

The Wrack Line

Newsletter of Parker River National Wildlife Refuge • Newburyport, MA



United States Fish & Wildlife Service

Fall, 2015

Successful Public-Private Partnership Helps a Rabbit

Dover, NH — In early September, U.S. Secretary of the Interior Sally Jewell announced that a public-private partnership uniting foresters, farmers, birdwatchers, biologists, hunters and other conservationists has saved the New England cottontail from needing protection under the Endangered Species Act. The partnership has also initiated on-the-ground conservation efforts for the cottontail that will benefit the rabbit into the future. Jewell was joined by U.S. Senator Jeanne Shaheen, U.S. Fish and Wildlife Service Director Dan Ashe, U.S. Department of Agriculture Natural Resources Conservation Service Chief Jason Weller, and other conservation partners at an event to celebrate the success of the multi-state effort.

“Thanks to the dedication of many partners, we can now say that future generations of Americans will know the cottontail – and not just through a character in children’s literature,” said Secretary Jewell. “This is a great Endangered Species Act success story of how proactive conservation across a landscape can benefit not only the cottontail, but other wildlife, and people who rely on healthy New England forests.”

The New England cottontail – the inspiration for author Thornton W. Burgess’s “The Adventures of Peter Cottontail” – is the only rabbit native to New England and east of the Hudson River in New York. The rabbit was classified as a candidate for Endangered Species Act protection beginning in 2006. Recognizing both the urgency and the opportunity to conserve the species, in 2008, state and federal biologists began a coordinated conservation effort that

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Photo: Matt Poole/FWS

Radio-collared New England Cottontail after release to the wild near Dover, New Hampshire

Successes and Failures of a Captive Bred Species

By Kaytee Hojnacki, Biological Technician

Excitement and heartbreak would best sum-up our New England cottontail (NEC) captive breeding efforts at the Great Bay NWR this year. If you read the Spring, 2015 issue of *The Wrack Line*, you would have learned about the “hardening pen” used to acclimate zoo-born rabbits to the wild. You may also recall that we were excited about trying something new this year – breeding New England cottontails in the pen. The Roger Williams Zoo (in Providence, RI) was kind enough to house four rabbits

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From the Manager's Desk

By Bill Peterson, Refuge Manager

We're having a busy fall at Parker River NWR. Now that the leaves have fallen, staff and volunteers are trimming roadside trees and shrubs to give drivers more room to safely pull over to watch and photograph wildlife. We've also added gravel to the Parking Lot 1 canoe launch to insure duck hunters and kayakers have level footing and ample space to launch their boats. Finally, we've begun installing handrails along the elevated boardwalk sections to prevent children and other visitors from falling on their way to the beach. I want everyone to have safe, enjoyable visits to Parker River and encourage you to share your suggestions for improving public safety with the refuge staff.

The refuge is finishing up an exciting saltmarsh restoration project near Nelson Island which entails filling several small ditches with marsh grass clippings. Over time, the "hay" will filter sediment from tidal flows to naturally fill in the ditches and encourage marsh grasses to grow across them. Our partners are helping us closely monitor the environmental results to determine whether similar, larger-scale saltmarsh restoration projects are feasible throughout the refuge. I'm looking forward to sharing our restoration results in future editions of *The Wrack Line*.

Congratulations to Frances Rodriguez, the refuge's term appointment biologist, who is transferring to a permanent wildlife inspector position in Newark, New Jersey. She's done an outstanding job coordinating perennial pepperweed control throughout the Great Marsh and installing most of the refuge's saltmarsh elevation tables (SETS). Check out the visitor center's invasive species control exhibit to see a video of Frances in action!

Welcome to Denise LaCroix, the refuge's new office assistant! She brings an enthusiasm for conservation, a strong administrative background, and an excellent customer service

attitude to this high profile position. Please introduce yourself the next time you call the refuge or purchase a permit in the visitor center.



Thank you again to the many refuge volunteers who worked with refuge staff to conserve wildlife and support our visitors during the busy spring-fall seasons. The Volunteer Appreciation Luncheon in October was a fun way to collectively recognize your contributions and I hope you're personally rewarded every time you volunteer at Parker River.

The Phabulous Photo Weekend, North Pool Dike walking opportunity, and Great Bay NWR tours highlighted this year's National Wildlife Refuge Week celebration. Our Great Bay tours are becoming a popular Parker River "field trip" to see how a scenic corner of the former Pease Air Force Base now supports bald eagles, oysters, and New England cottontails. If you aren't already familiar with this relatively new refuge, I encourage you to call Denise at the Parker River visitor center and register for a tour.

Wild cranberries are once again abundant in the interdunal swales and the refuge berry picking season runs through November 30. I hope this year's permittees enjoy homemade Plum Island cranberry sauce with their Thanksgiving dinners. After dinner, many families have a wonderful holiday tradition of hiking together at Parker River. Late November is a terrific time for exploring the refuge beach, the waterfowl migration is peaking, and snowy owls are arriving. I'll see you out there!



Interior Secretary Sally Jewell in Dover, NH

has fueled the species' path to recovery. That effort includes the development of a range-wide, science-based conservation strategy that has targeted ambitious but achievable goals.

Great strides have been made in making the strategy a success. Approximately 10,500 New England cottontails now live in a priority area, which brings the recovery effort three-quarters of the way towards the goal of 13,500 cottontails in healthy, young forest landscapes by 2030. Habitat projects are also producing increased numbers of cottontails.

"This initiative is a model for combining science, resources and public-private collaboration to advance the conservation of a species previously destined for federal protection," said Service Director Dan Ashe. "This is a moment for us all to feel proud – proud of the partnerships we forged among state and federal governments, landowners, conservation organizations, tribes and businesses; and proud of the successes those efforts brought. It's a terrific day for conservation and a terrific day for the New England cottontail."

Voluntary restoration efforts on private lands played a critical role in increasing and connecting early successional habitat. In the past three years, the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) has worked with owners and managers of private lands to restore more than 4,400 acres of habitat by removing trees and invasive species, planting native shrubs and creating brush piles.

The Service's decision makes use of a policy guiding the agency in evaluating ongoing or future conservation activities. The evaluation resulted in high certainty that the New England Cottontail Conservation Strategy would be carried out and would effectively recover the species – without the need for the formal protections of the Endangered Species Act.

The successful and ongoing conservation of the New England cottontail illustrates the flexibilities inherent in the Endangered Species Act, and the Service's commitment to science-based, results-driven collaboration that engages landowners and other partners in voluntary conservation efforts.

"Restoring the habitat of the New England Cottontail has been a tremendous team effort," Senator Shaheen said. "It serves as a good example of how development and conservation can make progress at the same time. Bringing back the cottontail population from the brink is not only important for New England's heritage and ecosystem, but also for regional development that would have been adversely affected were the Cottontail to have been moved to the Endangered Species List."

After the 1960s, the cottontail's range shrank 86 percent as young forest habitat disappeared due to development. Remaining forests matured into older and taller woods that provided little ground-level shelter and food for cottontails.

Today, this once-common native species survives in five isolated populations across Connecticut, Maine, Massachusetts, New Hampshire, New York and Rhode Island.

Captive rearing and release has also been critical to ensuring the rabbit's long-term survival. For the first time in history, more than 130 New England cottontails were successfully bred and raised in captivity in several locations (including a "hardening pen" at the Great Bay NWR in Newington, NH).

"Our work is not finished," said the Service's Northeast Regional Director Wendi Weber. "We and our partners are committed to seeing this initiative through. We're still seeking help from landowners willing to make and maintain young forest and shrubland habitat. In most places, this type of habitat will depend on our careful and ongoing management."

The restoration effort has created and improved young forest habitat relied upon by at least 65 other species, including woodcock, bobcats, snowshoe hares, a broad range of songbirds, box turtles and frosted elfin butterflies. The initiative has united dozens of partners across the species' range, from several state Audubon chapters to farmers and the National Wild Turkey Federation, all seeking to preserve open space, benefit native wildlife, and restore balance in New England's forests.

(Source: U.S. Dept. of Interior press release, 9/11/2015.)

Bunny Captive Breeding, continued from page 1 (2 males, 2 females) over last winter until we could make certain pen adjustments. On April 1st, the pen was ready and the rabbits were brought in. Spirits and hopes were running high, as the NECs were already showing signs that they were ready to breed. But after a few weeks, our first heartbreak occurred, as we lost one of the females to a predatory bird.

