

News from the Ministry of Natural Resources about The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem

the connection Connecting People and Partners Working to

Connecting People and Partners Working to Restore the Great Lakes Basin Ecosystem

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Please send suggestions for articles or editorial correspondence regarding this or future issues of the CONNECTION to: barb.mabee@mnr.gov.on.ca

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Cover: *Philip Edward Island, Lake Huron.* **Photo:** Doug Hamilton



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Our Connection to the Great Lakes



The Great Lakes. They're more than just the five lakes: they're the lands, rivers, streams and smaller lakes that drain into the Great Lakes. And they're more than just water, they're all the plants and wildlife that flourish in and around these environments.

The Great Lakes are one of the most precious natural resources Ontario has. Why? Nearly 98 per cent of Ontarians – about 11 million people – live in the Great Lakes basin, which is also the repository for 20 per cent of the world's supply of fresh water. In fact, three out of four Ontario residents rely on the Great Lakes for their drinking water.

Water from the Great Lakes also forms the foundation for Ontario's economy and supports our manufacturing, tourism and outdoor recreation industries, commercial and recreational fisheries, as well as shipping and agricultural activities.

Most importantly, the Great Lakes and their surrounding lands contribute to our quality of life. Coastal wetlands help to keep our lakes and rivers clean, prevent floods and provide important nesting and breeding areas for fish, waterfowl and other aquatic life. The Great Lakes basin ecosystem supports an astonishing variety of plants, fish, reptiles, amphibians and other wildlife, of which more than 130 species are at risk.







Everyone who lives, works and vacations in the Great Lakes basin has a connection to this large freshwater ecosystem. We owe it to ourselves, the future generations, the basin's plants and animals, and even the lakes themselves, to do what we can to keep our Great Lakes great.

MNR and The Canada-Ontario Agreement



The governments of Canada and Ontario have been working together for more than 30 years to maintain and improve the ecological health of our Great Lakes as partners in the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA).

COA helps Canada meet its obligations to the Great Lakes Water Quality Agreement, signed by Canada and the United States in

1972. COA also outlines how the two governments will address Great Lakes ecosystem problems, such as the spread of aquatic invasive species, and ensures that government-led programs cooperatively support projects and partnerships aimed at tackling these problems.

Eight federal agencies and three provincial ministries, including the Ministry of Natural Resources (MNR), are parties to the current five-year COA, which was signed in 2002.

Under the current COA, Ontario has invested \$50 million to clean up and restore the Great Lakes for future generations. About half of this funding is allocated to MNR over the lifespan of the current agreement to help fund a variety of COA projects.

Since 2002, MNR and more than 260 partners have been working on hundreds of protection and rehabilitation projects across the Great Lakes basin. MNR projects funded by COA help to restore fish and wildlife species and their habitats, conserve coastal wetlands, protect species at risk, monitor the status of fish populations, prevent the spread of aquatic invasive species, and improve our understanding of Great Lakes aquatic ecosystems.

Every COA project contributes to the goals of the new provincial biodiversity strategy, which recommends actions by government, non-government and private sector organizations to protect and preserve Ontario's rich natural heritage and variety of life. The strategy aims to protect the province's genetic, species and ecosystem diversity, and to ensure our abundant natural heritage is used sustainably for the benefit of all Ontarians – now and in the future.

From left to right: Monitoring fish activity, Eastern Spiny Softshell Turtle and the Lakeside Daisy.



PARTNERSHIPS That Make It Happen

Conservation Authorities Partner with COA – MNR partnered with Ontario's conservation authorities on nearly 50 COA projects this year. Over \$473,000 was contributed to 19 individual authorities to carry out more than 20 of these projects.

Funding from MNR helped the Nottawasaga Valley Conservation Authority, for example, to rehabilitate local tributaries. The Ganaraska River Conservation Authority made progress in developing a plan for managing fisheries in its watershed. The Central Lake Ontario Conservation Authority created guidelines for mapping flood and erosion prone areas. And the Grand, Thames and Raisin River conservation authorities monitored the health of wetlands and walleye spawning sites along their rivers.



COA projects involving conservation authorities are many and varied but all focus on our common purpose: protecting and improving the health of Ontario's watersheds to help restore the Great Lakes.

