Field Notes *from* Michigan

For Members of The Nature Conservancy in Michigan

Fall 2021 Newsletter

The Nature Conservancy

THE *SOIL SOLUTION*

Farmers in the Saginaw Bay Watershed can make a critical difference for climate action.

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Helen Taylor
State Director

The Decade to Deliver

While we see signs of the climate crisis all around us, the biodiversity crisis is much less visible. Yet we have lost nearly 68% of the world's vertebrate species since 1979. A sustainable future depends on addressing both the climate and biodiversity crises.

The Nature Conservancy (TNC) has set bold 2030 goals, described on the next page, that are necessary to tackle these challenges head-on. To achieve these ambitious global goals, TNC's strategies are focused where science says we can have the greatest impact. Our work in Michigan will vary from our work in Alaska or Mongolia or Tanzania, just as the landscapes and partnerships vary in each place—but it all adds up to a better future for people and nature.

For example, Michigan's abundant fresh water means that water is at the center of many of our strategies for the next decade. And our vast northern forests provide an opportunity to deliver nature-based solutions that help address our changing climate—well beyond state lines. We collaborate with farmers, fishers and other local experts, and inform and shape policy to achieve tangible lasting results that are much greater than any of us could achieve alone.

What we do here in Michigan is about more than Michigan, just as what TNC accomplishes around the world has impact right here at home. We strive to protect the lands and waters on which all life depends—which means we all have a part to play. It's a big decade for conservation. I'm grateful to be on this path to 2030 with you, our conservation partner and supporter. Thank you for your trust in our work, and for your partnership.

Yours in Conservation,

Helen Taylor

COVER: Harvesting at Milligan Farms in the Saginaw Bay Watershed. © Jason Whalen/Fauna Creative

ABOVE: Yellow ferns in autumn. © Eamon Mac Mahon

TNC'S GLOBAL 2030 GOALS

CLIMATE

3 GT
CO_2E REMOVED OR SEQUESTERED

THE TARGET: Remove or sequester 3 billion metric tons of carbon dioxide emissions (CO_2e) per year—the same as removing 650 million cars off the road.

THE HOW: Using the power of nature to store carbon, and the strength of policy to cut emissions equivalent to nearly a tenth of global emissions from fossil fuels.

100M
PEOPLE BENEFITED

THE TARGET: Help 100 million people who are most likely to be affected by climate-related emergencies such as floods, fires and drought.

THE HOW: Investing in nature to improve the health of habitats such as mangroves and reefs that absorb wave energy and equitably protect people in coastal communities.

OCEAN

4B
HECTARES CONSERVED

THE TARGET: Conserve 4 billion hectares of ocean—more than 10% of the world's ocean area.

THE HOW: Making sure that the ocean thrives through new and better-managed protected areas, sustainable fishing practices and positive policy changes.

LANDS

650M
HECTARES CONSERVED

THE TARGET: Conserve 650 million hectares of healthy lands, such as forests and grasslands—an area twice the size of India.

THE HOW: Partnering to improve management of working lands, elevating the efforts of Indigenous peoples, and supporting better forest management to sequester carbon.

FRESHWATER

1M
KM OF RIVERS CONSERVED

30M
HA OF LAKES & WETLANDS CONSERVED

THE TARGET: Conserve 1 million km of river systems and 30 million hectares of lakes and wetlands—enough river length to circumnavigate the globe 25 times.

THE HOW: Engaging in collaborative partnerships and promoting policies that improve the quality and amount of water available in freshwater ecosystems and communities.

PEOPLE

45M
PEOPLE SUPPORTED

THE TARGET: Support 45 million people who depend on ocean, freshwater and lands for their wellbeing and livelihoods.

THE HOW: Ensuring equitable access for people who rely on landscapes and seascapes so they can improve their economic opportunities, secure rights to resources and better shape their future.

