



# The Swamp Scene

friends of great swamp national wildlife refuge

ISSUE FIFTY-FIVE  
DECEMBER 2017

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## LOOKING BACK ON A SEASON OF MONARCH MAGIC

By Kathy Woodward, Friends President and Monarch Champion



Monarch caterpillar Photo by Jane Bell

What a year for monarchs! Our third-year demonstration butterfly garden was grazed heavily by four-legged critters in May, but Dorothy Smullen and helpers put up fencing and Susan Moseson donated new swamp milkweed.

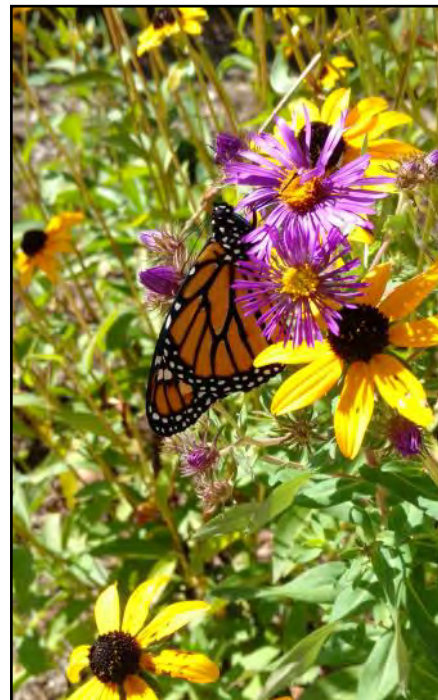
We brought our first caterpillar into the Visitor Center on July 17 and we released the final butterfly on October 11. Three months of flutter excitement and at least 45 monarchs released.

We had two display cases of caterpillars and chrysalises and started a "nursery" for tiny caterpillars.

We found eggs on our milkweed and got to watch caterpillars emerge from the shell. Our visitors were fascinated with the process. We released six monarchs at Fall Festival to the delight of everyone. Staff, interns, and volunteers helped gather milkweed, clean the display cases, and release monarchs.



Caterpillar emerging from egg  
Photo by Robert Lin



Newly released Monarch at Visitor Center  
Photo by Kathy Woodward

### LOOKING FORWARD TO 2018!

More milkweed = more monarchs. We have new habitat for monarchs and other butterflies. We will have new and improved cases to display the caterpillars. At our 2017 Fall Festival, our volunteers sighted and identified 15 species of butterflies. There are a lot more butterflies to learn about. Hopefully, we can raise monarchs and swallowtails. Come help!

Our volunteers were also busy at home and released another 225 monarchs. Turn to page 3 for some of their comments...

## FRIENDS OF GREAT SWAMP NWR BOARD MEMBER COMPLETES FRIENDS ACADEMY 10 TRAINING

By Joe Balmierczak, Friends Vice President

This past May I was selected, along with 21 other members of Friends organizations from across the country, to attend the Friends Academy at the National Conservation Training Center (NCTC) in Shepherdstown, West Virginia during the week of August 21-25. This is the 10<sup>th</sup> year that the Friends Academy has been held and it is designed to provide information about the National Wildlife Refuge System (NWRS) and guidance to new Friends board members (I became a Friends board member in January 2016). Although having received the agenda before I left New Jersey, I didn't have any firm ideas of what the next week of instruction at Friends Academy 10 would be like and whether it would be meaningful for me. I knew that I would be getting information from instructors selected by the NWRS that would help the Friends of Great Swamp NWR on a number of topics, such as recruiting and retaining new volunteers and guidance on board membership and performance.

After entering NCTC and surveying the beautiful 500 acre campus, I knew that I was someplace special, a place that showed that people involved in conservation were held in the highest regard. The following four days of instruction were jam-packed with lectures and assignments. The lectures described the organizational structure of the NWRS, its funding, and its mission. The most helpful parts of the week involved presentations on enhancing volunteer experiences, building partnerships between our local Friends groups and other nearby organizations that shared common conservation goals, and procedures to build and strengthen our Friends board of directors. The quality of the presentations and the professionalism of the



Receiving my Friends Academy diploma from the Chief of Refuges for the National Wildlife Refuge System, Cynthia Martinez

presenters were very impressive. One day we attended the class organized for refuge managers that focused on the Fish and Wildlife Service (FWS) budget and how the service interacts with Congress. A private consultant gave the best presentation of the week on this day. She explained the most effective ways FWS managers or leaders of Friends groups should communicate with team members and the group dynamics needed for the team to be successful in reaching goals.

