

NEW YORK STATE

CONSERVATIONIST

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APRIL 2020

Marine & Debris Our Ocean

**Celebrating New York's Women Anglers
Lake Trout Rebound in Lake Erie
DEC's 50th Anniversary**

Dear Reader,

The earth has shifted under our feet since my last *Conservationist* letter. At time of printing, the nation is still very much in the throes of the coronavirus pandemic. New York State is responding aggressively under the leadership of Governor Cuomo, and that includes a mobilization of the DEC. Hundreds of professionals from our agency have been serving on the front lines in the fight against the virus, and I have been honored to lead them in the field at testing sites and hospital expansions. At the same time, thousands of DEC staff continue to work on our core environmental programs, and I thank them for sustaining our mission at this critical time.



With the return of warm weather, I know that all of you are eager to get outside and enjoy New York's great outdoors. I am too. But during the ongoing public health crisis, it is imperative that we take critical safety precautions to help mitigate the spread of the virus and protect health. The best thing you can do to save lives is stay home. If you have to go out, do your part by recreating locally, keeping a safe distance (at least six feet) from others, and bringing with you a mask and hand sanitizer. Be aware that some outdoor destinations or pursuits may be temporarily off limits—please check our website for updates.

April 22nd marked the 50th anniversary of the first-ever Earth Day and the creation of DEC. In this issue of the *Conservationist*, you can learn more about the first Earth Day celebration and the formation of DEC (pg. 2). We also highlight some of DEC's accomplishments over the years, including the long-awaited return of brook trout to an Adirondack lake that had been devoid of fish for decades due to acid rain (pg. 19).

You can also learn about DEC's work to restore and repopulate lake trout in Lake Erie using the *Argo*, DEC's research vessel (pg. 4). The re-establishment of lake trout to the lake has earned international attention and will be highlighted in a soon-to-be-released documentary film. More importantly, the lake trout create exciting new opportunities for anglers, young and old.

April marks the start of the fishing season and this issue includes photographs (pg. 12) of female anglers who participated in our WomenHuntFishNY photo contest. We hope these photographs will inspire more women and girls to get outdoors and experience the great fishing available in every corner of New York.

In this issue, you can also read about programs, initiatives, and opportunities accessible to people and families of all ages, skills, and abilities (pg. 16). And you can discover how a group of volunteers is helping to protect and conserve the largest lake located wholly within New York State (pg. 23). Last but not least, everyone should read the article on marine debris highlighted on this issue's cover to find out how we can all do our part to help prevent waste from entering New York's coastal waters, where it negatively impacts marine life (pg. 8).

I wish you all health and safety. We will get through this together. New York Strong.

Sincerely,
Basil Seggos, Commissioner

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DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Basil Seggos, *Commissioner*
Erica Ringewald, *Deputy Commissioner for Public Affairs*
Harold Evans, *Director of Office of Communication Services*

THE CONSERVATIONIST STAFF

Eileen C. Stegemann, *Managing Editor*
Peter Constantakes, *Assistant Editor*
Tony Colyer-Pendas, *Assistant Editor*
Megan Ciotti, *Business Manager*
Jeremy J. Taylor, *Conservationist for Kids*
Rick Georgeson, *Contributing Editor*

DESIGN TEAM

Andy Breedlove, *Photographer/Designer*
Jim Clayton, *Chief, Multimedia Services*
Robin-Lucie Kuiper, *Photographer/Designer*
Mary Elizabeth Maguire, *Graphic Designer*
Jennifer Peyser, *Graphic Designer*
Maria VanWie, *Graphic Designer*

EDITORIAL OFFICES

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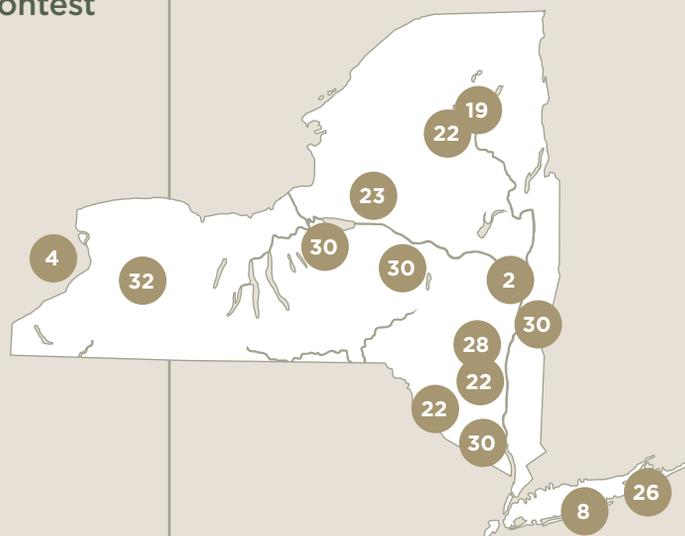
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We've Come a Long Way

CELEBRATING THE 50TH ANNIVERSARIES OF EARTH DAY AND DEC

BY CONSERVATIONIST STAFF

This year, we celebrate the 50th anniversary of Earth Day. The first national Earth Day was April 22, 1970; it was organized as a day of education about environmental issues. On that same day, Governor Nelson Rockefeller signed the legislation that established the New York State Department of Environmental Conservation (DEC).

Earth Day was envisioned to be a large-scale, grassroots environmental demonstration; a day to focus on the environment and raise awareness of environmental challenges.

On that first Earth Day, 20 million Americans took to the streets or assembled at college campuses, parks, and auditoriums to protest environmental degradation and demonstrate for a healthy, sustainable environment. Groups that had been fighting individually united at rallies across the nation, and an active, growing environmental movement gained strength.

In New York City, a portion of Fifth Avenue was closed to vehicles for several hours, and exhibits highlighting the theme of preserving the environment were erected in Union Square. Across the country, school kids cleaned up their playground or collected mounds of trash along highways to focus attention on litter problems.

Earth Day provided a voice to an emerging environmental consciousness and focused attention on the possibilities of environmentalism. The first Earth Day was effective in highlighting critical environmental issues and transforming public attitudes, and it is credited with launching the modern environmental movement. It also sparked the creation of the Environmental Protection Agency and the passage of the Clean Air, Clean Water, and Endangered Species acts.

Although it was a milestone event that helped transform our nation's environmental agenda, Earth Day did not start the country's commitment to environmental protection; New York State has had a long and proud tradition of concern for the environment. In 1894, New Yorkers voted to amend the state constitution to make parts of the forest



Governor Nelson Rockefeller signed a law creating DEC on that first Earth Day in 1970.

preserves in the Adirondacks and Catskills “forever wild,” pioneering the legal preservation of wilderness—70 years before Congress enacted the federal Wilderness Act.

Today, Earth Day is a global celebration and is recognized as the planet's largest civic event. Events are now held in 195 countries, with more than 1 billion people participating in Earth Day activities. This year's focus is on Climate Action, with five main themes: citizen science, advocacy, volunteering, education, and events. Earth Day 2020 is another opportunity to educate and mobilize people to take action to ensure our environment is healthy and sustainable now and into the future.

To learn more about Earth Day, events, group activities, and how you can get involved, visit: www.dec.ny.gov/public/8804.html or www.earthday.org/

“We do not inherit the earth from our ancestors, we borrow it from our children.”

— Chief Seattle, 1854

DEC's Fiftieth

Earth Day's 50th anniversary also marks the 50th anniversary of the Department of Environmental Conservation. It was on that first Earth Day that Governor Nelson Rockefeller signed legislation establishing DEC, combining all state programs designed to protect and enhance the environment, which had been handled by the Conservation Department, various state boards and commissions, and the state departments of Health and Agriculture & Markets, into a single agency. The new agency opened its doors and began operations on July 1, 1970.

DEC's core mission is "to conserve, improve, and protect New York's natural resources and environment... to enhance the health, safety, and welfare of the people of the state." The agency accomplishes this through a variety of methods, including research and monitoring, education and outreach, establishing and enforcing regulations and policies, and providing recreational opportunities for people to interact with the environment.

Here are just a few highlights of the past 50 years:

1970

DEC creates the first New York endangered species list, to protect biodiversity and wildlife throughout the state.

1982

New York's "Bottle Bill" is passed, requiring deposits on certain beverage containers to encourage recycling and reduce litter.

1984

New York passes the nation's first law to address "acid rain" from in-state air pollution sources.

1992

The first NYS Open Space Plan is signed, forming the blueprint for state acquisition and protection of unique and environmentally sensitive lands.

2007

DEC creates an Office of Climate Change to respond to concerns about the effects that increasing amounts of greenhouse gases in the atmosphere are having on the environment.

2019

DEC confirms the discovery of a self-sustaining brook trout population in Lake Colden, an Adirondack lake that had been deemed "fishless" for decades due to acid rain.

1972



Then DEC Commissioner Henry Diamond (right) meets with legislative leaders to push for the 1972 Environmental Quality Bond Act.

2005



The spirit of Earth Day continued to grow, with people young and old recognizing their role in ensuring a healthy environment.

2019



Fifty years after celebrating the first Earth Day, DEC Commissioner Seggos joined Gov. Andrew M. Cuomo and Al Gore at the signing of nation-leading actions to combat our greatest environmental challenge, climate change.



Department of
Environmental
Conservation



A Mighty Fish

Making its Return to Lake Erie (with some help)

BY TJ PIGNATARO



Once upon a time, an apex predator ruled Lake Erie. Lake trout grew to four feet in length and weighed 50 pounds or more. They fed primarily on abundant cisco (native prey fish now extirpated) and they thrived in Lake Erie's nutrient-rich waters.

