



the Swamp Scene

friends of great swamp national wildlife refuge

ISSUE FORTY
OCTOBER 2012

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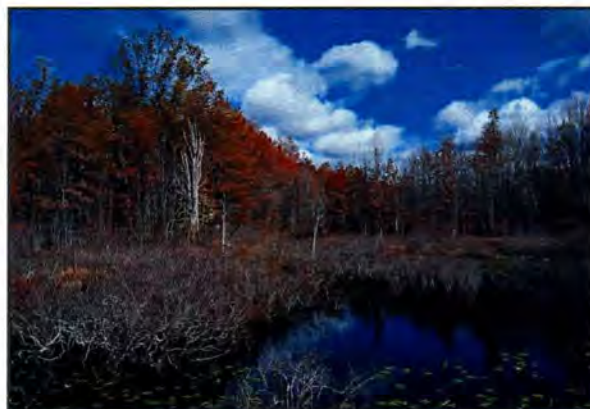
FRIENDS 2012 PHOTO CONTEST WINNERS ANNOUNCED AT FALL FESTIVAL



The winners of the 2012 Friends of Great Swamp Photo Contest were announced on September 8 at Fall Festival. Awards were presented by our two judges Jonathan Rosenberg, Visitor Services Manager, and professional wildlife photographer Jim Gilbert. Winners received gift certificates to the Friends' Nature Shop. There were too few entries in the Youth and People categories to judge, so all entrants in those categories received gift certificates.

More than 100 entries were submitted. Winning photos will be on display in the Visitor Center through December and are posted on the Friends web site. A slide show, which includes all of the photos entered in the contest, is available for viewing in the Visitor Center Library. The Friends would like to thank all of the entrants for their fabulous photos of the Refuge.

The 2013 Photo Contest has begun! Entry forms are available at the Visitor Center and on the Friends web site. Start your cameras!



FRIENDS 2012 PHOTO CONTEST WINNERS
Wildlife: 1st Place—Jim Mulvey (shown above); 2nd—Dan Dugan, 3rd—John Deep.

Landscape: 1st place—Richard Harris (shown left), 2nd—Jim Mulvey, 3rd—David Kenny.

Plants: 1st Place—Allyson O'Connor (shown below), 2nd—Michele Budd, 3rd—Ginnie Scott.

Birds: 1st Place—David Kenny (below), 2nd—Larry West, 3rd—Robert Lin.



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FRIENDS FUND NEW RESTROOM AT BLUEBIRD PARKING LOT ... AND MORE!

It's been a busy and productive year for the Friends—and 2013 is shaping up to be even busier and more exciting!

The Bluebird Parking Lot has never looked better! The new outdoor restroom was delivered in August; delivery and installation were coordinated by Dave Miller, funding was provided by the Friends. The building arrived preassembled and was lowered (very carefully) to sit on top of a concrete foundation. The Friends also purchased a new interpretive sign for the kiosk at the Bluebird Lot which describes the National Wildlife Refuge System. Fencing has been replaced along the perimeter and a memorial bench provides a quiet view of the field and forest. Jonathan Rosenberg, Visitor Services Manager, had this to say:

"The addition of a permanent restroom at the Bluebird Parking Lot is just the latest example of our joint effort to enhance the area for visitors to use now and in the future.

It is our belief that the use of this area will continue to increase and the public will appreciate the addition.

Thanks again for the support!"



Additional major projects funded by the Friends during fiscal year 2012 (October 1, 2011 through September 30, 2012)

- ▶ A summer biology intern (for the 9th year)
- ▶ Ground-breaking wood turtle research (see related story on page 10 in this issue)
- ▶ The new Nature Detective Trail welcome sign
- ▶ Printing a 2nd edition of the highly successful Junior Refuge Manager Activity Guide
- ▶ Improvements to the restroom facilities at the Wildlife Observation Center
- ▶ School trip transportation grant
- ▶ Seeds and plants for native plant gardens, including the septic mound and the butterfly garden (stories page 5)
- ▶ A free-standing 4-sided bulletin board kiosk inside the Visitor Center
- ▶ Co-sponsorship of the annual Volunteer Recognition Event and 13th annual Fall Festival

Thank you to all of our members and donors—we couldn't make this happen without your support. Last month, the Friends' Board met with Refuge management at our annual Joint Planning Meeting to discuss plans and projects for the upcoming fiscal year. It was a very productive meeting—with many ideas to pursue in 2013. Thank you all.

