



the Swamp Scene

friends of great swamp national wildlife refuge

ISSUE SEVENTY-THREE
NOV 2023

Highlights

Bluebird Nest Boxes	2-3
Photo Contest Winners	4-6
Purple Loosestrife	7
White Oak Trail Opens	8-9
Mammals Rarely Seen	10-11
Woodpecker concussions?	12
Invasive Species Control Team	12
Lake Stars	13
Cyclical Succession	13
Summer Interns	14

Board of Directors

Tom Gula
President

Randi Emmer
Vice-President

Stephen Herdman
Secretary

Tom Cartwright
Treasurer

Jane Bell
Judi DiMaio
Susan Garretson Friedman
Laurel Gould
Dave Katz
Paul Lauber
Bob Muska
Walter Willwerth
Kathy Woodward

Patricia Wells & Martha Wells
Editors

Mike Horne
Project Leader

Lenape National Wildlife Refuge Complex

Deadline for March 2024 issue
March 1, 2024



Printed on recycled
paper

GIFTS THE GREAT SWAMP GIVES US. SHARING THE GIFTS WITH OTHERS.

Fall Festival was great. Lots of people stayed the whole time, and they weren't the volunteers!

Photos by Dave Katz



Dr. Kurt Buhlmann shows off Head Start wood turtles. They spend the winter inside growing twice as fast as hibernating turtles.



Judi DiMaio showing visitors Passaic River fish.



Kathy Woodward leading White Oak Trail tour. The group is admiring the pond from the new deck which was built by the Friends of Great Swamp volunteer construction crew. (See page 8 for more about the crew and their work.)



The Friday Morning Walkers enjoy great company and beautiful sights like these sand hill cranes who put on a show at the Overlook in November. This summer we had Turtle Friday with a parade of four species, including a musk turtle. In August the marsh mallows were spectacular at the bridge over Great Brook. Join us any Friday at 10 AM at the Visitors Center.

Photo by Steve Weiner

FRIENDS PRESIDENT TOM GULA: 2023 BLUEBIRD NEST BOX REPORT

By Tom Gula, President, Friends of Great Swamp National Wildlife Refuge; Head of the Bluebird Box Team

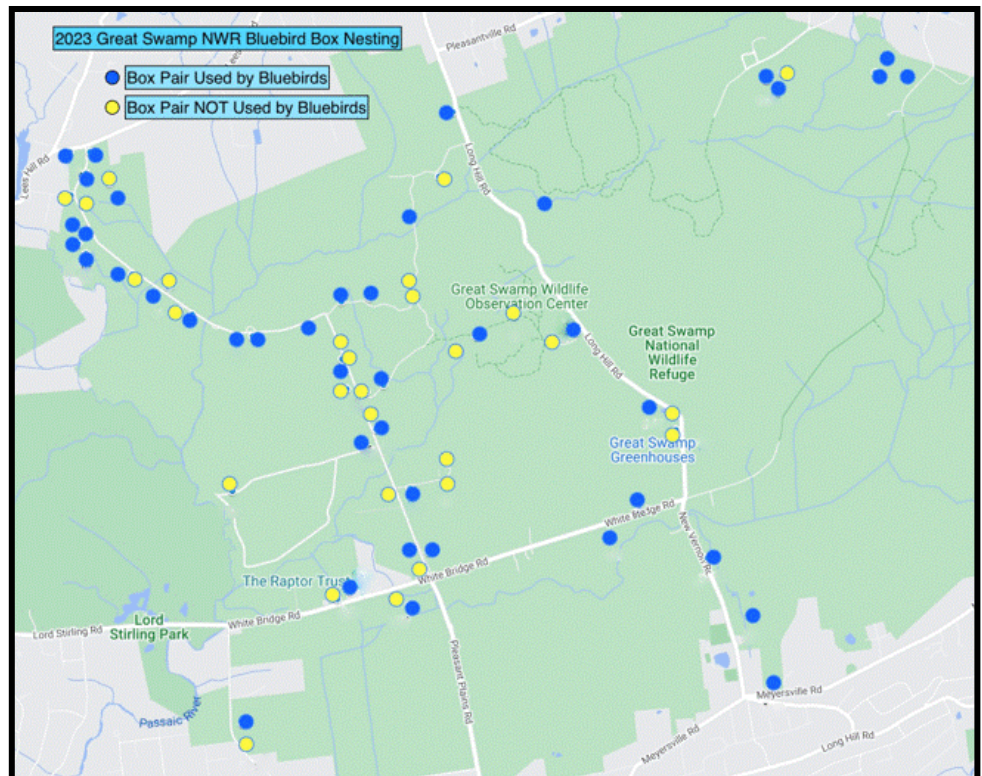
This year three species were recorded in the bluebird nesting boxes: eastern bluebirds, tree swallows, and house wrens. There were no nestings by house sparrows in 2023.

