NEW YORK STATE

CONSERVATIONIST

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FEBRUARY 2019

MEET THE RED FOX

SIGHTS ALONG THE HUDSON | ICE FISHING | RELOCATING MUSSELS

Dear Reader,

One of my favorite things about the Northeast is the change of seasons, which gives us so many opportunities to enjoy the outdoors. In New York, we can cross-country ski in winter, head to a favorite lake with a fishing pole in hand when spring arrives, visit a river, stream or pristine lake to swim or paddle on hot summer days, or bask in the beautiful colors or venture afield in the fall.

For more than 70 years, *Conservationist* magazine has encouraged people to enjoy the outdoors, with articles on activities accessible to everyone, as well as information on fish and wildlife, outdoor adventures, and the unique and beautiful resources found across the State.

In this issue, we highlight the joy of ice fishing, which is best enjoyed with friends and family. This issue also provides a glimpse of a few of the sites to be seen by riders traveling the rails along the Hudson River from Albany to New York City—or from the City to the Capital Region—and features several amazing spots to visit.

Readers will also learn how DEC biologists are protecting freshwater mussels in the Grasse River by relocating these creatures during a cleanup project that will improve river water quality—creating a healthier habitat for the mussels to return to when the project is finished. This issue highlights the State's efforts to transform a long-abandoned western themed park in the eastern Adirondacks into the new Frontier Town, with tent, RV, and equestrian camping, hiking and horse trails, a day-use recreation area, and even a nearby brewery.

This month's issue also features an inspiring article by a DEC biologist who reflects on his work along the Hudson River and some of the "oh-wow" moments he experienced.

DEC is committed to fulfilling its mission to protect our lands, air, and water, while also creating opportunities for people to experience nature. No matter the season, there's an amazing adventure awaiting you outdoors. I hope these articles will inspire you and your family and friends to get outside and discover some of the wonders that make New York special.

Best wishes,
Basil Seggos, Commissioner

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Andrew M. Cuomo, Governor of New York State

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FUN ON ICE

THE THRILL OF ICE FISHING

BY DOUG STANG | PHOTOS BY KELLY STANG

"Flag," yelled my son as he and several of his friends took off in the direction of a small blaze-orange flag flapping above a tip-up. Tip-ups have long been the most popular way to ice fish. Although their functionality improved with engineering and changes in material construction, tip-ups still consist of a spool of line, a set/trigger to keep the bait at a certain depth under the ice and the line wrapped on the spool, and a signal device (flag) to let you know when a fish has taken the bait.

"He is running with it," my son told his on-ice comrades as he slowly lifted the tip-up out of the hole and placed it on the ice, grabbed the line and, with a quick jerk of his wrist, set the hook. A hand-over-hand retrieve of the line with his now ungloved hands brought a chunky yellow perch up through the hole and onto the ice. High-fives all around to celebrate the catch and the contribution to the evening's fish fry.

While many think of Canada, Minnesota, Wisconsin, or Michigan as ice fishing destinations, ice fishing is a popular sport in New York as well. In DEC's most recent angler survey, approximately 22% of licensed anglers went ice fishing, and together spent more than 800,000 days fishing New York's "hard water." While most popular in New York's northern regions, ice fishing occurs across the state from Long Island to Plattsburgh to Dunkirk.

Ice fishing is fun for all ages and skill levels and gives everyone the opportunity to enjoy the outdoors on a winter day.

Yellow perch, walleye, sunfish, crappie, lake trout, northern pike, and chain pickerel are the most frequent targets of those willing to brave the cold to go ice fishing. In a few lakes, ice fishing is also permitted for landlocked (Atlantic) salmon, rainbow trout, and brown trout.

"Maya's turn is next," said my son. "She has never caught a fish through the ice before and has almost never been fishing," he added. Ice fishing is fun for all ages and skill levels and gives everyone an opportunity to enjoy the outdoors on those winter days that are just too nice to be inside. With my wife and sons, ice fishing is very much a family affair, and we regularly have a number of friends join us. Our Boy Scout Troop enjoyed an ice fishing trip a couple of years ago so much that it is now a much-anticipated annual event.

Ice fishing is a safe, fun activity, but a few precautions must be taken. Safe ice is essential (see page 4), along with proper outdoor winter clothing and footwear. Ice fishing requires different equipment than is used during the open-water season, and I encourage you to tag along on an ice fishing outing with a neighbor or friend to "test drive" the activity. The equipment is easily shared among all participants. Basic wooden tip-ups work great and will last a long time. I still use some tip-ups that I used as a boy and others that are hand-me-downs from my wife's grandfather. Instead of, or in addition to tip-ups, many use short fishing rods that are often referred to as jigging rods due to the up and down (or jigging) motion used to attract fish to the lures and bait. You will also need to make a hole in the ice. I recently upgraded to a power auger (ice drill), but the kids still enjoy using the hand auger—it keeps them busy and is a good use of their abounding energy.

Two years ago, I added an electronic fish finder to the equipment I load into my ice fishing sled before leaving home. The electronic fish finder helps determine the appropriate depth of water to set your baits and to fish your lures. It also focuses the kids' attention while they are "jigging a hole"—a sort of on-ice video game as they can see (mark) their lure, the

Ice Safety

- Safe ice is the number one consideration when ice fishing, with ice thickness and condition being the main safety concerns. A minimum of 4 inches of solid (clear) ice or 8 inches of white or "snow ice" (which is half as strong as clear ice) is the general rule for safely walking on the ice. Keep in mind that most waterbodies do not freeze evenly, so if you are unsure of the ice thickness, drill regular test holes as you go, at least every 150 feet.
- Avoid ice near moving/open water or around docks because it is often unsafe. Some owners use "bubblers" to protect their docks, which can produce thin, unsafe ice some distance away. Be especially alert in areas near shore, over moving bodies of water, and on lakes and ponds where streams enter or exit.
- Always carry ice safety picks (two handles with spike points) to help you get out of the water should you break through the ice. You can purchase them or make your own with dowels and nails.
- Always let someone know where you will be fishing and when you plan on returning. For adults, fishing with a friend is a good idea. Children should be accompanied by an adult. Using good judgment is essential.

depth of the fish, and try to match the two. The newer fish finders are sensitive enough to watch the fish swim to the lure (or the angler move the lure to the fish), much to the delight of those fishing.

We had been out on the ice for a couple of hours, drilling holes, setting up tip-ups, fishing with small jigging rods, drinking hot chocolate, and eating leftover holiday cookies, with only an occasional flag or bite on the jigging rod resulting in a few yellow perch and black crappie. Hopefully, that was about to change as more "blips" began to show up on the electronic fish finder—indicating a school of fish had moved into the area of the lake we were fishing.

These ice anglers are anticipating what's on the end of the line as they haul it in.

Success!

"Flag," shouted one of the kids, and off they went again. This time, Maya brought a nice chain pickerel up through the hole via her handiwork, resulting in a big smile and joyful scream—again, high-fives all around. After measuring the pickerel to make sure it met the legal minimum length, we spent a couple of minutes looking at the differences between the chain pickerel and the yellow perch, particularly the pickerel's prominent, sharp teeth, and then we added the pickerel to our collection for dinner.

"Flag" was cried again as the group sprinted toward the tip-up with the waving flag. When another flag went up, I silently made my way toward the most recently tripped device hoping that I, too, would get to pull a fish up through the ice, only to have the flag noticed by the others; half the crew was suddenly diverted to that tip-up. Two more yellow perch came up through the ice and were added to the day's bounty. The next flag produced a large smallmouth bass that was promptly returned down the hole as the season was closed. As the number of fish slated for dinner grew, so did the smiles on the faces of the anglers.

Looks like I won't get to enjoy pulling any fish up through the ice today; I am just not quick enough (anymore) to beat those youngsters to the tip-ups. That said, I still get to do my part and follow-up with rebaiting and resetting the tip-ups. I have my own jigging rod too, even if it's not next to the fish finder. I am also quite certain that my sons and their friends will "allow" me to fillet and prepare the day's catch for our fish fry dinner.

The day continued with flurries of activity on the tip-ups and the jigging rods followed by some lulls in the action. Down time was filled with hole drilling competitions, snowball fights, playing Frisbee, and consuming several thermoses of hot chocolate, boxes of cookies, and lunch.

"Flag," yelled one of my son's friends as they all took off again—it never gets old.

Avid angler **Doug Stang** is the assistant director for DEC's Division of Fish and Wildlife.

A sled helps you carry your gear to your selected fishing spot.

Perch make a great dinner.

Ice Fishing Gear

Ice fishing requires different equipment than is used during the rest of the year, and having the right equipment will make your outing enjoyable and (hopefully) successful. Use this checklist as a guideline:

- **Ice auger—large drill (to cut a hole in the ice)**
- **Sled to transport gear**
- **Scoop to clear the drilled hole of ice**
- **Tip-up(s) and/or small fishing rod(s) —often referred to as jigging rods**
- **Bait and bait bucket**
- **Lures (jigs)**
- **Leader (for tip-ups), hooks, weights**
- **Warm clothes (including hats, gloves, mittens)**
- **Warm, waterproof footwear**
- **Sunglasses and sunscreen**
- **Food, snacks, drinks**

Please see: www.dec.ny.gov/docs/fish_marine_pdf/gsfishing9.pdf for information and tips on getting started ice fishing.

Note: A fishing license is required for people aged 16 years and older, and you can use up to seven lines (combination of rods, hand lines, tip-ups, etc.) per person while ice fishing. Mark your calendars for next year—To foster interest in ice fishing, each year the weekend preceding President's Day in February is designated as free fishing days. During free fishing days, a fishing license is not required, but all other fishing rules and regulations are in effect.

Carl Heilman II

THE NATURE OF SURPRISE

BY SEAN MADDEN | PHOTOS BY AUTHOR, UNLESS OTHERWISE NOTED

My family and I feel a deep personal connection to the Hudson River. The river originally drew me to New York for an AmeriCorps position, and I met my wife in the Hudson Highlands. From its headwaters in the Adirondacks to the banks of our hometown of Albany, through the tidal estuary and out past New York City, the river is special; my family has spent many hours basking in the river's natural beauty and rich history. And so, I feel grateful to work on the Hudson River as part of my job at DEC.

