

Rare Species Rediscovered at Protected Areas



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Heartleaf Skullcap



© Jim Harding

For almost 90 years, no one had seen a heartleaf skullcap in Michigan. The flowering plant had not been seen in our state since 1918 until this summer when Bob Smith found the species during a routine plant survey at The Nature Conservancy's Ives Road Fen Preserve in Tecumseh. Coincidentally, Smith originally introduced staff from The Nature Conservancy to the area in 1979.

The rediscovery of the plant in Michigan demonstrates the necessity for continued land protection and habitat preservation. Scientists say that the skullcap's rediscovery points to the importance of increasing protected land in Michigan.

"This sighting reaffirms the vital role that habitat restoration and preservation plays in Michigan," said Dr. Patrick Doran, director of science for The Nature Conservancy in Michigan. "It's thrilling to

know that the hard work of our volunteers and land stewards is making a difference."

Doran also said that climate warming has allowed southern plants to expand their ranges further north into places like Michigan, and maintaining suitable habitats is fundamental to maintaining the diversity of plant species.

"While we originally thought of Ives Road Fen as a unique habitat because of the river and prairie fens, we know now that the floodplain forests and uplands also contribute to making this a special place where a variety of species can flourish," Doran said. "We're still learning and studying how preservation efforts provide a number of benefits within an ecosystem."

To learn more about Ives Road Fen Preserve, including stewardship work days, visit <http://nature.org/michigan> and click on "Places We Protect."

A recently discovered hatchling of the declining wood turtle (left) at Coolbough Natural Areas in Newaygo County, along with the rediscovery of a rare plant (see story, above), points to the need for protected lands in Michigan.

Who We Are and What We Do

The mission of The Nature Conservancy is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. The Nature Conservancy envisions a world where lakes forests, grasslands, deserts, rivers and oceans are healthy, where the connection between natural systems and the quality of human life is valued and where the places that sustain all life endure for future generations.

<http://nature.org/michigan>

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Dear friends:

As we focus our attention on rivers in southern Michigan, we must consider our relationship with the abundant aquatic ecosystems in this great state. Every living process on land affects the Great Lakes; watersheds, streams, rivers and inland lakes all deliver water to these massive gems that support life for nature and people.

In Michigan, we are uniquely positioned to protect these rich natural resources, which supply us with drinking water, fish and so much more. Many ecologically important rivers flow through southeast Michigan, and the majority of Michigan's population resides across the 10 major watersheds. Maintaining the rich biodiversity of our water systems, while keeping shoreline and forests in mind, is essential. That goal will be closer than ever, now that the Great Lakes have been chosen as a world-wide priority for funding and protection by The Nature Conservancy.

This newsletter covers a number of issues relating to Michigan's southern rivers. Each of the rivers we highlight on pages 6-10 could merit their own cover story, yet when viewed as a whole, it's amazing to see how these site-specific projects add up to landscape-level conservation affecting the globally significant Great Lakes. Still, these impressive systems face threats from invasive species like zebra mussels, as Aquatic Ecologist Matt Herbert explains on page 11.

Similar to our policy work on invasive species, we are putting forth an effort to shape the 2007 Farm Bill into an effective tool for conservation, making sure that farmers prosper in accordance with protective programs. On page 9, you can read about methods like "no-till" farming cause less soil disturbance, reduce erosion and greatly improve water quality, with no harm to productivity.

The Nature Conservancy's Great Rivers Partnership exports best practices learned here around the globe, in hopes of continuous learning to improve our rivers as well. The partnership aims to stop mismanagement of major water resources worldwide, beginning in China and Brazil, and leading back to the Mississippi and other U.S. river systems, including Michigan's watersheds. Success requires close partnerships with local governments, communities, agencies, industries and landowners.

With autumn approaching, we have much to be thankful for, most of all the participation of members like you. Through cooperation, we will continue to put our new learning in river conservation into action in Michigan, with tangible results that improve the health of the Great Lakes that define us.

Yours in conservation,

Helen Taylor
State Director

Philip H. Power
Chair, Board of Trustees

Breaking News

Fire in the UP

Postcards From the Field
Stories from the UP's Sleeper Lake Fire



In Its Entirety @ nature.org/michigan

The third-largest wildfire in Michigan's recorded history

began with a lightning strike north of Newberry in the Upper Peninsula on Aug. 2. After burning over 18,000 acres, the fire is now safely under control with no loss of life or major injuries incurred. The Nature Conservancy's Michigan Fire Manager, Jack McGowan-Stinski, supervised fire-trained staff who went to help the Michigan Dept. of Natural Resources and its many partners with this extraordinary effort. Jack gives us his reflections in these excerpts from a new series, *Postcards From the Field*, which can be found in its entirety on our website at: <http://nature.org/michigan>

Week 1: After the Lightning Strikes

Thursday, August 9-Wednesday, August 15, 2007: Newberry, Michigan

The Sleeper Lake wildfire reached 15,400 acres by Tuesday, an area 8 miles long and 3.5 miles wide. The fire has currently burned over approximately 2,000 acres of The Nature Conservancy's property, making the Conservancy the largest private landowner affected by the fire.

To date, the Conservancy has provided three fire-qualified staff on-site, made our high-band radios available, and provided the Michigan Dept. of Natural Resources (MDNR) with mapping shapefiles. Our staff have been serving as liaisons, forward observers, as part of an engine crew, and as a hand crew with sawyers.

