed from the potential biological control release list. Impacts to targeted species are subtle, and are limited to impacts to flowering or seed production, thus allowing crews performing herbicide treatments on the ground to catch up. Rarely, if ever, do the insects cause death in the targeted plant, but severe infestations or repeated attack by insects may eventually lead to death. In fact, the melaleuca psyllid, a tiny 2 to 3 millimeter cicada-like insect, has been shown to cause death of melaleuca seedlings under laboratory scenario. Thousands of nymphs sucking the juices from seedlings eventually cause complete necrosis of the affected plants causing them to wilt and eventually to die.

On September 18, 2003, while performing routine treatments to melaleuca saplings in the NE burn unit, the crew discovered that most melaleuca exhibiting fresh re-growth, as the result of a fire, were being attacked by melaleuca snout beetle larvae, a species that the USDA informed refuge staff would not, or did not establish in the interior due to high water levels. Needless to say, the crew was excited with the discovery. Most of the saplings were coated with larvae, and a few adults were present. Adult beetles are fairly large, 2 centimeters, and are visible to the trained eye. The larvae were feeding on the flush of tender new growth caused by the fire, effectively scraping off the top green layer of the leaves, and leaving skeletonized leaves behind. Larvae too are large and black. As they feed, their excrement forms a long, characteristic tail on their behind that is known as 'frass'. Adults were observed sucking plant juices from the tender new shoots. Almost all of the saplings over a 15



Larva damage from the  
melaleuca psyllid

or 20 acre site had feeding damage. Both the adults and larvae were impacting the saplings ability to flower and produce additional seeds.

In 1997, approximately 342 melaleuca snout beetle larva were released at a research site (melaleuca head) in the interior. In 2000, 350 adults were released at this site, and an additional 350 were released in Strazzulla Marsh. The USDA informed refuge staff that the interior releases were a bust, and that limited establishment and dispersal had occurred only in Strazzulla Marsh. It is unknown if the insects found in the NE burn unit were of either origin, or immigrated naturally from other release locations. In any event, refuge staff and management were ecstatic over the discovery.

If that wasn't positive news for the exotics program, on November 7, 2003 during a tour for the Acting FWS-National Invasive Species Coordinator, a visit to the same area revealed the presence of the second biological control insect, the melaleuca psyllid. This was great news. Damage by the snout beetle mentioned above was apparent, however, no larvae or adults were found to be present. However, a stop at one sapling revealed that saplings were now being attacked by the melaleuca psyllid. Most of the tips were being affected by psyllid nymphs. During feeding the nymphs, barely visible to the naked eye, exude a characteristic white flocculent for protection from predators. This flocculent appears as a white silky thread enveloping the shoots or tips of the new growth. Under the flocculent is stationed the feeding nymph or nymphs. Adults also feed or suck the plant juices from the new tips. Excessive feeding by thousands of adults and nymphs causes the new tips to wilt and eventually die; again, affecting the plants ability to flower and produce additional seeds to aid in its spread. Severe infestations may result in plant death, a bonus the USDA was not anticipating when this insect was originally released.

Approximately 12,680 adult melaleuca psyllids were released at a study head in the northern refuge interior on March 21, 2001. The insects did establish, but the USDA informed refuge staff that the insects were not dispersing. This discovery further strengthens the importance of having an Integrated Pest Management Program; that is, incorporating a variety of management techniques to control the spread of

exotic plants: herbicides, prescribed fire, biological controls, mechanical controls, and an aggressive public awareness campaign. Apparently, the establishment of these insects is directly correlated with the re-introduction of prescribed fire in the refuge interior. Adjacent unburned areas containing melaleuca appear to be unaffected by either insect. It is hoped that refuge staff can continue to coordinate exotic plant treatments and the use of prescribed fire to promote further establishment and dispersal of these two biological control insects to halt the spread of melaleuca in the refuge interior. Within a year, the USDA, pending approval, will begin releasing a defoliating moth to battle the aggressive Old World climbing fern.



White flocculent of the melaleuca psyllid

## Refuge Hours & Fees

The refuge is open to the public from sunrise to sunset daily. Exact times are posted at each entrance on our website and change with the hours of daylight. Currently the refuge opens at 6:00AM and closes at dusk.

