

**Lake Erie Watershed Cooperative Weed
Management Area 5 Year Plan
2013-2018**



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Why is the targeting of invasive species important to the Lake Erie Watershed?

Invasive plants are non-native species that grow quickly and aggressively, spreading and displacing native species. These foreign invaders are often introduced to new regions from their native habitat. Within these new habitats, invasive species have the potential to cause harm to the ecosystem and economy, as well as well human and animal health. By competing with and displacing native plants, invasive plant infestations alter plant community structure, nutrient cycling, and hydrological processes; increase soil erosion and sedimentation; and reduce species diversity and ecosystem productivity. In their natural range, these species are limited by environmental factors such as pests and or diseases. When introduced into an area where natural controls are limited or absent, these species have the ability to become invasive, threatening fragile ecosystems.

The over 500 square mile Lake Erie Watershed in Pennsylvania supports some of the most ecologically rich habitats in Pennsylvania, from the dune and sand plain communities of the immediate shore to the glacial wetlands further south within tributary watersheds. Invasive species are a threat to the biological integrity of numerous ecosystems that intertwine within the watershed. With over 11,600 acres of public land and numerous state agencies and Non-Governmental Organizations active within the watershed, there is great opportunity to cooperate in addressing the threats posed by invasive species. The Lake Erie Watershed Cooperative Weed Management Area (LEW-CWMA) will function to help coordinate invasive species inventory, control, and education activities across the watershed. By prioritizing efforts, increasing the capacity of individual agencies and organizations and leveraging funding for various control efforts, the formation of the LEW-CWMA represents an important milestone in preserving the quality and diversity of Lake Erie Watershed's natural communities.

What is a CWMA?

Cooperative Weed Management Areas, otherwise known as CWMAs, are local organizations that bring together landowners and land managers to coordinate action and share expertise and resources to manage common weed species within a designated geographical region. CWMAs often function under the authority of a mutually developed Memorandum of Understanding and are distinguished by these five characteristics:

- Defined geographical area distinguished by a common geography, weed problem, community, climate, political boundary, or land use.
- Involvement or representation of the majority of landowners and natural resource managers in the defined area.
- Led by a steering committee.

- Committed to cooperation.
- Developed a comprehensive plan that addresses the management and prevention of one or more noxious weeds or invasive plants.

Many local communities have established informal partnerships, working together to combat invasive plants. Informal partnerships have accomplished great things in many areas, but the formal agreement created during the formation of a Cooperative Weed Management Area establishes a long-term relationship that will not disappear after a joint project is completed. This formal agreement creates a mechanism for ongoing resource-sharing and collaboration that can be a highly effective long-term strategy for dealing with a long-term problem. Locally-driven CWMA's are especially effective at generating public interest in weed management and organizing community groups to support on-the-ground programs.

Mission

The Lake Erie Watershed Cooperative Weed Management Area (LEW-CWMA) provides a framework of contacts, planning, and guidance to individuals, groups, organizations, and agencies engaged in the management of invasive plant species within the Lake Erie Watershed. The work of the CWMA helps members educate individuals, develop common management objectives, set realistic management priorities, facilitate effective treatment, and coordinate efforts over geographical and municipal boundaries with similar land types, use patterns, and problem species.

Background

Pennsylvania's Lake Erie watershed is located in northwestern Pennsylvania on the southern shore of Lake Erie bordered by Ohio to the west and New York to the east. The watershed extends a minimum of 6.1 miles at its eastern border and a maximum of 25 miles near its western border south of Lake Erie, encompassing portions of Erie and Crawford counties and either portions or the full extent of 33 municipalities and townships. The over 500 square mile Lake Erie Watershed in Pennsylvania is home to the most ecologically diverse habitats in the state, harboring many rare, endangered, and threatened species and their habitats. Many locations within the watershed have been designated as Natural Heritage Areas (NHAs) by the Pennsylvania Natural Heritage Program. These NHAs offer the Lake Erie Watershed Cooperative Weed Management Area a unique opportunity to preserve, enhance, and restore areas of high ecological value within the watershed that are threatened by invasive species. Furthermore, the Lake Erie Watershed-Cooperative Weed Management Area will focus initial efforts within but not limited to the following areas:

Site	Natural Heritage Area	Description
<i>Global Significance</i>		
1	Presque Isle - Peninsula NHA	Diverse natural communities on the Peninsula include shoreline, sand dunes, sandplain and new ponds, marshes and old ponds, and several forest types. This site supports more than 70 species of conservation concern, more than any other NHA in the state.
2	Presque Isle - Bay NHA	As one of the best natural harbors along Lake Erie, Presque Isle Bay and its tributaries provide habitat for 15 species of conservation concern in PA. Two state endangered fish, Iowa darter and eastern sand darter, have refugia here.
3	Presque Isle - Gull Point NHA	This area is the only example of the Great Lakes beach-dune-sandplain complex in PA. Comprised of several dynamic lakeshore community types, the highly diverse Gull Point supports at least 53 species of conservation concern in PA.
<i>Regional Significance</i>		
1	Conneaut Creek NHA	This site supports populations of 14 species of conservation concern, including 4 mussels.
2	Erie Bluffs Coastline NHA	Centered around Erie Bluffs State Park, this site hosts the PA critically imperiled Great Lakes Bluff Seep community, only found on steep slopes adjacent to Lake Erie. There are 14 species and 2 communities of concern supported by this site.
3	Erie Bluffs East Swamp NHA	Swamps of Erie Bluffs State Park are home to the critically imperiled Great Lakes Region Lakeplain Palustrine Forest community. This habitat supports five plant species of conservation concern, including state endangered Shumard's oak and northern water-plantain.
4	Lower Elk Creek NHA	The waters, forests, and wetlands of Lower Elk Creek support 15 species of conservation concern in PA.
5	Roderick Reserve NHA	This site consists of a mix of upland forest and forested wetlands. These habitats support populations of 5 plant species of conservation concern. Included among these is PA endangered northern water-plantain.
6	West Branch Conneaut Creek NHA	Forests, forested wetlands, and aquatic habitats at this site support 11 species and two natural communities of conservation concern. Pumpkin ash, critically imperiled in PA, and Red Maple-Black-gum Palustrine Forest can be found here.
<i>State Significance</i>		
1	Asbury Woods - East NHA	Forested wetlands at this site support PA critically imperiled pumpkin ash.
2	Asbury Woods - West NHA	Forested wetlands at this site support 7 plant species of conservation concern in PA. Four of these are state endangered, including golden-fruited sedge, Bebb's sedge, slender spike-rush, and showy mountain ash.
3	Ashtabula Creek Headwaters NHA	This site supports PA critically imperiled pumpkin ash and is a candidate for classification as Elm-Ash-Maple Lakeplain Forest, a PA critically imperiled community type.
4	Cemetery Road Bluffs NHA	The PA rare Great Lakes Bluff Seep plant community type is found at this site. Seven plant species of conservation concern are supported here.
5	Conneauttee Creek NHA	Floodplain forests along Conneauttee Creek support a population of red currant, a PA threatened plant species.
6	Crooked Creek, Erie County NHA	This site supports a sensitive species of conservation concern.

7	Devil's Backbone NHA	Centered on Little Elk Creek, Devil's Backbone is a PA critically imperiled River Bluff Seep community that supports three plant species of conservation concern.
8	East Branch Conneaut Creek NHA	Forested waterways at this site provide aquatic habitat for two sensitive species of conservation concern.
9	Elk Creek NHA	The shale bluffs above Elk Creek support a River Bluff Seep community, critically imperiled in PA, which provides habitat for four plant species of conservation concern. Among these plants is state endangered Canada buffalo-berry
10	Elk Creek - McKean NHA	Riparian habitat at this site supports a sensitive species of conservation concern.
11	Erie Bluffs Sand Dune NHA	An ancient sand dune supports a Black Oak Savanna - Midwest Sand Barren plant community, found only on dry sand ridges and relict dunes of the Lake Erie Region. Two plant species of conservation concern are also found at the site.
12	Erie Bluffs West Swamp NHA	This site supports an Elm-Ash-Maple Lakeplain Forest community which is critically imperiled in PA. Populations for three plant species of conservation concern are found here, including state endangered Shumard's oak and pumpkin ash.
13	Fairview Business Park Wet Meadow NHA	Wet meadows at this site provide breeding habitat for a sensitive species of conservation concern.
14	Fairview Hatchery Ponds NHA	Alkaline aquatic habitats at this site support two species of damselfly and one dragonfly species of conservation concern in PA.
15	Fairview Swamp NHA	This wetland is likely the critically imperiled Elm-Ash-Maple Lakeplain Forest community type and supports two plant species of conservation concern: pumpkin ash and false hop sedge.
16	Falls Run NHA	The waters of Falls Run support two fish species of conservation concern: southern redbelly dace and brook stickleback.
17	Falls Run Gorge NHA	Riparian forest habitat along the Falls Run gorge supports populations of the globally vulnerable West Virginia white butterfly, three state rare plant species, and a sensitive species of conservation concern.
18	Falls Run - Shenango Creek Headwaters NHA	Forested and open wetlands at this site provide critical habitat for the state imperiled harlequin darter and a noctuid moth.
19	Fourteen Mile Point Beach NHA	Sandy beach habitat at this site hosts two plant species of conservation concern in PA: American sea-rocket and beach peavine, state threatened.
20	Gospel Hill NHA	Forest and aquatic habitats at this site support a sensitive species of conservation concern.
21	Greenlee Road NHA	Diverse wetland types support two plant species of conservation concern at this site. These include PA threatened prairie sedge and highbush cranberry.
22	Higmeier Road Park NHA	Forested wetland at this site supports the PA critically imperiled Elm-Ash-Maple Lakeplain Forest. A wet meadow provides habitat for state endangered northern water-plantain and state threatened stalked bulrush.
23	Howard Eaton Reservoir NHA	This site provides important habitat for two insects of special concern: bronze copper (butterfly) and white-faced meadowhawk (dragonfly).
24	Lake Erie Coastline - East of Raccoon Creek NHA	This site supports two plant species of conservation concern. These are the PA endangered variegated horsetail and PA threatened small-headed rush.
25	Lake Erie Coastline - Roderick NHA	This stretch of Lake Erie shoreline supports six plant species of conservation concern in PA. Among these species is the state endangered variegated horsetail.

