Michigan's Coastal Management Program

Celebrating 40 years on the fresh coast

MICHIGAN OFFICE OF THE GREAT LAKES

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION · NOAA · U.S. DEPARTMENT OF COMMERCE

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

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On the cover:
Big Sable Point Lighthouse, Ludington MI
MDOT Photography Unit

Foreword

Michigan's Coasts: The Gateway to the Great Lakes

As Director of the Michigan Office of the Great Lakes, my role has taken me to communities across Michigan, throughout the Great Lakes Region, down the St. Lawrence Seaway to the Gaspe Peninsula, and around the world.

In my travels, I've learned that regardless of location, everyone I meet has a water story – a moment, a memory, or a feeling tied to a place with a ribbon of blue. In some of those places, this feeling is as deep and strong as the current or as powerful as a wave; in others it is a little calmer or more placid, but there nonetheless. Inland communities still know the direction to water. I grew up in northern Ohio, so my "water compass" was always tuned to the north to the shores of Lake Erie. In the Upper Peninsula, depending on where you are, your water compass may pull north or south or even to the east to the big water of the Great Lakes.

When I speak about water, people respond with their own experiences. They tell me about special places that are significant to them. They tell me about splashing joyfully into a lake during summer vacation, of paddling a canoe with friends, and of seeking solace in the shoreline's varying waves. Water, for all of us, evokes feelings that are difficult to describe but that we all recognize. It is a pull and a centering point in our complex and busy lives.

In Michigan, it is unsurprising that many of our water stories connect to the Great Lakes coast. Our shoreline is nearly 3,300 miles; a significant part of the world's longest freshwater shoreline, rimmed with towering sand dunes, river mouths, great wetlands, granite shoreline, agate and rocky margins, and wide sandy beaches. People from near and far come to hike the Pictured Rocks National Lakeshore, enjoy the beach at Ludington State Park, watch freighters pass by on the Detroit and St. Marys Rivers, and fish the productive waters of Lake Erie and Lake St Clair. More than a hundred coastal lighthouses and myriad tragic shipwrecks remind us of the maritime heritage that built Michigan and brought people from across the world to live on the shores of our "sweetwater seas," drawn to the very same places that harbored Native American communities who settled where manoomin, or wild rice, grew in abundance.

Michigan's small and large coastal communities – from Monroe and Detroit to Sault Ste Marie and Ontanogan, from St. Ignace to New Buffalo, are our gateways to the Great Lakes. These places are special, made rich not only with natural resources and important places to work and recreate, but they form an important way of life found nowhere else in the world. They are worth protecting, they are worth our investment, they are worth our time, they are worth our effort and struggle to prioritize and expand careful, thoughtful stewardship so we can continue to grow the narratives of the Great Lakes story into the next chapter and the next generation.

The stories of family and place have existed here since the glaciers began to recede, revealing sparkling lakes in their wake. While we have not always been the best stewards of our coasts, I believe we have begun to (re)learn the lessons of stewardship and see the importance of restoration of these places. We now see the lakes for both their majesty and fragility. We bear the obligation to this legacy and opportunity that nature has provided. Our internal compass points to water, our hearts beat with its flow, and our stories reflect its joy. I have little doubt that we will succeed – with certain effort and patience however - in our determination and work to see our Great Lakes communities thrive as the gateways to this great and important system we call home.

Jon W. Allan **Director, Michigan Office of the Great Lakes**

Tying it all together

Managing Michigan's coastal resources

Michigan's coast is embraced by the waters of four of the five Great Lakes, and at 3,288 miles, is the longest freshwater coastline in the nation. With this unparalleled resource comes great responsibility for the protection and preservation of its natural, historical and cultural features. This work connects present and future generations to the wonders of the fresh coast.

Michigan's Coastal Management Program, established in 1978 in partnership with the National Oceanic and Atmospheric Administration, has provided leadership and effective management of the Great Lakes State's coastal resources for 40 years. This anniversary provides a chance to reflect on achievements made in partnership to protect, preserve, enhance, and restore coastal resources while looking ahead to continued work supporting healthy communities and ecosystems.

In this timespan, the program has been proud to work with coastal communities and partners at the national, regional, and local scale to effect positive change by:

- Providing public access to connect communities to Great Lakes coastal resources;
- Assisting in incorporating environmental and historical coastal resources into planning and development efforts for community resiliency;
- Conserving and protecting critical habitat, including dunes, beaches, and wetlands;
- Supporting community safety through hazard management initiatives; and,
- Protecting water quality through programs promoting clean and healthy waters.

It is essential for Michigan's coastal communities to plan for sustainable growth and change. The Coastal Management Program will support this through strategic investments in the development of coastal networks, promotion of nature-based systems, and increased ways for people to use and access the Great Lakes coast.