There were a total of 61 nestings (nests containing eggs) by bluebirds in the 136 boxes scattered throughout the Refuge. That is very close to the 10-year average of 62. So this was a successful year given the rain and warm temperatures throughout the summer. Bluebirds produced a total of 175 fledglings this year, up from 146 in 2022.

Tree swallow nestings were a bit below average with 70 this year compared to the 10-year average of 73. They also fledged a lower than average number, 230 compared to the 10-year average of 252.

House wrens had an exceptional breeding year in the Refuge, with 79 fledglings in 2023 as compared to 22 in 2022. The high number of house wrens no doubt had a negative effect on the nesting success of bluebirds and tree swallows. House wrens will enter boxes with active bluebird nests and peck holes in

Bluebird Box Nesting 2023



The nesting box program would not have been possible without the contributions for more than 20 years by my mentor and friend, Leo Hollein—who passed away in January 2023. It was a privilege to work with Leo from the day he asked me to become a nest box monitor in 2017. We spent many hours together in the Refuge repairing nest boxes, moving boxes to new locations, and building new boxes. He generously shared the incredible knowledge about the natural history of the Refuge in general and bluebird nesting in particular that he had accumulated over the past 30 years.

We honor him by carrying on the work to which he dedicated so much time and effort.

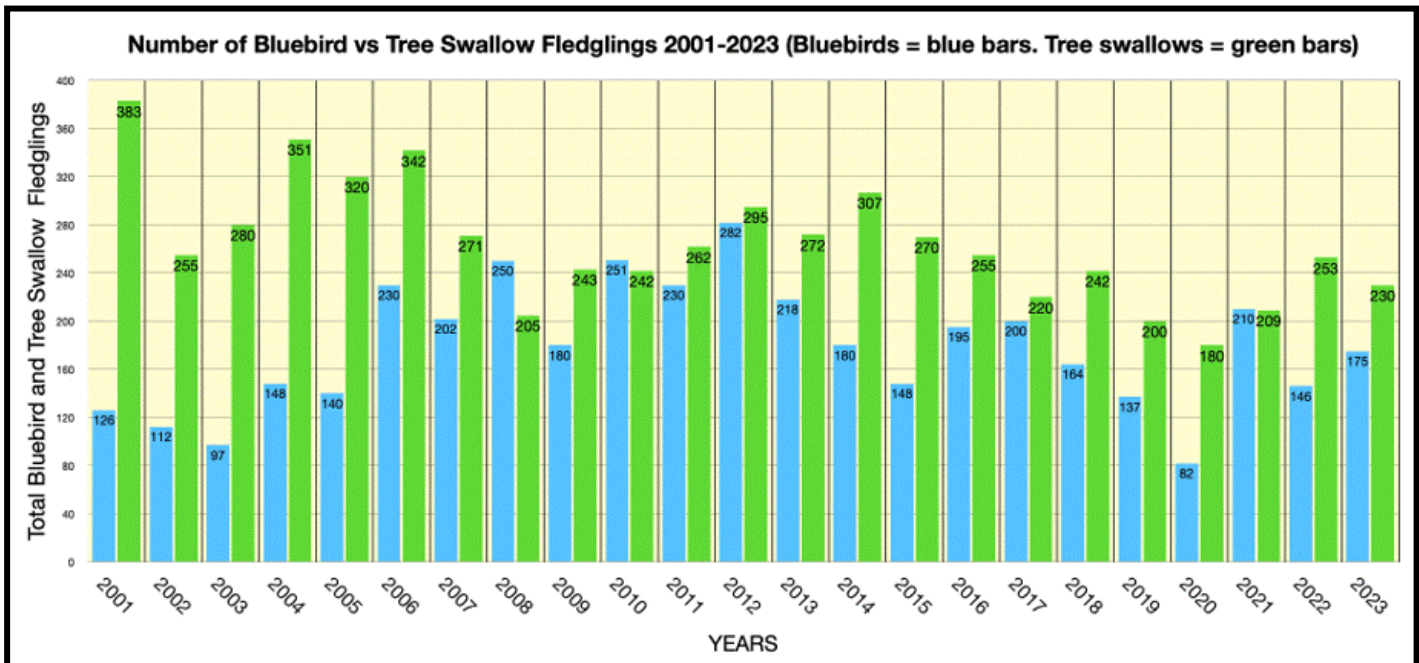
Thank you, Leo, for everything.
Tom Gula

Leo Hollien



BLUEBIRD NEST BOX REPORT

Total Bluebird and Tree Swallow Fledglings 2001-2023



the eggs. They will often drop the eggs out of the nest box. Several monitors noted evidence of house wren predation on both bluebird and tree swallow nests.

House sparrows have nested in several Refuge boxes in the past, but no nests were found this year. Because they have used boxes close to buildings in the past, those boxes were moved further away from the buildings or relocated to another area.