With hopes still high, we placed several remote cameras in the pen in mid-May and by early June we were rewarded with pictures of a young rabbit. Success! As we had never captured a picture with more than one young NEC in it at a time, we were unsure if all the pictures were the same rabbit or different individuals. (We would not learn how many juvenile rabbits there were until attempting to trap them in late June.) Heartbreak struck again the week before our planned trapping, when a fisher somehow made it through our defenses and into the pen, killing all three adults and an unknown number of young. The trapping date was pushed up and out came two young NECs. While losing any rabbits is disappointing, we can still say that we successfully

Here comes Peter Cottontail...

The New England cottontail inspired Peter Cottontail in Thornton Burgess stories. It's the only rabbit native to greater New England.

He's not the rabbit nibbling in your garden! That's the common, non-native eastern cottontail.

When Peter first appeared in 1910, New England cottontails were so abundant they were sometimes considered pests. A century later, they had become scarce.

Peter's Old Briar-patch had grown up, and houses and businesses popped up all over his home. Populations blinked out.

New England cottontails need young forests. At least 65 other animals require them too, including Peter's friends Spotty the Turtle and Bob White the Quail.

Historic habitat range

Remaining populations and focus areas

Biologists, landowners and many others began working over 8 years ago to bring back Peter Cottontail. We've restored and protected habitat, and released captive-raised rabbits to boost populations. Biologists estimate there's **over 18,000 acres** of habitat and about **10,500 rabbits** in focus areas.

We're closing in on our habitat and population goals, but the work is not done. With development and maturing forests, we must actively restore and protect areas of young forest.

Help us keep Peter Cottontail on the bunny trail:

- Create or maintain young forest
- Conserve your land
- Learn about the New England cottontail
- Advocate for young forest conservation

newenglandcottontail.org

bred New England cottontails in a captive situation outside of the zoo.

No matter how smart you *think* you are, animals show, time and again, that they can outwit us, especially when it comes to obtaining food. It is this logic that we're carrying into our next endeavor. Now that we have learned that NECs can be bred in the Great Bay pen, we're moving toward breeding on a larger scale. With help and funding from the New Hampshire Fish and Game Department, we're working to create a second pen, this one approximately 8 acres in size. Our hope is that with the extra elbow room and more natural setting, we will be able to produce many successful litters of young that can then be released into the wild to augment native populations.

For this new pen, we won't be attempting to fully secure it from predators, accepting that some rabbits will likely be taken. Instead, the larger pen will allow for a larger number of rabbits, so the loss of a rabbit or two won't be such a big deal, as there will be plenty more that survive to reproduce. The larger pen will also provide more cover and space for the

On-line Resources About the New England Cottontail

Photos:

<https://www.flickr.com/photos/newenglandcottontail>

Video:

<https://www.youtube.com/watch?v=aw6NT7zXGSg&list=PLZb5DyVcCk946xJFzAn7-5intOqbJtk6l>

Maps:

<https://www.flickr.com/photos/newenglandcottontail/sets/72157633153630053>

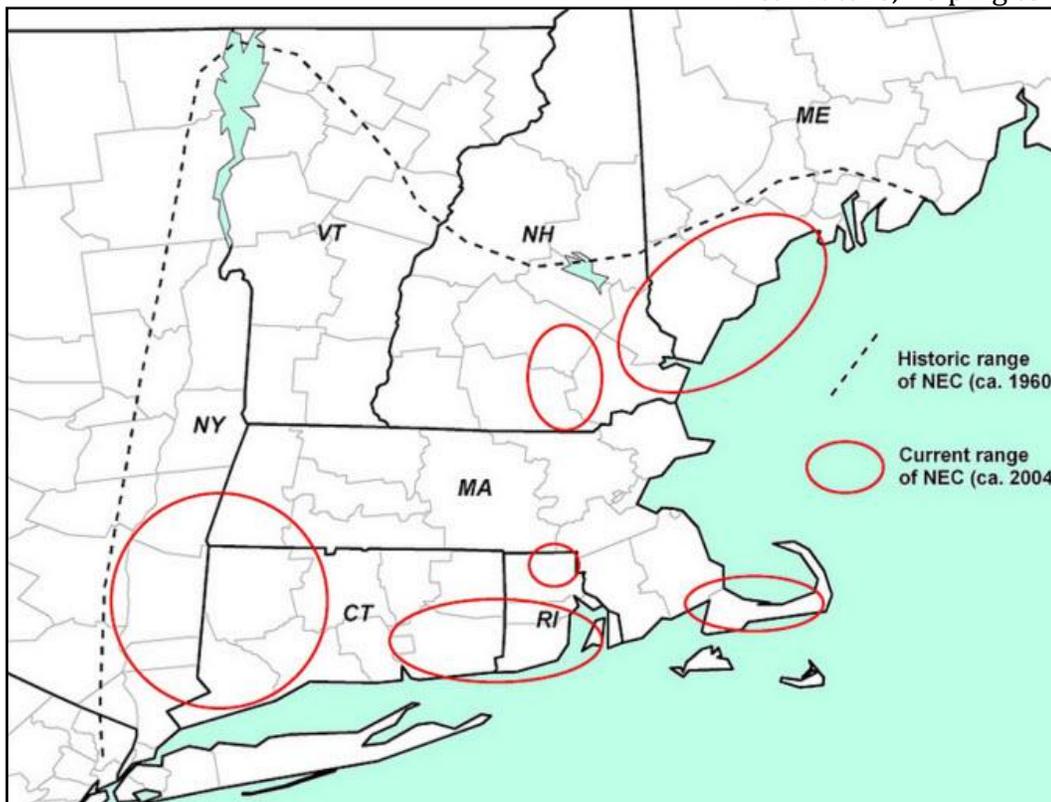
Fact Sheet:

<http://www.fws.gov/northeast/pdf/necotton.fs.pdf>

cottontails to avoid predators. This approach has been a huge success with pygmy rabbits out west, and we're hoping to follow suit.

Further excitement began to swirl this fall when we learned that the Maine Department of Inland Fisheries and Wildlife will help to fund a third pen (another 8-9 acres) to increase breeding capacity. It is our hope that with all of this collaboration, Great Bay NWR will be a major source of New England cottontails in the near future, helping to keep this species on the

landscape. With fingers crossed, we move toward the future.



Fishing With the World's Largest Tackle Box!

By Jean Adams, Outdoor Recreation Planner

It was 7:30 am and the office phone rang. "Hello, Parker River National Wildlife Refuge," I said. The caller on the other end seemed quite upset, "Not to alarm you," he said, but I am sitting out on the beach and there is a VEHICLE out here! Do you have any law enforcement who can catch this guy?" The caller was shocked when I explained that the vehicle on the beach was legally there and that the refuge has a drive-on surf fishing program where permitted fishermen can drive out onto certain sections of the beach and fish throughout the night. The caller's reaction did not surprise me, as many people don't understand that fishing (along with hunting) is a priority public use on many national wildlife refuges. Although driving a motor vehicle out on the beach for the express purpose of fishing may appear to some as a bit unconventional, it is considered a historical use dating way back before the refuge even existed.

The drive-on fishing program has seen quite a few changes over the decades. In the beginning of the program's existence, the number of permits issued was unlimited and the area fished encompassed the whole 6 miles of beach. Due to erosion, vegetation degradation, and people getting permits just to drive on the beach (not a priority public use), more controls have been put in place. Over the last 4 or 5 years, the number of permits issued has dropped to 85 per season, while the area open to drive-on surf



Refuge surf fishers proudly display a 8.5 lb. bluefish.

fishing has also been reduced. With an average of 115 permit applications received, the odds of someone getting selected are pretty good!

The intent of the drive-on program remains the same – to provide refuge visitors with another way to access the beach in order to fish. Today, the majority of the anglers who have a permit are serious about surf fishing. Their passion is true to the original intent of the program, which is to make surf fishing more accessible. Most of these permittees are people who have grown up fishing on the refuge beach and have many fond memories about their drive-on fishing experiences.