As we look to the future, the Coastal Management Program will continue to work with partners to grow the program's role as a hub of expertise and to tell the story of our state's coastal heritage, challenges and opportunities, and vision for the future.

Ronda Wuycheck
Program Manager, Michigan Coastal Management Program

Community Development
Habitat
Water Quality
Hazard Management
Public Access
Coastal Management Program Focus Areas

Growing Sustainable Communities

Adjusting sail for the winds of change

Great Lakes coastal communities face unique challenges from erosion, lake level changes, coastal hazards, and seasonal economies. Michigan's Coastal Management Program provides technical assistance and financial support to assist communities in planning for the future and growing readiness to adapt.

Coastal Fellowship Examines Strategies for Working Waterfronts

The Coastal Program supported a two-year study to research working waterfronts in Michigan's Great Lakes coastal communities. The study examined national and state trends related to working waterfronts, identified uses occupying waterfront lands, and recorded how communities are planning for and supporting water-dependent uses and shoreline public access.

A closer look at 11 case study communities revealed a set of potential best practices for maintaining working waterfronts as economic, cultural, and recreational assets with tools like historic preservation, zoning districts, and tax increment financing.

Swimmer Safety Initiative Aims to Save Lives

People are often surprised to learn that the Great Lakes hazards can include rip currents, high waves, and fierce coastal storms. These conditions often play a role in Great Lakes drownings, which have been on the rise in recent years according to The Great Lakes Surf Rescue Project. The Coastal Management Program is working to reverse that trend and help keep communities safe with new tools and information.

Program partners conducted the first-ever field studies collecting real-time Great Lakes rip current data before, during, and after current formation and developed techniques to map rip current "hot spots" along the coast. Information is available at **www.dangerouscurrents.org**, an online portal for Great Lakes beach safety.

The Coastal Program is providing technical assistance and newly-designed beach safety signs to coastal communities and aims to improve people's understanding of risks from dangerous currents and waves.

With the help of DNR partners, enhanced beach flag warning systems and beach safety signs have been deployed at 28 coastal state park beaches.

Building Community Vision in Harrison Township

Recognizing a need to create a shared vision for the future of its Lake St. Clair waterfront, Harrison Township used Coastal Management support for public engagement and listening sessions.

The effort created a new waterfront vision and set the stage for bringing it to fruition through a waterfront redevelopment plan and zoning district. Township officials used the planning process to build support among residents, business owners, and other stakeholders to address challenges such as insufficient physical and visual access to the water, low-density uses occupying prime waterfront locations, and a car-centric transportation network that discouraged popular pedestrian-dependent businesses and amenities and vibrant street life.

