

## **Detroit River-Western Lake Erie Cooperative Weed Management Area – The 7-Year Evolution of An Effective Partnership in Invasive Plant Surveys and Treatment**

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### **Background**

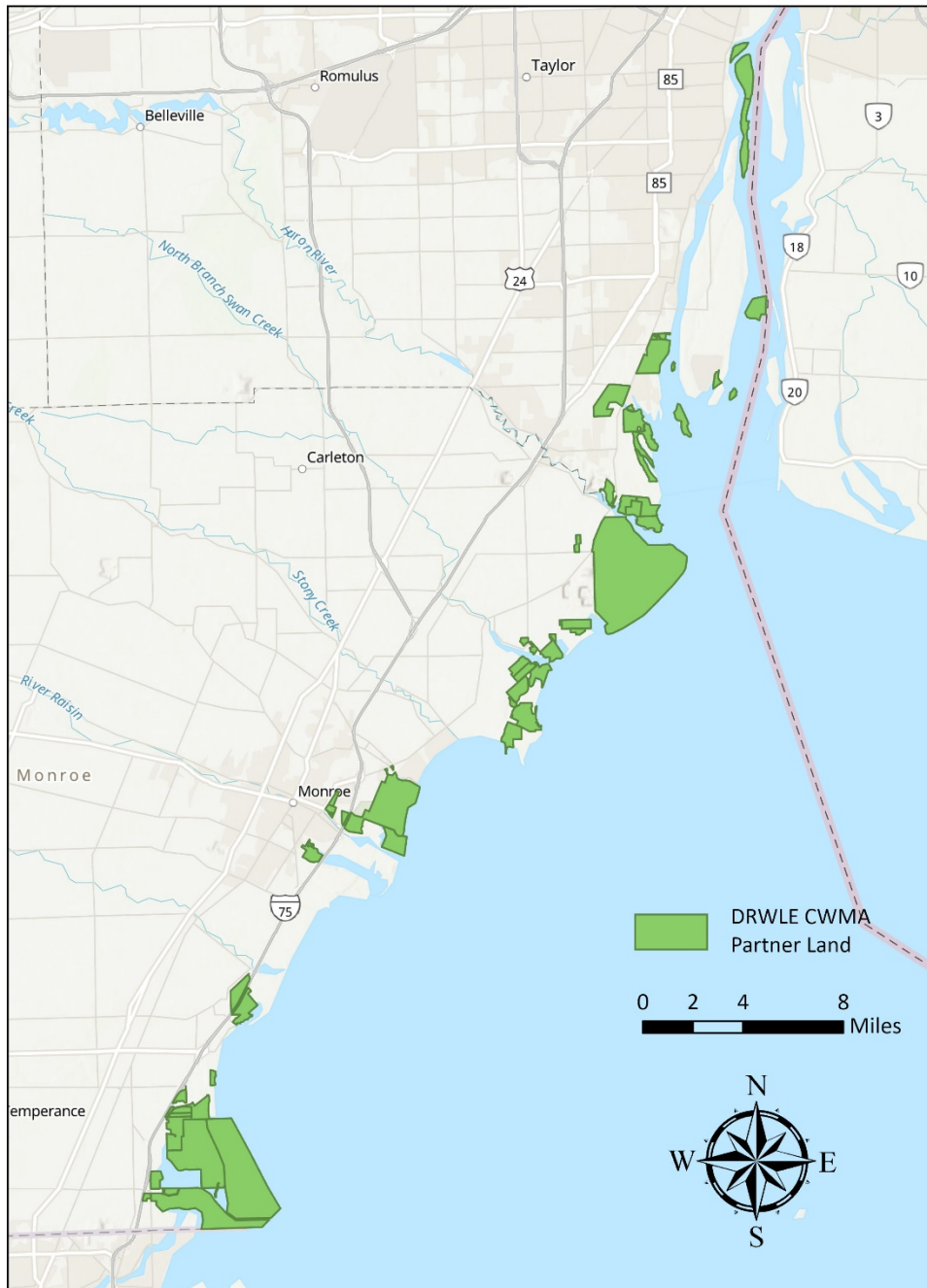
Great Lakes coastal wetlands perform vital ecosystem services, including pollutant filtration, erosion prevention, and nutrient fixing, and serve as a home for a variety of plant and animal species. In southeastern Michigan, this important ecosystem has historically been filled to allow human development threatening these important ecosystem functions; over 87% of the shoreline along the U.S. side of the Detroit River has been artificially hardened (Herdendorf, 1992; Manny and Kenaga, 1991). Moreover, invasion of non-native plant species in Great Lakes coastal wetlands is especially damaging to this already imperiled ecosystem (Manny et al., 1988). Significant time and funding are allocated to survey and provide treatment to control invasive plant species in these coastal wetlands. In the past, progress was limited as natural resource managers in southeastern Michigan were only able to affect those properties within their direct ownership and treatments were not coordinated across ownership lines. This disconnect among those with the same goal of invasive plant species management was recognized and remedied by the establishment of the Detroit River-Western Lake Erie Cooperative Weed Management Area (DRWLE CWMA) in 2011.

