



WELCOME!

Outreach and Education Methods for *Phragmites* Management

Mary Bohling, Extension Educator, Michigan Sea Grant Extension

The Webinar will begin shortly!

Phragmites Education and Outreach: What Tools are in the Toolbox?

Mary Bohling, SE MI Educator
Michigan Sea Grant College Program



MICHIGAN STATE
UNIVERSITY





Mission: Enhance sustainability of Michigan's Great Lakes coasts

Activities: Research, Education and Outreach

Focus Areas:

Sustainable Coastal Communities & Economies

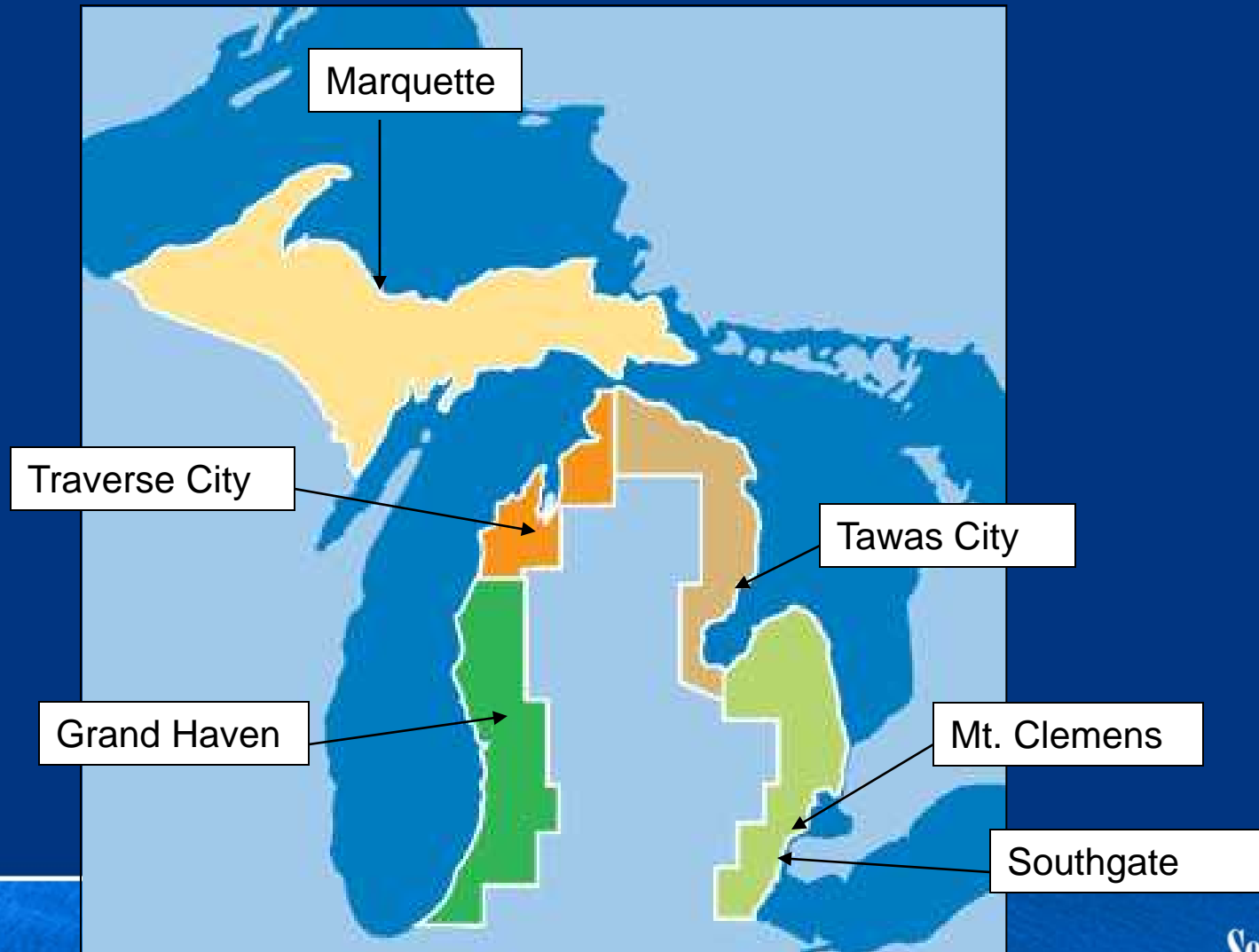
Healthy Coastal Ecosystems

Safe & Sustainable Seafood

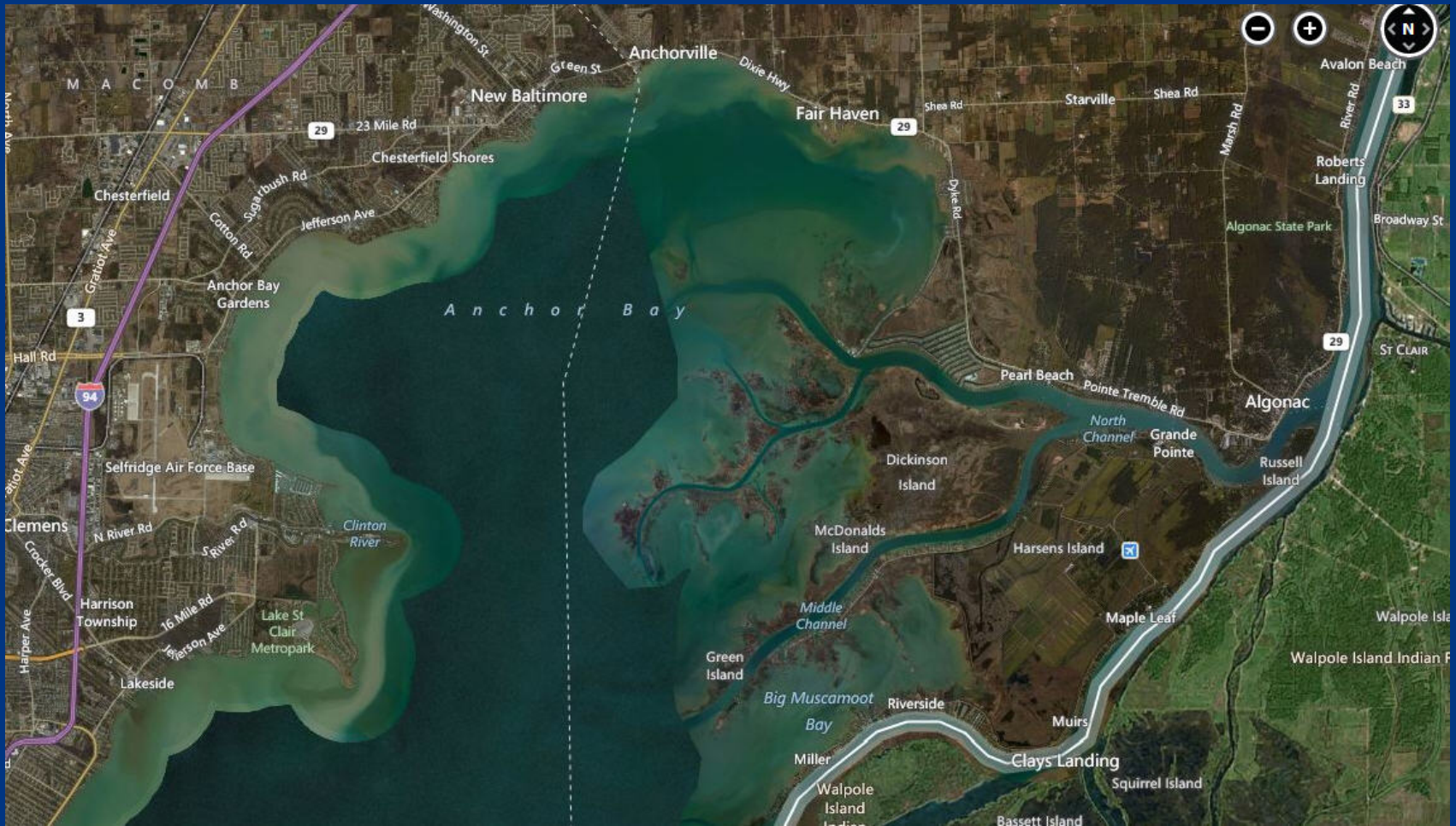
Coastal Hazard Resilience



MI Sea Grant Field Offices



Lake St. Clair / Anchor Bay



GLRI-DU

- ◆ **Grant Amount:**

- ◆ \$974,037 of federal GLRI funding via the U.S. EPA; DU contributed \$25,000 of eligible match

- ◆ **Partners:**

- ◆ Michigan DNR, Michigan Sea Grant/MSU, U.S. EPA, SEMCOG, Clay Twp., Ira Twp., Wildlife and Wetlands Solutions, Inc., and several private landowners

- ◆ **Timeline:**

- ◆ Grant awarded to DU on 8/23/2010. Education and outreach is currently ongoing. We anticipate a final prescribed burn on Michigan DNR lands followed by monitoring and final reporting to EPA to be complete by the grant period end date of 6/30/2014.

GLRI-DU

◆ Goals:

- ◆ Treat 1,200 acres of invasive Phragmites on both public and private lands on Anchor Bay and the St. Clair Flats.
- ◆ Treatment includes a combination of aerial and ground herbicide application followed by spot treatment and burning or mowing.