There were six volunteers maintaining and monitoring the 136 nest boxes this year. They started their weekly inspections and data collection in early April and continued until mid-August. Thanks to each of them for their persistence and dedication under often difficult conditions: increasingly wet, hot weather and insect infested fields, with vegetation growth sometimes nearly to the height of the boxes. It was hard field work.

Our bluebird and tree swallows had another successful nesting season because of the hard field work done by Jim Mulvey, Nancy Felicito, Christine Pirog and our two new monitors, Cathy Malok and Nikki Nobles. (Editors' note: Tom left his own name off. He has had to step into Leo's boots. They were big boots, but he's doing a very fine job.)

*Photo by Gavin Shah: Youth Category Honorable Mention
"Please look at me, I will help too"*



WINNERS OF THE 2023 PHOTOGRAPHY CONTEST

Thank you to the 61 photographers who submitted 278 photos to this year's contest. The winners are featured here. You can see the video of the second and third place winning photos, as well as those that received honorable mention at :

<https://friendsofgreatswamp.org/2023-refuge-photo-contest-winning-entries/>

A special thank you goes to our Contest judges who had a challenging assignment. They were:

- Jim Gilbert, Professional wildlife photographer
- Bill Koch, Retired GSNWR Manager
- Bonnie O'Connor, NJ Junior Duck Stamp Contest Judge; Retired art teacher

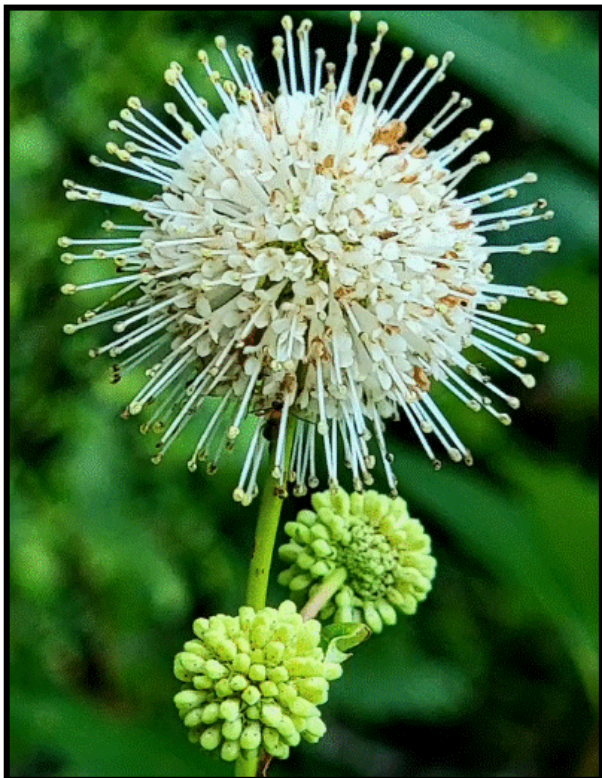
Thank you to the Friends volunteers for handling the entries and creating our 2023 Photo Contest video which plays all year long in the Helen C. Fenske Visitor Center.

We make good use of our photo library—1400 and growing. The photos are used in the Swamp Scene newsletter, in the Happenings eNews, on the website, and on our Facebook pages. They are used in displays, inter-



Pollinators and Other Insects:

“Hummingbird Moth at Work” by Lynda Brush



Youth: “Fox with Turtle Egg” by Tabitha Collins

Plants & Fungi: “Button Bush” by Judi DiMaio

PHOTOGRAPHY CONTEST

pretive signs, presentations, and publications by the Friends and the Refuge. The photos are also used in many ways by the U.S. Fish and Wildlife Service. Some of the 2022 photos were used in the NJ PBS Treasures of New Jersey episode about the Great Swamp NWR.

The winners received a gift from the Friends Nature Shop and the admiration of all who see their photos. But the real winners are the Great Swamp NWR and the U.S. Fish and Wildlife Service. Thank you, photographers, for donating and sharing all your fabulous photos.

(continued on page 6)



Birds Other Than Raptors;
“Hummingbirds”
by Chuck Hantis

Any Other Wildlife:
“Brown Snake”
by Steven Weiner



PHOTOGRAPHY CONTEST *(continued from page 5)*

Landscape:
"Sky Candy"
by Matt Heiss

Raptors:
"Red Shouldered Hawk"
By Chunk Hantis

**WHAT IS THE DIFFERENCE BETWEEN A SWAMP AND A MARSH?**

By Judi DiMaio

Trees. Swamps have trees. Actually, there is a lot more that differentiates the two, including how they were formed, the type of soil, what species live in them and more. Marshes form when open areas flood while swamps form when forested areas flood. They both can form near rivers and lakes. Marshes have more water-loving plants and shrubs while swamps have far more water-loving trees and very few shrubs or emergent plants (those with roots underwater, but leaves and stems extending above water). Swamps tend to have a much more negative feeling associated with them than do marshes resulting in many swamps being destroyed.