26	Lake Erie Community Park NHA	Lake bluff and forest ravine habitats support three plant species of conservation concern. The Great Lakes Bluff Seep plant community, critically imperiled in PA, is also found at this site.
27	Lower Walnut Creek NHA	This site supports four species of conservation concern in PA. Among these are state threatened common hop-tree and state rare longnose gar.
28	McLane Fens NHA	There are five plant species of conservation concern that are supported by forested wetlands at this site. Kames, or small gravel hills created by glaciers, filter the water feeding these wetlands and create an alkaline environment that can support these rare plants.
29	Manchester Beach NHA	This beach natural community supports populations of 6 plant species of conservation concern. Among these is the PA endangered purple sandgrass.
30	Mercyhurst Fen NHA	Comprised of a PA critically imperiled Buckthorn-Sedge-Golden Ragwort Fen community, this site supports seven plant species of conservation concern. Among these are PA endangered hooded ladies' tresses orchid and small-headed rush.
31	Northeast Lake Bluff Seeps NHA	Only found along steep lake or stream side slopes in the Great Lakes ecoregion, this Great Lakes Bluff Seep community provides refugia for four plant species of conservation concern. Among these are PA endangered variegated horsetail and Carolina grass-of-parnassus.
32	Pond Road Wetlands - North NHA	Forested wetlands north of Pond Road support a population of larger St. John's wort, a plant species listed as threatened in PA.
33	Pond Road Wetlands - South NHA	This site contains an Elm-Ash-Maple Lakeplain Forest community, critically imperiled in PA. Eleven additional species of conservation concern have populations at this site.
34	Raccoon Creek Swamp NHA	This site is comprised of the PA critically imperiled Elm-Ash-Maple Lakeplain Forest community, and it supports a population of pumpkin ash, also critically imperiled in PA.
35	Raccoon Creek Beach NHA	This site supports several plant species of conservation concern, including the PA endangered variegated horsetail.
36	Roderick Ponds NHA	This cluster of artificial pond wetlands provides habitat for the state rare bronze copper butterfly, and both the amber-winged spreadwing and azure bluet damselflies.
37	Shades Beach NHA	This site supports seven plant species of conservation concern in PA, including state endangered golden-fruited sedge, bushy cinquefoil, and Canada buffalo-berry.
38	Six Mile Creek Gorge NHA	The steep gorge walls along Six-Mile Creek support a complex of River Bluff Seep communities, critically imperiled in PA. These bluffs, along with upland forest, floodplain, and riverine habitat support 6 species of conservation concern.
39	Sixteen Mile Creek Gorge NHA	Steep slopes along Sixteen Mile Creek support the Great Lakes Bluff Seep community type, critically imperiled in PA. Two plant species of conservation concern and one sensitive species of conservation concern are found at this site.
40	Springfield Township Vernal Pools NHA	This forested site contains several ephemeral pool wetlands, considered vulnerable in PA. These vernal pools vary in wetness throughout the year, and provide critical spring time breeding habitat for amphibians like spotted salamander and wood frog.
41	Twenty Mile Creek NHA	This forested stretch of Twenty Mile Creek supports populations of three species of conservation concern and includes a River Bluff Seep natural community, critically imperiled in PA.

42	Twenty Mile Creek Beach NHA	Sandy beach and aquatic habitats at the mouth of Twenty Mile Creek support a state critically imperiled Great Lakes Sparsely Vegetated Shore community and nine plant species of conservation concern. Among these are PA endangered bushy cinquefoil and purple sandgrass.
43	Twenty Mile Creek Gorge NHA	Steep slopes along this forested section of Twenty Mile Creek support a River Bluff Seep community, critically imperiled in PA, and six additional species of conservation concern. Included among these are PA endangered golden-fruited sedge and capillary beaked-rush.
44	Vineyard Swamp NHA	Forested wetlands at this site support populations of two plant species of conservation concern: cyperus-like sedge and yellow water-crowfoot.
45	Walnut Creek Gorge NHA	Steep slopes support the state rare River Bluff Seeps. This site's forests and wetlands also support populations for six plant species of conservation concern. Among these are PA endangered golden-fruited sedge, variegated horsetail, and brook lobelia.
46	West Springfield - Route 20 NHA	This site supports an occurrence of racemed milkwort, critically imperiled in PA.
47	Wintergreen Gorge NHA	Steep slopes along Fourmile Creek support the PA critically imperiled River Bluff Seep community. Populations for at least four plant species of conservation concern are found here. Among these are state endangered golden-fruited sedge, and Canada buffalo-berry.

Cooperative weed management is not a new concept within the Lake Erie Watershed. Multiple state agencies, non-governmental organizations, academic institutions, and local community volunteers have worked together to restore and enhance several unique natural communities within the Lake Erie Watershed. Some examples of these efforts include the following:

Presque Isle State Park

The Presque Isle Peninsula in northwest Pennsylvania is an arching sand spit that juts into Lake Erie. It stretches seven miles, covering 3,200 acres and containing several unique natural communities including the greatest remaining complex of sand barrens, sand plains, emergent wetlands, and open water lagoons along the U.S. shoreline of Lake Erie.

Presque Isle supports a greater number of Pennsylvania's endangered, threatened, and species of conservation concern than any other area of comparable size within the state. It provides important habitat to all 26 Pennsylvania Birds of Conservation Concern and all 29 Bird Conservation Region 13 Species of Highest and High Priority. Presque Isle also possesses the highest potential to support population expansion of the federally endangered piping plover in the Great Lakes Basin. Indeed, it is recognized as Critical Habitat in the Great Lakes Piping Plover Recovery Plan, the only such designation in Pennsylvania. Presque Isle is one of the most important land bird stopovers in North America; it is identified as an Important Bird Area in the Partners in Flight Conservation Plan. Additionally, Presque Isle is identified as a conservation target in the Pennsylvania Wildlife Action Plan and included in the Lower Great Lakes Priority Area of the Ducks Unlimited International Conservation Plan.

Furthermore, Presque Isle supports the largest concentration of rare plants in Pennsylvania, many of which occur nowhere else in the state. Greater bur-reed (*Sparganium eurycarpum*), blue joint bur-reed (*Calamagrostis canadensis*) and tussock sedge (*Carex stricta*) wetland complexes on Presque Isle are host to many other native plants, including more than a dozen state listed species. Examples include twig rush (*Cladium mariscoides*), cyperus-like sedge (*Carex pseudocyperus*), four angled spike rush (*Eleocharis quadrangulata*), Virginia blue flag (*Iris virginica*), sweet flag (*Acorus calamus*), water sedge (*Carex aquatilis*), and hard stemmed bulrush (*Schoenoplectus acutus*). Unique wetland complexes at Presque Isle also provide spawning and nursery habitat for regionally important fishes including perch, walleye, and steelhead. Offshore, many deep-water plants extant on Presque Isle disappeared from the Lake Erie Basin more than 100 years ago. Those that remain sustain several priority waterfowl species: goldeneye, long tailed duck, ring necked duck, and the greater and lesser scaup.

The continued existence of many of these plant and wetland communities is threatened by the introduction and spread of invasive species across Presque Isle. Prior to 1985, invasive species covered less than half of the peninsula's bays and ponds. Today, its emergent wetlands have been overrun by three exotic species: common reed (*Phragmites australis*), narrow leaved cattail (*Typha angustifolia*), and hybrid cattail (*Typha x glauca*). Two other invasive species, purple loosestrife (*Lythrum salicaria*) and reed canary grass (*Phalaris arundinacea*) that were present in low numbers near the mainland in 1985, are now penetrating these wetlands. Curly pondweed (*Potamogeton crispus*) and Eurasian milfoil (*Myriophyllum spicatum*) are also disrupting wetland form and function on Presque Isle. Cladophora, a naturally occurring, branching green filamentous alga found naturally along the coastline of most of the Great Lakes presents an additional challenge. Harmful e-coli bacteria present in Cladophora is one contributing factor to public beach closures during prime visitor season. Invasive species also threaten the sustainability of the globally-imperiled sand barren and sand plain communities on Presque Isle. Sand barrens, which consist of widely spaced oak and pine trees with a grassy understory, have experienced a 50% decrease in size due in part to invasive species. Their decline impacts many state endangered species, such as the burrowing wolf spiders. In Pennsylvania, burrowing wolf spiders are found primarily within sand barrens at Presque Isle. Their habitat once controlled naturally by fire, is threatened by barberry, cypress spurge (*Euphorbia cyparissias*), common mullein (*Verbascum thapsus*), Morrow's bush honeysuckle (*Lonicera morrowii*), and others. Similarly, invasive species apply steady pressure on the assemblage of native sedges, rushes, and reeds found in sand plains, which constitute more than one-third of the 80 rare plants found on Presque Isle.

Cooperative treatment plan/efforts past-present: principle treatment areas at Presque Isle include the inner lagoons (70 acres), Thompson Bay (40 acres), Gull Point (30 acres), Leo's Landing (14 acres) and Ridge Pond (12 acres). Target species within wetland areas are common reed (*Phragmites australis*), narrow- leaved (*Typha angustifolia*) and hybrid cattail (*Typha x glauca*), reed canary grass (*Phalaris arundinacea*), and purple loosestrife (*Lythrum salicaria*). Prescribed

burning and spot treatment of herbicide used to control cypress spurge (*Euphorbia cyparissias*), quackgrass (*Elytrigia repens*), spotted knapweed (*Centaurea maculosa*), and honeysuckle from sand barren and sand plain communities (10 acres) and an amphibious vehicle specialized with specialized strainer plates will be used to remove filamentous *Cladophora* from 5 miles of shoreline. Beginning in the early 1990s, Presque Isle State Park also began employing summer interns to manage terrestrial invasive species. In the early stages of this program the park was able to employ 3-4 interns to focus on management efforts. Now with the successful acquisition of grant funds the program has grown substantially and currently 14 interns are employed to focus on the management of target invasive species, both terrestrial and aquatic. Also, the Presque Isle State Park Weed Warrior program provides both groups and individuals an opportunity to aid in the management of invasive plant species. The program runs 2-4 days a week from April through September with approximately 2-5 volunteers per shift.