- ◆ Additional goals include offering education opportunities and outreach to local communities regarding Phragmites control and spread.
- ◆ This effort builds on several Phragmites successes in the area, including the Lake St. Clair Coastal Project (funded by the National Coastal Wetlands Conservation) that treated 864 acres of Phragmites.

Project Elements

- ◆ Research
- ◆ Project Development
- ◆ Treatment
- ◆ Monitoring
- ◆ Follow-up Treatment

Education
and
Outreach

- ◆ Education & Outreach

Why Education & Outreach?

- ◆ Increase Capacity
- ◆ Increase Awareness
- ◆ Build Support
- ◆ Spread the Science
- ◆ Eliminate Duplication
- ◆ Distill Complicated Information
- ◆ Set the Stage for Future Funding
- ◆ Generate Positive Media Buzz



Tools

- ◆ Fact Sheets
- ◆ Maps
- ◆ Posters
- ◆ Presentations
- ◆ Photos/Graphics
- ◆ Workshops
- ◆ Events/Celebrations
- ◆ Curriculum
- ◆ Websites
- ◆ Displays/Signage
- ◆ Video
- ◆ Media Materials
- ◆ Booklets
- ◆ Stakeholder Groups

Workshops/Meetings

- Public Meetings
- Teacher Training
- Land Manager Workshops
- Private Landowner Workshops



SEMCOG UNIVERSITY

Workshop: Developing a Lake St. Clair Phragmites Control Strategy
March 14, 2014
9:00 am -11:30 am
Lake St. Clair Metropark Activity Center ([view site map](#))
31300 Metro Parkway, Harrison Township, MI 48045
(586) 463-4581

SEMCOG and the Michigan Sea Grant are jointly sponsoring this SEMCOG University to engage SEMCOG member counties and local governments within a [37-community target area](#) for which Phragmites has already been mapped, in developing a strategy for controlling invasive Phragmites.