The two things that impressed me the most were the experience and knowledge of the other Academy attendees and the support shown by the NWRS for all of the Friends groups. Meeting members of other Friends groups and the NWRS staff who are

Friends coordinators showed that our Friends group at Great Swamp can count on the support from other Friends groups and from the regional as well as the national headquarters of the NWRS. One of the attendees of Friends Academy 10 set up a Facebook page so that we all can stay in touch and share information about what we are doing at our respective refuges. Thus, one of the most important lessons I learned was that the Friends of Great Swamp NWR has many "friends" and each of us are part of the national effort to support our national wildlife refuges. It was a great week shared with some great people, and I felt privileged to be in their company.



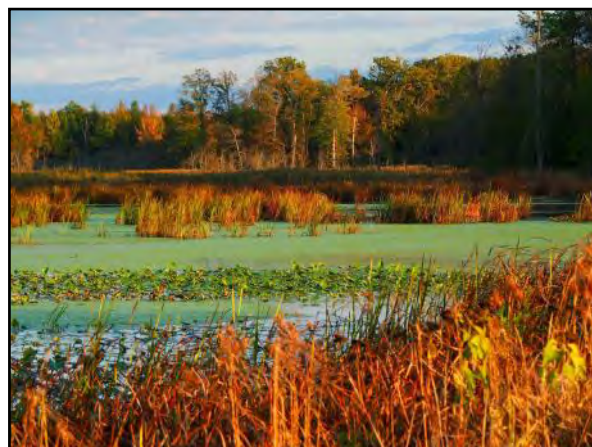
*Teamwork ... is the fuel that allows common people to attain uncommon results.* Andrew Carnegie



## FRIENDS CELEBRATE NATIONAL WILDLIFE REFUGE WEEK—SUNSET WALKS & THE BIG SIT!

In celebration of National Wildlife Refuge Week 2017, Friends of Great Swamp NWR invited the public to witness the nightly spectacle of flocks and flocks of migrating ducks and geese descending on the refuge impoundments to spend the night. Evening walks were scheduled Sunday October 8<sup>th</sup> through Saturday the 14<sup>th</sup>; however, due to rain two of the walks had to be cancelled. Over the course of the week there were a total of 115 visitors led by 20 volunteer birders, Friends board members and “walk-alongs” (volunteers who help out on the walk). Species identified included wood ducks, green wing teal, black ducks and mallards, Canada geese, swans, herons, kingfisher, woodcock, hawks, owls, bald eagle, sora rail, woodpeckers, snipe, marsh wrens, sparrows, frogs, crayfish and a bat. These Sunset Walks allow visitors and volunteers to experience areas of the refuge normally closed to the public and to appreciate the beauty and value of our refuge lands during the spectacular fall migration season.

*By Janet Stadelmeier, Friends Board Member, Photo by Kathrin Bergin*



The Big Sit is an annual, international, noncompetitive birding event hosted by *Bird Watcher's Digest*. It is held in October each year which coincides with National Wildlife Refuge Week. The rules are simple—birders count all the bird species seen or heard from within a 17-foot diameter circle. Our circle is located at the Overlook. This year participants identified 65 species in a 12-hour period. Highlights include barred owls and a screech owl calling from behind the parking lot at sunrise and then a good number of raptors throughout the day that included 4 bald eagles, a dozen or more accipiters (sharp-shinned and Cooper's hawks), 6 northern harriers, 2 peregrine falcons, 2 merlin falcons, 2-red-tailed hawks, 1 American kestrel and a late osprey—11 raptor species for the day.

Noteworthy fly-by species observed were northern pintails, green-winged teals, gadwalls, and a rare flock of ~20 brants. Lastly, over 600 American robins, 300-400 chimney swifts, and a couple thousand European starlings filled the skies all-day long.

This annual event is for all ages and is enjoyable, so next year, bring your binoculars or borrow a pair from the Helen C. Fenske Visitor Center and join us for any length of time to learn about the Big Sit and identifying birds.