Week 2: The Kindness of Strangers

Thursday, August 16-Wednesday, August 22, 2007: Newberry, Michigan

Four structures, all at one location, were lost this week. Fortunately, no one was near the area at the time. People have been evacuated in several areas and the Red Cross established a shelter for evacuees, but it was not needed. Every evacuated resident found a temporary home with friends and family in the area.

The amount of support I've seen from local residents is wonderful. Volunteers make up to 750 meals a day. Local residents leave their homes in the evening to line the streets of Newberry as the firefighters return from 11+ hour shifts battling the fire. People cheer, wave and clap their hands in support. Signs are posted everywhere saying "Thank you."

Week 3: Science of the Sleeper Lake Fire

Thursday, August 23-Wednesday, August 29, 2007: Newberry, Michigan

The Sleeper Lake fire is now 80% contained due to the hard work of the dedicated individuals at the MDNR and the many partner organizations. Wildfires the size of Sleeper Lake remain rare because the mix of these habitats are usually too wet and green this time of the year to burn over extensive areas, but the extreme drought exacerbated fuel conditions.

Fortunately, for our crew, we had met with the MDNR earlier this year to talk about planning and prevention efforts in this exact area, including some draft maps and site inspections. These discussions helped us in understanding the containment effort. This wildfire definitely calls attention to the benefits of understanding and working with fire to positively restore and maintain the fire regime in fire-dependent places.

Week 4: Looking to the Future

Thursday, September 6-Wednesday, September 12, 2007: Newberry, Michigan

The fire is 95% contained and all the fire crews have gone home. Total acreage is estimated at 18,185 acres. Many of the older trees have seen fires such as this one in the past, and will survive future fires.

The Nature Conservancy continues to help the MDNR in developing a rehabilitation plan for the fire area. Long-term monitoring will be needed for years to come to prevent negative effects such as a new non-native plant species invasion. Fire is a natural ecological process, and will continue, especially when dry parts of the cycle bring droughts like the one we saw this summer. Prescribed burns can sometimes reduce the effects of wildfires by reducing fuels, yet still achieve the fire effects needed by a fire-dependent system.

Learn more about prescribed fire and effects at The Nature Conservancy's Global Fire Initiative at: <http://nature.org/initiatives/fire/>



© TNC/Jack McGowan-Stinski

The Nature Conservancy's Two Hearted River Reserve was the largest privately owned land portion burned by the fire.



© TNC Archives

Jack McGowan-Stinski led fire-trained staff from The Nature Conservancy to help the MDNR's containment effort.



© TNC/Jack McGowan-Stinski

Science and stewardship staff will continue to monitor the land affected by this natural process.

EASEMENT DONATIONS INCREASE AS TAX INCENTIVE EXPIRES SOON

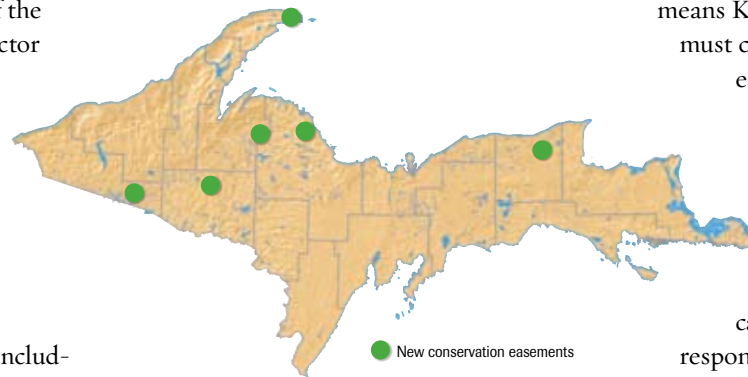
More than 1,000 acres in the Upper Peninsula's priority areas will be protected through a series of donated conservation easements prompted by a portion of the Pension Protection Act (PPA) that offers special tax incentives, which will expire at the end of 2007.

"The phone's been ringing off the hook," said UP Protection Director Jeff Knoop. "It's been a great motivator for people who've been thinking for a long time about donating an easement. A lot of people want to take advantage of this opportunity before it runs out."

Most of the newly protected property is in the western UP including 31 acres along the Net River in Iron County, 425 acres in the Michigamme Highlands in Marquette County and 220 acres at the headwaters of the Ontonagon River in Gogebic County. The easements

protect critical habitat for black bear, moose and other wide-ranging mammals and help stitch together thousands of acres of public and privately protected lands in the UP.

Knoop will finalize at least six donations altogether by Dec. 31, since the PPA is not expected to be renewed at this



point. The legislation essentially allows landowners to deduct up to 50% of their adjusted gross income and carry over unused portions of their tax deduction for

up to 15 years (rising from 30% and five years). He suggested anyone considering such a donation should consult a qualified tax advisor to learn more about any potential benefits or implications.

The Nature Conservancy will only accept easement donations for land in a conservation priority area, which means Knoop and other protection staff must carefully consider and examine each proposed easement before accepting the responsibility that comes with it. The Conservancy agrees to monitor and manage all land protected through acquisition or easement in perpetuity, significantly increasing our stewardship responsibilities.

"This is a great way for people to get involved with protection efforts but still keep the land for themselves and their families," Knoop said. "It's very gratifying."