Biologists on the Lookout for Bald Eagles



Once widespread and common throughout Ontario, bald eagle populations declined dramatically in southern Ontario by the 1950s, due to the cumulative effects of chemicals like DDT. Today, thanks to a ban on the use of DDT, and other management efforts, bald eagle populations are on the rise province-wide. But, while bald eagle populations are increasing, the number of successfully reproducing pairs of bald eagles nesting along the north shore of Lake Erie remains

limited. The birds also have not returned to former nesting areas along the north shore of Lake Ontario and its islands.

For the past eighteen months, Bird Studies Canada biologist Dawn Laing has been on the lookout for suitable nesting sites for bald eagles along the north shore of Lake Ontario, as part of an eagle monitoring and habitat research project jointly funded by COA, Bird Studies Canada, the Canadian Wildlife Service, Parks Canada and MNR.

"The bald eagle has been identified by the Lake Ontario Lakewide Management Plan or LaMP as a sentinel species – a species at the top of the food chain, whose state of health indicates the health of other species and the environment," said Dawn.

The research team, with Dawn at the helm, has gathered nesting and wintering habitat data about the history of Lake Ontario's bald eagle populations from a variety of sources, including the Ontario Breeding Bird Atlas, naturalist groups and Bird Studies Canada volunteers. GIS technology and visits to potential nesting sites help researchers to identify suitable bald eagle nesting habitat. So far, 13 possible sites within seven kilometres of the Canadian side of the Lake Ontario shoreline have been identified. "American biologists with the New York State Department of Environmental Conservation and the U.S. Environmental Protection Agency are also identifying suitable nesting sites along the south shore of Lake Ontario," said Dawn. "Our combined goal is to re-establish stable populations of bald eagles around the lake."

This past spring, the partners launched the second phase of the bald eagle monitoring and habitat research project, which involves fitting select young eagles with radio transmitters and telemetry devices. The devices – platform transmitting terminals or PTTs – allow the researchers to follow the birds' varied movements via satellite.

Dawn believes the results of this study will contribute much to developing a strategy for managing bald eagle habitat on Lakes Erie and Ontario. "Identifying dispersal patterns, preferred habitats and potentially hazardous environments that may be affecting bald eagle populations on these lakes will allow us to evaluate the size and reproductive success of existing bald eagle populations," added Dawn.

By tracking the eagles' movements and monitoring their physical condition, Bird Studies Canada researchers hope to pinpoint areas in the lower Great Lakes region that contain healthy bald eagle habitat and identify priority areas suitable for habitat enhancement and stewardship efforts.

Check on the movements of the young eagles outfitted with PTTs by clicking on Eagle Tracker on Bird Studies Canada's website www.bsc-eoc.org

COA PROJECT LEADERS: Dawn Laing, Bald Eagle Project Coordinator, Bird Studies Canada, 1-888-448-2473, ext. 232 and Dr. Chris Davies, Manager, Wildlife Research Section, MNR-Peterborough (705) 755-1560.

COA NEWS FROM AROUND THE GREAT LAKES

Bringing the Mighty Muskie Back in Spanish Harbour



If there are trophy muskies hanging on walls around Spanish Harbour or the Whalesback Channel area of Lake Huron, they're probably more than half a century old. Muskellunge started to disappear from those areas in the 1950s, due to degraded river conditions and spawning habitat and over-fishing.

Nine years ago, MNR biologists began stocking Spanish Harbour with hatchery-reared muskellunge yearlings and fingerlings to help rehabilitate native muskellunge populations.

Biologists are now assessing the age and number of muskellunge present in the Harbour and lower Spanish River, and are comparing their findings to data collected for other North Channel-Georgian Bay muskellunge populations. By capturing and examining a few muskellunge, biologists can determine the fishes' genetic origins and thus gauge the long-term success of the stocking program.

Using seine nets and electro fishing, biologists have already successfully captured muskellunge in a wide range of sizes, with the majority being young-of-the-year and juveniles. While additional sampling for adult spawning muskellunge did not prove successful in the spring of 2005, the fall electro-fishing assessment was, once again, extremely encouraging with approximately 40 juveniles captured and sampled for genetic testing.

