

# Huron Pines Invasive Species Program: Volunteer Handbook

## Introduction

The Huron Pines invasive species program was created through a Cooperative Weed Management Agreement and is implemented through the Huron Pines AmeriCorps program to help stop the introduction, spread and distribution of invasive weed species in Northeast Michigan. Invasive species have become a serious concern for people within the conservation community and the public in Northeast Michigan. In order to protect our quality of life and abundant natural resources from irreparable damage, these invasive plants need to be controlled and monitored. Not doing so would jeopardize Northeast Michigan's economy, tourism industry, distinctive natural heritage, diverse recreational opportunities, public health and scenic beauty.

Finding, identifying and documenting infestations are essential to any success against invasive weeds. Huron Pines serves 11 counties totaling 4 million acres in Northeast Michigan. In order to be successful in controlling invasive species we must rely heavily on volunteers and community members to participate in invasive species identification and report that information to Huron Pines. Involving the public in the search for invasive weeds broadens the area being surveyed so that infestation can be detected early on and rapidly controlled.

This manual is a resource for volunteers to help in the effort to find, track and eliminate invasive species from Northeast Michigan. In addition to on the ground training, this manual and other resources provide information on what volunteers can do to help and the invasives they should address first.

When an invasive weed species is first noticed in an area, often the initial reaction is one of neglect or uncertainty. Neglect because small patches of weeds are generally not seen as a pressing issue, and uncertainty showing up as a result of not knowing how to handle such a problem. Thus, a once small, manageable and inexpensive problem becomes large, unmanageable and expensive. To invest in region-wide early detection and rapid response weed management is an investment in the future of Northeast Michigan. Early detection/ rapid response are much more cost effective practices, especially when dealing with small infestations. Less time, effort and money is required to perform the needed tasks allowing resources to be used over a broad area while remaining highly effective.

## Northeast Michigan Coastal Cooperative Weed Management Agreement

The management of invasive weeds is a difficult and intimidating process to handle as a single organization. The resources alone required to perform the needed steps for control can be too much to handle for one organization. Joining together public and private entities to share resources toward controlling noxious weeds has several benefits.

The Cooperative Weed Management Agreement is a coordinated effort to institute early detection and rapid response efforts along the northern coast of Lake Huron because it is much more cost effective, and manageable to deal quickly with small infestations. Partners involved include Alcona County Conservation District, Huron Pines, Michigan DEQ, Michigan DNR, Michigan Sea Grant, The Nature Conservancy, Thunder Bay National Marine Sanctuary, U.S. Fish and Wildlife Service, and U.S. Forest Service. The coordination of partners also allows for sharing of resources and information across jurisdictional boundaries so that weed management can be carried out along ecological rather than political boundaries. Also the united front is much more visible, helping to generate public awareness. Finally, cooperative weed management can make securing funding easier and more productive.

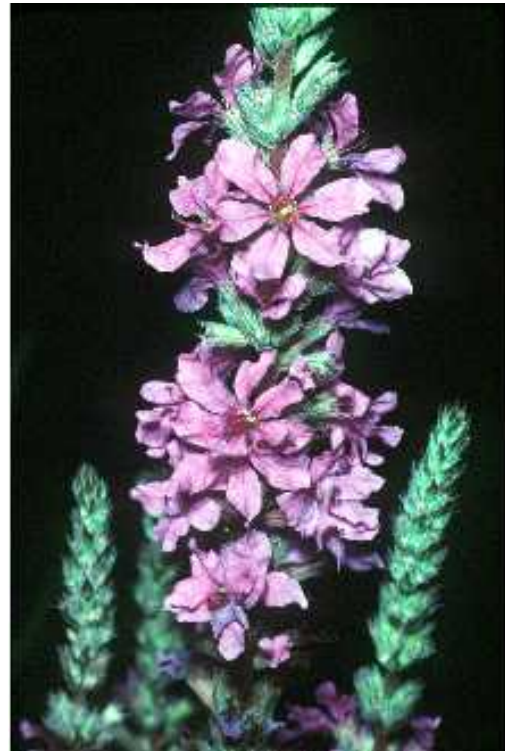
This management agreement emphasizes the Lake Huron shoreline because it is an essential part of the Northeast Michigan experience. The shoreline provides irreplaceable habitat for various types of wildlife and fauna, along with a wide variety of seasonal and year round recreational opportunities to enjoy.