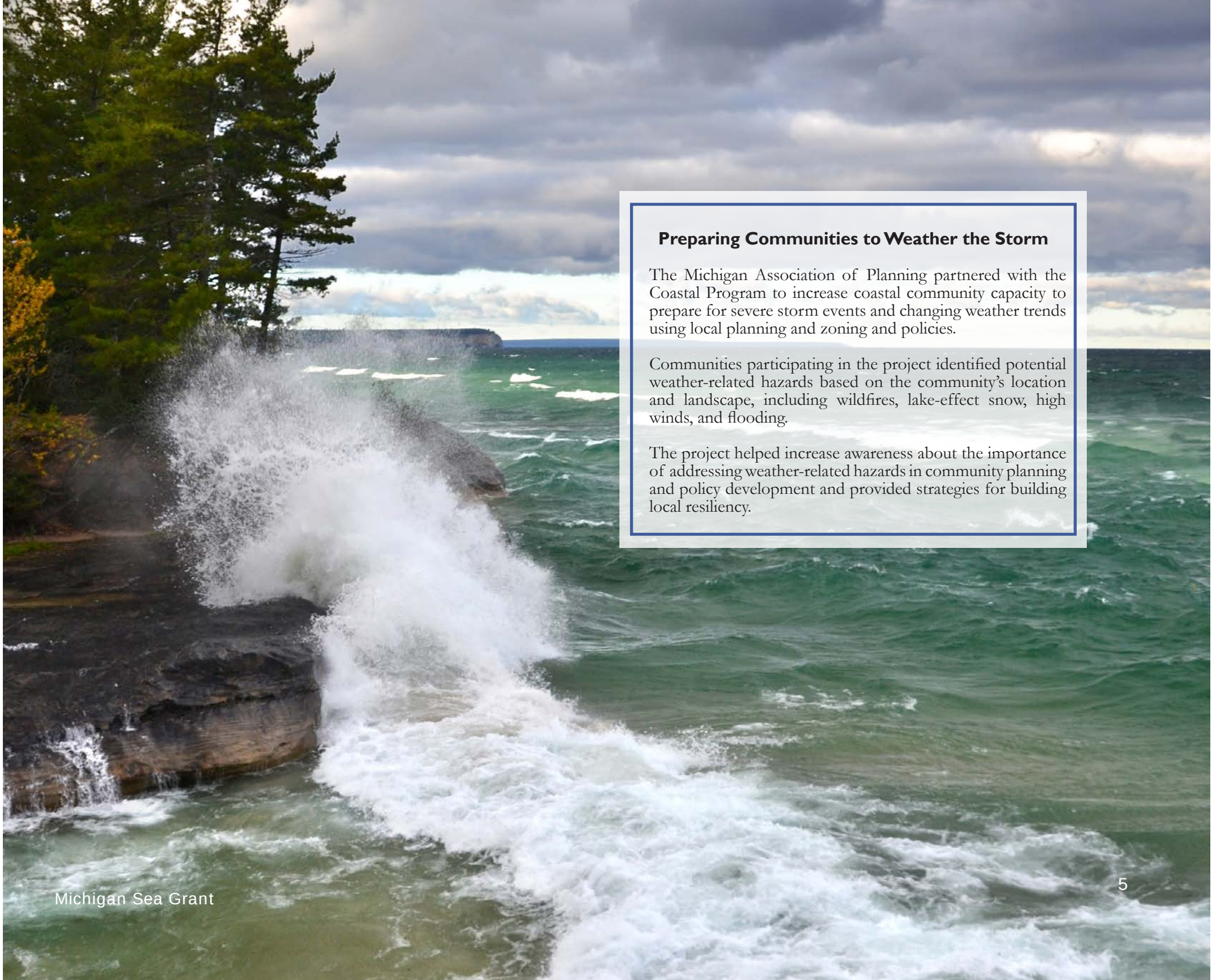
New waterfront zoning rules now promote these types of businesses by keeping storefronts close to the sidewalk, parking away from the flow of pedestrians, and encouraging redevelopment projects with a mix of commercial and residential spaces. A Complete Streets Plan ensures that future transportation investments will safely and conveniently accommodate pedestrians, cyclists, public transit users, and cars.

Building Smarter in St. Joseph

Smart coastal developers recognize the variable water levels of the Great Lakes and position buildings back away from dynamic, erosion-prone beach and dune systems. In 2012, the City of St. Joseph implemented an ordinance requiring new buildings to be set back from the beach and prohibiting seawalls in a vulnerable area north of the City's harbor. This ordinance was the first of its kind in Michigan.

Recent dramatic water level increases prompted the City to update the underlying engineering study, supported by the Coastal Program. These efforts showed that the setbacks are still providing adequate protection.

However, the latest study revealed that some property owners are lowering dunes for improved lake views with the unanticipated effect of funneling flood waters toward their homes. City officials are considering outreach to educate homeowners on avoiding these self-created hazards.



Preparing Communities to Weather the Storm

The Michigan Association of Planning partnered with the Coastal Program to increase coastal community capacity to prepare for severe storm events and changing weather trends using local planning and zoning and policies.

Communities participating in the project identified potential weather-related hazards based on the community's location and landscape, including wildfires, lake-effect snow, high winds, and flooding.

The project helped increase awareness about the importance of addressing weather-related hazards in community planning and policy development and provided strategies for building local resiliency.

Supporting Coastal Ecosystems

Protecting the places we love

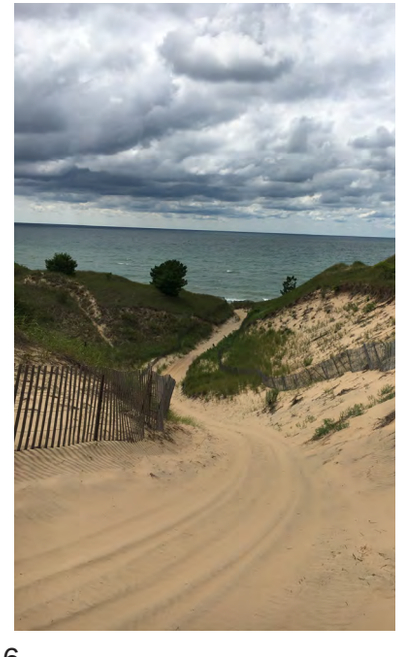
Michigan's coastal beaches, wetlands, and dune systems are home to specially-adapted coastal species ranging from delicate amphibians to some of the globe's toughest dune plants. The Great Lakes region is known as an important migratory bird flyway and has more than 160 species of freshwater fish. Conservation and stewardship of these special ecosystems helps to ensure a legacy that people will be able to enjoy for generations.