By the mid-twentieth century, however, a lethal combination of overfishing, a sea lamprey invasion, and a century's worth of pollution eliminated the fish from its native waters. Today, lake trout are back in Lake Erie. But, they aren't reproducing on their own.

"There is no natural population in the lake," said Jim Markham, an aquatic biologist with DEC's Great Lakes Fisheries Research Unit in Dunkirk. "In order to bring them back, we have to stock them." Markham was the lead author of the Great Lakes Fishery Commission's strategic plan to rehabilitate the lake trout in Lake Erie.



Lake trout, a keystone species that was eliminated from its native waters and historical spawning ground, are back in Lake Erie.

Prioritizing the restoration of a keystone species in Lake Erie is drawing attention to DEC, from near and far. This past September, a film crew of German science journalists visited Markham in Dunkirk for a documentary about Lake Erie's lake trout restoration efforts.

New York has been stocking lake trout for nearly 40 years, using the DEC Research Vessel *Argo*. While the stocking effort has produced a large population of adult lake trout, DEC fisheries experts found that it hasn't led to successful natural reproduction.

Markham said, "We're trying to restore a species that historically was here, but we're up against other factors. We're finding it very difficult to overcome those obstacles in bringing lake trout back. Ultimately, we hope to determine why they're not having success reproducing, and possibly determine methods to help improve the chances of success in the future."

Habitat Degradation

It's not that the fish aren't trying to propagate on their own. Scientists discovered evidence that lake trout are spawning, and even producing eggs—they're just not surviving.

DEC fisheries experts think they've figured out why: the prime suspects are invasive zebra and quagga mussels. After hitchhiking a trans-oceanic journey from Eurasia aboard lake freighters, the mussels colonized Brocton Shoal—the lake trout's historical spawning ground just west of Dunkirk. The shoal's piled lines of bowling ball-sized rocks provided an ecologically optimal habitat for the lake trout to spawn. But the shoal became so clogged with zebra and quagga mussels, the lake trout abandoned that habitat.

Instead, lake trout found alternative areas to spawn. But those areas are nearer to the shoreline and aren't ideal, as they tend to be in water that's shallower and very dynamic. Strong waves generated by the fall and winter storm seasons pulverize the trout eggs. As a result, DEC doesn't think the eggs are successfully hatching out of those areas.

Stocking Trout

Getting the fish to reproduce and repopulate Lake Erie naturally is the next step in the lake trout restoration mission, but it's a challenging task. Every spring, DEC stocks about 200,000 yearling lake trout from the USFWS's Allegheny National Fish Hatchery into Lake Erie. Of these fish, only about 80,000 will populate Lake Erie. That's because of high rates of mortality of the young stocked fish from predation and other hazards. In addition, those that do survive are constantly being hunted by sea lamprey, an invasive tissue-sucking parasite.

Lake Trout Documentary

Daniel Muentner, a science journalist and filmmaker from Hamburg, Germany, is making a documentary that will highlight the recovery of the health of Lake Erie and the re-establishment of lake trout to the lake. Muentner led a film crew to the Lake Erie Fisheries Research Unit in Dunkirk, NY and captured some of the sights and work performed by DEC. Jason Robinson, DEC's Great Lakes Fisheries Unit leader, Jim Markham, an aquatic biologist with the Fisheries Unit, and other staff aboard the DEC's research vessel *Argo* are expected to be featured in the film.

The documentary will reveal the agency's efforts to stock 200,000 yearling lake trout into Lake Erie every spring. It also highlights DEC's surveys and research initiatives gauging progress toward the restoration of lake trout into Lake Erie.

The subject of the restoration efforts and the lake trout seemed too compelling for Muentner to pass up. "There was a lot of stuff that could have been in the film," Muentner said. "I ended up choosing the lake trout because it ends up telling me something about ecological restoration in the best sense."

The hour-long film about Lake Erie will be one of five documentaries led by Muentner that feature ecological comebacks from around the world. It is scheduled to air on Arte TV—a publicly funded Franco-German media outlet—sometime this year.





Scientists surgically implant AA-battery sized acoustic telemetry devices in selected lake trout to track and record their movements around Lake Erie.



Once thriving in Lake Erie, lake trout would have been eliminated from the lake, if not for the hard work of DEC's scientists to stock, track, and restore the population of this fish.

Without stocking, Lake Erie's lake trout population would likely dwindle into oblivion. And the plight of these remarkable fish would be even more dire, if not for the *Argo*.

"The *Argo* is vital for our lake trout rehabilitation efforts," said Markham, a 19-year veteran with DEC who said he was lured to the agency for the chance to restore lake trout to its native waters. Every spring, this research vessel is loaded with young lake trout to be stocked into deeper waters offshore. The young trout are piped from a large hatchery tanker truck into two large stocking tanks on the *Argo*. Then, the fisheries unit shuttles them offshore of Dunkirk and releases them into about 70 feet of water.

It's a labor-intensive endeavor, but when the hatchery-to-tanker-to-*Argo* journey finally ends in the deep water of Lake Erie, the yearlings know what to do—they head straight for the bottom, where they're protected from being plucked by predators from shallower waters. DEC biologists have found that the fish stocked offshore, in the deeper water, survive to adults twice as well as those stocked from shore.



The DEC Research Vessel *Argo* is critically important to the efforts to stock and restore populations of lake trout to Lake Erie.

Finding Fish

Hand-stocking lake trout into Lake Erie aboard a boat may be considered a little old-fashioned, but the technology that gauges the success of those efforts is cutting edge. Today, scientists like Markham electronically track fish moving around Lake Erie with wireless acoustic telemetry technology. They're tracking various species, including lake sturgeon, walleye, and lake trout.

"That's our big research project," Markham said. "The whole idea behind this research is trying to figure out where the lake trout are spawning, and then to look at those areas and figure out why they are spawning there and why they are unsuccessful."

To follow the fish, biologists surgically implant AA-battery sized acoustic telemetry devices in selected lake trout. When the fish gets into proximity of one of the approximately 100 receivers arranged in a grid pattern through the Great Lakes Acoustic Telemetry Observation System (GLATOS: <http://glatos.glos.us/>) and anchored at the bottom of Lake Erie, the device pings the receiver. Data, including date, time, and the specific fish, is automatically recorded.

The data has already lent support to some of the fish biologists' theories—the big one being that a lack of suitable spawning habitat seems to be hampering the lake trout's ability to reproduce. The fish appear to move near the shore during the fall spawning season and then make large movements, which isn't their natural pattern. DEC biologists believe they are searching for habitat, indicating that there is a lack of spawning habitat.

How do Biologists Know Lake Trout Aren't Reproducing?

To help determine if lake trout are reproducing, all stocked lake trout are double-marked at the hatchery. The adipose fin—the small fin found behind the dorsal fin and in front of the tail fin—is clipped, and a microscopic

numeric coded wire tag is implanted in the nose of the fish. During DEC's August gillnet survey, conducted aboard the *Argo*, the tiny metal nose tag is removed and read. The tag confirms if the lake trout was stocked, as well as the time and location it was stocked. The August survey has been conducted in Lake Erie between Dunkirk and the Pennsylvania state line every year since 1985.

"Very few of the lake trout don't have a mark or a clip," Markham said. "Some years, there are none."

Tomorrow's Trout

The lake trout's return to Lake Erie is an unqualified success. However, it's just the first step toward achieving the bigger goal: a self-sustaining population. As stocking continues, technology advances, and research progresses, the primary questions are "Will it all work?" and "Will nature eventually see to the lake trout's restoration?"

"I'm hopeful," Markham said.

Meanwhile, DEC fish biologists keep searching for evidence that the lake trout are reproducing; making adjustments in procedures and trying different things. This has included stocking different strains of lake trout, some that are more resistant to predation by sea lamprey. Lake trout that can grow older and larger could aid reproduction odds. There's been some success there too. New York state's record lake trout—41 pounds, 8 ounces—was caught in Lake Erie in 2003.

"There's no other fish out there that you can catch in Lake Erie that can compare to the size of a lake trout," Markham said. He noted that DEC has recently begun stocking lake trout in different spots in the lake and even in a tributary to increase chances for successful reproduction.

"Our thought is to not leave any stone unturned," said Markham. "I think we still have some things up our sleeve to try."

TJ Pignataro is the public information officer for the DEC's Region 9 office in Buffalo.

STAFF SPOTLIGHT

Jim Markham—It's About the Fishing Experience



For many kids who grew up watching Jacques Cousteau on TV, becoming a marine biologist was their life's dream. While most didn't end up following that career path, Jim Markham actually did, earning his bachelor's degree in Marine Biology and then a master's degree in Natural Resources Management—Fisheries. Today, the boy who "fished every minute possible" is a Senior Aquatic Biologist for DEC's Lake Erie Fisheries Research Unit.

Jim started working for DEC in December 2000. He primarily works with coldwater species, including projects to restore lake trout, manage steelhead and native fish species, and assess sea lamprey populations. Yet when asked about what he's most proud of in his job, Jim says it's the strong relationship he's built with the angling community. Whether it's answering a specific question or simply providing information, he believes that one of the most essential parts of this job is to help someone have a better fishing experience.

Jim clearly has a passion for the outdoors—both on land and on water. He loves deer hunting, especially bowhunting, cross-country skiing with his wife, and, of course, fishing. When the weather's cooperating, he'll take his boat out after work to enjoy the "awesome" walleye fishing on Lake Erie, then head home for a campfire with his family and friends.