As a DEC biologist for over a decade, I have worked on an amazing diversity of studies related to Hudson River fish and wildlife. But when I reflect on my work, I am struck that some of my fondest memories are from unexpected finds, little surprises, and "Oh wow" moments that had nothing to do with the study objectives. These moments remind me of that thrill of discovery I felt as kid flipping over logs in the woods and poking around local tidal creeks. It's one of the reasons I chose a biology career, and that thrill has never left me. It's one of the greatest gifts about being out in nature: you never know what you are going to find. Here are a few of my favorite surprises from my years in the field.

Birds

For several years, I looked forward to checking tree swallow nest boxes along the upper Hudson River in spring. Monitoring tree swallow colonies was a wonderful way to welcome the season. I followed the annual rituals as the swallows arrived and began building nests—lining them with feathers to delicately cradle the eggs—right up through when the chicks hatched and eventually fledged. Most of the boxes were occupied by tree swallows, but finding the occasional eastern bluebird nest, with tiny hatchlings with fuzzy-feathered little Mohawks down their heads and back, was always a treat.

One morning I found what looked like a small-scale horror movie set on top of one of the boxes. Blood and guts of some creature I couldn't identify were hanging off the box. I encountered this same scene several times throughout the spring, but couldn't figure out what creature was getting ripped apart, or what was doing the ripping. Finally, one morning, the mystery—or at least part of it— was solved. This time I found an eastern garter snake draped off the box with much of its body torn, but the head clearly intact. Perhaps the gravel-crunching of my truck tires caused whatever was eating the snake to fly off. I never did solve the mystery of what was eating the snakes and draping them off the tree swallow boxes, but I can picture a small hawk or owl perched up there enjoying a delicious meal.

Tree swallow nest

Juvenile squirrel ready to return to its nest.

"I am lucky to have a job that enables me to get out, often in out-of-the-way places where I can experience things not many have a chance to see."

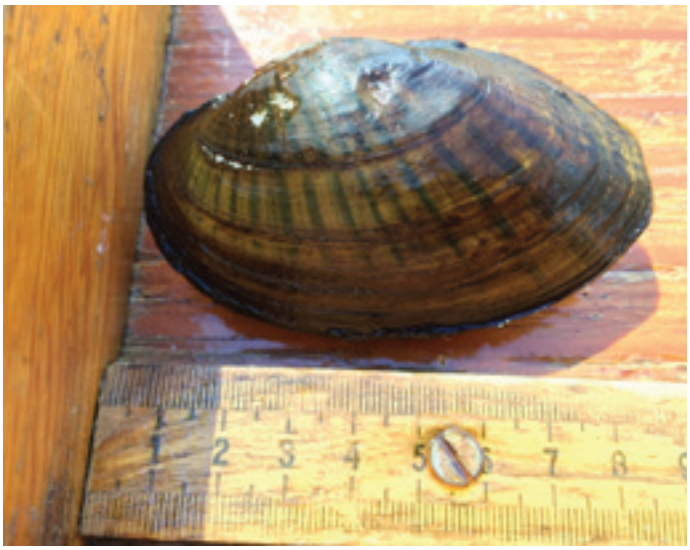
Another project had me helping put up more than 70 nest boxes along the floodplain of the Hudson River to study egg contaminants in eastern screech owls. The owls used the boxes, but after the study finished, the boxes were not maintained. Ten years later, I decided to check on the condition of the boxes to see if they were being utilized and if they could be used in future studies. Since the boxes were mounted on trees about fifteen feet off the ground, you needed a ladder to access them. This required traversing boot-stealing wetland mud, crashing through dense honeysuckle thickets, and/or dancing through stinging nettles (wishing I wore thicker pants), all while lugging a ladder. When I reached the boxes, I discovered that many of them had rotted and fallen off the trees or been claimed by squirrels.

Having had a few run-ins with gray squirrels and a couple of white-footed mice clearly upset by my disturbing their nests (which can be unsettling 15 feet above the ground), I began approaching the boxes more cautiously, first knocking on the outside before slowly and deliberately opening the lid. One box wouldn't open, and so I pulled a little harder, hugging the tree with one arm so I wouldn't lose my balance. Finally, the lid popped and a fragrant, waxy scent filled the air. The box was filled with columns of beautiful honeycomb. Fortunately, the nest wasn't active, and I speculated on where the bees had gone. Had the hive outgrown the space and swarmed to find a new home, or was the box not insulated enough to survive our cold winters? Whatever the reason, I'll never forget the pleasant smell that wafted out of the box.

Mussels

New York has an amazing diversity of native freshwater mussels, often called pearly mussels because of the beautiful nacre (mother-of-pearl) inside the shell. Mussels

Eastern lampmussel *(Lampsilis radiata)*



filter large volumes of water, help stabilize sediments, and provide a food source to fish and wildlife. Some mussels can live for decades, possibly even 100 years.

During the Hudson River PCB dredging project, DEC worked with the NYS Museum and U.S. Geological Survey to survey the Upper Hudson to find out the status of the freshwater mussel populations. A diver would place a square frame—called a quadrat—in designated sample sites, then scoop all the sediment within the quadrat into a mesh bag. Any mussels in the sample were counted, measured, and identified to species. I was excited to be working on this study and learning so much about this unique group of organisms.

One time the diver returned to the surface and announced she had discovered the whole lower unit of a boat motor. We decided we should bring it up and used a rope to raise it and rest it on the gunwale of the boat. While tilting the heavier prop end higher over the water, a dark, oozing mass suddenly slid out of the housing into the boat. I assumed it was a glob of mud, but then it wiggled and stretched into the unmistakable shape of a foot-long mudpuppy—New York's second largest salamander. After admiring it, we released it back into the river. We felt a little guilty about removing its home but were confident it would easily find some other crevice to occupy.

Mink and Mice

I've worked on several studies about American mink along the Hudson River, but ironically, I rarely saw them. When I did find one, it was usually dead along the side of the road, a victim of a vehicle strike. More often I'd look for mink sign, like scat or tracks, or collect mink prey to better understand which dietary items carry more PCBs.

One day, a colleague and I were checking a sample site along a drift fence, when we noticed some movement among the leaf litter. Checking the spot, we spotted a mouse hopping away. The drift fence kept it from escaping and we were able to scoop it into a sample bag. To our surprise, it was a meadow jumping mouse (not one of our target species). We set the mouse on a log, where it huddled for a minute. Say what you will about mice when they are pillaging your pantry, but this creature was beautiful. Its brown-furred body had smatterings of black hairs, creating a dark streak down its back. The mouse tucked itself into a delicate, tear-drop shape until it finally mustered the courage to make a run—really, a leap—for it, bounding on its hind legs almost like a kangaroo with its long tail stretched out for balance. We collected many other mice, but this jumping mouse was an unexpected treat.

On another early morning at the same site, I was walking through the open woods when I heard the distinctive "croaking" of ravens. Following the calls, I came upon a large spruce, its branches laden with ravens. I stood frozen for a moment before my presence caused an explosion of motion as dozens of ravens took flight from their roosting tree, croaking. The early morning sunlight glinted off their feathers. Stumbling upon these ravens was another unexpected treat that for me foretold the start of a great day in the field.

Frogs

During my study of PCB concentrations in mink prey, I also collected frogs at different life stages: larval (tadpole), juvenile, and adult. I used some minnow traps for tadpoles and pitfall traps for juveniles and adults, but I had the most success catching frogs of all life stages —mostly green frogs and bullfrogs, but also northern leopard frogs—using a standard long-handled D-frame dip net.

Catching frogs with a long-handled dip net is fun—just a little bit of patience to wait for the right moment, then a lunge with a quick flick of the wrist to get a twist in the net bag so the frog stays in there. I liken it to a great blue heron, wading through the wetlands, stalking prey slowly and deliberately. Because you're in a heightened sense of focus, you notice little things, like the newly-hatched turtle I spotted swimming near my leg. When I lifted it, I saw it was a painted turtle, its shell about the size of a quarter. It felt magical finding this turtle in this backwater pool along the Hudson River and reminded me of why we do this kind of work—cleaning up legacy

Jumping mouse

contaminants like PCBs—and why we struggle to protect habitat. Thinking about my kids, I let the turtle go and watched it disappear into the muck.

A few weeks later, I was in the Hudson River Estuary near Stockport Creek (Columbia County), once again collecting frogs. The summer was fading and I had to catch a few more green frogs to reach my target sample sizes for the area. I decided to try a wetland wedged between a steep hillside and the railroad tracks on a former farm property that was transitioning to conservation land (not long after, this site became Scenic Hudson's Harrier Hill Park). The tide was out and it was muddy work. The juvenile frogs easily evaded me in the tall cattails. I lunged for one frog and the wooden shaft of my net snapped. With my net broken, I relied on my hands, sometimes crawling on all fours through the muck.

The adult frogs seemed to be hanging out on the bank, often under overhanging tangles of tree roots hollowed out by tidal action. I was on my belly reaching in, trying to extract frogs and grab them before they could escape. I was filthy, hot, and tired, and probably missed more frogs than I caught, but it was so much fun. I felt like a kid again trying to catch frogs in the vernal pools near my house.

When I was done, I started back up the hill and across the old farm field. I stopped to admire the view of the Hudson Valley and realized I was standing under an old apple tree filled with big, ripe, red apples. I grabbed one and took a bite. After hours of struggling in the mud, the last thing I expected was to find a perfect apple, but to this day I swear that was the best apple I ever tasted.

I am lucky to have a job that enables me to get out, often in out-of-the-way places where I can experience things not many have a chance to see. I will always encourage people who are drawn to the natural world to pursue a career in the biological sciences. But you don't have to be a biologist to experience nature. Whether you are in the backwaters of the Hudson River, your suburban backyard, or a city park, open yourself up to the surprises nature has to offer. If you remain still and open your senses, you'll discover the surprises New York's natural resources have to reveal.

