



MICHIGAN DUNES

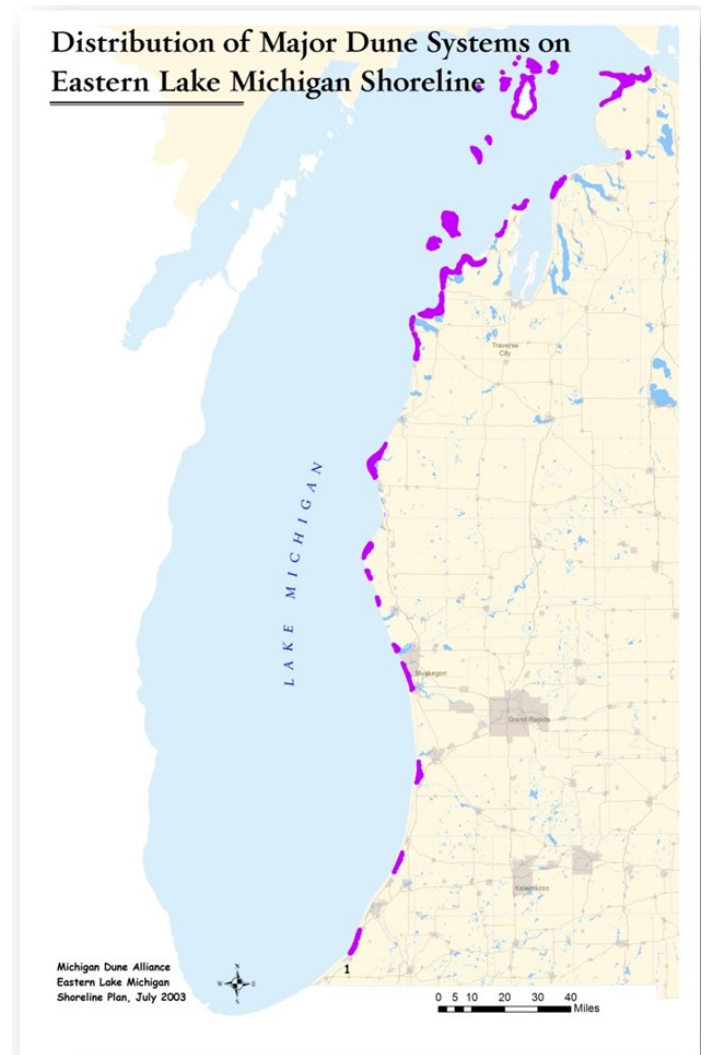
Michigan is home to the world's largest freshwater dune system. Born of glaciers thousands of years ago, more than 275,000 acres of sand dunes line the shores of Eastern Lake Michigan.

Their importance:

- A center of biodiversity, containing several globally-rare habitats and rare and endangered species like the piping plover, prairie warbler and Pitcher's thistle.
- The Eastern Lake Michigan coastline is comprised of diverse ecosystems, including dune systems, interdunal wetlands, marshes, and coastal forests.
- This system is a regional focal point of economic and recreational activity.

Threats to our dunes:

- Habitat fragmentation and incompatible development.
- Introduction and spread of invasive plants that alter the landscape, change nutrient and energy cycles, and outcompete native plants which are often highly specialized to these habitats.
- In some cases, invasive species threaten property values and limit recreational and economic uses.



Under Threat from Invasives

Invasive species directly contribute to the decline of nearly half of the threatened and endangered species in the United States—only habitat loss poses a greater threat. Once introduced, an invasive species has the potential to alter an ecosystem permanently, and invasions have exacted heavy losses in nearly every type of ecosystem. According to a leading economic study, the costs associated with prevention, response, and management of invasive species totals more than \$138 billion annually in the United States alone.

Invasives in Our Dunes



Baby's-breath —The seemingly innocent introduction of baby's-breath has profoundly affected dune habitat. A single baby's-breath plant is capable of producing 14,000 seeds that are scattered by the wind. Each plant is also capable of producing a long tap root to anchor itself to the dune, and once established, it will out-compete the surrounding native plants for limited resources.



Lyme grass —This species out-competes native grasses in open dune habitat, and threatens the pollination and food chain processes of native insects. Surveys completed between 2008 and 2010 reported more than 300 infestations in the sandy coastal communities along the western Lower Peninsula.