The Visitor Center is closed on Mondays and Tuesdays from May through September. From October through April, the center is open seven days a week. Hours for the Center are from 9:00AM to 4:00PM weekdays and 9:00AM to 4:30PM on weekends. The Visitor Center is closed on Thanksgiving and Christmas, although the trails will remain open.

A fee of \$5.00 is charged to private vehicles entering the refuge. When the fee booth is unmanned, visitors are subject to the honor system and should pay at the fee shelter next to the fee booth.

*In 1935, Red Rock Lakes NWR (Montana) was created to save the last 73 endangered trumpeter swans known in the wild.*

*Today, 14,000 of these majestic birds are found in Alaska, Montana, and the upper Midwest.*

## Everglade's Day Schedule

(Programs And Activities Subject to Change)

**7:30AM**

Bird Walk ---- Marsh Trail

**8:00AM**

Bird Walk ---- Marsh Trail

**9:00AM**

Wildlife Photography Program — Visitor Center

Paddling Demonstration ---- Boat Ramp

Canoe Trip ---- Boat Dock

**9:30AM**

Hiking Equipment Demonstration ---- Stage

Everglades Exploration Trail ---- Chickee

Fishing Opportunities (all day) --- Speaker Tent 2

**10:00AM**

Bird Walk ---- Marsh Trail

Strazzulla Marsh Bus Trip ---- Boat Ramp

Native and Non-Native Fish ---- Speaker Tent

Family Camping ---- Speaker Tent 2

Folk Music ---- Cindy Hackney ---- Stage

Treasure Coast Wildlife Program---- Chickee

Family Photo Walk --- Marsh Trail

**10:30AM**

LILA Loxahatchee Impoundment

Landscape Assessment Tours ---- Boat Ramp

Nature Walk ---- Marsh Trail

**11:00AM**

Hunting Safety ---- Visitor Center

Birds of Prey ---- Speaker Tent

Photo Contest Awards ---- Stage

Birding Watching Course ---- Chickee

Fishing Demonstration ---- Boat Ramp

Butterfly Walk ---- Visitor Center Parking Lot

Strazzulla Marsh Bus Trip ---- Boat Ramp

Canoe Trip ---- Boat Ramp

**11:30AM**

Children's Walk – Marsh Trail

LILA tour ---- Boat Ramp

**12:00 Noon**

Photographing Everglades --- Visitor Center

Comprehensive Everglades Restoration Plan – Master

Recreation ---- Speaker Tent

Folk Music-Road Side Revue ---- Stage

Biking the Everglades ---- Boat Ramp

Bird Walk ---- Marsh Trail

Strazzulla Marsh Trip ---- Boat Ramp

Everglades Program in Spanish ---- Chickee

Swamp Stroll --- Visitor Center

**12:30PM**

Nature Walk ---- Marsh Trail

LILA tour ---- Boat Ramp

**1:00PM**

Hiking In Florida ---- Visitor Center

Photographers Panel Discussion ---- Speaker Tent

Fishing Program ---- Speaker Tent 2

Children's Storyteller ---- Stage

Snakes ---- Chickee

Paddling Demonstration ---- Boat Ramp

Butterfly & Wildflower Walk ---- Visitor Center Parking Lot

Strazzulla Marsh Trip ---- Boat Ramp

**1:30PM**

LILA tour ---- Boat Ramp

**2:00PM**

Butterfly ID ---- Visitor Center

Recreational Ops ---- Speaker Tent

Busch Wildlife Program---- Speaker Tent 2

Children's Storyteller ---- Stage

Wilderness Survival ---- Chickee

Swamp Stroll ---- Visitor Center

Canoe Trip --- Boat Ramp

Strazzulla Marsh Trip ---- Boat Ramp

**2:30PM**

LILA Tour ---- Boat Ramp

**3:00PM**

Paddling the Everglades ---- Visitor Center

Alligators ---- Speaker Tent

Folk Music ---- Stage

Poison Flora & Fauna ---- Chickee

# 5th Annual Everglades Day Festival

Saturday, February 14, 2004

8:00 am - 4:00 pm

All Day — All Free

Arthur R. Marshall Loxahatchee  
National Wildlife Refuge

10216 Lee Road, Boynton Beach off State Road 7/US 441  
2 miles south of Boynton Beach Blvd. / 3 miles north of Atlantic Ave.

