# Detroit River-Western Lake Erie Cooperative Weed Management Area

# 2019 Annual Report – 2020 Operating Plan

## Membership

Alliance of Downriver Watersheds
Bay Creek Hunt Club
City of Monroe
DTE Energy
Ducks Unlimited, Inc.
Eastern Michigan University
Huron-Clinton Metropolitan Authority
International Wildlife Refuge Alliance
Michigan Department of Natural Resources, Wildlife Division
Monroe Conservation District
Monroe County Road Commission
National Park Service, River Raisin National Battlefield Park
Sisters, Servants Immaculate Heart of Mary
Southeast Michigan Council of Governments
Stewardship Network
River Raisin Institute
The Nature Conservancy
U.S. Fish and Wildlife Service, Detroit River International Wildlife Refuge
Wildlife Habitat Council
Wyandot of Anderdon Nation

## Background

The twenty member Detroit River-Western Lake Erie Cooperative Weed Management Area (DRWLE CWMA or 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)…" The CWMA emphasizes detection, inventory, monitoring, and information exchange between members as a coordinated and integrated management of invasive terrestrial and aquatic plant species. Members seek to prevent new invasive species from establishing, but are also engaged in active invasive species removal.

The Detroit River-Western Lake Erie CWMA manages current and emerging invasive plant species by using species-specific best management practices. During the 2018 and 2019 seasons, a three-tiered system for designating management importance was created that prioritized treatment of invasive species based on three criteria: 1) new or newly emerging invasive species were prioritized over well-established species; 2) invasive species that were more likely to rapidly take over were prioritized over slow invading species; and 3) treatment that significantly benefitted a site was prioritized over invasive species present on land where treatment has little anticipated effect. This new system reframed the focus on aquatic and terrestrial invasive species to better detect and target necessary management (Table 1).

| **Group 1** | |
|---|---|
| Black swallow wort | *Cynanchum louiseae* |
| Chinese yam | *Dioscorea polystachya* |
| European black alder | *Alnus glutinosa* |
| Giant knotweed | *Fallopia sachalinensis* |
| Pale swallow wort | *Cynanchum rossicum* |
| Parrot-feather milfoil | *Myriophyllum aquaticum* |
| Water hyacinth | *Eichhornia crassipes* |
| Water lettuce | *Pistia stratiotes* |
| White/Silver poplar | *Populus alba* |
| Yellow flag iris | *Iris pseudacorus* |

| **Group 2** | |
|---|---|
| European frog-bit | *Hydrocharis morsus-ranae* |
| Flowering rush | *Butomus umbellatus* |
| Phragmites | *Phragmites australis* |
| **Group 3** | |
| Autumn olive | *Elaeagnus umbellata* |
| Canada thistle | *Cirsium arvense* |
| Common buckthorn | *Rhamnus cathartica* |
| Garlic mustard | *Alliaria petiola* |
| Glossy buckthorn | *Frangula alnus* |
| Dame's rocket | *Hesperis matronalis* |

***Table 1:*** *Species included in three-tiered invasive species management prioritization based on known invasive species in 2018. This table does not include new invasive species detected during surveys in 2018 or 2019.*

## 2019 Summary

Tyler Dolin and Alexa Blankenship returned for the 2019 season with Jessica Fransted leaving for another job opportunity. A new technician, Andrew Newton, was hired for the summer as a temporary position through November 2019.

## Pre-Survey Training and Research

The new CWMA staff underwent orientation and training for the majority of June including introduction to the Early Detection Rapid Response (EDRR) program and survey methods, safety orientation, and an examination to obtain a commercial pesticide applicator license. The lead technician also completed an advanced wetland plant identification course at the U.S. Fish & Wildlife Service's National Conservation Training Center in Shepherdstown, West Virginia.

The CWMA staff attended multiple seminars to increase knowledge of invasive species in the Great Lakes region. Trainings included an update on the status of Phragmites biological control, webinars on the preparation for the potential invasion of Japanese stiltgrass, Great Lakes water level outlook, and tools for identifying and prioritizing range shifting plants, as well as the Biannual State of the Strait conference in Windsor, Canada.