The *SOIL SOLUTION:*

Farmers Unite for Climate Action

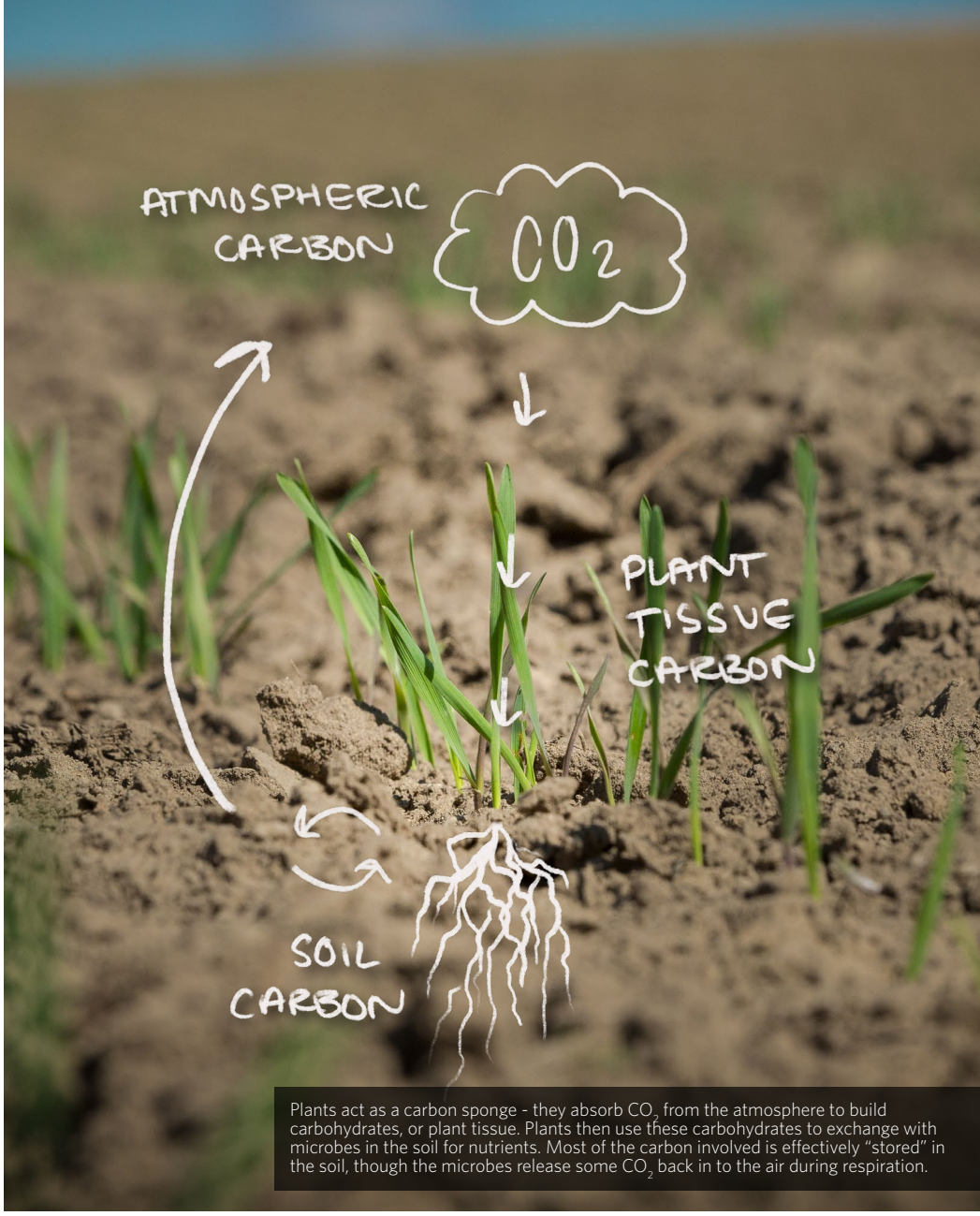
IN MICHIGAN, FARMING IS A WAY OF LIFE. Ten million acres of farmland support a robust agricultural economy that generates over $104 billion annually and employs nearly a quarter of working Michiganders. With so much of Michigan's lands and waters under their stewardship, farmers are direct witnesses of the impacts of a changing climate, including crop loss from floods, droughts and other weather extremes.

Farmers are also positioned to make a critical difference for climate action. The new, nationwide Food and Agriculture Climate Alliance (FACA)—launched by TNC and seven other organizations last fall—unites farmers, ranchers, foresters, the food sector, state governments and environmental advocates behind a common goal of reducing the greenhouse gas emissions of the U.S. food system.

"Farmers have a big role to play in how we manage growing emissions in the U.S.," says Madhu Anderson, TNC's director of government relations in Michigan. "Their leadership will be vital as we work together to find durable, effective agricultural policy solutions— for Michigan and across the country."

FACA has released a set of policy recommendations for federal lawmakers aimed at reducing agricultural greenhouse gas emissions and improving climate resilience. Here in Michigan, agricultural groups such as the Michigan Agri-Business Association and Michigan Farm Bureau are coming together with TNC and other partners for climate policy discussions and the advancement of FACA priorities locally—on farms, and all the way up the agricultural supply chain.

"In just two decades, climate change has gone from a niche issue talked about by a few companies to a large and material business concern for many, if not most, companies," says Madhu. "It's top of mind for investors and a lot of the business sector right now."



Plants act as a carbon sponge - they absorb CO_2 from the atmosphere to build carbohydrates, or plant tissue. Plants then use these carbohydrates to exchange with microbes in the soil for nutrients. Most of the carbon involved is effectively "stored" in the soil, though the microbes release some CO_2 back in to the air during respiration.

FACA's recommended changes start with the soil itself. Living plants soak up carbon—the key component of many climate-shifting greenhouse gases—which passes into the soil through their root systems. This sequestered carbon is the foundation of a healthy soil food web.

TNC has been working to promote agricultural conservation practices in Michigan for more than a decade, with a focus on water quality and soil health benefits. But science shows that conservation practices such as reduced tillage and crop diversification can also increase the carbon sequestration potential of farmlands—and thus their climate mitigation benefits. We are expanding our strategies to incorporate and demonstrate those benefits, while innovative partnerships like FACA also expand our reach.

TNC and other members of FACA are widely promoting these conservation practices as well as management approaches that reduce on-farm energy use and emissions. We are also helping to address key logistical questions that must still be answered—such as the best way to measure and track long-term carbon sequestration.

Ultimately, we all depend on healthy food systems. Addressing a changing climate from within our agricultural system is about a lot more than helping farms—it's about meeting the growing demand for food, fiber and fuel while increasing food security and economic stability. It's about putting the power back into the natural systems that sustain us.

ABOVE: In Michigan, TNC is working with farmers to expand the use of soil health practices such as cover crops, shown here, that protect farm fields against erosion and prevent nutrient runoff. © Jason Whalen/Fauna Creative

PARTNERS WEIGH IN

Carl Bednarski, President, Michigan Farm Bureau Family of Companies

"Michigan farmers are used to dealing with variability in weather patterns and making adjustments in their farming operations as needed—that's always been a central part of farming. But over the past several years, farmers have experienced milder winters, uncertainty with frost dates, changing rain patterns, dry spells and even the Polar Vortex.

"Michigan farmers have considerable experience implementing conservation practices on their farms—for erosion control, nutrient and water quality management and wildlife habitat, for example. In fact, Michigan has been a leader on voluntary conservation efforts with the Michigan Agricultural Environmental Assurance Program (MAEAP) for decades. Conservation programs like these can play a critical role in helping."

