

NEW YORK STATE

CONSERVATIONIST

APRIL/MAY 2023



The Fishing is Great in New York State

**New York's Native Pollinators
Return of the Whip-poor-will
American Shad Recovery**

Dear Readers,

With more than 7,500 lakes and ponds, 70,000 miles of rivers and streams, and hundreds of miles of coastline, New York State offers some of the finest cold and warm water fishing opportunities in the country. Whether fishing for brook trout on a crystal clear Adirondack lake or bluefish in Montauk's surf, there's something special here for anglers of all ages and abilities.

In this issue, fishing enthusiasts can get *hooked* on "Fishing with Doc," a heartwarming reminder that the special bonds formed between anglers and lasting memories made far outweigh even the largest whoppers we land (pg. 2). In the event you do catch a keeper, we've also included a short article that explains how to accurately measure a fish (pg. 17)—to prevent any fish tales.

Readers can also catch our Species Spotlight (pg. 28) on American shad to learn about important habitat restoration work DEC scientists are performing to protect New York's shad population and reverse sharp population declines (pg. 24). Goals of the recovery plan are to rebuild shad stocks to levels observed in the 1940s and '80s, and ultimately reopen recreational and commercial fisheries for American shad.

Springtime also signals the return and reemergence of many of our fine feathered friends that flock south for the winter, including another species suffering a sharp population decline—the whip-poor-will. Although rarely seen, this bird's unique song was once commonly heard throughout the Albany Pine Barrens. Significant declines in the number of whip-poor-will nesting sites in the Pine Barrens led a team of Albany Pine Bush Preserve and DEC staff to create new nesting sites in an effort to re-establish the population of these harmonious birds. So far, things look (and sound) promising. Learn more about the project (pg. 8).

DEC is also focused on protecting threatened and endangered pollinators, such as bees and butterflies (pg. 4). Learn more about research being conducted to gain a better understanding of their status, the threats they face, and steps we can take to protect native pollinators whose populations are at risk.

We hope you will enjoy learning all about the birds, the bees, and so much more in this spring issue of the *Conservationist*.

Sincerely,
Basil Seggos, Commissioner



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by @zachvaughanphotography

SPECIAL INSERT
CONSERVATIONIST
for kids!



FISHING WITH DOC

BY ROBERT FRANCIS GOTIE | PHOTOS BY AUTHOR

As I gazed out from my deer blind into the gloom of another central New York opening day, I couldn't stop thinking about my old outdoor partner and the many trips we shared hunting and fishing in central New York. Doc was special to me. He wasn't the best hunter in the world, nor a world-class fisherman, but he never said no when I'd call to go afield. I was fond of calling him "Doc," although he was not a doctor. To me, the title Doc naturally applied to my old outdoor teacher, whose real name was Frank.

Doc came of age during the Great Depression. Both his mother and father died during this economic calamity, and he was left as a teenager to fend for himself. A tour with the Civilian Conservation Corps (CCC), mainly

working the forests of New York's storied Adirondacks, turned him into the responsible man I knew. The CCC also instilled in Doc an interest in the outdoors that few city kids would ever find by themselves. It was his stoic life and selfless sharing of his outdoor experiences that inspired me to become like him.

In the early 1950s, Doc would show me his catch, squirming in the kitchen sink, of northern pike from Perch Lake, a place I came to know well 20 years later. As I grew older, Doc would take me fishing and soon we became partners. Lake Moraine in Madison County was where I caught my first fish, an 18-inch white sucker. I took it home to show my mom, but it ended up under the petunias, not in the frying

pan. From then on, we fished numerous central New York streams, with and without names, from spring to late summer. No matter our success, we always enjoyed each other's company.

Doc was not a well-educated man, a consequence of growing up without parents during the Great Depression, but he firmly believed in a solid education. His children, he once said to me, "will finish high school and beyond, no matter what." When I reached high school, he encouraged me to go on to college and study wildlife management. I think he saw in me what he would have liked to do, had he been given the chance as a kid. So after high school, I enrolled in college and began studying for a degree in wildlife management.



Facing page: Doc (right) with youngest son (middle) and friend (left); Top left: Doc (far right) at the Civilian Conservation Corps; Top right: Author awarded Eagle Scout (1965; Doc far left); Bottom left: Mom and Doc (1942); Bottom center: Author fishing the Black River; Bottom right: Doc (center) with author's son and nephew.

Although Doc had served honorably in the Army during WWII, he was not keen on the idea of any young man going off to an unpopular war in Vietnam. It was no surprise to me that he fully supported my decision to continue my education at a graduate school in Texas. I returned to New York two years later with a master's degree in wildlife science, soon found a job as a wildlife biologist with the New York State Department of Environmental Conservation's Division of Fish and Wildlife in Watertown, and married a young woman I had known since grade school.

The responsibilities of my job and growing family kept us apart over the years, but we did partner up to fish and hunt each year. As he approached

80, Doc's hunting trips completely ended. However, he would never say no to a short fishing trip, especially to Oriskany Creek, where he first introduced me to trout fishing.

It was in the summer of his 85th year that I had the privilege to fish for the last time with my old partner on our favorite stream. His first cast with the fly rod, into the bridge pool, netted him a nice fat brown trout. As I helped him unhook the fish and place it in his creel, I clearly remember the smile on his face. That one cooperative brown trout became the last he ever placed in his ancient creel, after a lifetime sharing the outdoors with me.

Doc died with dignity early in April nearly a year later, missing our regular spring fishing trip. Whenever I fish the

streams of my youth, I occasionally carry Doc's old and weathered wicker creel and, of course, the memories of a lifetime hunting and fishing with my dad.



Robert Francis Gotie retired as a Sr. Wildlife Biologist from the DEC Region 7 office in 2005. He was responsible for furbearer management in the nine counties of central New York for more than 30 years.



THE PLIGHT OF NATIVE POLLINATORS





BY MATTHEW D. SCHLESINGER
AND ERIN L. WHITE



Have you ever sat in a meadow, or in a garden, watching a bumble bee, hover fly, or hummingbird moth move determinedly from flower to flower, and thought about the evolution of pollination?

Insects, birds, and even bats in certain regions have adapted over millennia to better reach the nectar and pollen that flowers provide, while over the same timescale natural selection has favored plants that produce flowers that have maximum appeal to pollinators. This increases

the chances that their pollen grains will be moved to other flowers, thus completing the chain of events leading to production of seeds and, ultimately, reproduction of plants.

Some pollinators, like bees, collect pollen purposefully, while others, like butterflies, pollinate incidentally. There are many types of animal pollination, but regardless of the mechanism, there is a growing concern that these crucial, co-evolved links may be getting broken.

About 15 years ago, few New Yorkers gave much thought to the insects required for most of the state's crops and wildflowers to exist. But when reports of honeybee colonies collapsing started appearing in the news, many people started paying attention to the plight of our pollinators.

The honeybee (*Apis mellifera*), a European species domesticated for honey production and crop pollination, was indeed a species to be concerned about. But what about our native species of pollinators, the insects that co-evolved with North America's flowering plants?

It turned out that native bumble bees had also been declining, leading to the first-ever bee from the continental United States being placed on the Endangered Species List, the rusty-patched bumble bee (*Bombus affinis*). In addition, studies were showing other pollinator species

in decline. Scientists had been sounding an alarm about pollinators since at least the mid-1990s, as they studied the effects of habitat loss, the widespread use of pesticides, and the alteration of natural disturbance regimes on floral and faunal communities. But to what degree is this scenario playing out in New York State today?

In its 2015 *Pollinator Protection Plan*, New York State called for the Department of Environmental Conservation (DEC) to conduct "a multi-year evaluation of the state's myriad native pollinator species...[to] show the current status and distribution of native pollinators and serve as the foundation for developing and implementing future conservation practices." In other words, DEC was charged with determining how our native pollinators were doing. They turned to our program, the New York Natural Heritage Program (NYNHP), to help find out.

NYNHP has a nearly 40-year history of working with New York State agencies to provide information that facilitates the conservation of biodiversity. NYNHP is a program of the SUNY College of Environmental Science and Forestry, based in Albany at DEC's central office. We are part of a

1. Black-shouldered Drone Fly (*Eristalis dimidiata*) by Alan W. Wells
2. Banded Longhorn Beetle (*Typocerus velutinus*) by Alan W. Wells
3. Hummingbird Clearwing Moth (*Hemaris thysbe*) by Larry Master
4. Ash Sphinx Moth (*Manduca jaminearum*) by Dylan Cipkowski
5. Elderberry Borer (*Desmocerus palliatus*) by Matthew Schlesinger
6. American Hoverfly (*Eupeodes americanus*) by Alan W. Wells
7. Brown-belted Bumble Bee (*Bombus griseocollis*) by Denise Stoner
8. Abbreviated Long-horned Beetle (*Strangalepta abbreviate*) by Alan W. Wells
9. Snowberry Clearwing Moth (*Hemaris diffinis*) by Scott Stoner
10. Short-haired Leafwalker (*Chalcosyrphus piger*) by Alan W. Wells
11. Azalea Sphinx Moth (*Darapsa choerilus*) by Larry Master
12. Greater Bee Fly (*Bombylius major*) by Alan W. Wells

network of programs coordinated by NatureServe—every U.S. state and Canadian province has one—which uses the same methodology to conduct scientific inventories and determine the “conservation status” of native species.

A species’ conservation status is, in short, its likelihood of going extinct (or, to use conservation jargon, “becoming extirpated”) from a jurisdiction like New York State. Natural Heritage programs help state agencies determine which species to focus their conservation, management, and restoration efforts on. Our scientists are experts in natural community, or habitat, classification, rare plants, and all manner of rare animals, from birds to bats to beetles to baleen whales.

Building Partnerships and Designing the Study

When we began working on the pollinator study with DEC, we knew we needed to bring in expertise to study pollinating insects. So, we assembled an advisory committee consisting of experts from universities, state and federal agencies, and nonprofits to help us design the study. The first question we wrestled with was, “Which native pollinators should we study?”

There are thousands of insect pollinators in New York State, and one study couldn’t cover them all. And while we knew that bees are considered the most important native pollinators, we wanted to represent the diversity of insect

pollinators by including at least some species from each of the four main orders of insects containing pollinators: Hymenoptera (bees, wasps), Lepidoptera (butterflies, moths), Coleoptera (beetles), and Diptera (flies).

