Detroit River-Western Lake Erie Cooperative Weed Management Area

2017 Annual Report – 2018 Operating Plan

This draft submitted by Jake Bonello (jake_bonello@fws.gov), Detroit River International Wildlife Refuge, January 2018.

Photo credits: Detroit River International Wildlife Refuge

Membership

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 sixteen member Detroit River-Western Lake Erie Cooperative Weed Management Area 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; hereinafter "invasive"). The CWMA emphasizes detection, inventory, and monitoring and information exchange. Members seek to prevent new invasives from establishing, but are also engaged in active invasive species removal, especially *Phragmites australis*.

A website for the CWMA is maintained and can be viewed here: http://driwr.emich.edu/. The website makes research from faculty and students at Eastern Michigan University available for download. There is also a series of field reports from monitoring conducted by the Detroit River International Wildlife Refuge. Finally, there is a map-site which allows users to query cover types, soils, and ownership.

Some mapping tools are already available such as *Phragmites* distribution for the Great Lakes shorelines (http://cida.usgs.gov/glri/phragmites/). This mapping tool used a combination of Synthetic Aperture Radar (SAR) and field documentation to map *Phragmites* patches greater than 0.2 hectares (21,528 square feet); the map is readily available on-line. Also available is a map of coastal habitat suitable for *Phragmites* based on physiographic features of the landscape.

2017 Summary

The 2017 season was the most difficult year for the CWMA since work began in 2011. With no grant funds to conduct any retreatment of *Phragmites*, it was up to the individual partners to conduct the work using station funds. The survey of invasive species was still conducted during the summer months utilizing the existing crew that consists of Jake Bonello (Lead Technician) and bio-technicians Nicole LaFleur and Tyler Dolin, and were being funded by the International Wildlife Refuge Alliance to ensure that there was not a lapse in the data being collected. The highlight of 2017 came when the CWMA was awarded a National Fish and Wildlife Foundation grant totaling $269,147 to conduct treatments of *Phragmites* over the course of the 2018 and 2019 seasons.

Surveys

During the third year of surveying for invasives, a total of 8,588 acres were surveyed gathering a total of 2,593 data points that have since been uploaded to the Midwest Invasive Species Information Network (MISIN) and can be reviewed here: http://www.misin.msu.edu/browse/. The crew focused on 13 priority invasive species of interest that were mapped within the CWMA, with the possibility of terrestrial species being targeted during the 2018 winter months. Figure 3 shows an example of a full survey, which includes the following data: Area, Density, Treatment History, Probability of Expansion, Site Quality, and the Level of Concern (Table 1). The EDRR data table is set up to make integration into the MISIN database much easier by using the same parameters as MISIN – Area, Density, and Treatment History (see the 2016 annual report for a further breakdown of the survey data table).

Table 1: Example of a portion of the EDRR data table used during the 2017 invasive species surveys.

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
Hydrocharis morsus-ranae	European Frogsbit	2	2	U	3	3	6		Ford Marsh

In addition to the yearly invasives surveys, the CWMA also enrolled 3 units of the Detroit River International Wildlife Refuge into the Phragmites Adaptive Management Framework (PAMF). This online tool helps to monitor the success of treatments as well as suggests ways to treat the unit the following year based on the amount of *Phragmites* found during the survey. The three sites enrolled are the Brancheau, Strong, and Fix Units. These units were chosen due to their individuality and uniqueness from one another. Strong is a true coastal system open to the dynamics of Lake Erie, Brancheau is made up of diked impoundments, and Fix contains both systems. This new Framework is just one more tool in the toolbox for the CWMA to ensure that treatments are being conducted in a manner that includes more methods of treatment than just repeated herbicide application. For more information on PAMF and how this new framework will help the CWMA achieve its goal of managing *Phragmites* visit: https://www.usgs.gov/media/videos/phragmites-adaptive-management-framework-pamf

Treatments

Partners reported 366 acres of herbicide treatment of *Phragmites* and Flowering rush within the CWMA in 2017 (see Figures 1 and 2 that show where these treatments occurred along western Lake Erie). Tables 2 and 3 quantify treatments conducted in 2017 for the north and south zones of the CWMA, respectively, and those that are anticipated or required in 2018. Figures 6, 7, and 8 show total treatments since 2011.