Keweenaw County © Ron Leonetti



NEW DATABASE & MAPPING SYSTEM HELPS LAND USE PLANNING

Just how much land in Michigan is protected for conservation and recreational purposes? In an attempt to answer this question, Ducks Unlimited and The Nature Conservancy have been col-

lecting data for nearly three years from federal, state and local agencies, plus more than 40 land trusts in the state, to compile and analyze land use information in a mapping format. Information previously existed in county plat maps and a hodge-podge of different media, yet never collected together in a comprehensive and accessible format.

The Conservation and Recreational Lands (CARL) database now includes land owned by public entities, private land protected by conservation organizations, and both public and private land with conservation easements, long-term contracts and other levels of protection beyond ownership. Current information reveals that at least 8.7 million acres, or 23% of Michigan, is currently considered conservation or recreational lands.

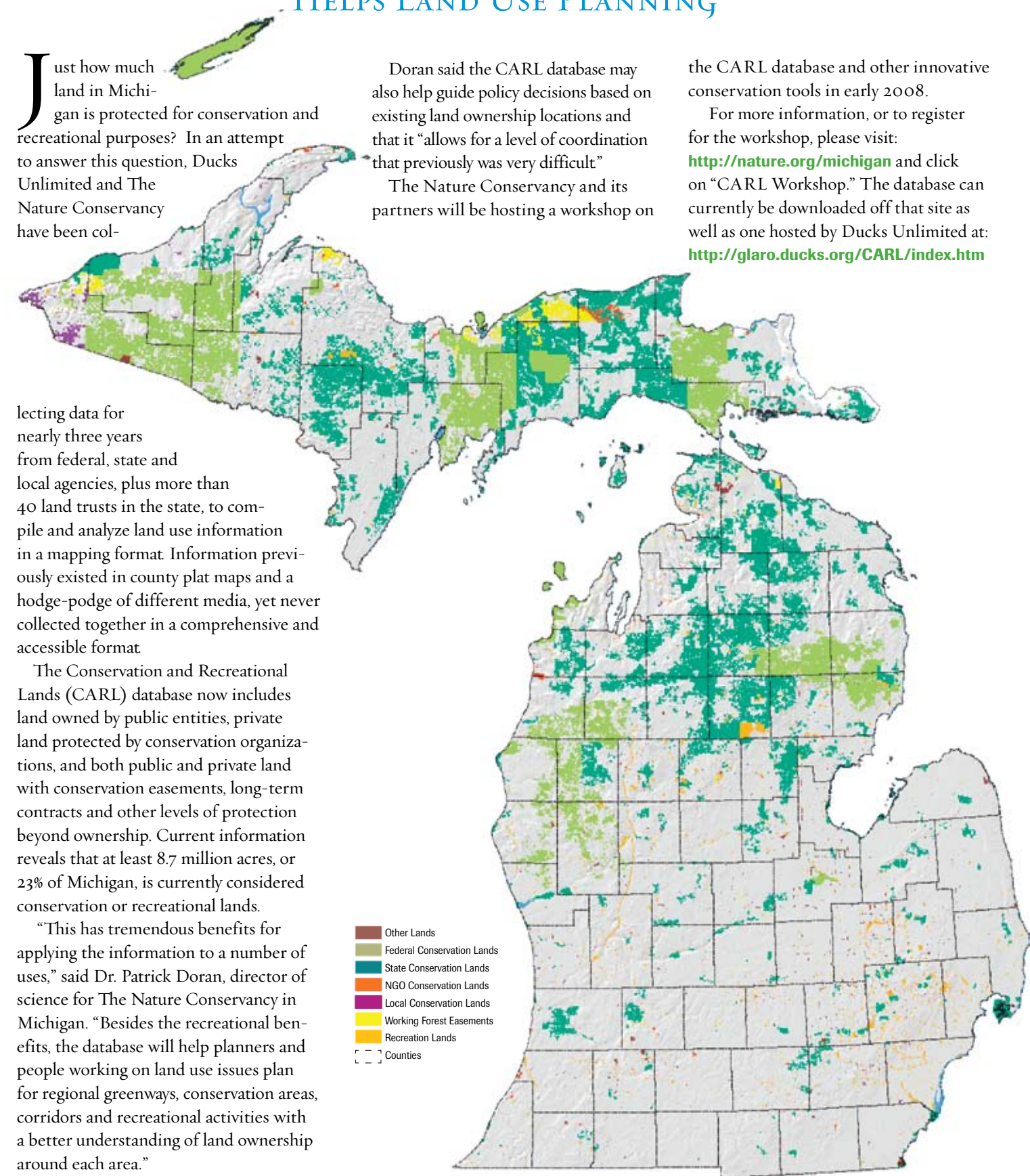
"This has tremendous benefits for applying the information to a number of uses," said Dr. Patrick Doran, director of science for The Nature Conservancy in Michigan. "Besides the recreational benefits, the database will help planners and people working on land use issues plan for regional greenways, conservation areas, corridors and recreational activities with a better understanding of land ownership around each area."

Doran said the CARL database may also help guide policy decisions based on existing land ownership locations and that it "allows for a level of coordination that previously was very difficult"

The Nature Conservancy and its partners will be hosting a workshop on

the CARL database and other innovative conservation tools in early 2008.