The Michigan Farm Bureau, which celebrated its centennial year in 2019, represents Michigan's agricultural diversity—from crops and livestock to fruits and vegetables, greenhouses, forestry and more, and farms of all sizes and varying styles of production, including conventional and organic practice.

***Carl Bednarski** has served as the president of the Michigan Farm Bureau since 2014, with many additional years on the board of directors. He also represents the Midwest region on the American Farm Bureau Federation board of directors. A farmer himself, he is also a founding member of the Michigan Sugar Cooperative.*

Chuck Lippstreu, President, Michigan Agri-Business Association

"The fight against climate change will continue to drive innovation that has been the hallmark of our industry for generations. Modern technology in agriculture has delivered incredible new tools for farmers to target stewardship practices to each field and acre, while evaluating and reporting on the results achieved. As a result, Michigan agriculture is well positioned to deliver climate solutions.

"We continue to encourage policies that view farmers, rural businesses and rural communities as partners in the fight against climate change and that seek to harness agricultural innovation to deliver new solutions. A good example of this is the Growing Climate Solutions Act—a bipartisan measure led by U.S. Senator Debbie Stabenow and Senator Mike Braun of Indiana—that would help break down barriers for farmers to participate in environmental markets. When it comes to climate policy, an approach that recognizes and values agriculture's contribution to the fight against climate change will deliver the strongest results."

Founded in 1903, the Michigan Agri-Business Association (MABA) is committed to the development and prosperity of Michigan agriculture. MABA members include retailers who provide seed, fertilizer and crop protection products to farmers; grain handlers; feed suppliers and food processors and many supporting sectors.

*In addition to serving as president of the MABA, **Chuck Lippstreu** also serves on the International Trade and Agricultural Policy Committee of the National Grain and Feed Association the board of Grain & Feed PAC; and the Economics Department Advisory Board at Grand Valley State University.*

ABOVE: Agricultural companies aren't the only ones taking action on climate. More than 1,400 corporations have made commitments through the Science Based Targets Initiative (sciencebasedtargets.org), and that number continues to climb. © Jason Whalen/Fauna Creative

A New Path for the **Northwoods**

A FOREST IS MORE THAN THE SUM OF ITS TREES. Wildlife finds food and shelter beneath its canopy. Leaves and branches store climate-altering greenhouse gases and filter the clean air we all depend on. The forest protects streams and rivers, provides for our everyday needs and offers a place to "get away from it all." A forest is a system—and conservation and restoration efforts must treat it as one to be successful.

However, forests in the U.S., including the Northwoods of Minnesota, Michigan and Wisconsin, have been divided over the years into a patchwork of ownership that includes states, local governments, corporations, federal organizations and families and individuals. This adds an extra layer of complexity to forest conservation.

To address this challenge, TNC in Michigan is working with TNC's Wisconsin and Minnesota chapters to expand the new **Family Forest Carbon Program**, (FFCP) into the Great Lakes Northwoods (a project dubbed "Carbon Northwoods" or "Carbon NoW"), in close partnership with the American Forest Foundation. The project is designed to increase carbon sequestration and storage and improve forest health by helping landowners adopt certain forest management practices—with a focus on those who own fewer than 2,400 acres.

More than a third of U.S. forests are family forests—spanning 248 million acres—and the vast majority of those are less than 2,400 acres. The FFCP connects owners of these smaller forests with the resources and technical knowledge they need to take on new conservation practices.

"The Family Forest Carbon Program will help us connect a whole new sector with natural climate solutions here in the Northwoods," says Emily Clegg, TNC's forest conservation project manager. For some participants, it will be their first time using a forest management plan. TNC can connect participants with a consulting forester and facilitate the development of that plan, in some cases.

One of the key innovations of the FFCP is that it helps this group access carbon programs that can help fund these improved forest management practices. "Smaller family forest owners have been largely excluded from carbon markets due to the high up-front costs of participation," says Emily. "Most carbon projects are on properties greater than 5,000 acres."

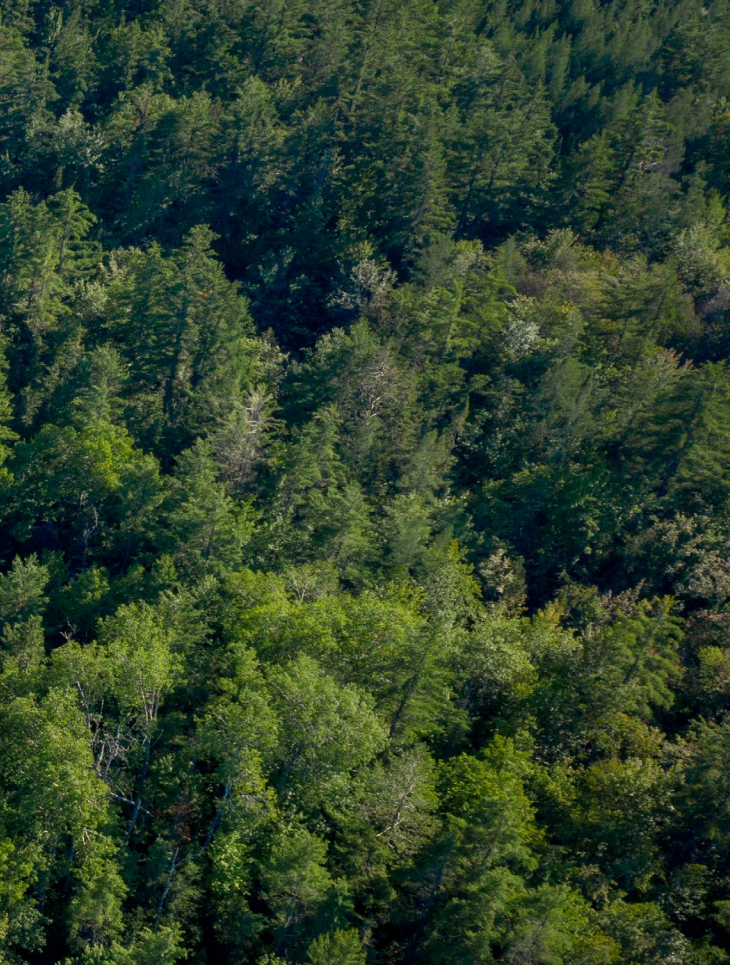
This approach is possible because the management practices that make forests healthier and more resilient also support the carbon storage potential of forests—which is significant. As the climate changes, science shows that forests can help mitigate rising temperatures by keeping some of the excess carbon out of the atmosphere.