Exhibits and presentations on the  
six recreational priorities of the National Wildlife Refuge System:  
photography • observation • education • fishing • hunting interpretation



all photos:  
USFWS

Featuring: photography workshops • fishing demonstrations • hunting safety • hiking skills • survival skills • camping workshops nature walks • kids' activities • music • food birding workshops • wildlife presentations • canoeing • kayaking • recreational opportunities • butterfly workshops • Special photographers panel discussion with some of South Florida's finest photographers



Over thirty exhibitors from agencies, clubs and non-profit organizations.  
**For more information,  
call (561) 734-8303**

In partnership with:  
The Arthur R. Marshall Loxahatchee NWR Friends of the Loxahatchee NWR  
The Audubon Society of the Everglades  
The Arthur R. Marshall Foundation

## 2004 Loxahatchee Events Schedule - February through April

### Sunday, February 1

#### SUNSET BIRDING

4:00PM Marsh Trail

Late-day sightings may include night herons, and snail kites coming home to roost. Bring binocular, field guide, and insect repellent.

### Wednesday, February 4

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, February 7

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Wednesday, February 11

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, February 14

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### EVERGLADES DAY

8:00AM – 4:00PM

The day's events include birding, family walks, hands-on activities, music, food, children's activities, exhibits, and live programs. Contact the Visitor Center for more information.

### Wednesday, February 18

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Friday, February 20

#### FLORIDA'S ALLIGATORS & CROCODILES: MONSTERS OR MYTH?

1:30PM Visitor Center

Hobe Sound Nature Center Naturalist Peter A. Quincy, will unlock the mysteries of these fascinating reptiles.

### Saturday, February 21

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Sunday, February 22

#### SWAMP STROLL

2:00PM Visitor Center

Enjoy the beauty of a cypress swamp from a half-mile long boardwalk trail. Learn about "swamp tea," floating plants, and thigmotrophism as a naturalist reveals the swamp's secrets to visitors.

### Wednesday, February 25

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Thursday, February 26

#### RESEARCH – WHAT'S UP?

2:00PM Visitor Center

Refuge Biologist Dr. Laura Brandt discusses what research and monitoring is being conducted on the refuge, their findings, and their plans for the future studies.

### Saturday, February 28

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, February 28

#### EVERGLADES CANOEING

8-10:00AM HQ Boat Ramp

Take a journey through the Everglades with an interpreter on our canoe trail. Bring canoe, PFD, water, sun/rain protection, and insect repellent. Some canoeing experience is recommended. **RESERVATIONS REQUIRED**

### Sunday, February 29

#### "ALL ABOUT NATURE" WALK

11:00AM Marsh Trail

Join a naturalist for a discovery tour of the plants and critters who call the refuge home.

### Wednesday, March 3

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, March 6

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, March 6

#### LILA – WHAT IS IT & WHAT'S GOING ON

2:00PM Visitor Center

Just what is LILA and how is it critical to Everglades restoration. Find out about this project and how visitors can see it for themselves. South Florida Water Management District Site Manager Eric Cline explains and gives updates on this one-of-a-kind research.

## 2004 Loxahatchee Events Schedule - February through April

### Sunday, March 7

#### SUNSET BIRDING

4:00PM Marsh Trail

Late-day sightings may include night herons, and snail kites coming home to roost. Bring binocular, field guide, and insect repellent.

### Wednesday, March 10

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Friday, March 12

#### GRILL THE MANAGER

2:00PM Visitor Center

Meet Refuge Manager Mark Musaus as he gives a brief "State of the Refuge" address and opens the program to audience questions.

### Saturday, March 13

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, March 13

#### EVERGLADES CANOEING

8-10:00AM HQ Boat Ramp

Take a journey through the Everglades with an interpreter on our canoe trail. Bring canoe, PFD, water, sun/rain protection, and insect repellent. Some canoeing experience is recommended. **RESERVATIONS REQUIRED**

### Sunday, March 14

#### SWAMP STROLL

2:00PM Visitor Center

Enjoy the beauty of a cypress swamp from a half-mile long boardwalk trail. Learn about "swamp tea," floating plants, and thigmotrophism as a naturalist reveals the swamp's secrets to visitors.