Sean Madden is a biologist in DEC's Bureau of Ecosystem Health in Albany.

GRASSE RIVER pearls

DEC protects mussels through relocation

BY REBECCA QUAIL AND CORBIN GOSIER | PHOTOS PROVIDED BY AUTHORS

It is an exceptionally hot early September day; we're keeping a close eye on two of our divers as they feel their way along the bottom of the lower Grasse River searching for treasure. One diver, Dr. Denise Mayer of the New York State Museum, returns to the surface and hands us a nylon bag filled with riches. We carefully empty the bag into a cooler filled with river water and get to work tallying the haul. We marvel, once again, at how much treasure the Grasse River holds and the richness of this overlooked resource. On this day it was not gold, silver, or relics we were recovering; instead, it was a treasure of pearly mussels.

The Grasse River is located near the northern border of New York State, in the Town of Massena. As a tributary to the St. Lawrence River, and due to its close proximity to the Moses-Saunders Power Dam, the river was an important waterway for the development of manufacturing in northern New York. However, prior to the mid-1970s, stormwater and treated wastewater containing polychlorinated biphenyls (PCBs) were discharged into the river from local industrial facilities through a series of outfalls. Even today, PCBs remain in the sediments and water column, posing health risks to humans who consume fish, and to the fish and wildlife that live in the river.

This year, the last seven miles of the Grasse River will undergo the cleanup, or remedy, necessary to reduce the PCBs. The remedy will include two main actions. In shallow water, dredging will remove contaminated sediments. In deep water, at least a foot of clean sand will be placed over the contaminated sediments. These actions will significantly reduce fish and wildlife exposure to PCBs, and ultimately protect people who live along the shores or recreate on the river.

While reducing the environmental consequences of historical contamination, the remedy has its own potential environmental cost. Living in the contaminated sediments is a robust and diverse community of freshwater or "pearly" mussels. Pearly mussels are native freshwater "clams" that can be found in waterbodies throughout New York State. Pearly mussels get their name from the shiny and colorful coating on the inside of their shell, called mother-of-pearl. This coating was used by Native Americans as a decorative feature for clothing and art, and later by the button industry.

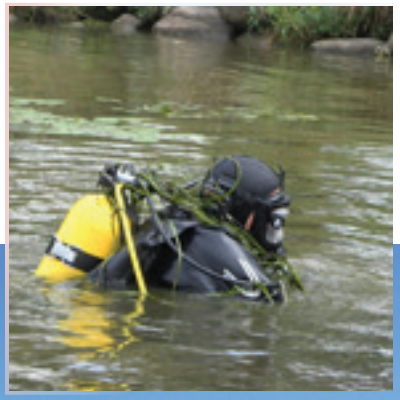
Based on recent surveys, DEC staff estimate about two million pearly mussels representing at least 10 species are present in the area affected by the Grasse River remedy. Unfortunately, as the remedy is implemented, these mussels will be unable to escape the fatal impacts, causing the loss of about 80% of the population.

Statewide, about 50 species of pearly mussels are known to occur in our lakes, rivers, and streams. Usually buried in the sediment, pearly mussels are rarely noticed by the casual observer, but are major engineers in the sediments of rivers and lakes. In a healthy system, mussels can compose most of the biomass, influencing nutrient cycling, creating habitat structure, and providing an important food source for fish and wildlife. As filter feeders, freshwater mussels obtain their food by filtering out microscopic organisms, mostly microalgae, from the water column, providing a natural filtration system to improve water quality.

In recent years, scientists have come to understand that most species of native freshwater mussels are imperiled due to largescale changes to the ecosystems in which they live. Historical overharvest, siltation (fine sediment or silt in the water) from agriculture and silviculture, nutrient pollution, and habitat alteration have impacted these species, sometimes eliminating them from large areas of river. Additionally, invasive species, especially zebra mussels, have caused widespread population impacts. In the St. Lawrence River, zebra mussels have eliminated many populations of pearly mussels by attaching to the shell in overwhelming numbers, ultimately killing the mussel.

Two aspects of the life history of pearly mussels make them especially susceptible to harm from the Grasse River cleanup remedy. First, they have a limited ability to move, depending on a simple foot to burrow into the sediment or slowly drag along the bottom of a stream. Second, they are slow-growing and long-lived. Where most stream invertebrates can reproduce several times a year and quickly disperse to new areas, pearly mussels require many years, usually at least seven, to become large enough to reproduce. Therefore, recolonization of the mussels after the remedy is completed will be slow—it may take decades. A few of the species in the Grasse River are so rare, biologists do not know if enough will remain to recover at all.

Pearly mussels have a unique reproductive strategy. Adults release their larvae (glochidia), which attach to the gills of a fish host. The glochidia live parasitically in fish gills until they drop off into the sediments as juvenile mussel, causing no harm to the fish. This relationship with



Divers collect freshwater mussels from the river bottom of the Grasse River to be relocated to another portion of the river unaffected by the PCB clean-up. Pictured left to right are Dr.Denise Mayer of the NYS Museum, and Corbin Gosier, a DEC biologist.

fish is what allows mussels to disperse long distances and will be key to their recovery in the Grasse River after the project is complete.

To try to offset the loss of pearly mussels in the Grasse River, DEC initiated a mussel relocation project in 2017. This project will assist with recolonization of small colonies of adult mussels in areas that would be affected by the remedy. Though moving mussels out of harm's way is becoming a common practice to protect these organisms during large projects, there were several challenges we needed to overcome for the Grasse River project to be successful. The first was how best to locate and collect these freshwater mussels.

In shallow rivers, biologists usually wade through the water using five-gallon buckets fitted with a clear plastic bottom that allows them to see through the water and spot any mussels buried in the sediment. However, the water in this portion of the Grasse River is too deep for wading. Instead, divers locate the mussels along the river bottom by either sight or feel and collect them in nylon bags. Safely diving to collect mussels requires many people with expertise in both diving and mussels. DEC staff worked with two key partner organizations, the New York State Museum and the Saint Regis Mohawk Tribe, to assemble the necessary crew and expertise. (See below)

The second challenge was what to do with the mussels once they were collected. Dr. Mayer recommended using a wire mesh cage to collect mussels in areas where they would otherwise be lost, then hold them outside the affected areas and later replace them when safe conditions returned. In addition to providing adult mussels to jumpstart recolonization, preserving individual mussels will retain some of the genetic diversity that will be lost during the remedy. DEC technicians built a modified design of a cage used by the U.S. Fish and Wildlife Service for mussel propagation. The cages were set into the river bottom sediments and can hold approximately 100 mussels each. Once filled with mussels, the cages were removed and placed in areas of the river where they would not be subjected to the remedy or natural ice scour.

While attempting to collect individuals of all mussel species, we encountered plenty of additional mussels. Since we had limited space in the cages, we released extra collected mussels into areas of the river that will not be affected by the cleanup project. We are hoping some portion of these released mussels will continue to survive and contribute to recolonization as well.

In October of 2017, we moved the first 20 cages containing nearly 2,000 mussels into deeper water. After digitally recording the location using GPS, we bid the mussels farewell for the year. We hoped that the wire mesh would allow enough waterflow so the mussels would have plenty of food to eat, but we did not know if they would survive any added stress from being confined at such densities or in new substrate. When we returned this past summer and retrieved the cages from the deep water, we discovered that nearly 100 percent of the caged mussels had survived!

Encouraged by the success of the first year, we continued mussel collection in 2018. To date, we have collected more than 17,000 mussels, composed of 8 species. Of these, more than 14,000 have been relocated to areas of the Grasse River outside the cleanup area. The remaining 3,000 are now in 33 holding cages. Though challenging to implement, and with results uncertain, we have proven that at least in the short-term, pearly mussels will survive removal

Note: DEC is grateful to our partners working on this project; the Saint Regis Mohawk Tribe (SRMT), New York State Museum, and the public, like you. This project was supported by the Return a Gift to Wildlife Fund, which is comprised of voluntary contributions from New York State taxpayers. SRMT was instrumental in providing local knowledge of mussels in the Grasse River and assisting in mussel collection. Expertise on mussel identification, handling, scientific review, and diving has been provided by Dr. Denise Mayer of the New York State Museum.

To see video of underwater mussel collection, visit: **https://youtube.com/watch?v=nDk-9yGV-w0**

DEC Fish and Wildlife Technicians, Sierra Hellwitz and Gavin Greco, check on mussels.

Grasse River Mussels

Based on the results of this study and other surveys, we know that at least 10 species of pearly mussels inhabit this seven-mile reach of the Grasse River. (Those with an asterisk are currently being held in cages.)

- Triangle floater (*Alasmidonta undulata*)*
- Eastern floater (*Pyganodon cataracta*)*
- Creeper (*Strophitus undulates*)
- Paper pondshell (*Utterbackia imbecillis*)*
- Plain pocketbook (*Lampsilis cardium*)
- Eastern lampmussel (*Lampsilis radiata*)*
- Fragile papershell (*Leptodea fragilis*)*
- Eastern pondmussel (*Ligumia nasuta*)*
- Pink heelsplitter (*Potamilus alatus*)*
- Eastern elliptio (*Elliptio complanata*)*

from the sediment and overwintering in the holding cages. We are pleased with the results to date, but the project is far from over; the mussels will need to be held for up to three years before the remediation is completed to the extent that will allow placement of the new colonies. Some additional assistance is planned, with an expanded effort to relocate mussels outside the remedy footprint, and a goal of moving at least 30 percent of the affected pearly mussel population.