PUT YOUR STAMP ON CONSERVATION—BUY DUCK STAMPS!



The 2012 Federal Duck Stamp—a stunning male wood duck—is on sale for \$15.00 at the Friends Nature Shop and at Refuge Headquarters. You may think a duck stamp is just for hunters. *Think again.* Federal Duck Stamps are for birdwatchers, photographers, and outdoor enthusiasts. That certainly describes *You!*

The Federal Duck Stamp program is widely known as one of the this nation's most successful and effective conservation programs—98 cents of every dollar goes directly to buying or leasing wetland and grassland habitat for wildlife.

The image on the stamp is selected annually in the only juried art competition sponsored by the federal government. Just announced, the winner of the 2012 Federal Duck Stamp Art Contest is Robert Steiner, an artist from San Francisco, California, whose painting of a common goldeneye will be made into the 2013-2014 Federal Duck Stamp which will go on sale in late June 2013.

By the way, the current duck stamp also provides free entrance to national wildlife refuges. Do your part to preserve lands for conservation—buy *your* duck stamp!



AROUND THE REFUGE... WITH DEPUTY REFUGE MANAGER STEVE HENRY

ADMINISTRATION AND PERSONNEL

The Refuge is finally at full staff with the hiring of Rob O'Keefe as a Maintenance Worker. Rob is a veteran and still involved in the reserves. He brings great maintenance experience and a solid educational background to the position. Colin Osborn is now in a shared Fish and Wildlife Biologist position and splits his time between Great Swamp, Wallkill River, and Cherry Valley NWRs. His primary focus remains reptile and amphibian conservation. The Friends and Mushett Family Foundation again generously funded summer interns. The refuge also hired a crew of interns to conduct bat research. The bat crew leader and one of the summer interns have been extended through the fall with refuge funds. We are also working on a contract to hire the bat crew leader into a six month outreach position to educate the public on the importance of bat conservation and the threats posed by White-Nose Syndrome.

BUDGET

Fiscal year 2013 is shaping up to be a difficult budget year. The Northeast Region is planning for a 5-8% reduction. If the budget sequestration occurs in early January, agencies could suffer as much as a 20% across-the-board cut. The Regional Office will handle the shortfall primarily by holding vacant positions open.

INFRASTRUCTURE

Refuge and Regional Office staff are working together to continue the rehabilitation of Pleasant Plains Road. The next phase of the project will be to resurface the existing asphalt road from Great Brook Bridge north to the cul-de-sac. The following phase, pending funding, will be to realign the sharp bend in the gravel section of the road to better accommodate larger vehicles, such as school buses. We have also recently undertaken an engineering and historical survey of Great Brook Bridge to evaluate its current condition and suitability for anticipated future needs (buses, heavy equipment, emergency vehicles, pedestrian/cyclist lane). By late-winter we should have a better idea of whether the bridge can be rehabilitated or will need replacement.

The heating-ventilation-air conditioning and lighting systems in headquarters have been upgraded to improve energy efficiency. An emergency generator has been installed which can power the entire building in the event of a power failure.

The tenant house and barn, just north of the Visitor Center, are being prepared for demolition. Historical clearance is being finalized. Asbestos panels and floor tile were removed last fall. We anticipate demolition during this fall or winter. Mitigation will require the installation of an interpretive display in the Visitor Center.

Volunteers continue to do an outstanding job assisting with facilities maintenance, including lawn mowing and recent repairs such as replacing the stairs to the rear office at the Visitor Center and building cabinet doors for the kitchen.

VISITOR CENTER AND VISITOR SERVICES

During the spring, a swamp white oak and plaque were placed behind the pavilion in memory of the late Congressman Peter Frelinghuysen. A plaque was also installed at a previously planted red maple in honor of Peter's son Rodney, our current Congressman. The pavilion was recently dedicated to the memory of Rich Guadagno (see story on p. 4). The refuge has design plans and is seeking funding to install solar panels on the roof of the large barn behind the Visitor Center. Interpretive displays and educational materials would be developed in conjunction with the installation. Volunteers continue to provide staffing at the Visitor Center four days a week and welcomed more than 9,000 visitors in the past year. Volunteers also staff the busy Wildlife Observation Center four days a week during the spring and fall migration seasons and greeted more than 12,000 visitors. Visitor Services staff continue to expand the refuge's outreach to urban and minority communities. Groups from East Side High School in Newark and the Morristown Neighborhood House have visited in recent months.