Erie Bluffs State Park

Acquired in 2004, Erie Bluffs State Park encompasses 621 acres along a 1.5 mile segment of Lake Erie shoreline. Erie Bluffs is located 12 miles west of Presque Isle and is regarded as a premiere Natural Heritage Area in Erie County. It contains black oak savanna habitat especially adapted to sandy soils prevalent in the region. Sadly the savanna habitat has been reduced to only 2% of its former range due to agriculture and development. At Erie Bluffs, many areas that were formerly savanna habitats are now in agriculture. They were cleared prior to the creation of the park and then abandoned, leaving them overrun with black locust (*Robinia pseudoacacia*), honeysuckle (*Lonicera spp.*), garlic mustard (*Alliaria petiolata*), oriental bittersweet (*Celastrus orbiculatus*), and other invasive species. Partners have the opportunity to restore black oak savanna and improve forested habitats in neglected or converted fields by encouraging natural oak regeneration and invasive species control.

A comprehensive 10 year strategy to restore black oak savanna habitat at Erie Bluffs was initiated in 2010 by a variety of partners. Objectives of the strategy include invasive species control, reforestation, and extensive monitoring. Early work successfully restored 33 acres of savanna habitat; future work has set out to restore/enhance an additional 30 acres primarily through invasive species control and the natural reestablishment of native trees using black oak (*Quercus velutina*) acorns collected on site.

State Game Lands 314

State Game Land 314 borders Ohio and Lake Erie in the extreme northwest corner of Pennsylvania. It encompasses 3495 acres and provides important stopover habitat for migratory birds. State Game Land 314 was one of the first areas identified as one of Pennsylvania Audubon Society's Important Bird Areas, in particular for its value to shrub associated birds. Currently, the Pennsylvania Game Commission active management focuses on restoring and maintaining habitat for shrub dependent birds. The Game Land also harbors several rare plant species and streams that support anadromous fisheries. A series of small anthropogenic impoundments also support nesting waterfowl and several rare insects.

Little Elk Creek Forest

The Little Elk Creek Forest is an important forested buffer for Little Elk Creek. Little Elk Creek connects to Elk Creek, which meanders through Erie Bluffs State Park before entering Lake Erie. Most of the Little Elk Creek Forest contains high quality timber species like black cherry and tulip poplar which are harvested sustainably with wildlife in mind using traditional logging methods. The western and central portions exhibit riparian and forested wetland characteristics, while the northern end is an early successional field. Unfortunately the Little Elk Creek Forest lies in an area of increasing development and habitat fragmentation, where few large forested blocks remain for conservation and public use. Substantial amounts of invasive species, such as Japanese barberry (*Berberis thunbergii*) and multiflora rose (*Rosa multiflora*) are found in and around the Little Elk Creek Forest. Partners plan to implement control measures across the site to prevent further proliferation and spread.

Efforts in the Little Elk Creek Forest include repeated ground-based herbicide application over 106 acres where invasive species are most dominant, especially where riparian and forested wetlands are prevalent.

The following lists were developed with the cooperation of LEW-CWMA partners and represent the primary invasive species of concern and interest in the watershed. It is not a comprehensive list of all invasive species.

Immediate Target Species

Common Name	Scientific Name
Common reed	<i>Phragmites australis</i>
Narrow leaved cattail	<i>Typha angustifolia</i>
Hybrid cattail	<i>Typha x glauca</i>
Amur honeysuckle	<i>Lonicera maackii</i>
Morrow's honeysuckle	<i>Lonicera morrowii</i>
Tatarian honeysuckle	<i>Lonicera tatarica</i>
Eurasian water milfoil	<i>Myriophyllum spicatum</i>
Canada thistle	<i>Cirsium arvense</i>
Garlic mustard	<i>Alliaria petiolata</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Oriental bittersweet	<i>Celastrus orbiculatus</i>
Spotted knapweed	<i>Centaurea maculosa</i>
Japanese knotweed	<i>Fallopia japonica</i>
Multiflora rose	<i>Rosa multiflora</i>
Guelder rose	<i>Viburnum opulus</i>
Japanese stiltgrass	<i>Microstegium vimineum</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>
Reed canary grass	<i>Phalaris arundinacea</i>

Watch List Species

Common Name	Scientific Name
Poison hemlock	<i>Conium maculatum</i>
Mile-a-minute	<i>Persicaria perfoliata</i>
Kudzu	<i>Pueraria montana var. lobata</i>
Tree-of-heaven	<i>Ailanthus altissima</i>
Glossy buckthorn	<i>Rhamnus frangula</i>
Common buckthorn	<i>Rhamnus cathartica</i>
Border privet	<i>Ligustrum obtusifolium</i>
Chinese privet	<i>Ligustrum sinense</i>
Common privet	<i>Ligustrum vulgare</i>
Japanese privet	<i>Ligustrum japonicum</i>
Japanese barberry	<i>Berberis thunbergii</i>
European barberry	<i>Berberis vulgaris</i>
Didymo	<i>Didymosphenia geminata</i>
Black swallow-wort	<i>Cynanchum louiseae</i>
Water Chestnut	<i>Trapa natans</i>

Goals

Everywhere we look invasive weed species are negatively impacting our way of life. The productivity of private and public lands is at risk, and more specifically many of the unique and sensitive habitats within the Lake Erie Watershed area being overwhelmed by invasive plants. Fishing streams, fields, city lots, favorite hunting areas, scenic byways, parks, and wildlife refuges are under siege by invasive weeds. With this in mind, the LEW-CWMA has established goals that members of the group have agreed to work collectively to accomplish. These goals include the following:

1. Prevent the introduction, reproduction, and spread of designated noxious weeds and invasive exotic plants into and within the Lake Erie Watershed.
2. Provide control efforts within priority areas to restore native species and habitats.
3. Increase awareness and support for the CWMA through education and outreach efforts.
4. Implement standard methodologies to constantly inventory and monitor the status of invasive species throughout the watershed.

Prevention, Early Detection, and Rapid Response

The most feasible and effective strategy in the fight against invasive species is the prevention of their initial establishment. Preventative measures often offer the most cost effective means for eliminating future environmental and economic impacts directly related to invasive infestations. However, if prevention efforts fail, early detection and rapid response (EDRR) are critical components of any effective invasive species management program. When new invasive species infestations are detected, a prompt and coordinated containment and eradication response can reduce environmental and economic impacts. This action results in lower cost and less resource damage than implementing a long-term control program after the species is established.

Approach

The Lake Erie Watershed Cooperative Weed Management Area's approach to prevention, early detection and rapid response is a comprehensive combination of education, constant inventory, monitoring and control. The LEW-CWMA will constantly strive to educate a broad audience on the threats posed by invasive species through the use of social media, presentations to local clubs and organizations, and interpretive signs and boot brushes placed at recreational hotspots. With the watershed-wide use of invasive species data available through the iMapInvasives database and website, we will be documenting and encouraging others to document invasive species wherever they might occur. All LEW-CWMA partners will participate in data gathering and be provided login information for iMapInvasives. Finally, the Lake Erie Watershed Cooperative Weed Management Area encourages landowners and interested individuals to report all new invasive species populations, and to take the initiative to manage their own properties with guidance from the LEW-CWMA.

Goal: Prevent the introduction, reproduction, and spread of designated noxious weeds and invasive plants into and throughout the Lake Erie Watershed.

- Objective:** Establish an early detection framework and mechanism for CWMA partners.
Strategy: Encourage partners to report all invasive species distributional data via the iMapInvasives website and utilize the website's alert system.
- Objective:** Develop Best Management Practices (BMP's) to prevent the spread and establishment of invasive plants in road and utility ROWs and other possible transportation corridors.
Strategy: Work with the Pennsylvania Department of Transportation, utility companies, and municipalities to share and develop BMPs for the control of invasive species currently within Right of Way's (ROWs) and prevent the initial establishment of new invasive species.
- Objective:** Improve communication between existing natural resource professionals and growing volunteer networks.

Strategy: Develop a forum enabling stakeholders and interested citizens to access information about invasive species and management options and their timing, ask questions, and share individual experiences.

4. **Objective:** Encourage use of the online mapping tool for locational data.

Strategy: Encourage the use of iMapInvasives as a centralized, online mapping system that will show exact locations of invasive infestations and allow for the input of management actions and the consolidation of information across the watershed.

5. **Objective:** Continue to evaluate target species status and develop fact sheets for distribution.

Strategy: Conduct a yearly assessment of the targeted species lists as part of the CWMA agenda and add species that are considered imminent invaders of the watershed.

6. **Objective:** Encourage the expansion of CWMA's activities to neighboring watersheds and municipalities.

Strategy: Share information, attend meetings and workshops, and consider across border projects with other CWMA's and invasive species control interests in adjacent jurisdictions.

Control, Management, and Restoration

By identifying and prioritizing invasive species that will be controlled and managed, and where, we strive to effectively implement management plans. When invasive species become established in an ecosystem, a strategic approach for control is required to minimize their impacts or reduce their spread. Effective control relies on a clear understanding of the target species including its biology, the ecosystem it has established, and associated introduction pathways. It also relies on persistent follow-through with monitoring of treatment efficacy and follow up control when needed.

Approach

The steering committee of Lake Erie Watershed Cooperative Weed Management Area will meet three (3) times annually to discuss potential projects for the upcoming season, control, management, and restoration focus areas and potential projects, summary of prior treatment season efforts, and possible expansion of the LEW-CWMA.