PURPLE LOOSESTRIPE AT THE GREAT SWAMP NWR

By Jack Donohue, Volunteer, & Kathy Woodward, Board Member and Invasive Species Control Team Leader

Purple loosestrife is a decorative ornamental plant, but looks can be deceiving because it is also a highly invasive plant. By the 1990s, purple loosestrife had clogged the habitat impoundments of Great Swamp NWR, robbing valuable acreage from use by migrating waterfowl.

According to a Spring 2004 issue of U.S. Fish & Wildlife Service Field Notes, NJ Field Office article, purple loosestrife was imported from Europe for flower gardens during the 1800s. Purple loosestrife seeds were also present in the soil used to weigh down the ballast holds of European ships.

Purple loosestrife spread pri-

growing. The resulting loss of plant diversity limits the number of animal species that find accommodating habitat in the infested wetland.

Prior to 1995 the GSNWR attempted to control purple loosestrife by spraying with the herbicide glyphosate, but it was very difficult to keep up with the tremendous seed production and germination of new purple loosestrife plants.

In Europe five insects complete their whole life feeding only on purple loosestrife. The USDA agreed to allow those five species to be introduced into the United States for biocontrol of purple loosestrife.

In 1995 the Great Swamp stopped spraying and began raising and releasing *Galerucella pusilla* and *G. californiensis*, two leaf-eating beetles. Although the refuge continued to release thousands of beetles each spring, the beetle population in the field increased slowly for a number of reasons. The beetles normally lay their eggs in the developing stem tips that are exactly the part of the loosestrife plant that white tail deer relish eating. Also, the refuge frequently received prolonged spring flooding that drowned the beetles' eggs and fall flooding that drowned the overwintering adults. Even under normal circumstances only about 20% of the adult beetles survive through the winter.

Nevertheless, each summer Refuge personnel observed more beetles on the plants. By 1999 the beetles completely consumed 1/4 acre of purple loosestrife, 3 acres



Terrible Beauty: Field of Purple Loosestrife
L.J. Mehrhoff for U. of Ct, Invasive.org

in 2000, 13 acres in 2001 and 40 acres in 2002. In 2003 because flooding drowned many beetle larvae only 20 acres of purple loosestrife were consumed, but this is almost certainly a temporary setback.

In 2004, it was anticipated that the purple loosestrife at the Great Swamp NWR should be under control in two to three years.

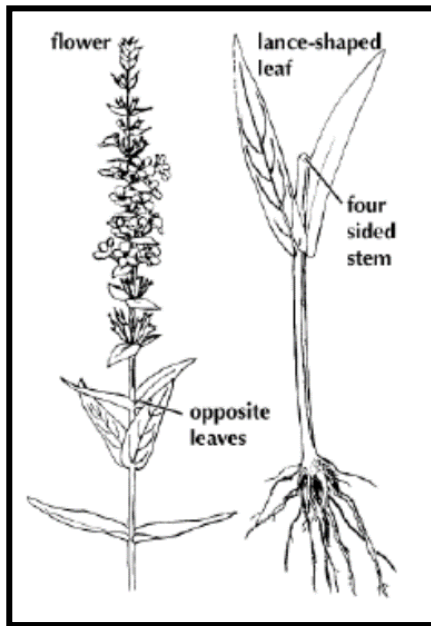
In the intervening years, the abundance of purple loosestrife and the populations of beetles have increased and decreased in parallel cycles.

Fast forward to 2023, when there is again an increase in purple loosestrife. The beetles that eat the purple loosestrife are still with us. Hopefully, their numbers are sufficient to control the latest uptick.

The Fish & Wildlife Service staff continue to monitor the situation.

The Invasive Plant Control team of which I am proud to be a member, in the meantime, are as eager as the leaf-eating beetles. We are pulling the purple loosestrife out of the Pollinator Meadow and adjacent areas to give the native plants the place to thrive.

Meet some of the Invasive Plant Control Team on page 12.



Purple loosestrife
Massachusetts Dept of
Conservation & Recreation

marily through seed dispersal through northern U.S. wetlands. Incredibly, a single mature plant can produce up to 2.7 million seeds annually.

Once established purple loosestrife will spread rapidly and eventually prevent native plants from



WHITE OAK TRAIL OPEN AFTER THREE-YEAR RENOVATION PROJECT

By Dave Katz, Volunteer and Board Member

The Friends Construction Crew has completed the White Oak Trail, a 1-mile long, ADA (Americans with Disabilities Act) compliant loop. The trail meanders through forested areas and clearings. The trail is made of stone dust paths, and sections of boardwalk. A highlight of the trail is the Vernal Pool Platform. The Platform is an excellent rest area with benches that allow visitors to enjoy the beauty of the Vernal Pool.

The Construction Crew labored over 3 years in all weather conditions, and finished Phase III in September of this year. Here are some statistics on the trail, which is affectionately called “Laurel’s Loop” by some crew members.