PUBLIC USE

The annual deer hunt is scheduled for November 7–10, with November 3 set aside for the youth hunt. The refuge will be closed to non-hunters during that period (only the Wilderness Area will be open during the youth hunt). The bag limit has been lowered from two deer to one in light of the reduced deer population following last fall's Epizootic Hemorrhagic Disease (EHD) outbreak. See story, page 9.

HABITAT AND POPULATION MANAGEMENT

The refuge's 22 "headstarted" wood turtles, which were reared over the winter by a special high school in Massachusetts, were returned to the refuge in May. No hatchlings were lost to mortality and upon return they were similar in size to four year old wild turtles! See story, page 10.

Two bat research projects were completed during the summer after an absence of bat work in 2011. Contractors were hired to mist-net and track Indiana bats. An intern crew was also employed to net and track bats as well as conduct acoustic monitoring. A total of 215 bats were captured from five different species. Notably, only one Indiana bat was caught and only seven small, cave-roosting bats were captured in total. This is a dramatic decline from pre-White-Nose Syndrome population levels and indicates how devastating the disease has been. Interestingly, big brown and red bats have become more common post-White-Nose Syndrome, indicating major changes among the refuge's bat populations.

Thanks to volunteer help, 172 mourning doves were banded on the refuge in 2012, by far the highest total in New Jersey. This was the fourth year doves were banded at Great Swamp in partnership with the NJ Division of Fish and Wildlife. The refuge again received an award for banding the most doves in the Northeast Region.

VISITOR CENTER PAVILION IS DEDICATED IN MEMORY OF RICHARD J. GUADAGNO

By Kathy Woodward, photos by David Sagan

Rich Guadagno was aboard hijacked United Flight 93 on September 11, 2001, which crashed in Pennsylvania, killing all aboard. Rich was returning to California, where he was manager of Humboldt Bay National Wildlife Refuge, after a visit with his family in New Jersey. On September 29, 2012, family members, Refuge staff, and Friends gathered at Great Swamp National Wildlife Refuge to dedicate the Visitor Center pavilion in memory of Richard J. Guadagno and to celebrate what would have been Rich's fiftieth birthday.

Bill Koch, Refuge Manager, explained to the guests the appropriateness of the dedication. Rich grew up in Trenton, NJ and loved living things, from the plants in his garden to wild animals. After graduating from Rutgers University's Cook College in 1984, Guadagno worked as a

biologist for Great Swamp National Wildlife Refuge and the New Jersey Fish and Game Department.

In 1988, Rich returned to Great Swamp NWR as refuge manager trainee. After subsequent career moves to Prime Hook, Supawna Meadows, Baskett Slough and Ankeny NWRs, Rich became the project leader at Humboldt Bay National Wildlife Refuge in 2000. Manager Koch noted Rich was also a trained law enforcement officer as well as an amateur classical guitarist. During the dedication, a recording of Rich's music played in the background. Friends President Susan Garretson Friedman explained that the pavilion is a well-used space—for workshops and lectures, and for children's activities



and displays during Fall Festival. Tom McFadden, retired Visitor Services Coordinator at Great Swamp NWR, noted Rich was very interested in having more people know about the Refuge—and the pavilion is a wonderful tribute to Rich.

Rich's cousin, Joan Burkholz, spoke for the family and expressed their gratitude to the Refuge and Refuge System for acknowledging Rich's extraordinary courage. Rich posthumously received the Department of the Interior's Valor Award, which is presented to Interior employees who demonstrated unusual courage involving a high degree of personal risk in the face of danger.

The dedication included the unveiling of the pavilion name and memorial rock with a plaque in honor of Rich.



RICHARD J. GUADAGNO SEPTEMBER 26, 1962—SEPTEMBER 11, 2001

Richard J. Guadagno, a U.S. Fish & Wildlife Service (USFWS) employee, passionately devoted his life to the conservation of natural resources. He was the Refuge Manager of Humboldt Bay National Wildlife Refuge in California and a trained law enforcement officer when his flight, United Airlines 93, was hijacked by terrorists on September 11, 2001. Rich was among the brave passengers and flight crew whose heroic actions prevented further tragedy that fateful day.