I recently asked a number of the current permit holders to share their reasons for driving-on to surf fish (as opposed to walking on), and also to share some of their stories about their drive-on experiences. All of them, including long time anglers Ken Bilotta, Steve Moore, and Ed Kelly cited the fact that it is simply more convenient to have the vehicle right there so that all their fishing equipment can be more easily accessed. Ken mentioned that having the vehicle allows a person to have several different types of rods available just in case the conditions change. This would not be possible if a person had to carry all the different rods and tackle out on foot, as those rods are heavy and cumbersome.

Many of the surf fishing permittees including Steve Dombrowski, Ray Green, Tom Pulkowski, and Danielle Ducharme say that the drive-on experience is about



David DePaulis with his rig on the beach.

family time and getting generation after generation out there together. Danielle wrote "The first time I was on Plum island was in 1988, when I was 2 weeks old, napping in the back of my Dad's Ford F150 while he fished for stripers. The island was my dreamland as a child and still remains my place of serenity, 27 years later. I honestly don't know how I would deal with summer ending if I wasn't looking forward to fishing with my drive-on permit. Four generations of my family have fished these waters and I can only hope that when I have children, they will learn to fish here. I can remember sitting with my grandfather, waiting for the stripers to bite, binoculars up, marking off each sighting in his "Bird Watcher's Bible." Plum Island has always been more than just a beach to me; Plum Island was the beginning of lifelong friendships, family bonding and of course, fish stories."

Eloquently described by Danielle, suffice it to say that a lot of the drive-on permittees credited the "family time" aspect of drive-on surf fishing as a primary reason for their young children getting "hooked" on surf fishing. However, that doesn't always happen. I asked veteran angler Ken Bilotta why he was fishing by himself? He said that his kids "just never took to it" and, now that they are grown, have "no interest in coming out to fish." I guess it's a bit of nature, as well as nurture, that instills the fishing bug in the next generation. You either have it in your blood or not.

Driving-on allows both the younger and older generations to get out and fish. Many of the latter cited bad knees and bad backs, which would normally keep them from getting out with all their gear. But with their four wheel drive vehicle, they can easily



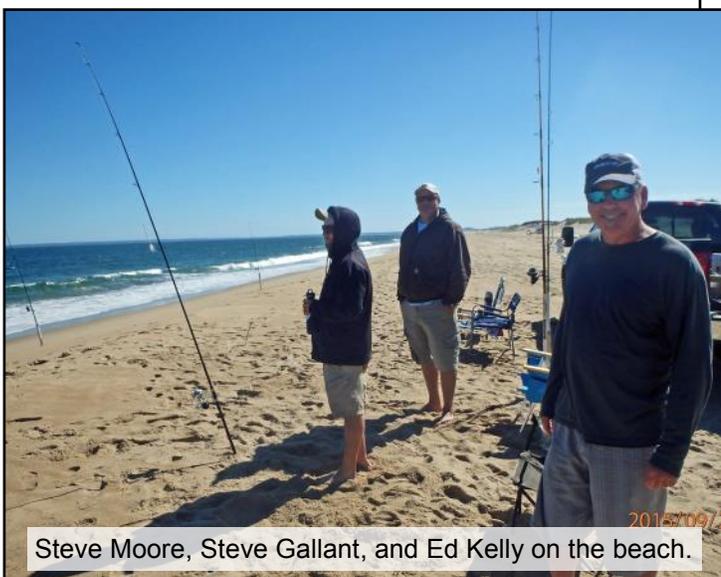
Ken Bilotta has been fishing on the island for 30+ yrs.

jump in and go. They also mentioned the fact that their elderly relatives with mobility issues can still share the experience. Steve Dombrowski says he cherishes fishing with both his dad and his son – three generations together.

In addition to the ability to haul out a lot of gear, many anglers such as Steve Moore and Ed Kelly cite the fact that it is convenient. "After work," says Ed, "I can just jump in the truck and go out fishing for a few hours without dragging all the gear out on foot." Peter Carro shared that driving-on allows him to stay longer because if the weather is bad he has shelter, and if he is tired he can rest. He mentions the night he was the only one out on the beach and saw the aurora borealis. "It was fantastic," Peter said, "and I was the only one out there to see it."

On the rare occasion when a fisherman "catches a big one," it's easier to haul it to shore. Jim Fallon said he caught a 44 pound striper four years ago, while Tom Pulkowski recalled a 40 plus pounder. The day I was out there, I didn't see anyone catch a "keeper" striper, but I did see a 8.5 lb. bluefish (caught by Adam Leger's son, Noah). Somehow, however, I don't get the impression it's so much about the fish as it is about the experience.

I think Ken Bilotta said it best. Ken has always been known as "Fat Ken" and so when I mentioned his slimmer physique this season and told him he would soon need a new nickname, he said, "Nah, I'll always be "Fat Ken" because "fat" also means "rich" and look at this (as he gestured to the beach and ocean around his 4x4 rig), how can you be out here and NOT be rich? If you're out here fishing, you're rich" Well said, Ken!



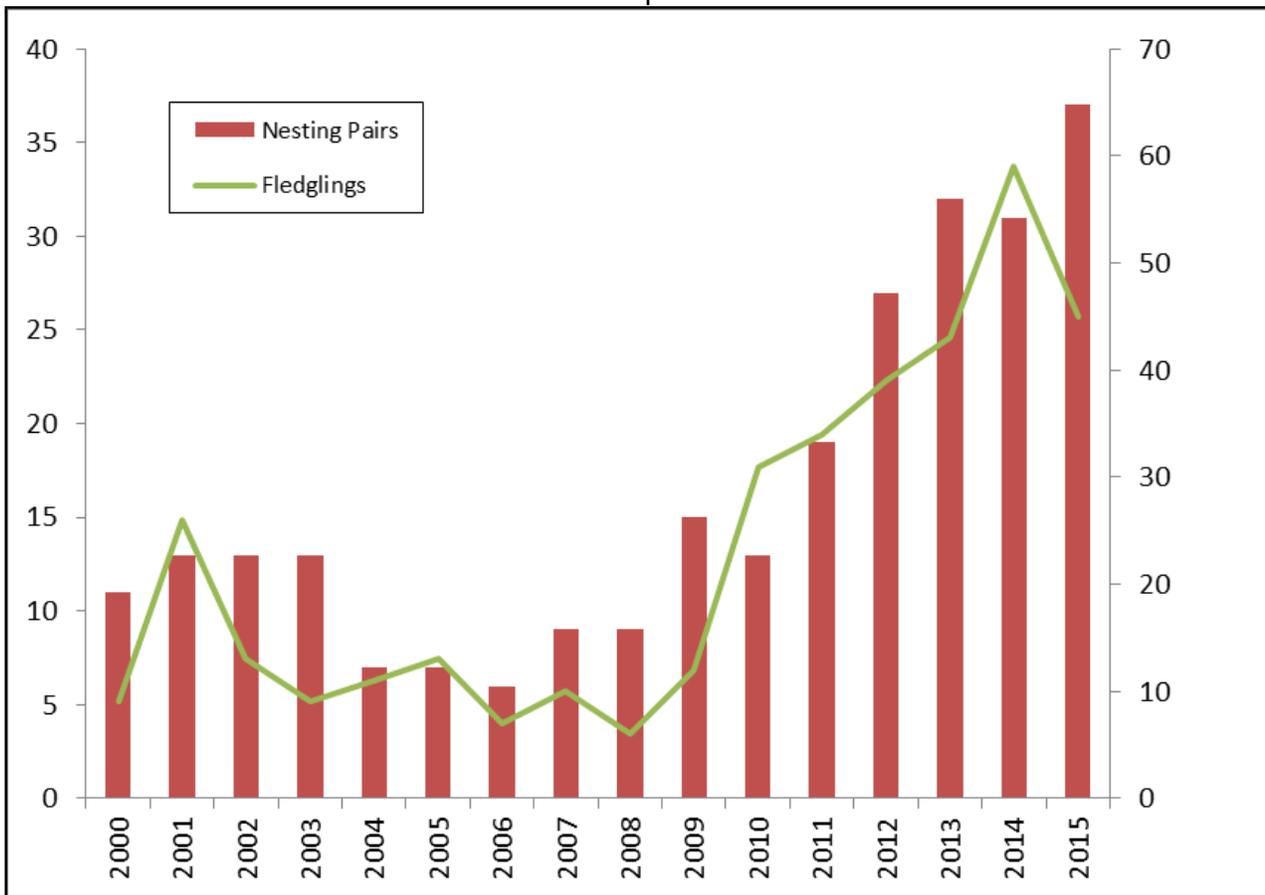
Steve Moore, Steve Gallant, and Ed Kelly on the beach.