During the 2017 field season it was noted that upon the drawdown of the Ford Marsh Unit at the mouth of the River Raisin, there was a sizeable emergence of *Phragmites* seedlings within the newly exposed mudflat areas. This unit was diked and hydrologically isolated from Lake Erie in the early to mid-1900s. Once cut-off from the seasonal/daily changes in water levels, this sand spit embayment began functioning much more like an inland lake, receiving the majority of its water from precipitation. This led to the proliferation of white water lily (*Nymphaea odorata*), that formed a dense monoculture across the roughly 150 acre unit (Figure 4). With the goal of restoring some hydrologic reconnection to Lake Erie, a pump system was installed, and the unit was drawn down over the 2016/2017 winter in hopes of exposing the seed bank to the stratification necessary for germination as well as to freeze the root systems of the white water lily. The spring and summer emergence of the native vegetation surpassed expectation (Figure 5), and the unit is now dominated by many native emergent plant species including the state threatened *Sagittaria montevidensis* described in the 2016 annual report. The concern is that with this explosion in native vegetation came a sizeable emergence of *Phragmites* seedlings. The seedlings are scattered across the entire unit in varying densities, and treatment with a MarshMaster was decided against due to the high probability of getting stuck in the unconsolidated muck. The goal for 2018 is to concentrate efforts in this unit before *Phragmites* is able to become competitive against the newly emerging native vegetation. In order to make retreatment more feasible, the drawdown of the unit is being sustained through the 2017/2018 winter in order to consolidate the muck further to allow access by a MarshMaster. The unit will be reflooded in the early part of spring before more *Phragmites* seeds are able to germinate. The 2018 annual report will continue to highlight the progress of this unit's restoration.

Table 2: Report of the number of acres of treated *Phragmites* and the goal for the 2018 season in the north zone. For this report, "maintenance herbicide" indicates areas where *Phragmites* has been largely reduced in coverage or vigor, but herbicide treatments are required to maintain current low level

Location	2017 Acres treated	2018 Goal
Humbug Marsh Unit, Detroit River IWR	6.72 acres spot-treated with backpacks	Maintenance herbicide
Fix Unit, Detroit River IWR	22.64 acres spot-treated with Marshmaster	Maintenance herbicide
Gibraltar Wetlands Unit, Detroit River IWR	9.59 acres spot-treated with Marshmaster	Maintenance herbicide
Strong and Burke Unit, Detroit River IWR	68.34 acres treated with helicopter/16.44 spot-treated with backback	Rx fire on all herbicide-treated Phragmites
Brancheau and Tishkof Unit, Detroit River IWR	34.37 acres spot-treated with Marshmaster	Maintenance herbicide
Pointe Mouillee SGA	152.14 acres treated with helicopter/ 23.09 acres mowed	Maintenance herbicide
Hull's Trace	.611 acres spot-treated with backpacks	Maintenance herbicide
Refuge Gateway	Minor Spot Treatments	Maintenance herbicide
Lake Erie Metropark, HCMA	No Treatment	Maintenance herbicide
Sisung and Fix Private Tracts	No Treatment	Maintenance herbicide
US Silica	No Treatment	Maintenance herbicide
Pointe Aux Peaux	No Treatment	Maintenance herbicide
Gibraltar Bay Unit, Detroit River IWR	No Treatment	Maintenance herbicide
Great Lakes Aggregates	No Treatment	Maintenance herbicide
Blanchett 1 and 2	No Treatment	Maintenance herbicide
Grassy Island	No Treatment	Continue EDRR surveys
Mud Island	No Treatment	Continue EDRR surveys
Calf Island	No Treatment	Continue EDRR surveys

Figure 1: 2017 treatment of *Phragmites* completed in the North Zone of the CWMA.

Table 3: Report of the number of acres of treated *Phragmites* and the goal for the 2018 season in the South zone. For this report, "maintenance herbicide" indicates areas where *Phragmites* has been largely reduced in coverage or vigor, but herbicide treatments are required to maintain current low levels.