Coexisting with Nature: Low-Impact Design for Coastal Homes

Living on the coast near the sun, sand, and wildlife of the Great Lakes is a lifelong dream for many. However, development can cause harm to sensitive coastal areas if care is not taken.

Preserve the Dunes, Inc., a non-profit organization based in southwest Michigan, developed a publication with Coastal Program support illustrating recommended strategies and methods to protect dunes ecosystems when building a home along Michigan's Great Lakes coast. The 16-page, full-color booklet shows that it is possible to design and build "HGTV-style" houses that leverage the beauty of the dune landscape while preserving the ecosystem. Read the booklet at www.michigan.gov/documents/deq/wrd-dunes-homes_487942_7.pdf

In addition to the booklet, Preserve the Dunes conducted a Critical Dune Residential Design Award competition to identify best practices for building in dunes. Architects, designers, builders and homeowners submitted entries to the competition which were reviewed by an architectural and design jury with input from a scientific panel of experts in dune ecosystems and preservation. The top three entries were highlighted with photographs and detail explaining how these beautiful houses also preserve dunes.



Preserving the Syndicate Dunes

Southwest Michigan's Van Buren County and Michigan's Coastal Program partnered to improve and manage public access to a dune system at Syndicate Dunes Park on Lake Michigan.

The effort focused on restoration and education to ensure that a local trail system met community needs while protecting an eroding dune area.

Partners installed fencing and enhanced the public trail system to provide beach access and scenic views, stabilized a 20-acre critical dune area with native dunegrass and woody shrub plantings, and increased awareness of the unique and dynamic dune environment with onsite educational signage and a video on dune ecosystems, available at www.swmpc.org/.

Understanding What Matters: Valuing Great Lakes Dune Systems

Michigan's Great Lakes dunes together make up the largest freshwater dune system on the planet. Despite the magnificence of this unique resource, there are significant data gaps. To better understand and value Michigan's dunes, the Coastal Program and Michigan Envionmental Council worked together on a 3-part initiative to:

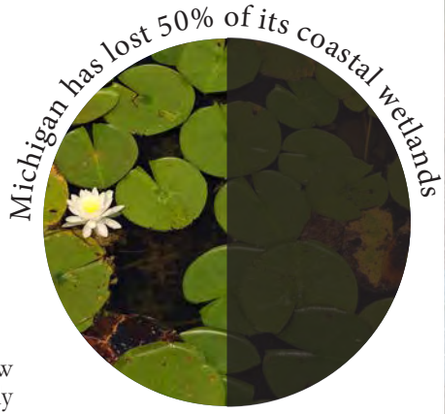
1. Digitally map and geologically research Michigan's dunes
2. Conduct a survey focusing on the socialcultural value of dunes
3. Engage local dune communities and users to raise public awareness

Prior to the mapping project, people relied on outdated, hand-surveyed maps, which didn't match up with the dynamic, constantly-changing dune ecosystem. The work filled a critical gap in knowledge of coastal dune systems.

The survey engaged more than 3500 participants in providing critical information on how dunes are used, valued, and understood.

Public events and community meetings helped to increase awareness of the value of Michigan's coastal dunes as a world-class natural and recreational asset.

Diving into Research on Coastal Wetlands



Historically, more than 50 percent of Michigan's coastal wetlands have been lost to development. Today, we know that coastal wetlands are critical Great Lakes resources. Michigan's coastal wetlands are some of the most biologically diverse areas in our region and support a variety of ecosystem services for communities like limiting the impacts of flooding and erosion and filtering pollutants out of water.

There is great potential for coastal communities to grow their understanding of the role of wetlands to effectively leverage and protect ecosystems and community assets.