We wanted our chosen species to appeal to amateur entomologists and photographers, so we could take advantage of the booming “community science” movement (also called “citizen science”). And we wanted the focus to be on species with poorly understood conservation status and groups believed to be in decline.

We settled on the following “focal” groups for the study, which we named the Empire State Native Pollinator Survey (ESNPS):

- Bees- bumble bees, long-horned bees, mining bees, leafcutter and mason bees, and oil bees
- Flies- hover flies (also called “flower flies”), and select bee flies
- Beetles- flower longhorn beetles, and hairy flower scarabs
- Moths- sphinx (or “hawk”) moths, and flower moths

What You Can Do



MAKE HABITAT

Convert your lawn to meadow, and plant for pollinators; if you keep honeybees, provide plenty

of floral resources for natives too. For resources on creating and improving habitat for pollinators, go to: <https://xerces.org/pollinator-resource-center>.

PROVIDE NEST SITES

Leave bare ground, stems, and dead wood (both downed and standing) where possible.



REDUCE TOXINS

Avoid using pesticides, fungicides, or herbicides; insects are highly sensitive to environmental poisons.

CONTRIBUTE DATA

Submit observations to iNaturalist (www.inaturalist.org), BumbleBee Watch (www.bumblebeewatch.org), or other platforms.





Conservation Status Ranks

Natural Heritage programs use a standard set of ranks for demonstrating the relative imperilment or security of species.

SX	Extirpated (once present, now gone)
SH	Historical (once present, now unknown)
S1	Critically imperiled
S2	Imperiled
S3	Vulnerable
S4	Apparently secure
S5	Demonstrably secure
SU	Unrankable due to lack of information

Together with our advisors, we designed the study to occur over three years, in all corners of New York, from the tip of Long Island to Buffalo to the High Peaks of the Adirondacks, in wilderness, cities, and everywhere in between. The ESNPS included a variety of specimen collection methods, like small “bee bowls” set out during the warmest part of the day to

attract small insects, tent-like Malaise traps set for weeks at a time, and hand netting near flowers.

During the study’s three years, we collected more than 35,000 insect specimens. We knew specimens were needed for identification of many species—properly curated specimens provide important material for future research, and studies have shown little to no effect on insect populations from scientific collecting.

For some insects, particularly larger and more distinct species, photographs are sufficient for identification, so we solicited photographs via iNaturalist (an online repository of biodiversity observations), compiling almost 60,000 observations of our focal species. Finally, we combed through insect collections in museums to catalogue historical records of our focal species and received databases from other researchers. All told, we compiled more than 200,000 insect records for the study.

At NYNHP, we learned how to identify bumble bees, hover flies, bee flies, and longhorn beetles ourselves. For other species groups, we relied on identification partnerships with Cornell University, SUNY Cobleskill, and the Atlantic Canada Conservation Data Centre, plus experts who help identify museum specimens and photographs on iNaturalist.

Taking Action after Sobering Findings

Our field and database work, supplemented by contributions from hundreds of volunteers from New York and beyond, allowed us to assess the conservation status of more than 450 species of native pollinators. Each species was assigned an “S-rank” (a State ranking) of 1 through 5, with S1 being “critically imperiled” and S5 being “demonstrably secure,” based on each species’ current-day rarity, a comparison to historical records, and known threats to populations.

Our main finding was troubling: using conservative criteria, 38 to 60 percent of New York’s native pollinators (of our focal taxa only) are at risk of extirpation from New York. Twenty-five bee species, 23 species of flies, 9 species of moths, and 22 species of beetles have not been found in New York in the last 22 years. Nine out of 20 bumble bee species were found to be at risk.

But not all was doom and gloom. Some bumble bees thought to have declined substantially from historical levels seem to be doing okay. They may have rebounded from pathogen impacts leading to low population sizes in recent decades, or it just may be that no one had been surveying them. And several species new to New York State were discovered.

The ESNPS, as a snapshot of the current status of pollinator species, was not designed to tell us why these species have declined or disappeared. That’s for future research and monitoring to determine. But in the meantime, DEC is taking action to further regulate pesticides known to affect bees, and future revisions to its list of threatened and endangered species can take into account this new information about pollinators.

Known locations of at-risk pollinators will be mapped in the NYNHP database, which is consulted during the permitting process for development projects. And our awareness of pollinators, those miracles of co-evolution, continues to grow.

Matt Schlesinger is Chief Zoologist and **Erin White** is Zoologist and Project Coordinator for the New York Natural Heritage Program, a program of the SUNY College of Environmental Science and Forestry that works in close partnership with DEC.

WHIP-POOR-

BY DARRYL MCGRATH
PHOTOGRAPHS COURTESY OF ALBANY
PINE BUSH PRESERVE COMMISSION

Return to the

On a June dawn in 2018, the far-off song of an Eastern whip-poor-will (*Antrostomus vociferus*) carries from the Albany Pine Bush Preserve to the loading dock of the preserve's education center. It is a sound that Neil Gifford, the preserve's Conservation Director, has been hoping to hear.

The morning is still more darkness than daybreak, but June is nesting season, and this bird—a male, whistling a rapid three-note signature that pitches up at the end—will soon be silent, for whip-poor-wills are night birds. That makes them exceptionally difficult to study because they must be



Field Ecologist/
Entomologist
Amanda Dillon
with a male
whip-poor-will

banded in the dark. By day, they look like clumps of old leaves, whether they are perched on a branch or sitting on their ground nests; at night, they swoop almost too fast for humans to follow even in full moonlight.

But the fact that this bird is singing suggests it has a mate or is seeking one. And now, as Gifford listens, he thinks about the years of sporadic signs—the periodic singing, the occasional sighting—with never any certainty whether the birds were there for the summer or just transients. But they have been singing for the past four springs and Gifford thinks it's finally time to move on this.

He can't know, as he prepares for a morning of banding songbirds, that he and his staff will spend the next four years trying to determine if the elusive whip-poor-will has come back there in numbers substantial enough to be called a breeding population. He does know that answering that question is one of the most difficult quests in bird work.

-WILLS

Pine Bush

Conservation Director
Neil Gifford holds a
male whip-poor-will



Now, five years later, Gifford and his staff believe they are right on the brink of a breeding population at the Pine Bush, decades after the birds all but disappeared there, and after tracking whip-poor-wills from 2019 to 2022. The results of the 2023 nesting season could help determine if they have achieved their goal.

“The house is built, and it’s furnished,” Gifford said in a recent interview, referring to the effort to create a landscape enticing to whip-poor-wills. “Clearly the birds are using the habitat.”

Restoring ancient habitat

Some 15,000 years ago, meltwater from retreating glaciers created a lake in Upstate New York that stretched 160 miles from just south of the Adirondacks to the modern-day mid-Hudson Valley. When that lake drained, wind shaped its sand floor into a hilly terrain that now looks more like Cape Cod’s National Seashore than the outskirts of the state capital.

The 3,400-plus acres of the Albany Pine Bush form an extremely rare inland sand dune ecosystem between the cities of Schenectady

and Albany, a visible relic of a once-vast landscape. Protecting Pine Bush lands from development began in the 1970s, through the efforts of groups like Save the Pine Bush and The Nature Conservancy. And, in 1988, the New York State Legislature created the Albany Pine Bush Preserve and its management commission. The bizarre sight of this coastal-like scenery in a suburban interior is a reminder that long before humans arrived, the glaciers were here. Yet, the region’s largest shopping mall and the New York State Thruway are just a short hike over the dunes.

Whip-poor-wills probably nested in the Pine Bush thousands of years ago, but they were never common in New York and have declined in recent decades—possibly from habitat loss and a reduction in populations of moths, which are a large part of their diet. The Pine Bush biologists know how difficult it is to reestablish a breeding population of any bird. There’s a difference between attracting a few nesting pairs and having a solid population of nesting pairs that returns year after year, along with unattached birds looking to find mates there.

Gifford has overseen the thinning of trees and brush to make today’s Pine Bush habitat function more like the ancient Pine Bush and, therefore, be more attractive to whip-poor-wills and other native species. Long before European settlers lived in the region, the native tribes of the Kanien’kehá:ka and the Muh-he-con-neok—also known as the Mohawk Haudenosaunee and the Stockbridge-Munsee Band of Mohicans, respectively—regularly burned this land to keep it open for hunting and harvesting. Whip-poor-wills loved the resulting savannah-like habitat of scrubby underbrush interspersed with trees.



Bristles around the bill are modified feathers that help catch moths.

Today, thanks to ecological restoration that includes forest thinning and controlled burns to clear invasive overgrowth, the Pine Bush Preserve has enough habitat to support a nesting population of whip-poor-wills, instead of just a sporadic few mated pairs. The trick is to get more whip-poor-wills to realize that.

Gifford and his staff are juggling a dozen projects involving rare or endangered species. Everything they do, backed by the state law that set this work in motion a generation ago, has one goal: to restore the world's best remaining inland pitch pine-scrub oak barrens. The presence of several rare species there, including the Karner blue butterfly, American woodcock, the prairie warbler, and the whip-poor-will, is a measure of that effort's success.

There's never enough time to get to everything. But 2018 marked the year that Pine Bush staff decided they had the right conditions—proper habitat and a documented pattern of singing birds—to make the whip-poor-will a priority.

A strong sign of nesting

A year later, equipped with federally licensed satellite-based tracking devices, Gifford and Pine Bush staff members Amanda Dillon and Steven Campbell—she's an entomologist; he's a conservation biologist—set out to find whip-poor-wills. They had reason to be optimistic: They had been hearing whip-poor-wills at the Pine Bush for at least seven summers since 2007, including every summer since 2015. Dillon oversees a crew of volunteers that started surveying the birds in 2016, and there had been at least one reliable sighting in each of those years.

Banding occurs during a few weeks in late May and June, as whip-poor-wills have evolved to lay their eggs so that the young hatch during a full moon. The moonlight makes it easier for the parents to catch insects for their young, but conditions have to be pretty much perfect for humans



A male Eastern whip-poor-will wears a wireless GPS tracker.

to catch whip-poor-wills. A run of blustery, cloudy, or rainy nights can wreck a prime week of banding time. But the crew got lucky in 2019; they captured two males and attached tracking devices to them.