Location	2017 Acres Treated	2018 Goal
Ford Marsh Unit, Detroit River IWR	6.81 acres spot-treated with backpacks/UTV	Maintenance herbicide
Plum Creek Bay Unit, Detroit River IWR	21.79 acres treated with helicopter/17.05 acres spot-treated with Marshmaster	Maintenance herbicide
River Raisin	9.95 acres of flowering rush spot-treated from boat	Maintenance herbicide
Toledo Beach Marina (Private Land)	No Treatment	Maintenance herbicide
Erie Marsh Preserve	No Treatment	Maintenance herbicide
Sterling State Park	No Treatment	Maintenance herbicide
Holloway and North Maumee Bay Units, Detroit River IWR	No Treatment	Maintenance herbicide
Port of Monroe	No Treatment	Maintenance herbicide
Bay Creek Hunt Club	No Treatment	Maintenance herbicide
Erie State Game Area	No Treatment	Maintenance herbicide
Lady of the Lake	No Treatment	Maintenance herbicide

Figure 2: 2017 treatment of *Phragmites* completed in the South Zone of the CWMA.

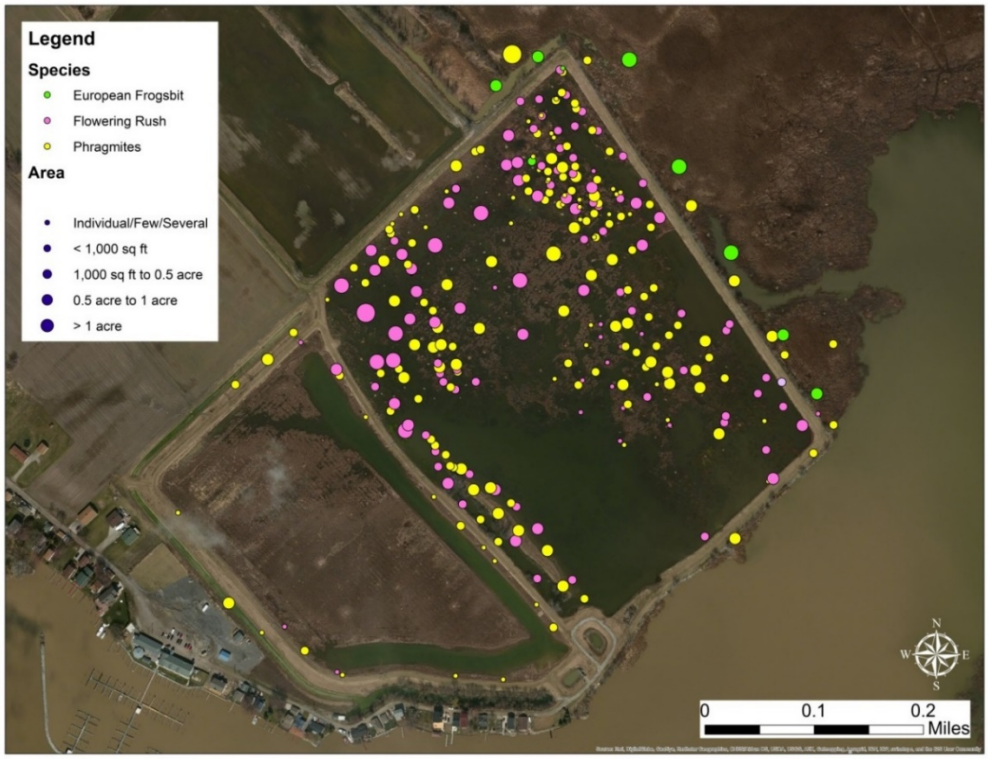

Figure 3: Example of a full survey for the 13 priority invasive species, pictured is the Brancheau unit of the Detroit River IWR.

Figure 4: Monoculture of white water lily (*Nymphaea odorata*) during drawdown of the Ford Marsh Unit.

Figure 5: Before and after photos of the Ford Marsh Unit pre and post drawdown of the Marsh.