Despite his accomplishments, Jim has a major challenge he wants to accomplish in the final span of his career—to achieve natural reproduction of lake trout in Lake Erie. He is optimistic that an acoustic telemetry project that is providing information on where lake trout are spawning will help achieve this goal.

The boy who idolized Jacques Cousteau followed his passion for the environment, and he encourages others to pursue things in life that bring them enjoyment. And thanks to Jim and his co-workers, anglers are finding a lot to enjoy on Lake Erie.

Musings on MARINE

DEBRIS

BY KRISTA HAAS

Chances are you've probably noticed trash in the environment—by the side of the road, pouring out of an overflowing bin, caught in a storm drain, left on the beach, or in a number of other places. And chances are that you've noticed it recently too, perhaps even today. Unfortunately, sights like this are now part of our everyday lives. While they may warrant a reaction of "Ugh, that's disgusting," more often than not, we've become so desensitized to it that we barely notice. However, occasionally we might pause and think: **What happens to this garbage littering our communities? How did it get there? Whose responsibility is it to clean it up? And, who can help make sure that these places stay clean?**

Well, let's explore.

What happens to loose trash?

Although some of the trash we see in our environment may get picked up and be properly disposed of, a lot of it doesn't. That trash may continue to move around and eventually end up in our waterways, becoming what is commonly referred to as "marine debris." Marine debris is officially defined as "any persistent solid material that is manufactured or

processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes." To put it in simpler terms, it's solid trash in the ocean or the Great Lakes. That means that the term "marine debris" can refer to almost any manmade waste, ranging from teeny pieces of foamed plastic to old fishing lines, plastic water bottles, or even a large abandoned vessel.

Once these discarded items enter our waters, they can have quite an impact. Debris can harm animals by resembling their natural food and being accidentally ingested, filling their stomachs or blocking their digestive system. There is also the physical hazard of entanglement, resulting in anything from mild irritation to life-threatening injury. In addition, debris can smother or destroy critical habitat by reducing light and oxygen levels, create serious navigational hazards for both recreational boaters and commercial vessels, and even impact our health.

In addition, marine debris can negatively impact coastal economies as it continues to clutter our shores

Eileen Stegemann



Plastic debris litters a Lake Ontario beach.

Plastics and the Environment

Plastic sticks around. That's why it was quite the miracle product when it first came into the spotlight—cheap to manufacture, lightweight, and doesn't fall apart. Unfortunately, these same properties are the reason plastic is currently causing such a problem in our ocean—it never really goes away. Instead, plastic items break down into smaller and smaller pieces as they're exposed to the elements, eventually becoming "microplastics," which are difficult to clean and easily ingested by wildlife. Although plastics still have a valuable place in our society, such as in the medical field, a vast amount of unnecessary plastic is used every day and approximately eight million metric tons of plastic waste enters our ocean each year. Think about what unnecessary plastic items you use in your life and consider making the switch to environmentally friendly alternatives.



NOAA

We can all be part of the solution to the marine debris problem. Picking up debris when it's safe to do so could prevent it from harming wildlife.



Missouri Department of Conservation



NOAA

and mar the beautiful aesthetic qualities of these destinations, causing the number of visitors to coastal communities to dwindle in favor of cleaner locales. In fact, a 2019 study by the National Oceanic and Atmospheric Administration (NOAA) found that marine debris had a substantial economic impact and that doubling levels of marine debris along Mid-Atlantic coasts could result in losses of more than \$140 million in recreational value, more than \$250 million in tourism spending, and 3,400 jobs.

Unfortunately, the economic impacts of marine debris don't stop there. Lost or discarded fishing

gear can impact commercial fishing revenues as it continues to capture marine life, which unfortunately often perishes due to the gear no longer being checked. This is especially true for derelict pots and traps, where deceased animals become "fresh bait" and lure in additional animals that could otherwise be fished and sold by commercial fisheries. A 2015 NOAA

study found that removal of some of the estimated 145,000 derelict crab pots in the Chesapeake Bay could increase the crab harvest by 38 million pounds (accounting for 28.3 percent of the annual harvest), and that six years of this type of removal could produce an additional \$33.5 million for the fishery.

How does it get there?

All this debris can enter our environment in many ways. Someone may have left their belongings behind while visiting the beach or a park, maybe items blew away with the wind before someone was able to discard of them properly, or maybe somebody put their trash in a garbage can that was overflowing or it got knocked over. Of course, garbage also gets into the environment from people intentionally littering; but in many cases, it's accidental, simply because we're just not paying enough attention. For instance, many people would be appalled at the thought of littering, but they wouldn't think twice about releasing a balloon into the air or adding their trash to the top of a heaping mound of rubbish in a too-full public garbage can. However, it's our responsibility to reduce our contributions, including making sure that we're discarding our trash properly. That responsibility falls on all of us, not just those living in coastal communities.

Although coastal communities may be on the front lines of the marine debris problem, inlanders have just as much of a stake in the fight. Marine debris may feel like a far-off problem when you're located inland, but in reality, it comes from and impacts us all. The reason is simple: watersheds. A watershed is an area of land that drains into the same waterbody. Some watersheds can be *huge*. For example, did you know that parts of New York State are in the watershed that drains into the Chesapeake Bay, about 250 miles away? That means that trash from parts of New York State can be carried through the watershed all the way to the Chesapeake Bay, which is directly connected to the ocean. And that's just one example. No matter where you are, your trash can end up as marine debris.

What can we do about it?

Thankfully, there's a lot we can do about the marine debris issue. Considering this is a problem entirely caused by humans, that means that

it's an issue that is fully preventable, and we have the power to tackle it. Although addressing marine debris can feel like a daunting task, and you may be wondering what kind of difference you can possibly make as an individual, you would be amazed at what small actions can accomplish. The impact of cumulative small efforts will grow exponentially as more and more people take action.

The most important step toward addressing marine debris is prevention, or "turning off the tap." We must first stop the problem from getting worse, then we need to address the damage that's been done—like an overflowing sink, you'd start by turning off the faucet before cleaning up the mess. We can prevent more marine debris by making small changes in the ways that we live our lives, like filling a reusable bottle with water rather than buying a plastic water bottle. We can also take steps to reduce our use of throw-away materials whenever possible, reuse items when we're able, and if we do

New York State Actions to Reduce Plastic Pollution

New York relies on the ocean and its waters for a wide range of commercial and recreational activities. However, marine debris is a problem around the globe and unfortunately, New York is no exception. New York has taken several steps to address this important issue, including implementing a statewide plastic bag ban which took effect March 1, as well as a statewide ban on polystyrene (i.e. foam cups, containers, etc.) that will be implemented by 2022. These efforts will help to prevent harmful debris from accumulating in New York's waters, where they harm fish and other marine life, and can affect recreation activities.

During the 2018 International Coastal Cleanup, volunteers collected 295,742 debris items from more than 316 miles in New York. That included more than 32,000 cigarette butts (those filters are made of a plastic-like substance that doesn't break down), more than 23,400 plastic bottle caps, and more than 13,500 plastic water bottles. During a similarly timed cleanup of Jones Beach on Long Island, a separate group collected more than 470 pieces of balloon-related debris items from just one mile of beach. That's a lot of debris! For more information on the International Coastal Cleanup, check out: <https://oceanconservancy.org/trash-free-seas/international-coastal-cleanup/>.



New York's new plastic bag ban encourages everyone to take action against marine debris by reducing their use of single-use items like plastic bags and replacing them with more environmentally friendly and reusable alternatives.

use something that must be discarded, recycle it if we can. New York's recent plastic bag ban is a great example of an effort to reduce our use of disposable plastic items and replace them with reusable items instead. As we take steps to prevent contributing to marine debris, we can also spread the word about the issue and our efforts to our friends, family, and community. Educating others about the problem and how they can make a difference is essential to preventing marine debris and changing social norms.

Unfortunately, as we're working on turning off that tap, there is already quite a mess to deal with. To address the marine debris that's already out there, we must also focus on removal. By removing trash that's in our environment, we can prevent it from inflicting additional damage and make our spaces more beautiful in the process. There are many efforts to do this at various scales, but you can work to make a difference by participating in a cleanup in your community.

Check for events near you and join a local effort. If you can't find a cleanup to join, consider getting some friends together and organizing one yourself. Or, simply take a bag with you on your next walk and pick up debris as you go. There are lots of ways to get involved, and every effort makes a difference.

So, the next time you're walking or driving down the street and you notice some trash that shouldn't be there, ask yourself if you're contributing to the problem, ignoring it, or helping to solve it. If you don't like your answer, now is the perfect time to change it.

Krista Haas is the Ocean & Marine Outreach Coordinator with New York Sea Grant. She focuses her efforts on outreach of New York's Ocean Action Plan (www.dec.ny.gov/lands/111222.html), working closely with DEC's Division of Marine Resources. Prior to her time with New York Sea Grant, Krista worked as the Communications & Education Specialist with the NOAA Marine Debris Program.



The Truth about the Great Pacific Garbage Patch

The "Great Pacific Garbage Patch" has become quite the celebrity over the years, and as with any famous figure, there are a lot of rumors out there. Let's set the record straight. The "Great Pacific Garbage Patch" is actually just one of several "garbage patches" found around the world. No, these patches are not huge floating masses of garbage that you can walk on. Instead, they are where large amounts of marine debris can be found in greater densities due to circular ocean currents called "gyres" that concentrate trash in these areas.

This concentrated collection of debris can be found from the surface of the water, throughout the water column, and all the way down to the bottom of the ocean. And while the garbage patches do include larger pieces of debris, like fishing nets and plastic containers, these patches are mostly made up of very small plastic pieces. As you can imagine, this makes the garbage patches very difficult to clean, which is why efforts to address marine debris are mostly focused on preventing more trash from entering our ocean and cleaning up coasts and nearshore waters.



