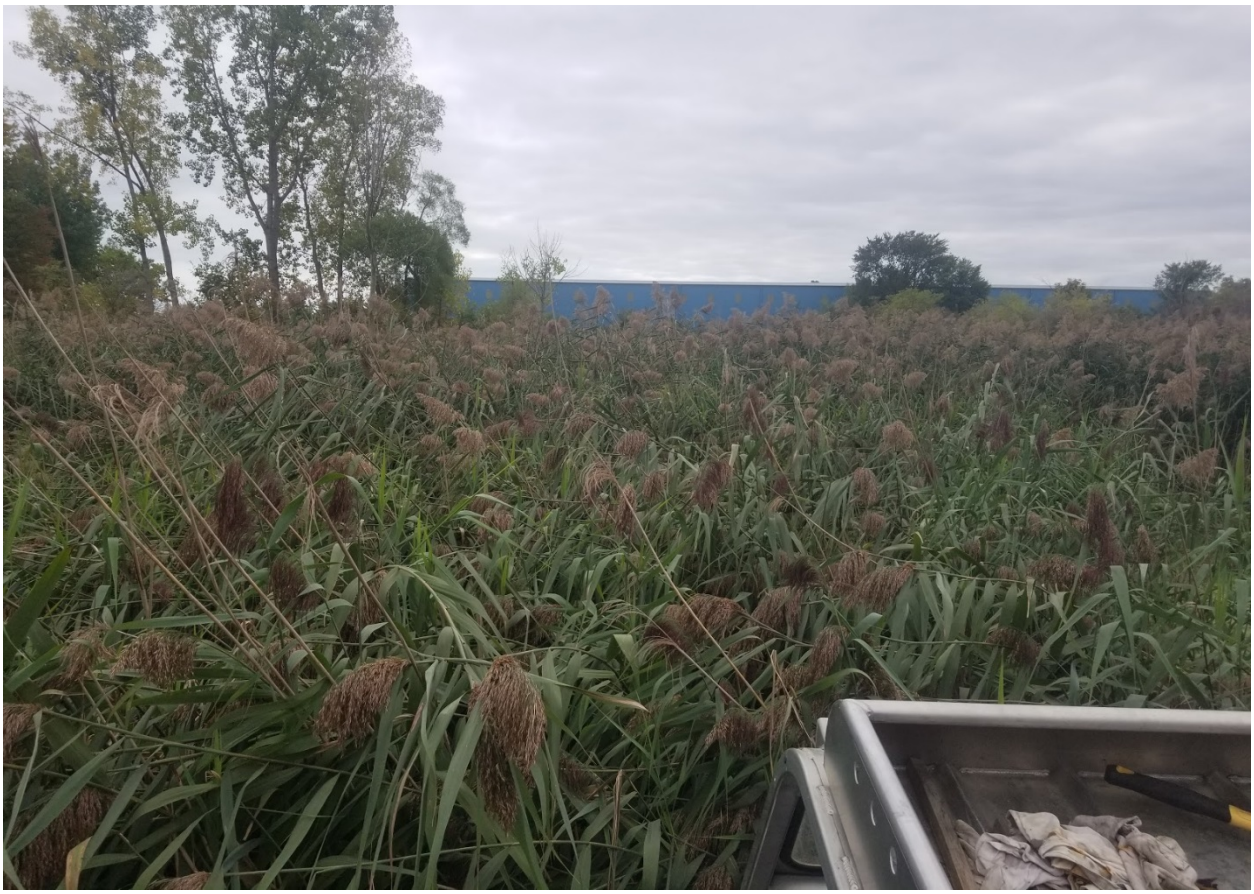
Detroit River-Western Lake Erie Cooperative Weed Management Area

2018 Annual Report – 2019 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
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

Background

The eighteen 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 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: *2018 and 2019 three-tiered invasive species management species*

2018 Summary

Jake Bonello and Nicole LaFleur moved on to new positions at the beginning of the 2018 season. Tyler Dolin was promoted to lead biological technician and two new technicians began work on June 4th, 2018: Alexa Blankenship and Jessica Fransted.

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, ATV/UTV operation, Marsh Master operation, and an examination to obtain a commercial pesticide applicator license. Additional training was started or completed by the lead technician, including various heavy equipment and agricultural tractor trainings, Wildland Firefighter Type 2 certification, and a Commercial Driver License. These qualifications expand the management possibilities of the CWMA by creating the ability to mow invasive species in uplands and wetlands, transport various equipment, and conduct prescribed burns to remove biomass.

The lead technician attended multiple seminars to increase knowledge of invasive species in the Great Lakes region. Trainings included a new invasive species to Michigan, Japanese stiltgrass *(Microstegium vimineum)*, the Phragmites Adaptive Management Framework (PAMF) and the Green Ribbon Initiative: invasive species of the Oak Openings region to gather more information on the current status of invasive species in the region.

Research on plant ecology was undertaken to further Best Management Practices (BMP) that emphasize a varied approach to invasive species control with or without herbicide. Further research had to be done as this grant introduces new invasive species into the EDRR protocol.

The CWMA GIS system, housed at the Detroit River International Wildlife Refuge (DRIWR), required more time than anticipated to keep GIS workflows operational for data collection in the

field. This was due to both inexperience with the system and ESRI system outages, resulting in lost field days.

Surveys

EDRR surveys were conducted from July 10, 2018 to September 6, 2018. 10,188 acres of wetlands and uplands throughout the CWMA were surveyed over the course of the summer starting in the northern most areas and moving south. The field crew had an expanded focus this year with an increase from 13 priority species to 18 under new funding. These new species yielded an increase in points collected from 2,593 in 2017 to 3,473 and caused the extension of the survey season into September. In the future, surveys may be broken into seasonal sections to alleviate the duration of a single summer survey and provide focus for prioritized treatment.