For the DEC team, the true treasure recovered from the Grasse River was a string of pearls that happened in various moments on the river: pulling up a pink heelsplitter as big as our hand and probably older than everyone working that day; finding a mussel bed so dense, we collected over 2,000 mussels in a single day; a pearly mussel that showed signs of escaping the fatal grip of zebra mussels; the first encounter with a new species in the river; a pair of smallmouth bass shielding their young as they sheltered next to the mussels in the cage; the juvenile mussel, smaller than a fingerprint, demonstrating the tenacity of the mussel population; and finding mussel bed "nurseries" where small juvenile mussels were burrowed next to nearly every adult. Each moment was a window into a part of the world most people never see. Our hope is that this project can be enough to preserve these treasures, seen and unseen, for future generations.

Rebecca Quail and **Corbin Gosier** work in DEC's Bureau of Ecosystem Health in Albany.

Some freshwater mussels like this pink heelsplitter can get quite large.

A pink heelsplitter mussel

SPECIES SPOTLIGHT

THE RED FOX

BY JOHN SHEA

Eric Dresser

Editor's Note: *New York State is blessed with a richness of fish, wildlife, and insect species. From time to time we'd like to highlight some of these species that call New York home, beginning with the red fox, a familiar sight in the winter. If you have a species you'd like to see profiled, send us your suggestion and you might see it highlighted here.*

Bill Banaszewski

It's winter in New York State, and a red fox is on the hunt. The fox's striking reddish-orange coat makes it easy to spot as it moves across a snow-covered field. Suddenly, it slows down and creeps forward before coming to a complete stop. Beneath the snow, mice and voles are busy moving about through a series of tunnels they've built to escape from the elements above. The fox stares down, listening intently as it tilts its head to one side and then the other, using its exceptional sense of hearing to pinpoint the exact location of its target. In a technique known as *mousing*, the fox leaps up into the air and comes down headfirst, crashing through the snow and onto its unsuspecting prey below.

The red fox is a member of the Canidae (dog) family and is the most widely distributed carnivore in the world. It is one of two species of foxes that can be found in New York; the other being the gray fox.

Description

Red fox are aptly named for the reddish-colored fur that covers the majority of their body, including the head and upperparts. The legs, feet, and backs of the large, sharply-pointed ears are black, while the chin, throat, chest, and belly are white. Their long, bushy tails are primarily red mixed with black, and have a white tip. The small, slender bodies and long legs are designed for speed and agility. They weigh about 10-15 pounds and are 48-57 inches long, with the tail accounting for nearly half that length.

Habitat, Diet, and Behavior

Red fox are common residents throughout most of New York State. They prefer a mixture of forested and open areas, and especially like the transitional zone (or edge) between these habitats. This landscape provides quality foraging opportunities and cover from predators.


Bill Banaszewski


Robert Cook


Bill Banaszewski

While we tend to associate red fox with rural or "wilder" areas, they have become increasingly more common in suburban and sometimes even urban areas. They are extremely adaptable, and human-modified landscapes like golf courses, parks, woodlots, lawns, and cemeteries provide appropriate mixes of habitats. Red fox also require a suitable den site for raising young. They may dig their own dens, but most often will improve on an abandoned woodchuck burrow. They may also den under fallen tree trunks, in hollow logs, or under sheds.

As *omnivores*, red fox have a variable diet, preferring small mammals such as mice, voles, squirrels, rabbits, and woodchucks. They will also take advantage of the seasonal availability of ground-nesting birds and their eggs, amphibians and reptiles, invertebrates, and fruits and berries. Red fox commonly use food caches to store surplus food, which they may return to in times of food shortage. Generally solitary hunters, they rely on their keen sense of smell and hearing to locate prey.

Red fox are most active between dawn and dusk, although it is not unusual to see one during the day, especially in spring, when the adults are busy working around the clock to provide enough food for their young. Adults frequently patrol the perimeters of their well-defined territories, marking the boundaries with feces and urine, which function as warnings to other fox to keep out. They will fiercely defend their territories against intruders, and as a result, red fox territories rarely overlap.

Life History

In New York, red fox breed from late December through March, with the peak in January and February. They tend to be monogamous and will mate for life. After a gestation period of 52 days, females give birth to a litter of 3-6 pups. The pups are born blind and are covered by short dark fur that will begin to be replaced by red fur after a few weeks. Most fox have more than one den and will move their young if they are disturbed. The young fox begin to emerge from the den after 4-5 weeks, but remain near the entrance, playing with each other and with prey items the adults bring to them. Young are weaned at 12 weeks and begin to join the adults on hunting expeditions, where they learn to catch their own prey. The young begin to disperse in the fall and are sexually mature by 10 months of age, although they may wait until the following winter to breed.

The primary predator of the red fox is its larger canid cousin, the coyote. Coyotes have zero tolerance for red fox since they both compete for the same food resources. As a result, red fox will actively avoid coyote territories. The increase in coyote populations in recent decades is thought to be a significant factor pushing red fox into suburban and urban areas.

Diseases

There are two notable diseases that affect red fox in New York: sarcoptic mange and rabies. Sarcoptic mange is caused by microscopic mites that burrow into the skin, causing extreme irritation and hair loss. While some fox may recover from mange, more often it proves to be fatal, as the animals either starve or succumb to hypothermia as winter sets in. Red fox will also occasionally become infected by rabies. Rabies is caused by a virus that affects the central nervous system, resulting in symptoms such as unprovoked aggression, paralysis, and disorientation.

John Shea is a Fish and Wildlife Technician in DEC's Wildlife Health Unit in Delmar.

Fun Facts

- Male red fox are called dogs, while females are called vixens.
- Red fox grow thicker fur for the winter and wrap their long bushy tails around themselves to keep warm.
- Red fox dens often have multiple entrances.
- The loud, shrill scream of a red fox is often confused for a human in distress, and can seem especially eerie when heard at night.
- A recent study indicated that red fox may be able to use the earth's magnetic field to hunt.

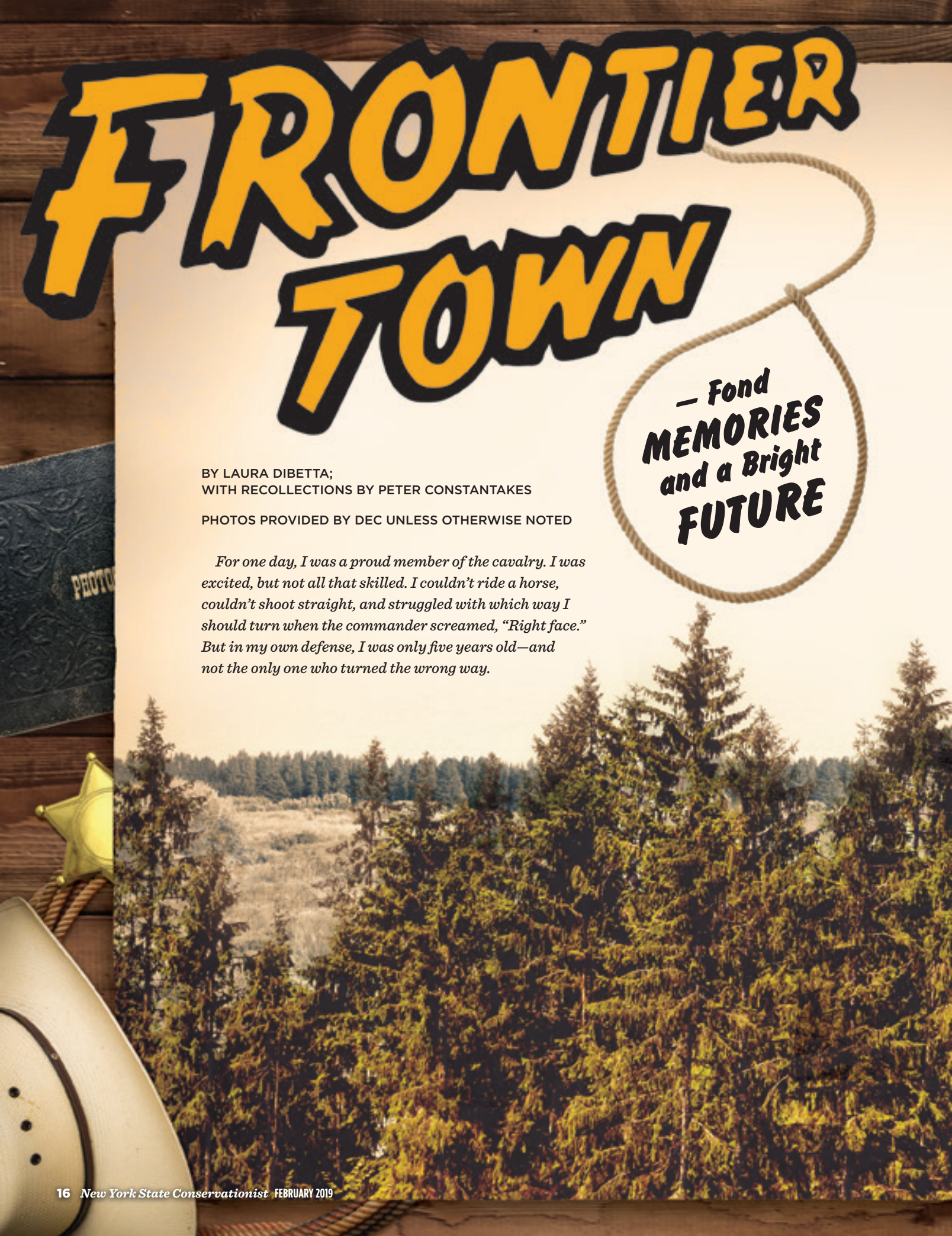
FRONTIER TOWN

— Fond MEMORIES and a Bright FUTURE

BY LAURA DIBETTA;
WITH RECOLLECTIONS BY PETER CONSTANTAKES

PHOTOS PROVIDED BY DEC UNLESS OTHERWISE NOTED

For one day, I was a proud member of the cavalry. I was excited, but not all that skilled. I couldn't ride a horse, couldn't shoot straight, and struggled with which way I should turn when the commander screamed, "Right face." But in my own defense, I was only five years old—and not the only one who turned the wrong way.