Montauk Lighthouse

Krista Haas

Ryan Strother, NYSG

NOAA

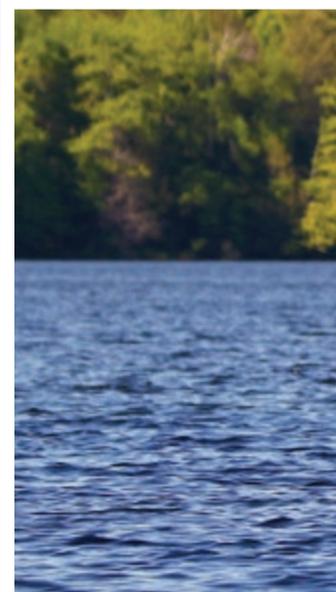
What goes up, must come down! Released balloons are litter too and often become marine debris.

Overflowing garbage cans can easily contribute to marine debris as trash is blown or washed into the environment.

The Changing Face of NEW YORK

Anglers

—DEC'S WomenHuntFishNY
Angling Photo Contest



BY JOELLE ERNST

When DEC launched its WomenHuntFishNY photo contest asking for photos of women hunters in their element, we had no idea how overwhelmingly positive a response we'd get. Women just wanted to tell their story. It was wonderful, especially considering how underrepresented women are in the hunting and angling community.

Along with the more than 2,000 hunting images that were submitted, we received a number of fishing photos. So we decided to build upon that, and launched the "WomenHuntFishNY Angling Photo Contest." Not surprisingly, the contest received a tremendous response, with more than 4,000 photos submitted. After all, women are a fast-growing segment of the angling community, especially when it comes to fly fishing. And this doesn't change once they start a family. In fact, more children are now fishing with their moms than with their dads.



Choosing 14 finalists among all the great photos was extremely difficult, but here are the winners and runners-up for each category:

- **Freshwater Fishing (Inland) winner:** Crystal Shore (Oneida Lake); runner-up: Michelle Muir
- **Freshwater Fishing (Great Lakes) winner:** Rachael Bush (Orwell Creek); runner-up: Dana Paciello (Lake Ontario)
- **Saltwater Fishing winner:** Angela Bryanne DeJesus (East River); runner-up: Samantha Moses (Cold Spring Harbor)
- **Ice Fishing winner:** Courtney Bly (Silver Lake); runner-up: Jennifer Pelletier (Lake George)
- **Youth Fishing winner:** Lydia Houck (Lake George); runner-up: L. Murphy
- **Multi-Generational winner:** Stacy Hollenbeck (Sandy Creek); runner-up: Christielee Bower
- **Action Shot winner:** Brianna Cook (West Canada Creek); runner-up: Sarah Eilers (Lincoln Pond)

Whether it's fly fishing with a friend on an esteemed Great Lakes tributary, taking their children to a local pond to fish for sunnies, or dropping a line after work for that evening bite, more women are out enjoying this rewarding activity, and the pictures on these pages celebrate their stories. We hope these images inspire other women to get out on the water and experience all the great fishing New York has to offer.



A.Paciello



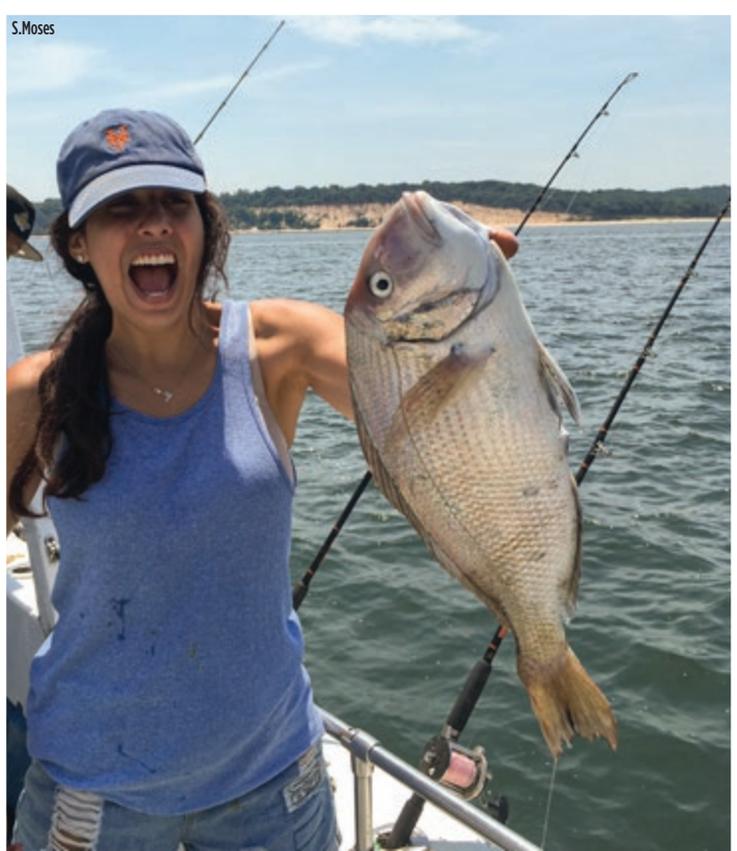
M.Houck



H.Stones



C.Bower



S.Moses



Note: These are only a sampling of the great photos that were submitted to the contest. To see more, visit DEC's Flickr page at: www.flickr.com/photos/nysdec/albums/72157711288524347

Joelle Ernst is a Fisheries Biologist in DEC's Albany office who specializes in fishing promotion.



ACCESSIBLE RECREATION

opportunities for everyone

BY TONY COLYER-PENDAS

I didn't grow up with a connection to nature. I grew up about 20 minutes outside of Miami, Florida. I played "hide-and-go-seek" in construction sites of row homes and townhouses. It wasn't until I moved to Saratoga Springs, after college, that I developed my fondness for the natural world. My wife and her family introduced me to the many outdoor experiences and opportunities that New York has to offer. Since then, I have made nature the focus of my personal and professional life, having now worked in land conservation, outdoor recreation, and natural resource protection for more than 20 years.

However, everything changed for me five years ago. I was driving home from work one evening, a drive that I had made thousands of times, having lived in my house and worked at the same place for more than 10 years. I was traveling on a two-lane State Route, with a 55-mph speed limit, when a driver coming in the other direction slammed into me, head-on. I sustained numerous injuries, including a shattered femur in my left leg. The doctors put my leg back together with a steel rod and 12 screws; they will be in there for the rest of my life.

I had to learn how to walk all over again. At first, I needed a wheelchair, then I required the use of a walker, and later a cane. I can now walk without any assistance or mobility aids on flat and paved surfaces; however, I don't get around as well as I used to. I use a walking stick or trekking pole to help me walk in nature, and handrails for assistance with stairs—surprisingly, going up stairs, or walking up a hill, is much easier than going down.

What I miss the most about my new physical limitations, is being able to go for a walk outdoors and explore the natural world. Whether people have been involved in an accident like me, or there is another reason for their difficulty walking, it turns out I'm not alone. More than 18 million people in the U.S. have limited mobility caused by accidents, disease, or aging.

The U.S. population is aging nationwide, and many people are finding they are not as nimble or active as they used to be. New York ranks fourth in the nation with the number of people aged 60 or older, with 3.7 million individuals, including 3.2 million people aged 65 and older. And, the older adult population is growing faster than any other age group in the state.

In 2017, New York became the first state in the nation to join the AARP Age Friendly Network. This confirms the state's commitment to support healthy aging through state agency decision-making. It also demonstrates a significant commitment to support the diverse needs of our state's growing population of older adults. While there are several efforts and studies designed to help people stay in their communities longer and to improve the quality of life of older adults, few of these efforts are focused on improving their outdoor recreation opportunities.

Realizing that I am not alone, I began searching for places in New York that have amenities to help people like me get out into nature. Quickly, I found that DEC and the State Office of Parks, Recreation and Historic Preservation have several properties with ADA accessibility improvements and facilities. In fact, to accommodate the needs of all visitors, improving accessibility is a goal for New York State and is incorporated into many state programs and policies.

Another challenge that I face with my limited mobility is keeping up with my 11-year-old son. Like many parents, I am finding that my son doesn't spend a lot of time outside, away from his electronic devices. While being indoors is easier for me, I can't help but feel that he should spend more time outside, playing and wandering. Again, I am not alone.

Several recent studies of children and adults in the U.S. show that many people don't have a close connection with nature. A study of parents of children 8 to 12 years old found that their children spend three times as many hours inside, with an electronic device, as they do outside.

Determined to encourage my son to embrace more time outdoors, I broadened my search from places where people like me (with limited mobility) can get out into nature, to include information on programs that encourage outdoor play and exploration for children. I quickly found DEC's Kids GO (Get Outside) initiative, www.dec.ny.gov/education/69.html. This website provides lots of useful information on resources and activities designed to help get kids outside and learn about nature and the environment.

While growing up in South Florida, I developed an affinity for fishing. I didn't live close to the ocean, but there was a network of ponds and canals within walking distance of my house, and I spent a lot of time fishing. I am still very interested in fishing. My wife and I bought a house that is bordered by a 35- to 40-foot-wide stream—definitely a bonus for me. I would fish in the brook any chance I could get.

I never learned to fly fish, so most of my fishing was from a bank of the stream or in it, with waders. When our son was old enough, I took him fishing with me and tried to get him interested, but I quickly learned that he was still too young and lacked the patience for waiting for a fish to strike. He would get bored and throw rocks into the water, which was more fun for him, but less for me—it scared the fish away.