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 2018*

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 in a post-treatment monotypic stand of Phragmites *(Phragmites australis)* from the year prior (Figure 1). The *S. montevidensis* is located

on a mudflat of Great Lakes marsh habitat that is open to Lake Erie at the Fix Unit of the DRIWR. A population of state endangered Mullein-foxglove *(Dasistoma macrophylla)* was also observed post treatment of dense autumn olive. Located at the Gibraltar Wetlands unit of the DRIWR, the *D. macrophylla* is located on a grassy opening of a floodplain forest (Figure 2). The populations will be monitored moving forward and taken into account with all invasive species management.

A new invasive species, water primrose *(Ludwigia grandiflora),* was detected at the Fix unit of the DRIWR with a specimen collected and verified by the University of Michigan Herbarium. This is the first observation in the Great Lakes region, and research is being conducted on control options and species history to develop the best management plan.

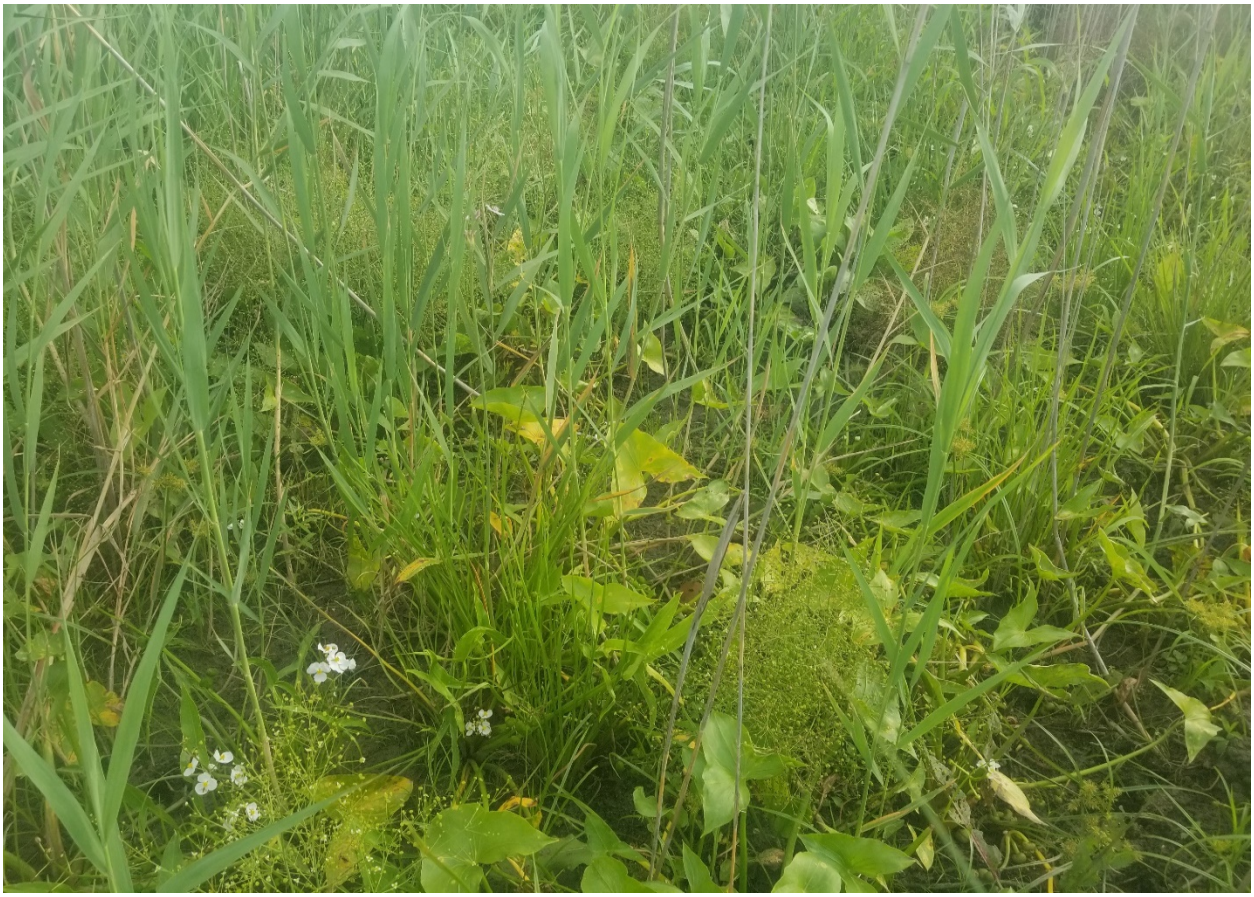


Figure 1: *Giant arrowhead, (Sagittaria montevidensis), in a Great lakes marsh following initial Phragmites treatment.*