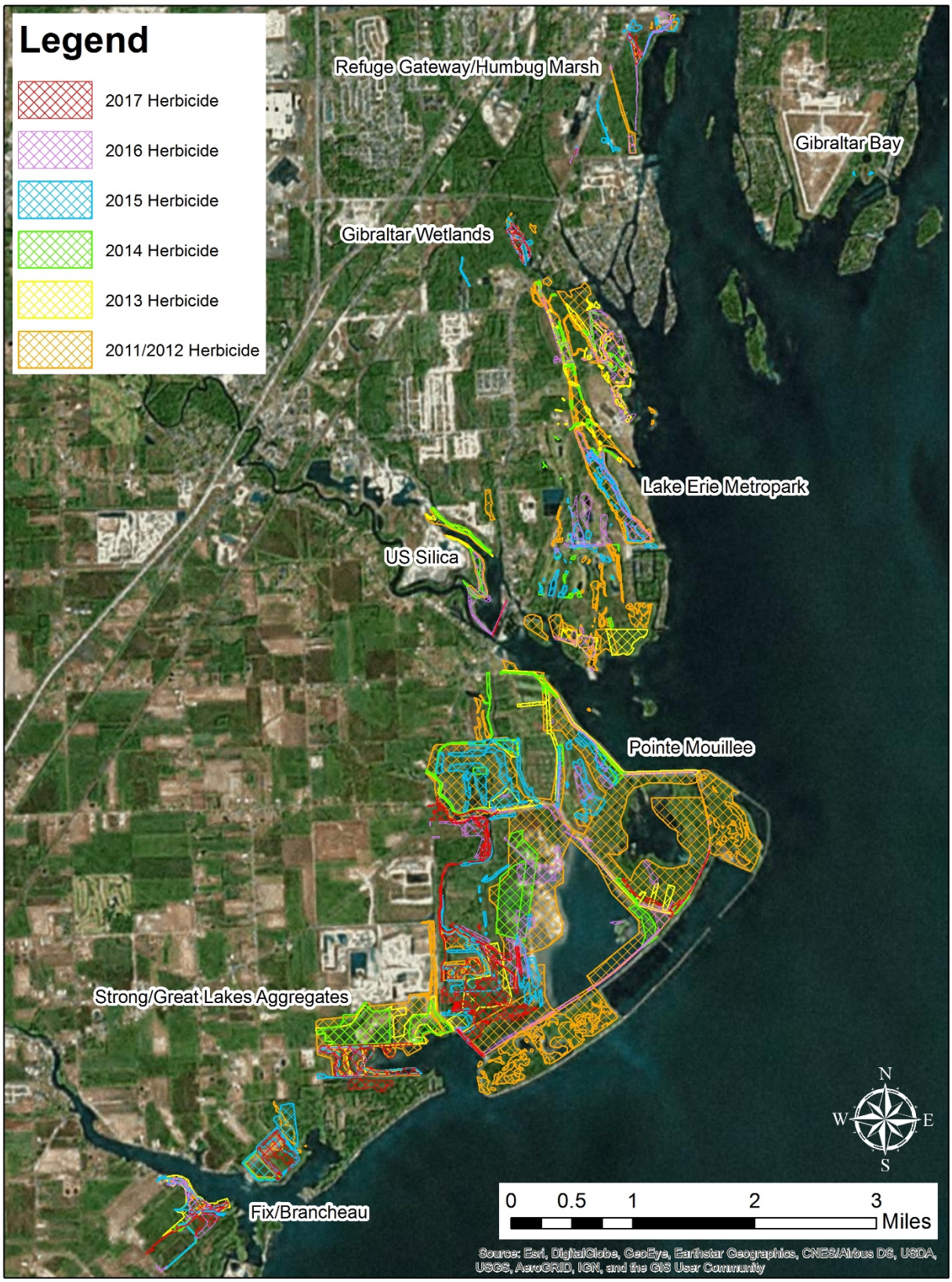

Figure 6: Herbicide treatments of *Phragmites* and flowering rush to date in the North zone.