The FFCP leverages this natural solution, paying woodland owners for practices that enhance wildlife habitat, water quality and carbon storage on their land. The additional carbon stored through these practices will be assessed through a long-standing U.S. Forest Service program (Forest Inventory and Analysis) that uses equivalent forest plots to measure and evaluate forest health across the country, including carbon storage.

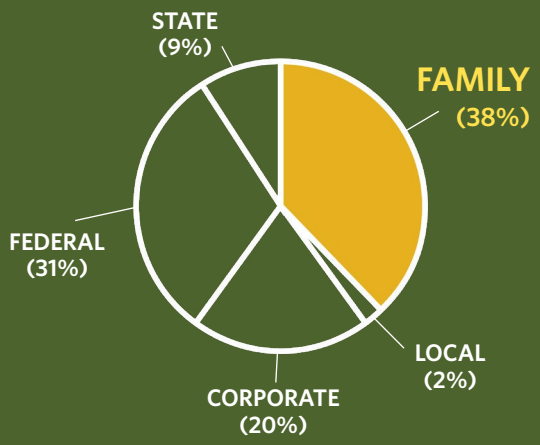
Credits representing this verified carbon storage will be made available on carbon markets. These credits can then be purchased by businesses that seek to offset emissions that are unavoidable in the short term while pursuing robust internal emissions reduction plans. Income from the sale of offset credits will supply continued incentives for program participants.

As TNC prepares for the program's regional launch, the team has been refining the set of practices that will most benefit our northern forests in the unique context of the Great Lakes—such as selectively harvesting to open up the forest canopy and allow a greater diversity of tree species to flourish on tracts where past management has resulted in dominant single species or plantations.

"It's a great opportunity to expand the reach of natural climate solutions," says Emily, "and get everyone working together for forests."



U.S. FOREST OWNERSHIP



THREE AMBITIOUS GOALS

Across the U.S., the Family Forest Carbon Program aims to:

- Enroll 54 million acres of family-owned forests by 2030.
- Grow carbon benefits to reach 100 million metric tons of additional sequestration and storage each year.
- Improve wildlife habitat, overall forest health, water quality and recreational spaces.

ABOVE: TNC and the American Forest Foundation launched the Family Forest Carbon Program in 2017, piloting it in 16 counties in Pennsylvania. The program now offers opportunities to landowners in Michigan. © Jason Whalen/Fauna Creative

MICHIGAN CLIMATE ACTION UPDATE

In Michigan, TNC uses strategic communications to build awareness of the need for climate action and support for impactful climate policy at the state, regional and federal levels. Thanks to a generous leadership gift by **Tony and Sarah Earley**, we are now building additional momentum for ambitious, market-based climate solutions, with a focus on industry influence and public engagement.

This includes, but is not limited to:

- Engaging with Michigan's industrial and manufacturing sector to encourage adoption of strategies for long-term carbon emissions reductions.
- Cultivating a greater public understanding of and support for climate and clean energy policy needs using social media outreach.
- Promoting public and private investment in research and the commercialization of low-carbon technologies.

GIVING CHALLENGE: Help us unlock the Earleys' climate action gift by donating today! Contact TNC's development department at **(517) 316-0300** to contribute. Each gift will be matched dollar for dollar up to $150,000.

ABOVE: Natural climate solutions such as forest restoration and sustainable agriculture practices can contribute a third of the global greenhouse gas reductions needed to keep temperatures from rising more than 1.5°C—a critical step towards protecting biodiversity. © Ellie Scholtz/TNC

ABOVE: Restoration efforts like those at the Ross Coastal Plain Marsh Preserve can look drastic at first, but nature recovers quickly—from the ground up. © Jason Whalen/Big Foot Media

Restoration in Action

THIS SPRING, TNC's Ross Coastal Plain Marsh Preserve in southwest Michigan began a transformation. Forty-three acres of a former red pine plantation were removed in order to make way for a healthier, more diverse forest, including 2,300 tree seedlings that will be planted this coming spring.

"This kind of change can be jarring to visitors, but it's essential to get the forest back to its natural condition," says Kim Steinberger, TNC's restoration project manager. "Climate change is putting more pressure on Michigan's forests, with growing threats like pests and drought. Restoration efforts like this will help forests overcome those threats."

TNC is taking this climate lens to forest restoration across the state, looking at where and how conservation action can help accelerate the recovery of species diversity and climate resilience in forests formerly managed for timber production.

"A red pine plantation remnant like the one on Ross preserve is a lot more vulnerable than a forest containing trees of many different ages and species," says Kim. "It limits the wildlife species that can live there as well." Restoration efforts like this provide better habitat for plant and wildlife species that thrive in Michigan—and for all of us who enjoy witnessing them in the wild.