Impacts to Wildlife

- ◆ Negatively impacts specialists
- ◆ Increases in some generalists
- ◆ Changes in food web
- ◆ Changes in wetland use (nesting/brood rearing)



Impacts to Human Values

- ◆ Recreation
- ◆ Property values
- ◆ Aesthetics
- ◆ Infrastructure



Herbicides

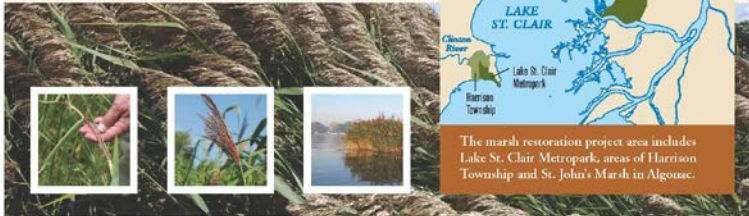
- ◆ Water approved formulation
- ◆ Glyphosate / Imazapyr
- ◆ Adjuvant & dye
- ◆ Application method – site specific
 - ◆ Boom sprayer
 - ◆ Backpack sprayer
 - ◆ Hand swiping
 - ◆ Aerial treatment
- ◆ Alternation of herbicides to avoid resistance

Selected Samples



Fact Sheets

RESTORING THE MARSH PHRAGMITES REMOVAL AND MONITORING



Great Lakes marshes are valuable wetland habitats, full of nutrients that help support diverse plant and animal life. They also provide ecological services such as water filtration and flood protection along the coast. However, many marsh habitats are threatened by pollution, development and non-native aquatic invasive species, like Phragmites.

RESTORING THE MARSHES

Phragmites australis, an invasive plant, quickly spreads through marsh and wetland areas, robbing the fish, plants and wildlife of nutrients and space; blocking access to the water; and spoiling shoreline views. Once it has become established, removal by hand is nearly impossible.

As Phragmites overtook the Lake St. Clair marshes, for example, removing the invader and restoring the natural balance of the marshes required strong measures. Natural resource managers devised a plan to eradicate and manage invasive Phragmites that included herbicide applications and controlled burns.

The marsh restoration project area includes Lake St. Clair Metropark, areas of Harrison Township and St. John's Marsh in Algonac.

WHAT WAS DONE?

- The Michigan Department of Natural Resources approved a control plan and the Michigan Department of Environmental Quality approved the required permits.
- Trained professionals followed the plan.
- First, an herbicide was applied by helicopter and on the ground.
- Then, controlled burns were used to remove dead Phragmites. Burning the stalks allowed sunlight to penetrate the ground and native plant seeds to germinate.

- Managers will continue to monitor the project area and will encourage the re-establishment of native species in the marshes.

TECHNOLOGY

Natural resource managers used Geographical Information System (GIS) technology to determine how and where to reduce and remove Phragmites to allow native plants to regenerate.



YEAR 1 FALL

Herbicide, a chemical used to kill plants, was applied by helicopter and on the ground with sprayers. Trained professionals used Glyphosate, an EPA approved aquatic herbicide to spray the plants. People were not allowed into the treatment area.



YEAR 2 SPRING

Controlled burns (in combination with the herbicide) were used to remove dead Phragmites, allowing sunlight to penetrate the ground.



YEAR 2 FALL

Herbicide application on the ground continued. The only herbicides that are effective in controlling Phragmites are broad spectrum, meaning they affect other plant species. However, native plants recover within a few years after initial herbicide treatment.



ONGOING

Managers will continue to study the project area while maintaining and protecting the recovering wetlands. There are many tools they use, including:

- Mowing, changing water levels, diking;
- Removing plants by mowing, dredging or burning;

- Applying herbicides or other chemicals to help prevent the growth and spread of invasive species; and
- Adding nest structures, plants and other habitat improvements to make it hospitable for native species to return.

PHRAGMITES AUSTRALIS, COMMON REED

While invasive Phragmites may look like a pretty wetland grass, in the Great Lakes region it is one tough invasive species. Also known as common reed, Phragmites is an aggressive plant that quickly outcompetes native plants and displaces animals.

PHRAGMITES FACTS

- Average height of the plant is 8-10 feet tall, but it can reach up to 18-20 feet.
- It can spread aboveground, underground and in the water, and stems create dense stands.
- Despite its height, most of the plant (nearly 80%) is found below the ground.
- Roots spread horizontally and vertically and can extend 6-8 feet deep, making removal by hand nearly impossible.
- Each stalk produces up to 2,000 seeds. The seeds are spread by the wind, transfer of soil, animals, etc.
- Seeds can float for one or two months, carried by water to new areas.
- The plants can also regenerate from relatively small pieces of rhizome or roots.

COOPERATIVE PROJECT EFFORT

The Marsh Restoration Project at Lake St. Clair Metropark has been a cooperative effort of the Michigan Department of Natural Resources, the Huron-Clinton Metropolitan Authority, Michigan Sea Grant, Harrison Township, Michigan Chapter of Ducks Unlimited and the Southeast Michigan Council of Governments. Other collaborators include St. Clair Flats Waterfowlers, Inc. and the St. Clair County Parks and Recreation Commission.

CONTACT

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www.metroparks.com



www.michigansea.grant.umich.edu



www.michigan.gov/dnr



www.ducks.org

Produced by Michigan Sea Grant with support from Ducks Unlimited. MICHU-12-720

Fliers

HURON-CLINTON METROPARKS PHRAGMITES control



This fall, the Michigan Department of Natural Resources and Environment (MDNRE), the Huron-Clinton Metroparks and the Charter Township of Harrison will continue efforts to control giant reed (phragmites) at several sites within the Lake St. Clair watershed. The intent of the project is to protect and restore valuable coastal marshes and wetlands within the watershed by controlling phragmites, an invasive wetland grass.