*Photo and Story by Robert Lin, Volunteer*

## VOLUNTEERS SHARE THEIR EXPERIENCES ... AND THEIR MONARCHS! *(continued from page 1)*



Jane Bell's Monarch Line  
Photo by Jane Bell

**JANE BELL:** I raised the caterpillars indoors because I was finding that many eggs and caterpillars were falling victim to predators—spiders, birds, etc. I would check on them one day and the next, they would be gone. I enjoyed following other folks interested in this effort on Instagram, using the hashtag #raisingmonarchs.

**PEGG PONZIO:** I put chrysalises in individual containers for a couple of friends who were immobile due to health reasons and they just *loved* to watch them emerge. Kind of Monarch therapy!

**KATHY WOODWARD:** I gave a chrysalis to my nephew's son, Bowen, and to my sister-in-law, Betsy. They can't wait to raise their own butterflies.

**JANET STADELMEIER AND ROBERT LIN:** We had so much fun!!!

**ANDREANA FIELD:** We brought 10 monarch caterpillars and 6 chrysalises to my daughter Marie's AP Environmental Science class so that the students could see them change in the various stages.

**HABITAT RESTORATION AT GREAT SWAMP NATIONAL WILDLIFE REFUGE**

*By John Berry, Friends Board Member and Strike Team Volunteer Leader*

**A**t the start of 2017, two invasive plant species seemed set to permanently alter the Great Swamp’s landscape by damaging or destroying the habitats of many native plants and animals, thus greatly reducing biodiversity. Glossy buckthorn, a “highly threatening” small tree from Europe, had established an extensive foothold in the southwest section of the refuge. This plant thrives in some of the Great Swamp’s most important habitats—brushy fields and forest understorey—and had begun to form monocultures in several areas. Water chestnut was only discovered on the Refuge in 2016, but by that time it had already invaded much of Pool 1. This plant also thrives in the Great Swamp, quickly propagating and forming thick monoculture mats across water surfaces.

Left uncontrolled, both plants would eventually have come to dominate their respective habitats. It’s worth taking a moment to think about the consequences. Imagine the Great Swamp’s brushy fields and woodland understorey as dense thickets of glossy buckthorn. How would that affect popu-



Water chestnut (*Trapa natans*)  
Image: John M. Randall, The Nature Conservancy, Bugwood.org

lations of American woodcock, screech owl, flying squirrel, wood frog, box turtle, and garter snake? Now imagine the impoundments as deserts of water

chestnut. What would that mean for the fish, amphibians, insects, and birds—including ducks and eagles—that depend on open water?

The Strike Team decided that these habitats needed to be restored and protected. Coordinating with refuge staff, the team worked hundreds of hours this year to control both infestations.

The team’s accomplishments are notable. Thanks to Ken Witkowski’s guidance, the team began pulling water chestnut early in June, when the plants were still small and relatively easy to handle. As a result, the team and staff members were able to pull the entire crop, thus ending seed production and curtailing any future expansion. Next year’s water chestnut infestation (arising from old seeds in the “seed bank”) should require significantly less labor. Soon the plant will become an “annual maintenance project.”

Glossy buckthorn is a far greater infestation and more serious problem. But the Strike Team, working closely with Colin Osborn, eradicated tens of thousands of tall, fruit-bearing trees. Much of this work involved hand-sawing trunks at ground level last winter. Even more work was dedicated to a large brushy field west of Pleasant Plains Road. Refuge staff mowed the field last winter in order to allow the Strike Team to treat re-sprouting glossy buckthorn during the sweltering days of summer. Although it will be years before this



Strike Team sporting glossy buckthorn t-shirts (left to right): Steve Herdman, Terry Kulmane, Colin Osborn, John Berry, Peter (Ozzie) Osborn, Roberto Reisinger, Joe Balwierczak, Claudia Osborn, Brian Osborn



Glossy buckthorn (*Frangula alnus*)  
Image: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

particular invasive can be considered an “annual maintenance project,” seed production has been drastically reduced, which is the first step in controlling the infestation.