Goal: Provide control efforts within priority areas to restore native species and habitats

1. **Objective:** Perform reconnaissance within the (5) highest priority areas determined by steering committee
Strategy: Map areas of infestation, develop implementation plans, and follow-up monitoring plans. Develop ranking criteria to use while assessing properties for control efforts.
2. **Objective:** Reduce the extent and density of established invasive plants to an acceptable density for that particular vegetative community *Strategy:* Based upon the site inventory and evaluation work, determine a desired state including maximum coverage of invasives, frequency of follow-up needed, and specific indicators of health that can be references in future evaluations. Collaborate with partners to target and share resources needed to reduce the density of established invasive plant populations.
3. **Objective:** Work with private landowners to provide management recommendations, expertise, and sources of funding to aid invasive plant control efforts.
Strategy: Prepare materials and disseminate to partners. During contact with landowners for various reasons, evaluate their interest and possible participation in the CWMA and specific projects that could involve their properties. For specifically targeted landowners, help to develop a comprehensive management plan for their property and provide them with tools and management options for each target species.
4. **Objective:** Initiate, facilitate, and support small-scale research projects on invasive plant control and management, and share results with the public.
Strategy: Working with partners and participants in the CWMA, consider options for incorporating research questions into management activities. Look for sources of support from partners, local industries, and various programs with a stake in the control of invasive species.
5. **Objective:** Work with local governments, schools, non-profit organizations, and state natural resource professionals to create programs to manage invasive species within municipal parks and publically owned lands.
Strategy: Use the Presque Isle Weed Warrior program as a framework for pilot programs on municipal parks and publically owned lands.
6. **Objective:** In designated priority areas restore native vegetation and reduce or eliminate invasive species

Strategy: Through natural processes (allowing the natural regeneration of native species) or active management processes (replanting) re-establish native, indigenous vegetation

Education and Outreach

Education and awareness programs foster public understanding of the threat invasive plants pose to natural resources, techniques used to manage these species, and the role humans play in the dispersal and establishment of invasive weeds. Awareness also provides an important first step in the detection of new invaders. Education includes the training of weed district and agency personnel, private landowners, and the general public in weed identification, new management techniques, monitoring protocols, and other skills needed for the management of noxious and other invasive plants.

Approach

The Lake Erie Watershed Cooperative Weed Management Area will target new groups to educate and gain interest in invasive plant identification and management through presentations, displays, publications, webinars and social media outlets

Goal: Increase awareness, encourage personal action and gain support for the CWMA through education and outreach efforts.

- Objective:** Develop and distribute materials to increase awareness and encouraging personal action to prevent the introduction and spread of invasive species.

Strategy: Develop and distribute species specific information at local events and meetings to citizens.
- Objective:** Involve private landowners in the LEW-CWMA and look for opportunities to combine control efforts on public and private lands.

Strategy 1: Develop and distribute a brochure aimed specifically toward landowners in priority control areas.

Strategy 2: Incorporate landowner properties in control efforts.

Strategy 3: Invite specific landowners to serve on the LEW-CWMA steering committee.
- Objective:** Encourage the use of native and non-invasive plant materials within the watershed.

- Strategy 1:** Develop documents that encouraging landscaping with native non-invasive species; documents should include information regarding threats posed by landscaping with non-natives and a list of native alternatives.
- Strategy 2:** Compile a list of possible invaders and photographs that are sold or frequently promoted or sold within the CWMA region.
- Strategy 3:** Meet with representative owners and managers of leading vendors and plant suppliers in the region to establish working relationships, promoting landscaping with native species and reducing the distribution of invasive plants.
4. **Objective:** Develop materials articulating the process of native species regeneration.
Strategy: Develop materials explaining the process of invasive species management and regeneration of native species. Materials will include strategies and photographs from the various phases of the restoration process through the differing ecological communities.
 5. **Objective:** Develop educational materials regarding BMPs for preventing the spread of invasive species through the use heavy machinery.
Strategy: Target local logging and construction companies to assure they are aware of BMP's that reduce the spread of invasive species
 6. **Objective:** Educate outdoor enthusiasts on the unintentional transport of invasive plants.
Strategy: Reduce the unintentional transport of invasive plants through the placement of educational signs and boot brushes at trailheads and other popular recreational areas.
 7. **Objective:** Work with local schools to increase student interest in and knowledge of invasive plants.
Strategy: Work with educators to incorporate information into lessons concerning threats invasive species pose, identification, small scale control projects on school properties, and the development of a site specific weed management plan (universities).
 8. **Objective:** Increase the knowledge and expertise of key groups in identifying invasive species.
Strategy: Host identification and control workshops that address target audiences and high priority species.

Inventory and Monitoring

Monitoring is defined as a survey repeated through time to determine changes in the status and demographics of abiotic resources, species, habitats, or ecological communities. Monitoring can play a vital role in invasive plant management and prevention. It can provide justification for evaluating management actions, adjustments, and aids in reaching invasive plant management objectives and sustainable land management goals more effectively and efficiently.

Approach

Initial site analysis will provide a baseline inventory for each location with detailed descriptions of invasive plant populations. CWMA members are encouraged to report all invasive species locations via iMapInvasives. By designating iMapInvasives as the sole reporting platform for the LEW-CWMA, distributional data will be updated and can be viewed by all members. Distributional data obtained and recorded thru iMapInvasives allows further prioritization for control, management, and restoration efforts.

Monitoring is an essential component to determine the efficiency of treatment. By recording and mapping the extent of individual invasive species infestations pre and post treatment, the LEW-CWMA will then be able to determine the efficiency of treatment, suppression, and control.

Goal: Implement a system to inventory and monitor invasive species populations at select sites and record distribution throughout the watershed.

- Objective:** Update Invasive Species Control Plans for each priority site as treatment proceeds.

Strategy: Design invasive control site plans to allow updates while maintaining a history of work and progress. Utilize iMapInvasives treatment logs for recording details of treatment and outcome.
- Objective:** Monitor priority sites to assess potential spread of targeted invasive species.

Strategy: From yearly monitoring determine optimal frequency for follow up visits, which may or may not be annually.
- Objective:** Monitor infestations where eradication/control measures have been implemented to determine their effectiveness.

Strategy: After control efforts have taken place, monitor the effectiveness of each treatment and the percent reduction in invasive cover resulting from the previous application.
- Objective:** Identify, monitor, and weed vectors that have the ability to move invasive plants throughout the watershed through partnerships

Strategy: Work with partners to identify known and possible movement vectors within the watershed.

5. **Objective:** Verify the establishment of invasive weed species.

Strategy: Soon after new weed communities are identified, confirm weed sightings and record baseline infestation information and suggested management efforts

6. **Objective:** Obtain and record distributional data from locations throughout the watershed.

Strategy: Record and map all invasive species inventories creating one source of reference for all groups to reference and compare results by location. Utilize iMapInvasives website to house all distributional data obtained through site work and reports from partners throughout the watershed.

Site Prioritization and Management Process

The Pennsylvania Natural Heritage Program (PNHP) is a partnership between Western Pennsylvania Conservancy (WPC), the Pennsylvania Department of Conservation and Natural Resources (DCNR), the Pennsylvania Game Commission (PGC), and the Pennsylvania Fish and Boat Commission (PFBC). Using a standard science based approach, PHNP collects and stores baseline ecological information about rare plants, rare animals, unique plant communities, significant habitats, and geological features in Pennsylvania. Not only providing information regarding the location of rare species, significant habitats, and geological features, the inventory includes a system of global and state ranks used to describe the relative degree of rarity for each species and natural community.

The Erie County Natural Heritage Inventory (CNHI) report presents the known outstanding natural features in Erie County. The CNHI provides maps of the best natural communities as well as the known locations of animals and plant species of concern. Contained within the report are written descriptions for each site that include the degrees of quality and rarity, site ranking on local, state, and globally significant scale, potential threats, and recommendations for protection.

The information presented in the Erie County Natural Heritage Inventory, updated in 2012, will be used to guide and focus efforts of the Lake Erie Watershed Cooperative Weed Management Area. By identifying the unique and rare habitats within the watershed, the CHNI has provided an extremely valuable tool enabling the LEW-CWMA to direct effort to preserving, enhancing, and restoring the ecological integrity of these sites.

Determining Sites

Initial site evaluations documented in the Inventory and Monitoring section of this plan are essential to determining the highest priority locations within the Lake Erie watershed. The initial prioritization of these sites will be based upon existing information regarding invasive plant communities present and the ecological sensitivity of each site. Given this information and considering the severity of the infestation as well as site accessibility and ownership, the steering committee will be responsible for choosing a minimum of five sites for analysis each season and a minimum of three target locations for management.

When the five sites have been chosen for inventory, the LEW-CWMA coordinator will be responsible for contacting the property owners and educating them on the impacts of invasive plant species, informing them of the group's mission and determining their interest in evaluating their properties. After permission to access the site has been granted, the LEW-CWMA coordinator will be responsible for assembling a team to evaluate the site and contacting the landowner with a day and time for the assessment. During the site visits, members of the CWMA will thoroughly comb the property and complete the attached site evaluation form. Information recorded during each site visit will include, but is not limited to, a list of all invasive species populations present, GPS location, size and severity of each invasive species infestation, threat to native plant communities, management options, difficulty of control, proximity to public lands, accessibility to the target area, and any other notable observations.

Once data sheets have been completed and maps have been produced for each location, the steering committee will meet to discuss the findings and determine which sites are the best candidates for management and restoration efforts. After the information from data sheets and maps is presented, the group will select a minimum of three target locations. The LEW-CWMA will strive to take part in three management projects per year. By taking into consideration that management efforts in most sites will require multiple treatments over an extended period of time, the LEW-CWMA will have to consider all factors including funding sources and available resources such as manpower, equipment, and other assets held by involved groups.

When management locations have been chosen, a site management plan for each location will be developed and approved by the Steering Committee before moving forward. This site specific plan will outline the management timeline and goals for each site, target species, known locations and approximate size of each infestation, dates for each treatment (assuming multiple treatments are necessary), and available resources to aid in restoration effort.