This activity is part of the Marsh Restoration Project, at Metro Beach Metropark, St. John's Marsh and Harrison Township. This four year project, funded by a U.S. Fish and Wildlife Service grant, is a cooperative effort of the MDNRE, the Huron-Clinton Metroparks, the Charter Township of Harrison, the Great Lakes/Atlantic Regional Office of Ducks Unlimited, Michigan Sea Grant, and the Southeast Michigan Council of Governments. Other partners and contributors include St. Clair Flats Waterfowlers, Inc. and the St. Clair County Parks and Recreation Commission. The project aims to restore and improve wildlife habitat and ensure the long-term ecological sustainability of Great Lakes coastal marshes.

Phragmites will be chemically treated at Metro Beach Metropark, St. John's Marsh and Harrison Township owned property along the Vanter DeBeuff Drain. The chemicals used in this treatment will be glyphosate and imazapyr. All treatment will be done in accordance with permits issued to the project administrator, the Great Lakes/Atlantic Regional Office of Ducks Unlimited, by the MDNRE Water Bureau and in accordance with product labels. Treatment will take place between September 7 and September 30, 2010. Questions regarding the treatment can be directed to Ernie Kafkas, MDNRE Wildlife, 586-465-7214 or Paul Muelle, Huron-Clinton Metroparks, 810-494-6052.



Booklets

EDUCATIONAL RESOURCES

POSTER

■ Ducks are fascinating creatures. Learn more about our native waterfowl with the Dabblers and Divers poster. This poster and other publications are available through www.misagrants.com

ONLINE CURRICULUM

More information about water quality, marshes and invasive species is available through Michigan Sea Grant's online curriculum resources.

■ **Teaching with Great Lakes Data** includes lessons, activities and data sets. The curriculum includes a lesson about Phragmites, marshes and water quality. See: www.greatlakeslessons.com

■ **Fisheries Learning on the Web (FLOW)** features lessons and activities about wetlands, and invasive and native plants and animals. Activities demonstrate important wetland functions and the challenges of making land-use decisions. See: www.projectflow.us

TAKE A HIKE!

Lake St. Clair Metropark Nature Center
Go for a hike through the marsh and visit the exhibits at the Nature Center that feature frogs, birds, fish and snakes that are part of the Lake St. Clair marsh. See: www.metroparks.com

GET OUTDOORS WITH THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Explore boating, birdwatching, and camping at Michigan State Parks and Recreation Areas. Search for "get outdoors" to find outdoor opportunities and events.

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RESTORING LAKE ST. CLAIR MARSHES



Many marsh habitats are threatened by pollution, development and non-native aquatic invasive species, like Phragmites. *Phragmites australis* or the common reed, is one of the tallest and toughest invasive grasses in the Great Lakes region. It can grow up to 20 feet tall and up to 30 feet of roots in one year.

In the Lake St. Clair area, natural resource managers devised a plan to eradicate and manage Phragmites in the marsh. The marsh restoration project area included Lake St. Clair Metropark, areas of Harrison Township and St. John's Marsh in Algonac.

WHAT WAS DONE?

- An herbicide was applied by helicopter and on the ground in an effort to control the invasive Phragmites.
- Glyphosate, an aquatic herbicide was used. The only herbicides that are effective in controlling Phragmites are broad spectrum, meaning they do not target just one species. However, native plants recover within a few years after initial herbicide treatment.
- Controlled burns were used to remove dead Phragmites. Burning the stalks allowed sunlight to penetrate the ground and native seeds to germinate.
- The control plan included a 50-yard buffer zone adjacent to the public land and residents and park visitors were not allowed into the treatment area.
- Ongoing monitoring and restoration will continue.

A HEALTHY MARSH

Marshes are unique areas where water saturates the soil and covers the land for most or all of the year. Marshes are one type of wetland, and are characterized as having open water, shrubs and grass-like plants. The marsh is full of nutrients and is home to plants and animals that need the habitat to survive.

With the constantly shifting water levels and conditions a wide variety of birds, plants and animals can take advantage of the habitat. Because of this diversity and the presence of rich soils, wetlands provide shelter and homes to not just larger mammals and birds, but also insects, invertebrates, bacteria, algae and decaying plants. Combined, these smaller organisms create a solid foundation for a rich food chain.

ONE EXAMPLE: DUCKS

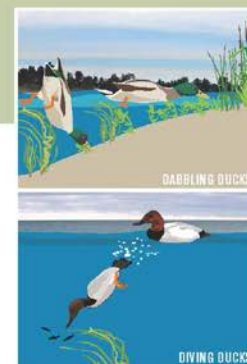
Marshes are home to many waterfowl. In fact, every species of duck in the Great Lakes rely on wetlands at some point in their lives. In the Great Lakes region, ducks are often classified into two groups: dabblers or divers. Just as it sounds, the ducks are organized by whichever behavior they exhibit, mainly in search of food. Dabblers and divers both rely on the marsh in different ways.

Overall, dabbling ducks spend most of their time in shallow water, nearshore or onshore searching for plants, seeds, worms and insects to eat. A dabbler can sometimes easily be spotted as it tips its whole body forward, dunking its head and the front half of its body to search for tasty bits in the shallow water.

The areas near the shore are used as resting, nesting and nursery areas for both dabblers and divers. The marsh helps provide nutrients and protection for mom and her ducklings as they grow large enough to begin exploring.

