

## Appendix

### Exhibit A 2007 Invasive Plants List

The following page contains the most recently updated Non-Native Invasive Plant List for the Huron-Manistee National Forest. The species on this list have been identified by forest botanists and plant ecologists as presenting a significant threat. Each species is categorized by its level of invasiveness and efforts to eradicate.

#### **HURON-MANOSTEE NATIONAL FORESTS NON-NATIVE INVASIVE PLANT LIST**

<b>Common Name</b>	<b>Species</b>	<b>Forest Category</b>	
Norway maple	<i>Acer platanoides</i>	3	
Tree-of-heaven	<i>Ailanthus altissima</i>	1	
Garlic mustard	<i>Alliaria petiolata</i>	2	
Wild garlic	<i>Allium vineale</i>	5	
Common burdock	<i>Arctium minus</i>	4	
Yellow rocket	<i>Barbarea vulgaris</i>	4	S
Common barberry	<i>Berberis vulgaris</i>	2	
Japanese barberry	<i>Berberis thunbergii</i>	2	
Hoary alyssum	<i>Berteroa incana</i>	4	S
Indian mustard	<i>Brassica juncea</i>	5	S
Black mustard	<i>Brassica nigra</i>	5	S
Smooth brome	<i>Bromus inermis</i>	4	
Flowering rush	<i>Butomus umbellatus</i>	1	
Musk thistle	<i>Carduus nutans</i>	1	
Spreading star thistle	<i>Centaurea diffusa</i>	5	
Spotted knapweed	<i>Centaurea maculosa</i>	4	
Russian thistle	<i>Centaurea repens</i>	5	
Canada thistle	<i>Cirsium arvense</i>	4	S
Marsh thistle	<i>Cirsium palustre</i>	1	
Bull thistle	<i>Cirsium vulgare</i>	4	
Field bindweed	<i>Convolvulus arvensis</i>	5	S
Purple crown vetch	<i>Coronilla varia</i>	2	
Flax dodder	<i>Cuscuta epilinum</i>	5	S
Clover dodder	<i>Cuscuta epithimum</i>	5	S
Houndstongue	<i>Cynoglossum officinale</i>	5	

Orchard grass	<i>Dactylus glomerata</i>	4	
Queen Anne's Lace	<i>Daucus carota</i>	4	S
Autumn olive	<i>Elaeagnus umbellata</i>	4	
Cypress spurge	<i>Euphorbia cyparissias</i>	5	
Leafy spurge	<i>Euphorbia esula</i>	3	
Baby's breath	<i>Gypsophila paniculata</i>	1	
Giant hogweed	<i>Heracleum mantegazzianum</i>	1	
Common St. John's-wort	<i>Hypericum perforatum</i>	4	
Lathco flatpea	<i>Lathyrus sylvestris</i>	5	
Amur honeysuckle	<i>Lonicera maackii</i>	2	
Morrow's honeysuckle Tatarian	<i>Lonicera morrowii</i>	2	
Morrow's honeysuckle Tatarian	<i>Lonicera tatarica</i>	2	
Whitebell honeysuckle	<i>Lonicera x bella</i>	2	
Purple loosestrife	<i>Lythrum salicaria</i>	3	
White sweet clover	<i>Melilotus alba</i>	4	
Yellow sweet clover	<i>Melilotus officinalis</i>	4	
Eurasian water-milfoil	<i>Myriophyllum spicatum</i>	4	
Wild parsnip	<i>Pastinaca sativa</i>	1	
Reed canary grass	<i>Phalaris arundinacea</i>	4	
Common reed	<i>Phragmites australis</i>	3	
Scotch pine	<i>Pinus sylvestris</i>	4	
Japanese knotweed	<i>Polygonum cuspidatum</i>	1	
White poplar	<i>Populus alba</i>	3	
Lombardy poplar	<i>Populus nigra</i>	3	
Curly pondweed	<i>Potamogeton crispus</i>	4	
Common buckthorn	<i>Rhamnus cathartica</i>	1	
Smooth buckthorn	<i>Rhamnus frangula</i>	1	
Black locust	<i>Robinia pseudoacacia</i>	5	
Multiflora rose	<i>Rosa multiflora</i>	2	
Perennial sow thistle	<i>Sonchus arvensis (uliginosus)</i>	5	S
Common tansy	<i>Tanacetum vulgare</i>	5	
Wild parsley	<i>Torilis japonica</i>	5	
Periwinkle	<i>Vinca minor</i>	4	