### **What are invasive weeds and why manage them?**

The federal government defines an invasive weed as any plant or plant product that can injure or damage crops, livestock, public health, natural resources, or the environment. There are several weeds listed on the state's prohibited or restricted lists, including the three species that will be the focus for this weed management plan.

### **Target Species**

Three target species have been chosen by a collection of resource professionals to be the focus of this programs effort: purple loosestrife, buckthorn and phragmites. These three species are of great concern because of their invasive nature and significant short- and long- term effects upon the environment, natural resources and the citizens of Northeast Michigan. These are the main species that need to be located and reported to Huron Pines. It is extremely important to become familiar with each of the target species. Knowing their physical characteristics, habitat, distribution and ideas for control will all help in the search for these invasive plant species. There are new and emerging invasive species on the horizon, these are the main species that need to be located and reported to Huron Pines. As efforts are continued to control these non-native weed species there will an opportunity to expand to other invasive species.



Robert H. Mohlenbrock @ USDA- NRCS PLANTS Database / USDA SCS 1989. *Midwest wetland flora: Field office illustrated guide to plant*

### **Purple Loosestrife (*Lythrum salicaria*)**

#### **Introduction**

Purple loosestrife is a perennial herb that is native to Eurasia. It arrived in ship's ballasts and is widely used as an ornamental to this day in states that have not banned it. Purple loosestrife adapts well to natural and disturbed wetlands reducing natural vegetation and replacing it with dense, homogeneous stands. These stands reduce biodiversity and have little value or nutrition for wildlife.

#### **Identification**

Mature purple loosestrife plants can grow 3 – 10 feet high and have up to 50 stems. The stems are four sided and are green to purple in color. Multiple branches make the plants bushy and woody in appearance and have a downy hair covering them. Their leaves are lance shaped, stalk- less and rounded to heart- shaped at the base; and arranged in pairs or whorls around the stem. Flowers are a showy magenta color that blooms from June to September. Individual flowers have 5 – 7 petals each. Seeds are in capsules that break at maturity from late June to August.

## **Distribution**

Purple loosestrife occurs throughout the United States and is heavily concentrated in the northeast. Purple loosestrife is known to invade wet freshwater meadows, river and stream banks, pond edges, reservoirs, and ditches. If well established it can invade dry areas as well. It is estimated that a single stem can produce two to three million seeds per year from a single rootstalk. Seeds can be distributed by animals, machinery and people and by wind or waterways. Purple loosestrife can also reproduce vegetatively by sending up shoots from the root system. These roots can grow up to a foot each growing season.

## **Removal/ Control**

### **Mechanical**

Small areas of young plants can be pulled by hand. Larger plants can be taken out with a shovel. All plants should be removed before seeding occurs (late July thru August), placed in garbage bags and removed from the site, then disposed of in a landfill or burned. Large populations are very difficult to remove by this means. Mowing is not an option because it can increase the dispersal of seeds by exposing the seed bank.

### **Chemical**

Glyphosate and triclopyr are effective herbicides in non-aquatic settings. They are best applied when plants are preparing for dormancy, in late August. It is important to follow up these applications on a yearly basis to spot treat any new or missed plants.

### **Biological**

A leaf-feeding beetle (*Galerucella californiensis*) has been established as an effective controller/ remover of plants, with many sites in Michigan already inhabited with them. Efforts now are focused on field collection and redistribution to sites without beetles present. While the beetles do feed on native plants, the damage to them is considered minimal.

## **Common Buckthorn (*Rhamnus cathartica*) and Glossy Buckthorn (*Rhamnus frangula*)**

### **Introduction**

Buckthorn is a relatively common shrub in Michigan growing on roadsides, along tree lines, and in wood lots. Common buckthorn is found in wooded areas as a thorny thicket along tree lines. Glossy buckthorn is used as an ornamental shrub for landscaping and is often seen for sale in nurseries. Both types of buckthorn were introduced in the United States from Eurasia. Buckthorn develops well under adverse growing conditions, and its berries are food for wildlife. For these reasons buckthorn has become a noxious weed; choking out native vegetation with its dense vegetation.