Throughout the management process photographs of the site will be taken to document the changes within each site as infestations are treated and new communities develop. At the end of each season, information regarding all restoration efforts will be presented to members of the LEW-CWMA. The success of management efforts will be determined by the impact of treatment on infestations taken before and after. Using GIS to determine the size of these areas, the LEW-CWMA will review the site management plans, update them as necessary, and evaluate the success of specific control efforts for a minimum of three years.

Adapting and Updating

Adapting and Updating

Adapting and Updating

Adapting and Updating

This 5 year plan is a dynamic document and will be used to guide decisions of the Lake Erie Watershed Cooperative Weed Management Area through the year 2017. This plan will be in effect for five years from the date the agreement is signed by all parties. This plan is to be adapted and changed as the Steering Committee sees fit within this five year period. When this plan expires in 2017 the Lake Erie Watershed Cooperative Weed Management Area will develop a new 5 year plan to assess the impacts of this plan, new threats and strategies to protect the biological integrity of the Lake Erie Watershed into the future.

Funding

The Western Pennsylvania Conservancy received funding for the development, coordination, and administration of the Lake Erie Watershed Cooperative Weed Management Area through the Great Lakes Restoration Initiative Grants program coordinated by the US Forest Service Cooperative Forestry Assistance Program. While some of the funding supports the development this 5 year plan, the majority of the funding is being used to carry out invasive plant control efforts throughout the watershed. The LEW-CWMA will work to identify potential funding sources as they arise to carry out the goals set forth in this plan.

Looking Forward

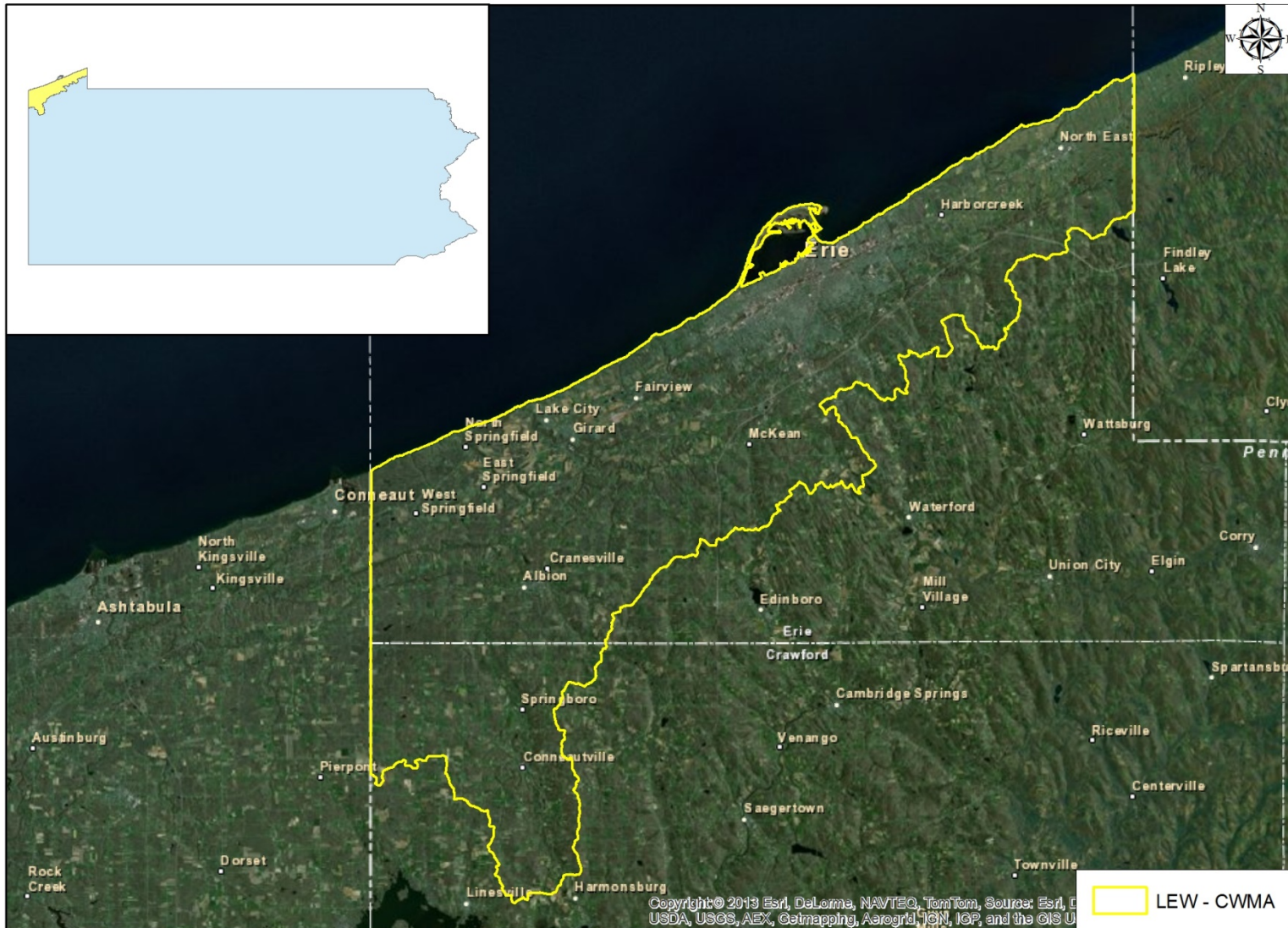
In years to come, the Lake Erie watershed will inevitably continue to face issues related to invasive species. As we work together to curb their negative effect on our native communities, we also must take into consideration factors such as climate change and native and exotic pest introductions that have the potential to expand distribution and increase hardiness of invasive species. Controlling existing populations of invasive species and keeping watch for the spread of

as yet undocumented invasive species into the watershed are key priorities for the LEW-CWMA. By working in coordination with many partners and cooperators throughout the watershed, we hope to achieve substantial outcomes and preserve some of the watersheds most significant resources.

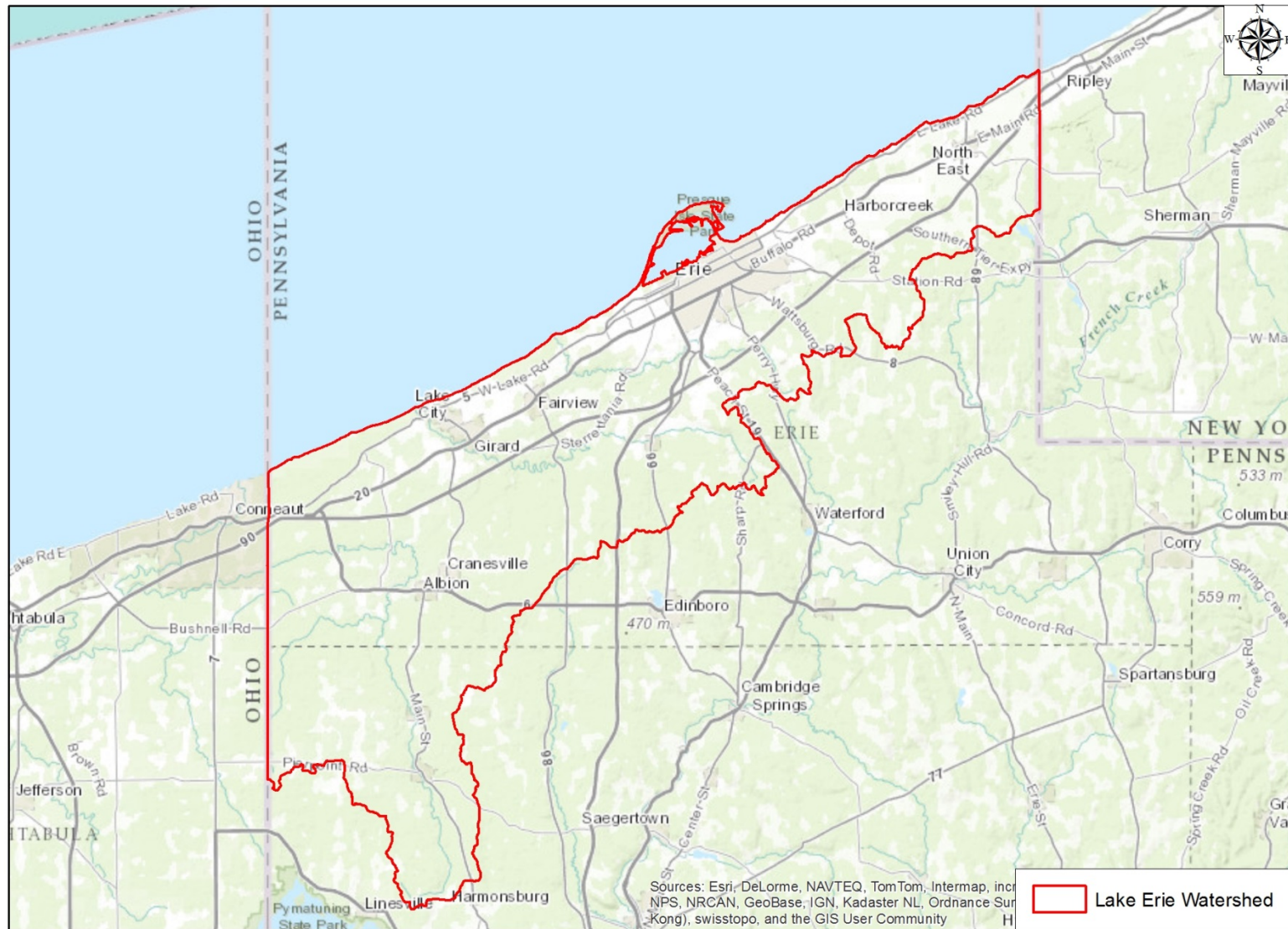
Measureable Outcomes

Measureable Outcomes	2013	2014	2015	2016	2017
Groups Represented					
Individual Members					
Social Media Followers					
Educational Events Held					
New Populations Discovered					
Management Projects					
Acres Restored					
Proposals Written					
Proposals Funded					