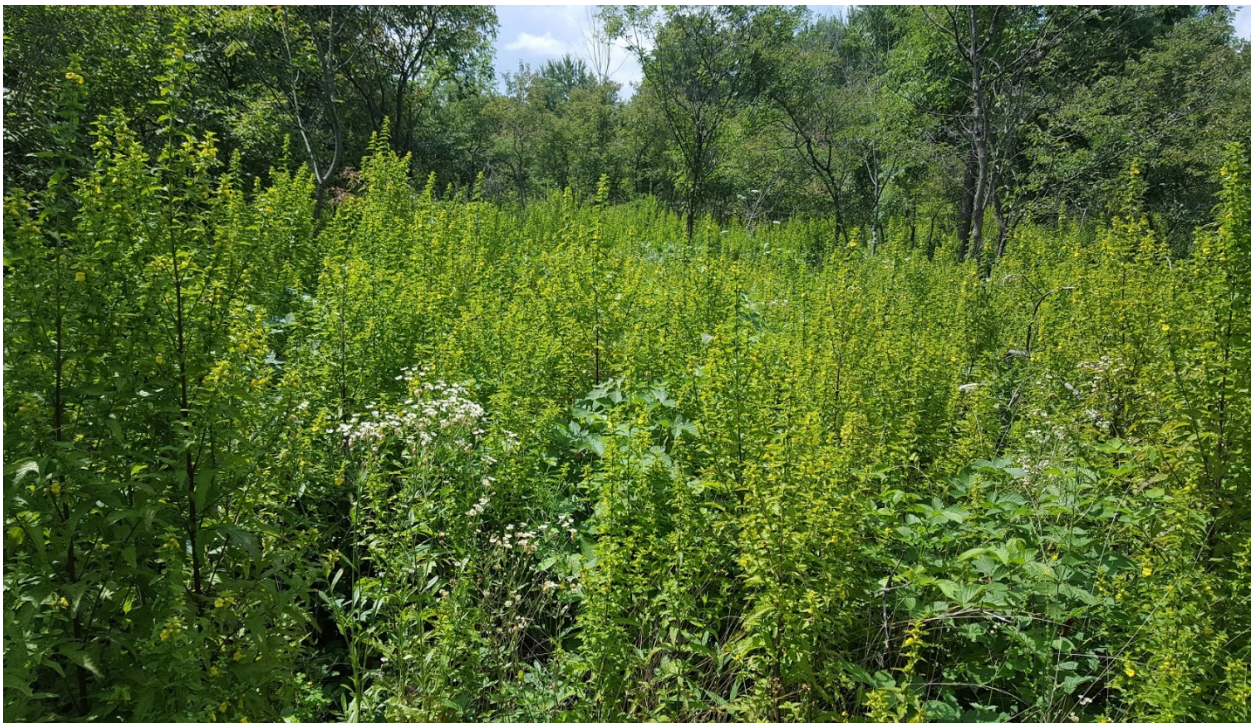


Figure 2: *Mullein-foxglove (Dasistoma macrophylla) following autumn olive treatment in a wet mesic flatwoods.*

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, and 6, 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.

Group 1 Priority Species

A total of 6.96 acres of European alder (*Alnus glutinosa*) were treated in 2018. Herbicidal application using the hack-and-squirt method was found to be most successful at treating European alder trees. European alder treatment began on October 24, 2018 and ended November 20, 2018 at Lake Erie Metropark and on Humbug Island. Treatment may continue through the early winter of 2019 depending on weather conditions and the acquisition of a new Aquatic Nuisance Control permit through the Michigan Department of Environmental Quality (MDEQ).

Group 2 Priority Species

Phragmites treatment began on September 11, 2018 and concluded on October 12, 2018. A total of 215.21 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 were undertaken at the Holloway Unit, Humbug Marsh Unit, and Bay Creek Hunt Club (Table 3). These treatments were low in acreage yet high in chemical usage and will be followed up annually to control the population.

Total Acres of Phragmites Treated				
Location	**Amount Herbicide Used**	**Acres Treated**	**Location Acres Total**	**Percentage Treated**
	Gallons			
Bay Creek Hunt Club	48.000	55.000	300.319	18.314
Holloway	12.000	11.948	47.730	25.032
Humbug Marsh	12.160	4.500	405.160	1.111
Total	72.160	71.448	753.209	14.819

Table 3: *Large treatments of Phragmites in 2018 with total treatment acres and average percentage treated.*

Flowering rush treatment occurred on October 3, 2018, totaling 17 acres in the River Raisin. Treatment has been ongoing for three years and will continue if needed.

Group 3 Priority Species

The start of invasive species management was undertaken for group 3 priority species common buckthorn *(Rhamnus cathartica)* at the Humbug Marsh Unit of the DRIWR. Buckthorn was cut at chest height to stunt upward growth but keep root systems alive for a large scale cut-stump treatment in the winter of 2019 in both the Humbug Marsh Unit and the Gibraltar Wetlands Unit. Saplings are periodically mowed in a long term management strategy to exhaust the existing seed bank.

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 Unit and Ford Marsh Unit, where it was managed with invasive species in mind. Phragmites was targeted in an attempt to flood the plant before it could grow above the water's surface.

Mechanical treatment continued in June on a former agricultural field with the mowing of 5 acres of Canada thistle *(Cirsium arvense)* and seed head removal of common teasel *(Dipsacus fullonum)*. Canada thistle control has been successful in the past while common teasel removal is an experimental attempt to further reduce herbicide use on conservation lands.

Honeysuckle *(Lonicera sp.)* and autumn olive *(Elaeagnus umbellata)* were also removed from high priority ecosystems in small amounts.

The CWMA GIS system was updated with the final copy of the 2018 EDRR data and sent out to all partners on October 3, 2018. Treatment maps were created for Phragmites and European alder, alongside herbicide concentrations culminating in a submitted report to the Michigan DEQ on November 29, 2018.

Table 4: *Treatment for the 2018 field season with target species and 2019 treatment goals, North Zone.*

Location	Owner	2018 Acres Treated	Method	Target Species	2019 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 survey
Refuge Gateway	Wayne County	3.09 Acres	Marsh Master	Phragmites	Spot treatment
Humbug Marsh	USFWS	40.65 Acres	Marsh Master, Back pack	Phragmites, Buckthorn	Spot treatment
Humbug Island	USFWS	3.7 Acres	Hack and Squirt	European Alder	Spot treatment
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	67 Acres 3.28 Acres	Foliar Spray, Hack and Squirt	Phragmites, European Alder	Spot treatment
US Silica	USFWS	None	N/A	Phragmites	Aerial treatment
Hull's Trace	USNPS	2 Acres	Back pack	Phragmites	Spot treatment