Glossy Buckthorn. Robert H. Mohlenbrock. USDA SCS. 1989. *Midwest wetland flora: Field office illustrated guide to plant species*. Midwest National Technical Center, Lincoln. Courtesy of USDA NRCS Wetland Science Institute

## **Identification**

Common buckthorn is a shrub that can grow to 22 feet in height and a trunk up to 10 inches in diameter. The bark is grey to brown and rough textured when mature. The inner bark is yellow and the heartwood is pink to orange. Twigs are often tipped with a spine, replacing terminal buds. Dense clusters of yellow-green flowers, which form in spring, produce fruit. The fruit that is found only on female trees is green in early season and turns black in the fall and contains 3 or 4 seeds. Leaves are broad and oval with 3-4 pairs of up curved veins, dark green and glossy. Leaves often stay on the tree well into fall, after most deciduous trees have dropped their leaves. Glossy buckthorn does not have a spine at the twig tips. The leaves are toothed, and the undersides are hairy.

## **Distribution**

Buckthorn is an understory tree that commonly invades open oak woods, woodlot edges, and deadfall openings. It is tolerant of many soil types and sunlight conditions. It is particularly aggressive in wet areas. The berries produced are a food source for birds, which are the catalyst for distribution and expansion of buckthorn.

## **Control/Removal**

### **Mechanical**

Anything plants less than 3/8 of an inch in diameter can be removed by hand, be sure to remove as much of the root as possible. Plants 3/8 inch- 2 inches in diameter can be pulled with a hand tool that removes the roots known as a "Weed Wrench" or "Root Talon." Any pulling should be done when the soil is damp. Buckthorn plants can be left to decompose, and provide good shelter for wildlife when stacked. The plant can be chipped if there is no fruit on it. If fruit is present, burning the branches is recommended to reduce the viable seed bank.

### **Herbicide**

Plant diameters above 2 inches need to be cut down with hand tools or a chainsaw, or girdled, and then treated with an herbicide. The best time to treat buckthorn is late summer and through the fall. Buckthorn leaves remain green longer than most plants, making it easy to identify. General use herbicides such as glyphosate or triclopyr work well in non - aquatic habitats. Using the cut stump or girdling method reduces negative effects to native vegetation around the treated area, and reduces the amount of herbicide wasted, making it less costly.

## **Phragmites (*Phragmites australis*)**

### **Introduction**

Phragmites, also known as common reed, is a perennial wetland grass. While it is native to Michigan, there is a non-native, invasive variety of phragmites that is threatening and overtaking wetlands and coastal areas. Phragmites creates tall, dense stands that essentially make it impossible for native



vegetation to survive. The monoculture that is created also crowds out animals and blocks shoreline access to swimmers, fishermen, and hunters. A dangerous fire hazard can also be produced by the dead, dry plant material left behind each fall by the plant.

### **Identification**

Phragmites plants can grow 6 – 15 feet high, but 80 percent of the plant’s mass is underground. The huge accumulation of roots and rhizomes can penetrate six feet of soil or more. In summer leaves are attached alternately along tan and rough, dull and rigid stalks. Leaves are grey-green and 2 – 2.5 inches wide and 8 – 15 inches long. Distinctive purple-brown plumes form at the end of stalks, appearing by late July. The plumes are 6 – 20 inches long and 8 inches wide with multiple branches. In fall leaves turn brown and most fall to the ground which leaves the stalk and plumes through most of the winter. Each mature plant can produce 2000 seeds annually. While new stands can form from seed, it is a much slower process than with rhizomes.

Native phragmites stalks are reddish in spring and summer and are smooth, shiny and flexible. The leaves are a lighter yellow-green color. Rhizomes are a smaller diameter and are yellow, as opposed to the white to light yellow color of invasive phragmites. Native phragmites also coexists with other native plants, not as a monoculture.

### **Physical Differences between Native and Introduced Varieties**

Phragmites causes ecological degradation that reduces and even eliminates vital wildlife habitat along shoreline and within wetlands through out the state of Michigan. Efforts have been pursued in recent years to control and reduce the threat of the non- native, introduced genome of phragmites.