For more information, or to register for the workshop, please visit: <http://nature.org/michigan> and click on "CARL Workshop." The database can currently be downloaded off that site as well as one hosted by Ducks Unlimited at: <http://glaro.ducks.org/CARL/index.htm>





Scientists at The Nature Conservancy identified the mainstem of the Paw Paw River as a high-quality aquatic system for conserving freshwater biodiversity in the Great Lakes Basin.
© Sue DeVries

michigan's southern rivers

On-The-Ground Conservation Connects to Great Lakes

From a 30,000-foot view, the rivers in the southern Lower Peninsula appear as the creases in Michigan's famous mitt. This complex system comprised of curvy creeks, sparkling streams and rapid rivers work together to form a globally significant aquatic network that feeds into the Great Lakes, the largest freshwater ecosystem on the planet. Yet while this living landscape seems to churn along effortlessly, southern Michigan's cool and warm-water rivers are feeling the heat of increasing pressures that can weaken their health and viability.

The top three threats to Michigan's southern rivers vary in predominance yet inevitably include: incompatible development, invasive species and incompatible agricultural practices. Dams altering river flows and fire suppression in adjacent habitat also impact several riparian cor-

ridors. Considering these issues along with a blend of geographic and socio-economic factors, scientists at The Nature Conservancy carefully study what places to protect that will be most effective in conserving the full spectrum of biodiversity. Since 1951, The Nature Conservancy has protected more than 5,000 miles of rivers on Earth and is currently working at more than 400 sites around the world to protect rivers, lakes, wetlands and other freshwater systems.

In Michigan, four areas in particular epitomize our innovative and diverse conservation practices that result in a customized conservation plan for each freshwater river system that ultimately impacts our Great Lakes.

Paw Paw River Watershed

The 108-mile Paw Paw River is a major tributary of the St. Joseph River

and encompasses 446 square miles into Berrien, Kalamazoo and VanBuren Counties. Spreading over two distinctly different ecoregions, the river's watershed is dominated by agriculture, threatened by increasing incompatible development, and now has less than 8% in natural vegetative cover.

But this busy area interspersed with I-94 running through its belly also supports an incredible array of complex wetland systems, intact uplands and restorable oak savannas, a natural community more rare than tropical rainforests. In these natural communities live several rare and declining species of insects, reptiles, birds and plants including eastern box turtle, massasauga rattlesnake and shrubby cinquefoil, an indicator of a rare prairie fen.

More than 410,000 people also live in these three counties in places like the



Blessed with more than 36,000 miles of pristine rivers and streams, few states can match Michigan's magnificent waterways. The Nature Conservancy has identified 58 rivers in the Great Lakes basin as conservation priorities and is significantly increasing conservation efforts in four key areas (highlighted here). Many of these watersheds contain important natural areas, often in headwater areas where remnant wetlands, uplands and small streams occur in close proximity.

- Paw Paw River Watershed
- Grand River Fen & Skiff Lake
- Shiawassee River Watershed
- River Raisin Watershed

CORRECTION: Please note that this map replaces the version in the printed publication.

growing western suburbs of Kalamazoo and the cities of Benton Harbor and St. Joseph. These populations look to the river for recreation and related economic development, and conservation of the natural systems will help maintain these values into the future.

"I've always found this corner of the state to be one of the most interesting, and underappreciated," said Bill Parfet, a member of The Nature Conservancy's board of trustees in Michigan. "It's exciting to have this area recognized by The Nature Conservancy to confirm what we who live in this area have known all along – it's special."

By partnering with federal, state and local organizations, The Nature Conservancy is working to restore and maintain at least 1,000 acres in the headwaters of this high-quality aquatic system through a variety of approaches updated for modern conservation. In addition to traditional acquisitions, conservation buyer properties and conservation easements to restrict future development in targeted areas have helped boost protected lands here to more than 2,000 acres by the Conservancy and others.

"When we originally looked at the Paw Paw, we considered the river to be

the string that connected these jewels of natural communities together," said West Michigan Conservation Director John Legge. "Today, we see this as a comprehensive watershed project. It's a continuum of land protection and conservation efforts with partners to prioritize protection efforts from the

I've always found this corner of the state to be one of the most interesting, and underappreciated.

— Bill Parfet, Trustee

headwaters, where most of the turtles are, to the mouth of the river with prairie fens, floodplain forests and oak savannas along the way."

At the Conservancy's 135-acre Paw Paw Prairie Fen Preserve, staff are leading efforts to restore the hydrology to this critical system using a number of techniques to remove invasive plant species, including controlled burns at our preserve, partner properties and through management agreements on private landowners' property. The area hosts one of the best remaining populations for the eastern box turtle, which is an indicator of oak savannas and barrens as targets for restorable natural communities.

Conservancy staff are working at four separate properties to restore oak savanna and prairie fen habitat. Future strategies may include adopting practices learned in the Shiawassee River Basin working with farmers and local communities to reduce runoff and sedimentation.

Staff is currently working with the Southwest Michigan Planning Commission and other partners to complete a watershed management plan for the Paw Paw River. When completed, the partners will be eligible to apply for funding sources only available to those pre-approved watershed projects to implement our shared vision for the watershed.

Grand River Fen & Skiff Lake Area

Though declining in other places across their range, more than 1,200 Mitchell's satyr butterflies were counted this year by Conservancy scientists and partners—the highest number ever recorded anywhere in the world. Like this federally endangered insect, a variety of species depend on wetlands and natural communities found in the Grand River Fen & Skiff Lake area, including oak savanna and barrens, of which only remnants remain.