I loved that day I spent at Frontier Town a long time ago. Cowboy hats and cap guns made me feel special. I cheered when the sheriff nabbed the train robbers and laughed when the villains were strapped to the dunking machine. So, it was a sad day in the late 90's when I heard the park was shutting down. I had not been there in decades and was too old to "re-enlist" in the cavalry, yet I still felt a sense of loss.

DEC Commissioner Basil Seggos announcing the completion of the equestrian camping and day-use areas at the new Frontier Town, located off Route 9 from exit 29 off the Northway (I-87).

Frontier Town is now being reborn. New York State teamed up with public and private partners to develop a plan to revive the former Frontier Town site. When Governor Cuomo announced the "Upper Hudson Recreation Hub Master Plan" to redevelop the site of the former Frontier Town western themed park in his January 2017 State of the State message, it brought back many wonderful, old memories for many people, and optimism that the site would once again be a great adventure for families and an important part of the Adirondacks experience.

Circa 1960s

The inviting entrance to Frontier Town, "Gateway to the Adirondacks"

The transformation of the property into a "Gateway to the Adirondacks" will create the next chapter in the history of Frontier Town. The site will be home to the new Frontier Town Campground, Equestrian and Day-Use Area, which will be open this summer for the public to enjoy. And while the cavalry won't be returning, visitors will have plenty of opportunities to enjoy their own Adirondack adventures, which, hopefully, will extend the spirit of the old Frontier Town to new generations.

The vision is to make the nearly 300-acre property a hub to access world-class outdoor recreation experiences in the eastern region of the Adirondack Park, which will also support local economies.

The Master Plan envisions an attractive, multi-use, year-round destination that will connect visitors to the region's forest lands and trails, lakes and rivers, storied history, and local businesses. The key component of the Plan is the $19 million state investment to develop the Campground, Equestrian and Day-Use Area on approximately 91 acres, complementing the site's natural features and typography. In addition, the state is working with public and private partners to bring to life other elements envisioned in the Master Plan.

Along with the DEC facilities, Paradox Brewery of Schroon Lake is developing a multimillion-dollar brewing and canning facility at the site, with a tasting room expected to be open in 2019. This is a great link to the western theme of the past Frontier Town.

Visitors to the new Frontier Town can bring their horses and explore the beautiful Adirondacks on horseback.

(Note: My Frontier Town experience was too long ago for me to remember if there was a saloon when I served in the cavalry, but now that I'm older, it sounds like an intriguing amenity).

Visitors to this new Gateway will also be encouraged to venture off-site to explore the many recreation opportunities in the Adirondack Park. As a starting point for outdoor exploration and adventure, the site will link to existing and proposed community connection trails, including the Schroon Lake-North Hudson Snowmobile trail, commonly known as the "Ti to Co Line Trail." Trail connections will allow people to access the Hammond Pond Wild Forest to the east, and a community connection trail network to the west, linking the public to amenities within the communities of North Hudson, Newcomb, Minerva, Long Lake, and Indian Lake. This trail network will travel through the Blue Ridge and Hudson River Hyslop Conservation Easement lands, the Vanderwhacker Wild Forest, the Camp Santanoni Historic Area, and the Lake Harris Campground. It will provide access to the breathtaking Boreas Ponds in the High Peaks Wilderness and the Essex Chain Lakes Complex.

Unlike traditional base camps, you'll find many comforts at the new Frontier Town. You can stay in the equestrian camping area, which features 33 equestrian campsites, and will have Americans with Disabilities Act (ADA)-compliant features and electric hookups. There is also a recreational vehicle (RV) and trailer camping area with electric hookups for those who prefer more luxurious camping. Or you can rough it like true pioneers at one of the 45 tent camping sites. And don't worry, that area includes two shower buildings, two pavilions, and a playground. Within the campground, there is a day-use area on the shore of the Schroon River, and just outside of the entrance there is a parking area to accommodate four-season public use of nearby trails. So, no matter your preferences, all will always be welcome.

As one long-time local noted, this is "the beginning of a new and exciting phase of opening Essex County and the Adirondacks for the use and enjoyment of all New Yorkers." The old Frontier Town was a single-theme recreation destination. The redevelopment will expand the experience, incorporating the beautiful local resources. Visitors will be able to easily access recreation trails on public lands for hiking, biking, skiing, and snowmobiling amidst the picturesque Adirondack Park. While you won't be able to enlist in the cavalry, even the most energetic children (and adults) will be active and entertained. It's a new and exciting chapter that builds on the adventure spirit and legacy of the Adirondacks.

I only visited Frontier Town that one time. My brother and sister were older than me and approaching the age where they had other ideas on where our family should go and what we should do during our summer vacation. It was much later that I, too, discovered how much more there is to do in that region of the Adirondacks—even for those who are novices to outdoor adventure.

Hearing about the plan to redevelop Frontier Town made me look back and look ahead at the same time. I'm excited that the pioneering spirit of Frontier Town will rise again. Though it will be a different experience, it will offer thrills and excitement that will create lasting memories for new generations. Memories they will cherish for a long time, like those I still think about from a childhood adventure so many years ago.

Laura DiBetta is the director of outdoor recreation in DEC's Albany office. **Peter Constantakes** is assistant editor for *Conservationist.*

Map of proposed layout for the new Frontier Town facility

photo credit: Town of North Hudson

NEW YORK'S FISH PATHOLOGY LAB

A History of Ensuring Healthy Fish and Great Fishing

BY GEOF ECKERLIN | PHOTOS PROVIDED BY DEC UNLESS OTHERWISE NOTED

Since the late 1930s, the NYS fish pathology lab has been continuously monitoring and treating fish disease in DEC's twelve fish hatcheries. Officially known as the Fish Disease Control Unit (FDCU), the lab is still operating within its original footprint on the grounds of the Rome Fish Hatchery.

The FDCU primarily serves as the fish doctor's office and medicine chest for all the state hatcheries. The duties of the fish health program include the maintenance of disease resistant broodstock at the Rome Hatchery and investigating fish kills (wild or in hatcheries) anywhere in the state. The combination of these tasks, and associated efforts, keeps our small full-time staff of three on the move.

Our pathologist and biologist administer and conduct fish health inspections on samples of fish produced in our hatchery system each year. Each inspection consists of testing for eight very harmful fish pathogens (four viral, three bacterial, and one protozoal)—a list agreed to under an agreement between Great Lakes states and Canadian provinces. To perform these tests, FDCU utilizes internationally accepted "gold standard" techniques and equipment. If fish are found to be infected with any of these pathogens, they cannot be released to the wild. By continually inspecting our fish and not releasing any sick fish into state waters, we are able to protect native fish populations, as well as the fish in other hatcheries.

As the fish health experts in DEC's hatchery system, the FDCU regularly offers fish health training for all fish culturists in the system. This training allows all hatchery staff to serve as our "eyes and ears" in the field, helping to quickly diagnose and treat common fish health issues, like "ich" (a parasitic disease also known as white spot disease), at our facilities.

At the FDCU, we maintain world-renowned, disease-resistant brook and brown trout broodstock fish, known as "Rome strain" trout. These brook and brown trout are resistant to a particularly harmful disease in hatcheries, known as furunculosis, and form the basis of our domestic trout programs across the state. Eggs from Rome are shipped annually to DEC's Catskill and Randolph hatcheries, where they, in turn, become broodstock for all brook and brown trout we stock in New York. Requests for Rome strain eggs also have been filled to several other states in the eastern U.S., along with a few shipments of brown trout eggs sent to Europe.

New York's first state fish pathologist, Dr. Louis Wolf, identified furunculosis as a primary obstacle to fish culture in New York State. In response, in 1952, he began a selective breeding program at the Rome facility to identify strains of trout from the northeastern U.S. with a natural resistance to the disease. The current strains were selected after a decade of study and testing for resistance, under the direction of the second state fish pathologist, Neil Ehlinger. To maintain this resistance, these strains are exposed to the pathogen that

Former State pathologist Neil Ehlinger

New York's first fish pathologist, Dr. Louis Wolf.

The protozoan that causes *ich*.

LOCATED AT ROME FISH HATCHERY IN ONEIDA COUNTY ABOUT FOUR MILES NORTH OF THE CITY OF ROME.

causes furunculosis every year. Only the resistant individuals survive to become broodstock—and voila, the products of this process are the special furunculosis-resistant Rome strain.

Maintaining this disease-resistant strain for the past sixty years through artificial selection has not come without a cost. Biologists have found that the Rome strain fish are not surviving in streams after stocking as well as they once did. To combat this trend, staff at the FDCU have begun crossing in milt from feral trout populations to improve the "genetic fitness" needed to survive in the wild. The goal is to produce healthy fish that provide the public with positive outdoor experiences and recreational fishing opportunities.

As part of the new selective breeding process, DEC recently updated a key water valve and rehabilitated the primary water supply at the facility, both of which increased the flow of water into the facility. The increased water flow means increased capacity, allowing us to continue producing sturdy and dependable domestic trout strains.

For biosecurity reasons, the FDCU is not open to the public like DEC's production hatcheries. These practices help us ensure the health and productivity of the rest of the hatchery system, which means more people can enjoy outstanding fishing opportunities at the various sites we service.

Geof Eckerlin is an aquatic biologist at DEC's Fish Pathology Lab in Rome.

Brook trout with furunculosis

Matt Nobles

DEC Fish & Wildlife Technician, Ariel Gallo, holds a healthy Rome strain brown trout

STAFF SPOTLIGHT

Geof Eckerlin: Protecting Fish is a Natural Fit

Growing up in Central New York, Geof Eckerlin was surrounded by kettle lakes, the Finger Lakes, and numerous streams. So, it's not surprising he developed a fascination with water at a young age, or that he would go on to help protect fish in some of our nation's most historic waters.

Geof earned an associate's degree in Aquaculture and Aquatic Science, and a B.S. in Natural Resources, while working on Hudson River ecology projects. He ran a trawler between Manhattan piers, and caught fish and invertebrates from the river's submerged aquatic vegetative (SAV) beds as far north as Troy. He parlayed this experience into a position as a water quality technician with the Hudson River National Estuarine Research Reserve.