Non-native Phragmites (giant reed) —This invasive quickly out-competes native flora, creating tall monocultures in coastal wetlands and many other natural communities. This results in a degradation of wildlife habitat, loss of recreation associated with wetlands including hunting and fishing, obstruction of scenic views, and presents a very dangerous fire risk.



Other invasives — Kudzu (shown above), Japanese knotweed, black and pale swallow-wort, and Oriental bittersweet are other invasives that threaten Michigan's dune system.

Michigan Dune Alliance

The Michigan Dune Alliance was formed in 1999 to protect Eastern Lake Michigan's dunes and associated ecosystems from border to bridge by building a coordinated coastal effort and creating a unified vision for coastal conservation.

Made up of regional land conservancies, cooperative weed management areas, state and federal agencies, and a variety of other organizations, the Dune Alliance is taking the necessary steps to achieve the conservation and stewardship goals for this system, which contains nearly 10 percent of the state's endangered and threatened species.

Starting with a seed grant from the Michigan Coastal Zone Management Program, The Nature Conservancy leveraged over \$3.5 million from private and public sources like the U.S. Environmental Protection Agency, and the Meijer Foundation, which were used to identify and target important sites for conservation efforts and to develop the capacity of participating organizations.

Under the leadership of The Nature Conservancy, the Dune Alliance is in the process of creating a set of over 50 high-quality, semi contiguous coastal lands that are healthy and resilient, support native biodiversity, and are able to be sustainably managed through this partnership framework into the future.

Michigan Dune Alliance Partners Currently Active in the Project

The Nature Conservancy

Grand Traverse Regional Land Conservancy

Leelanau Conservancy

The Stewardship Network—West Michigan Cluster

Southwest Michigan Land Conservancy

Outdoor Discovery Center Macatawa Greenway

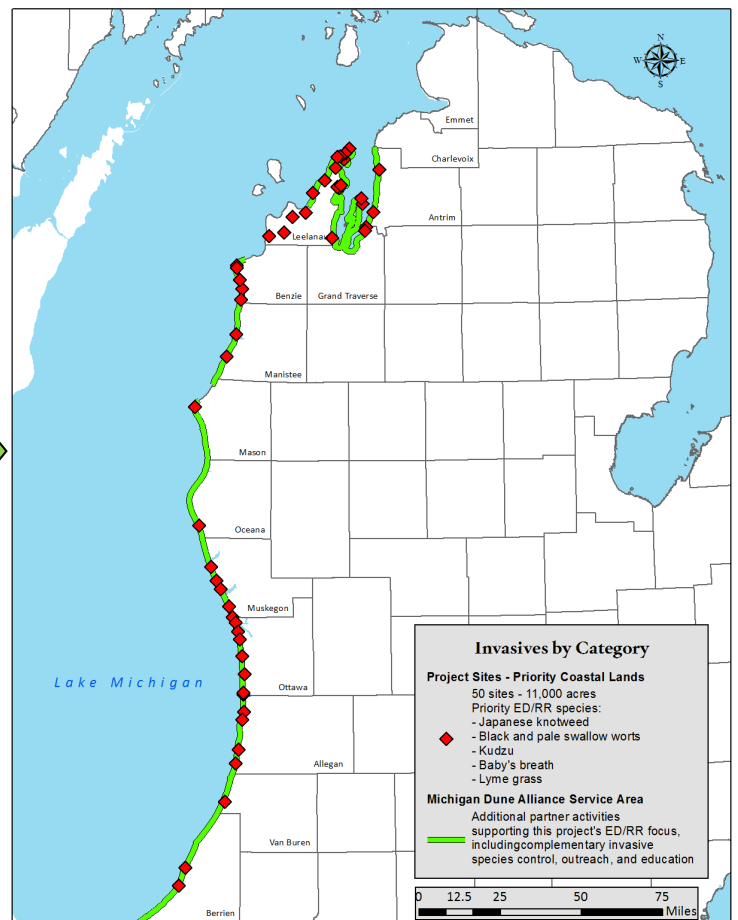
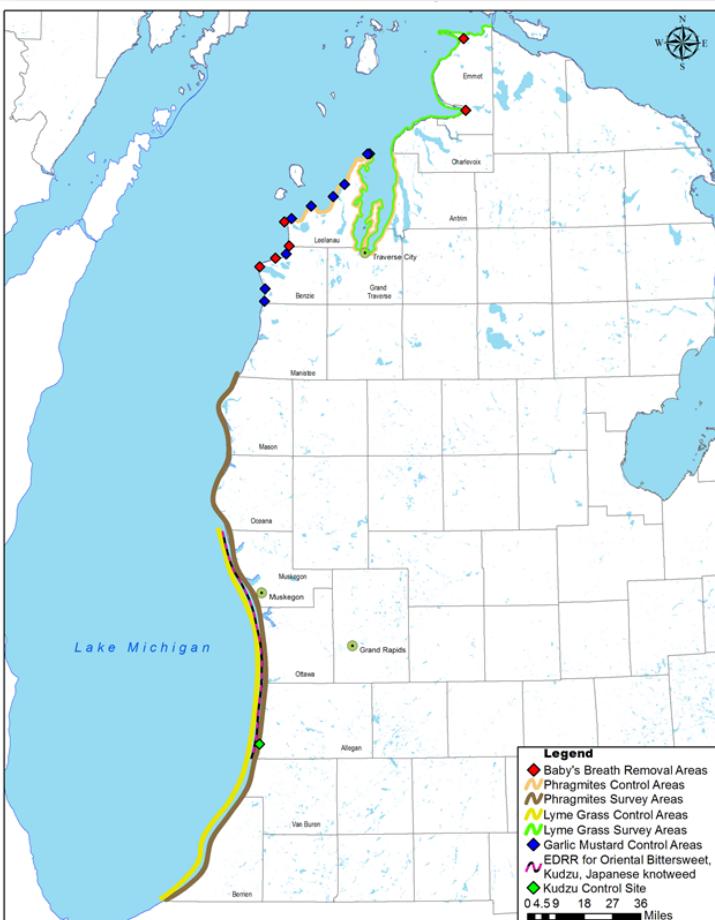
National Park Service—Sleeping Bear Dunes