Restoring muskellunge to the Spanish Harbour is a goal of the Spanish Harbour Remedial Action Plan. ■

COA PROJECT LEADERS: Seija Deschenes, Spanish River Project Biologist, (705) 869-5756 and Christine Selinger, Area Biologist, MNR-Espanola Area Office (705) 869-2192.

PARTNERSHIPS That Make It Happen

Partnership Helps Protect Rare Alvar Habitat – In the spring of 2005, the Nature Conservancy of Canada (NCC) announced the successful wrap-up of its efforts to purchase 912 hectares of alvar (a globally rare plant community) on 1,040-hectare Strawberry Island in the North Channel of Georgian Bay.

MNR contributed a total of \$250,000 towards the purchase of this imperilled habitat through its COA and Ontario Parks-NCC Legacy programs.

"Protecting Strawberry Island is part of our continuing effort to conserve some of the most pristine alvar and coastal wetland communities on the Great Lakes," said John Grant, Midwestern Ontario Program Manager for the NCC. "To date, NCC and its partners have acquired more than 95,000 hectares of alvar habitat in Ontario."

The purchase also backs Canada-U.S. efforts to conserve other biologically diverse islands throughout the Great Lakes basin, the largest inland system of freshwater islands in the world.



For more information about the NCC visit: <u>www.natureconservancy.ca</u>

Look for more COA NEWS on page 10.

SPOTLIGHT ON COA PROJECTS: LAKE SUPERIOR

Tuning in on Fossil Fish



Lake sturgeon, the bony-plated fish whose looks haven't changed much since dinosaur days, were once so abundant that, in the days of wood-burning steamboats, the fish used to be stacked on docks to be taken aboard to fire ships' boilers.

Over the last 120 years, however, lake sturgeon numbers have declined. Over-fishing, degradation of habitat caused by urban and rural development, and the construction of dams that have prevented the fish from reaching their traditional spawning and feeding areas have all been cited as factors that have contributed to a steady decline in lake sturgeon populations.

To gain new knowledge to help protect sturgeon, biologists have outfitted juvenile and adult lake sturgeon from select Lake Superior tributaries (located between Thunder Bay and Sault Ste. Marie) with radio transmitters.

Tuning in to these radio tags allows biologists to determine the seasonal distribution and movement patterns of the fish and to identify critical habitats, such as spawning and feeding areas. Biologists are also studying the migratory behaviour of spawning sturgeon under controlled and manipulated flow conditions.

Biologists will use this additional knowledge to encourage the development of better plans for managing water levels in critical habitats, to guide decisions about implementing greater harvest restrictions, and to improve public awareness about the importance of protecting and restoring sturgeon spawning habitat. For more information about these and other projects, contact Lake Superior Basin COA Coordinator PATRICK FURLONG at (807) 343-4031.

Studying the Wood Turtle, a Species at Risk

The wood turtle is well named. Each scute of this medium-sized turtle's sculpted shell looks like the wood-grained cross-section of a tree branch, complete with growth rings. The wood turtle also inhabits forested river- and stream-bank environments.

Wood turtle populations are relatively isolated and scattered across Ontario. Their overall numbers are influenced by poaching, mortality due to road traffic and off-road ATV use, degradation and loss of habitat, and predation of nests by raccoons, skunks and foxes. The turtle's low reproductive success rate may also make it more vulnerable to these and other threats.

That's why biologists in the Lake Superior basin near Sault Ste. Marie are interested in finding, studying and protecting these native turtles. They're using radio-tagged wood turtles to collect data about the home range, travel patterns and general ecology of this species, as well as to learn more about threats to its survival.

To date, 161 wood turtles have been measured and marked, with 21 of these turtles radiotagged at any given time. Biologists now have at least



one year's and, in many instances, up to five years' worth of data. Preliminary findings indicate that wood turtles tend to prefer sections of streams that offer all of their life cycle requirements, including summer land range and hibernation and nesting sites.

All the data collected will be used to develop a plan to protect northern Ontario's wood turtle populations.

SPOTLIGHT ON COA PROJECTS: LAKE HURON

Taking the Pulse of Lake Huron's Coastal Wetlands

How healthy are the fish communities in the coastal and river delta wetlands of Georgian Bay and Lake Huron's North Channel?