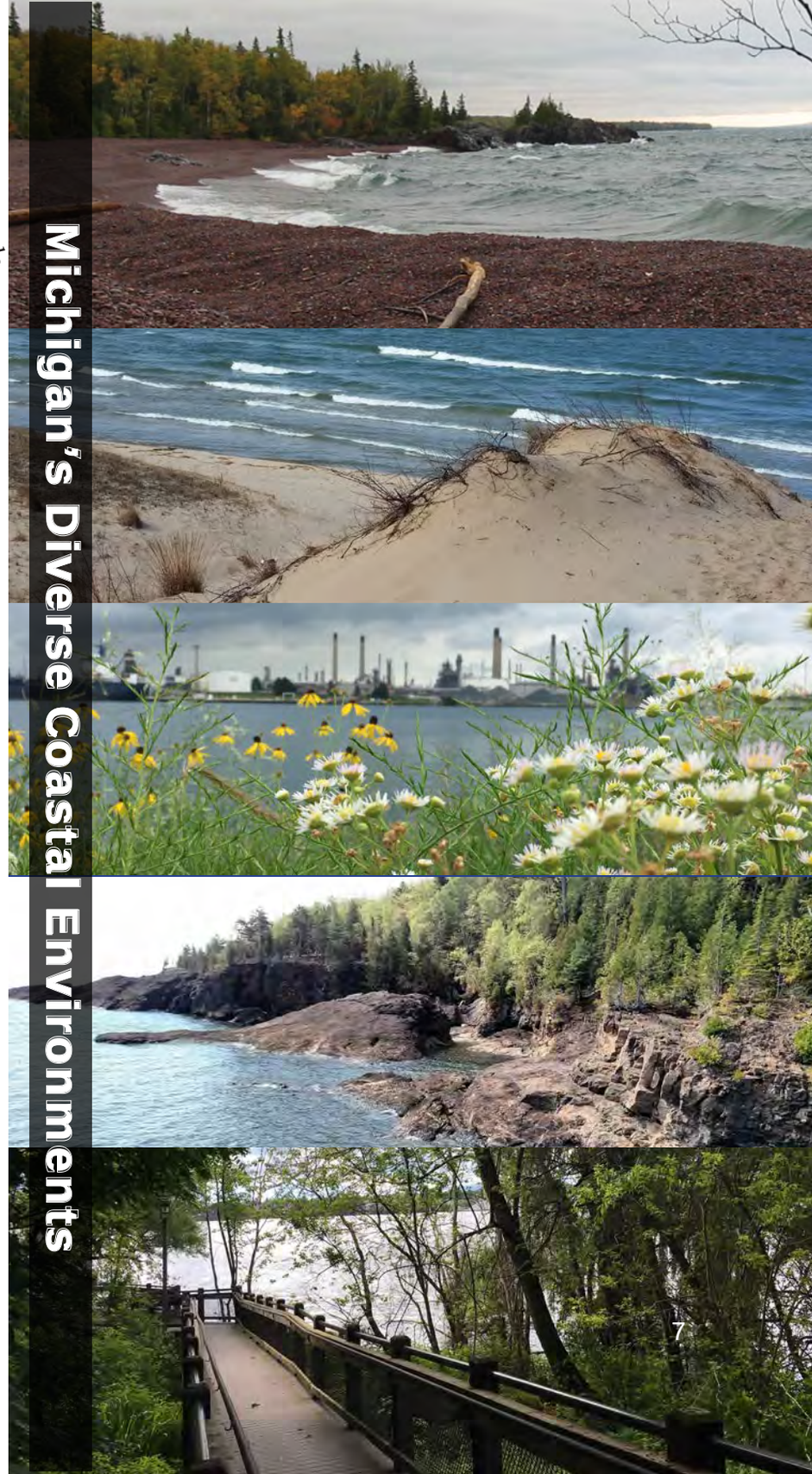
To gain essential information on the value, function, and locations of Great Lakes Coastal wetlands, the Coastal Program partnered with a team of researchers from University of Michigan, Michigan Technological University, the Michigan Tech Research Institute, and the Traverse-City based LIAA. The team worked to research, map, and gather data on coastal wetlands influenced by the Great Lakes with a goal to help local governments improve their shoreland management efforts. The data will be made publicly available online on the Great Lakes Aquatic Habitat Framework.

Partners also helped to advance the Coastal Program's coastal wetlands strategy. They field-tested site conditions against currently available data and conducted work to learn more about water levels, storm surge, and other factors.

Information will assist local officials by providing key factors affecting their communities. Data gathered will be used to support community efforts to improve shoreline management through science-based decision making. Data can help identify where policies and protective measures can be used to support sustainable economic development, recreation, and other community needs.

Benefits of Wetlands

- Flood and storm control by water absorption and storage
- Wildlife habitat for species like waterfowl, reptiles, fish, and amphibians, many of them rare, threatened, or endangered
- Protection of groundwater water resources and provision of valuable watersheds and recharging ground water supplies
- Pollution treatment by filtering nutrients and pollutants
- Erosion control by absorbing silt and organic matter
- Serving as nursery grounds and sanctuaries for fish



Partnerships Reaching from Coast to Coast

Making progress together

"**Collaborate**, **coordinate**, and **partnership**" are familiar terms with deep meaning for the Coastal Team. Managing the world's longest freshwater coastline is no small task, and it takes the efforts of players from federal, state, and local agencies, as well as local communities, universities, and nonprofit organizations, to make progress to protect Great Lakes resources and support a thriving coast. Partnerships an require additional coordination, but ultimately result in stronger initiatives supported by greater capacity, collaborative decision-making, and increased engagement in seeing a successful result.