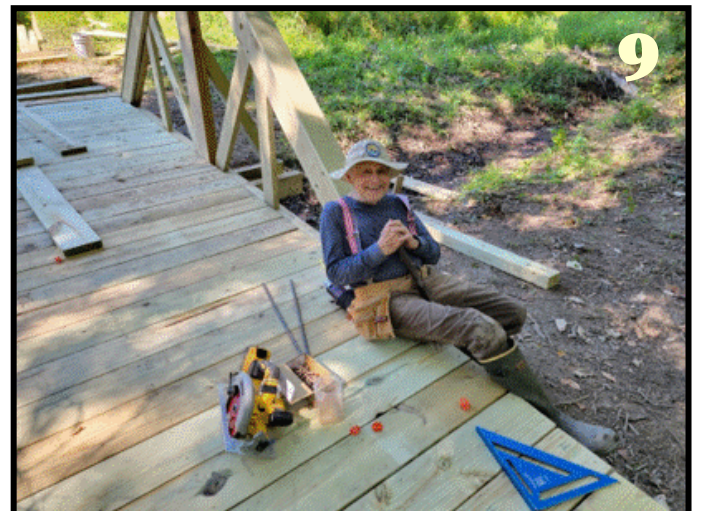
- ◆ Number of boardwalk treads: 4400 (all cut by the crew)
- ◆ Tons of stone dust: 159 (31,800 pounds, loaded one shovel at a time!)
- ◆ Board feet (a measure of lumber volume) of curbing lumber: 4900
- ◆ Number of feet of trail constructed per year: Approx 1700
- ◆ Number of bridges over drainage ditches: 5
 - ◇ Two 14-foot-long bridges, 4 feet wide
 - ◇ Two 20-foot-long bridges, 7 feet wide
 - ◇ One 20-foot-long truss bridge, 7 feet wide - All 7-foot-wide bridges will support riding lawn mowers and utility vehicles
- ◆ Number of volunteer hours worked: 5300 hours over a 3-year period

Fall would be a great time to enjoy this trail and see the awesome work the Construction Crew accomplished. Future refinements include a new trailhead containing a four panel Kiosk.

(Editors’ note: The Team didn’t just build boardwalk, bridges, and platforms. They built beautiful structures that enhance the natural environment and enrich our experience. Thank you, Team.)



WHITE OAK TAIL (continued from page 8)



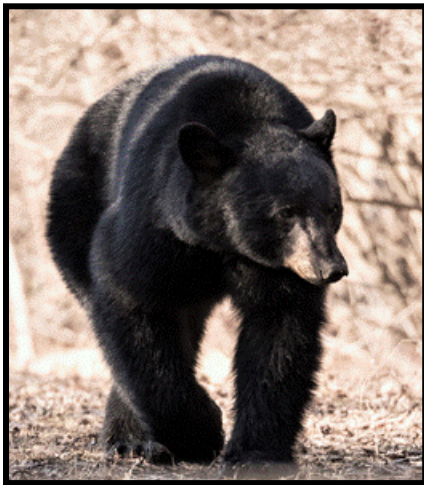
1. Phase I: September 2021—Boardwalk “boxes” being constructed
2. Adding stone dust—many long walks
3. Constructing a rest area platform for two benches
4. Phase II: August 2022—Constructing one of the two bridges required for this phase
5. Celebrating Construction Crew Leader George Solovay’s birthday on the Vernal Pool Platform. (George is 4th from left)
6. A completed section of Phase II
7. July 2023—Cutting Planks and bumpers
8. Attaching hundreds of planks
9. George can relax knowing the Crew has got it under control, and the project is almost completed.

MAMMALS RARELY SEEN AT THE GREAT SWAMP NWR

Articles and photos by Robert Lin, Volunteer

AMERICAN BLACK BEAR (*Ursus americanus*) *Bear photos taken near Wildlife Observation Center bathrooms*

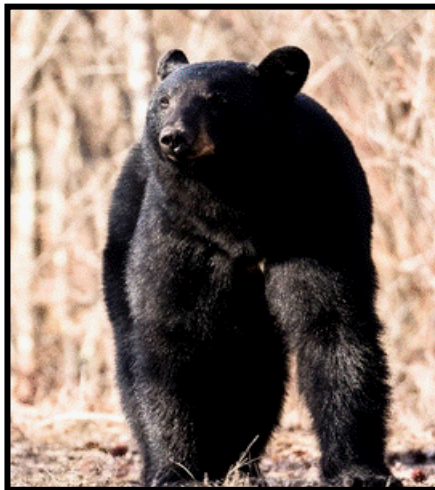
Black bears are the largest native land mammal in New Jersey. They are an integral part of the state's natural heritage and a vital component of healthy ecosystems. Black bears vary in size. In New Jersey, males weigh from 100 to 900 pounds and females from 85 to 500 pounds. Since the 1980s, the Garden State's black bear population has been increasing and expanding its range both southward and eastward from the forested areas of northwestern New Jersey. Within the most densely populated state in the nation, black bears are thriving. There have been confirmed bear sightings in all 21 of New Jersey's counties.