That's what biology graduate students from Hamilton's McMaster University set out to learn this past summer under the leadership of Dr. Patricia Chow-Fraser. They collected information about the distribution of near-shore fish communities in 40 coastal wetlands around Georgian Bay, using a broad set of assessment criteria related to physical, chemical and food-web characteristics.



In the coming months, the students will be comparing data gathered during their field season with data collected in the 1980s to look for trends or changes in the distribution of nearshore fish communities in these wetlands. Their long-term goal is to develop a method of classifying and inventorying fish habitat for the coastal wetlands in all five Great Lakes. The data also will be used to protect wetland values and document the effects of changing water levels on coastal wetlands.

Elsewhere along Georgian Bay, natural heritage specialists with MNR's Midhurst District have been working to verify the boundaries of more than 20 privately-owned, provincially significant coastal wetlands and Areas of Natural and Scientific Interest (ANSIs) in an effort to update existing inventories for these areas.

Now, with the help of COA funds, new data is being added to MNR's Natural Resources Values Information System, which becomes a resource for municipalities to become more informed about land use and development. The data will also help MNR suggest potential properties for rehabilitation and acquisition by the Eastern Habitat Joint Venture partners and the Nature Conservancy of Canada.

The Severn Sound Environmental Association and the North Simcoe Private Land Stewardship Network are also partners in this project.

For more information about these and other projects, contact Lake Huron Basin COA Coordinator DAVID M. ANDERSON at (519) 371-5449.

PARTNERSHIPS That Make It Happen

Protecting Simcoe's Tributaries – Thirty landowners . . . 4,300 metres of electric fencing to keep cattle out of streams . . . 53 hectares of pasture retired . . . 22,000 trees planted to reduce wind and soil erosion . . . and several dams decommissioned to improve water flow, water quality and fish migration.

The Severn Sound Environmental Association and the Nottawasaga Valley Conservation Authority (NVCA) have helped 30 rural landowners across Simcoe County implement Best Management Practices to conserve soil, improve water quality and protect natural features, such as wetlands, on their properties.



All this was accomplished by North Simcoe Healthy Streams and NVCA's Tributary Rehabilitation Program, and partially funded by COA.

SPOTLIGHT ON COA PROJECTS: LAKE ERIE

Habitat Stewardship Improves Thames River

The 273-kilometre-long Thames River flows through four southwestern Ontario counties – Oxford, Middlesex, Elgin and Kent – on its way to Lake St. Clair. Stewardship councils in all four of these counties are partners in the larger Thames River Habitat Stewardship Initiative. Together, they are helping landowners who live in the watershed to carry out habitat stewardship projects on their properties.



The aim of the Thames River Habitat Stewardship Initiative, now well into its third year, is to encourage local landowners to implement Best Management Practices on their lands to improve water quality and fish and wildlife habitat, conserve soil, and protect wetlands.

Over the past three years, the Stewardship Initiative has received a total of \$120,000 in funding from COA. Additional funds are contributed annually by various conservation partners and agencies. Using these funds, local stewardship councils offer financial incentives and technical assistance to landowners who plant buffer strips of trees, stabilize stream banks, install fences to keep livestock from the Thames River and its tributaries, and retire fragile agricultural land bordering river banks within the watershed.

"We're excited about the level of interest from local landowners in this program and the cooperation that's occurring with the agricultural community," said Leonard Jones, Chair of the Elgin Stewardship Council.

Other partners in this initiative include the Upper and Lower Thames River conservation authorities, local municipalities, OFAH, and conservation agencies such as Ducks Unlimited Canada and the Wetland Habitat Fund partners.

Similar stewardship efforts are underway in the Grand River watershed.

For more information about these and other projects, contact Lake Erie Basin COA Coordinator RICHARD DROUIN at (519) 873-4712.

Investing in Landowner Involvement

The Wetland Habitat Fund (WHF) Program is an ongoing partnership between MNR and Wildlife Habitat Canada. A key stewardship program of the Eastern Habitat Joint Venture of the North American Waterfowl Management Plan, the WHF provides technical and financial assistance to landowners in Ontario who are conserving wetland and riparian habitat.