If you are interested in working to restore habitat in the Great Swamp National Wildlife Refuge, please consider joining the Strike Team. Email: <info@friendsofgreatswamp.org>

*In the end, there is really nothing more important than taking care of the earth and letting it take care of you.* Charles Scott



## RACCOONS ARE CLEVER

Story and Photos by Leo Hollein, Volunteer

Graduate student Casey Wagnon studied the population of refuge predators using trail cameras for a two year period. Raccoons (*Procyon lotor*) were photographed nearly 3,500 times. This was 50% more than red fox which were the second most frequent predator photographed.

The most readily observable features of raccoons are the black facial mask that is similar to a bandit's mask and a long bushy ringed tail. The area of black fur around the eyes contrasts sharply with the surrounding white face coloring. The mask may reduce glare and enhance night vision.

Refuge raccoons typically weigh from 8 to 20 pounds. Their body length, less the tail, is about 2 feet. Males are larger than females. Raccoons can live up to 16 years in the wild although most do not make it through their second year. Captive raccoons have lived for 20 years.

As part of his research Casey also evaluated the diet of refuge predators. Samples of scat were collected and analyzed. The frequency of food items found in 40 raccoon samples was:

- Crawfish - 88%
- Insects - 15%

- Fruit/seeds - 15%
- Mammals - 13%
- Fish - 3%
- Birds - 2%

The data indicates that raccoons are omnivorous. They consume vertebrates, invertebrates and plant material. Raccoons prefer to forage at the shore line as indicated by the frequency that crawfish remains are found in their scat.

The human-like front paw of a raccoon is shown below. The paw has a palm, 5 digits that are not webbed and non-retractable claws. Although the



paw lacks an opposable thumb, it has an excellent sense of touch. Raccoons possess amazing manual dexterity that gives them the ability to open doors, jars and latches as well as identifying food items by touch. They often hold food items in their paws and wash them before eating. Raccoons are excellent climbers. They often make their dens in tree cavities, and occasionally in a wood duck

box. Raccoons do not hibernate but are less active in the winter.

My encounters with raccoons usually involve the refuge bluebird trail and the duck banding program. Raccoons occasionally raid bluebird nest boxes. They climb the support post and reach through the entrance hole to grab eggs or hatchlings with their sensitive front paw.

Conical predator guards can deter raccoon predation. They are placed on nest box posts in areas where raccoons have depredated boxes.

Whole corn kernels are used as bait to attract ducks to the trapping site. Raccoons eat the corn bait and are smart enough to enter the duck confusion trap and leave once they



Raccoon in have-a-heart trap



Raccoon feeding on snapping turtle eggs

have eaten their fill of corn. In some years large flocks of blackbirds consume all the bait corn at the site. If this happens, the corn is placed in six inches of water in front of the trap so blackbirds cannot access it. If the corn is under water, raccoons wade and use their paws to locate the kernels. The photo below shows a trapped raccoon that was relocated to the far end of the refuge. Trapping and reloca-

tion keeps the raccoons from negatively impacting the duck trapping and banding program.

Raccoons are primarily nocturnal but are sometimes active in daylight to take advantage of available food sources. The photo above shows a raccoon at mid-morning beside a snapping turtle that has just laid eggs. The raccoon was eating the eggs even before the snapper had a chance to bury them.

The Refuge provides excellent habitat for raccoons consisting of plentiful water, large trees and abundant vegetation. Raccoons, however, are adaptable and have become accustomed to living in suburbia where they consume garbage and food discarded by humans.



## GREAT SWAMP NWR RARE TURTLE RECOVERY PROJECTS, 2017 FIELD SEASON SUMMARY

By Colin Osborn, Wildlife Biologist and Dr. Kurt Buhlmann, Senior Research Associate, Savannah River Ecology Laboratory

Wood turtle and bog turtle conservation work had another excellent year at Great Swamp NWR thanks in major part to the exceptional effort and hard work of intern Amelia Russell. Amelia's tenure lasted from late May through early October and she was instrumental in carrying out nearly all of the critical recovery actions for each species. She routinely radio-tracked a total of 33 wood turtles (7 adult females, 22 head-starts from the first four cohorts [2011-2014], 2 direct-release juveniles, and 2 natural born juveniles). She learned how to install radio transmitters and helped replace them on all of the aforementioned juveniles and several of the females. Together we protected 7 nests from those females that resulted in 29 hatchlings. Amelia processed all of them and in late September she and Colin brought the hatchlings up to Bristol County Agricultural High School in Massachusetts to be head-started.