At different times, both female and male ducks molt, meaning they lose and replace their feathers. For example, in winter and spring, many male ducks have flashy feathers — or breeding plumage — to attract potential mates. Shortly after the breeding season, however, they begin to lose the showy feathers and replace them with basic feathers. The male ducks cannot fly while in molt.

During this flightless period, the ducks are completely dependent upon the resources



of the wetland. Dabbling ducks use areas near the shore, particularly for cover, while divers tend to seek out deeper water areas for protection. However, many ducks use the marsh habitat for food as well as resting areas during their flightless times.



www.metroparks.com



www.misagrants.umich.edu



www.michigan.gov/dnr



www.ducks.org

The Marsh Restoration Project at Lake St. Clair Metropark has been a cooperative effort of the Michigan Department of Natural Resources, the Washtenaw County Metropolitan Authority, Michigan Sea Grant, Harrison Township, Michigan Chapter of Ducks Unlimited and the Southeast Michigan Council of Governments. Other contributors include St. Clair White Waterworks, Inc. and the St. Clair County Parks and Recreation Commission. Funded by Michigan Sea Grant with support from Ducks Unlimited. 30343-12-725

Outdoor Interpretive Signage

what a fen-tastic wetland!



The wetland at the soggy margin between the hillside and the pond is called a fen. It receives most of its moisture from groundwater released by springs and seeps near the base of the hill. As groundwater flows, it picks up calcium and magnesium from the soil. Plants that live here are adapted to the alkaline soils created by these minerals. Grass-like sedges often dominate, but other emergent plants that don't mind "wet feet" are also present.



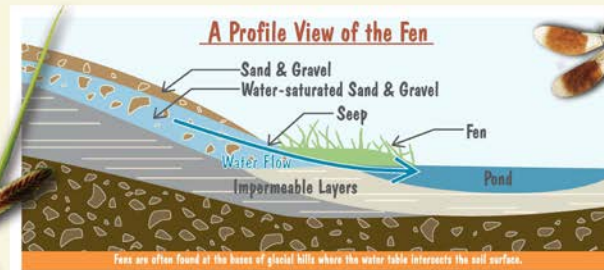
Our man-made fen began to take shape in 2002.



Today the fen is alive with plants and wild creatures!



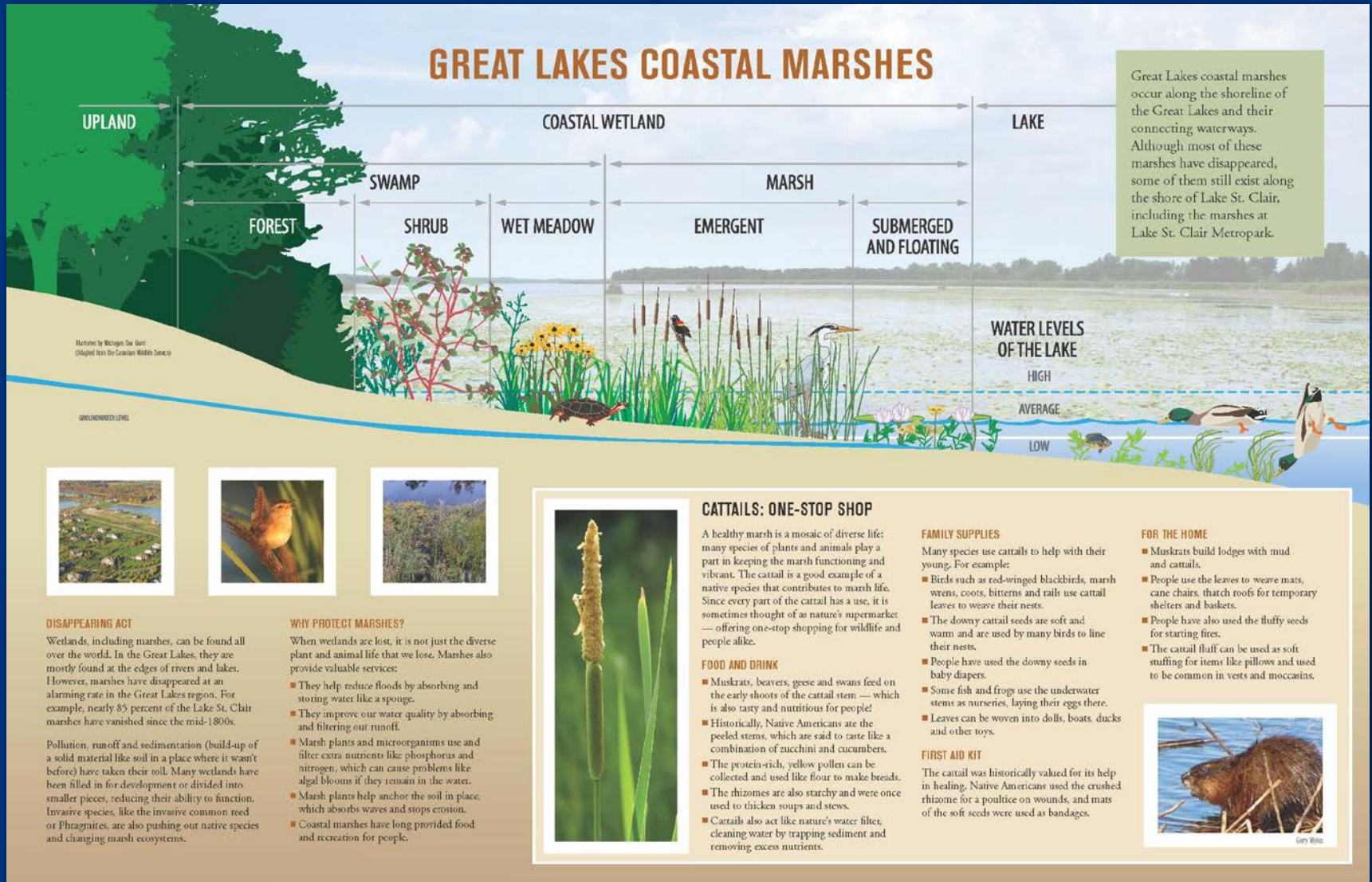
The caterpillar of the Eyed Brown butterfly feeds on sedges that grow in a fen.