Rich grew up in New Jersey and graduated from Rutgers University in 1984. After several positions with NJ Fish & Wildlife and USFWS, his first refuge manager position, as a trainee, was obtained at Great Swamp in 1988. Rich managed four more refuges before moving to Humboldt Bay NWR in 2000.

*** WE WILL NEVER FORGET ***



BIRDING HOT SPOT! THE SEPTIC MOUND!!

By Laurel Gould, *Turkeys on Mound Photo—Dave Sagan, Partridge Pea Photo—Laurel Gould*

Dave Miller, Refuge Engineering Equipment Operator, is a man of action. Just two years ago he was learning about a new US Fish & Wildlife Service initiative on helping insect pollinators—he was watching volunteer Paul Fenske spend hours during the summer season mowing the septic mound behind the Visitor Center—and he saw the Friends' GardenKeepers expanding the native plant gardens to include a new butterfly garden. An idea was germinating.

In places like the swamp where the water table is high, a raised septic mound is created to filter waste from buildings, like the Visitor Center, through a series of pipes before discharging the cleaner

water into the ground. No woody plants can be allowed to grow on the mound as the roots would interfere with the maze of underground plastic piping. However, rather than maintaining the mound in lawn, which requires frequent mowing, Dave decided a flowering meadow would be a much better alternative: it would provide habitat for pollinators and other wildlife, it would form a natural backdrop for the adjacent butterfly garden, and it would provide an educational opportunity for visitors.

This past spring, the staff applied an herbicide to kill the grass on the mound. They then de-thatched the mound to get rid of the dead vegetation and to loosen the soil. The Friends purchased a northeast pollinator seed mix which included lanceleaf coreopsis, tall white beardtongue, common milkweed, partridge pea, anise hyssop, slender mountainmint, arrowleaf aster, and other native flowers, and the refuge added warm season grass seeds to the mix, all of which was applied in late spring.

Then came the long wait. As Dave says: "It was tense for a while." However, by mid-summer the field started to bloom, with bright yellow partridge pea dotting the entire mound followed by a variety of colorful late-summer flowers. Success! Instead of a large mound of mowed



grass, there is an attractive and busy meadow. Dave points out the flocks of small birds—goldfinches and many different sparrows—flying in and out of the grasses. He laughs: "The turkeys are loving it in there—they have their own trail system!"

Looking ahead, Dave expects to mow the meadow every three years which will allow native flowers and grasses to germinate but will prevent the growth of woody plants. He sees educational opportunities with the mound and hopes visitors will get ideas about how they can turn their own lawns into an attractive pollinator meadow. He starts to talk about expanding the idea to other locations around the refuge and applying lessons learned from this initial endeavor. In the meantime, visitors, volunteers, and staff are enjoying the abundance of flowers and the continual bird and insect activity that the septic mound meadow is providing.



FRIENDS' NEW BUTTERFLY GARDEN IS CERTIFIED!



The new native plant butterfly garden was full of color, butterflies, and pollinators all season long. The Friends' GardenKeepers weeded, mulched, planted, pruned, and enjoyed the flowers—the insects—and the birds.

This summer, volunteer Ruth Lloyd completed the application form for butterfly garden certification which is awarded by the North American Butterfly Association (NABA). In the application, you must list the host plants and larval plants in your garden, as well as other important features for butterflies such as water and shelter.

We now proudly display the sign that indicates we are NABA certified! Way to go GardenKeepers!

STEPPING UP INVASIVE PLANT SPECIES CONTROL EFFORTS AT GREAT SWAMP

By Laurel Gould

Dealing with non-native, invasive plants is nothing new at Great Swamp National Wildlife Refuge. In the 1990's, staff biologist Craig Bitler pioneered the introduction of a beetle to fight the invasive purple loosestrife. Phragmites has long been a targeted species for staff control methods. Not too long ago, Friends work groups will remember tackling the forest of bamboo at Hidden Valley Nursery. However, invasive plant species are a continuing and increasing problem on the refuge, as they are in many other wild places. Invasive plants pose a threat to native plants and can seriously degrade the habitat for wildlife.