In addition to all of this, she performed habitat restoration and invasive species removal at the wood turtle site. Amelia also tracked 5 female bog turtles from two different sites, replaced radios on them, protected several nests that resulted in 4 hatchlings, processed them and released the hatchlings at their natal sites. She helped refuge staff, volunteers (namely "invasives warrior" John Berry), and partners perform habitat restoration and invasive species removal at numerous bog turtle sites (active and historic).

Amelia's time at the refuge this year was funded entirely by a generous donation from the Friends to the University of Georgia, for which we are extremely grateful. An additional donation from the Friends has allowed Amelia to continue working with us on the wood turtle



project by remotely compiling, entering and analyzing data that will eventually form the foundation of a scientific publication focused on the results of the head-start program. To express her appreciation and gratitude and to summarize her internship experience at the refuge, Amelia wanted to share her experiences.



The world works in mysterious ways. I am a 2016 graduate from the University of South Carolina Upstate with a Bachelor's degree in Biology; and it was by fate that I ended up working at New Jersey's Great Swamp National Wildlife Refuge. You see, the biological intern position for the 2017 field season at GSNWR had already been filled for months. However, through a friend of a friend, I found out the position unexpectedly became available and, about two months before the start date, I decided to apply. Luckily for me,

*fate knew exactly what I needed! Working at Great Swamp alongside U.S. Fish & Wildlife Service personnel and the Friends of GSNWR has been one of the most invaluable experiences for me.*

*I have been fortunate enough to be a part of several wildlife research projects, but this past summer I was able to immerse myself in every aspect of the wood turtle head-start project at Great Swamp. From radio-tracking turtles,*

*protecting nests, and transporting hatchlings for the head-start program to Bristol County Agricultural High School in Massachusetts; to data analyses of wood turtle growth rates, female nesting success, and survivorship.*

*As many of you may already know, this project has been ongoing for nearly 10 years! A long-term project such as this is rare, and the fact that the applied conservation of Great Swamp's wood turtles is showing great progress is something everyone should take great pride in!*

*Beyond my primary focus on the wood turtle project, I got further experience handling the endangered bog turtles. I worked with New Jersey's Department of Environmental Protection capturing and banding Canada geese to determine their abundance and distribution throughout the state. While working alongside the very determined and volunteer-driven Strike Team, I learned a lot about native and invasive flora of the Northeast. I also had the pleasure of interacting with Great Swamp's community during several educational outreach programs.*

*Although I was only at Great Swamp for five months, I have learned so much and am so thankful to everyone who welcomed me. I must give a huge shout out to the Friends of GSNWR as this summer would literally not have been possible without all of you; and to my colleagues Colin Osborn and Kurt Buhlmann—thank you for all your wisdom and passion for conservation!*

-Amelia Russell, 2017 Biological Intern



## A CLOSER LOOK AT A COMPLEX SITUATION

By Laurel Gould, Friends Board Member and Volunteer

Not so long ago, it was normal for each refuge to have a Refuge Manager. But times have changed and now, more frequently, refuges are part of a “Complex”, defined as a group of refuges under the management of a single Project Leader. Great Swamp National Wildlife Refuge is part of a Complex under the management of Project Leader Mike Horne, along with:

- Cherry Valley National Wildlife Refuge, northeastern Pennsylvania,
- Wallkill River National Wildlife Refuge, northern New Jersey,
- Shawangunk Grasslands National Wildlife Refuge, Ulster County, New York, &
- Nellie Hill Preserve, Great Thicket National Wildlife Refuge, Dutchess County, NY

That’s five refuges in three states! This arrangement can facilitate the sharing of resources, equipment, expertise and personnel—and Friends. Each of these refuges has its own Friends group and representatives from each Friends group met in August to share ideas and discuss ways to help each other and our refuges. Since then Friends of Great Swamp NWR have travelled to Wallkill River NWR to help with the removal of the invasive plant mile-a-minute and in November, Friends met at Cherry Valley NWR to help plant a pollinator garden around their new headquarters/Visitor Center. Cherry Valley NWR is an amazing place... well worth a visit.