2018 Invasive Species Treatments North Zone

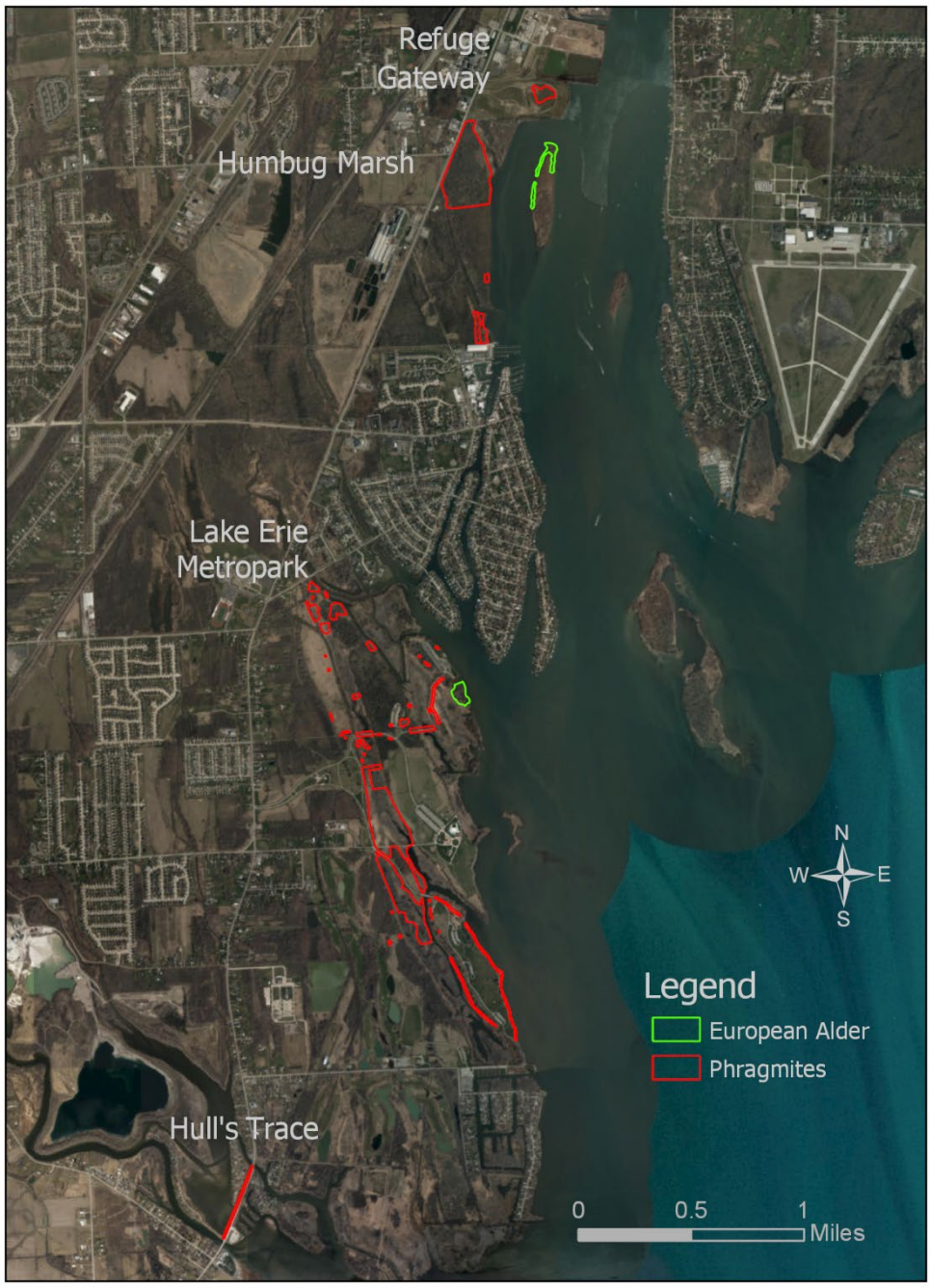


Figure 3: *Invasive species treatments in the North Zone of the CWMA*

Table 5: *Treatment for the 2018 field season with target species and 2019 treatment goals, Central Zone.*

Location	Owner	2018 Acres Treated	Method	Target Species	2019 Goal
Point Mouillee	DNR	None	N/A	Phragmites	Continue EDDR surveys
Taylor Unit	USFWS	None	N/A	Phragmites, Canada Thistle	Continue EDRR surveys
Strong Unit	USFWS	None	N/A	Phragmites	Continue EDRR surveys
Osborne Tract	USFWS	5 Acres	Tractor/ Mechanical	Canada Thistle	Continue EDRR surveys
Brancheau Unit	USFWS	8 Acres	Marsh Master	Phragmites	Spot treatment
Fix Unit	USFWS	11.2 Acres	Marsh Master/Back Pack	Phragmites	Follow up treatment
Sisung	Private Property	13.57 Acres	Marsh Master	Phragmites	Follow up treatment
Point Aux Peaux	DNR	None	N/A	Phragmites	Continue EDRR surveys

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

Table 6: *Treatment for the 2018 field season with target species and 2019 treatment goals, South Zone.*

Location	Owner	2018 Acres Treated	Method	Target Species	2019 Goal
Ford Marsh	USFWS	None	N/A	Phragmites	Treatment
River Raisin	Monroe County	17 Acres	Boat	Flowering Rush	Continue EDRR surveys
Port of Monroe	USFWS	None	N/A	Phragmites	Aerial treatment
Plum Creek Bay	USFWS	None	N/A	Phragmites	Spot treatment
Lady of the Lake	USFWS	2.39 Acres	Marsh Master	Phragmites	Spot treatment
Holloway Unit	USFWS	11.77 Acres	Marsh Master	Phragmites	Follow up treatment
Bay Creek Hunt Club	Bay Creek Hunt Club	55 Acres	Helicopter	Phragmites	Follow up treatment
Erie Marsh Preserve	TNC	None	N/A	Phragmites	Continue EDRR surveys