Then the crash happened, and my limited mobility created some trouble for me to fish. As I said, I am able to get around okay on flat, level surfaces, but the banks of the stream on our property are a bit sloped, soft, and rocky in places, and there is usually some type of vegetation creating an obstacle. What was an outdoor activity that I enjoyed and would help me relax became difficult. For a while I didn't go fishing at all—I had to focus on learning to walk again, and then on rehabilitation and physical therapy.

It was my son who renewed my interest in fishing. As he got a little older, he expressed an interest in fishing and asked me to teach him. It wasn't easy, for either of us, but we fished a major creek together, and I'll never forget his joy at catching a fish. He has learned to be patient and not scare the fish away. I have since learned that fishing from a dock is easier for me; my son just likes fishing from anywhere.

I was encouraged to find that DEC not only has programs and resources to help inspire kids to get outside, it also offers many opportunities for families to explore the outdoors together, and they are open to people of all ages, skills, and abilities. Many of New York State's parks, facilities, and outdoor recreation lands contain amenities for families. In addition, there are numerous campgrounds, education centers, and public lands that offer outdoor

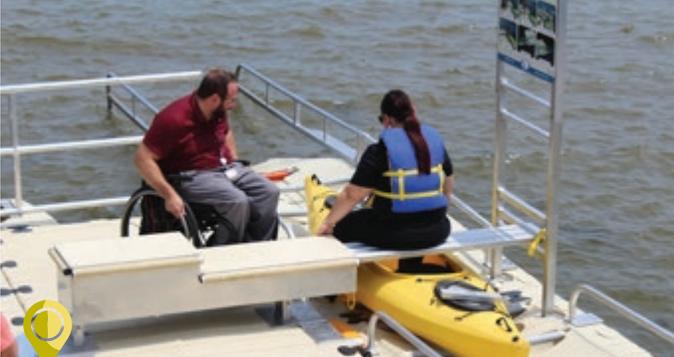


Opportunities abound for families to explore New York's lands together, regardless of age or ability.

DEC launched Adventure NY in 2017 to provide and improve access to state lands and waters.



Boardwalks, docks, and fishing platforms on NY State lands provide fishing access for anglers with disabilities.



For site-specific information related to accessible features, contact a DEC Regional Access Coordinator; visit www.dec.ny.gov/outdoor/42324.html.



DEC's Motorized Access Program for People with Disabilities provides a permit for people with a disability, providing access for hunting, fishing, and camping.

recreation opportunities for people with disabilities, including camping, picnicking, and nature viewing. These accessibility amenities and improvements aren't just helpful for people with mobility issues, they also provide access to state lands for families with children in strollers.

During my research, I discovered that there are several state-owned properties located across the state with amenities designed to provide fishing access for anglers with disabilities. These amenities include docks, fishing platforms, campgrounds, privies and restrooms, parking areas, and accessible trails. DEC's website provides a map with links to local webpages of fishing access sites for anglers with disabilities.

Even though it has been five years since the crash, I am still learning to live with my physical limitations. I'm also learning about the many different programs and activities offered by New York State, and the things I can do to help my son connect with nature. I am encouraged by all of the resources, programs, and amenities that DEC provides to help everyone get outside to play and explore, regardless of their age or ability. We all can enjoy nature, and that's something we should take advantage of whenever we can.

Tony Colyer-Pendas is an Assistant Editor with *Conservationist*.

For more information on the programs and initiatives that New York State provides to encourage people of all ages and abilities to get out into nature, visit the following webpages:

- Accessible Recreation: www.dec.ny.gov/outdoor/34035.html
- Fishing Access for Anglers with Disabilities: www.dec.ny.gov/outdoor/31539.html
- Kids GO: www.dec.ny.gov/education/69.html
- State Destinations with Accessible amenities: www.dec.ny.gov/outdoor/34038.html
- Access Pass: <https://parks.ny.gov/admission/access-pass/default.aspx>

For more information on outdoor activities and events: www.dec.ny.gov/outdoor

Brook Trout



Return to LAKE COLDEN

BY JON FIEROH AND KAREN ROY

Some days, the fish just aren't biting. But even the best anglers can't catch a fish when there are no fish to catch. On July 31, 2019, Jon Fieroh, a fisheries biologist from DEC's Ray Brook office, received a call from a fisherman reporting he had caught a brook trout (*Salvelinus fontinalis*) in Lake Colden.

While angler reports like this one have proven to be a valuable source of information, Fieroh (an experienced aquatic biologist) was surprised by what he was hearing—Lake Colden had been devoid of fish for more than four decades due to the negative effects of acid rain.

A high-elevation lake situated at 2,764 feet in the Adirondack High Peaks, Lake Colden was deemed fishless after a 1970 survey caught no fish, and subsequent surveys conducted in 1987, 2004, and 2011 also didn't catch any fish. The reason for the lack of fish is that some high-elevation Adirondack lakes cannot effectively neutralize acid precipitation, causing their populations of brook trout to significantly diminish. Lake Colden was a prime example.

Fieroh was part of a team that had been documenting and studying recovering Adirondack waters. After he received the call, he notified the Adirondack Lakes Survey Corporation (ALSC), which, along with DEC, had been monitoring and sampling the water quality of Lake Colden for more than 25 years. Based on the monitoring data that had been collected, it had been suspected that the water quality of Lake Colden had improved enough to support brook trout, but until that phone call it was not known that fish were already present.

New York's official state fish, the brook trout is one of only two species of trout that is native to New York waters. Despite the name, brook trout are often found in cold water lakes and clear headwater streams. They need high-quality water and are sensitive to low oxygen, changes in pH, and pollution. As such, they are considered an indicator species because they help indicate the health and overall quality of the waters they inhabit. Large numbers of brook trout indicate a healthy environment, while a decline of their population could indicate deteriorating habitat, poor water quality, or competition from other species.

In the U.S., acid rain has resulted in pH levels in certain waterbodies that are too low to sustain brook trout and other sensitive populations. Efforts are underway to restore brook trout in waters that once held native populations.

To document water quality across the Adirondacks, DEC's Division of Air Resources and ALSC have been monitoring the chemistry of numerous lakes—including Lake Colden—for many years. Water samples from the lake and 51 other designated Adirondack Long-Term Monitoring lakes are collected and analyzed several times per year for pH and other water chemistry indicators. In recent years, samples have shown that the water quality of Lake Colden was improving.

In August 2019, ALSC staff observed small brook trout in a tributary to Lake Colden while collecting water samples. During follow-up sampling, DEC Fisheries discovered that the lake contained a viable and healthy population of three generations of brook trout, and they also found brook trout in a tributary. This confirmed that the lake's water quality has improved enough to support brook trout and their reproduction.



Brook trout, once a staple of Lake Colden, were discovered in the lake after being absent for more than four decades.



Lake Colden, a high elevation lake in the Adirondacks, became a "fishless" lake due to acid rain.

“The recovery of some of our Adirondack waters is important to many people, me included. Lake Colden is a very high-profile water and is certainly a significant part of that recovery,” said Fieroh. “To find an already established, self-sustaining brook trout population was absolutely exhilarating for everyone involved, and we all feel extremely lucky to have been a part of it.”

The resurgence of the lake's fish is attributed to improved water quality, resulting from decades of rigorous state and federal standards designed to reduce the airborne pollutants that cause acid rain. The New York State Acid Deposition Control Act (1984), the Federal Clean Air Act Amendments (1990), and the Cross-State Air Pollution Rule (2011) were all aimed at reducing these pollutants. As a result of actions like these, emissions of acid rain-causing pollution are currently a small fraction—about 10 percent—of what they once were.



New York's efforts to reduce acid rain and its impacts sparked the recovery of brook trout.

The recovery of Lake Colden's water quality and the return of brook trout in the Adirondacks is a remarkable success that everyone can be proud of. DEC and all its collaborators, including ALSC, will continue to monitor the lake's water quality; DEC fisheries staff will also monitor the self-sustaining brook trout population.

There's a sense of pride for every angler, young or old, when they catch a fish. When a fish is caught in Lake Colden, DEC air and fisheries staff share that sense of pride as well.

Jon Fieroh is an Aquatic Biologist with DEC's Bureau of Fisheries in Ray Brook, and **Karen Roy** is a Research Scientist with DEC's Division of Air Resources in Ray Brook.



The return of brook trout, New York's State fish, is welcome news to anglers and nature lovers.

Acid Rain

Acid deposition forms when sulfur dioxide (SO₂) and nitrogen oxides (NO_x) combine with moisture in the atmosphere to produce sulfuric acid and nitric acid. Acid rain is any form of precipitation with these acidic components that falls to the ground from the atmosphere, including rain, snow, sleet, hail, and fog.

Acid rain is a byproduct of our industrialized society; human activities are the main cause of acid rain. Power plants emit SO₂ and NO_x when they burn fossil fuels to produce electricity. The exhaust from factories, as well as cars, trucks, buses, and airplanes releases acid rain-forming pollutants into the air.

The Adirondacks, Catskills, Hudson Highlands, Rensselaer Plateau, and parts of Long Island are particularly sensitive to acid deposition. The soil and bedrock in these areas are not able to counteract the acid in the rain and snow, and it can accumulate in their soils, streams, and lakes.

The negative effects of acid rain are most evident in aquatic ecosystems, including streams, lakes, and marshes. As waterbodies become acidified, one species after another may begin to disappear; some acidic lakes have no fish. Even if a species of fish or animal can tolerate moderately acidic water, the animals or plants that it eats might not.