Great Swamp Strike Team

Three years ago a new effort was launched when volunteers Rich Dufort and Kathy Woodward attended the Rutgers Environmental Stewards program and needed a project to satisfy course requirements. They decided to focus on the removal of invasive woody plant species on the refuge. Since then, they have been taking volunteers out twice a month, from May to September, to cut and treat widespread invasive species including Japanese barberry, multiflora rose, autumn olive, Japanese honeysuckle, and Asian bittersweet. Rich obtained a pesticides applicator's permit and is certified to use herbicides which prevent plant regrowth. This past year, a total of 50 volunteers, including a class from New Providence High School, spent 288 hours tackling these invasives.

This ongoing effort, over the past three years, has resulted in a noticeable reduction in the number of invasive plants in high visibility locations along Pleasant

Plains Road, on trails, and around the Visitor Center. This summer, these same volunteers participated in native plant restoration work, planting silky dogwood, buttonbush, and elderberry on selected test sites. The experience has provided an educational opportunity for volunteers who learn to identify the various invasive plants and learn about the value of native plants in the habitat.

Earlier this year, under the direction of Deputy Refuge Manager Steve Henry, the focus on invasive species expanded, incorporating an "early detection/rapid response" strategy promoted by the US Fish and Wildlife Service and the NJ Invasive Species Strike Team. The objective is to prevent the establishment and spread of highly threatening emerging invasive plant species across the refuge. Steve ran a similar program when he was stationed at the Charles M. Russell National Wildlife Refuge in Montana and felt it would prove valuable here.

Using his experience, he formed the "Great Swamp Strike Team." Twice a month, volunteers have worked with Steve to control infestations of newly emerging invasive plant species. A target list was developed of 15 high priority emerging invasive species (shown right) known to occur either on or around the refuge. This year about 20 acres were treated targeting glossy buckthorn, porcelainberry, ailanthus, and Callery pear. Both the Refuge and the Friends are official members of the NJ Invasive Species Strike Team, have received training from their staff, and share data with the goal of assisting larger statewide invasive species control efforts. Although complete eradication of invasive species is unlikely, Steve says: "This is a good opportunity to stop new invasive species from getting a foothold on the refuge and becoming the next Japanese barberry or multiflora rose."

The focus of the two groups is very different, but they share a common objective—to restore a healthy native self-sustaining plant community—and provide habitat for the benefit of wildlife and for the education and enjoyment of refuge visitors.

"This is a good opportunity to stop new invasive species from getting a foothold on the refuge and becoming the next Japanese barberry or multiflora rose."

Steve says that getting the all-volunteer Strike Team up and running was a significant accomplishment for this first year and he is looking forward to expanding the effort next year to include more volunteers and possibly interns as well. Rich and Kathy will also continue their volunteer workdays in 2013. Interested volunteers may contact Steve Henry at Refuge Headquarters, or the Friends of Great Swamp. There will be additional opportunities for planting native plants as well as cutting and removing invasive plants with the goal of restoring native plant communities and quality wildlife habitat. This is an opportunity to make a real difference for the benefit of habitat and wildlife.

Porcelainberry	Ampelopsis brevipedunculata
Japanese angelica tree	Aralia elata
Orange eye butterfly-bush	Buddleja davidii
Glossy buckthorn	Frangula alnus
English ivy	Hedera helix
Chinese silvergrass	Miscanthus sinensis
Oriental photinia	Photinia villosa
Mile-a-minute	Polygonum perfoliatum
Callery pear	Pyrus calleryana
Common buckthorn / Dahurian buckthorn	Rhamnus cathartica Rhamnus davurica
Linden viburnum	Viburnum dilatatum
Siebold's viburnum	Viburnum sieboldii
Chinese wisteria / Japanese wisteria	Wisteria sinensis / Wisteria floribunda
Winged burning bush	Euonymus alata
Ailanthus	Ailanthus altissima

SUMMER BIOLOGY INTERNS FUNDED BY FRIENDS AND MUSHETT FAMILY FOUNDATION

This summer has allowed me to grow exponentially in the wildlife field making me a valuable resource to future employers. It was here at Great Swamp that I was able to participate in different conservation and restoration projects. I obtained experience in the trapping and banding of doves, waterfowl, and geese, as well as invasive plant management and control.

The staff here was also very receptive to new ideas and I was able to start a new bog turtle habitat restoration project by collecting and growing tussock sedge seeds. My counterpart and I were also able to become key parts of a new exciting research project on head start wood turtles. The project was designed to see if head start turtles can survive in the wild and make it to breeding age. This was something that was never before studied and will prove to be very important for the future conservation of turtle species.