The DRWLE CWMA began as a partnership of regional, state, and federal agencies, nongovernmental organizations, businesses, and universities to manage the spread of invasive *Phragmites australis* in Monroe and Wayne counties' coastal wetlands in southeastern Michigan. The DRWLE CWMA shares resources as well as survey and treatment information across over 10,000 acres of partner-owned land (Figure 1). Partners operate under a Memorandum of Understanding that outlines the goals, expectations, and responsibilities of CWMA members. Over the last seven years, this group expanded beyond *Phragmites* to combat a number of newly emerging and established invasive plant species that threaten coastal wetland ecosystems.

### **Status and Trends**

Now eighteen members strong, the CWMA collaborates on “preventing the establishment and spread of species that are both non-native (not present on an evolutionary time-scale) and invasive (significantly reduce conservation values)” (Table 1). An emphasis on detection, inventory, monitoring, and information exchange between members functions as the backbone of a coordinated and integrated management strategy for invasive terrestrial and aquatic plant species. Members seek to prevent new invasive species from becoming established, but are also engaged in active invasive species removal.

# Detroit River-Western Lake Erie Cooperative Weed Management Area



**Figure 1.** Detroit River-Western Lake Erie Cooperative Weed Management Area partner property along the Detroit River and Western Lake Erie.

**Table 1.** Members of the Detroit River-Western Lake Erie Cooperative Weed Management Area. Partners in bold are part of the core team that cooperatively manages the strike team and Marsh Master equipment for invasive species treatment.

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| <ul style="list-style-type: none"> <li>• Alliance of Downriver Watersheds</li> <li>• Bay Creek Hunt Club</li> <li>• City of Monroe</li> <li>• DTE Energy</li> <li>• Ducks Unlimited, Inc.</li> <li>• Eastern Michigan University</li> <li>• <b>Huron-Clinton Metropolitan Authority</b></li> <li>• International Wildlife Refuge Alliance</li> <li>• <b>Michigan Department of Natural Resources, Wildlife Division</b></li> <li>• Monroe Conservation District</li> </ul> | <ul style="list-style-type: none"> <li>• National Park Service, River Raisin National Battlefield Park</li> <li>• Sisters, Servants Immaculate Heart of Mary</li> <li>• Southeast Michigan Council of Governments</li> <li>• Stewardship Network</li> <li>• River Raisin Institute</li> <li>• <b>The Nature Conservancy</b></li> <li>• <b>U.S. Fish &amp; Wildlife Service, Detroit River International Wildlife Refuge</b></li> <li>• Wildlife Habitat Council</li> </ul> |
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The DRWLE CWMA manages current and emerging invasive plant species by implementing species-specific best management practices. In 2015, a three-person strike team began conducting systematic surveys of all DRWLE CWMA partner lands for high-priority invasive wetland plant species. This was the first year of DRWLE CWMA-wide surveys based on rigorous protocols that lead to informed treatment decisions. Between 2015 and 2019, the strike team surveyed over 35,000 acres (with some acres surveyed multiple times) for invasive plant species (Table 2). During surveys, populations of invasive species within each property or subunit of a property are ranked based on size, density, treatment history, probability of expansion, and overall site quality. A level-of-concern ranking is assigned based on these metrics, which informs prioritization for treatment. All survey data is uploaded to the Midwest Invasive Species Information Network (MISIN; <https://www.misin.msu.edu/>) which serves as a region-wide spatial database for invasive plant and animal information.

**Table 2.** Number of DRWLE CWMA partner-owned acres surveyed and the number of distinct invasive plant species populations identified during surveys between 2015 and 2019.

Year	Acres Surveyed	Populations Identified
2015	7,860	3,3361
2016	8,831	3,943
2017	8,588	2,593
2018	10,188	3,473

During the 2018 and 2019 seasons, the CWMA created a three-tiered system for designating management importance and prioritized treatment of invasive species based on three criteria: 1) new or newly emerging invasive species are prioritized over well-established species; 2) invasive species that are more likely to rapidly take over habitat are prioritized over slowly invading species; and 3) treatment that may significantly benefit a site is prioritized over treatment with lower anticipated benefits. This new system reframed the focus on aquatic and terrestrial invasive species to better detect and target newly emerging and rapidly expanding invasive plant species (Table 3).