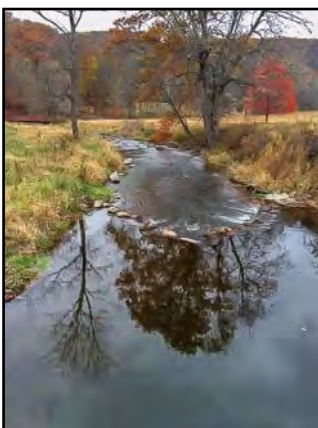
Joe Balwierczak, Friends Vice President, at Cherry Valley NWR



Cherry Valley National Wildlife Refuge was established in 2010 and consists of several different properties. However, in February 2017, the Nature Conservancy acquired the Cherry Valley Golf Course and transferred ownership to U.S. Fish and Wildlife Service to become part of the refuge.

The 193 acre property includes a large club house and paved golf cart paths. The transformation of a golf course into wildlife habitat is well underway.

A section of Cherry Creek has been restored to healthy habitat for brook trout, the greens and fairways have been planted with native wildflowers and grasses, the golf cart paths are now wonderful walking trails that pass through scenic vistas and cross the Cherry Creek. The clubhouse is a ready made site for the headquarters and a Visitor Center. Located about an hour’s drive, near Stroudsburg Pennsylvania, a visit makes a wonderful day trip in any season. Remember, as at Great Swamp NWR, dogs are not allowed—it’s a refuge for wildlife ... and for visitors. *(Scenic photos by Shary Skoloff)*



restored to healthy habitat for brook trout, the greens and fairways have been planted with native wildflowers and grasses, the golf cart paths are now wonderful walking trails that pass through scenic vistas and cross the Cherry Creek. The clubhouse is a ready made site for the headquarters and a Visitor Center. Located about an hour’s drive, near Stroudsburg Pennsylvania, a visit makes a wonderful day trip in any season. Remember, as at Great Swamp NWR, dogs are not allowed—it’s a refuge for wildlife ... and for visitors. *(Scenic photos by Shary Skoloff)*





## CUTTING-EDGE WOOD TURTLE HEAD-START PROGRAM AT GREAT SWAMP NWR

By Laurel Gould, Friends Board Member and Volunteer ; Photos below by Colin Osborn/USFWS: Wood turtle hatchlings (left); female wood turtle on mound with radio transmitter (right)



In 2010, the future of the wood turtle (*Glyptemys insculpta*) population at Great Swamp National Wildlife Refuge was not encouraging. Although Wildlife Biologist Colin Osborn and turtle expert Dr. Kurt Buhmann had been doing surveys over the past five years, and had discovered a new wood turtle population on the refuge (good news), the individuals that they found were nearly all mature adults—there were almost no young wood turtles (bad news). Even though the females' nests were now being protected annually, which increased the production of wood turtle hatchlings each year, there was no evidence that these juvenile wood turtles were surviving, with predation suspected as the primary reason. As shown in the photo above, wood turtle hatchlings are very small (slightly larger than the size of a quarter) with soft shells—a perfect snack for everything from raccoons to great blue herons. There simply were no young turtles to ensure the long-term survival of the refuge's wood turtle population.

It was time to try something different. So, in 2011, funded by the Friends of Great Swamp National Wildlife Refuge, the wood turtle head-start program at the refuge was launched.

### What is a head-start program?

According to Dr. Buhmann, “head-starting programs for turtles are presumed to give hatchling turtles a better

chance of surviving their first year by keeping them protected from predators while also giving them the chance to grow when they would normally be hibernating.” Therefore, more individuals are put on the trajectory to maturity than would normally be expected. The goal of this program is to rejuvenate and augment an existing small population of wood turtles on the refuge.

### How does a head-start program work?

For several years, Dr. Buhmann had been spearheading a new head-start program for Blanding's turtles (*Emydoidea blandingii*) on the Assabet River National Wildlife Refuge in Massachusetts, partnering with the Bristol County Agricultural High School in Dighton, Massachusetts. High school students had been feeding and caring for the Blanding's turtle hatchlings over the winter. The turtles were then released on the refuge in the spring—at the size of wild four-year olds, even though they themselves were only 9 months old. Subsequent recaptures of the headstarted turtles indicated that a large percentage continued to survive.