Being from New York City, it was amazing to be able to spend my summer in a place so beautiful where I learned so much—and still be so close to home.

*Evie Schmuck – Biology/ Turtle Intern
Sponsored by Friends of Great Swamp*



Intern Evie Schmuck tracking turtles with radio transmitter

After spending last summer interning at Great Swamp, I was elated when I got the opportunity to return this summer to continue working on some exciting conservation projects.



Intern Nick Scobel (knee deep in muck!) with fellow intern Evie Schmuck

My second go-around at the swamp has been more rewarding than I ever could have imagined. Between keeping up with a group of twenty-two head started wood turtles, protecting turtle nest sites, banding waterfowl, and removing invasive plants, it is no wonder that this summer has passed by so quickly.

Great Swamp is a very special place and is a true haven for wildlife. These past two summers have been such a joy, and I am truly saddened to be leaving for good. My time here at the refuge has given me invaluable experiences and connections as I continue further into my career. I would like to extend my most sincere thanks for making my internship here possible and for being such a wonderful group of people to work with.

*Nick Scobel, Biological Intern 2012 –
Sponsored by Mushett Family Foundation*

For those who keep track!

Valle de Oro and Rio Mora in New Mexico become nation's 559th and 560th Refuges—News Release 09/27/2012

For more information: www.doi.gov/news/pressreleases

WEATHER SPURS SONGBIRD NESTING

Story and photos by Leo Hollein



The warm spring of 2012 helped produce an excellent songbird nesting season. There were 141 boxes monitored during the season, with a total of 175 nestings (nests with eggs). Both the totals for nestings and fledglings in 2012 (shown below) are among the two highest levels achieved over the last 12 years.

Species	Nestings	Fledglings
Bluebirds	88	280
Tree swallows	78	291
House wrens	2	11
House sparrows	7	0
Total	175	582

The first egg of the season was laid very early on March 26 by a bluebird. The last nest, also by a bluebird, fledged on August 13. There were a number of notable events during the nesting season:

- Black bears pulled down seven songbird nest boxes. Previously black bears had predated no more than one box in a season.
- Bluebirds fledged a record 280 young. The previous record was 254 fledglings in 2010.
- One of the boxes had a clutch of seven bluebird eggs tended by three adults. Two were females.

BLACK BEAR ACTIVITY—ANOMALY OR TREND?

The first noted bluebird nest box taken by a black bear was in 2005. Bears always bend the post before predated the nest and almost always target boxes that contain eggs or hatchlings. From 2005 through 2011, only one or no boxes were raided by bears. The seven boxes and their posts damaged in 2012 represents a large increase from past years. All the predated boxes in 2012 were within several hundred yards of the Passaic River and its tributary, Great Brook. They were on both sides of the streams. The distance between boxes was over a mile.

The Wallkill River National Wildlife Refuge is located in northern Sussex County and has significant bear populations. Wallkill has a bluebird trail with 41 boxes. In 2012, Wallkill also observed a leap in bear predation as they took down 11 boxes versus 3 in 2011. The Great Swamp and Wallkill data suggest that 2012 was an unusual year for bear predation of bluebird boxes. However, only time will tell if 2012 was an exception or a growing trend.

BLUEBIRDS HAVE A RECORD NESTING SEASON

Bluebirds fledged a record 280 young from 51 nesting pairs in 2012. The warm March and April encouraged the bluebirds to nest early. When bluebirds begin their first nesting early in April, a larger percentage attempt a second nesting. This held true in 2012 as



Nest box and post attacked by bear



A refuge first! Clutch of 7 bluebird eggs

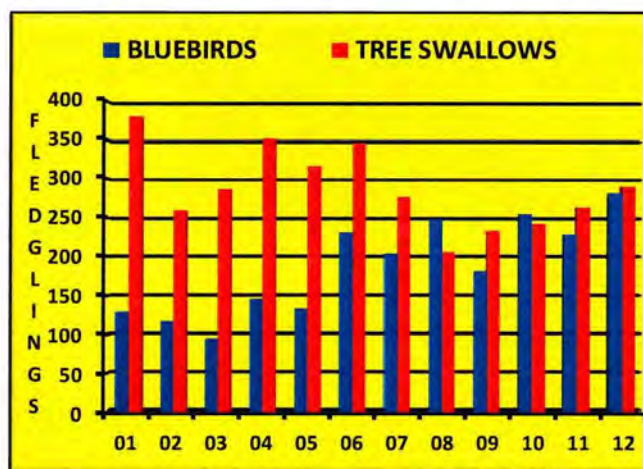
71% of the pairs attempted a second nesting versus an average of 62% for the 2004 to 2011 seasons.