### Wednesday, March 17

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Wednesday, March 17

#### NIGHT PROWL

7:30PM Visitor Center

Experience the refuge after dark. See and hear our night time wildlife residents. **RESERVATIONS**

**REQUIRED**

### Friday, March 19

#### SOMETHING'S FISHY

2:00PM Visitor Center

Refuge Biologist Bill Thomas reels the line in on the life cycle of bass and how to catch them.

### Saturday, March 20

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, March 20

#### BUTTERFLIES & WILDFLOWERS

9:00AM Visitor Center

Join naturalist Hal Wiedemann for a slide show and walk to view some of the small wonders of the refuge. **RESERVATIONS REQUIRED**

### Sunday, March 21

#### CHILDREN'S STORY AND CRAFT HOUR

2:00PM Visitor Center

Join a naturalist for a children's story and craft session to follow. Open to children five to eight years old. Children must be accompanied by an adult. **RESERVATION REQUIRED**

### Wednesday, March 24

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Thursday, March 25

#### SCAT IDENTIFICATION

#### WORKSHOP

2:00PM Visitor Center

Join Interpretive Specialist Serena Rinker as she shows that you don't have to see an animal or its tracks to know that it has been there.

### Friday, March 26

#### SEA TURTLES

1:30PM Visitor Center

After years at sea, these turtles come to land to continue their cycle of rebirth. Hobe Sound Refuge Manager Margo Stahl gives us a glimpse of sea turtle life and the importance of the refuge to these magnificent creatures.

### Saturday, March 27

#### EARLY BIRD SPECIAL

7:30AM Marsh Trail

This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, March 27

#### EVERGLADES CANOEING

8-10:00AM HQ Boat Ramp

Take a journey through the Everglades with an interpreter on our canoe trail. Bring canoe, PFD, water, sun/rain protection, and insect repellent. Some canoeing experience is recommended. **RESERVATIONS REQUIRED**

## 2004 Loxahatchee Events Schedule - February through April

### Sunday, March 28

"ALL ABOUT NATURE" WALK  
11:00AM Marsh Trail  
Join a naturalist for a discovery tour of the plants and critters who call the refuge home.

### Wednesday, March 31

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, April 3

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Sunday, April 4

CHILDREN'S STORY AND CRAFT HOUR  
2:00PM Visitor Center  
Join a naturalist for a children's story and craft session to follow. Open to children five to eight years old. Children must be accompanied by an adult. **RESERVATION REQUIRED**

### Wednesday, April 7

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, April 10

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, April 10

BUTTERFLIES & WILDFLOWERS  
9:00AM Visitor Center  
Join naturalist Hal Wiedemann for a slide show and walk to view some of the small wonders of the refuge.  
**RESERVATIONS REQUIRED**

### Wednesday, April 14

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, April 17

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, April 17

EVERGLADES CANOEING  
8-10:00AM HQ Boat Ramp  
Take a journey through the Everglades with an interpreter on our canoe trail. Bring canoe, PFD, water, sun/rain protection, and insect repellent. Some canoeing experience is recommended.  
**RESERVATIONS REQUIRED**

### Sunday, April 18

SWAMP STROLL  
2:00PM Visitor Center  
Enjoy the beauty of a cypress swamp from a half-mile long boardwalk trail. Learn about "swamp tea," floating plants, and thigmotrophism as a naturalist reveals the swamp's secrets to visitors.

### Wednesday, April 21

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Saturday, April 24

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

### Sunday, April 25

"ALL ABOUT NATURE" WALK  
11:00AM Marsh Trail  
Join a naturalist for a discovery tour of the plants and critters who call the refuge home.

### Wednesday, April 28

EARLY BIRD SPECIAL  
7:30AM Marsh Trail  
This one-mile walk is for the birds and the early risers. Bring binocular, field guide, and insect repellent.