**Table 3.** Three-tiered grouping of all invasive plant species surveyed for the 2018 and 2019 season on DRWLE CWMA partner land. Group 1 invasive species are the highest priority for treatment.

<b>Group 1</b>		<b>Group 2</b>	
Black swallow wort	<i>Cynanchum louiseae</i>	European frog-bit	<i>Hydrocharis morsus-ranae</i>
Chinese yam	<i>Dioscorea polystachya</i>	Flowering rush	<i>Butomus umbellatus</i>
European black alder	<i>Alnus glutinosa</i>	Phragmites	<i>Phragmites australis</i>
Giant knotweed	<i>Fallopia sachalinensis</i>		<b>Group 3</b>
Pale swallow wort	<i>Cynanchum rossicum</i>	Autumn olive	<i>Elaeagnus umbellata</i>
	<i>Myriophyllum aquaticum</i>	Canada thistle	<i>Cirsium arvense</i>
Parrot-feather milfoil		Common buckthorn	<i>Rhamnus cathartica</i>
Water hyacinth	<i>Eichhornia crassipes</i>	Garlic mustard	<i>Alliaria petiolaris</i>
Water lettuce	<i>Pistia stratiotes</i>	Glossy buckthorn	<i>Frangula alnus</i>
White/Silver poplar	<i>Populus alba</i>	Dame's rocket	<i>Hesperis matronalis</i>
Yellow flag	<i>Iris pseudacorus</i>		

In 2018, seven acres of Group 1 invasive species and over 165 acres of Group 2 species were identified and targeted for treatment by the DRWLE CWMA strike team. The strike team treated five acres of Group 3 invasive plant species, but volunteer groups and CWMA partners treated many more acres opportunistically by targeting buckthorn, autumn olive, and garlic mustard.

**Management Next Steps**

As of 2019, DRWLE CWMA is one of 21 cooperative invasive species management areas (CISMAs) in the state of Michigan. Together, this mosaic of partnerships covers all of Michigan’s 83 counties and provides a variety of services to both public and private land owners. These services include education,

outreach, and assistance in the identification and treatment of invasive plant species. Funding for continued operation of the survey and treatment strike team and maintenance of the DRWLE CWMA GIS database and website will be necessary to maintain the successful rehabilitation and protection of coastal wetlands in southeast Michigan. DRWLE CWMA will continue to evaluate effectiveness, adopt new techniques, modify existing processes, and engage partners to improve the detection and removal of invasive plants.

### **Research/Monitoring Needs**

The DRWLE CWMA is dedicated to the restoration, enhancement, and protection of coastal wetlands in the highly developed areas along the Detroit River and Western Lake Erie. More than ever, it is imperative that natural resource and land managers connect with people who share the land managed. An important part of any successful CWSMA is a comprehensive invasive species management plan that includes education and collaboration with surrounding landowners and members of the public. In 2019, the DRWLE CWMA hopes to reach out and provide education and information to residents through an updated website and the launch of a social media presence. The CWMA encourages research and monitoring collaborations with universities and other partners to advance knowledge of restoration effectiveness and the impacts of invasive species on native species and ecosystem function. The International Wildlife Refuge Alliance has applied for the 2020 Michigan Invasive Species Grant Program on behalf of the DRWLE CWMA to fund the continued invasive species early detection and rapid response efforts by the strike team as well as expanded outreach efforts.

### **References**

- Herdendorf, C.E. 1987. The ecology of the coastal marshes of Western Lake Erie: a community profile. U.S. Fish & Wildlife Service, Biological Report 85(7.9). Ann Arbor, Michigan, USA.
- Herdendorf, C.E. 1992. Lake Erie coastal wetlands: an overview. *Journal of Great Lakes Research* 18: 553-551.
- Manny, B.A., T.A. Edsall, and E. Jaworski. 1988. The Detroit River, Michigan: an ecological profile. U.S. Fish & Wildlife Service, Biological Report 85(7.17). Ann Arbor, Michigan, USA.
- Manny, B.A. and D. Kenaga. 1991. The Detroit River: effects of contaminants and human activities on aquatic plants and animals and their habitats. *Hydrobiologia* 219: 269-279.

### **Links for More Information:**

Detroit River-Western Lake Erie Cooperative Weed Management Area:  
<https://www.michiganinvasives.org/detroitlakeeriecwma/>

Midwest Invasive Species Information Network (MISIN): <https://www.misin.msu.edu/>

Detroit River International Wildlife Refuge: [https://www.fws.gov/refuge/detroit\\_river/](https://www.fws.gov/refuge/detroit_river/)

The Nature Conservancy: <https://www.nature.org>