Summer, 2015: Not a Banner Year for the Piping Plover

By Kaytee Hojnacki, Biological Technician

After last year's record-breaking number of fledglings (59), we were hopeful that 2015 would be another fantastic piping plover season at Parker River NWR. The first plover was spotted on the beach March 31, and the first nest was found on April 29. Plover season was in full swing! And quite a plover season it was, constantly searching for nests due to a whole slew of nest failures. Crows, coyotes, grackles, high tides, and Nor'easters weren't friendly to the birds this year (both piping plovers and least terns). Thirty-seven pairs (our highest number yet) ended up laying in 65 nests, only 19 of which survived to hatch at least one egg (fledging 45 chicks). This was the lowest hatching rate since 2008. It just seemed like this year that everything was out to get the plover (and tern) nests, and that is just a part of nature.

On a positive note, we continue to see plovers moving their nests off the beachfront and on to the dunes. That proved to be the smart move this year, avoiding not only flooding, but also the worst of the depredation. As the sea level continues to rise, and more intense storms become increasingly common, the plovers that adapt by nesting further from the tide line will be the most successful. Now if we could only convince the coyotes that the increasing number of nests on the beach do not make a great meal, we'd be all set! And so, we look toward 2016 with the hope that nature will be kind to the piping plover at Parker River NWR so that we shall have lots of "cotton ball youngsters" running around the beach!



Number of piping plover pairs (use left Y axis) and the number of fledged chicks (use right Y axis) on the refuge beach over the past 15 years.

Waging a Successful War on Perennial Pepperweed

By Frances Toledo Rodriguez, Biological Technician

For the past 9 years the staff of Parker River National Wildlife Refuge, Massachusetts Audubon, and Northeast Massachusetts Mosquito Control and Wetlands Management District, along with many volunteer groups and individuals, have dedicated part of their summer to the battle against invasive species. We dedicated most of our attention to perennial pepperweed because of its status as a relatively new invasive plant and its potential to become as pervasive as phragmites or purple loosestrife.

The Great Marsh Perennial Pepperweed Eradication Project is a collaboration between Parker River NWR, Mass Audubon, and a growing list of other local partners. The project was initiated in 2006 to control and eradicate perennial pepperweed in the Great Marsh. Parker River NWR and Mass Audubon have been working with many conservation partners, towns, states, volunteers, and local schools to contain and eradicate this invasive plant before it takes over our salt marshes.



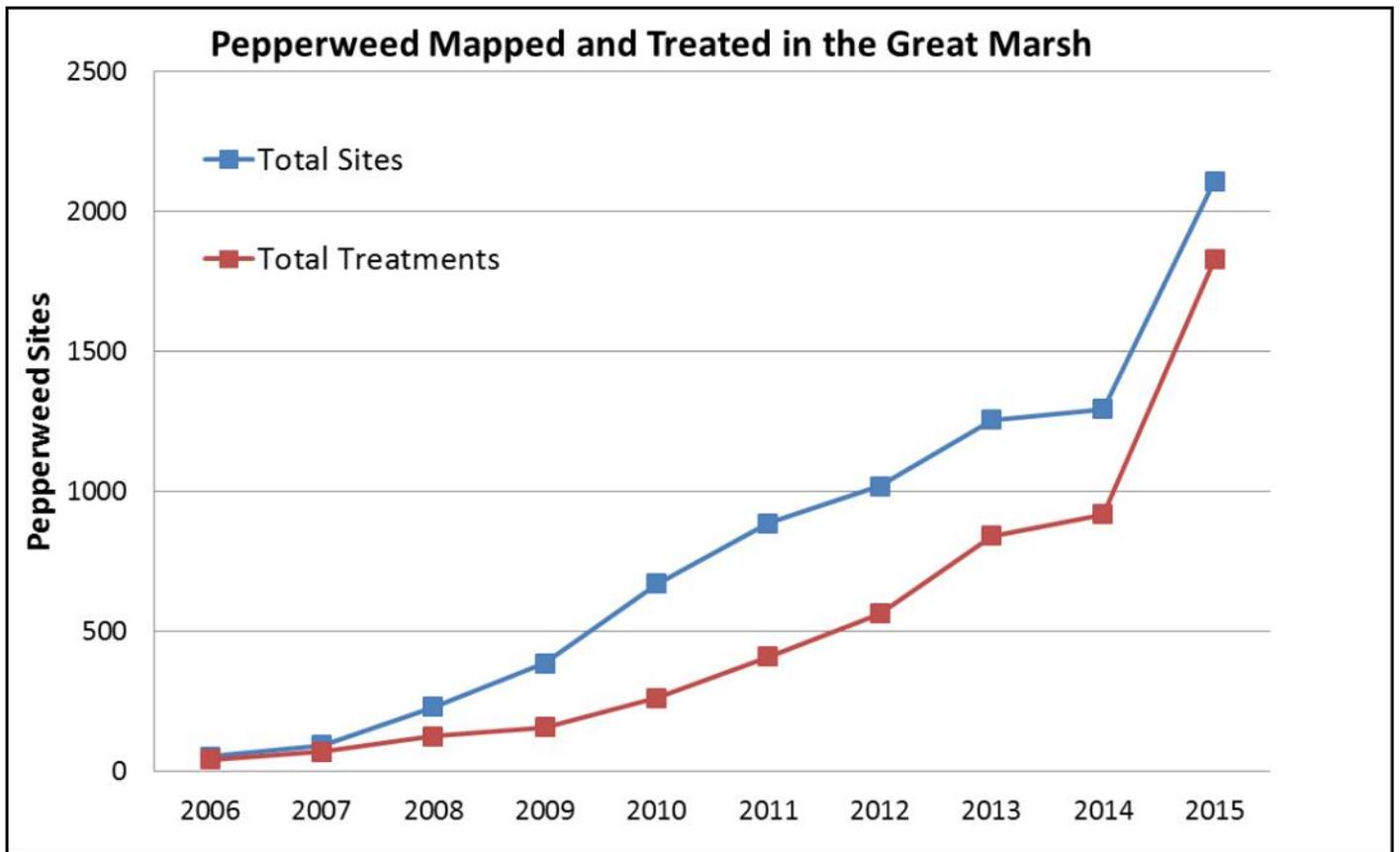
This is what perennial pepperweed looks like while in flower.

Volunteers are essential to the success of the pepperweed control project. Pepperweed forms dense, single species stands which displace native species. It produces thousands of highly viable seeds annually, which are then dispersed by wind and water. It is feared that if allowed to spread unchecked, pepperweed may continue to degrade salt marshes and expand its range into other habitats, displacing imperiled wildlife like the New England cottontail and the saltmarsh sparrow. In New England, infestations of pepperweed are mainly found near the coast and on coastal islands. The plant often occurs at the upper edges of salt marshes above the high-tide line, frequently forming dense stands. It also occurs along highways, since it propagates well in disturbed areas.



Refuge staff treating perennial pepperweed from the Marsh Master.

Throughout the summer of 2015, Parker River NWR staff, Mass Audubon staff, and volunteers pulled pepperweed at sites throughout the Great Marsh, treating 1827 sites, or 84% of all our identified sites. Volunteers donated over 930 hours of time in 2015. Since 2006, our treatment delivery has increased at a steady rate, mainly because sites that have been



Pepperweed sites that have been mapped (in blue) and sites that have been treated (in red).

treated for consecutive years require less effort every year. The project has also been able to increase the treatment capacity with new strategies and volunteer training (see figure). For the last 2 years, use of a loaner amphibious machine called a Marsh Master enabled us to treat more sites quickly and to reach difficult to access areas. This machine has low ground pressure — between 1 to 2 pounds per square inch — ensuring that we don't damage the marsh during treatment. Volunteers have also grown in number and in capability. Since 2006, volunteers have donated over 10,000 hours to the project! With the help of numerous volunteers, thousands of pounds of pepperweed have been pulled and 48 sites have been restored.