For the past three years, COA funds have helped the WHF increase services to watersheds in identified Areas of Concern across southern Ontario. This year in particular, the WHF has focused its efforts on landowner-led projects in the Lake Erie basin. Many of these projects are clustered in the watersheds of Catfish Creek in Elgin County, where COA funds are supporting the work of the multipartner Elgin Landscape Strategy, led by the Elgin Stewardship Council.

Planting native trees and shrubs, enhancing wetlands, and fencing river banks to restrict cattle access – such activities are now underway on 260 hectares under conservation agreement with private landowners. The WHF plans to invest additional COA funds in landowner projects linked to the Strategy and other initiatives in the Lake Erie basin in the months and years ahead.



SPOTLIGHT ON COA PROJECTS: LAKE ONTARIO

Biologists Gather Data About Bay of Quinte Gobies



They feed on bottom-dwelling invertebrates (including zebra mussels) and the eggs and fry of other fish species. They out-compete native fish species, such as the mottled sculpin and the log

perch, for food and habitat. "They" are round gobies, aquatic invaders first discovered in the St. Clair River in 1990 and now well-established throughout the Great Lakes, including the Bay of Quinte.

Ted Schaner, assessment biologist with MNR's Lake Ontario Management Unit, and his team are studying the impact of the round goby on the Bay of Quinte. "As goby numbers grow, so do our concerns over their potential effects on the nearshore fish communities and ecosystems of the Bay," said Ted.

Through the spring and summer of 2005, Lake Ontario Management Unit biologists and biology graduate students from Peterborough's Trent University collected information. Students used seine and trap nets as well as underwater cameras to help them tally goby numbers. Management unit biologists also set nets, to trap sport and commercial fish species that prey upon the goby. Then, in early fall, the focus shifted to collecting data about changes in the Bay's nearshore fish communities.

"Now, we're examining the stomach contents of gobies and other fish we've caught to determine what the gobies are eating and which sport and commercial fish species are eating gobies," said Ted. Because round gobies eat large quantities of zebra mussels, the potential transfer of contaminants to sport and commercial fish is worrying.

Gobies can spawn several times a season. This characteristic, coupled with the goby's relative abundance and size, means that this unwelcome addition to the Bay of Quinte fish community has the potential to threaten the diversity and number of native fish species in the Bay's aquatic ecosystem.

For more information about these and other projects, contact Lake Ontario Basin COA Coordinator ALASTAIR MATHERS at (613) 476-8733.

PARTNERSHIPS That Make It Happen

Partnership to Stop Invading Species – Since 1992, the Ontario Federation of Anglers and Hunters (OFAH) and MNR have been partners in the fight against invading species. The OFAH delivers the Invading Species Awareness Program through this partnership, publicizing the message across Ontario not to spread aquatic invasive species.



With over \$200,000 of yearly funding to OFAH from MNR through COA – an amount matched by OFAH – the program is able to significantly enhance its awareness, monitoring,

research, and control efforts.

The partnership maintains a tollfree Invading Species Hotline (1-800-563-7711) and website <u>www.invadingspecies.com</u>, where people can get information and report sightings of new invasions.

Monitoring, research and control measures for invaders such as the zebra mussel, round goby, purple loosestrife, and fanwort involve additional partnerships to team up in the challenge to keep all our lakes great!

Scientists Study Thiamine Deficiency in Salmon

A vitamin deficiency in Lake Ontario's Atlantic salmon population could be hampering efforts by biologists to restore naturally reproducing populations of these and other salmon and trout in Lake Ontario.

The cause is a diet rich in alewife, a non-native fish species that likely entered Lake Ontario via the Erie Barge Canal system in the 1860s. Alewife carry an enzyme, thiaminase, which destroys thiamine (vitamin B-1) when eaten by larger, predatory fish species, such as salmon and trout.

"Thiamine deficiency causes a condition that scientists refer to as early mortality syndrome or EMS in affected salmon and trout fry," said Scott Brown, a research scientist with Environment Canada's Priority Substances Effects office in Burlington, Ontario.

Biologists with the Lake Ontario Management Unit are working closely with scientists at the federal departments of the Environment and Fisheries and Oceans to determine what long-term effects low thiamine levels might be having. Foraging behaviour, predator avoidance, spawning migration and reproductive success in Lake Ontario salmonines, including native species such as the Atlantic salmon and lake trout, are all areas of concern.