Soon after, they recaptured both males, one of them simultaneously with an untagged female. The researchers knew the female was almost certainly nesting because she had a brood patch on her underside, where she had molted the feathers, so that her warm skin would be in contact with her eggs and chicks. They heard seven birds singing that season, and Gifford thought it was possible that as many as a half-dozen nesting pairs were at the Pine Bush.

The first *Atlas of Breeding Birds in New York State*, published in 1988 and based on surveys from 1980 to 1985,

Sunrise at the Albany Pine Bush Preserve

identified only 16 confirmed whip-poor-will breeding areas, mostly on Long Island. By the time the *Second Atlas of Breeding Birds* came out in 2008—based on surveys from 2000 to 2005—confirmed breeding sites had dropped to eight. Today, New York considers the whip-poor-will a “Species of Special Concern” in its *State Wildlife Action Plan*—a status that few would contest, even if the challenges of surveying whip-poor-wills at night may mean they are slightly undercounted. It is extremely difficult to breed these birds in captivity, so captive-breeding-and-release programs are not an option.

The 2019 findings, including the bonus of the female, thrilled the staff. But then came the Coronavirus pandemic in 2020, and fieldwork at the Pine Bush Preserve and most other conservation sites pretty much halted.

Now, it is the night of May 25, 2021, and Gifford, Dillon, and Campbell hike to a place where a male has been singing. They switch off their headlamps and stop talking as they get close. Then, with the slightly clouded-over moon as their only illumination, they unfurl the nets, set them up, and turn on a recording of a whip-poor-will song to trick the male into thinking a rival is in his territory. Nearly an hour passes, during which the bird flies into a net and somehow escapes, so



A whip-poor-will's plumage helps it hide during the day.

the biologists move the nets to a new location. That works; the whip-poor-will swoops into a net and remains caught. It is a male, not yet banded.

Few birds are stranger looking than a whip-poor-will, unless it is one of its cousins in the group of birds known as nightjars. Nightjars include the Chuck-will's-widow, the common nighthawk, and several other species, most of which are in trouble. All nightjars look like creatures out of a science fiction movie, especially the whip-poor-will. Their shovel-like beak seems enormous on the diminutive face; the “whiskers” around the beak are actually long specialized feathers that may help capture moths.

When the biologists finish, the whip-poor-will wears a band that will forever link it to this night and place, and a GPS tracker, about the size of a thumbnail, attached to its back in a way that will not impede its flight. Gifford walks off a few paces to release this living example of so much hard work.

This is his special bird, but it could just as easily be a Henslow's sparrow, a Bicknell's thrush, a cerulean warbler, a wood thrush, a bobolink ... or any of the 135 birds in North America that the United States Fish and Wildlife Service listed in its *Birds of Conservation Concern 2021* report. Neither Neil Gifford nor any biologist today will ever know the fate of most

of these species. It's an impossible question to answer—whether any declining bird will survive, and for how long. All that any biologist can do is try to make a difference in the time they have.

Gifford opens his hands and the whip-poor-will disappears into the night.

A turning point this season?

During the 2022 breeding season, Department of Environmental Conservation (DEC) biologist Matthew Palumbo joined the Pine Bush biologists to observe how they track whip-poor-wills, as DEC prepared a statewide project to assess the bird's status. Whip-poor-wills were less prevalent that season, a situation the biologists heard occurred elsewhere.

Bird populations can fluctuate year to year; even subtle changes in their wintering area—for Eastern whip-poor-wills, that's Mexico and Central America—can cause temporary shifts. The Pine Bush staff heard only one male singing in 2022. They caught that bird, banded it, attached a tracking device, and later recaptured it. But given the sustained presence of whip-poor-wills in the Pine Bush in recent years, the biologists are optimistic about 2023.

With good reason: Since 2019, they have banded six male whip-poor-wills and one female. They fit six of those birds with tracking devices, then later recaptured three of them and plotted their movements.

“We could be right on the cusp of documenting their return as a breeding species,” Dillon said. Gifford agreed, adding, “That's where I think we are.”

Albany journalist **Darryl McGrath** is the author of *Flight Paths: A Field Journal of Hope, Heartbreak, and Miracles with New York's Bird People*, published in 2016 by SUNY Press.



White tail feathers indicate a male



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



Eighteen new Environmental Conservation Police Officers (ECOs) officially joined the ranks of DEC's Division of Law Enforcement, after graduating from the 23rd Basic School in Syracuse. The ECOs will protect communities and natural resources statewide by enforcing New York State's Environmental Conservation Law. DEC also celebrates 38 new graduates from the 23rd Basic School for New York State Forest Rangers. These graduates will join 121 current Rangers to create the largest Ranger force in DEC history. To watch the ECO graduation video, go to: www.youtube.com/watch?v=yZW4NndICA; to watch the Ranger graduation video, go to: www.youtube.com/watch?v=7w0VtbIKj7M.



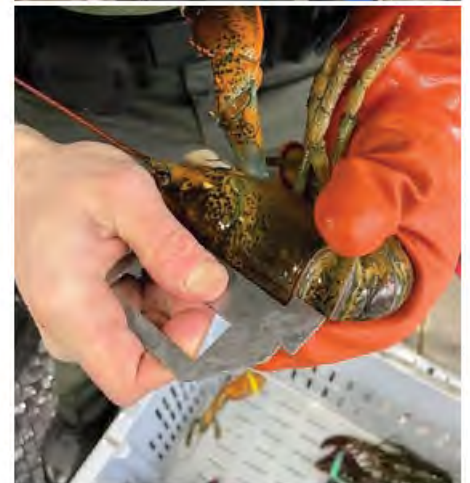
Holiday Storm Assistance—Erie, Genesee, St. Lawrence, and Sullivan Counties

From December 24 to 27, 2022, Forest Rangers and ECOs assisted local emergency personnel during a massive winter storm that dumped several feet of snow in western New York. Several agencies and police forces helped local efforts with rescues, food deliveries, and snow removal. Utilizing 4x4 patrol trucks and other equipment, ECOs responded to more than two dozen calls to help protect the public and the affected communities. In addition to rescuing people from their cars, Rangers helped deliver cots to a warming center. Rangers and ECOs continue working with New York State Police wherever they are needed.



Wilderness Rescue—Essex County

On December 13, 2022, Ray Brook Dispatch requested Forest Ranger assistance with a hiker who injured their ankle below the Wright/Algonquin junction. Due to the location, Captain Burns requested aviation assistance, but high winds and safety concerns kept the New York State Police helicopter grounded. Thirteen Rangers and additional DEC staff and volunteers responded, assisting the 21-year-old from Saratoga Springs by administering first aid for the hiker's ankle and hypothermia. Rangers used a backpack litter system to carry the hiker down the mountain through treacherous conditions of steep, icy slopes. At the Adirondak Loj, Rangers were met by a Lake Placid Ambulance, and the subject was taken to the hospital for further medical care.



Short Lobsters and Untagged Oysters—Queens and Kings Counties

On December 24, 2022, while inspecting a supermarket in Queens, ECOs Currey, Keegan, and Kortz issued the store a Notice of Violation after observing 128 undersized lobsters in a tank. Two days later, ECOs Veloski and Rappold received a complaint about undersized lobsters offered for sale at a market in Brooklyn. The Officers discovered 245 lobsters below legal size and 141 untagged oysters. ECOs issued a Notice of Violation to the market for various offenses and donated the lobsters to a food pantry in New York City.

A woman in camouflage gear, including a hat and pants, is kneeling on a rocky, mossy ground. She is wearing pink gloves and black boots with pink laces. A large wild turkey with iridescent feathers and a large tail fan is lying on the ground next to her. The background is a blurred forest floor.

my wife

W|TURKEY F|HUNTER

BY NATE KENNEDY | PHOTOS BY AUTHOR



My wife and I were planning our meals and putting together a grocery list. Tacos were on the menu, so I looked in the freezer to consider our protein options. I shuffled through the yellow perch filets from Lake of the Isles, various cuts of venison from my parents' property in the St. Lawrence Valley, ruffed grouse from the Northern Adirondacks, early-season Canada geese, and late-season mallards. At the bottom of the drawer, I saw a long-forgotten package labeled "*Jess - Turkey - '22*." A smile crossed my face and my mind wandered back to a perfect May morning: the day my wife became a turkey hunter.

When I met Jess in 2013, I never imagined we'd be hunting together one day. She wasn't against hunting, but it wasn't her "thing" and she didn't have much interest in attempting to make it so. Through the years we spent together, she took a shine to target shooting, dipped her toes into the world of foraging and wild game, and fell deeply in love with all things fishing.

However, hunting wasn't in the cards. Or so it seemed, until I brought home a wild turkey during the spring of 2021. I grilled one breast on the BBQ, deep fried another in traditional nugget form, and made "carnitas" with the leg and thigh meat. Served with freshly picked and pickled ramps and enjoyed before a night out trolling for walleyes, she was hooked!

I could feel it in the air, and one day she said, "I think I want to give it a try." I did my best to keep my cool, but inside I was screaming out with excitement. The thought of my wife setting off on a hunt of her own was a dream I'd always wished would come true.

When turkey season rolled into view last year, we were ready. We scouted birds all over the North Country, rigged up my youth model 20-gauge, and chatted about the possibility of a successful hunt. Again, I tried to contain my excitement—no easy feat. I wanted desperately to drag her down the rabbit hole of gear and calls and turkey hunting lore. I droned on and on about strategy, life history, turkey hunting podcasts, and *The Tenth Legion* by Colonel Tom Kelly.

Jess was excited too, but for different reasons; better reasons, probably. She wanted to watch the birds, to learn about them. She wanted the challenge of doing it on her own, to be proficient. Most of all, she wanted the satisfaction of bringing home the glorious bounty that any successful turkey hunter is fortunate to enjoy. I made it through March and April without annoying her into changing her mind, and when the calendar flipped to May, she was ready.

We set our course for the Northwoods. The plan was to spend a night at the family deer camp and start out from there, on the public lands we'd scouted earlier in the spring. That night, we built a fire and made a nice dinner together. Bedtime comes early for the turkey hunter. At 4:00 a.m. we were up and at it, postponing our morning coffee and heading off into the dark.