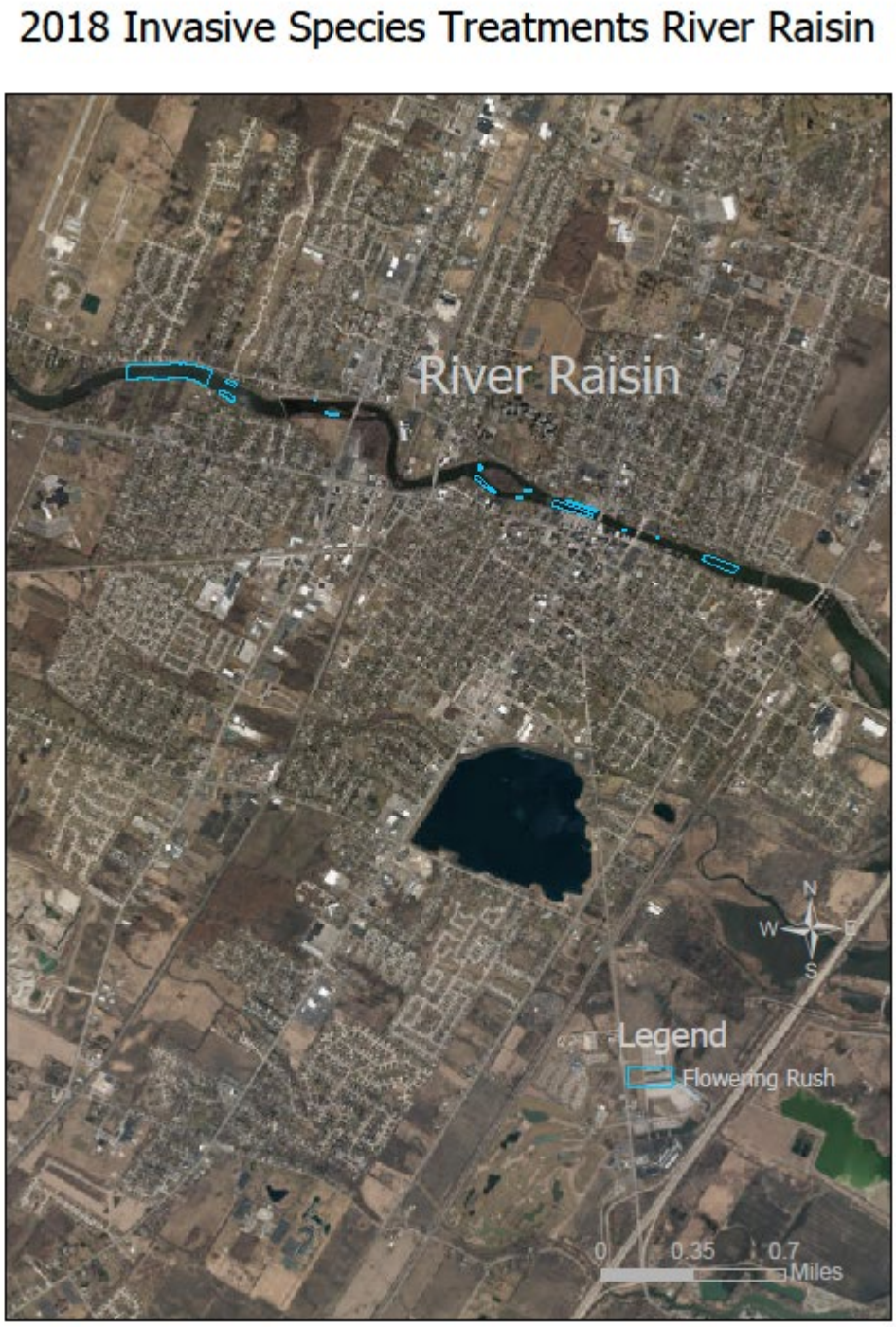


Figure 5: *Invasive species treatments in the Central Zone of the CWMA*

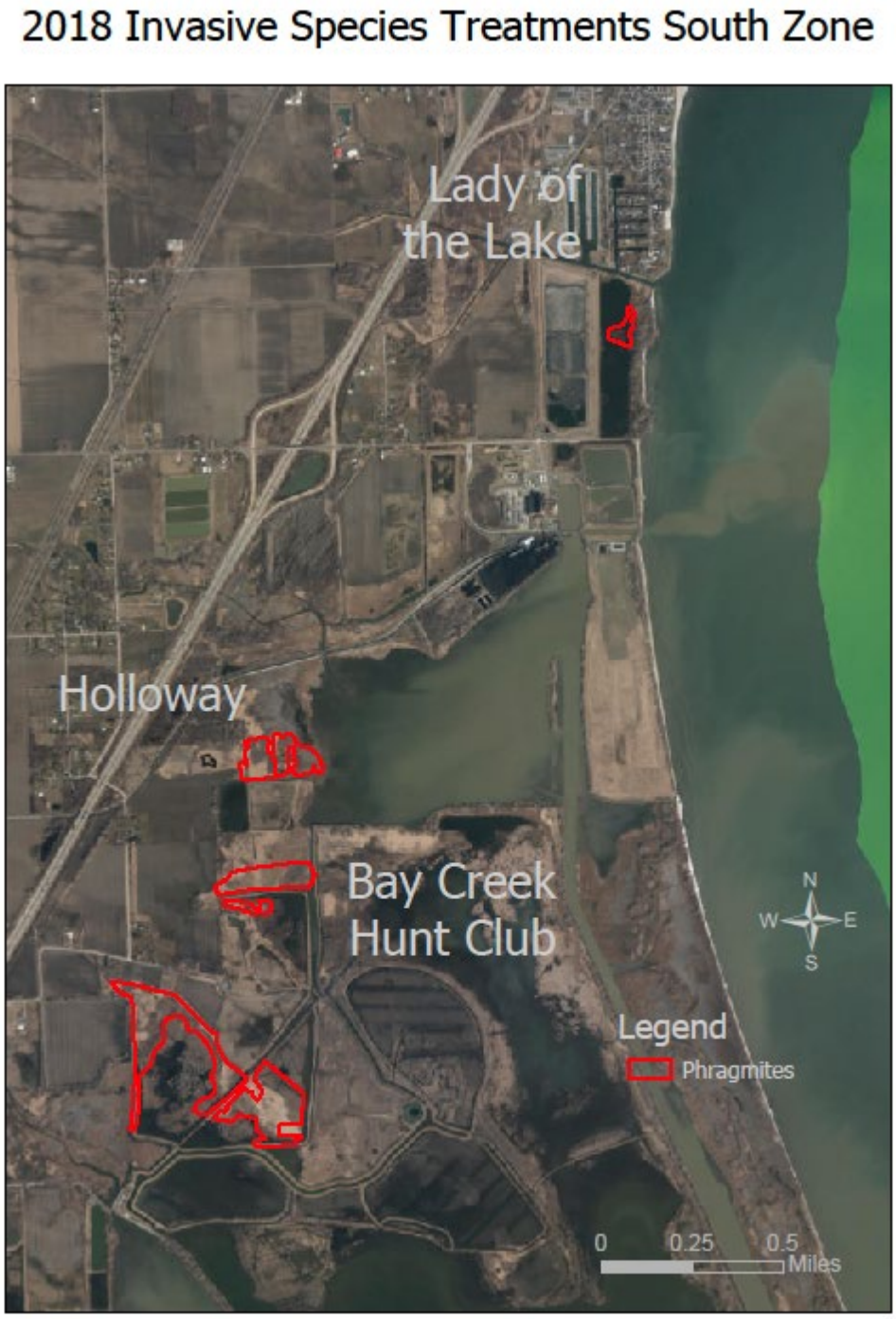