Since the 1980s, various state and federal emissions reduction programs have caused acid-rain forming pollution to decrease by about 90 percent. As a result of these and other actions taken at DEC's urging, acid rain precursors are emitted at a significantly lower level than before 1985, and sensitive ecosystems are beginning to recover.

On Patrol

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

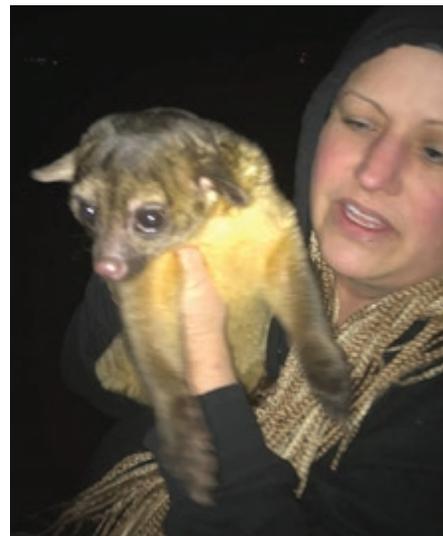
CONTRIBUTED BY ECO LT. LIZA BOBSEINE AND FOREST RANGER CAPT. SARAH B. GEESLER

Wilderness Rescue— Essex County

DEC's Ray Brook Dispatch received a request on February 21 to assist a 56-year-old male and an 18-year-old male from Boston, MA, who had become disoriented while off-trail skiing at Whiteface Mountain. Forest Rangers Kevin Burns and Rob Prackajlo contacted the missing men's family members, who used a Snapchat program to help communicate with the lost skiers. The Rangers instructed the men to call 911 to determine their exact location. With coordinates provided by Essex County 911, the Forest Rangers directed the men to walk to a designated location. The skiers were met by the Rangers and transported to Whiteface Mountain Medical Services.

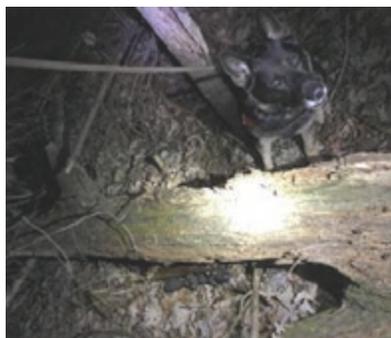
Kinkajou on the Loose— Ulster County

On February 4, ECOs Adam Johnson and Nicole Duchene responded to a call about a possible primate trapped on someone's porch. Once on the scene, the ECOs determined that the animal was not a primate, but rather a kinkajou. While kinkajous resemble a primate or a raccoon, they are actually tropical rainforest mammals that are legal to own in New York State, unlike primates. After securing the kinkajou, the ECOs contacted the New Paltz Animal Hospital to arrange temporary lodging. They learned that the animal had escaped from a residence close to where it became trapped. The ECOs reunited the pet with its owner less than an hour after they had received the original call.



K9 Deming—Sullivan County

On February 24, a man from Port Jervis paid civil penalties resulting from a hunting incident that occurred in November 2019. ECOs Ricky Wood and Tom Koepf responded to a dispatch to investigate an observed baited tree stand. While monitoring the baited stand, ECO Wood saw two men entering the woods with a bow and a gun. After waiting almost an hour for the hunters to return, ECOs Wood and Koepf deployed K9 Deming; K9 Deming located a dead and field-dressed buck, and a rifle hidden under a tree. The ECOs seized the man's bow and charged him with unlawfully taking protected wildlife, hunting deer with the aid of bait, and failing to tag deer. In total, the unlawful hunters paid \$1,815 in penalties and the illegal deer was donated.



Wilderness Rescue— Ulster County

On the morning of February 29, two hikers found a man near the trail leading to Giant Ledge from Woodland Valley Campground in the Catskill Park; the man was extremely cold and had no feeling in his hands or feet. The hikers helped the man into their tent, covered him with a down sleeping bag, and then called 911. Forest Rangers Erik Stratton and Richard Franke, Jr. arrived on scene with firefighters and continued to warm the man. The man eventually warmed up enough to walk on his own and was evaluated by EMS; he refused further medical treatment and was released.

Guardians

OF THE LAKE

ONEIDA LAKE
ASSOCIATION

CELEBRATES

75

YEARS

of

CONSERVATION

BY JOHN HARMON |
PHOTOS PROVIDED BY
ONEIDA LAKE ASSOCIATION

New York is home to a wealth of natural resources that offer amazing opportunities for outdoor recreation and, in many cases, these resources play an important role in supporting the regional economy and quality of life.

Oneida Lake, located just north of Syracuse, is the largest lake located wholly within New York State, and it has a reputation as a world-class fishery and a spectacular boating venue. For the past 75 years, the Oneida Lake Association (OLA) has played a key role in protecting, restoring, and preserving the natural resources of Oneida Lake and its surrounding ecosystems.

OLA consists of nearly two thousand volunteer members who are dedicated to the stewardship of the lake. Together, they work to reduce invasive species, monitor phosphorus levels, mitigate pollution, promote common-sense fishing regulations, manage water levels, and support boater safety initiatives. Today, their vision of “developing the lake into the state’s best warmwater fishing lake” has been achieved, as people from across the country come to enjoy Oneida Lake’s waters in every season of the year.

A Fishery in Trouble

Oneida Lake once supported a robust, self-sustaining walleye population, which was both a blessing and a burden. During the 1800s, the walleye attracted numerous recreational anglers and fortune hunters who harvested hundreds of walleyes with the use of large nets. These “commercial” harvesters would sell their bountiful catch to restaurants and a public eager for this tasty table treat. However, concerned about the stress on the walleye population, New York State banned the practice of net-fishing in 1897.

Despite the fishing ban, many net-fishermen continued their practice under the cover of night. It is believed that the invention of the spinning reel caused the end of the practice of net-fishing. Attracted by an abundant source of tasty walleyes, anglers flocked to Oneida Lake, but they often found that their legal tackle would get entangled in illegal nets. This rallied the public to support the elimination of net-fishing, and that led to the creation of OLA. Its Directors continued to pursue the goal of eliminating net-fishing until 1961, when New York State passed a law that banned the sale of walleyes from Oneida Lake.



Oneida Lake is a world-class fishery, providing the public with an abundance of natural resources.



During its 75-year history, OLA has organized numerous lake clean-up activities.

Cormorants

During the 1990s, another issue threatened Oneida Lake's world-class walleye fishery—the double crested cormorant. From spring 1996 to spring 1997, Cornell University, the Oneida Fish Hatchery, the Oneida Lake Association, and the New York State Department of Environmental Conservation (DEC) collected data that showed cormorants had consumed about 100,000 walleyes. In addition, the studies showed that the once thriving perch population had become threatened.

To minimize the impacts on the lake's fish community, OLA partnered with DEC and the U.S. Department of Agriculture Wildlife Services to develop a program that would reduce the population of double-crested cormorants on Oneida Lake. A key effort that was undertaken was to chase away a substantial population of the cormorants from the lake. Since then, cormorant management activities have continued to evolve, and OLA's partners (DEC and Cornell University) remain committed to the defense of Oneida Lake's irreplaceable fishery.

Cornell Biological Field Station

Located on the southern shore of the lake, the Cornell University Biological Field Station is an invaluable resource in the fight to protect Oneida Lake. This academic institution has launched a variety of research initiatives concerning the health of the lake and its fish populations. OLA relies on, and benefits from, the initiatives and the scientific expertise found at the Field Station. One of the early leaders of the station, Dr. John Forney, provided vital scientific insight into the sound management of the lake and its fishery. His research and publications have helped make Oneida Lake one of the best-understood and best-managed lakes in the world.

Similarly, research conducted by Dr. Ed Mills has assisted in the knowledge base and sustainable management of Oneida Lake. A researcher at the Cornell Biological Field Station and an OLA past president and current director, Dr. Mills explains "The research and leadership team at Cornell University's Biological Field Station at Shackleton Point have made Oneida Lake one of the best-studied lakes on the planet, with more than seven decades of informing natural resource managers, policymakers, and the public about Oneida Lake's world-class fishery."

Boat Launches and Fishing Access Sites

OLA has long lobbied for more and improved access to the lake, and this work continues today. Most recently, OLA learned that its efforts to establish a boat launch near Sylvan Beach are nearing fruition. In addition, in recent months, OLA learned that New York State will fund a major rehabilitation of the Cleveland Pier, providing increased access to the lake's north shore. The organization has actively advocated for both improvements to the lake, which will provide access for everyone to this outstanding resource.



Cornell's Biological Field Station provides scientific knowledge and has made Oneida Lake one of the best studied lakes in the world.

Constantia Fish Hatchery

From its earliest days, OLA has supported the modernization, maintenance, and staffing of DEC's fish hatchery on the lake's north shore. During the past 123 years, the hatchery's stocking programs have added millions of walleye into Oneida Lake. Sound conservation measures by DEC and a continuous stocking program of walleyes have contributed to the superb fishery that can be enjoyed in the lake. As a result, earlier this year, DEC proudly announced that the adult walleye population in Oneida Lake has returned to one million fish.

In addition to rearing and stocking walleye, hatchery staff are dedicated to the re-establishment of Oneida Lake's lake sturgeon population. Richard (Rip) Colesante, retired researcher at the hatchery and current OLA Director and past president, stated "Constantia Hatchery is an extremely valuable asset to Oneida Lake. Its programs are strong, vibrant, and successful—consistently stocking large numbers of walleye on an annual basis and stocking a record number of sturgeon in the 2019 season."