Special thanks to our *Weed Warriors*, each of whom dedicated their time last summer to this effort: Student Conservation Association interns Ashley Leung, Charles Williford, Hali Macko, Hanna Mogensen, and Kathryn Bland; refuge volunteer John Waraska; Mass Audubon's Lauren Healey and Maya Jain; Youth

Conservation Corps crew members Tristan Fox, Anna Springfield, and Colleen Twomey; the Plum Island Beautification Society; River Valley Charter School (Patricia Cumming, Alison Ney and students); Robin McMahon; and Tomas Nocera, University of New Hampshire.



Weed Warriors from the River Valley Charter School pull pepperweed plants.

Bats: Our Silent Neighbors

By Nancy Pau, Wildlife Biologist

Bats are the ultimate secretive species. They fly through the forests and fields around us, but we don't see them because they use the cloak of darkness. The air around us is filled with their sounds, but we can't hear them because it's above our hearing frequency. For thousands of years, bats have been flying in our neighborhoods, quietly carrying out roles vital to healthy ecosystems and our economy. Bats are major predators of insects, including many agricultural pests that can cause billions in crop damage. In warmer climates, bats pollinate many species of plants and disperse seeds to ensure regeneration of rain forests and desert plants. Ironically, it took bats dying by the millions for humans to take notice of this invisible but invaluable group.



White-nose syndrome (WNS) is a fungal disease that was introduced to a cave in New York State in 2006. Since then, it has spread to 26 US States and 5 Canadian provinces, and killed an estimated 5.7 million bats. Two of the most abundant bats in the Northeast, the little brown bat, and the northern long eared bat, are being hit the hardest, with over 95% population decline. The northern long-eared bat was listed for protection under the Federal Endangered Species Act in 2015.

People finally started focusing on bats when millions of bats started dying. Unfortunately, we also realized that we didn't have a lot of basic information on bat ecology, including where they lived, how many bats lived in the Northeast, and where they spent their winters. At Parker River and Great Bay National Wildlife Refuge, we were lucky enough to have started studying bats right before the major population crashes. In 2008, an organization we work closely with, Biodiversity Research Institute (BRI) needed an alternate site to study contaminants in bats when one of their study sites fell through at the last minute. When they approached us at Parker River, I gave them permission with the caveat that the Refuge wasn't great habitat for bats. Boy, was I wrong! BRI caught 17 bats that night, including 14 little brown bats and 3 red bats. Since then, we've learned that both Parker River and Great Bay are important hot-spots for bats.

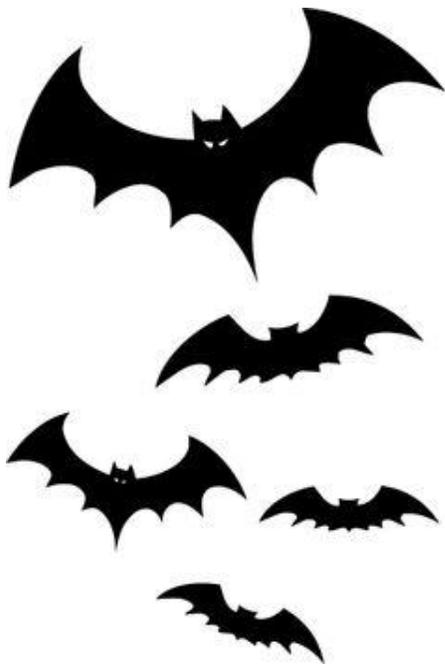
Being along the coast, Parker River NWR is an important site for migratory tree bats like red bats,

hoary bats, and silver-haired bats. These bats migrate hundreds of miles from their summer ground and wintering ground, and tend to live by themselves or in small groups. Because of this, these migratory tree bats breed during the fall during migration. We suspected that Parker River was one of these breeding sites, and was able to confirm breeding of red bats at Parker River. The Great Bay Refuge supports northern long eared bats, small-footed myotis (which is extremely rare in New England), big brown bats, little brown bats, and migratory tree bats in the fall.

Today, we're really happy to have 7 years of bat data at the two refuges, including those early "pre-WNS" data to use as a baseline, as the bat landscape has changed drastically. As white nose syndrome spread rapidly from state to state, we've observed several drastic declines. At Parker River, our data showed the rapid decline in little brown bats from 2008 to 2010. Little brown bats were the most abundant bat at Parker River, with 23 caught in one night in 2009. After 2010, we did not catch any little brown bats at Parker River. At Great Bay Refuge, we saw a later decline of northern long eared bats. We noticed a decline from 2011 to 2012, and a second decline from 2012 to 2014. The timing of these declines corresponded to regional declines reported from Maine to Virginia. Multi-year, continuous data like these collected at our refuges help to put disjointed bat data collected from other locations in context, helping to identify critical tipping points and trends.

The conservation future of bats is very uncertain at this moment. With the baseline information we have at the two refuges, we have been working with bat experts in the region to address some critical information gaps. In the last two years, we've been testing the use of new automated telemetry technology called nanotags to track movement of bats. The technology is showing great promise for tracking migratory tree bats like the red bat, as well as giving us very detailed activity information on resident bats. This hopefully will lead to better understanding of their ecology and behavior. At Parker River, we will continue to monitor tree bats to see if their population is affected by white-nose syndrome. Great Bay Refuge is an ideal candidate to study how various forestry management practices affects bats. That is why we are beginning to design forestry management practices that will increase resiliency to climate change while improving habitat for the northern long-ear bat.

Bats are one of the most successful and diverse mammal groups, occupying all but the coldest land masses on Earth. With the introduction of white nose syndrome, many of our most common species of bats are in jeopardy of extinction. We hope that what we learn from bats through our studies can assist in their continued preservation. Bats have been keystone species in their respective habitats for millions of years. For thousands of years, bats have provided free ecosystem services to human society. It's now our chance to help our fellow mammals in return.



Wheelchair Lift on “Magic Bus” Improves Accessibility of Refuge Tours

By *Alix McArdle, Volunteer Master Naturalist*

Niki Rosen likes to think of the Parker River NWR as her "backyard" and she has enjoyed visiting here since long before she moved to the James Steam Mill in Newburyport in 1998. She was born in Omaha, raised her children in southern California, moved to New England in 1974, and after visiting a friend who lived on Plum Island in the '90s, she began enjoying frequent excursions to the refuge. A woman with a lively imagination, she mentions a hollowed out stump on the Hellcat Trail that was full of fairies with whom she often exchanged brief greetings on her walks by. She imagined a bowl-shaped dip on the Pines Trail as a perfect location for a small yurt that would easily go undetected by passersby. Like many others, the play of fog and wind and light at Emerson's Rocks have created indelible memories. Niki knows the refuge. Recent health issues have necessitated her giving up driving but her love of the refuge stays true and this fall she was able to join others from the Newburyport Council on Aging on the refuge-owned bus for a volunteer-led Behind the Scenes Tour. The N-Vitamin has reenergized her and Niki hopes to volunteer at the refuge visitor center in the near future.



In the center, refuge tour participant Niki Rosen, flanked by volunteers Alix McArdle (left) and Janet Hickey (right).

Changes in the Sands of Time



Road Building, Then & Now



In the late 1940s, refuge maintenance workers constructed a "loading trap" at Cross Farm Hill to scrape gravel into the waiting truck. The gravel was used as a base layer when extending the road southward.



Modern day road building equipment on the refuge.

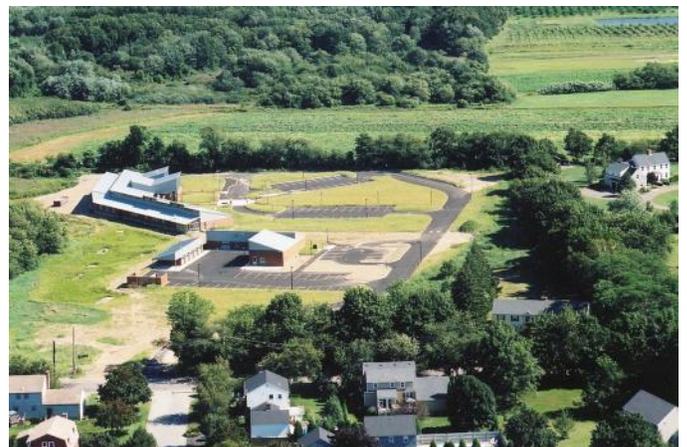
Refuge Headquarters



The first refuge headquarters was rented space in downtown Newburyport.