Based on this success, Dr. Buhmann asked if the school would be willing to head-start a number of wood turtles from New Jersey. Needless to say, there were permits to be obtained from the NJ Division of Fish and Wildlife (after all, this is a New Jersey Threatened Species) and the Massachusetts Depart-

ment of Fish and Wildlife (to allow the NJ turtles to be sent there). But with these permissions in hand, 22 of 42 hatchlings that were collected from five protected nests in September 2011 were taken to the high school. There, instead of hibernating, they would be fed a diverse diet and kept active all winter. The remaining 20 hatchlings were released at that time on the refuge to forage and hibernate as usual. All of the hatchlings, those that were direct-released as well as the head-starts, were individually marked through a system of notches on the upper shell (carapace). (continued on page 9)



Students measure wood turtles  
Photo by Brian Bastarache



**HEAD-START PROGRAM** *(continued from page 8)*

All 22 of the head-start turtles survived and were brought back to the refuge in May 2012. They were all fitted with radio transmitters for tracking during the season and then released near their respective nest sites. During the summer, biology interns tracked the turtles to provide data on survivorship, behavior, habitat use and home range establishment. The questions included whether they would become established in the same area as the adults and whether they would find suitable hibernation sites in the fall.

**Progress and Results**

This innovative head-start turtle research program is now in its 7<sup>th</sup> year at Great Swamp NWR. Results are



2012 siblings compared: head-start turtle on left  
Photo by Kurt Buhlmann

impressive. In 2013, the team was thrilled to find sibling turtles, both hatched in August 2012 that could be compared side-by-side. According to Dr. Buhlmann, “the larger turtle on the left went to Massachusetts and was fed in the school greenhouse for nine months. The smaller one on the right was directly released on the ref-

uge when it hatched in late August 2012. It did not have much opportunity to grow and simply hibernated to survive the winter. Emerging in the spring, the direct release turtle started growing, but was still a soft pliable snack for predators. The head-started turtle, on the other hand, is much larger and has a hard shell.”

Radio-tracking, recapture, and data collection results show that the young turtles are doing the things that are expected of wood turtles. They start foraging immediately upon release and have been observed eating the natural foods found in their environment, specifically snails, slugs, earthworms, and berries. They are setting up home ranges, using the appropriate wood turtle habitat on the refuge, and growing—substantially. Research shows that head-starting advances these turtles on average by about three to four years in size and mass. Tracking shows that the head-start turtles successfully overwinter, often using the same areas in the streams as the adult wood turtles.

From the 2011 to 2015 cohorts (released in spring 2012 to spring 2016, respectively), a total of 152 head-start wood turtles have been released on the refuge. Survivorship numbers are excellent, based on radio-tracking and recapture of individuals and extrapolating numbers for the entire population. Dr. Buhlmann notes: “From fall 2007 to fall 2015, we released a total of 227 direct-release hatchlings. To date, we have only recaptured three of them (1.3%). Of the aforementioned 152 total

head-starts released to date (through 2016), we documented the existence (recaptured or were actively tracking) 38 of them (25%) in 2016 alone. Those numbers indicate a clear and major survivorship advantage as a result of head-starting.

Research results to date are very promising. With funding from Friends of Great Swamp NWR, the head-start turtle research will continue as there are still unanswered questions, which will require time, continued research, and detailed documentation. The hope is that this head-start concept can be applied to other at-risk turtle species, such as the closely-related, Federally-threatened bog turtle (*Glyptemys muhlenbergii*).

Wildlife biologist Colin Osborn is thrilled: “Head-starting is clearly doing what we hoped it would by increasing the survivorship of these juvenile turtles which should eventually boost the rate of new adults entering the popula-

tion and ultimately increase the population size in the long run.”

It’s hard to imagine a swamp without turtles and Great Swamp NWR has many. Even though it’s a common sight, it’s still thrilling to view a string of painted turtles basking on a log, or catch sight of the smaller spotted turtles as they emerge from winter hibernation, or watch a female snapping turtle as she lays her eggs. As a result of this head-start research program, it is possible wood turtles may one day be a common sight for visitors to the refuge.