NESTCAMS POPULAR WITH VISITORS & BIRDS

This was the second year that two nest boxes near the Visitor Center had cameras that provided live video of nesting activity to a monitor inside the Visitor Center. Bluebirds successfully fledged

two clutches sequentially from the boxes—a total of 11 fledglings. One of the nests contained 7 eggs—typical clutch size is 4 or 5.

Visitors enjoyed watching the bluebirds from the first egg through fledging, which takes about 5 weeks. It's fascinating to watch what's happening inside the boxes. The activity was recorded for wintertime viewing.



Bluebird and tree swallow fledglings 2001–2012

DISEASE DEVESTATES REFUGE DEER HERD

By Leo Hollein

The 2011 white-tailed deer hunt at Great Swamp NWR had the lowest deer harvest of any of the annual hunts that have been held since 1974. The four day hunt takes place in November. A total of 44 deer were harvested in the 2011 hunt. The annual average harvest total for the 38 years that hunt has taken place is 157 deer.

The deer hunt has varied significantly over history. The land hunted has increased and the number of hunters varies. Historically, the biggest impacts on the deer harvest have been the rules governing the hunt and the weather during the hunt. The hunt rules are modified to manage the deer population. The weather is what it is. The management goal is to control the herd size while providing a satisfying hunt experience. Hunters pay fees for helping to manage the deer herd to prevent over-browsing in the Refuge.

While not all hunts are held under the same conditions, the available data can be statistically analyzed. Statistically there is less than a 2% probability that the deer harvest would be as low as 44 deer. This was not, however, a random event, but was caused by a devastating weather-facilitated disease.

EHD STRIKES REFUGE DEER HERD

It is likely that Hurricane Irene had an impact on the outbreak and spread of Epizootic Hemorrhagic Disease (EHD). Hurricane Irene hit the Refuge in late August 2011. Dave Miller, the Refuge Engineering Equipment Operator, found eight dead deer during the annual fall mowing of approximately 200 acres. He typically finds one dead deer during this operation. If this concentration of dead deer was typical of the entire Refuge, then well over 200 deer could have succumbed to EHD. There was a strong odor of decaying deer throughout the Refuge following the hurricane.

Irene brought about 6 inches of rainfall that led to extensive flooding following an already wet August. Access to the Headquarters building was cut off for days by the high water levels. Duck trap-

ping and banding were suspended for about 3 weeks due to high water levels and vegetation that was swept into the duck traps. Mosquitoes had perfect breeding conditions following the hurricane as there was water everywhere. The Refuge interns used netting around their heads to ward off the clouds of mosquitoes as they performed their outdoor activities. Unnoticed was the breeding of small midges (*Culicoides variipennis*) commonly referred to as gnats or "no-see-ums" that can transmit the EHD virus when biting deer. A midge carrying the EHD virus may have been carried into the Refuge on hurricane winds. Any disease-carrying midges that were present in the Refuge had ideal breeding conditions to expand their population.

All known outbreaks of EHD have occurred in late summer or fall. Outbreaks cease after the first hard frost that kills the midges and the virus. Epizootic means that the disease occurs at the same time in many individuals of the same species. As the name implies, the disease causes extensive hemorrhaging. Tissues and all internal organs can be affected. Extensive hemorrhaging is the result of interference with blood clotting and degeneration of blood vessel walls. While the virus is often fatal, not all infected deer will die. Some will fight off the disease and develop antibodies to ward off future infections. Surviving deer pass these antibodies to their offspring.

EHD outbreaks occur over a wide geographical range in North America. However individual outbreaks are local. While the deer herd at the Refuge was devastated, there was no apparent decline of deer in my neighborhood that is about 15 miles from the Refuge and at a higher elevation. The deer continue to feast on my ornamental plants. EHD



Great Swamp trophy buck

outbreaks have not had a significant impact on the nationwide deer population or its health.