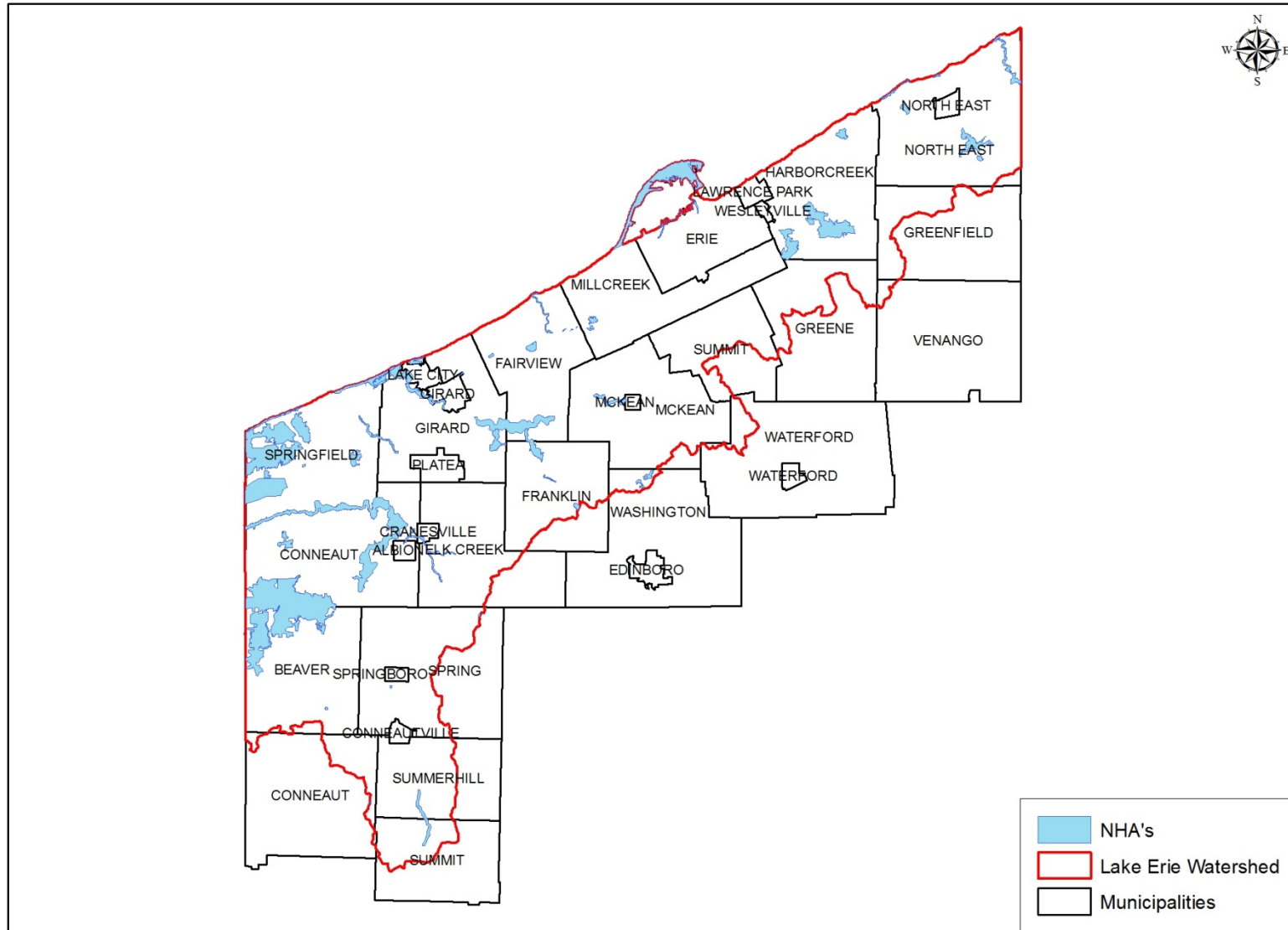
Lake Erie Watershed - Cooperative Weed Management Area



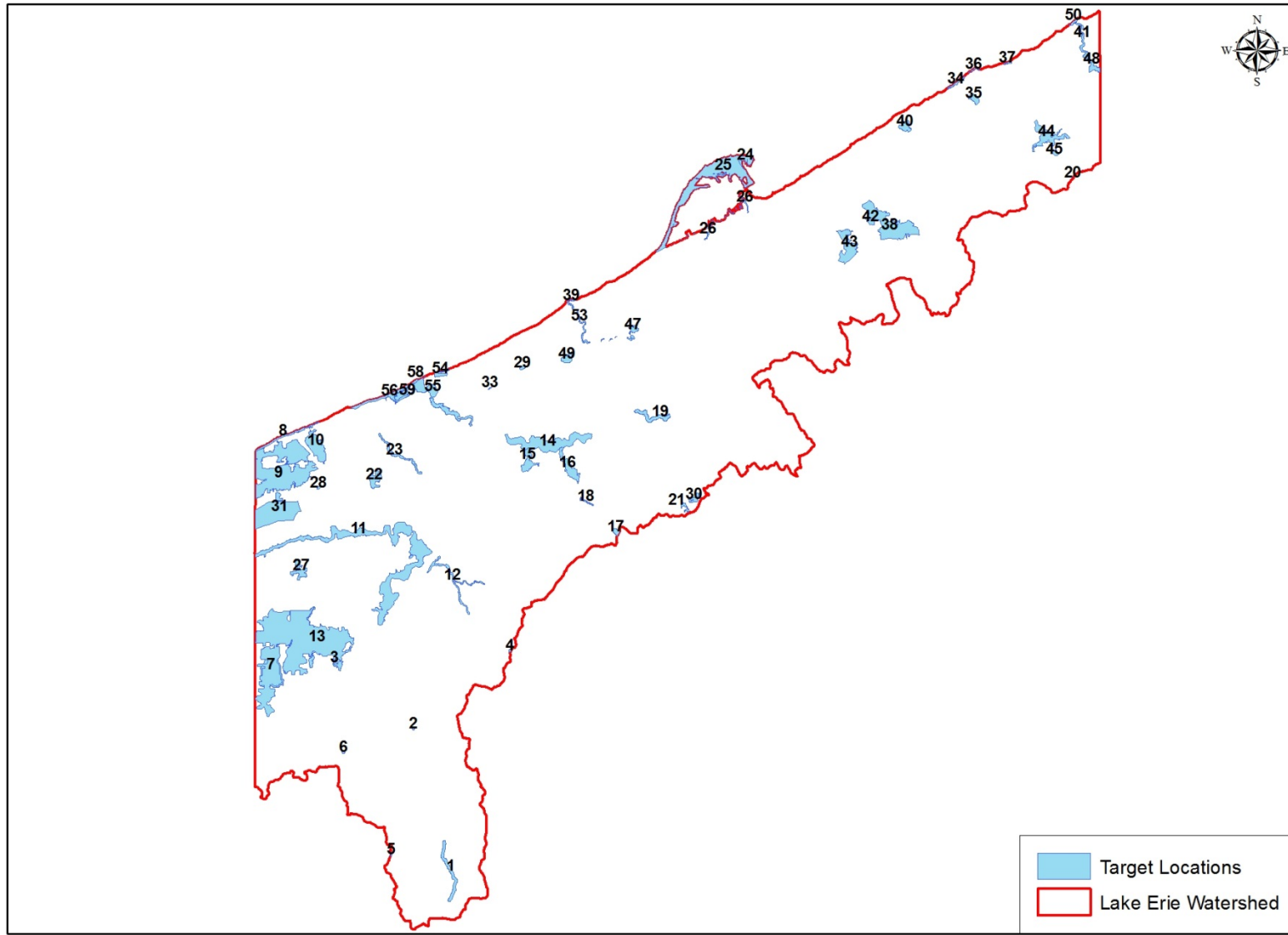
Lake Erie Watershed : Topographic Map



Lake Erie Watershed : Municipalities



LEW - CWMA : Target Locations



2013-2017 Objectives and Strategies

Prevention, Early Detection, and Rapid Response

Goal: Prevent the introduction, reproduction, and spread of designated noxious weeds and invasive exotic plants into and within the Lake Erie Watershed.

Objective	Strategy	Anticipated Completion Date
Establish an early detection framework and mechanism for CWMA partners	Encourage partners to report all invasive species distributional data via the iMapInvasives website and utilize the website's alert system.	Year 2
Develop BMPs to prevent the spread and development of invasive plants in road and utility ROW and other possible movement corridors	Work with the Pennsylvania Department of Transportation, utility companies, and municipalities to develop BMPs for the eradication of invasive species within ROWs	Year 3-4
Improve communication between the existing professional and growing volunteer networks	Develop a forum allowing stakeholders and interested citizens to access information about each invasive species and management options, ask questions, and share individual experiences.	Year 2
Encourage use of the online mapping tool for locational data.	Encourage the use of iMapInvasives as a centralized, online mapping system that will show exact locations of invasive infestations and allow for the input of management actions and the consolidation of information across the watershed.	Ongoing
Continue to evaluate target species status and develop fact sheets for distribution.	Conduct a yearly assessment of the targeted species lists as part of the CWMA agenda and add species that are considered imminent invaders of the watershed.	Ongoing
Encourage the expansion of CWMA's activities to neighboring watersheds and municipalities.	Share information, attend meetings and workshops, and consider across border projects with other CWMA's and invasive species control interests in adjacent jurisdictions.	Year 4-5