Fens are often found at the bases of glacial hills where the water table intersects the soil surface.



Graphics



Media Announcements



PUBLICATION ANNOUNCEMENT

Michigan Sea Grant
www.mseagrant.umich.edu

New: Dabblers and Divers Poster Now Available

Contact: Stephanie Ariganello
stephaa@umich.edu or
(734) 615-0400

Publisher: Michigan Sea Grant (Oct. 2012)
Publication Number: MICHU-12- 725
Price: \$8. Education discounts available. Contact
msgpubs@umich.edu for more information.

Details: Vertical poster, 26 in. wide x 37. in tall.
Printed four-color on high quality, post-consumer,
100% recycled paper with vegetable-based ink.

**Have you ever seen a duck and wondered
what kind of duck it was? Michigan Sea
Grant's new publication *Dabblers & Divers:*
Great Lakes Waterfowl poster can help.**

The full-color poster features profiles of eight
ducks — four dabblers and four divers —
found throughout the Great Lakes. Each profile
includes the duck's common and scientific
names and shows pictures of both female and
males ducks and the duck in flight.



It's great for avid and novice birders, educators, nature enthusiasts or anyone interested in Great
Lakes birds and animals. The poster also provides information to help you figure out if a duck is
a dabbler or diver. That includes information on: where dabblers and divers can be found; their
position in the water; the size and shape of their bodies and wings; and where their feet are
positioned on their bodies, along with other common distinguishing characteristics.

Bonus: Learn About Wetlands

When you order a poster, you also receive a free brochure on wetlands that features an overview
on why they are important, how they are managed and what you can do to ensure they stay
healthy.

To order your copy, visit www.mseagrant.com

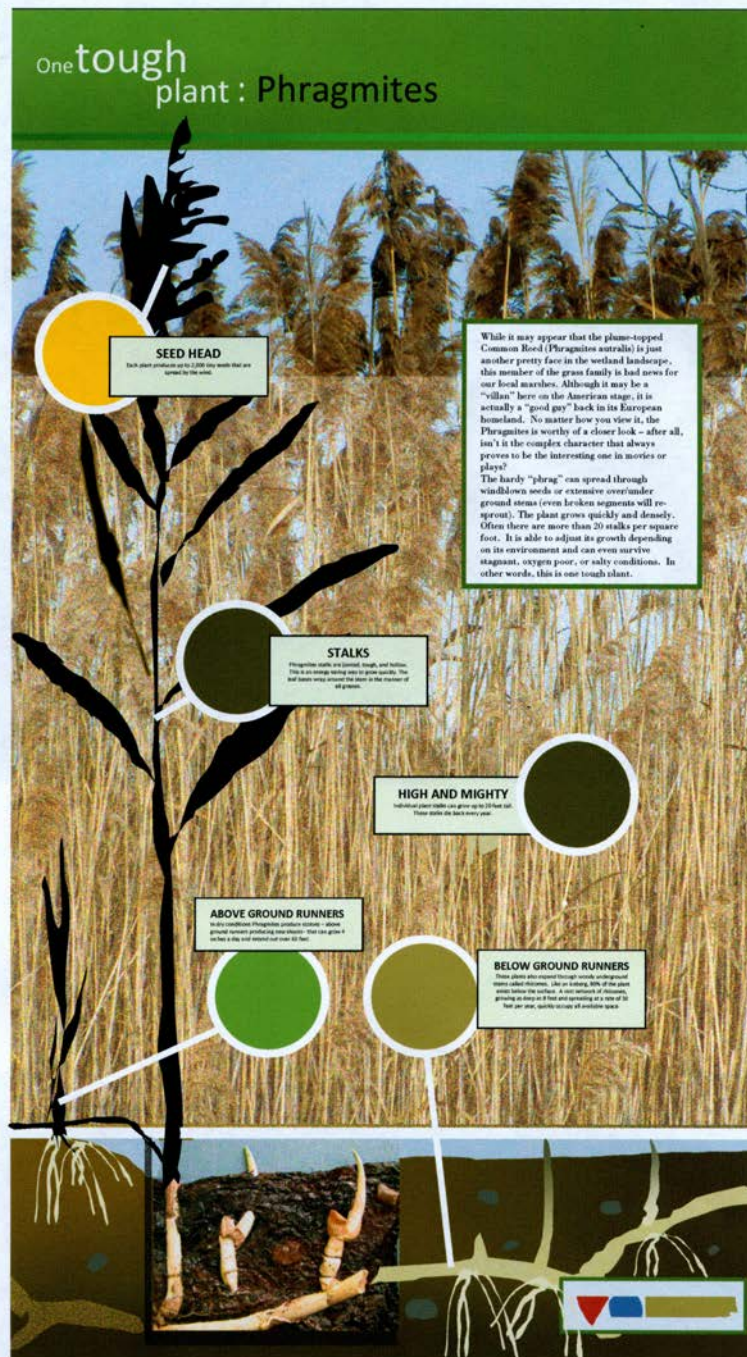
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*Michigan Sea Grant helps to foster economic growth and protect Michigan's coastal, Great Lakes
resources through research, education and outreach. A collaborative effort of the University of Michigan
and Michigan State University, MSG is part of the NOAA National Sea Grant network of more than 32
university-based programs around the country.*

Portable Displays



Display Panels



Display Panels

Feel the Burn!