© Jeremy Wittrock/TNC

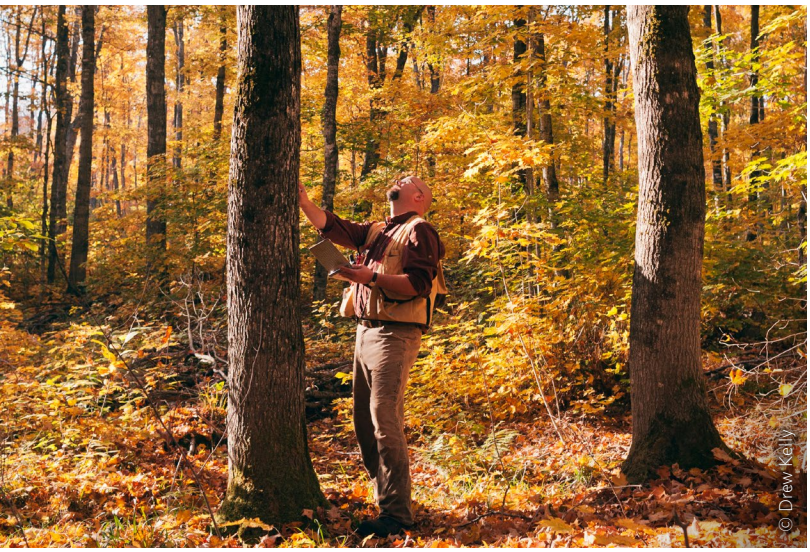
Ross Coastal Plain Marsh Preserve

From May to July, TNC removed several stands of red pine on this preserve, totaling 43 acres, that had been planted in a monoculture by previous landowners many years ago. While red pine occurs naturally in Michigan, the habitat these crowded plantation rows created does not. Their removal will allow the growth of other native species like white pine, beech, oak and sassafras, and a more naturally diverse habitat. This coming spring, we will accelerate this regeneration by planting 2,300 native trees. Over time, a healthier, more resilient forest will emerge.

BY THE NUMBERS:

43 acres harvested

2,300 trees to be planted


© Drew Kelly

Two Hearted River Forest Reserve

In the last year, TNC has been creating "canopy gaps" in our 23,000-acre Two Hearted River Forest Reserve, which is dominated by sugar maple. These forests were at one time more diverse, but past timbering practices removed many of the other species. Canopy gaps provide open spaces where under-represented species can regenerate, bringing back more conifer trees for wildlife species that depend on them—such as snowshoe hare, pine marten and migratory birds. We gave this process a boost by also "underplanting" climate-resilient species such as red oak, white spruce and eastern hemlock.

BY THE NUMBERS:

123 acres selectively thinned

123 acres underplanted

48,000 trees planted over two years


© Kim Steinberger/TNC

Ottawa National Forest

Through an agreement with the U.S. Forest Service, TNC staff planted white pine, white spruce, tamarack and hemlock along rivers in the Ottawa National Forest this past spring. This partnership aims to restore forest connectivity, resilience and habitat quality along high-priority Upper Peninsula streams, which are especially vulnerable to habitat loss. Some of these areas are dominated by ash trees that are threatened by the spread of the emerald ash borer, and planting these additional saplings is important to protect overall forest health.

BY THE NUMBERS:

68 acres restored

19,450 trees planted

2.5 river miles covered


© Jason Whalen/Big Foot Media

Keweenaw Bay Indian Community Lands

In the spring, TNC provided 2,000 northern red oak saplings to the Keweenaw Bay Indian Community. These were planted in areas where the destructive pest spruce bud worm has killed off balsam fir, white spruce and other trees, to restore the health of these forest stands. This adds long-lived hardwood species to the forest and improves forage availability for wildlife like black bear, wild turkey and wood duck.

BY THE NUMBERS:

2,000 trees planted

The Legacy of North Point

WHAT IS SPECIAL ABOUT THE NORTH POINT PENINSULA? "That's one of those 'what do you like best about your kids' kind of questions," says Jeff Gray, the superintendent of the surrounding Thunder Bay National Marine Sanctuary. "It's really not just one place—it's many places. The diversity is incredible. Wherever you're standing on the property, you see an entirely unique view."

Lisha Ramsdell, the associate director of Huron Pines, shares a similar feeling. "I've worked in northeast Michigan for over 16 years and still remember the first time I went to North Point," she says. "It was awe-inspiring. The miles of shoreline, the eagle's nest, the coastal fen with its carnivorous plants—there are so many things that make this place special."

This 1,400-acre property, located near Alpena, was acquired by TNC in 2017 thanks to the generosity of many individuals and foundations, and after many years of hard work by partners including the National Oceanic and Atmospheric Administration (NOAA), TNC and Huron Pines and the Friends of Thunder Bay National Marine Sanctuary (TBNMS), two regional nonprofits. This year, TNC officially transfers ownership of the property to the Friends of TBNMS, opening the door to an exciting future for this natural treasure.

The Friends of TBNMS will own and manage the property in perpetuity, while Huron Pines will hold a conservation easement that strictly limits any future development. Together, they will ensure the protection of the property's ecological values, forever—and there's a lot here worth protecting.

The fertile nearshore waters along its four miles of Lake Huron coastline are a critical spawning area for whitefish and perch. The shaded cedar forests and wildflower-spotted meadows feature the occasional rare find such as dwarf lake iris and Pitcher's thistle, two threatened native species.

North Point Peninsula also lies along one of the most significant flyways in the U.S.—more than 200 species of migratory birds stop here every year, from tiny warblers to long-legged cranes. The forested peninsula and nearby islands give them a much needed chance to rest and refuel before continuing on their long journey across the Great Lakes.

The number one driver for protecting North Point is the conservation potential. However, there is also significant potential for stewardship and education, such as school-group tours, research opportunities, and low-impact recreation. "I see it as a place of learning, a source of inspiration and a space that the community can be proud of," Lisha says.