2013-2017 Objectives and Strategies		
Control, Management, and Restoration		
Goal: Provide control efforts within priority areas to restore native species and habitats.		
Objective	Strategy	Anticipated Completion Date
Perform reconnaissance within the (5) highest priority areas determined by steering committee.	Map areas of infestation, develop implementation plans, and follow-up monitoring plans. Develop ranking criteria to use while assessing properties for control efforts.	Ongoing
Reduce the extent and density of established invasive weeds to a point that native plants and natural communities are dominant at a given site.	Based upon the site inventory and evaluation work, determine a desired state including maximum coverage of invasives, frequency of follow-up needed, and specific indicators of health that can be references in future evaluations. Collaborate with partners to target and share resources needed to reduce the density of established invasive species populations.	Ongoing
Work with private landowners to provide management recommendations, expertise, and sources of funding to aid invasive plant control efforts.	Prepare materials and disseminate to partners. During contact with landowners for various reasons, evaluate their interest and possible participation in the CWMA and specific projects that could involve their properties. For specifically targeted landowners, help to develop a comprehensive management plan for their property and provide them with tools such as identification guides and management options for each target species.	Years 3-4
Initiate, facilitate, and support small-scale research projects on invasive plant control and management, and share results with the public.	Working with partners and participants in the CWMA, consider options for incorporating research questions into management activities. Look for sources of support from partners, local industries, and various programs with a stake in the control of invasive species.	Years 4-5
Work with local government to create programs to manage invasive species within municipal parks and publically owned lands.	Use the foundations of the Presque Isle Weed Warrior program as a pilot program for municipal parks and publically owned lands.	Year 2-3

2013-2017 Objectives and Strategies		
Education and Outreach		
Goal: Increase awareness and support for the CWMA through education and outreach efforts.		
Objective	Strategy	Anticipated Completion Date
Develop and distribute materials for the general public increasing awareness and encouraging personal action to prevent the introduction and spread of invasive species.	Develop and distribute species specific information at local events and meetings educating interested citizens.	Ongoing
Involve private landowners in the LEW-CWMA and look for opportunities to combine control efforts on public and private lands.	<i>Strategy 1:</i> Develop and distribute a brochure aimed specifically toward landowners in priority control areas.	Year 3-4
	<i>Strategy 2:</i> Incorporate landowner properties in control efforts.	Ongoing
	<i>Strategy 3:</i> Invite specific landowners to serve on the LEW-CWMA steering committee.	Ongoing
Encourage the use of native and non-invasive plant materials within the watershed.	<i>Strategy 1:</i> Develop documents encouraging landscaping with native non-invasive species; documents should include information about threats posed by landscaping with non-natives and a list of possible alternatives.	Year 2
	<i>Strategy 2:</i> Compile a list of possible invaders that are sold or frequently promoted or sold within the CWMA region.	Year 2
	<i>Strategy 3:</i> Meet with representative owners and managers of leading vendors and plant suppliers in the region to establish a working relationship.	Year 2
Develop materials articulating the process of native species regeneration.	Develop materials explaining the process of invasive species management and regeneration of native species; materials will include strategies and photographs from the various phases of the restoration process through the differing ecological communities.	Ongoing
Develop educational materials regarding BMPs for preventing the spread of invasive species through heavy machinery.	Work with local logging and construction companies to develop BMPs and educational materials reducing the spread of invasive species by heavy machinery or other construction equipment.	Year 5

Educate outdoor enthusiasts on the unintentional transport of invasive plants.	Reduce the unintentional transport of invasive plants through the placement of educational signs at trailheads and other popular recreational areas.	Year 3-4
Work with local schools to increase student interest in and knowledge of invasive plants.	Work with educators to incorporate information into lessons concerning threats invasive species pose, identification, small scale control projects on school properties, and the development of a site specific weed management plan (universities).	Ongoing
Increase the knowledge and expertise in identifying invasive species.	Host identification and control workshops to address target and watch list species	Ongoing

2013-2017 Objectives and Strategies		
Inventory and Monitoring		
Goal: Implement a system to inventory and monitor invasive species populations at select sites and record distribution throughout the watershed.		
Objective:	Strategy:	Anticipated Completion Date:
Update Invasive Species Control Plans for each priority site as treatment proceeds.	Design invasive control site plans to allow updates while maintaining a history of work and progress. Utilize iMapInvasives treatment logs for recording details of treatment and outcome.	Ongoing
Monitor priority sites to assess potential spread of targeted invasive species.	Review priority sites on a yearly basis to determine the need and frequency of monitoring and potentially further control.	Ongoing
Monitor infestations where eradication/control measures have been implemented to determine their effectiveness.	After control efforts have taken place monitor the effectiveness of each treatment and the percent reduction in invasive cover resulting from the previous application.	Ongoing
Identify, monitor, and prevent existing and potential weed vectors through partnerships with local businesses, government, and resource agencies.	Work with partners to identify known and possible movement vectors within the watershed.	Ongoing
Utilize technical experts to verify invasive weed sightings.	Soon after new weed communities are identified, confirm weed sightings and record baseline infestation information and suggested management efforts.	Ongoing
Obtain and record distributional data from locations throughout the watershed.	Record and map all invasive species inventories creating one source of reference for all groups to reference and compare results by location. Utilize iMapInvasives website to house all distributional data obtained through site work and reports from partners throughout the watershed.	Ongoing

LEW - CWMA Target Management Locations:

ID # :	Site Name	County
1	Conneaut Creek at Dicksonburg	Crawford
2	Conneaut Creek Slope - Springsboro South	Crawford
3	Mud Run Wetland	Crawford
4	Pont Road Wetlands	Crawford
5	Linesville Creek Headwaters Wetland	Crawford
6	East Branch Conneaut Creek Headwaters Wetland	Crawford
7	West Branch Conneaut Creek	Crawford, Erie
8	Lake Erie Coastline - Roderick	Erie
9	Roderick Reserve	Erie
10	Raccoon Creek Swamp	Erie
11	Conneaut Creek	Erie
12	East Branch Conneaut Creek	Erie
13	West Branch Conneaut Creek	Erie, Crawford
14	Elk Creek	Erie
15	Devil's Backbone	Erie
16	Falls Run	Erie
17	Falls Run - Shenango Creek Headwaters	Erie
18	Falls Run	Erie
19	Elk Creek - McKean	Erie
20	Howard Eaton Reservior	Erie
21	McLane Fens	Erie
22	Springfield Township Vernal Pools	Erie
23	Crooked Creek	Erie
24	Presque Isle - Gull Point	Erie
25	Presque Isle - Peninsula	Erie
26	Presque Isle - Bay	Erie
27	Ashtabula Creek Headwaters	Erie
28	West Springfield - Route 20	Erie
29	Trout Run Pond	Erie
30	McLane Fens - East	Erie
31	Pond Road Wetlands - South	Erie
32	Pond Road Wetlands - North	Erie
33	Mercyhurst Fen	Erie
34	Cemetary Road Bluffs	Erie
35	Vineyard Swamp	Erie
36	[needs a name]	Erie

37	Northeast Lake Bluff Seeps	Erie
38	Six Mile Creek Gorge	Erie
39	Manchester Beach	Erie
40	Higmeyer Road Park	Erie
41	Twenty Mile Creek	Erie
42	Gospel Hill	Erie
43	Wintergreen Gorge	Erie
44	Sixteen Mile Creek Gorge	Erie
45	German Road Ponds	Erie
46	Asbury Woods	Erie
47	Asbury Woods	Erie
48	Twenty Mile Creek Gorge	Erie
49	Fairview Swamp	Erie
50	Twenty Mile Creek Beach	Erie
51	Twenty Mile Creek Beach	Erie
52	Twenty Mile Creek Beach	Erie
53	Walnut Creek	Erie
54	Lake Erie Community Park	Erie
55	Elk Creek - Mouth	Erie
56	Erie Bluffs - Shoreline	Erie
57	Erie Bluffs - Sand Dune	Erie
58	Elk Creek - Mouth	Erie
59	Erie Bluffs - Swamp	Erie

-Pennsylvania Invasive Plant List

Not all non-native plants become invasive. In fact, it is a very small fraction that does. The plants listed here have been found to act aggressively in parts of Pennsylvania or throughout the whole state, negatively impacting ecosystems. New species cross state borders and some plants that have been here for decades may suddenly become invasive due to changing land uses, changes in weather or climate, or genetic reasons, so this list may change over time and will be updated periodically. Although this list is not regulatory, it is merely a suggestion that these plants can become invasive under the right environmental conditions and it will be used as a guide for management efforts.

Common Name	Scientific Name	Other Common Name(s)
Trees		
Callery pear	<i>Pyrus calleryana</i>	Bradford pear
Empress tree	<i>Paulownia tomentosa</i>	Princess tree, royal paulownia
European black alder	<i>Alnus glutinosa</i>	Common alder
Japanese angelica tree	<i>Aralia elata</i>	
Mimosa	<i>Albizia julibrissin</i>	Persian silk tree, silktree, silky acacia
Norway maple	<i>Acer platanoides</i>	
Siberian elm	<i>Ulmus pumila</i>	
Sycamore maple	<i>Acer pseudoplatanus</i>	Mock plane
Tree-of-heaven	<i>Ailanthus altissima</i>	Chinese or stinking sumac, tree of hell
Bushes		
Amur honeysuckle	<i>Lonicera mackii</i>	
Autumn olive	<i>Elaeagnus umbellata</i>	
Bell's honeysuckle	<i>Lonicera morrowii x bella</i>	Bella or showy bush or pretty honeysuckle
Border privet	<i>Ligustrum obtusifolium</i>	Blunt-leaved or obtuse-leaved or regal privet
Chinese bushclover	<i>Lespedeza cuneata</i>	Chinese Lespedeza, sericea lespedeza
Chinese privet	<i>Ligustrum sinense</i>	
Common buckthorn	<i>Rhamnus cathartica</i>	Purging buckthorn
Common privet	<i>Ligustrum vulgare</i>	European privet, wild privet
European barberry	<i>Berberis vulgaris</i>	Common barberry
Glossy buckthorn	<i>Frangula alnus</i>	
Guelder rose	<i>Viburnum opulus</i>	Cranberrybush viburnum, red elder, cramp bark
Japanese barberry	<i>Berberis thunbergii</i>	Red barberry, Thunberg's barberry
Japanese privet	<i>Ligustrum japonicum</i>	Waxleaf ligustrum, wax privet
Japanese spiraea	<i>Spiraea japonica</i>	Japanese meadowsweet, nippon spiraea
Jetbead	<i>Rhodotypos scandens</i>	Black jetbead
Morrow's honeysuckle	<i>Lonicera morrowii</i>	
Multiflora rose	<i>Rosa multiflora</i>	Rambler or Japanese or baby or seven-sisters rose
Russian olive	<i>Elaeagnus angustifolia</i>	Oleaster, wild olive
Shrubby bushclover	<i>Lespedeza bicolor</i>	Shrubby lespedeza