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continued from pg 7

river rundown The Importance of Rivers

- The freshwater ecosystems of the U.S. are comparable to the tropical rainforests in their contribution to global biological diversity. The U.S. has more species of freshwater mussels, freshwater snails, crayfish, and stoneflies than any other country. In addition, the U.S. has **10% of the world's fish species** and **8%** of the world's dragonfly and damselfly species.
- Only 0.01% of Earth's water is available as freshwater in rivers and lakes across the Earth's surface. The Great Lakes ecosystem contains approximately **20% of the world's fresh surface water.**
- The Great Lakes Basin plays an important role in maintaining the rich freshwater biological diversity of North America. For instance, nearly **25% of North American freshwater fish species** are found in the Great Lakes Basin.
- Riparian ecosystems serve as vital transition zones between terrestrial and aquatic systems **providing key habitat**, material inputs such as structure and nutrients, as well as other ecological services like shading to control temperatures.
- **No two rivers are alike**, varying by length, steepness, geology, topography, meanderings, sediment load, etc. All rivers transport water, sediment, nutrients, and other materials. Rivers change landscapes as they erode soil and transport it downstream. This naturally occurring process can become excessive with landscape modifications that increase river flood flows.
- Changes in river flows to suit human needs have damaged natural streamflow dynamics, especially related to the volume and timing of water delivery. Worldwide, **60% of the 227 largest rivers are fragmented by dams**, diversions, levees, canals and other infrastructures, which has resulted in serious impacts to ecological systems.
- Solutions lie in restoring natural flow regimes. More than 230 rivers around the world are currently **undergoing some flow restoration.** The Nature Conservancy is a leader in the development of tools and strategies for restoring natural flow regimes and has worked with many governments, dam operators, and conservation partners to restore natural streamflows.

The Conservancy is targeting 7,300 acres for protection and restoration in Jackson and Hillsdale Counties through direct conservation action, but the price of prized agricultural land prohibits simply buying all available properties. Instead, public and private grants coupled with landowner outreach and education have helped to protect critical parcels to begin to compile a nearly contiguous corridor for the butterfly and other conservation priority species.

"A lot of people think that if you partner with the Conservancy that you're going to lose control of your property or some of your privacy," said Scott Weaver, who owns 80 acres in Liberty with his wife, Cindy. "That couldn't be farther from the truth."

The Weavers have been working with the Conservancy and local partners for more than 20 years to raise awareness with neighbors, friends and family about the importance of this area and what people can do to protect it. Their property qualified for funding from the MDNR's Landowner Incentive Program (LIP) to have land stewards work with them to remove invasive species like buckthorn from their land, which connects to The Nature Conservancy's Grand River Fen Preserve.

More than 120 people near the Weavers recently attended a workshop sponsored by the Conservancy and Michigan State University to learn more about opportunities like the LIP program and more permanently binding tactics such as conservation easements.

"All of us living in this special place should be doing something to help protect it, not just for us, but for the long-term, for those who will be here after us," Weaver said.



© Michael D-L Jordan



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Shiawassee Resource Conservationist Craig Burns coordinates a field day every year to show farmers new techniques in conservation tillage and other demonstration projects.

Management agreements with landowners in this area like the Weavers are just one way Conservancy staff are working to create a conservation corridor to connect two thriving populations of the Mitchell's satyr. Other tactics include working with public agencies like the MDNR and Jackson County, as well as institutions like Michigan State University, which owns the 420-acre MacCready Reserve. Staff are working with MSU to learn from demonstration projects at this multi-use site including restoring more than 100 acres of oak barrens and prairie fen.

What once started as a project to protect the butterflies and the fen has now broadened into a commitment to restore and manage these precious natural communities at a landscape scale to provide vital habitat for rare and common species. With these myriad of strategies now in place, the Conservancy has gained much traction to not only protect these conservation priorities, but also the headwaters and wetlands in this critical area.

River Raisin Headwaters

The watersheds of 10 major rivers begin in southeastern Michigan and drain directly into the Great Lakes, influencing

the health of this vital natural resource. But not all of these rivers flow the same way—the River Raisin moves east into Lake Erie while the adjacent Grand River travels west to Lake Michigan. These two waterways are separated by a topographi-

Just as real estate is all about location, our key strategy to protect the River Raisin Headwaters is focused on partnerships.

— Rich Bowman,
Director of Government Relations

cal stretch of glacial landforms known as the Jackson Interlobate creating a diagonal line that runs parallel to the Detroit River. In the Interlobate, numerous small hills, lakes, and ridges of sand and gravel occur in close proximity to generate abundant habitat for a high diversity of plant and animal species. It is this topographical divide from which so many river systems emerge.

This beautiful geography also attracts roughly 2 million people, or 20% of Michigan's population, to live and work in this area where land ownership is overwhelmingly private and conserved land is comparatively scarce. Despite these cost-prohibitive challenges, The Nature Con-

servancy is working with partners to impact about 20,000 acres here under some form of conservation protection, restoration or management with the goal of creating conservation corridors, conserving private lands and protecting the functionality of the river.

"Just as real estate is all about location, our key strategy to protect the River Raisin Headwaters is focused on partnerships," said Director of Government Relations Rich Bowman. "We must have a coordinated approach with all levels of federal, state,

local, public and private organizations to protect this highly fragmented landscape."