# LILA Newsletter Update: December 2003

by Eric Cline - LILA on-site Project Manager

The Loxahatchee Impoundment Landscape Assessment (LILA) project is steadily making progress towards the goal of a fully operational environmental monitoring tool. Vegetation management and site maintenance continues as both SFWMD and Refuge staff seek to accurately mimic natural Everglades ecosystem processes. This lofty objective requires careful stewardship and a lot of hard work!

A big hurdle in getting the LILA project up and running was finally overcome, as routing of the electrical service to the pump was completed in October. The recirculation of water, provided by this pump, is the heart of the system. The ability to move water through LILA is vital in creating natural wildlife and vegetation responses. It is this link, formed between Everglades' biota and water, which will be monitored over the next decade.

One major component of the LILA project will be assessing the response of native tree species to different water depths. Scientists and volunteers will plant six-thousand trees, commonly found in the Everglades, on the tree islands constructed in the macrocosms. As part of a pilot project SFWMD researchers Eric Cline, Geoff



Dr. Bates

West, Fred Sklar as well as Iowa State Professor Arnold van der Valk and David Bates of D.R. Bates Nursery planted 40 seedlings. This small planting was undertaken to help develop protocol and predict any problems that may arise. In only a few days a very serious and apparent problem developed--something was eating our trees!

With the help of Forest Hill High School Environmental Science Academy student Annemarie Rivera, the culprit was identified as a marsh rabbit (*Sylvilagus palustris*). As part of science fair project Annemarie is testing a seedling protector tube as a rabbit deterrent.

Over the next few months the scientists and staff associated with LILA will continue to focus on vegetation management, incorporating the use of mechanical and chemical methods, as well as testing the capacities of the recirculation system. This hydrologic testing will simulate extreme wet and dry seasonal conditions while maintaining an appropriate flow rate within the wetlands. Other projects include transplanting saw grass on to the wetland ridges, installing flow meters and the initiation of a study involving bird use and tree island restoration.



Osprey checking out the LILA project



Annemarie in action

*Hundreds of National Wildlife Refuges are located along what four major migration corridors (flyways)? Answer: Atlantic, Mississippi, Central and Pacific. Bonus points: Name a refuge for each corridor.*

## Refuge Receives Grant for Fishing Pier - Matching Dollars Needed

by Mitch Rosenheim - Friends of Loxahatchee Refuge

There's good news for you fresh water fishermen and lovers of the great outdoors. We, the fortunate ones who are not shoveling snow as the New Year approaches, should rejoice in our proximity to one of nature's ecological wonders – The Everglades. The good news is that The National Wildlife Refuge Foundation has approved a \$36,200 grant application for the construction of a new fishing pier to be located at our Headquarters entrance where Lee Road ends at the boat ramps.



However, this grant comes with one challenging condition – that the grant must be matched, dollar for dollar, by private donations. The Friends of the Refuge will be conducting a campaign beginning early in the New Year to raise those matching dollars. If you are interested in this effort please contact Mitch Rosenheim, fundraising co-chair at 561-496-2822.

Some of you may not know that the Northeast corner of the existing Everglades lies largely in Palm Beach County. The Arthur R. Marshall Loxahatchee National Wildlife Refuge, which is set aside to preserve and restore this unique ecosystem, comprises 145,000 acres and sits on your doorstep. No place in Palm Beach County is more than 45 minutes drive from the Refuge entrance and adjacent Visitor Center. Visitors can enjoy this part of "The River of Grass" with its profusion of herons, egrets, moorhens, ibis, woodstorks, and many species of migratory birds. There are a variety hiking trails, a biking trail, observation towers and a butterfly garden. Activities also include fishing, alligator watching (leave 'em alone, just look) and guided or unguided canoeing

along the 5.5 mile canoe trail.

For more information about the refuge, contact the Visitor Center from 9am to 4pm daily at 561-734-8303. We know that you will enjoy the opportunity to see and partake of this unique habitat, particularly if you are visiting from colder climates. It is merely a statement of fact, not hype, that in all the world there is no other ecosystem remotely like The Everglades.