A year later, he accepted an offer from SUNY-ESF and headed back to Central New York, where he worked on the St. Lawrence River and pursued his graduate degree. He studied the interplay of an emerging pathogen (VHSV) with round goby and smallmouth bass, which brought him to the Great Lakes.

In 2011, Geof joined DEC's Fish Disease Control Unit. He works with a small team that conducts fish health inspections on every lot of fish produced by NYS hatcheries, diagnosing disease events in the hatcheries and developing strategies to prevent them. The unit also raises and performs experiments with brood fish in its small hatchery and coordinates responses to fish health issues in the wild. His aquaculture job requires an array of skills, which often vary by the day; he can be found examining fish in the lab, identifying bacteria, fabricating tools, teaching, or any other activity that will ensure hatchery fish are healthy.

Geof can appreciate how his work fits into the "bigger picture." He believes hatcheries serve "as a gateway conservation experience" for many visitors and feels blessed when people connect with nature through the services and opportunities his unit provides. Geof always finds ways to be outdoors: hunting, fishing, hiking, paddling, snowboarding, or just spending time alone in nature. And that love translates into the work he does and a job that is clearly a natural fit.

Esopus Meadows Lighthouse

THROUGH A Train Window

Riding along the Hudson River

BY PETER CONSTANTAKES

Sometimes it's fun to let someone else drive. Instead of keeping your eyes glued to the road, wouldn't you rather look at the natural beauty, history, and attractions of New York?

For those who answer yes, there's a window of opportunity to let your eyes roam as you travel, taking in lush scenery, historic sites and vibrant communities. It's a view through a train window as you ride the rails from Albany to New York City.

Heading south on tracks under the Hudson River (which Native Americans called the *Mahicannituck*), you'll reach New York City in under three hours. Of course, the City has a pretty sizeable list of must-see sites and attractions of its own, but you don't want to miss the views along the way. There's a long list of rail-side memories just outside the window.

Soon after departing from the Albany-Rensselaer station, you'll pass through Schodack Island State Park. Opened in 2002, this 1,052-acre, scenic park is nestled on seven miles of Hudson River/Schodack Creek shoreline. You'll likely see campers, hikers, and boaters enjoying the outdoors, as well as lush trees, wildlife, and birds, including cerulean warblers, blue herons, and even bald eagles, which nest in the park's cottonwood trees.

Bald eagles are regularly spotted along the river by train passengers, especially in the winter along the lower Hudson from Kingston to Croton. Riders may see several eagles perched in trees, standing on ice, or diving and catching fish. Open water areas associated with discharges from power plants and dead animals (carrion) along the tracks from train strikes provide a rich source of food, which attracts these majestic birds.

As the train glides farther south, about 20 miles past Schodack Island, your views of the Hudson will capture a bit of history as you pass the Hudson Athens Lighthouse. Completed in 1874 at a cost of $35,000, the 46-foot lighthouse has served as a navigation maker to warn ships of the Middle Ground Flats, a large, muddy section on the river bottom that could strand ships heading to the ports of Hudson (on the east shore) or Athens (west shore). Modern technology improved navigation safety, making many lighthouses obsolete, but preservation groups have maintained and rehabbed the Athens Lighthouse, and offer seasonal tours of this historic structure.

Since the Hudson was a main transportation route, it's not surprising that another lighthouse played a key role in safe navigation of its waters. The Esopus Meadows Lighthouse, about 35 miles farther south, was completed in 1871; the lighthouse stood 53-feet above the water line, and would shine an arc of light 270 degrees, visible for 12 nautical miles, to warn vessels to avoid mud flats in the western part of the river. The lighthouse fell into disrepair in the mid-1960s, but a local preservation group initiated a long-term restoration effort. In 2003, after 38 years of being dark, a new light was installed and the lighthouse was once again deemed "a working navigational aid." It is listed on the National Registry of Historic Places.

Next up is the unique Walkway Over the Hudson State Historic Park, a refurbished 1889 rail bridge that now serves as a pedestrian park high above the river at Poughkeepsie. Since opening in October 2009, millions of people have jogged, strolled or biked across the 1.28-mile span, which sits 212 feet above the river. Combining outdoor recreation with breathtaking views, the Walkway is a popular site for young and old who can look down on the historic Hudson and its shoreline communities from one of the longest elevated pedestrian bridges in the world.

A little farther downriver, your eyes will be drawn to Bannerman Castle on Pollepel Island, which always sparks the curiosity of train passengers. The island, which Native Americans considered haunted, is steeped in superstition. According to legend, it's named for a young girl (Polly Pell) who was rescued from cracking river ice by a man she later married. Scotland native Francis Bannerman purchased the island in 1900 and initiated the design and construction of a simulated Scottish castle and modest residence. Over the years, cannons, munitions, blankets, and uniforms were stored at the site, including some provided to the U.S. government during World War I. As Francis Bannerman's son noted in 1962, "the little island will always have its place in history and in legend, and will be forever a jewel in its Hudson Highland setting." The castle was ravaged by fire in 1969. The Bannerman Island Trust, Inc. is committed to stabilizing and preserving the castle, while also promoting heritage tourism on the island, which can be accessed via passenger tour boats or kayak tours.

Scenic views continue down the rail line as you pass the Hudson Highlands, with mountains and cliffs framing the river on both sides. Hudson Highlands' visitors can hike the rugged trails, or enjoy outdoor activities at state parks like Storm King Mountain and Hudson Highlands.

About 10 miles later, you can see historic West Point. Home of the U.S. Military Academy (officially designated by President Thomas Jefferson in 1802), this beautiful fortress on the west bank plateau was designed in 1777. General George Washington considered West Point to be the "most important strategic position in America," and transferred his military headquarters during the Revolutionary War to the site in 1779. Visitors to West Point today can tour the grounds, stroll through its museum and cemetery, and watch cadet reviews, parades, and sporting events.

Bannerman Castle

The Eagles Are Back

Not all that long ago, seeing eagles along the Hudson, or in other areas of the state, was rare. In fact, in the late 1960s, the population of bald eagles in New York was nearly depleted, due in large part to harmful chemicals like DDT, which caused impaired nesting success.

In 1976, DEC initiated the Bald Eagle Restoration Project to import young birds from other states, and rear them by hand until they became independent. Over a 13-year period, 198 bald eagle nestlings were collected from healthy populations and released in the state. In conjunction with the national ban on DDT, and prohibitions against the taking or killing of bald eagles and creation of New York's Endangered Species Program, the eagle population began to rebound.

Statewide, there are now more than 325 breeding pairs in New York and more than 500 nesting territories. Because the Hudson River region contains tracts of undisturbed lands for eagle roosting, perching and nesting, eagles can thrive along the river, and can be seen even in cold winter months, usually near open waters, especially near power plants that discharge water as part of their energy production. In 1997, a nesting pair produced the first bald eagle born along the Hudson in more than a century. Since then a stretch of the river from Kingston to Croton has been a popular area for bald eagles.

New York's 2016 Bald Eagle Conservation Plan includes a number of strategies to monitor and manage the eagle population and mitigate potential threats to these majestic birds. New York has seen great success in its efforts to protect and restore eagles—and the public can see that success, even through a train window.

West Point

Governor Mario M. Cuomo Bridge

Courtesy of the New York State Thruway Authority

As you head farther south, you'll pass Fort Montgomery Historic Site, located on a high cliff in the Palisades. Fort Montgomery was the site of a major Revolutionary War battle between the colonists and Britain for control of the Hudson River. In October 1777, American forces courageously battled an attack by British and Hessian troops, but ultimately were defeated, with more than half the American forces killed, injured or captured. That history is told through archeological exhibits, including artifacts and weapons, mannequins illustrating the battle, and a 15-minute movie of the assault. The site also offers spectacular views of the historic river.

Next, you'll pass close by (or through if you're on the Hudson Line) the infamous Sing Sing Correctional Facility in Ossining, an active maximum-security prison that has housed many famous inmates, including Willie Sutton, Lucky Luciano, and David Berkowitz (aka "the Son of Sam"). Sending a convicted criminal "up the river" to the "Big House," originated from phrases NYC judges used when sentencing criminals to the prison.

Just over 14 miles downriver, a new modern-day marvel comes into view. The Governor Mario M. Cuomo Bridge spans the widest point of the Hudson River at three miles, and will accommodate 50 million vehicles annually. The bridge, which replaces the Tappan Zee, is considered an engineering model, with eight 410-foot towers holding 192 stay cables. The project required more than 110,000 tons of steel, and features energy-efficient, programmable LED lighting that illuminates the bridge in color at night.

> **"Our happiest moments as tourists always seem to come when we stumble upon one thing while in pursuit of something else."**

During this leg of the trip, you will enjoy amazing views of the Hudson River Palisades, steep rocky cliffs that line the west side of the river. The Palisades, which stretch for more than 30 miles, are a big draw for world-class rock climbers and outdoor enthusiasts, and also feature popular outdoor venues, and more. The area hosts a variety of habitat and wildlife, and is an exciting place for exploring nature and history.

In a short time, the train begins to enter New York City, but there's still more to see. Denny Farrell Riverbank State Park was inspired by Japanese urban rooftop designs. The 28-acre, multi-level site that rises above the Hudson River is a buzz of activity for young and old, offering youth sports and a 2,500-seat athletics facility, boat docks, an 800-seat cultural theater, playgrounds, a roller skating/ice skaing rink, pools and a spray park. In addition to the array of park activities, visitors enjoy stunning views of the Hudson River, Palisades, and the George Washington Bridge.

After traveling on tracks along the Hudson, with its lush landscapes and historic attractions, you've reached your destination. When you depart the train, you'll no doubt have places to go, things to do, people to see. But hopefully you enjoyed unexpected sightseeing on the trip, and discovered some places you may want to explore in the future. New York author Lawrence Block once said, "Our happiest moments as tourists always seem to come when we stumble upon one thing while in pursuit of something else."