The adverse effects of introduced phragmites are not mirrored by the native genotype. Native phragmites does not produce a tall dense monoculture with little to no native vegetation for wildlife habitat and food. It coexists with native vegetation contributing to the biodiversity of an ecosystem.

There are several traits that help distinguish between native and introduced phragmites listed in Table 1. These traits are intended to be used as guidelines for identification; not as tried and true rules.



Native phragmites (right) being displaced by invasive phragmites (left)

**Table 1. Observed differences between native and introduced phragmites**

Trait	Native	Introduced
<b>Leaves</b>	Fall off in the fall and are easily removed from stem	For the most part stay on plant through winter. Leaf sheaths are difficult to remove
<b>Stem color at base (spring/summer). Leaf sheath needs to be removed</b>	Red to chestnut	Tan to brown
<b>Stem color at base (winter)</b>	Light chestnut to light brown/gray	Tan
<b>Stem texture</b>	Smooth and shiny. Often black spots at winter nodes	Rough and dull. Stems have visible vertical ridges
<b>Stem flexibility</b>	High	Rigid
<b>Stem density</b>	Low	High
<b>Time of flowering</b>	Early (July- August)	Intermediate (August-September)
<b>Inflorescence</b>	Sparse	Dense
<b>Leaf color</b>	Yellow- green	Dark green- gray
<b>Rhizome density</b>	Low	High
<b>Rhizome color</b>	Yellow	White to light yellow
<b>Rhizome diameter</b>	Usually under 15 mm	Mostly greater than 15 mm
<b>Expansion rate</b>	Slow	Rapid

**Distribution**

Phragmites for the most part is found in coastal and wetland areas. It can also be found along lake margins and road ditches. Any low lying, moist area has the potential for a phragmites population to appear.

The rapid pace at which phragmites spread is a direct result of its rhizomes; each rhizome can exceed 60 feet in length and has the potential to grow six feet or more yearly. When fragmented, rhizomes can develop into new plants. Rhizomes can be broken by natural actions such as waves, as well as human actions like dredging. After being transported to a new location, the rhizomes waste no time and quickly take root. Other disturbances such as discharged nutrients and fire suppression cause rapid expansion.

**Control/Removal**

It is important to identify phragmites before starting any kind of control, assuring that they are not the native type. Controlling phragmites is essential to restoration of native plant communities in wetlands and shorelines. Field work has shown that an initial herbicide treatment followed up by mechanical removal is the best method followed by annual maintenance.

**Chemical**

Herbicide application is recommended as the first step in control of phragmites. Glyphosate and imazapyr have proven to be effective herbicides. While both are nonselective, if used in accordance with the manufacturer’s instruction impact to native plants, animals, and fish can be minimized. When using imazapyr treatment should

be done from early to late summer (June – September). If using glyphosate or a combination of the two, application should occur in late summer (August – September). Small stands of plants can be treated by injecting stems, hand swiping leaves, or selectively spraying plants. Large dense stands may require professional equipment.

### Mechanical

Mechanical removal of dead plant material after herbicide application is a very important step in controlling phragmites. It allows native plants to grow and eases the process of identifying remaining phragmites plants. Small seedlings and shoots can be pulled by hand, ensuring that all of the roots are removed. Individual plants or small stands can be cut down with hand tools or weed whips. If the ground is dry a small mower could be used. Dense areas that are accessible can be mowed down with a brush cutter. Be sure to clean any machinery or tools used before transporting them from the site. Any type of mowing or cutting should be done two weeks after the herbicide application. Use of any type of machinery is dependant upon the wetness of the soil, size of the site and density of plants. All stalks and debris must be collected, bagged and disposed of properly to prevent any spreading.

### Prescribed Burning

Some sites may allow for prescribed burns. This is a cost- effective and ecologically beneficial practice that should only be used in large dense stands of phragmites. Burns should be performed the year following herbicide application in late summer (mid- July – August) or winter (January – spring thaw). Late summer application is more beneficial; destroying seed heads, removing dead stems and allowing native plants to green before first frost. All burning is dependent on weather conditions and moisture levels.