Natural resource managers face a challenging problem: save the marsh at Lake St. Clair. Since Phragmites is aggressive and very difficult to get rid of once established, the measures to control the invader have to be equally as strong. Project partners devised a plan to keep the Phragmites in check.

Phragmites australis (common reed) quickly spread through St. Clair area marshes and continues to move into new territory. Stands of Phragmites:

- Spoil shoreline views;
- Block access to the water for swimming, fishing and hunting; and
- Rob fish, plants and wildlife of nutrients and space.



PROJECT AREA

The marsh restoration project area includes Lake St. Clair Wetland, areas of Harrison Township and St. John's Marsh in Algoma.



RESTORING THE MARSH

In order to determine how and where to reduce and remove Phragmites and allow native plants to regenerate, natural resource managers used Geographic Information System (GIS) technology.



WHAT IS RESTORATION?

Restoration is the act of returning something to a formal, original, normal or unimpaired condition. Do you think restoration would be easy to do? How do we know when a habitat is "restored"?

DON'T TRY THIS AT HOME



HERBICIDE

Herbicide, a chemical used to kill plants, was applied by helicopters and "on the ground" with sprayers. Trained professionals from Ducks Unlimited used Glyphosate, an EPA-approved aquatic herbicide to spray the plants. During the application of herbicide, residents and park visitors were not allowed into the treatment area.



BURNING

Controlled burns (in combination with the herbicide treatment) were used to remove dead Phragmites. Burning the stalks down allowed sunlight to penetrate the ground and native seeds to germinate.

TIMELINE

YEAR 1 EARLY FALL
Herbicide - Aerial application. People were not allowed in the treatment area.



YEAR 2 SPRING
Burn - Controlled burns used in combination with the herbicide treatment to remove standing dead Phragmites.



YEAR 2 FALL
Herbicide - Ground application to prevent regrowth.



ONGOING
Observation and maintenance.



Marsh Restoration: This project is a cooperative effort of Marine Climate Adaptation Authority, Michigan Sea Grant (University of Michigan and Michigan State University), Michigan Department of Natural Resources, Ducks Unlimited, Harrison Township, and the Southeast Michigan Council of Governments. Additional partners include the St. Clair Waterkeepers, Inc. and the St. Clair County Parks and Recreation Commission.



Display Panels

Meet the Marsh

Marshes are unique areas of land where water saturates the soil and covers the land for most or all of the year. The marsh is full of nutrients and is home to plants and animals that need the marsh to survive. Marshes are one type of wetland. They usually have some open water, shrubs and grass-like plants. Wetlands, including marshes, can be found all over the world. In Michigan, they are mostly found at the edges of rivers and lakes, like Lake St. Clair.

FRAGILE: HANDLE WITH CARE

Both humans and natural sources are threats to marshes.

HUMAN THREATS INCLUDE:

- Development of homes and businesses
- Changes to the shoreline, like adding a seawall.
- Runoff pollutants that "run off" the area they were applied to (like pesticides used on crops, fertilizers used on lawns, or grease on roadways left from vehicles).



HOW DO THEY MANAGE?

Natural resource marsh managers have to develop ways of dealing with threats like development and invasive species, and the changes they bring. Solutions are challenging because:

- Managers have to make sure both humans and wildlife are happy.
- Working with ever-changing nature means new situations all the time.

Did you notice the marsh when you came into the park?



UNDER ATTACK!

Non-native species invaders are a natural threat to marshes. For example, the invasive plant *Phragmites australis* (common reed) has moved in and taken over many wetland areas. Invasive species disrupt environments by reducing habitat or food for native species or by proving directly upon native species.

Because they are new, invasive species usually don't have predators yet - meaning they can grow and reproduce unchecked. "At-lacking" the habitat before the environment can catch up, invasive species are often called "biological pollutants" because they can have such a negative impact.



North Restoration: This project is a cooperative effort of Home Climate Adaptation Authority, Michigan Sea Grant (University of Michigan and Michigan State University), Michigan Department of Natural Resources, Ducks Unlimited, Northern Territory, and the Southern Michigan Council of Governments. Additional partners include the St. Clair Water Board, Inc. and the St. Clair County Parks and Recreation Commission.



Display Panels

Home Sweet Home

THE MARSH AND WILDLIFE

Coastal marshes provide important wildlife habitat. Great Lakes marshes are considered to be one of the most productive ecosystems on earth. With the constantly shifting water levels and conditions, a wide variety of plants and animals can take advantage of this diverse habitat.



RARITIES

The Lake St. Clair marshes also support several rare species of animals and plants that rely on these wetlands for survival, such as the bittern, fox snake, marsh wren, berris, and marsh bellflower, among others.

CRUCIAL TO THE ECOSYSTEM PUZZLE

- Michigan boasts about 3,500 native plant species.
- about 50% of these are wetland species.
- more than 25% of which are threatened or endangered.



COMMUNITY

Each vegetation zone is occupied by a different plant community, which supports a different animal community by providing food, water, shelter and breeding sites.



REST, NEST AND FEED

Waterfowl, shorebirds and songbirds use marshes to rest, nest and feed while migrating. Fish also use wetlands. At least 12 different species of lake fish rely on the coastal marshes and move into these areas to spawn and feed.

More than 40% of vertebrate species (animals with spines) in Michigan live in or use wetlands. These include:

- Water birds (e.g., ducks, geese, herons, etc.)
- Songbirds (e.g., warblers, vireos, blackbirds, etc.)
- Raptors (e.g., hawks)
- Fish, frogs and reptiles
- Mammals like muskrats, beaver and otter

Can you find the muskrat somewhere in this room?