"We have wanted to protect North Point since 2005. It's important for us to remember that these big, important conservation efforts take time and tenacity. I'm so thankful for the group of partners who never gave up on this opportunity."—Helen Taylor

"North Point fits right into the direction that Alpena and the larger region are headed in," says Jeff. "As 'the Sanctuary of the Great Lakes,' the community is really focused on highlighting the area's cultural and natural treasures and how they can be integrated into our everyday lives, making them accessible while also protecting them and growing our quality of life."

The Friends of TBNMS, Huron Pines, TNC and NOAA will continue to work together to explore these opportunities. "North Point can be a legacy both for the people who enjoy it and for the natural world," Jeff says. "It's more than just protecting one place—it's about inspiring people to think about protecting nature in their own life and building the next generation of stewards."

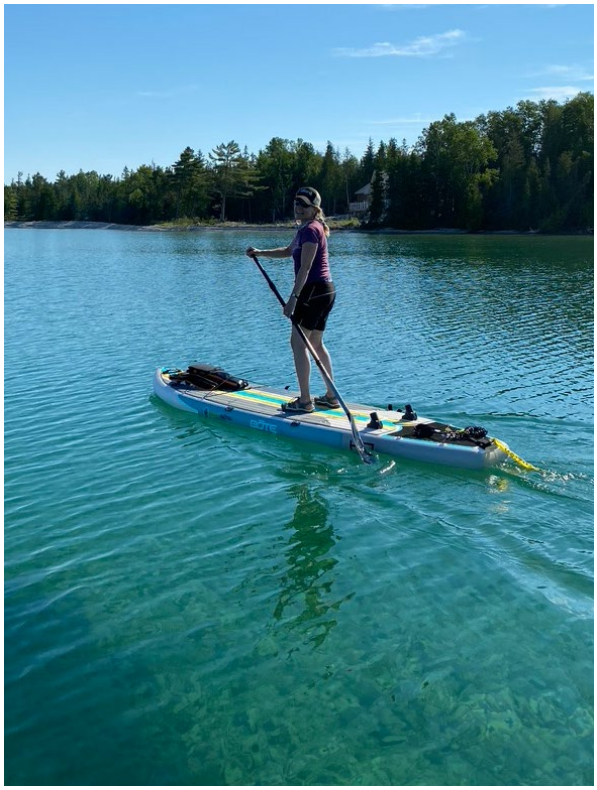
ABOVE: The geography and scale of North Point alone set it apart. Located in the middle of federally protected Lake Huron waters, it adds to a network of protected lands and waters all up and down the shoreline of eastern Michigan. © Dietrich Ludwig

ABOVE (TOP): North Point isn't just a migratory stopover for birds—you can also see monarch butterflies at the preserve. © Chuck Wiesen; ABOVE (BOTTOM): Interdunal wetland areas support a rich diversity of wildlife. © Chuck Wiesen

THANK YOU!

A big thanks to those who gave significant leadership gifts of support that made this acquisition possible, and the many others who helped support this landmark project, including:

- The Carls Foundation
- J.A. Woollam Foundation
- The Patricia and David Kepler Foundation
- U.S. National Fish and Wildlife Foundation
- Carol and Peter Walters
- John M. Leonard and Rita Jain
- And many more!



ABOVE: There are over 200 shipwrecks in the crystal clear waters near North Point, relics of the area's long and illustrious maritime history. TNC's CEO Jen Morris visited in summer 2020. © Rich Tuzinsky/TNC

WHAT'S NEXT FOR NORTH POINT

TNC, Huron Pines and the Friends of TBNMS have worked together over the last two years to develop a management plan to ensure the property is managed for healthy habitats and natural systems.

As the new owner of the North Point property, the Friends of TBNMS will lead the property's management, including overseeing trail management, invasive species control, bird counts and more. The Friends of TBNMS will also lead fundraising efforts to cover management costs.

Huron Pines will monitor the property to make sure the terms of the conservation easement are met and contribute capacity where needed. "We also see ourselves working closely with community partners to bring thoughtful educational and research opportunities to the property," says the associate director of Huron Pines, Lisha Ramsdell.

Some *'Fenny'* Business

THANKS TO AN EXCITING NEW PARTNERSHIP with the U.S. Geological Survey (USGS), TNC now has monitoring equipment installed at the 627-acre Grand River Fen Preserve that will give us much needed robust data on the local prairie fen hydrology.

We have been working for years to get more information on the hydrology and local conditions that might impact the restoration actions and population success of the Mitchell's satyr butterfly. The Grand River Fen Preserve has the largest remaining population of this endangered species. It also contains the headwaters of the Grand River, the longest river in Michigan, and helps protect downstream water quality.

Now that USGS has put in water monitoring wells and a weather monitoring station and started to collect data, we are hoping to connect those data to local butterfly population levels and inform habitat restoration efforts. This support for our science-based decision-making is just one of the many reasons that TNC encourages and enables scientific research projects on our protected lands.

ABOVE: Mitchell's satyr butterfly (*Neonympha mitchellii*). © TNC; RIGHT: USGS monitoring equipment at Grand River Fen Preserve. © Chris May/TNC

BEYOND THE PIPES

WHEN YOU THINK ABOUT THE NATURE CONSERVANCY, septic tanks are hopefully not the first thing that comes to mind. But they are an important factor in the challenges TNC is tackling as we work to ensure that Michigan's abundant waters remain clean and accessible for generations to come.

"When we talk about water infrastructure, we tend to think about pipes in cities. But it's much, much more than that," says Rich Bowman, director of policy for TNC in Michigan. "If TNC is going to adequately address the issues facing Michigan's freshwater ecosystems, we need to look across everything having to do with how water resources are managed, from drainage ditches to water bills."