A literature review was conducted to create a database of Best Management Practice (BMP) resources to aid in the management of new and established invasive species. Various BMP categories were collected including plant ecology, treatment methods, and life history information. This database was used to advance CWMA treatment methods and is updated as needed.

## Surveys

EDRR surveys were conducted from May 6, 2019 to May 20, 2019 for early spring species and June 3, 2019 to September 18, 2019 for established summer species. A total of 9,639.5 acres were surveyed, encompassing both wetlands and uplands over the course of the spring and

summer. Survey operations in 2019 were adapted to better reflect early plant seasonal growth by shifting surveys to begin in the south and work north. The total number of survey points collected increased from 3,473 in 2018 to 4,383 in 2019.

Table 2 shows an example of a full survey, which includes the following data: Area, Density, Treatment History, Probability of Expansion, Site Quality, and Level of Concern. The EDRR data table is set up to make integration into the Michigan Invasive Species Network (MISIN) database much easier by using some of the same parameters: Area, Density, and Treatment History. The remaining parameters were created by the CWMA for species treatment prioritization.

| Species | Common Name | Area | Density | Treatment | Probability of Expansion | Site Quality | Level of Concern | Comments | Unit |
|---|---|---|---|---|---|---|---|---|---|
| Butomus umbellatus | Flowering rush | 2 | 2 | U | 3 | 3 | 6 | | US Silica |
| Phragmites australis | Phragmites | 4 | 3 | U | 2 | 3 | 5 | | US Silica |
| Hrydrocharis morsus-ranae | European frog-bit | 2 | 2 | U | 3 | 3 | 6 | | Ford Marsh |

***Table 2:*** *Example of an EDRR survey used in 2019*

Key populations of native species were noted whenever encountered during sampling invasive species. In addition to previous observations of state threatened giant arrowhead (*Sagittaria montevidensis*), a new population was discovered at the Detroit River International Wildlife Refuge (DRIWR) Brancheau unit, after a significant water drawdown and at Bay Creek Hunt Club, near a recently restored wetland (Figure 1). A population of lizard's tail (*Saururus cernuus*), a rare riparian species in Michigan was observed at the Gibraltar Wetlands unit of the DRIWR post treatment of Phragmites in 2018 (Figure 2). A state special concern species, Virginia spiderwort (*Tradescantia virginiana*) was also observed at the Blanchett 2 prairie (Figure 3).

***Figure 1:*** *Giant arrowhead, (Sagittaria montevidensis), in a Great lakes marsh following initial Phragmites treatment.*

***Figure 2:*** *Lizard's tail (Saururus cernuus), in a riparian wetland post Phragmites treatment.*

***Figure 3:*** *Virginia spiderwort (Tradescantia virginiana), in a wet prairie.*

Observations of *Ludwigia peploides* increased to include a broader expanse in the Fix unit, as well as the coastal wetlands of the Sisung property, and the Strong unit of DRIWR. Each observation was treated according to best management practices and EDRR will continue for new populations.

## Treatment

The CWMA develops an annual operating plan for the upcoming year that includes prior year treatment totals in a table format. Tables 4, 5, 6, and 7 along with the associated figures 3, 4, 5, and 6 should be referenced throughout the treatment narrative; Figures 7, 8, 9, and 10 reference treatments from the previous three years. Historical maps focus on Phragmites and flowering rush *(Butomus umbellatus*) due to the need for continuous management to attain the desired reduced population of these species.  During 2019 the CWMA treated a total of 781.87 acres.