The Nature Conservancy and its partners have already protected more than 33,000 acres in this area, including our popular Nan Weston Preserve at Sharon Hollow and Ives Road Fen Preserve, which benefits from hundreds of volunteers annually donating time to remove invasive plant species, a primary threat here which disrupts natural hydrology. If partnerships continue to work and thrive, globally significant headwater streams, rivers and lakes, prairie fens, oak barrens and forests will be connected and provide valuable ecological services, wildlife habitat and migratory bird stopover sites.

Shiawassee River

Known as the best example of a warm-water river system in the Saginaw Basin and one of the best high-quality examples in the Great Lakes region, the Shiawassee River supports 59 species of fish and at least 14 species of freshwater mussels, a key indicator of a river's health (see sidebar, pg. 10). Wetlands in the river's headwaters and riparian forests provide some of the best remaining habitat for several globally rare species including the Indiana bat, Blanding's turtle, eastern Massasauga, and powesheik skipperling. Migratory waterfowl and shorebirds such as the tundra swan and greater yellowlegs follow the river and stop to rest in the vast wetlands at the juncture of the Shiawassee, Flint, Cass and Tittibawassee Rivers.

But, this species-rich, seemingly healthy riparian system faces intense pressures from incompatible development and agricultural practices. In the headwaters portion of the watershed, the Conservancy and its partners use a blend of traditional and new conservation tools including acquisitions and easements. The downstream portion, however, demands a different set of tools since land use is dominated by working farms and

challenged by non-point source pollution carrying fertilizers, pesticides and sediment into the river, and ultimately, Lake Huron.

Learning from The Nature Conservancy's work in Indiana, staff have encouraged increased use of agricultural best management practices such as conservation tillage and two-stage drainage ditches to protect and restore the health of the Shiawassee River. Word has spread among farmers about the benefits of these techniques, thanks to outreach by the Conservancy's Shiawassee River Program staff.

Over the last three years, staff have enrolled more than 13,000 acres into the Conservancy's program aimed at promoting sustainable agricultural practices. This program helps farmers purchase new equipment, learn no-till practices and utilize our science-based resources. Farmers can lease the Conservancy's Brillion Zone Commander™, a large tractor-like tool designed to remove deep soil compaction that helps farmers prepare for no-till management that ultimately reduces soil erosion and sediment flowing into rivers and streams.

Demonstration workshops on building two-stage ditches have led to more than

100 county drain commissioners and public officials learning about its benefits. An annual field day helps educate farmers about these and other programs in sustainable agriculture. Shiawassee staff also publish two newsletters to spread the word on their success and how to get involved: the Shiawassee River Report and the River View, a joint publication with Friends of the Shiawassee River.

"When farmers first heard about The Nature Conservancy coming into the Shiawassee area, they were skeptical of no-till, but optimistic," said Director of Sustainable Agriculture Bill Northcott. "But now they're some of our best advocates out in the community. This program has grown exponentially, and we're looking forward to bringing what we've learned here to other parts of the state."

Indeed, all the work and success on the Shiawassee and across rivers in agricultural landscapes around the world will inform and enhance our work at all of our priority watersheds and rivers in southern Michigan.

Invasive mussels threaten aquatic systems

As a general rule, the number of native freshwater mussels indicates a river's health because of their highly selective living conditions. The Shiawassee River is home to at least 14 native species, and the Raisin River has 21.

"One-third of the world's freshwater mussels are right here in the U.S.," said Matt Herbert, an aquatic ecologist for The Nature Conservancy in Michigan. "We're a hotbed of mussel biodiversity."

At least 43 species of native unionid mussels live in Michigan. These differ from the much smaller invasive mussels, which are more closely related to our native finger-nail clams. Zebra mussels (*Dreissena polymorpha*) attach to hard surfaces such as rocks, industrial pipes, boats, or even native mussels, and filter plankton from the water for food. Because of their extremely high densities, they have greatly altered the plankton populations that native mussels and other species rely on, and can wipe out entire populations.

Invasives like the zebra and quagga mussel (*Dreissena bugensis*) threaten two-thirds of our native species putting them in danger of becoming extinct. These exotic mussels create the potential to

spread disease, collecting organic pollutants through filter feeding that exceed natural environmental concentrations by hundreds of thousands. Fish and birds can spread the contaminants after eating zebra mussels, making humans more susceptible. One possible pollutant is the bacteria *Clostridium botulinum*, which is responsible for botulism.

"Within three years of arriving in the Great Lakes, zebra mussels had spread to

ecosystem, control and removal of the species becomes significantly more difficult and expensive. Prevention, detection and rapid response are the best ways to minimize damage from invasives. The Nature Conservancy is continuing to address the threat of invasive species by:

- Providing science based solutions
- Managing invasions and restoring habitats
- Encouraging better business practices
- Promoting stronger public policies

While it is important to find ways to control invasive species, it is even more important to prevent new species from coming into our ecosystems.

— Matt Herbert, Aquatic Ecologist

Perhaps the best way to prevent further spread of invasive mussels is to stop people from moving fish, vegetation, or water from one place to another. Small steps like rinsing off boats after each use or ensuring that items

like bathing suits are dry before entering uninfested waters can help. Some aquatic invasive species may have become established here from seemingly innocent actions like releasing aquarium fish and plants into our waterways.