### Please Join Us

• **Membership Application** •  
**Friends of the Arthur R. Marshall  
 Loxahatchee National Wildlife Refuge**

- |   |   |
|---|---|
| <input type="checkbox"/> Individual \$15.00 | <input type="checkbox"/> Student (to age 18) \$5.00 |
| <input type="checkbox"/> Family \$25.00     | <input type="checkbox"/> Supporting \$50            |
| <input type="checkbox"/> Organization \$100 | <input type="checkbox"/> Contribution _____         |

Please mail this form to:

Friends of the Loxahatchee Refuge  
 P.O. Box 6777  
 Delray Beach, FL. 33482-6777

Make checks payable to:

"Friends of the Loxahatchee Refuge"

If paying by credit card please indicate:

\_\_\_ Visa \_\_\_ MasterCard \_\_\_ Discover

Credit Card # \_\_\_\_\_

Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_ Phone \_\_\_\_\_

Name (please print) \_\_\_\_\_

E-Mail \_\_\_\_\_

Street \_\_\_\_\_ City \_\_\_\_\_

\_\_\_\_\_ Zip \_\_\_\_\_

For further information about the Friends of the Refuge please contact:

Arthur R. Marshall National Wildlife Refuge  
 10216 Lee Road  
 Boynton Beach, FL 33437-4796  
 (561) 734-8303 or (561) 732-3684

Kids  
Corner

# Annie's Big Adventure

story by Chrissanna (gator) Srdoch - University of Florida  
artwork by Frank Lohan

Kids  
Corner



*Remember our little Annie? On that dark and stormy night during hurricane Irene, she was blown from her warm and cozy nest, AND HER MOMMY! Now she must search Loxahatchee Refuge to find her mommy. Bertha the Butterfly and Rocky the Raccoon really tried to help Annie in our last story. Let's see if we can finally bring Annie home to her Mommy!!*



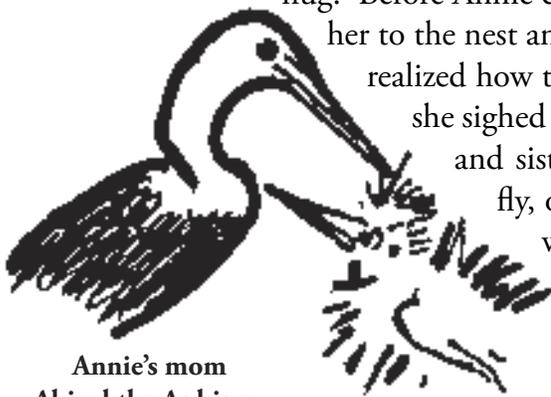
Rocky the Raccoon

When Annie got to the water, she noticed a bird with fanned out wings standing at the water's edge. The bird had a straight beak, and Annie was sure that such a beak could be used to catch fish. Annie cheerfully approached the bird and said "Hello mother, I am Annie, my egg rolled out of your nest in the storm," but before she could go on, the bird stopped her and said, "I can't possibly be your mother because I am a guy bird. "Look little Miss," he said, "My name is Andrew the Anhinga, yes you too are an anhinga, that means your mother will look just like me except instead of the brown head that all guy anhingas have, she will have a black head which shows everyone that she is a girl. Just like that bird over there. In fact, maybe she's your mother."



Andrew the Anhinga

Before she could go very far, the anhinga Andrew had pointed to, flew over and cheerfully introduced herself. "My name is Abigail Anhinga, I am your mother and I have looked everywhere for you!" Annie was so thrilled to have finally found her mother, that they gave each other huge hug. Before Annie could ask any more questions, her mother had ushered her to the nest and was offering her food to eat. It was then that Annie realized how tired and hungry she actually was. After eating her fill she sighed contently and fell asleep in the warmth of her brothers and sisters. The time would come when she could learn to fly, or to catch fish on her own, or why she would fan her wings out. But for now she was happy just to be home at last with her mother and brothers and sisters.



Annie's mom  
Abigail the Anhinga

Annie



Otto the Otter



Watch for the next issue when Annie and her new friends start exploring the Refuge

Ally the Alligator



Bertha the Butterfly

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
A.R.M. Loxahatchee National Wildlife Refuge  
10216 Lee Rd.  
Boynton Beach, FL 33437-4796