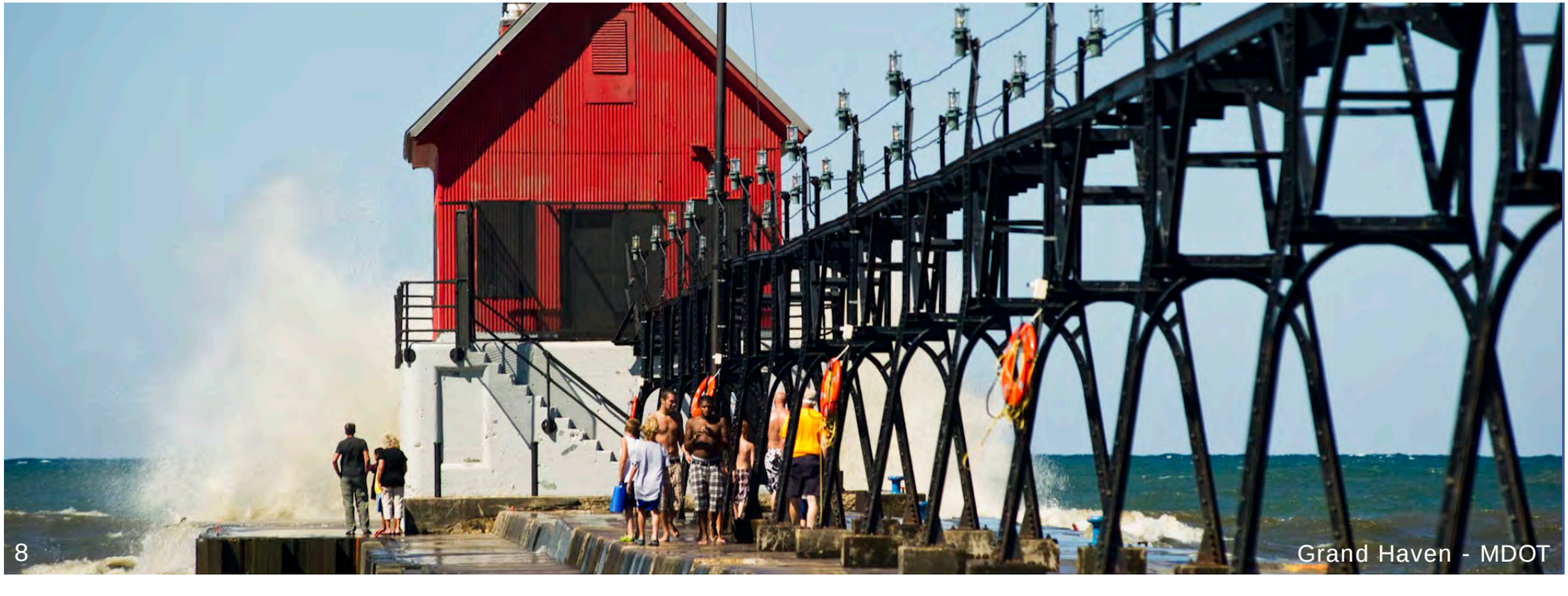
Great Lakes Coastal Resiliency Initiative

A hazard-ready coastal community is one that can absorb and adapt to changes in Great Lakes water levels, coastal storms and flooding events. Beaches, shorelines and dunes naturally change and move over time, and when allowed to do so, provide better protection than seawalls or other manmade structures. Hazard-ready communities recognize this and seek to sustain natural beaches, dunes and wetlands that absorb erosion and flooding impacts and provide other ecosystem services.

Michigan's Coastal Program has engaged a Coastal Resilience Team of regional planners and Great Lakes scientists to support local officials in addressing challenges from coastal erosion and flooding and to arm them with knowledge on how their coast may change over time.

The team provides recommendations communities can use in their land use planning and zoning codes to improve hazard-readiness. Resulting plans and codes will better align with the community's vision for their coast and strive to "step back" development from sensitive and dynamic beaches, dunes and wetlands.

Pilot planning efforts with the City of Bridgman and Emmet County are serving as examples with the goal that successful pilot efforts will serve as examples for other coastal communities to consider adding hazard-readiness strategies to their planning and zoning toolbox.



Grand Haven - MDOT

Clean Marina Partnership

Michigan has more than one million registered boaters and many more residents and visitors who enjoy paddling coastal waters by kayak, canoe and paddleboard. With that many craft, it's important to practice clean boating so everyone can experience a beautiful coast.

That's the vision that the OGL's Coastal Management Program is aiming for by convening strategic partnerships to support healthy coastal habitats, waters and communities.

The Clean Marina Program supports heathy relationships between coastal communities and the Great Lakes by promoting sustainable marina and boating practices that reduce pollution and enhance fish and wildlife habitat.