Black bears prefer to live in dense cover, such as forests, cedar swamps, thickets, and brush. That is why they live at the Great Swamp NWR. As with most wildlife species, their home range is determined by availability of food. They roam throughout the summer in search of food sources. Females will travel roughly ten square miles, and males may go

up to fifty square miles from home. Black bears are excellent tree climbers, even as cubs, who will use trees to escape danger. Black bears generally live about ten years, though a few may survive twice that long.

No food source is ever overlooked. Black bears can eat just



about anything of nutritional value. Their fur is bee-proof and the occasional sting on the nose is well worth the honey. Although vegetation makes up most of their diet, ants from an anthill, roadkill or even the occasional fawn will do as well.

Most people think that bears hibernate, but in fact, they do not. They go through a period of dormancy known as denning. The bears will make a den someplace secluded where they will not be found or disturbed, such as hollow trees, small caves, large excavation under roots of a tree, or the side of a dirt hill. The space cannot be too large as they will need to conserve body heat. The site will be prepared about one

month in advance of their late November to early December denning time.

The bears fall into a deep, yet not unbreakable slumber. They may awaken briefly and go out for a sleepy walk. During their extended sleep their body temperature remains near normal at 96 degrees, but their heart rate slows to 10 beats per minute. Within this five-month nap period, the bears do not urinate, defecate, eat or drink. All the water and calories necessary are provided to them by the four-inch layer of fat they have established prior to their slumber.



Camouflage Challenge

Get out your magnifying glass and see if you can find the red-spotted newt in this photograph. Answer on page 14.



MAMMALS RARELY SEEN AT GSNWR

BOBCAT (*LYNX RUFUS*)

The bobcat is a medium sized-cat, about two feet tall. It is larger than a housecat, but much smaller than a cougar or mountain lion. Adult females in New Jersey generally weigh between 18 and 25 lbs. while adult males can weigh as much as 35 lbs.

Their fur ranges from yellowish brown to reddish brown and markings that vary from 'tabby' stripes to heavy spotting. They possess slightly tufted ears and a short-bobbed tail (between three



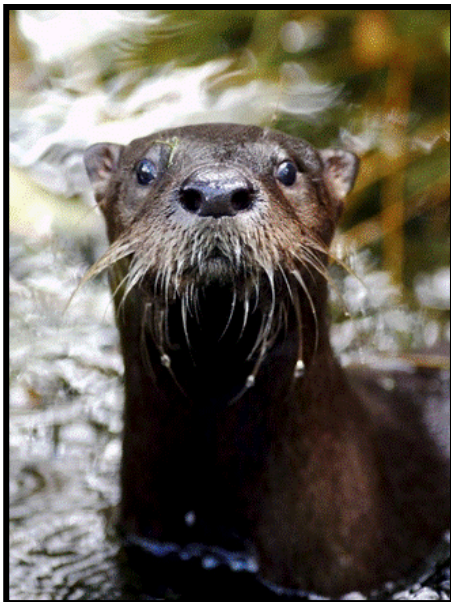
and seven inches long) that is black at the tip.

Generally, they hunt both by night and day, although there is evidence that most hunting takes place at dawn and dusk.

They are extremely shy animals and are seldom seen by humans. However, as their numbers have increased in northern parts of the state, more and more people are seeing them. There have been reports of bobcats in the Great Swamp National Wildlife Refuge.



NORTH AMERICAN RIVER OTTER (*LUTRA CANADENSIS*)



The North American River Otter (*Lutra canadensis*) lives a semi-aquatic life and is one of five members of the weasel family in New Jersey. The river otter has a long, thick, streamlined body with dense protective fur and short powerful legs. Their tail is slightly flattened and makes up almost half of the otter's total body

length. Mature adult river otter's weigh from about 10 to 25 pounds, with a total length between 40 to 52 inches long.

The river otter is a top predator in the food chain, so the species are indicators of good water quality.

Throughout much of the state, river otters tend to live in watersheds that have active beaver colonies as beavers maintain stable water conditions and increase food sources for the otter. River otters are usually found near good herbaceous cover that provides dens and resting areas with little or no human activity.

Fish make up a major part of the otter's diet. Crayfish and other crustaceans are also important food items as well as rep-

tiles, amphibians, clams, snails, mussels, insects, muskrat, and waterfowl.

The lifespan of a wild river otter can be as much as 10-15 years.

They are rarely seen at the Great Swamp NWR but if you are lucky, they have been seen along Pleasant Plains Road in Black Brook and from the Chandler Robbins Platform looking out onto the waterway.



Photo taken from Chandler Robbins Platform
Wildlife Observation Center

WHY DON'T WOODPECKERS GET CONCUSSIONS?

By Judi DiMaio, Board Member and Volunteer

Woodpeckers spend the day smashing their faces against trees. How do they avoid concussions?