For more information, visit: <http://nature.org/invasivespecies>

the Gulf of Mexico," Herbert said. "While it is important to find ways to control invasive species, it is even more important to prevent new species from coming into our ecosystems."

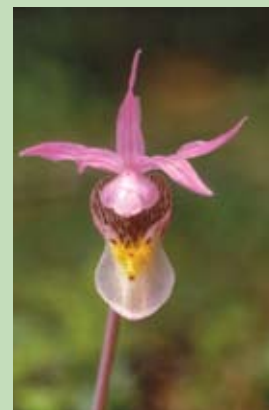
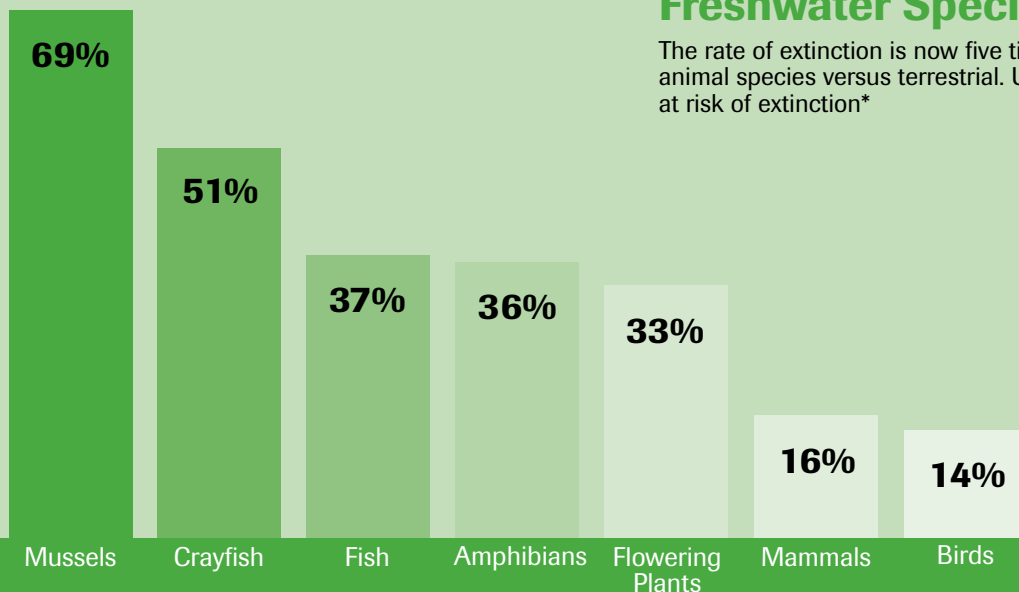
For more than two decades, The Nature Conservancy has been working to better control invasive species and lessen their impact on native plants and animals.

Today, we are increasingly focused on preventing invasions before they occur. Once an invasive species has entered an

Species at risk

Freshwater Species at Risk:

The rate of extinction is now five times greater for freshwater animal species versus terrestrial. U.S. freshwater species at risk of extinction*



© TNC Archives

Aquatic Ecologist Matt Herbert (right) works on issues involving invasive species like zebra mussels (left).



© Center for Great Lakes and Aquatic Sciences

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GREAT RIVERS PARTNERSHIP LEADS GLOBAL EFFORT TO IMPROVE MAJOR RIVER SYSTEMS

At great rivers around the world, learning is taking place. People restoring waters apply new techniques, policymakers create innovative approaches, and business and community leaders connect their work with rivers in new ways.

The Nature Conservancy formed the Great Rivers Partnership in 2005 with Caterpillar, IBM and other partners to share best management practices within the Conservancy related to the world's major river systems. The partnership's underlying goal is to share conservation strategies between the four countries, in an effort to improve all freshwater management systems. The program includes: the Yangtze River in China, the Parana River in Brazil, the Zambezi River in Africa, and the Mississippi River in the U.S.

"Nature knows no borders," said Don Zeilstra, director of philanthropy for The Nature Conservancy in Michigan. "It's exciting and engaging to see how we can import and export our conservation knowledge to other parts of the world."

Zeilstra is coordinating a trip to take members of our board of trustees to see

Brazil's Atlantic Forest next year for an up-close, in-depth look at how the Conservancy works in other countries.

"It's important for us to look beyond our borders not only for how we can help, but how we can learn," he said.

Water mismanagement drastically exhausts vital natural resources causing



higher long-term costs, water scarcity, diminished water quality and habitat destruction. The Parana River supplies drinking water and food to more than 17 million people, but losing grassland triggers depleting vegetation that once filtered sediments from incoming streams. A massive 400 million people depend on the Yangtze, where urban development has led to deforestation, erosion and pollution, with natural fisheries production declining by 75%.

To address these challenges, The Nature Conservancy's Great Rivers Partnership is developing innovative, technology-based decision support tools for improved management of water resources. Together with academic and corporate partners like IBM, the Conservancy will create the world's most comprehensive open repository of information, models and tools for sustainable uses.

The planned system will incorporate graphics and interactive simulations allowing users to visualize the effect of changes in conditions on freshwater ecosystems. This modeling framework and technology will enable changes to the way we conduct conservation on-the-ground related to freshwater systems around the world. In addition to these tools, educational efforts will include workshops, conferences and resources online such as websites, chat rooms, blogs, podcasts, videocasts and workspaces to promote instant, active collaboration and learning opportunities for other conservation practitioners.