Marinas can participate in the program through an online or in-person classroom led by Michigan Sea Grant. More information is available at www.michigancleanmarina.org.

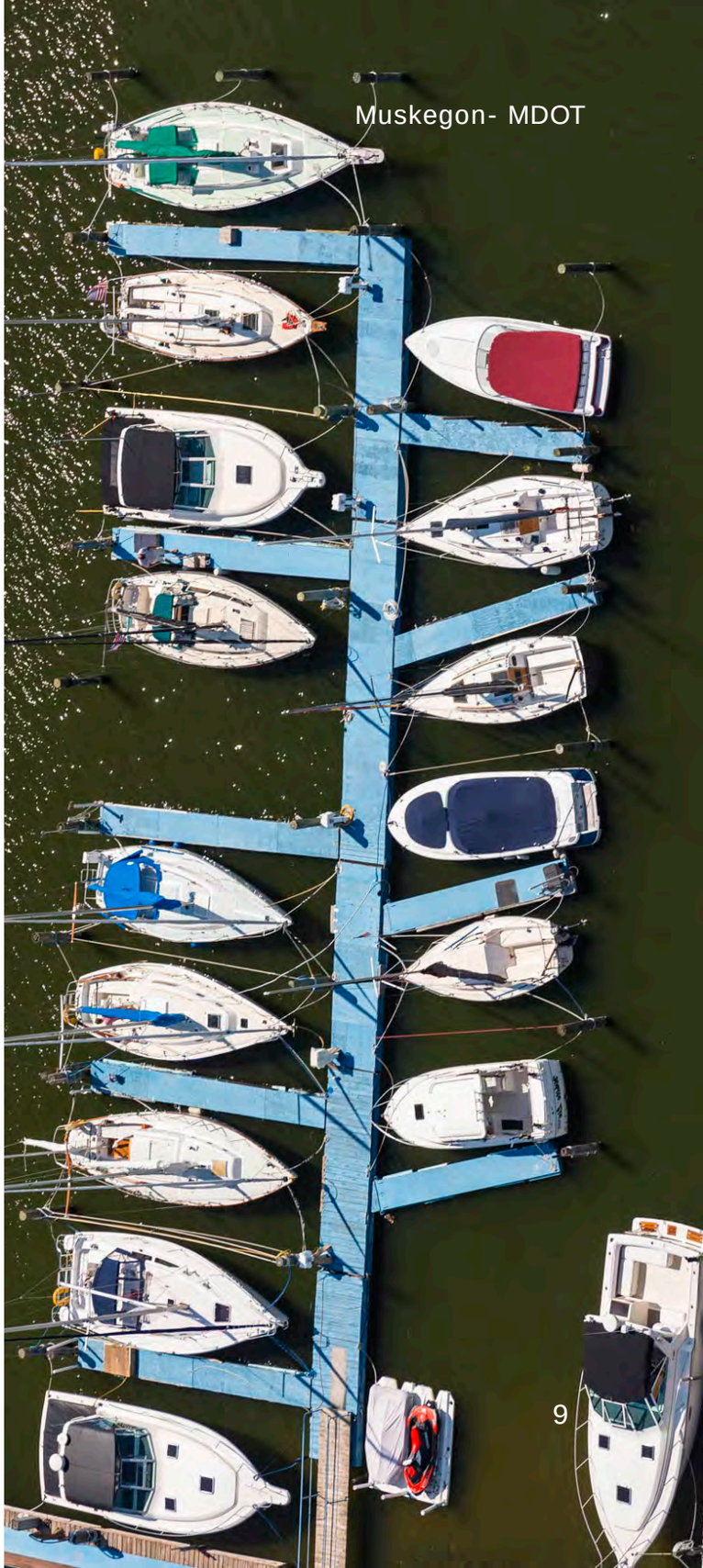
The Coastal Program works with maritime experts at the Michigan Boating Industries Association to ensure that the program's environmentally-friendly best management practices are scientifically sound and efficient for marina owners to implement.

Partners have goals to see every coastal marina achieve the right to fly the Clean Marina flag.

Clean Marina Best Management Practices

Clean Marina practices sets standards to protect human and environmental health, and include:

- Siting considerations and marina design
- Marina maintenance, facilities, and habitat
- Stormwater management
- Boat maintenance
- Petroleum control
- Sewage handling
- Waste management and recycling
- Marina management and boater education
- Invasive species education and management
- Increasing resilience


Muskegon- MDOT

Connecting to the Coast

Connecting is the first step on the path to stewardship

Great Lakes Coastal Water Trails Initiative

Michigan's Coastal Program has invested nearly $2 million to support local water trail efforts since 2012 from planning, design, engineering, and construction to education, outreach, and community engagement.