Figure 6: *Invasive species treatments in the South Zone of the CWMA*

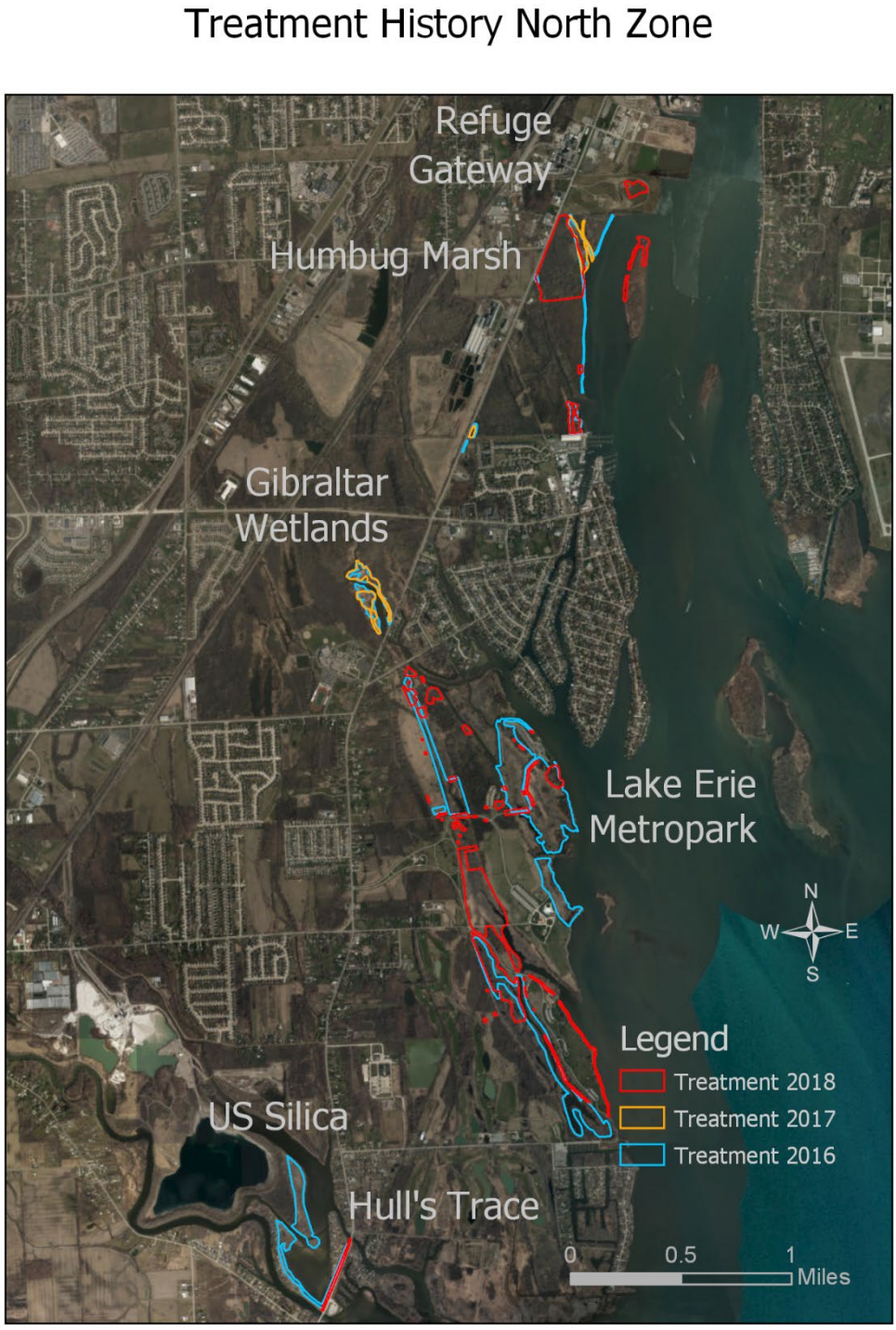


Figure 7: *Three year treatment analysis in the CWMA North Zone*