One old theory suggested that there was some spongy material in the front of their skull that acted as a shock absorber and protected the brain. Another theory said the bird's long tongue wrapped around the brain, protecting it.

New evidence suggests that neither is true. Woodpeckers can hammer a tree up to 25 times/second, 12,000 times a day, producing around 1200 Gs (more than 100 Gs will give a person a concussion) notes Audubon Magazine.

Researchers at the Universteit Antwerpen, Belgium, have a plausible theory – physics. Given that the birds' brains are about 7 times smaller than those of humans, they can absorb 7 times more force. There is also less fluid between the brain and skull, allowing for less movement of the brain upon impact. They examined the theory that the woodpeckers had some sort of shock absorbers to cushion the blows but saw no physical evidence. Shock absorption would actually be counterproductive as it would reduce the pecking force by dissipating the energy.



Red-Bellied Woodpecker
by Robert Lin

So, in the case of woodpeckers, a smaller brain is better!



Some of the Invasive Species Control Team. On the left is Matt Heiss who manages the Pollinator Demonstration Garden at the start of the Discovery Trail. He is pointing to a monarch butterfly in a habitat. Matt was able to bring many monarch caterpillars in from the pollinator garden and raise them in the butterfly “palace” in the Visitor Center. Many visitors were able to see the butterfly lifecycle up close. (from left to right) Barbara Fowler, Jack Donohue, Martha Wells, Pat Wells, Paul Lauber, Nancy Strum, Walter Willwerth, and Peg Lundrigan. Nancy and Peg manage the Pollinator Meadow.

Photo by Kathy Woodward Invasive Species Control Team Leader

INVASIVE SPECIES CONTROL TEAM

From March through October, the Invasive Species Control Team spends several days a month removing invasive species from public areas in the Refuge. Some plants can be dug or pulled out like purple loosestrife and Japanese stiltgrass. Other invasives are cut close to the ground, then a herbicide is carefully dabbed onto the clean cut. The team targets multiflora rose, autumn olive, barberry, euonymus

“burning bush”, glossy buckthorn, as well as other invasives that show up where the team is working.

This summer and fall, the team also assisted in the pollinator meadow, weeding and watering.

It's all team work, all the time, and hard but satisfying work. New volunteers are always welcome.



STRANGE FORMATIONS SEEN IN THE ICE AT GREAT SWAMP!

By Judi DiMaio, Board Member and Volunteer, Photo by Judi DiMaio

There were strange sightings last year at the Wildlife Observation Center in the ice by the Sportsman's blind. What are they? Lightning strikes? Alien markings? Weird tracks? They look like neu-



rons or lightning. They are the dark formations in the lighter ice. What could they possibly be?

They are called "lake stars", "ice stars", "ice octopi" or "ice spiders". So how do they form? Usually it starts with a freeze (below 32 degrees) then a few warmer days that follow. When it is cold enough and a thin layer of ice forms on still water that's when the magic begins. The thin ice needs a layer of slush or snow on it. Warm water coming up from below the ice is siphoned up by the snow. If the ice is too thick this won't happen. The weight of the wet snow/slush gets heavier and pushes the ice down and the star begins to take shape. The central "hole" forms and acts as a "well" for the warmer water to flow up and form the dark arms. The stars look dark because they are clear ice that doesn't have snow or slush on top.

They don't occur very often, so maybe we'll be lucky and see them again this winter!



CYCLICAL SUCCESSION

By Jack Donohue, Volunteer, Photo by Jack Donohue

Each year red maple seeds are carried by the wind looking for a suitable habitat in which to grow. Red maples grow in diverse habitats, but I never saw red maples growing in water until I looked across an open marsh at the Great Swamp National Wildlife Refuge.

At least I thought the red maples were growing in water. However, when I looked closer, I realized the maples had done an ingenious thing. The maples were growing on the top of a sedge. A sedge is a grass-like plant that is rooted on the watery bottom of the marsh. They form a mound called a hummock that stands out of the water. To the red maple, the sedge was like a small island in an inland sea.

I learned that this union between the red maple and the sedge is a form of cyclical succession. In the beginning, the red maple and the sedge grow together in harmony, a symbiotic relationship. However, as the red maple grows larger, its root system expands and eventually overwhelms the sedge. The



sedge dies.

When the sedge dies the buffer between the red maple and the water is gone, and the maple, which cannot grow directly in water, also dies. That ends the cycle between the sedge and the red maple.

The cycle begins again when a new sedge begins to grow in the water and a red maple seed falls on top of the sedge, takes root and begins to grow.

Of course, other trees and shrubs normally found in drier habitats follow the example of the red maple and find a home on top of one of the water-loving sedges.

There are many examples of this cyclical succession phenomenon at the Great Swamp National Wildlife Refuge. My favorite place to view it is along the boardwalk leading to the Sportsman's Blind at the Wildlife Observation Center.