The team (l to r) Alyssa Frediani, Colin Osborn, Kurt Buhlmann, Aaron Caswell, Brian Bastarache

**ACKNOWLEDGEMENTS**

This innovative head-start turtle research program involves many partners. Thanks to: Friends of Great Swamp NWR; the Marta Heflin Foundation; Colin Osborn, Fish and Wildlife Biologist, Great Swamp, Walkkill River, and Cherry Valley National Wildlife Refuges; Dr. Kurt Buhlmann, Senior Research Associate, University of Georgia, Savannah River Ecology Laboratory; Brian Bastarache, Department Chair, Natural Resource Management Department, Bristol County Agricultural High School (Dighton, MA).

*This article was first published in the Delaware Valley Eagle Alliance, Nature’s Newsletter (Online edition), Summer 2017.*  
<[www.dveaglealliance.org](http://www.dveaglealliance.org)>

*Note: Friends have approved funding for this program again in 2018. Join us for an update at the Endangered Species Day, May 2018.*

**FRIENDS BOARD APPROVES FY2018 BUDGET**

Each year the Friends Board and Refuge management meet to share ideas for new projects for the coming fiscal year (October 1 to September 30). The Board then creates a budget, projecting income and operating expenses before selecting new projects to fund. Here are some of the projects that have been budgeted for 2018.

**HABITAT AND WILDLIFE PROJECTS**

- Clear vegetation from the pond near North Gate to improve habitat for diving ducks (and waterfowl viewing for visitors)
- Continue support of head-start wood turtle research
- Fund summer interns through Groundwork Elizabeth
- Support Strike Team and invasive plant control; purchase plants and seed for habitat restoration

**VISITOR CENTER AREA PROJECTS**

- Upgrade nest cams and install webcam
- Develop purple martin interpretive reader rails at pavilion
- Renovate Visitor Center front desk
- Purchase trees to replace eventual loss of ash trees
- Construct observation platform on Pleasant Plains Rd
- Create a pollinator meadow for habitat and education
- Enhance interpretive features of Nature Detective Trail
- Expand butterfly garden for educational purposes

**WILDLIFE OBSERVATION CENTER PROJECTS**

- Build boardwalk trail (ADA accessible) to Friends Blind
- Create interpretive signs on turtles, snakes, and frogs
- Replace roofs on blinds; refurbish Garden Club Blind

**INCOME SOURCES**

The Friends receive income from sales in the Nature Shop. Donations are received from individuals, corporations, and from generous Foundation grants.

However, the largest source of income for the Friends is *you*—our members.

*Thank you for your incredible support!*



**2017 PHOTO CONTEST WINNERS ANNOUNCED AT FALL FESTIVAL**



First place—Landscape: Carol Duffy “Foggy Fall Morning”

Winners of the 2017 Great Swamp National Wildlife Refuge Photo Contest were announced at the 18th annual Fall Festival, September 16, 2017.

Friends of Great Swamp NWR board member Laurel Gould thanked all of the photographers who submitted photos for this year’s contest. Contest judges Bill Koch and Jim Gilbert remarked on the quality and diversity of the 193 entries, making judging a challenging task.

All entries are being shown in the Discovery Den at the Visitor Center. Winners are listed with their photos on the Friends web site.

The 2018 Friends Photo Contest has begun! An entry form will be available on the Friends website in January. The deadline for submitting entries is June 30, 2018. *Start Snapping!*

**DO YOUR PART FOR CONSERVATION—BUY A FEDERAL DUCK STAMP**

It’s not about hunting. It’s actually about buying habitat for waterfowl—and for the songbirds and other wildlife that benefit. Stamp sales, which are used to buy land for refuges, have declined over the past 30 years, a loss of more than \$10 million

annually. Less habitat, fewer birds.

Unlike hunters—birders, photographers, and those who enjoy nature are not required to purchase the stamp, but we all enjoy the benefits of wetlands and refuge lands.

It’s really simple. If wetlands become housing developments, shopping malls, and soybean fields, there are fewer birds of any kind. We all have to do our share. Stamps are available at the Helen C. Fenske Visitor Center, open daily.





# 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](http://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.

Gift Memberships will include a coupon redeemable at the Friends Nature Shop for a free Great Swamp pin or Great Swamp patch.

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



## **THE SWAMP SCENE DECEMBER 2017**

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.