The "new headquarters," as former employee Tom Stubbs called it, was built in the mid-1950s.



The new headquarters and visitor center complex, across the street from MA Audubon at Joppa Flats.

Beach Use

Beach use has changed dramatically as the public increasingly understands and supports the refuge's "wildlife first" mission. Permits for over-sand vehicles are now numbered and chosen by lottery. Beach-going is limited to north of Lot #1 between April 1st and mid-August in order to protect nesting piping plovers.



Cranberry Bogs

Cranberry bogs were at one time more widespread on the refuge. These two photographs show the encroachment of woody vegetation on a patch near Lot #2. Beach plums continue to thrive though permits are now required and pickers are limited to one quart per day. Berry picking remains a very popular activity.



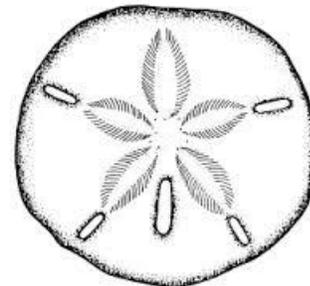
Camp Sea Haven

Camp Sea Haven, half a mile south of the Hellcat Swamp parking lot, once enjoyed a much wider beach as shown in these three photographs from 1950, the mid-80s, and 1991. Remnants of the camp's long-buried swimming pool are now visible on the beach as the dune continues to erode.



Shifting Sands

The black and white photo, taken about 1950 at a point just north of the site of Camp Sea Haven, shows how the refuge used snow fencing to catch and retain blowing sand. The color shot from 1978, taken a bit further north, shows how dramatically the beach can change. Efforts to build and retain dunes have been successful; however, the shoreline is always vulnerable to winter storms.



Along the Northeast Boundary

These photos were taken from the northeast refuge boundary (from the Lot #1 boardwalk), looking at the extreme end of Southern Boulevard. The earlier image was taken about 1950, the latter was taken this fall. Both the skyline and the previously hilly foreground are much altered today.



The Archive Team — comprised of Alix McArdle, Kate Murray and Karen Stahle — is a small team of enthusiastic volunteers who have explored and organized the refuge's 60+ year accumulation of photographic prints, 35 mm slides and negatives. They are now using these (nearly forgotten) treasures to tell the refuge's many stories—stories that provide an additional opportunity to engage the public's interest in what has, is, and will continue to happen on this national wildlife refuge.

Meet Our New Teammate!

By Denise LaCroix, Administrative Assistant

My name is Denise LaCroix and I am the new office assistant at the Parker River National Wildlife Refuge. As the office assistant, I spend the day answering the telephone, processing the mail, filling out permits for our visitors, and help out with tours if needed, just to name a few of the tasks I do. I really enjoy the administrative tasks and meeting our visitors!

In the past, I have worked as a contact center advisor in human resources; and have several years of experience in a customer support and administrative support role for call centers. I sincerely enjoy customer support and look forward to a long career here supporting the refuge staff, our volunteers and, of course, our many visitors!

U.S. Fish & Wildlife Service

Why a Blue Goose?

The "Blue Goose" has been adopted as the symbol of the National Wildlife Refuge System. Refuge boundary markers, entrance signs, brochures, and exhibits have displayed the blue goose since 1936. The blue goose is the legacy of Pulitzer Prize winning editorial cartoonist J.N. "Ding" Darling, who designed the symbol while he was chief of the U.S. Biological Survey, the forerunner of today's U.S. Fish & Wildlife Service, from 1934-1935.



Ding Darling had a deep and lasting love of wildlife and the outdoors, with a special interest in migratory waterfowl. He became one of the greatest proponents of wildlife conservation in the 20th century. His cartoons, which focused on conservation and wildlife, alerted the public to the widespread destruction of the nation's natural resources.

As the National Wildlife Refuge System begins its centennial celebration, the blue goose still flies. It flies at Pelican Island NWR, the first refuge established by President Theodore Roosevelt on March 14, 1903, and it flies at over 535 other national wildlife refuges across America. The blue goose continues to symbolize America's conservation efforts of establishing these refuges for wildlife and conservation of wildlife habitat. Look for the blue goose when you visit a national wildlife refuge.



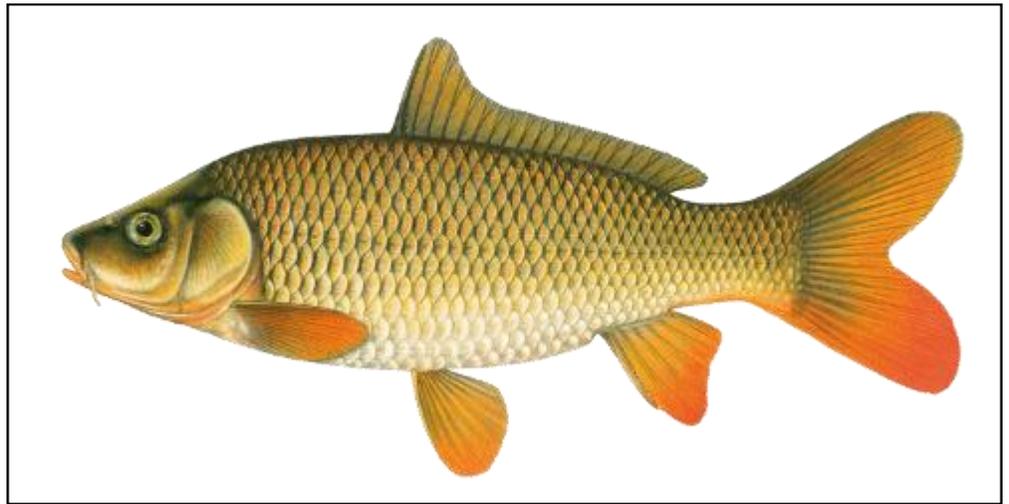
Carp Turned to Compost!

By Katy Bland, SCA Intern

During late August, five refuge staff, along with a FWS fisheries biologist, began the daunting task of eradicating common carp (*Cyprinus carpio*) from the brackish North Pool using a technique called electro-

fishing. For those that missed the article “Common Carp & the North Pool: A Love-Hate Relationship” in the summer, 2015 edition of *The Wrack Line*, the goal of electrofishing was to remove common carp, a prolific invasive species, from the North Pool impoundment. Common carp’s ability to tolerate extreme environmental conditions, coupled with its high rate of reproductive success and herbivorous diet, makes it one of the most problematic invasive species. Because they are herbivorous, common carp often uproot native aquatic plants, which inherently damages habitat and foraging ground for native fish, invertebrates, amphibians, and waterfowl. Parker River NWR aims to be a host for native species, and the eradication of common carp will set us one step closer to that goal.

Over two days we collected 613 common carp, which we estimated to be about 1000 pounds of fish. With a “bycatch” of only one white perch, we were effectively able to selectively target the carp. Since North Pool is more saline than we had expected, and the conductivity of saltwater is higher than the conductivity of carp, electrofishing this invasive fish was not as successful as if the pool had been fresh water. What did we do with the carp? We partnered with Agresource, Inc. and the Ipswich Composting Facility, and composted all 613 Carp. By composting the carp, we can shift organic material from the fish to the soil. The ideal carbon-nitrogen ratio for composting is between 25:1 and 30:1 and, by itself, fish have a very low C:N ratio (about 7:1), so it was integrated with



existing compost to raise the C:N ratio. Eventually, microbes will degrade the fish. It is estimated that about 80% of the carbon will be released to the atmosphere as CO₂ and the remaining carbon will be resistant to further decomposition and therefore become part of the soil “carbon sink.” By composting fish, we are lessening our landfill-bound waste while augmenting the soil carbon sink.

The Marsh as a Carbon Sink

A carbon sink is a reservoir of carbon-containing elements that stores carbon for an indefinite amount of time. Oceans, forests, soils, and coastal marine ecosystems are all large carbon sinks.