And maybe some of the sites you saw from the train will be the destinations of future trips. As author/director/traveler Susan Sontag noted, "I haven't been everywhere, but it's on my list." There's a lot out there for you to see and discover in New York; so keep looking for new adventures.

Peter Constantakes is assistant editor of *Conservationist*.


Carl Heilman II

On Patrol

Real stories from DEC Conservation Police Officers and Forest Rangers in the field

CONTRIBUTED BY ECO LT. LIZA BOBSEINE AND FOREST RANGER CAPT. SARAH B. GEESLER

Bad Shot—Yates County

On December 6, ECOs Ron Gross and Spencer Noyes set up a deer decoy in the town of Italy. At approximately 2:50 PM, a pickup truck drove down the road, halted, and the driver exited. He leaned on his truck and fired one shot at the decoy from the road, committing several misdemeanors as he did so. During the arrest process, the man exclaimed "What happened to my tonneau cover!?" The muzzle blast from his rifle as he rested it on the truck had blown a fist sized, two-foot-long rip in the truck bed cover. A cocked crossbow was also found in the back seat of the truck. The man was charged with having a loaded gun and crossbow in a motor vehicle, discharging a firearm from a public highway, taking deer while in or on a motor vehicle, taking deer from a public roadway, and trespassing.

Accident Day—Hamilton County

On January 12, Forest Rangers Dave Kallen, Andrew Lewis, and ECO Peter Buswell assisted Hamilton County Sheriff's Deputies in locating and evacuating a 54-year-old woman who had sustained injuries in a snowmobile accident on the Speculator Tree Farm easement lands. The woman was packaged in a stretcher and transported to Nathan Littauer Hospital. Upon clearing that incident, the three officers responded to another snowmobile accident only four miles away. Two snowmobilers, ages 14 and 41, collided and were ejected from their snowmobiles. The younger rider was carried to an ambulance and the older rider was evacuated on an ATV. Both snowmobilers were transported with non-life-threatening injuries to Nathan Littauer Hospital.

Stranded Snowmobiler—St. Lawrence County

On January 9, a 55-year-old snowmobiler called St. Lawrence County 911 for assistance in getting her snowmobile pulled out of deep snow she had ridden into. The call was transferred to DEC Dispatch in Ray Brook, but her cell phone coordinates were unavailable from the initial call to 911. To conserve her cell battery on an already low-powered phone, Ray Brook texted the woman to call 911 again, which enabled them to capture her coordinates. Forest Ranger Adam Baldwin was able to locate her within ten minutes of entering the trail on his snowmobile. He helped the woman free her snowmobile, and she continued her trip home without injury.

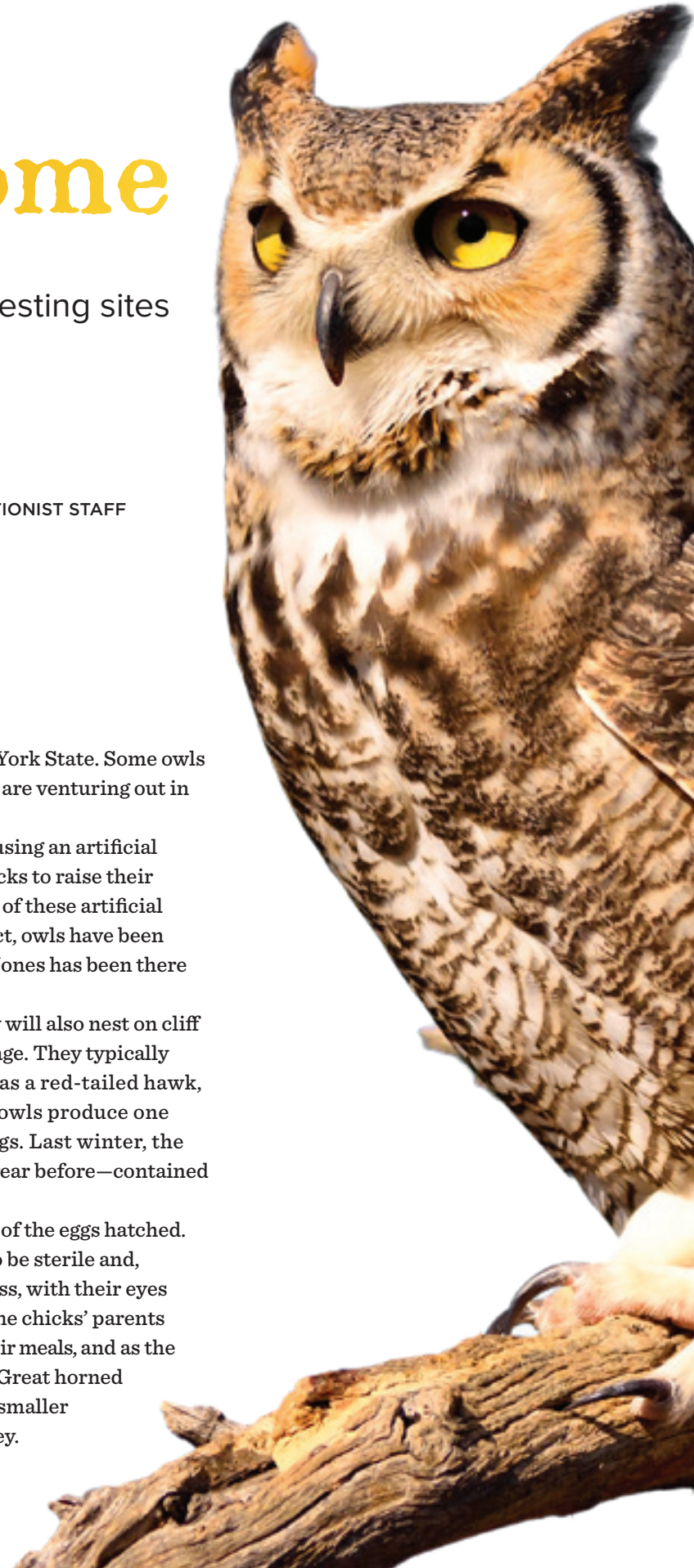
Problematic Aquaculture—Suffolk County

This past fall, members of the Division of Law Enforcement's Marine Enforcement Unit and Eastern Long Island Sector officers documented a large-scale aquaculture operation in Meetinghouse Creek in the town of Riverhead that was storing oysters in uncertified waters without a permit. ECOs Ike Bobseine, Jordan Doroski, Robert McCabe, Evan Laczi, and Jeremy Eastwood, under the supervision of Lt. Sean Reilly, interviewed the owner of the business, documented evidence, and seized the shellfish in place. Approximately 400 bushels of oysters were stored around docks in the creek, which DEC had previously documented as containing shellfish with Paralytic Shellfish Poisoning (PSP). Due to the considerable public safety risk, the shellfish from the business were embargoed from retail stores, and the shellfish at the facility were not allowed to be used for consumption. A settlement of the case was reached, which included a substantial fine and forfeiture of the oysters to be transplanted into uncertified waters to prevent their harvest for commercial sale.

Home Sweet Home

Biologists at Bethpage provide nesting sites for great horned owls

PHOTOS BY JAMES JONES | TEXT BY CONSERVATIONIST STAFF



Now is a great time of year to see and hear owls in New York State. Some owls are nesting and beginning to raise their young, and others are venturing out in search of food.

At Bethpage State Park, a pair of great horned owls are using an artificial "nesting cone" made from tar paper, chicken wire, and sticks to raise their young. Over the years, park staff have constructed several of these artificial platforms and placed them in trees around the park. In fact, owls have been nesting at Bethpage for the last twenty years, and James Jones has been there with his camera to study and document them.

Great horned owls normally nest in trees, although they will also nest on cliff ledges and human-made platforms like the ones at Bethpage. They typically use stick nests that were built by another species, such as a red-tailed hawk, crow, raven, or heron, or even an old squirrel nest. The owls produce one brood per year, with the female laying a clutch of 1-4 eggs. Last winter, the Bethpage nest depicted here —which owls also used the year before—contained three eggs.

After being incubated for a period of about 35 days, two of the eggs hatched. It is not unusual for the third (or sometimes fourth) egg to be sterile and, therefore, not hatch. Newly hatched owl chicks are helpless, with their eyes closed and only their upper parts covered in white down. The chicks' parents provide a steady supply of small birds and mammals for their meals, and as the newly hatched birds grow, so does the size of their meals. Great horned owls will prey on a variety of different animals, including smaller rodents, rabbits, skunks, geese, and even other birds of prey.

Within the first couple of weeks, the young owls begin to grow rapidly, and soon their downy covering begins to be replaced by adult feathers. They will remain in the nest for approximately six weeks, but as they grow they become more active and start to pay more attention to their surroundings. The closer they get to leaving the nest (fledging), the more they explore the area immediately surrounding their nest, eventually moving out onto the branches of the tree in a behavior aptly named branching. The young owls will spend many hours flapping their now-feathered wings, building strength in the muscles needed for flight.

As their confidence grows, the young owls will leave the nest, taking their first short, tenuous flights. In a matter of only 6-8 weeks, they have gone from eggs to the newest great horned owls on the prowl in Bethpage State Park.

James Jones is a staff naturalist at Bethpage State Park.

The Bethpage great horned owl produced a brood of 3 eggs last winter.

Feeding time for young chicks

As they grow, the chicks shed their downy coats and grow feathers.

Fledging owls ready to branch out

First Day Hike a Success

Nearly 7,500 people started the new year by participating in one of the 78 hikes offered by DEC and State Parks on January 1, 2019. The turnout far surpassed previous years' attendance. Thanks to all the staff and volunteers who spent their holiday leading hikes and providing refreshments and assistance to participants—and thanks to all the people who came out to celebrate. First Day Hikes are a great way to discover and explore some of New York's amazing outdoor attractions. And, remember, many DEC and State Parks sites are open year-round, so we encourage you to explore the outdoors with friends and family and connect with nature in all four seasons.