Figure 7: Herbicide treatment of *Phragmites* since 2011 in the central zone.

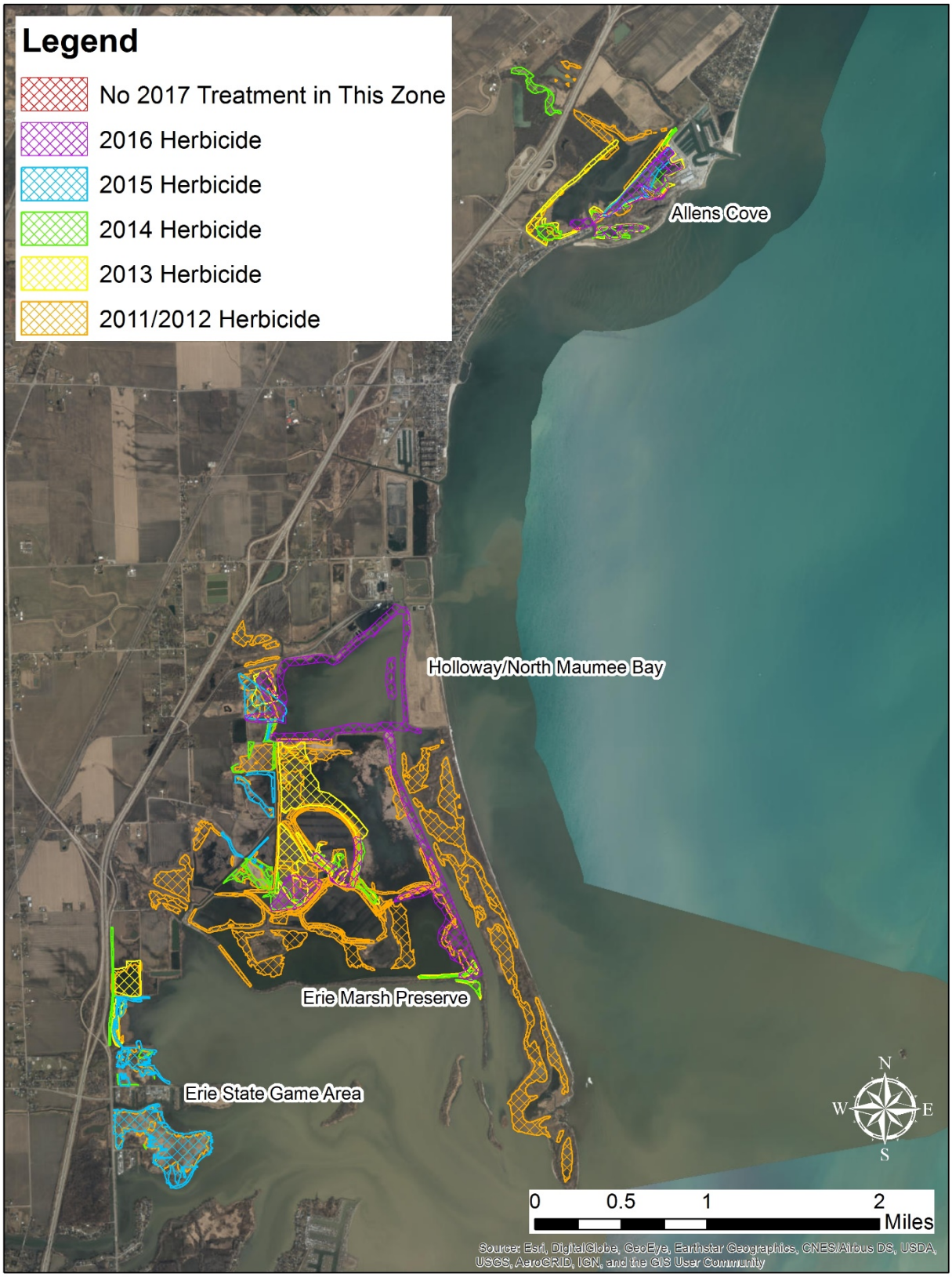

Figure 81: Herbicide treatment of Phragmites since 2011 in the South zone.