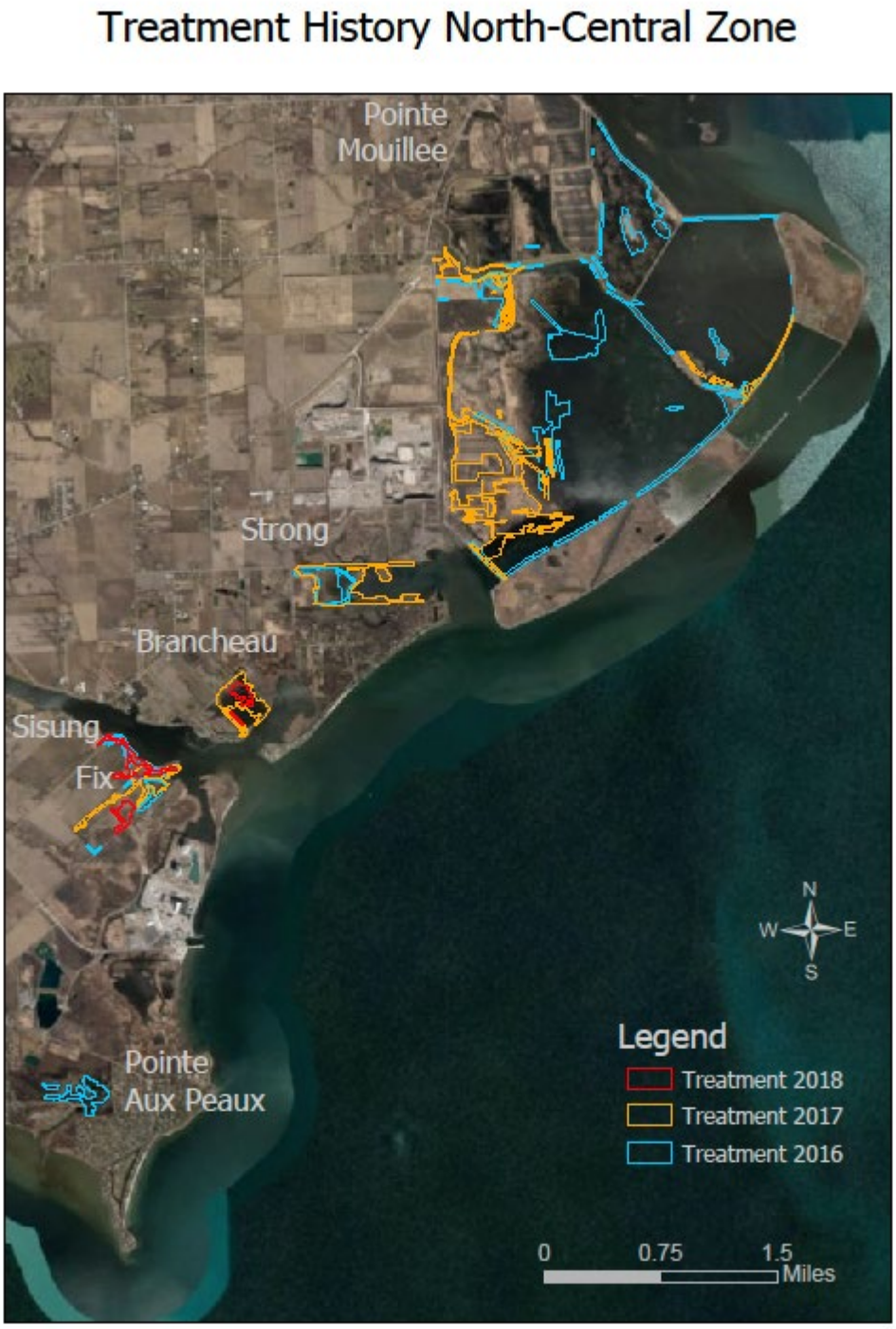


Figure 8: *Three year treatment analysis in the CWMA north Central Zone*

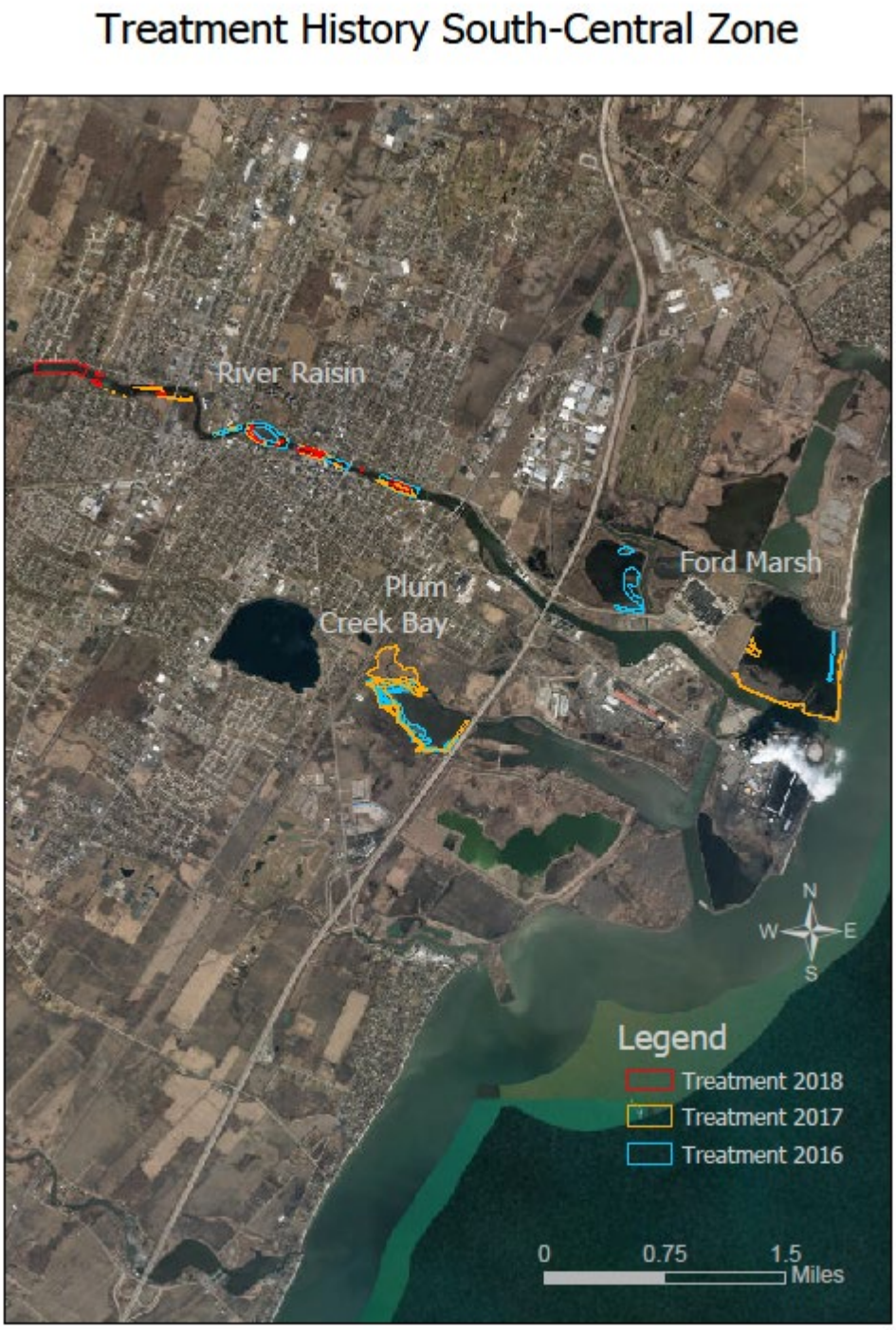