We parked the truck at our first spot, still a short while before daybreak. Our plan was simple: get out and listen for turkeys. If we hadn't heard any gobbles by a little later in the morning, we'd strike off on a long hike. However, we had no more than stepped out of the truck when Jess' face lit up at the sound of a distant gobble. One of the coolest sounds in the world.

We grabbed our gear and hustled up the road. We could hear the gobbles well enough to have a general idea of where the bird was, but he was a little far away and much higher than us in elevation. Daybreak was approaching and I hoped we'd have a chance to get close before he flew down from his roost. We cut into the woods and kept up our pace. He kept gobbling, and gobbling, and gobbling. We crossed a stream, passed an old rock wall from some long-gone farmstead, and climbed atop a hemlock ridge—the old tom's roost that particular morning.

As we climbed the ridge and closed the distance, it really seemed like this hunt might go as planned. The turkey must have gobbled 60 times during our hike, a special experience in itself. Those were *his* woods. Suddenly, he let out a gobble that let us know we'd made it far enough. Legal shooting light was just minutes away and we decided to set up and get ready.

While I was fumbling around with childlike excitement, Jess was calm and collected; excited, but cool. We tucked into a small hemlock tree and I checked the time: "We're legal." Jess got into position and I began to call. The bird gobbled in response and it was clear that he had flown down from his roost. My heart raced.

I kept whispering to Jess about where he might come from, how she might get ready for the shot, to remain calm, and to take her time. She was much calmer than I was, so it was wasted breath, but she put up with me as best she could. A ruffed grouse drummed his spring beat in the distance. The turkey gobbled, I called, the grouse drummed, and on and on it went for a minute or two.

Suddenly, there he was—king of those hills. He stepped out, gobbled, strutted, and moved behind a small maple tree. When he showed himself again, he was in range and Jess made a perfect shot. A moment I will never ever forget.

These moments are sometimes difficult to explain. Many hunters feel remorse, others joy, and others a tremendous amount of gratitude. That morning brought it all, plus love. Love for these woods, for this person, for this bird, and for the opportunities we have as hunters. To experience this with my wife was unlike anything I've ever felt in 15 years of hunting.

For Jess, it was all new. She was quiet, thoughtful, and proud. "I couldn't tell if it was my heart pounding or that grouse making noise," she said. We sat there for a while with this beautiful bird. We admired his tail fan and feathers, his vibrant colors, his beard, and spurs. He was gorgeous. We shared a real moment in time on the ridge that morning. We spent an hour up there after the shot, just sitting and reflecting and taking in the whole experience.

We took photos, had a snack, and then began our walk back out to the truck with a smile. My wife, the turkey hunter. "How about that coffee?" she asked.

It may be hard to believe, but every part of that memory came back to me when I looked in the freezer that day. That's the beauty of hunting and wild game; it's immersive and interconnected. Every meal shared brings back the experience and the moment. Those tacos brought us back to that ridge, to those public lands and landscapes that mean so much to us, and to the grey light of day bringing that tom turkey down from his roost into the hemlocks, and to the moment that followed, that forever lives on in our memory.

Nate Kennedy is a hunter, angler, and outdoor writer published in the *Auburn Citizen*, *New York Outdoor News*, *Field & Stream*, and *Covers Magazine*.

New York State Spring Turkey Season 2023

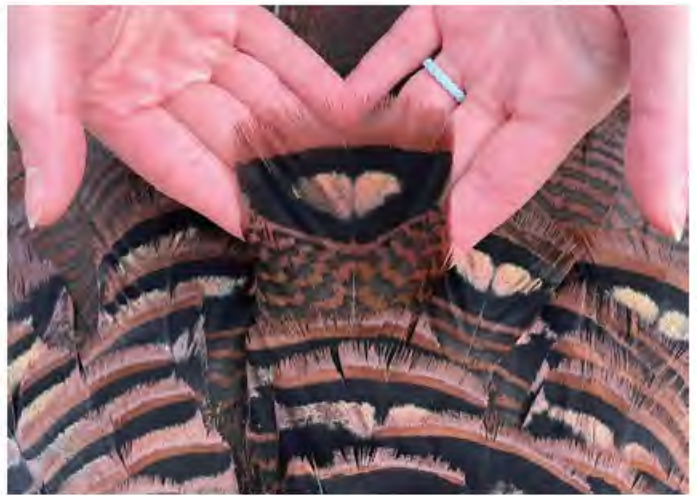
SEASON DATES: May 1 to May 31

LOCATIONS: all open areas

HOURS: 1/2 hour before sunrise to noon

BAG LIMITS: 2 bearded birds; no more than 1 in WMU 1C (parts of Long Island)

You must report taking a turkey within 7 days via the DECALS online reporting system at www.dec.ny.gov/outdoor/8316.html or by calling: 1-866-426-3778.



A feather from the male turkey's tail coverts, which cover the base of the tail feathers.



Most turkeys have four toes, typically three facing forward and one pointing backward.



A turkey's beard is usually three to four inches long, and can be 10 inches or longer on an old gobbler.

How to Measure a Fish

Knowing how to measure a fish allows anglers to determine the length of their best catches, and helps to ensure that all fish meet any applicable federal or state length requirements. There are three lengths for a fish: the total length; the fork length; and the standard length. The easiest way to measure the length of a fish is using a tape measure.

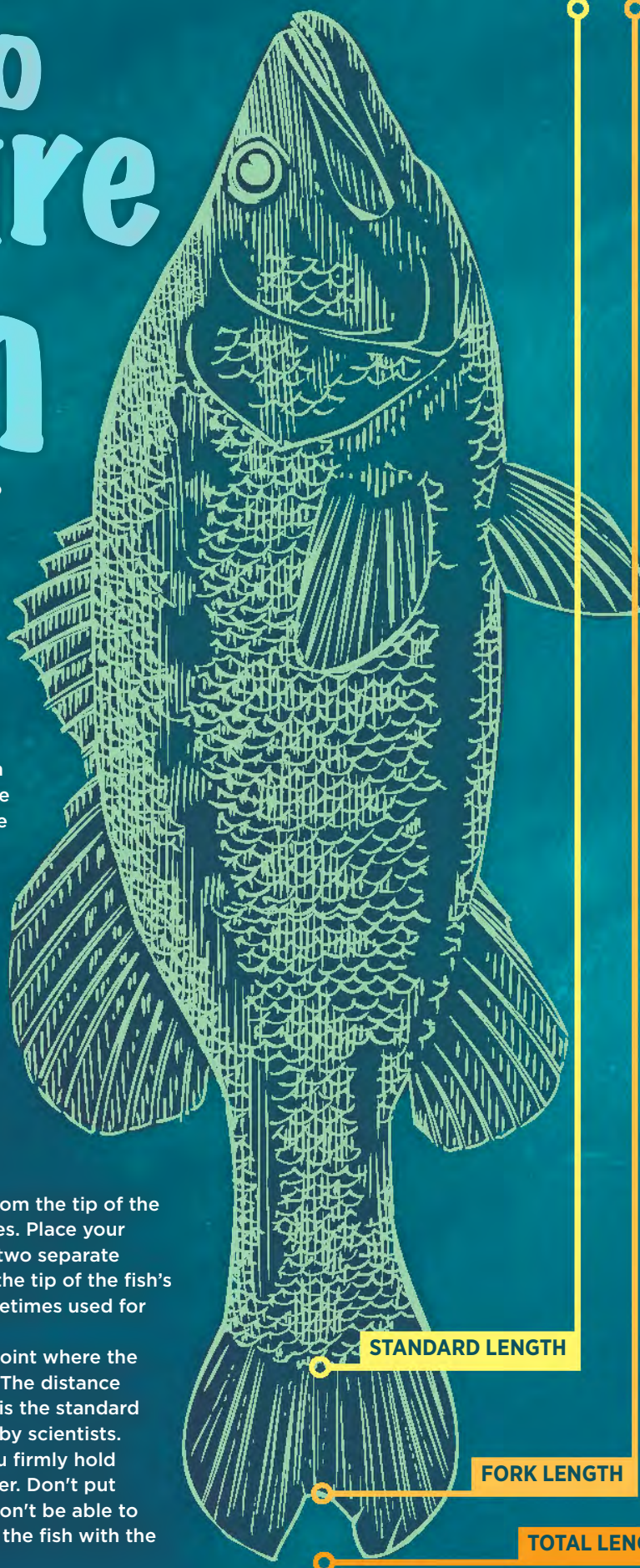
Regardless of the measurement you're taking, always start at the tip of the fish's mouth. Place an extended tape measure on a flat surface. Extend the tape measure so it's visibly longer than the fish you are measuring. Lay the fish flat next to the tape measure, so the tip of its mouth is lined up with the end of the tape measure. Start the measurement at the tip of the fish's mouth. If the fish's bottom jaw extends out farther than the top of its mouth, measure starting at the furthest point on the bottom jaw.

FOR THE TOTAL LENGTH, pinch the tail fin closed and measure to the tip. Place your index finger on one tip of the tail fin and your thumb on the other. Then, squeeze the two tips together so they form a single point. The measurement from the tip of the fish's mouth to the tip of the point between your fingers is the total length of the fish. This is the most common measurement.

TO DETERMINE THE FORK LENGTH, measure from the tip of the fish's mouth to the point where the tail fin separates. Place your finger on the spot where the tail fin branches into two separate points. The measurement between that point and the tip of the fish's mouth is the fork length. This measurement is sometimes used for fishing size limits.

FOR THE STANDARD LENGTH, measure to the point where the fish's fleshy body ends and the thin tail fin begins. The distance between that point and the tip of the fish's mouth is the standard length of the fish. This measurement is often used by scientists.

When you're measuring a live fish, make sure you firmly hold it in your hand, so it doesn't flop back into the water. Don't put the fish directly on top of the tape measure; you won't be able to read the measurement. And, going over the top of the fish with the tape measure can distort the measurement.



STANDARD LENGTH

FORK LENGTH

TOTAL LENGTH



Team visiting the successful Elders West marsh island restoration project in Jamaica Bay, New York.