Marsh Restoration: This project is a cooperative effort of Huron-Clinton Metropolitan Authority, Michigan Sea Grant, University of Michigan and Michigan State University, Michigan Department of Natural Resources, Ducks Unlimited, National Technical, and the Southeast Michigan Council of Governments. Additional partners include the St. Clair Plant Waterfowl, Inc. and the St. Clair County Parks and Recreation Commission.



Display Panels

Worth Protecting

MARSHES

Why should we protect and preserve marshes? Our coastal marshes are unique to the Great Lakes and are considered rare and in danger. When the wetlands are lost, it's not just the diverse plant and animal life that we lose. Marshes also provide valuable services.



AT YOUR SERVICE

Coastal Marshes are important for...

PEOPLE

- They help reduce floods by absorbing and storing water like a sponge.
- They improve our water quality and drinking water by filtering and cleaning the runoff.
- Marsh plants and microorganisms use extra nutrients like phosphorus and nitrogen to grow, removing them from the water. These excess nutrients can cause problems like algae blooms if they remain in the water.
- Plants found in marshes help anchor the soil in place, which stops land from eroding and absorbs waves.
- According to the EPA, marshes are so good at cleaning polluted water, people are now building systems that work like wetlands to treat used water from farms, parking lots and sewage plants.
- Coastal marshes have long provided food and recreation for people.

ANIMALS

- Many regions like birds use wetlands to rest, nest and feed.
- Some animals spend their entire lives in marshes, while others use them for certain purposes like raising young — which is crucial to their survival.
- Animals also use the marsh for protection, hiding from predators. Others use them as hunting grounds.

VANISHED!

Marshes have disappeared at an alarming rate in the region. Nearly 80% of the Lake St. Clair marshes have vanished since the mid 1800s. On the American side of the lake, this figure is closer to 95%, making it even more important to protect the wetlands that are still here. (The Great Lakes Foundation, Lake St. Clair Marsh (near Alpena), Huron's Island and the St. Clair Flats.)

WHERE ARE THEY GOING?

- Inflation, runoff and sedimentation build up of a solid material like soil in a place where it wasn't before have taken their toll.
- Many have been filled in for development.
- They've been broken up into smaller pieces, reducing their ability to function.
- Invasive species are pushing out native species and changing marsh ecosystems.



Marsh Restoration: This project is a cooperative effort of Huron-Clinton Metropolitan Authority, Michigan Sea Grant (University of Michigan and Michigan State University), Michigan Department of Natural Resources, Parks, Recreation, and the Southwest Michigan Council of Governments. Additional partners include the St. Clair Waterfront, Inc. and the St. Clair County Parks and Recreation Commission.



Display Panels

The Hex Hatch

THE MORE MAYFLIES THE MERRIER? YES!

Small in size, but mighty in numbers, Burrowing Mayflies play a key role in Lake St. Clair's ecosystem. They are a crucial and abundant food item for many of the lake's fish and other residents. The nymphs also provide a service, recycling the nutrients in the lake by eating decaying aquatic plants. Although humans may be repulsed by their annual invasion — and the resulting mass of dead mayflies — mayflies are a sign of good lake health since they cannot survive in highly polluted waters.

WHAT'S IN A NAME?

Officially called Burrowing Mayflies (*Isonychia imbecilis*), these insects are better known as Hexflies, Canadian soldiers, wigglers or hexes (by people who fly Hex).

As adults, they do not feed — they don't even have mouths! They are harmless and cannot bite.

FPO

LIFECYCLE IN LAKE ST. CLAIR

LIFE IN A TUBE

1 Newly hatched nymphs use their heads and strong legs to create U-shaped tubes in the lake bottom.

2

Nymphs spend at least two winters in this stage and grow to about 1.5 inches in length. There can be upwards of 500 nymphs per square foot burrowed into the lake bottom.

3

The insects create a current with their headgear, able to draw fine food particles into the burrow.

4

Adult Burrowing Mayflies emerge en masse in the evening, typically during the second half of June.

8

Both males and females die soon after, usually within 1-2 days of emerging.

7

The females return to the lake to lay thousands of eggs after mating.



Mayfly Nymph (Ephemeroptera)

A GOOD OMEN

Today the mayfly population along Lake St. Clair is healthy, but mayflies are sensitive to pollution. The local population became virtually extinct in the 1950s and only rebounded after the lake's water quality improved in the 1960s. Such as nymphs and adults, they are an important food for fish like yellow perch and sturgeon, nesting birds, amphibians, reptiles and other insects.



North Restoration. This project is a cooperative effort of Huron-Clinton Metropolitan Authority, Michigan Sea Grant (University of Michigan and Michigan State University), Michigan Department of Natural Resources, Quak Lakes, Huron Township, and the Southwest Michigan Council of Governments. Additional partners include the St. Clair Waterfront, Inc., and the St. Clair County Parks and Recreation Commission.



Tools

- ◆ Fact Sheets
- ◆ Maps
- ◆ Posters
- ◆ Presentations
- ◆ Photos/Graphics
- ◆ Workshops
- ◆ Events/Celebrations
- ◆ Curriculum
- ◆ Websites
- ◆ Displays/Signage
- ◆ Video
- ◆ Media Materials
- ◆ Booklets
- ◆ Stakeholder Groups

A photograph of a sunset over the ocean. The sun is low on the horizon, creating a bright orange and red glow across the sky and reflecting on the water's surface. The text "Thank You." is overlaid in a large, white, serif font.

Thank You.

QUESTIONS, COMMENTS OR REMARKS?

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THANK YOU!

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