### *Group 1 Priority Species*

A total of 3.12 acres of European alder (*Alnus glutinosa*) were treated in 2019. European alder treatment began on October 23, 2019 and ended November 6, 2019 at the Refuge Gateway, Humbug Marsh, and Humbug Island units. Treatment may continue through the early winter of 2020 depending on weather conditions and the acquisition of a new Aquatic Nuisance Control permit through the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

### *Group 2 Priority Species*

Phragmites treatment began on September 9, 2019 and concluded on October 18, 2019. A total of 584.12 acres were treated. Priority was given to Phragmites treatment over European alder due to the ability to treat European alder in the fall and winter. Significant initial treatments by helicopter occurred at The Nature Conservancy's Erie Marsh Preserve, Bay Creek Hunt Club, and DRIWR's Port of Monroe and U.S Silica units. These treatments, as well as secondary treatments in the DRIWR Holloway unit, Bay Creek Hunt Club, Lake Erie Metropark and Pointe Mouilee State Game Area will be continued to achieve the 10 percent areal coverage management goal. Mechanical removal of Phragmites with a Marsh Master and roller chopper occurred at the Holloway unit and the Sisung property totaling 9.5 acres.

Flowering rush treatment occurred on September 30, 2019, totaling 5.6 acres in the River Raisin. Treatment has been ongoing for four years and will continue if needed.

### *Group 3 Priority Species*

Treatment of common buckthorn (*Rhamnus cathartica*) was deferred in 2019 because of the federal government shutdown in January and weather delays in February. The two units for proposed treatment, Humbug Marsh and Gibraltar Wetlands, are federal lands owned by the USFWS and were not able to be accessed during the shutdown for conservation work. Treatments will be explored through contracting in the beginning of 2020.

Preventative measures were also undertaken with water level management, with attempts at mowing and burning. Water level management occurred at the DRIWR in the Brancheau and Fix Units, where it was managed with invasive species in mind.

Additional species treated include: autumn olive *(Elaeagnus umbellata),* common teasel (*Dipsacus fullonum*), garlic mustard (*Alliaria petiolata*), Dame's rocket (*Hesperis matronalies*) and Japanese hedge parsley (*Torilis japonica*) were removed from high priority ecosystems in small amounts.

The CWMA GIS system was updated with the final copy of the 2019 EDRR data and sent out to all partners as their respective properties were surveyed. Treatment maps were created for Phragmites and European alder, alongside herbicide concentrations culminating in a submitted report to the Michigan EGLE on November 30, 2019.

On 2/19/2020, The CWMA received an email from the University of Michigan herbarium regarding the identification of the *Ludwigia grandiflora* species submitted for identification. The L. grandiflora was re-catalogued to Ludwigia peploides, a species still listed as invasive in Michigan, but native to neighboring southern states unlike *L. grandiflora*.

**Acknowledgments**

This work would not have been possible without funding provided by the National Fish and Wildlife Foundation and their Sustain Our Great Lakes grant program. Special thanks to all DRWLE CWMA members who contribute their time, resources, and access to properties for this vital goal of invasive species management.

# 2019 Treatments and 2020 Goals

***Table 4:*** *Treatment for the 2019 field season with target species and 2020 treatment goals, North Zone.*

| Location | Owner | 2019 Acres Treated | Method | Target Species | 2020 Goal |
|---|---|---|---|---|---|
| Mud Island | USFWS | None | N/A | Upland invasives | Continue EDRR survey |
| Grassy Island | USFWS | None | N/A | Phragmites | Continue EDRR survey |
| Stony Island | DNR | None | N/A | Phragmites, upland invasives | Continue EDRR surveys |
| Refuge Gateway | Wayne County | 0.85 Acres | Hack and Squirt | European alder | Continue EDRR surveys |
| Humbug Marsh | USFWS | 2.76 Acres | Foliar, Hack and Squirt | White poplar, Phragmites, European alder | Continue EDRR surveys |
| Humbug Island | USFWS | 0.72 Acres | Hack and Squirt | European alder | Continue EDRR surveys |
| Gibraltar Bay Unit | USFWS | None | N/A | Phragmites, Teasel | Spot treatment, Rx fire |
| Sugar Island | USFWS | None | N/A | Upland invasives | Continue EDRR survey |
| Gibraltar Wetlands Unit | USFWS | None | N/A | Phragmites, Buckthorn | Spot treatment |
| Lake Erie Metropark | HCMA | 158.63 Acres | Hand Pull, Mowing, Foliar | Phragmites, Dame's Rocket, Garlic mustard, Japanese hedge parsely | Continue EDRR surveys and treatment |
| US Silica | USFWS | 11.06 Acres | Helicopter | Phragmites | Spot treatment |
| Hull's Trace | USNPS | None | N/A | Phragmites | Continue EDRR surveys |