Michigan Dept. of Natural Resources

Michigan Dept. of Environmental Quality

US Forest Service—Huron-Manistee National Forest

Project Growth



Measuring Success and Looking Ahead

Achieved Outcomes (2007-2014)

Eastern Lake Michigan Shoreline

- Over **85%** of all dune areas infested with baby'-breath have received control treatments, creating healthy habitat supporting endangered and threatened species like piping plovers and Pitcher's thistle.
- Beginning with over 2,600 individual populations, treatment efforts have reduced non-native *Phragmites* along the Grand Traverse Bay shoreline to a "**maintenance level**" aka a level no longer threatening to native ecology or ecotourism.
- All of the highest priority coastal sites in West Michigan, under a variety of ownership and management have received **comprehensive survey effort** to identify the most efficient management control strategy.
- The only known coastal infestation of kudzu in the region was located, received multiple control treatments, and is scheduled for **eradication**

Beaver Island Archipelago

- Over **6,000** acres of Beaver Island have been surveyed for the highest-threat invasive species and a comprehensive management plan has been developed and adopted to sustainably manage forest, wetland, and coastal health on the island.

Total Landscape-Scale Results

- In total, **50,000 acres** of public, private, and conserved lands have been surveyed and or treated by the Michigan Dune Alliance. In addition, all project data is publicly available at the Midwest Invasive Species Information Network (www.misin.msu.edu) for stakeholder and landowner use.
- **75% of the 10,000+** invasive plant populations identified have received control management, including those populations that require multi-year treatment efforts.

Activities Underway/Scheduled (2014-2016)

Eastern Lake Michigan shoreline

- Through a third round of National Fish and Wildlife Foundation funding, build a set of 50 semi-contiguous coastal lands (encompassing dunes, wetlands, and coastal forests) that are free from the highest threat invasive plants, ecologically resilient, and capable of supporting native biodiversity.
- Utilize the Michigan Dune Alliance partnership structure to develop additional protection and policy strategies supporting continued holistic coastal restoration efforts.

Beaver Island Archipelago

- After combining and analyzing 2012-2014 survey and treatment data, project partners will effectively eradicate high-threat invasive plants from 1,400 acres and 7,000 feet of Beaver Island shoreline.
- Through NFWF funding, create a on-island "strike team" capable of continued survey, monitoring, and management of any new invasive infestations found on the Archipelago

Great Lakes Basin

- Explore the implementation of complementary activities in Northern, Western, and Southern Lake Michigan.
- Begin the export of lessons learned in Eastern Lake Michigan to all Great Lakes coastal areas.