New York Moose

As part of a multi-year collaborative research project to better understand New York's moose population, DEC wildlife staff recently completed the 5th annual aerial survey of moose in the Adirondack Park. In 42 hours of helicopter flight time, staff observed 83 moose or groups of moose, all of which appeared healthy. Staff recorded the location, number of animals, and the age and sex of each animal, and also noted general habitat characteristics for each moose sighted. Data from these surveys will refine the estimate of the moose population in the Adirondacks, and will ultimately help determine a future moose management plan. For more information on New York's moose research project, visit **www.dec.ny.gov/animals/6964.html#Research.**

DEC Summer Camps

Online registration for DEC's 2019 Summer Camps program is still open, and parents or guardians are encouraged to check out www.dec.ny.gov/education/2013.html to see about availability. DEC operates four residential summer camps: Camp Colby in Saranac Lake (Franklin County); Camp DeBruce in Livingston Manor (Sullivan County); Camp Rushford in Caneadea (Allegany County); and Pack Forest in Warrensburg (Warren County). The camps provide conservation education to children aged 11-17, with individual camps offering designated weeks for specific age groups. Check out the DEC Summer Camps webpage at **www.dec.ny.gov/education/29.html** for more information or to make a reservation.

Nature Tech Adventures for Kids at Reinstein Woods

For the third year in a row, DEC's Reinstein Woods Environmental Education Center in Erie County is offering children a unique opportunity to explore a new side of nature over spring break in April. The Nature Tech Adventure series invites kids ages eight and older to discover how technology and nature intersect to provide exciting outdoor adventures. Each afternoon session will last about an hour and a half at Reinstein Woods Nature Preserve, located just outside Buffalo. Sessions include Solar Solutions, Birding, Geo-caching Egg Hunt, and Nature Apps. The events are free-of-charge, but registration is required for each session. Kids can register for any number of sessions. For a complete schedule, visit **www.dec.ny.gov/education/1977.html**. To register for a Nature Tech Adventure, contact Reinstein Woods at (716) 683-5959.

New York Fights for Fair Fluke Quotas

Governor Andrew Cuomo recently initiated a lawsuit against the federal government, challenging the unfair, outdated quota allocated to New York's commercial fluke (summer flounder) fishery. The quota is established in federal regulations, and while updated this past December, remains based upon incomplete fisheries data from 40 years ago, when the fluke population had been fished to very low levels. This data is not reflective of current practices and population condition. New York has made numerous requests to correct the unfair quotas that continue to harm the state's commercial fishermen and women.

Scientific studies show the distribution of the fluke fishery has shifted north since federal allocations were established in 1993, using incomplete data from the 1980s. At that time, the fluke population had been fished to very low levels, but since then the population has recovered, with larger, older fish more common, and these bigger fish found closer to New York. New York's fluke allocation is 7.6 percent of the coast-wide quota, while neighboring and more southern states have much larger allocations—15.7 percent for Rhode Island, 16.7 percent for New Jersey, 21.3 percent for Virginia, and 27.4 percent for North Carolina. New York's low allocation has resulted in closures of fluke fishing, and daily trip limits restricted to 50 pounds in 2017 and most of 2018.

Beach Bums

I was fortunate to get this photo of some seals on West Hampton Beach, Long Island.

LAURA DENAPOLI

Nice shot. Long Island is a great place to view seals during the winter months when they haul out onto the beaches and jetties. There are up to five species of seals that can be found in our waters, some more frequently than others. Harbor seals, like the ones pictured here, are the most common and are easily recognized by their round heads and blunt snouts. They are relatively abundant in Long Island from late fall until late spring. Grey seals are regularly seen as well, but in smaller numbers. Less common "arctic" species, including harp, hooded, and ringed seals, have been sighted in New York waters more often in recent years. If you spot seals on the beach, remember not to disturb them.

Ask the Biologist

Q: We had an invasion of bees last February that knocked a lot of seed to the ground at our bird feeders. Can you tell me why they were out and what they were doing?

—GARY ENNIS, BINGHAMTON

A: Bees and bird feeders are actually a common topic in late winter/early spring. People are amazed to see hordes of honeybees furiously burrowing through their feeders, kicking large amounts of seed to the ground, and sometimes becoming trapped in the feeders. The dust on black oil sunflower seeds is a product of the seeds grinding against each other; it is about the same consistency as pollen, and very high protein, which bees need for brood rearing. The bees see this as a terrific resource, and once located, a great number of foragers will come to gather.

—BOB HENKE, RETIRED DEC ENVIRONMENTAL CONSERVATION OFFICER AND BEEKEEPER

Chilly Beauty

I was captivated by the beauty of this frigid day on Dablon Point, Cape Vincent. The temperature was -33°F and the wind was gusty.

AARON WINTERS
ROCHESTER

What a beautiful shot Aaron!

Finally Foiled

Our request for readers to send us their ideas for squirrel-proof bird feeders from the Back Trails article (December 2018) got quite a response. While all basically have a variation of the same design, here are a couple of samples.

JOHN FRANKLIN (LEFT)

GEORGE CROSS (RIGHT)

On the Prowl

Dale Hall sent us this photo of a bobcat taken on his trail cam in February 2017. Although they occur in much of the state, bobcats are shy, solitary animals that are not seen that often. They may be active at any time, day or night.

Tiny Visitor

This tiny saw-whet owl visited our yard just before dark several days in a row. It was a real treat to see it.

CHUCK VAUGHN

Northern saw-whet owls are very small, about the size of a robin. They measure between 7.1 – 8.3 inches, and weigh 2.3 – 5.3 ounces. It gets its name from one of its calls that sounds similar to a saw being sharpened. Saw-whets nest in holes in trees and in nest boxes. They primarily eat small mammals.

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Back Trails

Perspectives on People and Nature

Magical Monitoring

BY SARAH LAZAZZERO

Come February, my thoughts begin to turn to spring, and I look forward to late March and early April when the air becomes magical. Warmer, rainy nights and increasing day length trigger hormones and start the reproductive season of many songbirds and amphibians such as frogs and salamanders. Birdsong and calling frogs start an intense crescendo that builds throughout the spring and then dims as June ends.

The pulse of life is palpable—there is a rush to get things underway. The season is short and there is a lot to be done: find a mate, produce young, and prepare for the onset of another winter.

As a scientist by profession and a citizen scientist by avocation, this time of year kindles my desire to monitor all of this wildlife activity around me. The season of observation and adventure begins.

I am a long-time volunteer for the Bird Studies Canada Marsh Monitoring Program (MMP) which uses citizen science to monitor avian and amphibian populations, and their habitat throughout Canada and around the Great Lakes. Volunteers report/survey what they hear and see during the breeding season of frogs and marsh birds. The information that's gathered is used to help track long-term trends in species diversity, and guide management programs for marshes and their inhabitants.

Marshes provide important benefits—such as essential wildlife habitat and flood control—and volunteering in MMP allows me to contribute to the protection and restoration of these valuable ecosystems. I get to be outdoors and enjoy the progression of the seasons and the corresponding changes in the species of frogs that vocalize. Early callers, like wood frogs and spring peepers, are the first to emerge, and then they become quiet. Next, northern leopard frogs, American toads, and green frogs are active, with bullfrogs and grey tree frogs being the last to join in.

I've found that being a citizen scientist often leads to memorable wildlife encounters. For me, last April was one of those times. My daughter, Alina, has been a frog enthusiast since age two, so when I told her I had a "mission" to count frogs and asked if she wanted to come along, she enthusiastically said yes! She could hardly wait for the half hour after sunset for our adventure to begin.

When it was time, we took the short drive to the middle of town and descended a curvy road through a foggy valley to where the road terminated at a cattail marsh. As soon as we got out of the car, the spring peeper chorus fully engulfed us. They were so loud it was hard to talk over them, let alone discern any other calling frog species. Faintly off in the distance, however, I heard the hooting of a barred owl. Despite all my attempts to help Alina hone in on the hooting, she just couldn't pick up on it and before long we had to leave.

As we were buckling her in her car seat, Alina yelled "OWL!" I looked up to see the owl swoop a couple feet over us and perch at the top of a nearby dead tree. No more than 20 feet away, its silhouette fully visible, it started to hoot. This was truly a gift.

When we arrived home, Alina pulled out a field guide. We talked at length about owls—we were both so excited we couldn't settle down. It was a magical moment that seared an unforgettable memory for my daughter and me. Needless to say, she is hooked, and in the evenings, she asks if we can go frog counting.

There are a number of monitoring programs looking for volunteers, and I encourage everyone to find a nearby program. It's a great way to usher in spring and create your own magical monitoring memory.

Sarah Lazazzero is a wildlife biologist with the NYS Department of Transportation. She resides in Monroe County and enjoys outdoor activities with her family.

For more on citizen science programs, check out the Conservationist article "Discover Citizen Science" at **www.dec.ny.gov/docs/administration_pdf/1211citizenscience.pdf**.

spring peeper

Nurture Nestlings by **Planting Native Trees and Shrubs**

You can help local bird populations by planting native trees and shrubs, like those available at DEC's Saratoga Tree Nursery. Native plants support many insects, such as caterpillars, which 96% of our songbirds need to feed their chicks. Chickadees, for example, require between 6,000 and 10,000 caterpillars to raise just one brood of young.

More than 40 native tree and shrub species are available from the Saratoga Tree Nursery now through May 9. If helping hatchlings is your goal, please note that native plants vary in how many insect species they support. Oak trees top the list of insect-friendly plants in New York, supporting nearly 400 species of insects, while pines support about 200. If you're not sure what trees or shrubs to choose, try a mixed species packet tailored to your planting goals.

Whether you're planting seedlings to create a windbreak, stabilize a streambank, produce wood products or enhance wildlife habitat, use native plants and you'll also be helping to feed young birds.

Photos by Dr. Doug Tallamy

Black-throated blue warbler

Double-toothed prominent caterpillar

White-eyed vireo

For more information on the Saratoga Tree Nursery's annual plant sale, visit WWW.DEC.NY.GOV/ANIMALS/9395.HTML.

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