Marshes are important carbon sinks because*:

- **Marsh plants grow rapidly, and therefore convert carbon into plant parts quickly.**
- **The soil is mostly anaerobic (without oxygen), so decomposition happens slowly and carbon remains in the soil for hundreds to thousands of years.**

The marshes of Parker River NWR alone sequester, or capture, about 1,080 tons of carbon/year, which is equivalent to sequestering the carbon emissions from about 121,500 gallons of gas!**

***<http://www.habitat.noaa.gov/coastalcarbonsequestration.html>**

**** (Drake, K., Halifax, H., Adamowicz, S.C., and Craft, C. (June 2015) *Carbon Sequestration in Tidal Salt Marshes of the Northeast United States*).**

Meet Volunteer Erika Hartweig

By Jean Adams, Outdoor Recreation Planner & Volunteer Coordinator

If I were to look up the words “tough” or “hardy” or “dedicated” in the dictionary, it would not surprise me a bit to find a picture of Erika Hartweig. She is the very definition of these words. This is one tough volunteer who loves the refuge and enjoys being outside in all weather. Erika started volunteering two years ago as a plover warden. Her first shift was a bitterly cold, wet, windy day. Whereas most would have packed it in (and maybe never come back) after an hour on such a raw day, she stayed on the beach for her entire four hour shift. She came back to the gatehouse all excited about being a plover warden and said she thought it was “just great” and that she “loved it.” In fact, when I think about it, every time I have talked to Erika after any of her volunteer shifts, she always says it was “just great!”

This summer was brutally hot and busy and each Saturday Erika was out on the beach doing



back to back plover warden shifts (6 -8 hours). When I went out to see her, I would be melting out on the beach and she would say “It’s just GREAT!” The greenheads would be swarming and she would say she just loves being a plover warden. In fact, I don’t think I have ever heard her say anything negative about the elements or her encounters with the public or her volunteer experience.

With her easy adaptation to the weather and bugs, one would think that Erika was a country girl but that is not the case at all. Erika spent many years in a high tech biology lab at MIT as a researcher using electron microscopes. She did very detailed, highly technical work which is a far cry from “shooshing” (as Erika calls it) people off the closed beach. But somehow this 360 degree change in routine suits her.

This year Erika helped me with the beach clean-up and LOVED it. I think I have found my sidekick for the spring cleanup. After a long day on the beach, she was wondering what else she could do to help? I mentioned being a volunteer in the gatehouse and she said “When can I start training?”

It seems there are no limits to Erika’s energy and enthusiasm and love for the refuge. Her positive attitude is infectious and inspiring. We hope to have Erika as a volunteer for many years to come. She seems to be genuinely grateful for having the opportunity to volunteer here, always says “thank you” before she leaves. But the fact is, we should be thanking her. THANK YOU, Erika!



The American Black Duck

By Linda Schwartz, Volunteer Master Naturalist

American black ducks are frequently confused with mallards (females), but they are an eastern North American species whose numbers have been declining since the 1940s and have been documented in the North American Breeding Bird Survey since 1966. The decline seems to have slowed in the past decade, but there is still concern for this species. Black ducks have also been heavily hunted, with about 800,000 birds killed each year in the 1960's and 1970's. In the wake of stringent limits that were pursued by the Humane Society of the U.S. (in 1982), the annual harvest has decreased to around 115,000 birds each year. They are still listed on the IUCN Red List (categorized as "of least concern"), but their declining numbers are being carefully watched by the U.S. Fish and Wildlife service. Many national wildlife refuges have been established in important breeding areas, and along migration routes, for this waterfowl species (including Parker River, in 1941).

Black ducks are one of the largest dabbling ducks and one of the few where the males and females don't show strong sexual dimorphism (males and females look similar). They weigh approximately 1.5 to 3.5 lbs. Unlike mallards in breeding plumage, where the male has the familiar green head and the female is brown all



over, black ducks both are mostly a dark brown on the body with a lighter head and an eye stripe. Male mallards also have feathers on their rump with a bit of an upward curl. The main difference between a male and female black duck is the beak. The male has a yellow beak and the female has a drabber olive, greenish beak. Both the male and female have a metallic, violet blue speculum (secondary flight feathers) with black borders. Female mallards have an orange and black bill in contrast to the yellow or greenish bill of a black duck. Hybrid

(or crossbred) black ducks/ mallards can show any degree of combinations in features. Frequently, males have a partly green head. Both species have white underwings, but the contrast of the black duck's darker body will make them more distinctive in flight.

Black ducks have a range that extends through eastern North America, mostly along



Photo: Linda Schwartz

the Atlantic and Mississippi Flyways, and most concentrated along the Atlantic coast from the Maritime Provinces of Canada south to Florida. They are most commonly found on wetlands near Lake Erie and the St. Lawrence River in Canada to the mid-Atlantic coast of the US. There are high concentrations that winter from Long Island south to North Carolina, though many also winter quite locally. They are considered partially migratory, with some only relocating to open water in their area in winter, in contrast to others that breed in Northwestern Quebec and Ontario, migrating 700-800 miles. Many black ducks overwinter in Massachusetts, frequently in the company of mallards. They can live into their 20s, with the record being about 26 years.

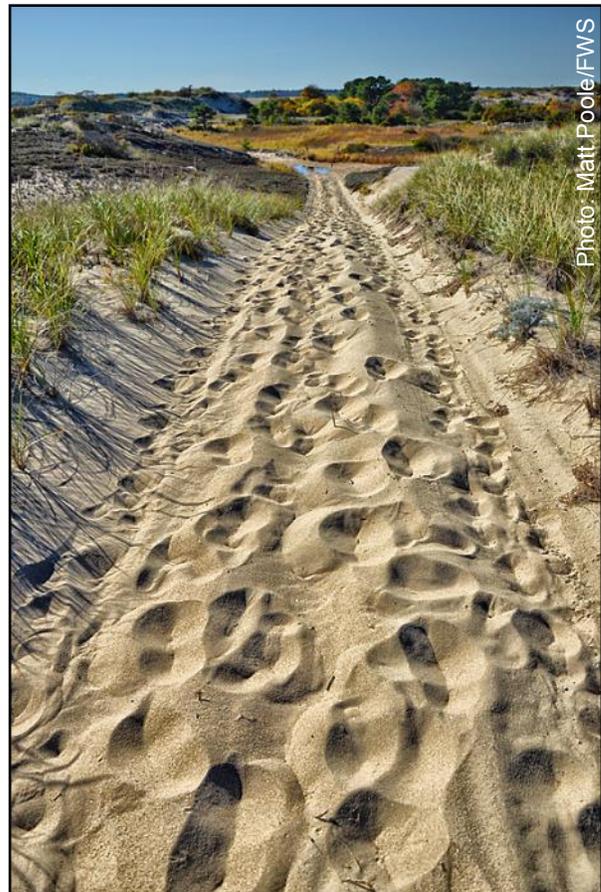
The black duck breeds from the upper Mississippi, across to the northeastern United States and north into northern Saskatchewan, Manitoba across Ontario and into the eastern Canadian provinces. The largest breeding populations are found in Maine and Nova Scotia. They breed in a wide variety of habitats that include alkaline marshes, acid bogs, lakes, stream margins, fresh or brackish marshes, as well as the margins of estuaries. The females lay an average of 9 eggs in a clutch.

Black ducks face a number of other threats. Probably one of the largest is habitat loss from farming, logging and urbanization. Like many waterfowl, they are prone to lead poisoning from ingesting lead shot and fishing tackle (a concern for many waterfowl species). Black ducks are shyer than their similar cousin, the mallard and are potentially being out competed for food and habitat by them. Their wariness potentially makes them less tolerant of disturbance caused by development. Mallards thrive in urban locations, where the shyer black duck tends to get driven out. They are also known to hybridize with mallards, further threatening the species. Some believe that the hybrids are frequently the result of forced copulation, a frequent aggressive behavior of mallards that sometimes results in the death of the female. It has also been noted that, female black duck/mallard hybrids may not survive long enough

to reproduce, according to some captive studies of them.

Black ducks, along with many other species of ducks, have been helped by the Migratory Bird Hunting Stamp Act of 1934, also known as the Duck Stamp Act. Federal Duck Stamp proceeds are used to buy land and manage it to help migratory waterfowl. This is the same duck stamp that waterfowl hunters must buy and the one that can be used for entrance to national wildlife refuges, such as Parker River. Altogether the duck stamp program has financed the purchase or lease of about 6.5 million acres of wetland habitat across the country. Saving the habitat for waterfowl helps many other species as well. This is very much in evidence with the diverse habitat at Parker River, which supports an incredible variety of wildlife.

So next time you see a flock of ducks, look closely as there may be some black ducks amongst a sea of mallards!