ONLY WHITE-TAILED DEER SUFFER FROM EHD AT THE REFUGE

The good news is that EHD is only fatal to wild ruminants such as deer. There are no other wild ruminants in the Refuge. It rarely causes illness to domestic animals. EHD does not infect humans. People are not at risk by handling infected deer or eating venison harvested during the deer hunt that has been exposed to EHD.

In view of the reduced deer herd, the Refuge has modified the rules for the 2012 deer hunt to limit the harvest. Hunters, whether using a shotgun or muzzleloader, can only harvest one deer. The hunter may take a buck, doe or fawn. Shotguns will only be allowed in certain areas. Muzzleloaders can be used everywhere in the hunting zones. Past history has shown that given the choice, hunters will preferentially harvest bucks. This will reduce the hunting pressure on does that typically have two fawns per year. Under these hunting rules the deer herd should rebound in a few years.

EDITOR'S NOTE: In the June issue of Swamp Scene, we wrote about welcoming 22 wood turtles home from their winter stay in Massachusetts as part of a new "head start" program being conducted here at Great Swamp NWR. It has been a good summer for the young turtles as you can see from the update below. The important research results gained from the summer study will provide insights into the ecology and survival of State-threatened wood turtles. This research is supported by your donations and membership in Friends of Great Swamp National Wildlife Refuge. *Thank you.*

WOOD TURTLE HEAD-START UPDATE—EXCITING RESULTS

By Colin Osborn, Kurt Buhlmann, Evie Schmuck, Nick Scobel

Now into the 5th month of radio-tracking, we are currently maintaining contact with 12 out of the 22 head-started wood turtles. Of the other 10, we have confirmed the loss of only two of them—one to a predator (likely a raccoon) and the other we believe was hit by a lawnmower on an adjacent private property (although it is possible that this individual was predated first and left on the lawn where it was subsequently hit). Four radios have fallen off their respective turtles and this can be attributed, at least in part, to their rapid growth rates. Their shells are expanding so rapidly that it causes the bond of the epoxy to fail. We have lost radio contact with the remaining four. The reasons are currently unknown but possibilities include: individuals moved out of range and we cannot detect their signals, their radio antennas have broken and reception distance is extremely reduced and undetectable, or their radios have failed altogether.

Since being released in late May, the turtles that we still have contact with have put on an average of 64.8 grams, which is an average increase of 47.6%! They are thus finding food readily and should be well prepared for their upcoming hibernation. All of the tracked turtles have taken up residence in appropriate wood turtle habitat, defined generally as riparian woodland and meadows. In recent weeks, a number of the head-starts have been found back in the stream and we believe they are scoping out potential hibernacula locations. We are excited to see where they choose to settle in for the winter and how these locations relate to where they were released and to where resident adult wood turtles are known to successfully hibernate.



"The difference head-starting makes. One of this year's hatchlings (left) and last year's head-starts. (right)."

Due to the excellent results thus far, the refuge has chosen to continue the wood turtle head-start project into 2013. We successfully hatched 35 wood turtles this year from nests we protected. This year's batch of head-starts, a total of 25 individuals, was brought up to Bristol County Agricultural High School in Dighton, Massachusetts in late August. Just like last year's batch, these hatchlings are being raised by seniors in their Biology and Natural Resources Management class. The remaining 10 hatchlings that we collected from nests this year were released naturally back at the Great Swamp site. We look forward to providing future updates on this exciting project!



SWAMP WHITE OAK PLANTED IN MEMORY OF PETER FRELINGHUYSEN

This past spring, a Swamp White Oak (*Quercus bicolor*) was planted at the Helen C. Fenske Visitor Center in memory of Congressman Peter Frelinghuysen. A memorial plaque is placed near the tree (see plaque text below). Thank you to everyone who donated to Friends of Great Swamp NWR in memory of this outstanding individual.

Honoring
Peter H.B. Frelinghuysen, Jr.
(January 17, 1916—May 23, 2011)
A staunch champion of saving the Great Swamp and leader in establishing this
National Wildlife Refuge and its Wilderness Area
Member of U.S. Congress 1953—1974
Planted by Friends of Great Swamp National Wildlife Refuge

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
241 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.

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
National Wildlife Refuge

THE SWAMP SCENE OCTOBER 2012

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.