Figure 9: *Three year treatment analysis in the CWMA South Central Zone*

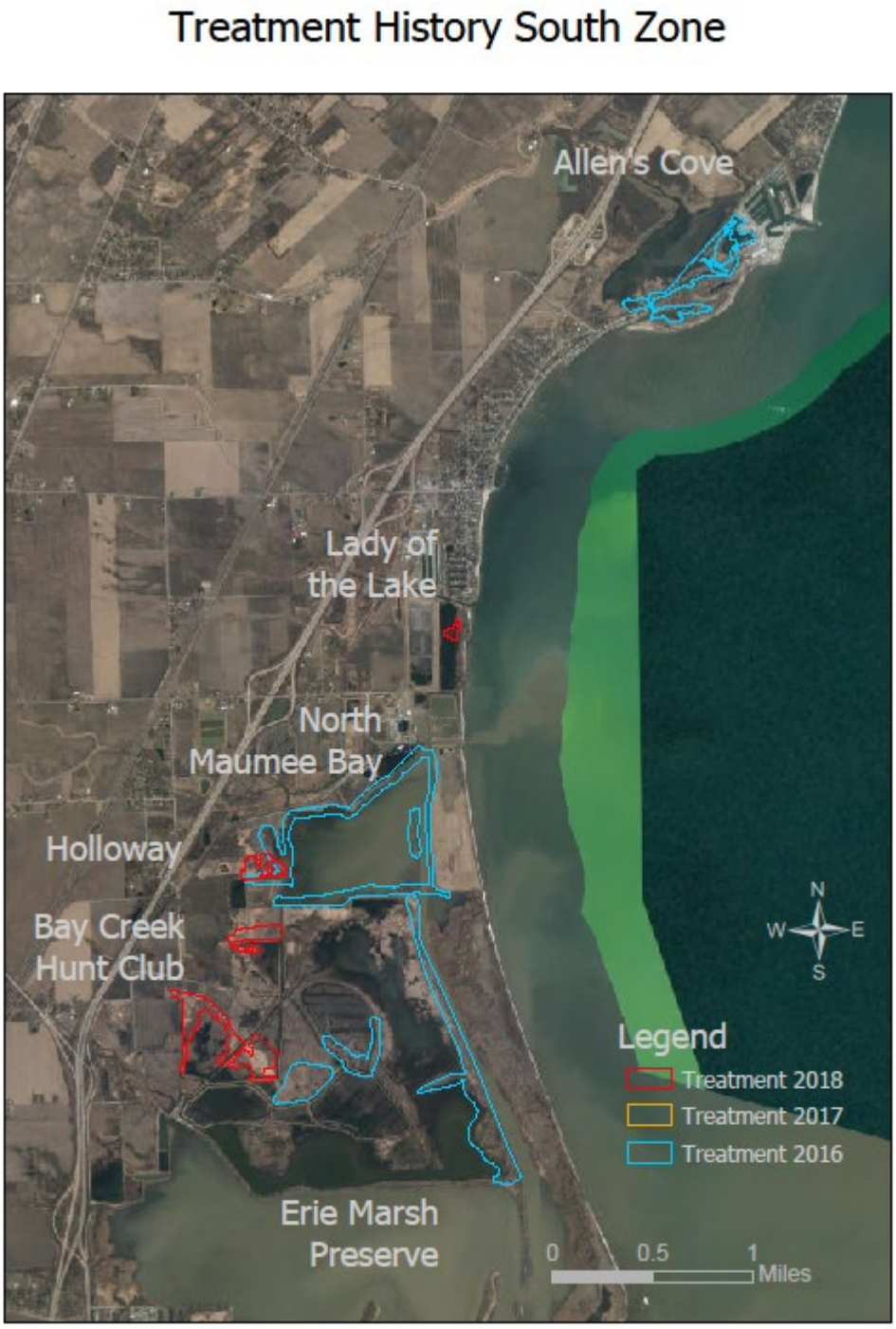


Figure 10: *Three year treatment analysis in the CWMA South Zone*