These are just a few highlights of the achievements of the Oneida Lake Association. Other examples of OLA's work include the support of youth fishing, water activities such as boating, bird watching, nature photography, water safety, removal of invasive vegetation, and much more. OLA's Board of Directors are proud to continue this 75-year tradition well into the current century, and thanks its thousands of members, both past and present, for supporting efforts to preserve Oneida Lake as a jewel in the heart of New York State.

John Harmon is Vice President of the Oneida Lake Association.



The Oneida Lake Association's volunteer members provide stewardship activities of the lake, including the removal of invasive species.



Conservation and stocking activities by DEC and OLA have helped the adult walleye population in Oneida Lake to return to more than one million fish.



The Constantia Fish Hatchery, with the support of OLA members, is working to reestablish Atlantic sturgeon in Oneida Lake.

OLA is currently a member of the New York State Federation of Lake Associations (NYSFOLA) and is just one of many lake associations that are active in New York State. NYSFOLA's membership includes more than 200 lake associations from public and private lakes—ranging in size from small ponds to large lakes—located in nearly all 62 counties of the state. While each association may have its own major focus—from protecting water quality to documenting lake conditions to restoring the use of their lake—they all serve as stewards for their lake communities and water resources. If you'd like to learn more about NYSFOLA, visit <https://nysfola.org>, or to get involved in your community, contact your local lake association.

SPECIES SPOTLIGHT

SEA STARS

BY BILL RHODES | PHOTOS BY CHRISTOPHER PAPARO



No matter where you live or whether you are a child or an adult, chances are you are familiar with starfish (a.k.a. sea stars).

In fact, the sea star (*Asterias forbesi*) is one of the most recognized species found in New York's inshore marine waters. Many beach walkers have been delighted by the unmistakable sight of a spiny, five-armed critter lying on the beach or latched onto seaweed or debris along the ocean's edge.

Despite its common name, however, starfish aren't actually fish; they are echinoderms, closely related to sea urchins and sand dollars. As such, scientists now refer to starfish as sea stars. These familiar marine animals have lived in the Earth's seas for millions of years and, while we sometimes call them primitive, they are actually an evolutionary success story.

Description/Diet/Behavior

Sea stars are often found clinging to underwater rocks or boulders. They can grow to be six inches (15 cm) from arm tip to opposite arm tip and vary in color, being shades of red, pink, tan, or brown, with some of the most striking individuals displaying bright orange on their upper sides. They are radially symmetrical, meaning you can divide their bodies in half at any central point and have two mirror image sides.

On the underside of their arms are hundreds of small tubed feet equipped with "suckers" on their tips. These tubed feet help propel sea stars through the water, enable them to eat their food, and allow them to cling to underwater structures to avoid being washed away.

At the tip of each arm is a light-sensitive eyespot, which sea stars use to navigate along the sandy bottom. They also rely on chemoreception—their sense of smell—to identify chemicals in the water emanating from their prey. While they are carnivores and will eat small invertebrates and crustaceans, they are perfectly designed for finding and devouring bivalve mollusks (oysters, mussels, clams, and scallops).





When a hungry sea star finds a suitable-sized clam, it envelops the top and bottom shells in its arms and pushes its sticky feet up against them. Flexing its

body, the sea star then pries open the shells just enough for it to push its stomach out through its mouth and inside the clam, where it begins secreting digestive juices. These juices turn the clam's body into a liquid that is then guided into the sea star's mouth.

If you have ever tried to open a clam with your fingers, you know just how strong its muscles are, yet the sea star almost always wins this battle. It can exert constant muscle pressure for a very long time, generally outlasting the clam's resistance, and only requires a very thin opening to slide its stomach into its prey. When finished, the sea star pulls its stomach back inside itself, leaving behind an empty shell, still attached at the hinge.

Resilient creatures, sea stars can survive having their legs nipped off by a predator since the appendage will grow back, although usually not to the same size as before. Amazingly, some sea stars can grow their entire bodies back from a single leg, provided that about one-fifth of the central disk is still attached.

Life History

Most species of sea stars have separate male and female individuals. To reproduce, the female releases as many as 2.5 million eggs into the water, which stimulates nearby males to shed their sperm. The resulting fertilized eggs then hatch to become minute, free-swimming, bilaterally symmetrical larvae called *bipinnaria*. These larvae are covered with small hairs, which propel them in the water, where they become part of the ocean's zooplankton. After swimming and feeding for about three weeks, they settle to the ocean floor and change into the radially symmetrical, multiarmed, non-swimming adults we recognize as sea stars.

While a favorite of beachcombers, sea stars' proclivity for devouring clams and oysters has made them unpopular with many commercial clambers and shellfish harvesters, who see them as adversaries. Sea stars can wreak havoc

on oyster beds and have long done so in Long Island Sound.

The larger the clam or oyster, the less vulnerable it is to sea star predation, but sea stars can wipe out juvenile clams so that none are left to grow to harvestable size.

Sea stars are very effective at attacking vast underwater beds of shellfish. It has been documented that clams that are one-half inch or less in size (juveniles or small adults) are particularly vulnerable. These small clams can be consumed at a rapid pace—10 or more individual clams per day being eaten by a single sea star. Multiply that by the many thousands of sea stars that may be present in an abundant year, and it is easily understood how they can have a long-term, harmful impact on local commercial shellfish operations. But not all starfish compete with or interfere with commercial marine fishermen. There are more than 2,000 species of sea stars throughout the world—they live in every part of the ocean on Earth, at all depths.

Simply built, slow, and deliberate, sea stars may seem to be primitive animals, but they are in fact one of nature's success stories, and they are really fun to watch.

Bill Rhodes is a retired life sciences and healthcare industry executive. He is a freelance writer and avid naturalist.



Fun Facts

- Sea stars enjoy long lives, with some species living as many as 35 years.
- Sea stars live throughout the Earth's oceans, but cannot live in freshwater.
- Although a sea star can regenerate lost limbs, it will take about a year for one to grow back.
- Sea stars do not have a brain or blood, they use seawater to transport nutrients throughout their bodies.
- Not all sea stars have five arms; the sun star can have as many as 40 arms.





New Boating Law Goes into Effect

Beginning this year, operators of motorized boats and personal motorized watercraft will be required to complete a safe boating course and get a boating safety certificate. Known as Brianna's Law, the requirement will be phased in, beginning with people born on or after Jan. 1, 1993 will need a boating safety certificate starting in 2020. The next group will be those born on or after Jan. 1, 1988; they will need a boating safety certificate beginning in 2022. New York State will provide boating safety certificates to people who successfully complete a New York State Safe Boating Classroom Course. The State also recognizes the safety certificates issued by the U.S. Coast Guard Auxiliary, the U.S. Power Squadron, and U.S. Powerboating. Those who complete the New York Safe Boating Course or an approved online boating safety course may opt to have their driver's license, non-driver ID, or learner's permit indicate completion of the course. A small anchor icon will be placed on your DMV document, attesting that you have earned a New York State boating safety certificate. For more information about the law and boater education, visit: www.parks.ny.gov/recreation/boating/education.aspx.



World's Oldest Forest in Cairo, NY

Scientists have discovered fossils of what they believe is the world's oldest known forest in an abandoned quarry near Cairo, New York. The find provides researchers with evidence that forests developed 2 to 3 million years earlier than previously thought. The site contains fossils of at least three unique root systems, showing that ancient forests were comprised of several different trees and plants that were previously thought to grow in mutually exclusive habitats. At the time the Cairo forest existed, no birds or vertebrates lived on land. The forest is also about 140 million years older than the first dinosaurs. Researchers and scientists believe that the remains of this ancient forest reveal a key milestone in Earth's climate history. This important discovery could also help provide information about the relationship between deforestation and modern climate change.



Moose Study and New Wildlife Law

DEC, SUNY College of Environmental Science and Forestry, Cornell University's Cooperative Fish & Wildlife Research Unit and Animal Health Diagnostic Center, the Biodiversity Research Institute, and the Wildlife Conservation Society Adirondack Program are conducting a multi-year research project to obtain information on the status and general health of New York's moose population. The study will gather data that will be used to create a moose management plan for New York State. DEC and its research partners are seeking information from the public regarding moose sightings. If you spot a moose, let us know; visit www.dec.ny.gov/animals/6964.html.

To reduce the spread of wildlife diseases and other negative effects on wildlife and habitat, it is now illegal to intentionally feed wild deer or moose in New York State, and it's also illegal to place a salt lick on land inhabited by deer. Exceptions include wildlife plantings, bona fide agricultural practices, livestock husbandry, and research and nuisance abatement actions permitted by DEC. To learn more about the new deer and moose regulations, visit: www.dec.ny.gov/animals/7197.html

Make Sure You are Counted— U.S. Census 2020

New York urges everyone to be part of New York’s “complete count” effort, which will ensure census data is accurate. An accurate population count is vital to make certain that New York State receives more federal funding for conservation and environmental initiatives, schools receive the aid they deserve, the state has appropriate representation in Congress, and that communities receive appropriate levels of federal aid for services such as hospitals, fire departments, and other vital programs. Information gathered through the Census helps to ensure an accurate population count for all regions of New York State. You can participate online, by phone, or by mail; you can also help by encouraging friends, family, and co-workers to contribute as well. For more information, visit www.ny.gov/programs/2020-census.