***Figure 3:*** *Invasive species treatments in the North Zone of the CWMA*

***Table 5:*** *Treatment for the 2019 field season with target species and 2020 treatment goals, North-Central Zone.*

| Location | Owner | 2019 Acres Treated | Method | Target Species | 2020 Goal |
|---|---|---|---|---|---|
| Point Mouillee | DNR | 200 Acres | Helicopter | Phragmites | Continue EDRR surveys |
| Taylor Unit | USFWS | None | N/A | Phragmites | Continue EDRR surveys |
| Strong Unit | USFWS | 4.97 Acres | Marsh Master, Backpack | Phragmites, Ludwigia peploides | Continue EDRR surveys |
| Burke Tract | USFWS | 21.13 Acres | UTV | Phragmites, Autumn olive, Teasel | Continue EDRR surveys |
| Brancheau Unit | USFWS | 8 Acres | Marsh Master | Phragmites | Spot treatment |
| Blanchette Tract | USFWS | 0.78 Acres | Backpack | Teasel | Spot treatment |
| Fix Unit | USFWS | 2.64 Acres | Backpack, squirt bottle | Teasel, Ludwigia peploides | Continue EDRR surveys |
| Sisung | Private Property | 16.34 Acres | Marsh Master, Hack and Squirt | Phragmites, Ludwigia peploides, European alder | Follow up treatment |
| Point Aux Peaux | DNR | None | N/A | Phragmites | Continue EDRR surveys |


***Figure 4:*** *Invasive species treatments in the North-Central Zone of the CWMA*

***Table 6:*** *Treatment for the 2019 field season with target species and 2020 treatment goals, South-Central Zone.*

| Location | Owner | 2019 Acres Treated | Method | Target Species | 2020 Goal |
|---|---|---|---|---|---|
| River Raisin | Monroe County | 5.6 Acres | Boat | Flowering rush | Continue EDRR surveys |
| Ford Marsh | USFWS | None | N/A | Phragmites | Treatment |
| Port of Monroe | USFWS | 22.76 Acres | Helicopter | Phragmites | Continue EDRR surveys |
| Plum Creek Bay | USFWS | 0.1 Acres | Backpack | Japanese knotweed | Continue EDRR surveys |


***Figure 5:*** *Invasive species treatments in the South-Central Zone of the CWMA*

***Table 7:*** *Treatment for the 2019 field season with target species and 2020 treatment goals, South Zone.*

| Location | Owner | 2019 Acres Treated | Method | Target Species | 2020 Goal |
|---|---|---|---|---|---|
| Lady of the Lake | USFWS | None | N/A | Phragmites | Continue EDRR surveys |
| Holloway Unit | USFWS | 10.66 Acres | Marsh Master | Phragmites | Follow up treatment |
| Bay Creek Hunt Club | Bay Creek Hunt Club | 30.87 Acres | Helicopter | Phragmites | Follow up treatment |
| Erie Marsh Preserve | TNC | 284 Acres | Helicopter | Phragmites | Potential aerial |