And that includes septic tanks. About 30% of Michigan households use on-site septic systems to manage their wastewater, mostly in rural areas. And many of these are in desperate need of repair, leaking raw sewage into ground and surface water.

"The fact is that when we don't appropriately maintain our septic systems, it's not only a health hazard to ourselves and our neighbors, it impacts our drinking water resources, our lakes and streams, and the wildlife that depend on them as well," Rich says.

At the state level, there is no requirement for how Michigan homeowners maintain their septic systems—making Michigan the only state without statewide septic regulation. Instead, this responsibility falls to health departments in Michigan's 83 counties. There are currently 10 Michigan counties with health departments that require the septic system to be inspected—and repaired if needed—whenever a house is sold. These are called Time of Sale/Transfer (TOST) programs.

TNC is working with the Citizen's Research Council (CRC) of Michigan to answer two questions—are TOST programs something that could (and should) be replicated in other counties? And, what would be the costs of implementing a similar program statewide?

The CRC has been doing independent fiscal analysis since its founding in 1916 and is well respected for its unbiased approach and commitment to accuracy, making it a trusted, nonpartisan resource on significant issues concerning Michigan's state, local and regional governments. The findings they have recently shared with TNC give us a strong and credible basis for conversations with Michigan's leaders on this issue.

"Early results indicate that even in counties with TOST programs, the main barrier faced by many residents is simply the cost of replacing a failed septic system, which is often $10,000 to $15,000 or more," says Rich.

In another ongoing study with Public Sector Consultants, TNC is surveying county and regional health departments on the status of regulatory and assistance programs for septic systems, to clarify the financial support currently available to residents.

As Rich puts it, "Whatever solutions we arrive at, they need to be equitable, they need to be based in science and they need to protect the health of our communities and the natural resources we all depend on."

ABOVE: View of the rear of a septic pump truck. © Getty Images/iStockphoto


© Rory Doyle

ON THIN ICE

While the Great Lakes and the Mississippi River grow the crops that feed the world, a changing climate has pushed these rivers and lakes to the brink. These fragile waters face changes and challenges unlike never before. Explore a new story map that explains who, why and how TNC is charting a course forward for fresh water, in Michigan and across the Midwest.

Dive in at nature.org/midwestwater!

90% OF US SURFACE FRESHWATER

SUSTAINER OF **1.2M** JOBS

92% OF NATION'S AGRICULTURAL EXPORTS

60% OF ALL NORTH AMERICAN BIRDS USE MISSISSIPPI MIGRATORY FLYWAY

Upcoming Field Trips and Webinars

Tune in for our lunchtime "Nature Break" webinar series!
Register online at nature.org/mievents to participate. Can't make it? Watch recordings of past webinars on our Facebook page (facebook.com/TNCMichigan) in the "video" section.

CUTTING FOR CONSERVATION
Friday, October 15, 12-1pm ET, on Zoom

Harvesting trees can be an important conservation tool. In Michigan's Upper Peninsula, The Nature Conservancy actively manages over 37,000 acres of forests. Learn how TNC uses timber harvests to restore forests and increase new timber growth. Special guests include Evelyn Magner from Michigan Tech University and Emily Clegg, TNC protection and restoration associate.

We're so excited to welcome you back to the field this fall!
Join us for a field trip or volunteer day. Register online at nature.org/mievents. Can't make it in person? Explore new ways to connect with us online, including audio tours, lectures and more at nature.org/miexplore.

FALL INTO NATURE AT SHARON HOLLOW
Saturday, October 23, 10am-12pm ET

Join us for a family friendly fall hike! Enjoy the changing colors over coffee and donuts while our trail guides lead you on an informative hike. Learn about unique species and fauna and local conservation efforts. Space is limited.

VOLUNTEER AT IVES ROAD FEN PRESERVE
Saturdays, September thru October, 9am-12pm ET

Join a group of dedicated volunteers in Lenawee County. In the fall, we cut honeysuckle in the upland area near the prairie and enjoy the seasonal colors and fruits. As a volunteer, you'll experience parts of the preserve that most visitors never get to see!

#OPTOUTSIDE – GET OUT, CLEAN UP!
Friday, November 26

Go outdoors on Black Friday instead of shopping. A nation-wide campaign started by REI, #OptOutside reminds us to give back, get active and leave the world better than you found it. We'd love to see you out in nature! Find a preserve near you at nature.org/mipreserves or stay local in your own neighborhood or park. Tag us on social media @TNCMichigan and use the hashtag #OptOutside to show us how you give back to nature.

ABOVE: Michigan fall color in the forest. © Drew Kelly

LET'S GO FOR A HIKE!

This fall, TNC is rolling out new audio tours for three Upper Peninsula preserves: Mary Macdonald Preserve at Horseshoe Harbor and the Helmut and Candis Stern Preserve at Mt. Baldy—both on the Keweenaw Peninsula—and McMahon Lake Preserve in Luce County. Embark on a journey from a U.P. trailhead—or even from the comfort of your living room couch—through the past, present and future of these special places, and delve into some fun facts about the local flora and fauna.

Enhance your nature experience by visiting nature.org/miexplore, where you can also access four other previously released audio tours. See you on the trail!

ABOVE: Mary Macdonald Preserve at Horseshoe Harbor. © Jason Whalen/Big Foot Media

NATURE LAB Educator Resources

Nature Lab is a robust and engaging online platform developed by TNC for parents and educators, so that young people can confront the urgent and complex challenges facing the planet. Nature Lab helps youth learn about conserving nature for its own sake and for its ability to fulfill their needs and enrich their lives. Visit nature.org/naturelab to access lesson plans with interactive worksheets, videos and hands-on projects.