For more information, visit: <http://nature.org/greatrivers>



Dense native forest lines the banks of the Iguazu River, a tributary of the Paraná River in Brazil.

©Scott Warren

BROAD COALITION WORKS TOGETHER FOR CLIMATE CHANGE ACTION

The Nature Conservancy has joined a diverse group of businesses and environmental organizations that are calling for the federal government to take immediate action to enact national legislation to achieve significant reductions of greenhouse gas emissions.

The Conservancy, along with Michigan-based General Motors Corporation and The Dow Chemical Company, joined other businesses and environmental organizations as new members of the United States Climate Action Partnership (USCAP).

The Nature Conservancy, known for

its nonpartisan, science-based approach to policy issues, believes the climate crisis must be urgently addressed. The environmental goal is to reduce global atmospheric greenhouse gas (GHG) concentrations to a level that minimizes large-scale adverse impacts to humans and the natural environment.

"Climate change will be the biggest threat by far to our mission of protecting nature and to the many investments in lands and waters we have made over the past 60 years," said Steve McCormick, president and CEO of The Nature Conservancy. "One of The Nature Conservancy's goals is to ensure that the

important role intact forests and other ecosystems play in mitigating climate change is recognized as a vital part of any policy framework developed to address this critical challenge."

The non-partisan USCAP urges policy makers to enact a policy framework for mandatory reductions of GHG emissions from major emitting sectors, including large stationary sources and transportation, and energy use in commercial and residential buildings. The cornerstone of this approach would be a cap-and-trade program.

Camp Swampy Transfer to National Forest Complete

More than 1,000 acres once used as a hunting camp for Steelcase employees and their families is now open to the general public since The Nature Conservancy recently completed the transfer of the majority of the property to the United States Forest Service. The Conservancy also assisted the Newaygo County Parks and Recreation Commission in opening 151 acres of the land as a public campground.

The Conservancy bought the entire 1,017-acre property known as "Camp Swampy" from Steelcase in 2004. Using funding from the Fremont Area Community Foundation and the Wege Foundation, the Conservancy served as a



Camp Swampy is a high priority for conservation because of its size, ecological health and its suitable habitat for species like the federally endangered Karner blue butterfly.

©Andy Morrison

bridge to buy the land until federal funding became available.

The Nature Conservancy identified the property through its savannas and dunes project to conserve biodiversity with the Land Conservancy of West Michigan. Connectivity with the larger landscape of the Huron-Manistee Forest is also a key

issue for wildlife management since few corridors of this size remain for plants and animals, especially in the Lower Peninsula. Public use on this new addition to the federal forest includes deer hunting, hiking, birdwatching and other light recreational use.

LEAVE A LEGACY FOR FUTURE GENERATIONS



Our annual Leapers & Creepers field trip draws visitors from around the state to our Nan Weston Preserve at Sharon Hollow, Washtenaw County. ©Michael D-L Jordan

What better legacy to leave than your commitment to protecting Earth for generations to come? Whether you are taking those first important steps toward planning your estate or updating your estate plan, The Nature Conservancy can help.

Contact us today to discuss how you can name The Nature Conservancy in your will or estate plan.

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E-MAIL: legacy@tnc.org

WEB: nature.org/legacy

SAMPLE LANGUAGE FOR YOUR WILL: nature.org/bequestlanguage

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All inquiries are completely confidential and at no obligation. Please consult your professional advisor before making any charitable gifts.

visit us on the **web** nature.org/michigan

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One of the headwater sources to the Grand River starts at our Grand River Fen Preserve in Jackson County.

© TNC/Melissa Soule

Waterways define Michigan. More than 36,000 miles of rivers and streams in our state flow into the Great Lakes, the world's largest freshwater ecosystem. Because of our unique geographic location, we hold a special responsibility to understand the importance of our connection between the land we live on and how it impacts these globally significant natural resources.

You can make a difference in protecting these vital waterways by learning more about Michigan's rivers. Ways to get involved, project descriptions and much more can be found online at <http://nature.org/michigan/rivers>. *Visit today!*



Submit Your Favorite Preserve Photo!

Join members like Elizabeth LaPorte and send a photo to us of a recent visit to your favorite Nature Conservancy preserve. Email an image to Dani Miller at: upmichigan@tnc.org

Stewardship Work Days

Get out in the field this fall and help remove invasive species from The Nature Conservancy's preserves. Visit us online at <http://nature.org/michigan/volunteer> to find a work day that fits your schedule.



wish list

If you'd like to grant any of the Chapter's "wishes," please contact Lara Coyer at (517) 316-0300 or by e-mail at lcoyer@tnc.org Thank you!

- Digital video camera
- Gift cards to Meijer, Lowe's or Home Depot
- Helmet: snowmobile/motorcycle, various sizes
- Ramp: for loading equipment to truck bed
- Plastic tote bins: 25 gallons or larger
- Plywood: 2' x 4' or larger
- Trailer: 8' enclosed for hauling waste
- Vehicles: all-wheel drive car or mini-van; and any reliable car with less than 100,000 miles is desperately needed, especially for our UP office



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Nearly 6,000 people in Michigan belong to the Conservancy Online and receive free monthly e-mail alerts on the news and activities involving The Nature Conservancy in Michigan. It's easy to join! Go to nature.org and click on this box below the logo.