RESTORING THE HUDSON RARITAN ESTUARY

Partners Work to Reverse More Than a Century of Industrialization

BY JOANNE CASTAGNA

I have a vivid memory as a child while living in Brooklyn, New York in the 1970s. I'm in the car with my family and we're driving along the Belt Parkway, when suddenly the vehicle fills with a familiar stench that tells me we've reached Jamaica Bay. I hold my breath and look out the window. I see a mountain of raw garbage—a dump 100 feet high, with tiny bulldozers plowing through it, hungry seagulls circling the top, while contaminated soil falls into the bay.

Today, the dump and pungent smell are gone, but not the negative effects it's had on the bay. However, the estuary is slowly improving with work being performed by the United States Army Corps of Engineers (Army Corps), New York District.

Working with community partners, the Army Corps is using funds from the Bipartisan Infrastructure Law (BIL) to restore the degrading Hudson Raritan Estuary in New York and New Jersey. This project fulfills some of the goals of the BIL, which was passed in spring 2022 by Congress and signed into law by President Biden. The BIL is providing investments in the transportation sector: improving public safety and climate resilience; repairing and rebuilding roads and bridges; improving public transportation (including rail and freight efficiency and safety); creating jobs across the country; and delivering a more equitable future.

The Army Corps received funding that will be applied to more than 500 projects throughout the United States. The Army Corps' New York District will be applying these funds to a number of projects, including the Hudson Raritan Estuary New York and New Jersey Ecosystem Restoration Project. The Hudson Raritan Estuary is

U.S. National Archives and Records Administration



Landfill operations at Jamaica Bay, New York, in 1973

located within the boundaries of the Port District of New York and New Jersey, and is within a 25-mile radius of the Statue of Liberty National Monument.

An estuary is a partially enclosed, coastal waterbody where fresh water from rivers and streams mixes with salt water from the ocean. Estuaries can include a variety of habitats, including salt marshes, mangrove or maritime forests, mud flats, tidal streams, rocky intertidal shores, reefs, and barrier beaches. The Hudson Raritan Estuary is a complex ecological system located within a highly urbanized region of 20 million people that includes the New York Harbor, rivers, wetlands, coastlines, and open waters.

Over the years, industrialization has degraded the Hudson Raritan Estuary—1,000 miles of its natural shorelines have been replaced with piers, docks, and bulkheads. This industrialization has destroyed some of the naturally sloped shorelines that provide habitat for fish and other marine life. Restoring the estuary is important because the ecosystem provides habitat for birds, fish, shellfish, and other wildlife. The estuary also maintains water quality by filtering out contaminated sediments, provides recreational opportunities, boosts the region's economy, and acts as a buffer from flooding for coastal communities during destructive and powerful storms.

Lisa Baron, project manager of the United States Army Corps of Engineers, New York District, explained, "The plan for the overall Hudson Raritan Estuary Program is to restore a mosaic of 621 acres of habitat at 20 project sites. These projects will restore estuarine and freshwater wetlands, shorelines, fish passages, oyster reefs, shallow water habitats, coastal forests, and Jamaica Bay marsh islands, while providing ecological and societal benefits to the region."

The BIL funds will help kickstart several projects during the next few years. This article highlights two of these projects in New York State: the Stony Creek Marsh Island Restoration Project in Jamaica Bay; and the Bronx Zoo and Dam and Stone Mill Dam Restoration Project in the Bronx.

USACE



Aerial photo of the restoration project in Jamaica Bay, New York.

Stony Creek Marsh Island Restoration Project

Jamaica Bay is located in portions of the boroughs of Brooklyn and Queens in New York City. It is part of the Jamaica Bay Park and Wildlife Refuge, the country's first national urban park and one of the Gateway National Recreation Areas visited by millions of people each year.

The bay covers 26 square miles and opens to the Atlantic Ocean. The land surrounding the bay is heavily developed and includes John F. Kennedy International Airport, the Belt Parkway, and several closed landfills, including the ones I saw as a child, the Fountain Avenue and Pennsylvania Avenue landfills.

Inside the bay, there is a marsh island complex. During the last century, these once vibrant islands have been rapidly disappearing, resulting in extensive habitat loss. Since 1924, more than 2,000 acres of marsh islands and 85 percent of the wetlands have been lost.

In general, historic wetland loss in the region is due to human development, including the filling in of marshes and open water areas, hardening of shorelines, the discharge of raw and treated sewage, sewer overflows, and landfill leachate (water containing contaminants seeping from landfills). The disappearing marshes pose a threat to wildlife and coastal communities.

It had been estimated that the marsh islands, if left alone, would vanish completely by 2025. Fortunately, due to work the Army Corps conducted over the years, this

won't happen. The Army Corps, along with partnering agencies, has restored approximately 180 acres of marsh in Jamaica Bay through a number of successful restoration projects.

According to Baron, "Restoring these marsh islands provides significant benefits to the region, and combats many of the reasons for their loss. The restored marsh islands keep the sediment within the Jamaica Bay system: wetland vegetation stabilizes the island; the islands reduce waves and erosion of surrounding shorelines and adjacent islands; the wetlands improve water quality within the bay; and the marsh islands that we construct will continue to build the ecological resilience of the bay to respond to increasing sea level rise."

Now with BIL funds, the Army Corps, in collaboration with the New York City Department of Environmental Protection, will restore 62 acres of Stony Creek Marsh Island, which sits in the heart of Jamaica Bay. To perform this work, approximately 150,000 cubic yards of sand will be beneficially used from the dredging of the Jamaica Bay Federal Navigation Channel or Ambrose Channel and placed on the island.

The material will be graded and contoured to appropriate elevations suitable for a marsh and then planted with native vegetation. When completed, the island will have 26 acres of low marsh, 22.5 acres of high marsh, 3.5 acres of scrub-shrub wetland, 8.7 acres of shallow marine habitat, and 1.4 acres of tidal channels or narrow inlets.

This will create a healthy marsh for one of the most biodiverse regions in the Northeastern United States. Jamaica Bay provides critical spawning and nursery habitat for more than 80 migratory and estuarine fish species, as well as terrapins and four species of endangered or threatened turtles. In addition, 300 bird species—20

percent of the nation's birds—call the bay their home and visit it every year, as a stopover along the Atlantic Flyway migration route to their breeding grounds. These birds include the federally threatened piping plover and endangered roseate tern.

Bronx Zoo and Dam, and Stone Mill Dam Restoration Project

Another project that will help preserve critical spawning and nursery habitats is the Bronx Zoo and Dam and Stone Mill Dam Restoration Project, located in the Borough of the Bronx, New York City. These two dams are located close to each other along the Bronx River, which flows through highly urban communities that include roads, parking lots, the Bronx River Parkway, the Metro North Harlem commuter rail line, the Bronx Zoo, and the New York Botanical Garden.

Over the years, the Bronx River's complex ecosystem has degraded, losing more than 99 percent of its freshwater wetlands. This has been caused by industrialization, channel modification, filling of wetlands, and runoff of contaminated sediments from roadways. The construction of these two dams have created barriers to fish movement upstream to reach egg-laying sites, threatening the survival of their populations.



Roseate tern

The United States Army Corps of Engineers' mission is to deliver vital public and military engineering services; partnering in peace and war to strengthen our nation's security, energize the economy, and reduce risks from disasters.

The New York District is responsible for the United States Army Corps of Engineers' water resource development, navigation, and regulatory activities in northeastern New Jersey, eastern and south-central New York State, including the New

York Harbor and Long Island, and parts of Vermont, Massachusetts, and Connecticut. The District is also responsible for design and construction at United States Army and Air Force installations in New Jersey, New York, and Greenland.

The District's area of responsibility encompasses more than 20 million people spread throughout 37 congressional districts. The District's civil works water resource development projects span eight major river basins and Lake

Champlain, the Port of New York/New Jersey, and 400 miles of coastline. The projects entail the planning and construction of environmental remediation projects, responding to military contingencies and civil emergencies, regulating impacts to wetlands and navigable waterways, and providing real estate support services to nearly 400 United States Armed Forces recruiting stations and numerous military installations.



Stone Mill Dam

Now with BIL funding, the Army Corps, in collaboration with New York City Parks and Recreation, will provide fish access and connections to key spawning and nursery habitats upstream. The work will remove or modify fish passage barriers, which may include installing fish ladders and opening or removing the dams at both locations to allow fish access to and from an additional seven miles of upstream habitat.

Providing habitat for migratory fish is important socially, economically, and ecologically. Migratory fish, such as river herring, are a source of food for birds, including great blue heron and osprey, and commercial fish, such as striped bass, cod, and haddock, whose populations have been declining. These and many other fish and wildlife species will benefit from better connections between Bronx waterways and upstream rivers.

In addition, the river and its shoreline will be improved. This will include restoring the bottom of the channel, removing invasive plant species, like knotweed, and replacing it with vegetation that will improve wildlife habitat and stabilize the shoreline to prevent soil erosion.

Today, when I drive past Jamaica Bay, I'm instinctively prepared to be struck by that putrid dump smell and to hold my breath, but instead I'm stunned by the change that's occurring in the area. The landfills have been closed and are now a 400-acre, 130-foot-high New York State Park. Instead of seagulls hunting for food, families picnic on wooden tables, and instead of toxic soil leaking into the bay, there is a healthy mix of trees, shrubs, and wildflowers growing along the park's walking paths and grounds.



Picnic area at Shirley Chisholm State Park in Brooklyn. Former site of the Fountain Avenue and Pennsylvania Avenue landfills in Jamaica Bay.

Park visitors also have spectacular panoramic views of the Empire State Building to the northwest, the Verrazano-Narrows Bridge and New York Harbor to the west, and Jamaica Bay to the south. As restoration work moves forward on the Hudson Raritan Estuary New York and New Jersey Ecosystem Restoration Project, the views of the bay are sure to take the breath away of future generations, in a good way.

Dr. JoAnne Castagna, Ed.D. is a public affairs specialist and writer for the U.S. Army Corps of Engineers, New York District. She can be reached at joanne.castagna@usace.army.mil.



Participate in the Kiosk Survey

DEC would like your opinion on our informational kiosks. Kiosks are small, open, wooden structures that provide cover for educational and informational signs that feature trail maps, emergency phone numbers, and other important information. These kiosks are located at various State properties, such as state forests, wilderness areas, conservation easement lands, wildlife management areas, boat launches, and more. Survey participants will be entered to win a \$50 sporting goods store gift card and a free subscription to the *Conservationist* magazine. By providing input, you can help improve your outdoor experience! For additional information, go to: www.dec.ny.gov/outdoor/124251.html. To participate in the survey, go to: www.surveymonkey.com/r/DECKiosks.