### Monitoring Methods

Monitoring by participating volunteers play's a key role in the early detection and rapid response to invasive species. Keeping a close and diligent eye over an area ensures protection of the area and its natural resources. Multiple visits to the same site keep data current and accurate. If you or your group is interested in monitoring a specific area, talk to Huron Pines about signing up to adopt a locale.

#### **1. Know your site**

Keeping a sharp eye can mean the difference between early detection and an all out infestation. Learn where streams, lakes, ridges, wetlands, swaps, etc. are located. Knowing where these types of features are will help with narrowing down locations to look for the target species. For example, phragmites is primarily found in wetlands and along the edge of water features. So you can exclude uplands from your search area. Planning site visits according to plant life cycles is also helpful for early identification. For instance, purple loosestrife is easily identifiable by its flowers which bloom from June to September.

#### **2. Look for target species**

After becoming familiar with the site and have a few areas narrowed down, start keeping an eye out for any of the target species. Be thorough and move at pace that allows you to do so. The invaders are likely to be in different stages of maturity, so be on the look out for young as well as fully developed plants. The earlier they are detected the sooner and easier they are to control.

### **3. Record your visit**

Always record a visit to any area. Even if no target species are found it is just as important to know where they have not been found as where they have been.

### **4. Record your findings**

If a target species plant or colony is found it is extremely important to record the necessary information. Knowing the location ensures that the site can be revisited later on for additional monitoring or for removal. Collecting other information such as the area of the stand and density of plants are important for determining the effect on the surrounding ecosystem.

### **5. Take Photos**

When possible take several photos of the plant(s) and the density of the stand(s). A combination of close-up photos and landscape shots will ensure correct identification of the plant and help to visually monitor changes in the stand density.

### **6. What to do with your findings**

After completing a site visit all of the information collected should be returned to us as soon as possible. The address is:

Huron Pines  
Invasive Species Program  
501 Norway St.  
Grayling, MI 49738

## Huron Pines Invasive Species Site Report

Site \_\_\_\_\_

Date \_\_\_\_\_

Name(s) \_\_\_\_\_  
\_\_\_\_\_

Start Time \_\_\_\_\_  
End Time \_\_\_\_\_

1. Site Location: \_\_\_\_\_ Twp. \_\_\_\_\_ Range \_\_\_\_\_ Section \_\_\_\_\_

Street:

Main Crossroads:

2. Target Species: Did you find any target species? Yes No (continue to section 4)

3. Target Species Report:

I. Species Found \_\_\_\_\_

Location \_\_\_\_\_

*\*If no GPS points, mark on copy of a map*

Estimated number of plants: 1-100 100-500 500-1000 >1000

Estimated size of occurrence in feet (l x w) \_\_\_\_\_

Did you remove any plants? Yes No If yes how many? \_\_\_\_\_

II. Species Found \_\_\_\_\_

Location \_\_\_\_\_

*\*If no GPS points, mark on copy of a map*

Estimated number of plants: 1-100 100-500 500-1000 >1000

Estimated size of occurrence in feet (l x w) \_\_\_\_\_

Did you remove any plants? Yes No If yes how many? \_\_\_\_\_

III. Species Found \_\_\_\_\_

Location \_\_\_\_\_

*\*If no GPS points, mark on copy of a map*

Estimated number of plants: 1-100 100-500 500-1000 >1000

Estimated size of occurrence in feet (l x w) \_\_\_\_\_

Did you remove any plants? Yes No If yes how many? \_\_\_\_\_

4. Produce a Site Drawing with Populations on Reverse Side.

5. Any Additional Information (use reverse side if necessary):

**Submit to: Huron Pines, Invasive Species Program, 501 Norway Street, Grayling, MI 49738**

## **Resources**

Huron Pines: <http://www.huronpines.org/>

Huron Pine AmeriCorps: <http://www.huronpinesamericorps.org/>

DEQ recommendations for control and management of invasive phragmites:  
[http://www.michigan.gov/deq/0,1607,7-135-3313\\_3681\\_3710-178183--,00.html](http://www.michigan.gov/deq/0,1607,7-135-3313_3681_3710-178183--,00.html)

Michigan Invasive Plant Council (MIPC): <http://invasiveplantsmi.org/>

Michigan Sea Grant's website dedicated to purple loosestrife:  
<http://www.miseagrant.umich.edu/pp/index.html>