Red maple sapling using a sedge hummock as an island of dry land.

SUMMER INTERNS DENISSE CAMARENA AND NATALIA SWIETEK

Denisse and Natalia spent two weeks at Great Swamp NWR this summer gathering surveys. They were here during the Fall Festival, so they had a chance to talk to a lot of our visitors. They also spent a few work days helping on the Pervasive Invasive Team. They were good hard workers.

The Swamp Scene editors asked the girls to tell us about their internship, their education and what they hoped to do in the future. Denisse responded for the two of them:

For this internship, we are traveling nationally to National Wildlife Refuges with the intention of collecting willing participants for the National Wildlife Refuge Visitor Survey. This position is through American Conservation Experience and AmeriCorps, in partnership with the US Fish and Wildlife Service. We stay at each refuge for two weeks, with around 60 hours spent on surveying and around 10 hours on additional projects the refuge needs help with. These additional projects have so far varied from helping with trail maintenance, recording water level data, and removal of invasive species.

Our goal at each refuge is to have



American Conservation Experience
Interns joining in on a Pervasive
Invasive workday
in the Wildflower Meadow

200-250 visitors agree to take the survey, which comes to around 20 per day. The data we collect is sent to Ohio State University, where they mail out the survey to participants and compile the data for the refuges. The data is combined with surveys from a previous term for a projected total of 400 total visitor surveys per refuge.

We began in Fort Collins, Colorado for our orientation, where we were given company vehicles to travel with. Our first refuge was Detroit River International Wildlife Refuge in Michigan, then Umbagog NWR in northern New Hampshire followed by Rachel Carson NWR in southern Maine, and before coming here to Great Swamp NWR, we were at Eastern Neck NWR in Maryland. Our next and last location of the season is a secret (as we are not allowed to make any announcements about our arrival at a refuge for survey integrity purposes).

We both just graduated from university in May. Natalia graduated with a degree in Integrative Biology and minor in Spanish from University of Illinois in Urbana-Champaign and Denisse graduated with a degree in Animal Ecology and a minor in Forestry from Iowa State University. Natalia plans to travel before, hopefully, starting an avian research position in the spring and Denisse is planning to work a few more internships until she finds a suitable masters program to further her career in natural resources and conservation.



Did You Know?

Adult luna moths have only vestigial mouth parts and do not eat. They mate and reproduce, then die within 7-10 days after emerging from their cocoons.



Their preferred larval (caterpillar) foods are sweet gum, white birch, hickories, walnut, and sumac. The caterpillars are leaf green, an excellent form of camouflage.

The luna belongs to the silkworm family.

Here's your newt.



FRIENDS OF GREAT SWAMP NATIONAL WILDLIFE REFUGE

MEMBERSHIP APPLICATION

The Friends of Great Swamp is an independent, non-profit organization organized in 1999. Our operations and activities are managed by an all-volunteer Board of Directors. As our mission statement indicates, our focus is Refuge-centric — we support the goals, projects, and mission of the Great Swamp National Wildlife Refuge.

To become a member of the Friends of Great Swamp, fill out the information on this form, and mail with your check to:

Friends of Great Swamp National Wildlife Refuge
32 Pleasant Plains Road, Basking Ridge, New Jersey 07920

ANNUAL MEMBERSHIP APPLICATION

☐ **EASTERN BLUEBIRD—\$15-\$49**

☐ **PAINTED TURTLE—\$50-\$99**

☐ **RIVER OTTER—\$100-\$249**

☐ **MONARCH BUTTERFLY—\$250-\$499**

☐ **WOOD DUCK—\$500 +**

☐ **New Member?**

TOTAL ENCLOSED \$ _____

You may also join online at www.friendsofgreatswamp.org

Name _____

Address _____

City _____

State, Zip Code _____

Phone Number _____

E-Mail Address _____

Gift Membership From: _____

(If this is a gift, please include your full name on the line above so we may notify the recipient)

We need more Friends ...

**Become a Friend Today—or,
Give a gift membership to a friend.**

Thank you



Memberships help support the projects and programs at Great Swamp National Wildlife Refuge.

Membership Benefits

- The Swamp Scene Newsletter.
- A 10% discount in Friends Nature Shop.
- Notifications of upcoming events.
- Satisfaction in knowing you are helping protect wildlife and wild places while safeguarding a national treasure for future generations.

Friends of Great Swamp NWR
32 Pleasant Plains Road
Basking Ridge NJ 07920

Non-Profit Org.
PrSrt Std.
US Postage Paid
Permit No. 407
Chester NJ 07930



THE SWAMP SCENE NOVEMBER 2023

Friends of Great Swamp National Wildlife Refuge
Is an independent, volunteer, non-profit organization
dedicated to

Promoting stewardship of the natural resources of the Refuge,

Inspiring an appreciation of nature through education and outreach,

Engaging in partnership activities that support and enhance the Great Swamp National
Wildlife Refuge and the National Wildlife Refuge System.