2023 Fire Tower Challenge

The Catskills Fire Tower Challenge is back for 2023. Participants will have until December 31, 2023, to hike to the six DEC-owned Catskill fire towers: Balsam Lake, Hunter, Overlook, Red Hill, Tremper, and Upper Esopus, which has a new fire tower located at the Catskills Visitor Center. The Fire Tower Challenge provides an opportunity to experience breathtaking views of the Catskill Mountains, while also making lasting memories with family and friends. For more information, go to: www.dec.ny.gov/lands/76620.html.



New York's Waters are the Best for Bass Fishing

According to *Bassmaster* magazine's ranking of the 100 Best Bass Lakes of 2022, the St. Lawrence River is the best fishery in the U.S. for bass fishing. Other New York State waterways earning a spot on the Top 100 list include Erie/Upper Niagara River (#8 overall), Champlain (#4 Northeastern Division), Cayuga (#12 Northeastern Division), Oneida (#18 Northeastern Division) and Chautauqua (#25 Northeastern Division). Complete rankings can be found in the September/October 2022 issue of *Bassmaster* magazine.



New Bridge Expands Recreation Opportunities

DEC recently announced the completion of the Little Sandy Creek Bridge in Winona State Forest, in Boylston, Oswego County. The newly constructed 110-foot bridge that extends over Little Sandy Creek was built by DEC in partnership with the Winona Forest Recreation Association, and is part of the new, one-mile Little Sandy Creek Trail. The 9,233-acre Winona State Forest, which includes 31.1 miles of cross-country ski trails, 8.7 miles of snowmobile trails, and 9.9 miles of forest roads, has become one of New York's premiere destinations for outdoor recreation. For more information about Winona State Forest, go to: www.dec.ny.gov/lands/8072.html.



Climate Leadership and Community Protection Act

After a rigorous public process and nearly three years of work, New York's Climate Action Council adopted a Scoping Plan to advance the State's Climate Leadership and Community Protection Act. The Scoping Plan sets the course to effectively reduce the carbon footprint of 20 million New Yorkers, while transitioning to a clean energy economy that improves reliability and resilience, and benefits all of New York State. DEC will have until January 1, 2024, to draft regulations to meet the Climate Act's statewide greenhouse gas emission limits. To view the Scoping Plan and for more information, go to: climate.ny.gov.

New Fish Found in Hudson River

In September 2022, while conducting annual monitoring for young-of-year striped bass, the DEC Hudson River Fisheries Unit caught its first blackcheek tonguefish (*Symphurus plagiusa*) near Kingsland Point Park in Westchester County. These bottom-dwelling flatfish are relatively small, with a maximum length of 23 centimeters, and have both eyes on the left side of their body. The fish captured have been preserved as part of the New York State Museum collection and will be used to expand our understanding of the species. The Fisheries Unit will continue to record and share news about blackcheek tonguefish during future annual monitoring.



AMERICAN SHAD

What DEC is Doing to Help Bring Back this Important Species



BY ROBERT MICHELSON
WITH WES EAKIN

The American shad (*Alosa sapidissima*) is an anadromous, or migratory fish species that spends its adult life living in saltwater, then returns to the river or stream of its birth to reproduce. There are several species of Hudson River fish that fall into this category: American shad; Atlantic and shortnose sturgeon; and alewife and blueback herring.

Management of the American shad falls under the guidance of the Atlantic States Marine Fisheries Commission (ASMFC). All Atlantic Coast states are required to coordinate all fish-related activities through this authority, and must conform to ASMFC Interstate Fisheries Management Plans that set rules and regulations for both commercial and recreational fishing.

Shad in New York

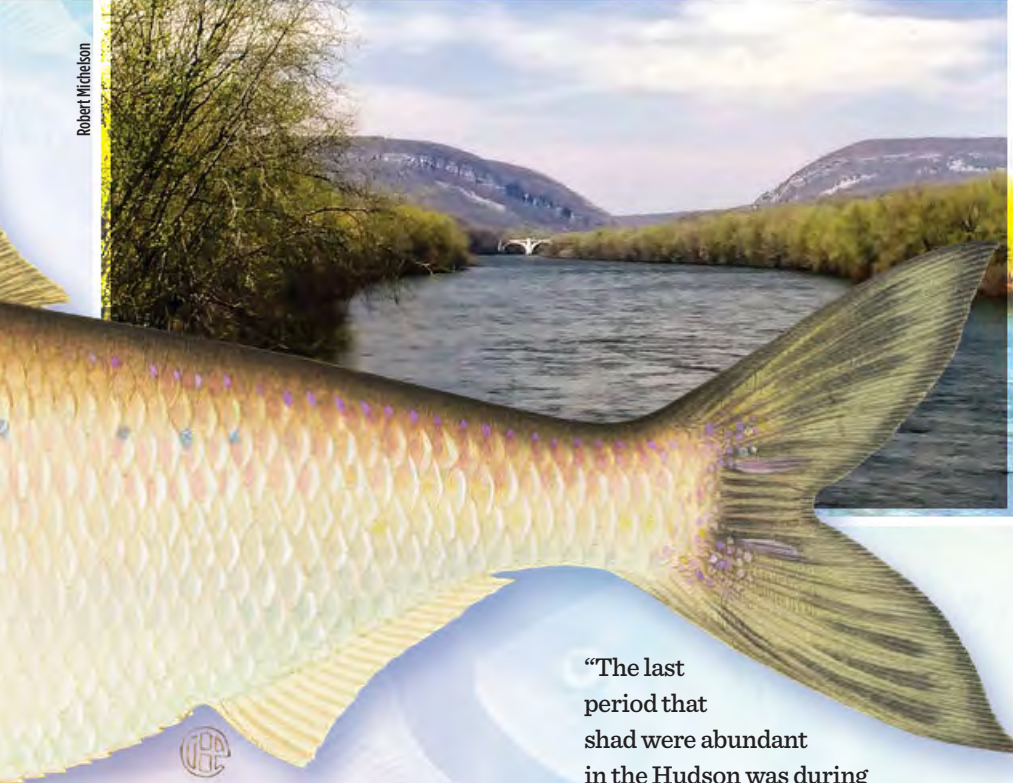
American shad have a long history in New York State, dating back prior to European colonization. Archaeological digs along the Hudson River of Native American middens (piles of shells, bones, utensils, and artifacts) indicate that shad were an important food source. The earliest documentation of American shad occurred in the 1600s, when Dutch, French Jesuits, and English explorers noted these fish in their diaries and reports. The Dutch recognized 10 commercially important species, along with a few they were not familiar with, one of which they called “elft” or the American shad.

According to Wes Eakin, Fisheries Biologist with the Department of Environmental Conservation (DEC) Hudson River Fisheries Unit, written records of the American shad fishery began in the late 1800s. “These

records show a cyclical pattern of overfishing and stock rebuilding, compounded by habitat loss due to dredge and fill operations from the construction of navigation channels for commerce,” he explained.

Harvest in the late 1800s was high, followed by 20 years of low, or no, fishing catches. During this lull in harvest, the stock grew to high levels, enough to sustain the high harvest experienced during WWII. During this time, a concerted effort was made to harvest United States fishery resources with the motto “food will win the war.” However, in the years following the war, the shad stock experienced another collapse, likely due to the overfishing that occurred during the war and the seven-to-ten-year period that followed.

The stock rebounded in the late-1950s and early 1960s, but it was short-lived, collapsing again in the late-1960s.



A sports fisherman landing shad during a shad fishing tournament.



The upper Connecticut River near the Massachusetts border.

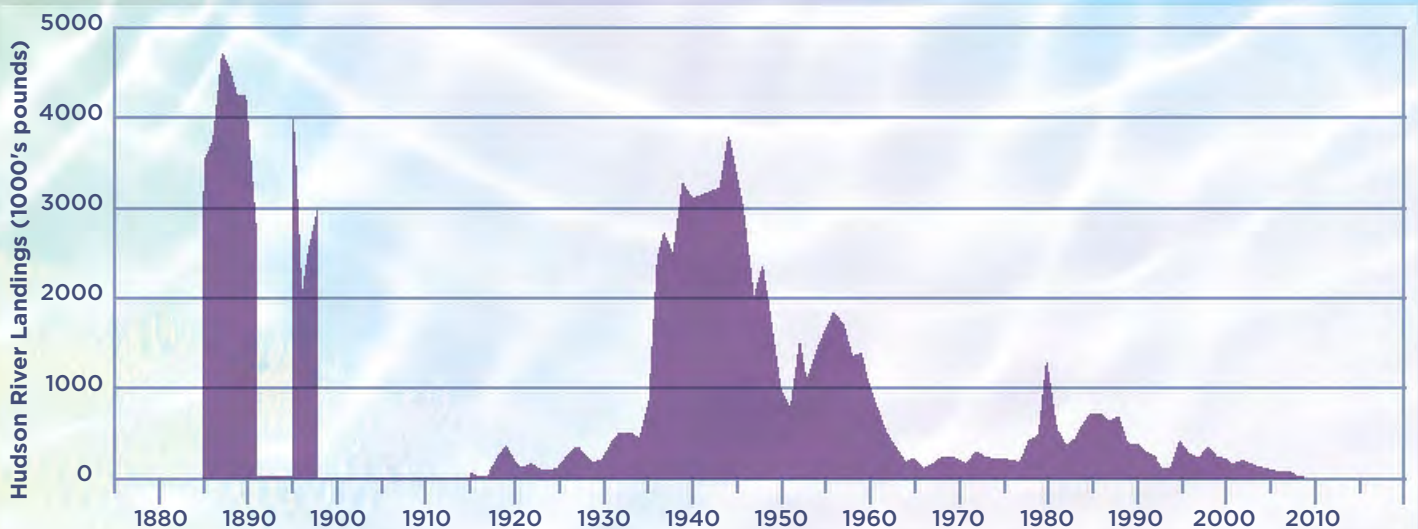
Population and Abundance Decline

“Biological data, such as average age, size, and weight of spawning fish were decreasing, indicating an increase in mortality,” Eakin reported. Where and when that mortality was occurring was difficult to ascertain, and unfortunately, it all came to a head in 2002, when American shad experienced recruitment failure, meaning that there were not enough young fish hatching to overcome the loss of adult shad. This resulted in the total collapse of the stock four years later in 2006, when the number of adult shad returning to spawn plummeted.