According to a report by the Outdoor Foundation, Paddlesports are the fastest-growing form of outdoor recreation. Investments in water trails round out Michigan's resume as "The Trails State."

Michigan has more than 4,000 miles of coastal water trails wrapping around its shoreline and islands, with potential for connections with many inland trail systems. Water trails provide for memorable outdoor experiences and influence environmental stewardship, community-building and local economies.

A major focus for the Coastal Program in investing in local water trail development has been incorporation of universal access features. Accessible kayak launches are a staple of a successful universal water trail access site, utilizing barrier-free features to empower those with physical limitations to easily enter and exit their kayaks and canoes.

These investments have bolstered the grassroots emergence and continued development of local water trails in Michigan.

Investing in Access: Casco Township's Nature Preserve

In 2012, Allegan County's Casco Township opened a coastal nature preserve, the township's very first public park and one of only two local public access points to Lake Michigan.

It's estimated that more than 80 percent of Michigan's Great Lakes coastline is privately owned, so the acquisition of the park's 700 feet of Lake Michigan beach was especially significant. The now 20-acre property is home to a picturesque maple grove, hosts migratory shorebirds, and offers stunning views from the top of a unique sand-clay bluff formation dropping 50 feet to the beach below.

After dedicating its new coastal park, the township looked for opportunities to improve the site to make it safer and more accessible to the community. The steep, sandy vertical drop from bluff to beach made passage difficult, and the fragile clay-sand bluff was threatened by increased activity.

Casco Township officials worked with Michigan's Coastal Program to create solutions for its park. Using green infrastructure techniques, a permeable parking lot addition with a bioswale was added to slow and filter stormwater. Today, a barrier-free pathway, accessible viewing platform, and beach stairway enhance public access to the park while preserving its unique bluff by reducing erosion.

Telling the Story of the Fort Gratiot Lighthouse

The Fort Gratiot Lighthouse is the oldest lighthouse in Michigan and the second oldest on the Great Lakes, build when Congress allocated funds to build in "Michigan Territory" in 1823, due to increased shipping traffic through Great Lakes after the completion of the Erie Canal.

Although the lighthouse initially guided ships to the south end of Lake Huron into the mouth of the St. Clair River, it today serves as a must-see for lighthouse hunters.

To supplement and provide context for the historical site, the Coastal Program supported the creation of a series of signage panels describing the early history of the lighthouse, a historic timeline, and Lake Huron's significance in Great Lakes regional industry and maritime trade.

Nature is Everywhere: St. Clair River Urban Wetland Boardwalk

Southeast Michigan's St. Clair River is one of the world's busiest waterways, flowing through the largest delta in the Great Lakes and intersecting shipping lanes, natural areas, and one of the state's top water trail destinations.

Historically, the St. Clair River suffered from the impacts of pollution, but today transformative, award-winning work to restore the river has reinvented its waterfront. Investments in environmental restoration, economic development, and recreation have reconnected the community to the river.

Michigan's Coastal Management Program partnered with St. Clair County to enhance this connection by building a new, wheelchair-accessible interpretive boardwalk over a restored coastal wetland on the river. The wetland reclaims the site of a former industrial railyard and absorbs area stormwater.

The public access project brings people closer to nature for viewing turtles, butterflies, frogs, wetland plants, and recovering species like lake sturgeon and mudpuppies. Interpretive signage posted throughout the site provides opportunities for environmental education and citizen science, focusing on the area's natural and cultural history.

Concluding message

Looking ahead to another 40 years

In its 40 years, Michigan's Coastal Management Program has led the region on critical Great Lakes coastal issues. Coastal Program staff take pride in their work with Great Lakes communities. Looking ahead, we know that change is an intrinsic part of nature, and our job is to lean in to provide our communities with the tools to prepare and respond.

The Coastal Program is committed to forming strategic partnerships and increasing engagement with communities to solve present and future coastal challenges. These include incorporating coastal resources into community planning efforts, supporting research to fill in data gaps, enhancing cultural heritage through stewardship, and implementing actions to address coastal resiliency.

Coordinators will work with partners to increase public access to the coast and public trust resources; enhance preservation and access to heritage resources like lighthouses and shipwrecks; work to support resilient, sustainable communities; protect and restore vulnerable natural resources; and help communities gain a greater understanding of the drivers, risks, and options to mitigate coastal hazards.

Through technical assistance, partnership, and strategic grant funding, the Coastal Program will be a hub bringing together collaborative resources to support a legacy of healthy Michigan waters, habitats, and communities.

Michigan Department of Environment, Great Lakes, and Energy (EGLE)
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