How serious is the condition? What factors contribute to the deficiency? Are there ways of mitigating its effects? These are the questions research scientists involved in the project want to answer.

"Learning more about the impacts related to thiamine deficiency in Atlantic salmon and lake trout may shed new light on efforts to restore and sustain populations of these native fish species in our Great Lakes," said Lake Ontario Management Unit biologist Marion Daniels.

The Atlantic salmon was a key component of the original offshore fish community of Lake Ontario and supported significant subsistence and commercial fisheries. Loss of valuable spawning habitat led to its disappearance from the lake in the late 1800s.

COA PROJECT LEADER: Marion Daniels, Management Biologist, Lake Ontario Management Unit, MNR-Peterborough (705) 755-1345.

Local school children help biologist, Marion Daniels, place Atlantic salmon fry into their new homes in a Lake Ontario stream. MNR and its partners are working towards restoring wild populations of this native species.

> Eyed salmon eggs and newly hatched fry. Salmon and trout are reared at several MNR Fish Culture Stations to support native species restoration efforts in Lake Ontario and provide fishing opportunities

> Future spawners? Tiny (1g) Atlantic salmon fry are hand stocked in Lake Ontario streams in May.



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MORE NEWS FROM AROUND THE GREAT LAKES

Researchers Radio-collar Mink

The first study of the effects of mercury and polychlorinated biphenyls or PCBs on the survival of fish-eating furbearers in Ontario is taking place at Point Pelee National Park, southeast of Windsor on Lake Erie.

Since January 2005, Ryan Gorman, ecology Master's student from



Peterborough's Trent University, has been capturing and radiocollaring mink, semi-aquatic members of the weasel family that inhabit the park's vast marshlands. By examining blood samples taken from captured mink, Ryan and other researchers can determine PCB levels in the animals. Since mink are fish-eating predators at the top of the aquatic food chain, they are an excellent indicator of the health of marsh ecosystems here on the Great Lakes.

"This is the first study of mink in the park and among the first studies of mink in Canada," said project coordinator Dr. Jeff Bowman, who is a wildlife research scientist with MNR. "Fur harvest trends suggest that mink populations in Ontario have declined dramatically over the last 60 years. The mink is the only fur-bearer that exhibits such a trend."

The effects of persistent toxins like mercury and PCBs have been cited as one reason for wildlife decline. Scientists and researchers around the world have been monitoring the health of fish-eating birds, fish and mammals living in PCB contaminated areas since the late 1970s, when PCBs were first banned.

So far, 13 mink have been collared in Point Pelee National Park. Ryan hopes for a total of 35 to 40 mink to get a good representative sample of local populations. Radio-tracking the mink will help researchers learn more about this elusive animal. The information collected, combined with historical information provided by trappers and other field work, will help researchers tell if Ontario's mink population is thriving or declining.

COA PROJECT LEADER: Dr. Jeff Bowman, Research Scientist, Wildlife Research Section, MNR-Peterborough (705) 755-1555.

PARTNERSHIPS That Make It Happen

Ontario Streams Races to Save the Dace – Ontario Streams is helping provincial efforts to reverse the decline of the redside dace, an Ontario fish species-at-risk.

The organization, known for its dedication to stream stewardship, is working closely with MNR's Midhurst District on a COA-funded project aimed at protecting existing redside dace habitat. Former habitats that have the potential for rehabilitation are being identified.

For the past two field seasons, Ontario Streams staff and volunteers have evaluated nearly 30 known or suspected redside dace habitats in the Saugeen River watershed, once reported to have the healthiest populations of this colourful minnow in the Lake Huron basin.

Efforts also include working with landowners to preserve existing redside dace habitat and helping them to recognize the type of habitat this threatened fish species needs.

Female redside dace, top. Male, below.



HOW YOU CAN GET INVOLVED WITH COA

The COA Unit of MNR's new Great Lakes Branch coordinates the monitoring, reporting, work planning and priority-setting components of the COA program. Staff from MNR's Great Lakes management units, districts and nine provincial program areas work with partners to coordinate and carry out COA projects. Contact your local lake basin coordinator, program lead or any member of the MNR-COA Implementation Team (listed below) for detailed information about specific COA projects or for information about how you can get involved with COA.

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