Since then, the adult runs and subsequent recruitment of young fish have been fewer than failure levels. “However, we did see a glimmer of hope in 2014, when a strong year class was hatched, followed by good adult runs in 2021 and 2022 (shad mature and return to spawn for the first time when they are between five to eight years old). These runs were good, relative to the abundance of shad since the fishery collapsed, but are still not where we want them to be, but a positive sign nonetheless,” Eakin said.

“The last period that shad were abundant in the Hudson was during the 1980s and 90s. Although, it is important to note that after each collapse, the stock was never able to fully rebuild to levels observed prior to collapse,” said Eakin (see landings figure below).

The abundance of shad in the Hudson was relatively satisfactory and stable in the 1980s and 90s, though at low levels relative to historic abundance. It’s hard to point to one specific reason as to why the stock collapsed; it was likely a combination of several factors, but there were indications that the stock was headed in the wrong direction.



As mentioned earlier, it is hard to identify one specific reason for the collapse. Overfishing, loss of nearshore habitat due to dredging and filling, the introduction of invasive zebra mussels, and degradation of habitat quality are all thought to have contributed to the decline and ultimate collapse of American shad in the Hudson River.

Approximately 57 percent of shallow water habitat north of the city of Hudson has been lost due to dredge and fill operations. This area provided critical nursery habitat for American shad. The loss of nursery habitat directly affects recruitment. Efforts to restore nursery habitats are underway, primarily by the Hudson River Estuary Program, which is a program within DEC, and continue to be a priority to promote shad recovery in the Hudson River.

Another factor influencing shad is climate change. Increases in major storm events such as Hurricane Irene and Tropical Storm Lee in 2011 caused significant habitat alterations that undoubtedly negatively impacted American shad. Those two storms alone deposited approximately 2.7 megatons of sediment into the Hudson River.

Those sediments buried submerged aquatic vegetation (SAV) beds. "SAV beds provide important nursery area for young American shad, along with a refuge from predators," said Eakin. "We have just recently—within the past five years or so—begun observing the recovery of SAV beds." To further promote SAV recovery, restoration efforts are underway by the Hudson River Estuary Program, via plantings of native eel grass at strategic locations throughout the Hudson River.

In the early 2000s, there were signs the Hudson shad stock, as well as several shad runs in other

coastal states, were headed in the wrong direction. During that time, a large component of American shad mortality was attributed to directed ocean fisheries that were specifically trying to catch American shad, as opposed to indirect fisheries that capture shad as bycatch. To address concerns of many state and federal agencies, the ASMFC closed ocean shad fisheries.

Closure of Shad Fisheries in New York

"ASMFC is a collaborative body that manages shared migratory fishery resources along the Atlantic coast, which includes American shad," Eakin explained. The closure took a phased-out approach, and the ocean fisheries were completely closed by 2005, but unfortunately it may have been too late for the Hudson stock. While the ocean fisheries undoubtedly contributed to the decline of the Hudson shad stock, it was not the only contributor. In-river fisheries, as well as habitat loss and alteration, were also significant factors in the decline.

In 2010, with no immediate response to the ocean fisheries closure and continued decline of the Hudson stock, DEC implemented a complete moratorium on recreational

Sign at a weigh-in station of a shad fishing tournament.



Robert Michelson

and commercial American shad fishing, which remains in place today.

DEC, along with other state and federal collaborators, has worked to implement management strategies to reduce mortality of the Hudson River shad stock by limiting bycatch of Hudson shad in other fisheries, mainly in the Delaware Bay and federal waters. In 2014, the Mid-Atlantic and New England Fisheries Management Councils implemented a shad and river herring bycatch cap.

This cap helps prevent excessive harvest of shad and river herring as bycatch in high volume fisheries, such as the Atlantic herring and mackerel fisheries. Another recently

American eel grass





Robert Michelson

implemented management strategy is an American shad quota in the Delaware Bay, where Hudson shad are known to be caught in directed and non-directed fisheries. Studies have shown that as much as 40 percent of shad caught in these fisheries are Hudson River shad.

This quota will cap the amount of Hudson shad being caught in these fisheries. It is important to note that in recent years, shad caught in the Delaware Bay have declined significantly, with landings in the thousands of pounds (100s of fish), compared to historic landings, which were in the hundreds of thousands of pounds. Nevertheless, this management strategy will ensure that Hudson River shad will be better protected, especially if Delaware Bay landings increase in the future.

DEC's Efforts to Help Shad

Several habitat restoration projects that benefit shad have been completed or are in the planning phase. Since 2016, nine dams have been removed in the Hudson River watershed. While none of these removals restored access to historical shad habitat, the removals improved overall ecosystem function, indirectly benefitting shad.

In 2018, a side channel restoration project was completed by the Hudson River Estuary Program. This project restored vegetated shallow water and intertidal habitats, improving water quality and nursery habitat directly benefiting shad. Several other habitat improvement projects are identified in the *Hudson River Estuary Habitat Restoration Plan*. To view this plan, go to: www.dec.ny.gov/docs/remediation_hudson_pdf/hrhrp.pdf.

The 2020 ASMFC American Shad Benchmark Stock Assessment indicated that the mortality of Hudson River adult shad was sustainable. This is a good sign and indicates that adult shad are surviving at acceptable levels, both following spawning in the Hudson and during ocean residency. However, the assessment also indicated that recruitment is still below failure levels and the adult spawning run remains depleted relative to historical levels. Given these results and the need to rebuild the shad stock, DEC developed the *Hudson River American Shad Recovery Plan*.

"In this plan, we define recovery goals and specify targets that, when attained, will allow for the reopening of sustainable fisheries. This plan is currently in internal review, incorporating public comments, and is expected to be released in early 2023," Eakin reported. The draft plan is available at: www.dec.ny.gov/docs/fish_marine_pdf/hudsonshadplan.pdf.

The long-term and short-term goals of this plan are to rebuild shad stocks to levels observed in the 1940s and 1980s. As previously mentioned, during the rebuilding process, targets are defined in which recreational and commercial fisheries can be reopened sustainably.

The spawning runs in 2021 and 2022 provide hope that we are close to turning the corner on the recovery of American shad in the Hudson. However, we may need a bit more patience. Based on a case study of the Columbia River in Oregon, where shad had been heavily overfished, leading to a collapse, it took approximately 15 to 20 years, or two to three shad generations, for the stock to fully recover.

Robert Michelson is a professional photographer and videographer, a monthly columnist in *The Fisherman Magazine*, and a frequent contributor to *Natural History Magazine* and the *Conservationist*. **Wes Eakin** is a Fisheries Biologist with Cornell University in cooperation with the New York State Department of Environmental Conservation.

Author (Robert Michelson) underwater videotaping American shad.



SPECIES SPOTLIGHT

AMERICAN SHAD

BY ROBERT MICHELSON WITH WES EAKIN



American shad (*Alosa sapidissima*) are found along the entire east coast of North America, ranging from the St. Johns River in Florida to Labrador in Canada. On the west coast, American shad were introduced at the end of the 19th century and can now be found from Sacramento, California to southern Alaska.

Description/Diet/Behavior

The American shad is the largest river herring in North America, growing up to 30 inches long and weighing up to eight pounds. They are large, silvery fish that are built for speed. They have a deeply forked tail like tuna, and a top, or dorsal, fin set farther back to reduce drag in the water.

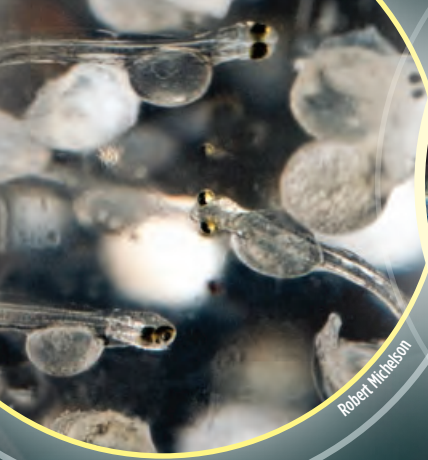
During the spawning run in New York State, typically from late-March through early-June, adult American shad do not feed once they are in freshwater. But they will strike at artificial lures, including darts and small shiny spoons.

Shad are anadromous fish, which means they were born in freshwater, but spend most of their lives in saltwater, feeding in the open ocean until maturity, and then returning to their natal (where born) freshwater rivers to reproduce. The American shad is also a migratory species, moving generally north during the spring and summer, and south during the fall and winter.

Spawning adults locate their home region by orienting themselves to ocean currents and changes in water salinity. However, the exact method by which shad identify their specific home river is still largely unknown. Research has suggested that the principal homing mechanism may be olfactory in nature; shad may find their natal river by recognizing its unique smell.

Shad returning to spawn gather near the mouth of their natal river, waiting for the right conditions to enter the estuary. Water temperature is the key factor in determining when shad will make their upstream run. Upstream movement and spawning begin when the water temperature has reached about 54 degrees Fahrenheit and continues until the temperature climbs to 68 degrees, with peak activity occurring at about 65 degrees. Although temperature is the main trigger, water volume flow, water clarity, and the lengthening period of daylight are also factors that affect the timing of the spawning run.





Shad spawn in the main stem of rivers, in areas of moderate current flow. Spawning occurs at night, beginning at sunset, and continues until about midnight. Most likely, some form of chase is involved, with males swimming in tight circles around the females.

Females release their eggs directly into open water as shallow as three feet, or as deep as twenty feet. Males swimming nearby release milt (semen of a fish) to fertilize the eggs as they slowly sink. After spawning, shad that have survived the difficult upstream journey and the exhausting process of spawning return downstream almost immediately to rejoin the offshore juveniles, as they begin their springtime migration through the Gulf of Maine.

Life History

The number of eggs a female American shad will release depends on the latitude of the river of its origin. Southern shad may release more than a half million eggs, but will only live to spawn once. Shad on the northern end of the range will release 100,000 to 200,000 eggs, but may return to spawn more than once. The average spawning release of the female along the mid-Atlantic coast is 200,000 to 400,000 eggs.