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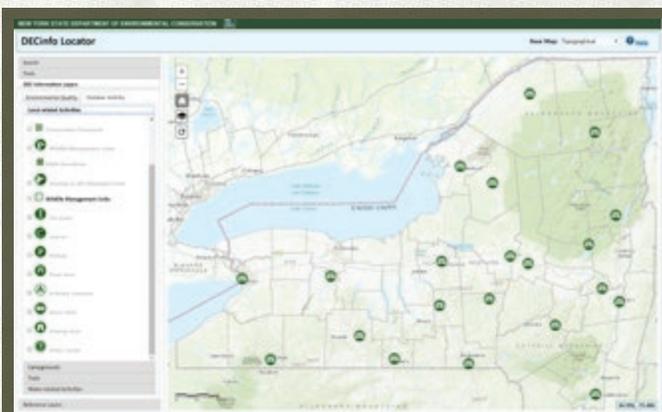


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Freshwater Angler’s Survey

A recent survey of freshwater anglers confirmed that New York State’s world-class fishing opportunities continue to draw anglers from near and far. Freshwater anglers enjoyed an estimated 19.89 million angler days in 2017, and the combined direct, indirect, and induced economic impacts of freshwater angling in New York State totaled an estimated \$2.14 billion and supported 10,961 jobs. This survey’s data will help guide DEC’s efforts to continue to effectively maintain high-quality angling opportunities and the recreational and economic benefits that they provide.



DECinfo Locator Updated

DEC’s interactive mapping application, DECinfo Locator, has recently been updated to improve user experience. Users have access to DEC documents and public data about New York’s environment and outdoor recreation resources. Since its debut in July 2019, several new data layers have been added, specific to locations across the state. DECinfo Locator allows hikers, campers, hunters, and other adventurers to plan excursions into New York’s natural wonders, and it lets users view and download permits, and environmental quality and monitoring reports. With more than 50 interactive data layers, the public can use DECinfo Locator to generate maps to get information on their favorite fishing location and learn about water quality. To access the mapping application, visit: www.dec.ny.gov/pubs/109457.html.



An Eggcellent Meal

We have had Canada geese nesting on a small island in our pond for years. One April morning, we noticed that they were staying away from their nest, which was unusual for them. That afternoon, we noticed a coyote on the island, and after reviewing the photos from our game camera, we realized he had been there that morning as well, making a meal of their eggs. We thought your readers might enjoy seeing the photos.

JOANNE MARCH
MARCELLUS, NY

Thanks for sharing the images with us. Eastern coyotes are very opportunistic omnivores, and will eat most anything that they come across. Their diet includes white-tailed deer, rabbits, small mammals, such as mice and voles, raccoons, groundhogs, birds, insects, and plant materials. This nest full of eggs seems to have hit the spot!



Three Spurs Are Rarer Than One

While out doing some spring turkey hunting, I got this tom with three spurs on each leg! About 20 years ago I got one with two spurs, but have never seen three and wondered how rare it was.

BILL HOLLISTER
COLUMBIA COUNTY

What a rare find. In general, most gobblers have spurs, and the length of the spurs is an indication of a bird's age. On rare occasions, a gobbler will fail to develop one or both spurs, and even more rare still is a gobbler with two spurs on a leg. A bird with triple spurs is almost unheard of. Over the past decade, DEC staff have examined thousands of legs from turkeys killed by hunters in the fall and have seen missing spurs and double spurs, but never a triple spur.

—MICHAEL SCHIAVONE, DEC WILDLIFE BIOLOGIST



Feathered Puffball

I was wondering if anyone could tell me what this little feathered puffball could be. I spotted it in my patio a few nights ago, trying very hard to be invisible. I took one quick photo and let it be, and it was gone by morning.

ERIKA JONES
TUXEDO PARK, NY



This one really stumped us! Some of the best suggestions we could come up with were red phase Eastern screech-owl and Northern saw-whet owl. After sharing the photo on our Facebook page, some of our astute fans solved the mystery for us. Your feathered puffball is a roosting Carolina wren. A quick internet search turns up many similar photos.

Fantastic Find

I found this fossil in a small seasonal creek near my home, and had no idea that New York had fossils like this! All my years playing in the creek, and this is a first for me.

BARRY HOGAN
WORCESTER, NY



Nice sea star! It is most likely Devonaster from the Middle Devonian period (about 390 million years old). We have a giant slab of these sea stars on display in the lobby of the New York State Museum. They are preserved with bivalves (clams) that the sea stars were likely preying upon. They were walking along the bottom on their tube feet looking for food when a storm buried everything under a blanket of sediment, killing all the animals, but also preserving them beautifully.

—DR. LISA AMATI, STATE PALEONTOLOGIST OF NEW YORK,
NEW YORK STATE MUSEUM



Watchful Peregrine

While working under the Governor Mario M. Cuomo Bridge recently, we noticed that this peregrine falcon was keeping a close eye on us. We have also had bald eagles circle overhead while we work.

KARL (PHOTO BY KRISTINA BARRERA)
WESTCHESTER COUNTY

That is so great you got a close-up view like this. Peregrine falcons can often be found roosting and nesting on many of the bridges in New York State. In fact, peregrine nesting boxes can be found on most of the bridges crossing the Hudson River between Albany and New York City. Peregrine falcons are well adapted to urban life.

Ask the Biologist

Q: I was wondering why these salmon appear so different from one another. One was caught in Saranac Lake and the others in Lake Champlain. The markings and even tail appear very different when comparing the fish.

—PATRICK ARAGOSA, SCOTIA

A: *The characteristics of the salmon you caught near Saranac Lake are very consistent (including shallow tail fork) with the Sebago strain that we rear at the Adirondack Fish Hatchery. Meanwhile, in Lake Champlain, a strain development project has been underway for some years to develop a salmon strain that can better handle some of the unique problems of that lake. I suspect that strain difference accounts for the physical differences you observed.*

—FRED HENSON, COLDWATER
FISHERIES UNIT LEADER



CONTACT US!

@ magazine@dec.ny.gov



Conservationist Letters
NYSDEC, 625 Broadway
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Back Trails

Perspectives on People and Nature



Life Lessons

BY ANNIE SWANSON

If you had asked me ten years ago if I saw myself teaching hunting education I would have laughed and replied, “Me? I don’t think so.” I wasn’t a great public speaker, and in the hunting world most would have considered me a newbie, so what would I have to offer? When I was approached to teach, I explained that I lacked years of hunting stories and didn’t have the knowledge needed to teach others. But I was told I was wrong, and that by just showing up I would be putting a group of young girls, sisters, moms, and grandmothers at ease.

The truth is, the person who told me that was correct; and during my first class, I talked very little. I was just trying to take it all in, and wondered: Can I do this? I really just wanted to leave, walk out, and go back to my very new life of hunting.

That all changed, however, when I was approached by a woman in the class who pulled me aside. She told me that she was taking the class because as a child she watched her own grandmother hunt and then lovingly cook the game that she had harvested. Her grandmother would gather her large family around the table on Sundays after church and serve the best venison dinner ever. The student said she missed that way of life—the gentle Sundays spent with family sitting on the porch quietly talking, telling stories about hunting, and listening to her uncles tell stories about springtime in the

woods hunting turkey. She longed to give her own children this appreciation of nature and of family. She then confessed that she had come to the class very nervous, thinking that she was going to be the only female and would feel out of place. But when she saw me, she knew it was going to be ok, and that she could do this. Little did she know, that her talking to me that day actually gave me what I needed to pursue this new endeavor.

Since then, I have spent countless happy hours with my fellow instructors, hunting, learning, and sharing stories and laughter. They have become family. I have sat with them in the spring, waiting to hear that sought-after bird gobble, and watching as the spring season in the woods comes alive. I have spent opening days with them, eating breakfast at camp, waiting to head out to see if this was my year for a beautiful buck to pass by. My fellow instructors and I talk about conservation and what it means to us. We talk about future generations and what we all will leave behind. All of this comes from teaching a hunter education class. I don’t know how many girls and women I have taught since that first class, but I do know that it is a lot. The growing number

includes girls who can’t wait to spend time with their Grampa, wives hoping to join their husbands in the field, and women who are now hunting with their friends. They are all learning what I have learned: that hunting isn’t just about the kill; it is about the people you spend time with in the outdoors; the memories that come from a simpler way of life; and sharing the beauty of New York State.

An avid outdoorswoman, **Annie Swanson** teaches hunter education in Western New York.

To learn about Becoming an Outdoors-Woman (BOW): www.dec.ny.gov/education/68.html

To learn about DEC’s Hunter Education Program: www.dec.ny.gov/outdoor/7860.html

To learn about becoming a hunter education instructor: www.dec.ny.gov/outdoor/9189.html





Trees for People | People for Trees

ARBOR DAY

Trees do so much for us, from cooling our neighborhoods in summer and storing carbon in their wood, to improving our mental and physical health and providing food and shelter for wildlife.

This Arbor Day, and every day, let's take care of our local trees.

Developed areas can be tough on trees, even those in our own yards. Here are some simple steps you can take to improve the health of your trees:

- Observe your tree's overall condition throughout the year and note if any concerns arise (cavities, fungus growing, sudden change in leaf color or needles).
- Protect young trees from animal browsing in winter by fencing or wrapping trunks.
- Remove dead wood and prune competing branches.
- If your trees need pruning, prune them in the winter to lower the risk of diseases.
- Protect the tree's root area from compaction.
- If you have space, plant a tree appropriate for your site conditions.
- Water newly planted trees for two years to help root development.

If you have questions or concerns about your trees, contact:

- An arborist (www.treesaregood.org/)
- Cornell Cooperative Extension (<https://cce.cornell.edu/localoffices>)
- Local DEC Forestry office (www.dec.ny.gov/about/558.html)



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