National Conservation Training Center:

“Home” of the U.S. Fish & Wildlife Service



By Matt Poole, Visitor Services Manager

Did you know that the U.S. Fish & Wildlife Service (FWS) has a “home?” It’s called the National Conservation Training Center (NCTC). Opened in September, 1997, the training center is located on 530 acres of forest and field along the Potomac River in the Eastern Panhandle of West Virginia (in Shepherdstown). Prior to returning to New England, I had the great honor of working as a course leader and instructor at NCTC for almost eight years. As a state-of-the-art training center – with 12 classrooms, several computer and science labs, a large auditorium, 4 residential lodges, a dining commons and a gym – we (the FWS) are very lucky to have it (with many thanks to the active support of the late Senator Robert Byrd).

But what do I mean by the reference to “home?” NCTC also serves as a history museum – of the U.S. Fish & Wildlife Service, of the National Wildlife Refuge System, and of conservation in general. One cannot walk down a corridor at the training center without passing by scores of large, framed photographs of famous, and not so famous, conservation heroes. Turn a corner and you may come face-to-face with a full size grizzly bear, elk, wolf, or moose! (Relax; I meant taxidermy!) In my book, top honors for the most “wicked cool” exhibit goes to the full size airboat that is permanently on display in the foyer of Instructional East!

The agency’s permanent archives and conservation library are also located at NCTC.

NCTC’s *Fallen Comrades Memorial* honors the men and women of the U.S. Fish and Wildlife



Photo: Matt Poole/FWS

Service who have died in service to conservation. It is a quiet, sobering space that was made that much more special a few years ago with the addition of a beautiful new sculpture.

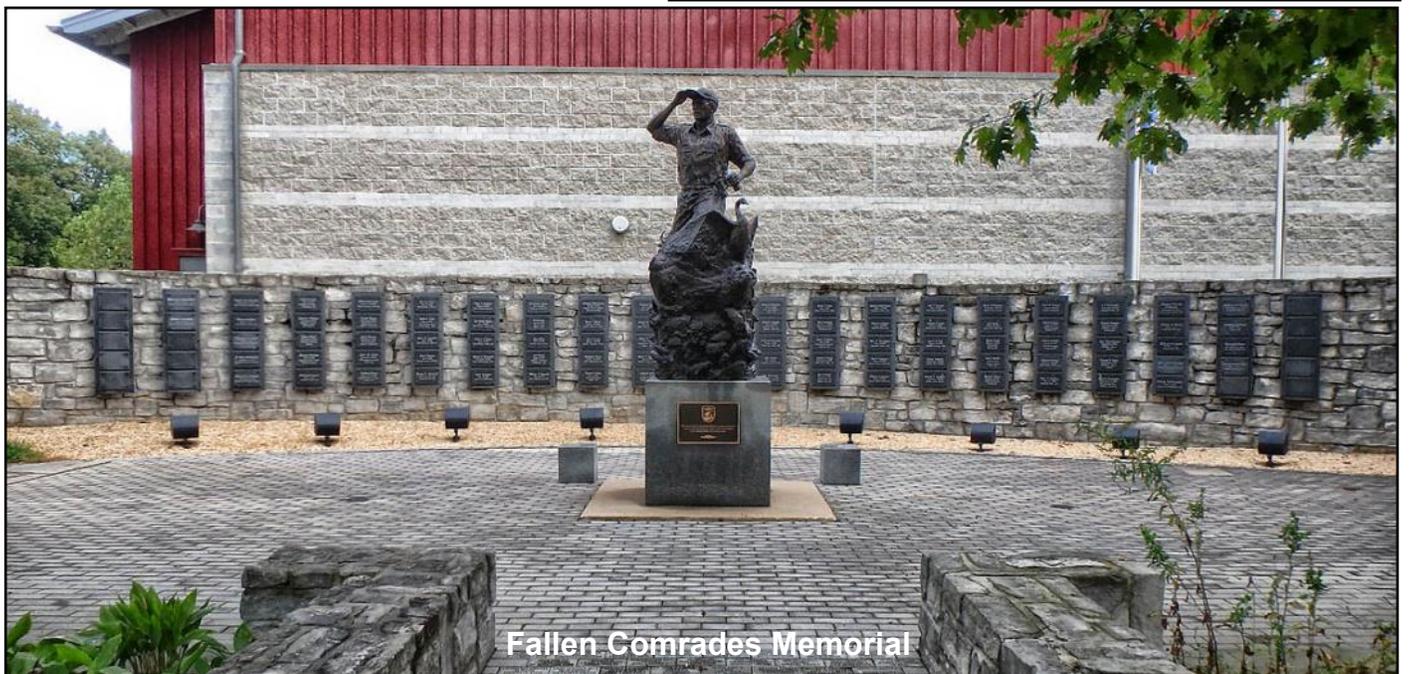
Whenever I return to NCTC, it always feels like going home again. It's an opportunity to learn new ways to do my job better, reconnect with colleagues, and recharge my passion for conservation. We in the U.S. Fish & Wildlife Service are extremely lucky to have a home, and it just happens to be called NCTC!



This airboat was designed and built by staff at the Bear River Migratory Bird Refuge in Utah.



Photos: Matt Poole/FWS



Fallen Comrades Memorial

PHOTOGRAPHICA ESTOTERICA

(a handful of random "Kodak Moments" around the refuge...)



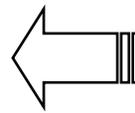
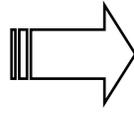
The winged seeds of common milkweed.

In a year when so few monarch butterflies were seen here, locally, the U.S. Fish & Wildlife Service launched a national outreach campaign to "Save the Monarchs!" Parker River did it's part, largely through the program offerings of contract educator Katie Hone Banks, who brought knowledge and passion to her kids' programs. These programs were enhanced by a simple, related exhibit in the visitor center and a small "pollinator patch garden" in front of the center.

Seven local teens participated in the 2015 week-long Digital Nature Photography Day Camp.

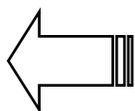
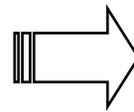


Photographers jumped at the chance to shoot pictures of live birds of prey during October's Phabulous Photo Weekend. The birds were provided by the Center for Wildlife, located in York, Maine



An extensive project to improve the weather hardiness of the visitor center and headquarters building was completed this fall. The puddles of water on the floor that often followed a heavy rain should be all but a fond memory from now on!

The yearlong Refuge Naturalist Training Program continued to truck along—bringing together nascent volunteer educator and interpreters one day each month for hands-on training on a range of topics. In August the group had a chance to explore and learn about the salt marsh from a tour boat (which is owned and captained by a course participant!)



In late summer, while tide pooling at Emerson Rocks, a refuge visitor looked down and noticed a sharp, oblong shaped stone. It turned out to be a Native American stone knife from the Archaic Period—dating the artifact to 3000-8000 years ago!

Winners of the 4th Annual Parker River NWR Nature & Wildlife Photography Contest are Announced!

By Matt Poole, Visitor Services Manager

This year 125 matted prints were submitted to the refuge's annual photo contest. As in previous years, there were two subject categories: wildlife and seascapes/landscapes. All of the prints were placed on display at the visitor center during the week leading up to the *Phabulous Photo Weekend* (Oct. 5^o -18). And, as happens every year, quite a few center visitors were heard commenting that this year's "judges are going to have a difficult time deciding on the winners." And they were right! But, ultimately, and after carefully reviewing the photos through the dual critical lenses of exposure and composition, the judging panel made their selections. This year's *Best of Show*, by photographer Tanya Maxham, is shown below.

Each of the photographs that placed first, second and third in each of the categories will be on exhibit in the refuge visitor center for the next year. So, not only does the refuge have a successful photo contest, but the visitor center gets a changeable exhibit!

All contest winners can be viewed in this online gallery: http://www.fws.gov/uploadedFiles/2015_photocontest_winners.pdf



Photo: Tanya Maxham

Upcoming Events!

Saturday,
February 27th

*Merrimack River
Eagle Festival*

Friday, March 4th thru
Sunday, March 6th

*American Conserva-
tion Film Festival—
NORTH*

Saturday, June 18th

Let's Go Outside!

Friday, October 14th &
Saturday, October 15th

*Phabulous Photo
Weekend*

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