***Figure 6:*** *Invasive species treatments in the South Zone of the CWMA*

# Three Year Treatment Analysis for Phragmites and Flowering Rush


***Figure 7:*** *Three year treatment analysis in the CWMA North Zone*

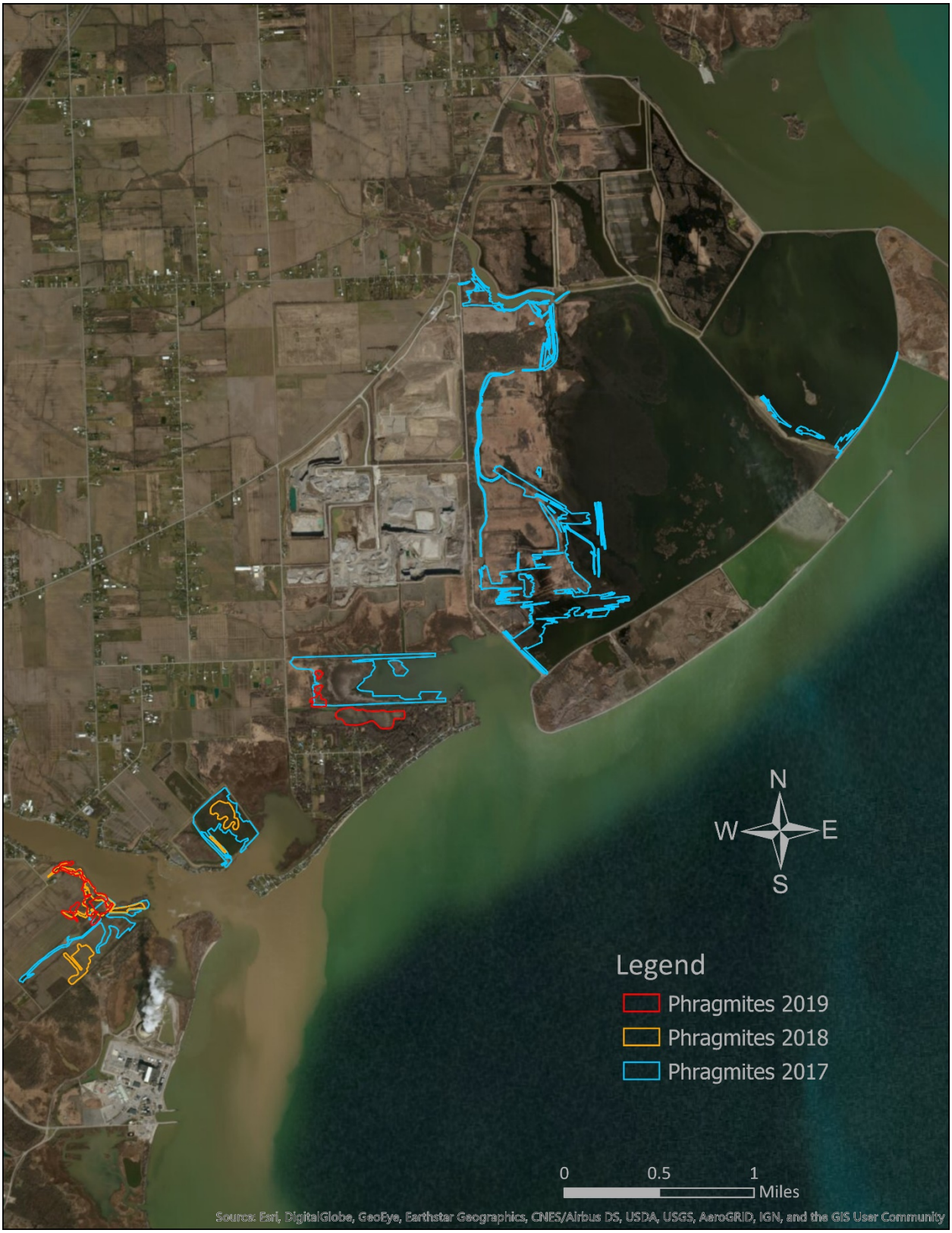


***Figure 8:*** *Three year treatment analysis in the CWMA North Central Zone*


***Figure 9:*** *Three year treatment analysis in the CWMA South Central Zone*


***Figure 10:*** *Three year treatment analysis in the CWMA South Zone*