Cut out this page and participate in this fun Nature Lab activity!

SCIENCE AT HOME: RAINWATER FILTRATION

EXPERIMENTAL QUESTION:

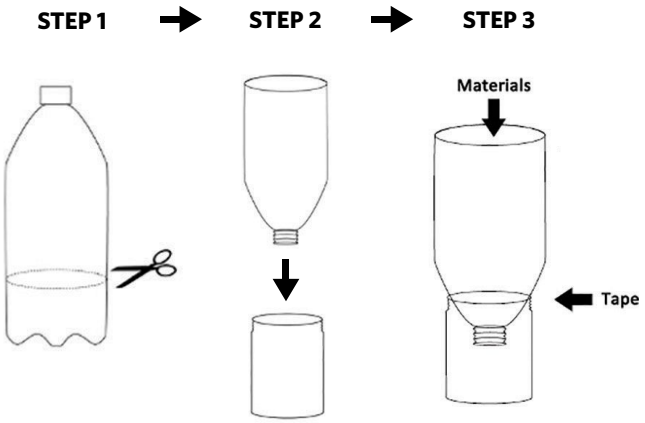
How do paved areas impact rainwater filtration?

MATERIALS:

- 2 soda bottles with bottom removed
- 2 large jars about the same diameter as the soda bottles
- Duct tape
- Handful of horticultural moss
- Handful of dried leaves
- Bag of sand
- Bag of gravel
- Several pieces of concrete
- Old newspaper
- Old plastic cups
- Garden soil
- Bucket
- Tap water
- Vegetable oil
- 1 liter pouring jug
- Timer
- Ruler

PROCEDURE:

1. Construct two funnels with the soda bottles as shown in the diagram. Invert the soda bottles to make funnels and use the duct tape to secure the bottles to the large jars.
2. Mix together a handful or so each of the garden soil, sand, gravel, leaves and moss. The quantities are not important, but try to keep the amounts of each material about equal. Keep aside a small handful of moss.
3. Place the small handful of moss in the neck of one funnel. Add the mixture to the funnel. Ensure the material is packed firmly but not too tightly. This funnel represents the soil through which water filters in natural areas.
4. In the other funnel, place the pieces of concrete, to the same volume as the soil-filled funnel. Loosely crumple the old newspaper into various sized pieces and crush the plastic cups. Add the newspaper and plastic cups into the funnel. This funnel represents areas across which water drains in paved areas. The newspaper and cups represent trash which may collect in the drains of paved areas.
5. Mix together a small amount of the garden soil with 2 liters of water and add two cups of the vegetable oil.
6. Add 1 liter of this mixture to the pouring jug.
7. Pour the mixture into the soil-filled funnel. Record how long it takes for the water to drain through and your observations. Measure the height of the oil layer that rises to the top of the water once it has filtered through.
8. Repeat the above step for the funnel filled with concrete and trash.



In this activity, you will learn how dirt actually helps keep water clean! Natural areas absorb and filter water through layers of soil, sand, rock and plant matter, reducing both the need for costly filtering treatments and the risk of devastating floods. Much less of this natural water filtration occurs in urban areas, however. When rainwater hits roofs, paved roadways and sidewalks in cities, it flows into storm drains instead of the ground, carrying pollutants like car oil and pesticides into the streams and lakes where we like to play. Yuck!

In cities like Detroit, TNC is helping to incorporate more green spaces and permeable surfaces that allow rainwater to get soaked up by the ground instead. For example, TNC worked with Detroit's Sacred Heart Church to transform some of their parking lot into functional gardens. Learn more at bit.ly/detroitshc.

ABOVE: Sacred Heart Church's new gardens have already reduced flood risk and runoff during some of the heavy rainstorms Detroit experienced this summer. © Fauna Creative

The Nature Conservancy
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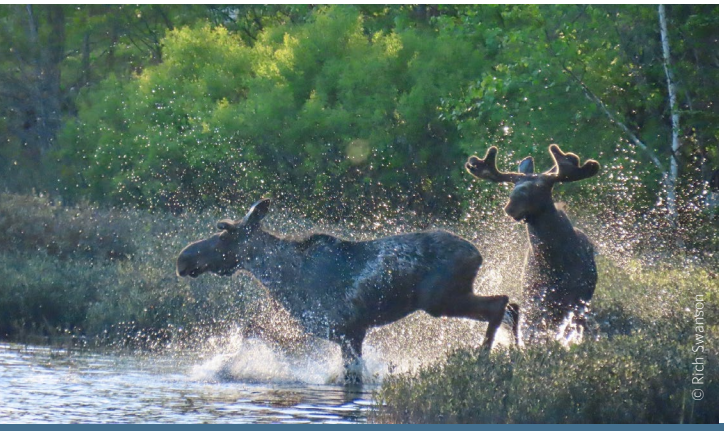

Closing the Gap

This May, we acted on an immediate and vital opportunity to nearly double the size of TNC's Wilderness Lakes Reserve to over 11,000 acres of spectacular forests, wetlands and lakes. Connecting healthy, resilient working forests with neighboring protected lands such as Craig Lake State Park helps build a corridor of protected habitat that gives wide-ranging species like moose the space they need to thrive.

But we still need your help.

A funding need of approximately $2.5 million remains of the $4.9 million project cost. **Please consider making a generous donation today at nature.org/midonate**, or contact development staff at (517) 316-0300.

Our deepest gratitude to the many supporters who are making this exciting achievement possible!

Follow us on social media **@TNCMichigan**.

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Donate to our work at **nature.org/midonate**.

Speak up for nature at **nature.org/actnow**.

Visit our website to learn more at **nature.org/michigan**.

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