Large numbers of eggs are needed to offset intense predation. Predatory fish, such as bass and pickerel, and birds, such as gulls and cormorants, eat shad eggs and juveniles. Offshore, striped bass, porpoises, and sharks are among the many predators that feed on shad as well. Only one out of every 100,000 fertilized eggs will develop into a fish that will survive long enough to return to spawn as an adult.

After fertilization, the newly laid eggs are carried by the current and hatch in six to twelve days, depending on water temperature. The eggs hatch to release a transparent, thread-like larvae that is slightly smaller than one-half inch in length. Larvae feed on microscopic zooplankton—tiny plants and animals found in the surrounding water. The millions of newly hatched shad larvae are also an important part of the rich mix of plankton found in rivers and estuaries, providing a significant food source for other species in the food chain.

When the larvae are about four to six weeks old, they start to develop into the juvenile stage and begin to resemble adult shad. Juvenile shad spend the remaining weeks of summer moving constantly, feeding throughout the water column. By summer's end, the juvenile shad have grown to be about three to four inches in length.

As water temperatures begin to drop with the approach of autumn, the young shad begin to move downstream and out into the ocean, where they spend the next several years feeding and growing. They remain in the open sea until they become sexually mature at three to five years old for males, and four to six years for females.

The American shad has a long history in the Hudson River. However, the Hudson stock has declined in recent years. As a result, recreational and commercial fishing for American shad is prohibited in the Hudson River and the Marine District of New York. In March 2022, DEC released a Draft Recovery Plan for Hudson River American Shad. This plan outlines efforts to recover the stock and develops a science-based roadmap for reopening the shad fisheries. To view the plan, go to: www.dec.ny.gov/docs/fish_marine_pdf/hudsonshadplan.pdf.

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Fun Facts

- Some shad travel more than 2,000 miles in a single year
- Shad have sharp scales like a saw covering their stomach and chest
- Males communicate with females by nudging their bellies for spawning
- Adult shad have no teeth
- Shad primarily feed on zooplankton, but sometimes eat smaller fish like smelt, sand lance, and silver hake





Casting a Line

Spring is a great time of the year to go fly fishing, and New York is full of wonderful places to cast a line. One of my favorite spots is the Connetquot River in Islip, Long Island.

PETE CEPONIS | RIDGE

Thanks for sharing your photo with us! New York State is indeed known for its many fly fishing locations. Find your new favorite spot on our website at www.dec.ny.gov/outdoor/7749.html and read about the history of fly fishing in Connections with Old Rods and Reels in the April/May 2022 issue of Conservationist.



Housekeeping

This bald eagle decided to gather some clawfuls of grass for nest maintenance. The photo was taken in January on the upper Delaware River in Barryville.

TERRY ROGERS

Fantastic shot, thanks for sharing! Bald eagles will spend time during the fall and winter fixing up their nests, as was discussed in the article The Cobleskill Lovebirds in the February/March 2023 issue of the Conservationist.



Slipping and Sliding

I found these tracks and what appears to be an animal “slide” on the Lake Ontario side of my camp, located in the town of Richland, Oswego County. I have heard that otters will slide, but the tracks look quite large and, in places, are quite far apart.

BOB OWENS

These tracks were definitely made by an otter! The tracks look a little melted out, which makes them appear larger. But the five toes and the track pattern are definitely characteristic of otter! They have a bit of an awkward gait on land, where they lope, making the distance between tracks larger than expected.

—MANDY WATSON, WILDLIFE BIOLOGIST, DIVISION OF FISH AND WILDLIFE

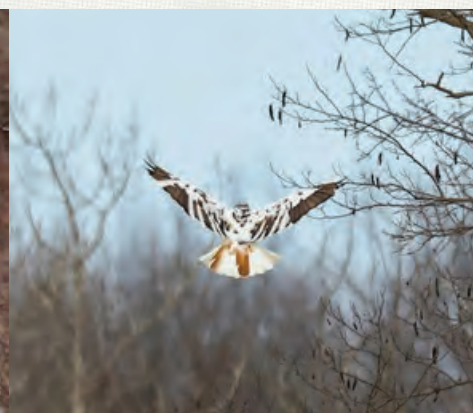


Ask the Biologist

Q: This was frozen in the sphagnum mat in a fen in western New York in early December. The picture is much magnified; the object was probably less than an inch across. It appeared to have been cut cleanly in half, and developed by wrapping around and around itself. I was unable to examine the back of it as it was frozen in solidly.

TOM REAGAN

A: *What you're seeing is the cross section (horizontal view of inside the stem) of a common bulrush plant (Typha latifolia), a.k.a. cattail. They're a native perennial plant that can be found throughout the country, as well as in South America, Eurasia, and Africa. Muskrats, geese, and a few other water dwelling animals feed on cattails, which is likely why it has a clean cut down to the base. They have this unique pattern inside the stem because it grows by producing a series of overlapping leaves. —LIAM SOMERS, ENTOMOLOGIST, FOREST HEALTH DIAGNOSTIC LAB*



An Array of (Missing) Colors

Over the years, we have featured a number of photos of leucistic animals in the *Conservationist*. Leucism is a genetic mutation that causes white, pale, or patchy coloration due to a partial lack of pigmentation. Although not especially common, some of our eagle-eyed readers have recently sent us photos of leucistic animals, and we wanted to share some of their photos. If you are lucky enough to photograph one, please share your photos with us at magazine@dec.ny.gov!

—LEFT: EVENING GROSBEAK BY VIRGINIA GLAZEN, MARATHON
CENTER: WHITE-TAILED DEER BY TIMOTHY BROWN, CLARENCE
RIGHT: RED-TAILED HAWK BY BILL COMBS JR., COBLESKILL

CONTACT US!



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Back Trails

Perspectives on
People and Nature

First Striper of 2022

BY ED SKORUPSKI

My 2021 striped season was cut short when I broke my ribs in a fall. So, to say I looked forward to the 2022 season is a gross understatement; I dreamt about it for a year!

My boat, named “The Money Pit,” because it’s a hole in the water into which I throw money, was ready for Opening Day (April 1). However, Mother Nature delivered a deluge two days earlier that muddied the waters, making them unfishable. I was destined to bide my time and was forced to rein in my desires a little longer.

After waiting a couple of days, on a Tuesday, Anna helped me put my boat in the slip at the Albany Yacht Club—the water was still a little turbid, but I could feel the tingle. On the way home, I stopped to see Captain Joe DeMarco at Tri City Tackle to pick up a couple dozen blood worms so I would be ready to go.

Waking early the next morning, listening to the peepers in the backyard, I could come up with no reason not to go fishing. After checking the United States Geological Survey sampling station on the Mohawk River, the turbidity dropped to 16—clear enough to fish—so I went fishing.

I can’t describe how good it felt to pull away from the dock and head upriver—there is a sense of freedom and simple purpose when I’m alone with my thoughts on the boat going fishing. To be honest, I had high hopes, but low expectations. The water was dirty and cold, there were no herring around, and I hadn’t heard of any fish being caught; but it didn’t matter, I was fishing.

With a definite destination in mind, I eased the throttle forward and ran north on the river—smooth as glass, with the smells of early spring wafting around me. The “spot” was a small side water that I liked to fish, on the Hudson River, just north and upstream of the Route 378 bridge. As I eased up to my anchor spot, a female mallard flew away, chattering “good morning.”

Anchor down, I rigged two rods, threaded a blood worm on a no. 3 circle hook, and cast the lines into the depths. I’m getting better at waiting, and while practicing patience, I cleaned up and organized the boat and rods.

About 40 minutes into the morning, while I was rigging a spinning rod with a Sabiki rig (a multi-hook set-up of small flies for catching herring), the port rod began singing “zzzzzzzzzzzzzzzzzzzz,” as some line

spooled off the reel—a song I hadn’t heard in too long a time. Instinctively, I grabbed the rod, clicked the reel into gear, and let the rod “load up,” hooking the fish. Then there was a satisfying weight on the rod, as the fish realized what was happening.

You don’t expect big fish early in the season, but this one battled like it was. We battled each other for five minutes, each of us gaining and losing. Finally, the fish tuckered out and I carefully lifted him into the boat: an absolutely beautiful 23-inch, 4-pound male striper—my first of the 2022 season!

After a quick picture, I released him back into the river.

The satisfaction and sense of accomplishment is indescribable. I dared to think that I was “owed” one after the events of the previous year, but that would be presumptuous. I was lucky catching one that early in the season, and I hoped my luck would hold and improve for the next 10 weeks.

I continued to fish for another two hours without a bite, but I really didn’t care. My day was already made. Now if it would just stop raining.

Ed Skorupski is an avid angler and a member of the New York State Outdoor Writers Association.



Check out the Tackle Box feature in the HuntFishNY mobile app!



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- Ability to search waterbodies by name or by zooming/panning a NYS map;
- Waterbody-specific fishing regulations;
- Fish species and stocking information;
- Fishing access information, including boat launches and parking areas; and
- A navigation feature for driving directions.



To access these features, download the latest version of HuntFishNY by visiting your Apple App Store or Google Play Store. For more information, visit DEC's website at www.dec.ny.gov/outdoor/96470.html or use your phone to scan the QR code.



Arbor Day (April 28, 2023)

is the official day we recognize the importance of trees in our lives. Not only do trees produce oxygen, clean our air and water, and provide wildlife habitat, but spending time among trees and in nature also makes us healthier and happier.

Research has shown that visiting a forest has real, measurable health benefits, both mental and physical. Spending even just a few minutes in nature as part of your regular schedule can help lower blood pressure, reduce stress, and improve your ability to focus. It's not just a forest's beauty that calms us—exposure to the fresh air boosts our immune systems too.

So whether your nearby nature is a city park, a local forest, or your own backyard, spend some time among the trees this Arbor Day and your body, mind, and soul will thank you. Even better, make it a habit beyond Arbor Day and the benefits will last a lifetime.



Department of
Environmental
Conservation

**“Time spent amongst trees
is never wasted time.”**

—Katrina Mayer





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I'm NOT blue da ba dee da ba di?! Did you know blue jay feathers are made of microscopic prism-like structures, causing the refracted light to appear blue? Hold a blue jay feather to a light bulb, or crush the feather, and the blue color will disappear!

@zachvaughanphotography

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