Standish honeysuckle	<i>Lonicera standishii</i>	
Tartarian honeysuckle	<i>Lonicera tatarica</i>	
Wineberry	<i>Rubus phoenicolasius</i>	Wine raspberry, Japanese wineberry
Winged euonymus	<i>Eunonymus alata</i>	Burning bush, winged burning bush, winged wahoo
Vines		
Black swallow-wort	<i>Vincetoxicum nigrum</i>	Louis' or Louise's swallow-wort
Chocolate vine	<i>Akebia quinata</i>	Fiveleaf akebia, raisin vine
Japanese honeysuckle	<i>Lonicera japonica</i>	Chinese honeysuckle
Japanese hops	<i>Humulus japonicus</i>	
Kudzu	<i>Pueraria lobata</i>	Vine that ate the South
Mile-a-minute	<i>Persicaria perfoliata</i>	Devil's tear-thumb
Oriental bittersweet	<i>Celastrus orbiculatus</i>	Asiatic or round-leaved bittersweet
Pale swallow-wort	<i>Vincetoxicum rossicum</i>	European swallow-wort, dog strangling vine
Porcelain berry	<i>Ampelopsis brevipedunculata</i>	Amur peppervine, porcelain vine
Herbs and Forbs		
Beefsteak plant	<i>Perilla frutescens</i>	Chinese basil, purple mint
Black knapweed	<i>Centaurea nigra</i>	Lesser or common knapweed, hardheads
Bristled knotweed	<i>Persicaria longiseta</i>	Oriental lady's thumb, Asiatic smartweed
Brown knapweed	<i>Centaurea jacea</i>	Horse-knobs, rayed knapweed, hardheads
Bull thistle	<i>Cirsium vulgare</i>	
Canada thistle	<i>Cirsium arvense</i>	Canadian thistle
Dames rocket	<i>Hesperis matronalis</i>	Dame's violet, dame's gillyflower, dame's wort
Garlic mustard	<i>Alliaria petiolata</i>	Hedge mustard
Giant hogweed	<i>Heracleum mantegazzianum</i>	Giant cow parsnip or parsley, cartwheel flower
Giant knotweed	<i>Fallopia sachalinensis</i>	Sakhalin knotweed
Goatsrue	<i>Galega officinalis</i>	Holy hay, professor-weed, Italian fitch
Goutweed	<i>Aegopodium podagraria</i>	Bishop's weed, snow-on-the-mountain, holy hay
Greater celandine	<i>Chelidonium majus</i>	Tetterwort
Hairy willow herb	<i>Epilobium hirsutum</i>	Great willowherb
Japanese knotweed	<i>Fallopia japonica</i>	Fleeceflower, Mexican bamboo
Jimsonweed	<i>Datura stramonium</i>	Jamestown weed, devil's trumpet, thorn apple
Lesser celandine	<i>Ranunculus ficaria</i>	Fig buttercup, pilewort
Moneywort	<i>Lysimachia nummularia</i>	Creeping Jenny or Charlie, wandering sailor
Musk thistle	<i>Carduus nutans</i>	Nodding thistle
Narrowleaf bittercress	<i>Cardamine impatiens</i>	Bushy rock-cress
Poison hemlock	<i>Conium maculatum</i>	
Purple loosestrife	<i>Lythrum salicaria</i>	Swamp loosestrife
Spotted knapweed	<i>Centaurea stoebe</i>	
Star-of-Bethlehem	<i>Ornithogalum nutans/O. umbellatum</i>	Silver bells, drooping star-of-Bethlehem
Wild chervil	<i>Anthriscus sylvestris</i>	Cow parsley, keck, bur chervil

Wild parsnip	<i>Pastinaca sativa</i>	Garden parsnip
Yellow flag iris	<i>Iris pseudacorus</i>	
Grasses		
Cheatgrass	<i>Bromus tectorum</i>	Downy or drooping brome, bronco grass, June grass
Common reed	<i>Phragmites australis</i>	
Japanese stiltgrass	<i>Microstegium vimineum</i>	Nepalese browntop, packing grass
Johnson grass	<i>Sorghum halepense</i>	
Reed canary grass	<i>Phalaris australis</i>	
Rough bluegrass	<i>Poa trivialis</i>	
Shattercane	<i>Sorghum bicolor ssp. x. drummondii</i>	
Aquatic Plants		
Brazilian water-weed	<i>Egeria densa</i>	
Carolina fanwort	<i>Cabomba caroliniana</i>	Green Cabomba, fish grass, Washington grass
Curly pondweed	<i>Potamogeton crispus</i>	Curly-leaved or curlyleaf or crispy-leaved pondweed
Didymo	<i>Didymoshenia geminate</i>	Rock snot
Eurasian water-milfoil	<i>Myriophyllum spicatum</i>	Eurasian milfoil, spike watermilfoil
European water chestnut	<i>Trapa natans</i>	Devil pod
Floating seedbox	<i>Ludwigia peploides</i>	Water primrose
Hydrilla	<i>Hydrilla verticillata</i>	Esthwaite waterweed
Narrow-leaved cattail	<i>Typha angustifolia</i>	Narrow lead cattail, nail rod
Parrot feather watermilfoil	<i>Myriophyllum aquaticum</i>	Parrotfeather

Pennsylvania Invasive Species Watch List

“Watch List” species listed in the below table are still sold in the landscape and nursery trade but can act aggressively, are not very common throughout the state but are a problem in certain locations, or are not yet in Pennsylvania but are in neighboring states and would pose a major threat to our natural ecosystems should they arrive here.

Common Name	Scientific Name	Other Common Name(s)
Trees		
Amur corktree	<i>Phellodendron amurense</i>	
Amur maple	<i>Acer ginnala</i>	
Bee-bee tree	<i>Tetradium daniellii</i>	Korean Evodia
Japanese corktree	<i>Phellodendron japonicum</i>	
Lavella corktree	<i>Phellodendron lavellei</i>	Lavelle’s cork tree
Paper mulberry	<i>Broussonetia papyfera</i>	
White mulberry	<i>Morus alba</i>	Common or Chinese or Russian white mulberry
Bushes		
Butterfly bush	<i>Buddleja davidii</i>	Orange-eye butterfly bush
Doublefile viburnum	<i>Viburnum plicatum</i>	Japanese snowball bush
Linden viburnum	<i>Viburnum dilatatum</i>	Linden arrowwood
Siebold viburnum	<i>Viburnum sieboldii</i>	Siebold’s arrowwood
Vines		
Bigleaf periwinkle	<i>Vinca major</i>	Greater periwinkle
Chinese wisteria	<i>Wisteria sinensis</i>	
Common periwinkle	<i>Vinca minor</i>	Ground myrtle
English ivy	<i>Hedera helix</i>	Common ivy
Japanese wisteria	<i>Wisteria floribunda</i>	
Wintercreeper	<i>Euonymus fortunei</i>	Climbing Euonymus, fortune’s spindle
Herbs and Forbs		
Japanese pachysandra	<i>Pachysandra terminalis</i>	Japanese spurge, Chinese fever vine
Orange day-lily	<i>Hemerocallis fulva</i>	
Grasses		
Chinese silvergrass	<i>Miscanthus sinensis</i>	Eulalia, zebra grass, maidenhair grass
Golden bamboo	<i>Phyllostachys aurea</i>	Yellow grove bamboo, fish pole bamboo
Ravenna grass	<i>Saccharum ravennae</i>	Hardy pampas grass
Small carpetgrass	<i>Anthraxon hispidus</i>	Joint-head grass, hairy joint grass, jointhead
Tall fescue	<i>Schedonorus arundinaceus</i>	
Wavyleaf basketgrass	<i>Oplismenus hirtellus</i>	

Lake Erie Watershed-Cooperative Weed Management Area

Site Evaluation Form:

Location: _____

Date: _____

Evaluator Name(s): _____

SCIENTIFIC NAME	COMMON NAME	THREAT TO NATURAL COMMUNITIES	BIOLOGY & ECOLOGY	DISTRIBUTION & ABUNDANCE	DIFFICULTY OF CONTROL	NEW INVASIVENESS RANK	FORMER INVASIVENESS RANK
<i>Phragmites australis</i>	Common reed						
<i>Typha angustifolia</i>	Narrow leaf cattail						
<i>Typha x glauca</i>	Hybrid cattail						
<i>Myriophyllum spicatum</i>	Eurasian water milfoil						
<i>Cirsium arvense</i>	Canada thistle						
<i>Lonicera maacki</i>	Amur honeysuckle						
<i>Lonicera morrowii</i>	Marrow's honeysuckle						
<i>Lonicera standishii</i>	Standish honeysuckle						
<i>Lonicera tatarica</i>	Tatarian honeysuckle						
<i>Lonicera xbella</i>	Belle honeysuckle						
<i>Alliaria petiolata</i>	Garlic mustard						
<i>Lythrum salicaria</i>	Purple loosestrife						
<i>Celastrus orbiculatus</i>	Oriental bittersweet						
<i>Centourea maculosa</i>	Spotted knapweed						
<i>Fallopia japonica</i>	Japanese knotweed						
<i>Rosa multiflora</i>	Multiflora rose						

Notes:

Observations:

Management Recommendations:

Other:

Location Name, Date of Assessment



Date:

Photographer Name(s):

		Photo Location:	Picture Number:
Latitude:	Longitude:		

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