**Forest Category**

1=not on Forests yet; eradicate new occurrences immediately upon discovery

2=eradicate wherever found

3=control source populations, eradicate outliers

4=prevent invasion of last areas not invaded, eradicate high priority areas

5=status on Forest uncertain, control/eradication site specific

S = State of Michigan Noxious Weed



## Existing Invasive Species

\*The following four species have been documented to occur in the Nordhouse Dunes Wilderness. There has been a removal effort for each of the species involving hand-pulling in the past. Removal of Spotted Knapweed is an ongoing effort.



**Houndstongue**  
*Cynoglossum officinale*

### Description:

- Is a biennial forb
- Forms a rosette in its 1st year with softly pubescent leaves 4- 12'' long and 0.8- 2'' wide.
- Flower stems, 12-48'' tall, are produced the 2nd year, or sometimes later.

### Impact:

- Rosettes can withstand drought stress, enabling the plant to survive water deficits and to delay flowering until conditions are favorable.
- Displaces native plant species, including the federally threatened Pitcher's Thistle
- The thick, deep taproot can exploit lower soil strata for water and nutrients.
- Can vary from individual plant to very dense stands
- Occurs in areas such as: disturbed forests and forest clearings, logging areas, and lake shores



**Japanese Barberry**  
*Berberis thunbergii*

**Description:**

- Upright fountain or dome shaped thorny shrub 2' – 3' in height, may reach 6'
- Green (sometimes red, copper or variegated) spatula shaped leaves appearing in tufts along the stem
- Yellow 6-petaled flowers

**Impact:**

- Host for black stem rust in wheat
- Displaces a variety of native herb and shrub species
- Forms dense stands in canopy forests and open woodlands



**Knapweed, Spotted**  
*Centaurea maculosa*



**Description:**

- Biennial herb that grows in 1' to 3' tall tufted clumps
- Seedlings form a rosette of alternate, pinnately to bi-pinnately dissected leaves 4-8" long
- Flowers: white to pink or purple, growing at the end of the stems in thistle-like heads

**Impact:**

- Reduces livestock and wildlife forage
- Displaces native plant species, including the federally threatened Pitcher's Thistle.
- Suppresses native plant communities
- Increases surface water runoff and soil sedimentation
- Produces an allelopathic compound that reduces germination of some grass species



**Lombardy Poplar**  
*Populus nigra*

**Description:**

- Deciduous tree that reaches heights of 50-75'; very fast growing tree
- Leaves: alternate; simple leaf type; pinnate veins; 2-4'' long; green
- Branches point upwards

**Impact:**

- Roots are extremely invasive
- Very hard to remove permanently
- Could significantly reduce native species





**Non-Native Bush Honeysuckles**  
*Lonicera maackii*; *Lonicera morrowii*  
*Lonicera tatarica*; *Lonicera x bella*

**Description:**

- Deciduous shrubs or small trees 6' to 15' tall
- Leaves are egg-shaped, opposite along the stem and short-stalked.
- Older stems are often hollow
- Tubular flower occur in pairs and the color ranges from creamy white to pink or crimson. Fruits are red to orange

**Impact:**

- Outcompetes and shades out native plant species
- Depletes soil moisture and nutrients
- Competes with native honeysuckles which are better for wildlife food and habitat





**Canada Thistle**  
*Cirsium arvense*

**Description:**

- Perennial herb that grows in 1.5' to 4' tall
- Prickly leaves are irregularly lobed with spiny margins
- Fibrous taproots may extend 6 feet deep
- Flowers: pink to purple, growing at the end of the stems
- Fuzzy seeds are spread by wind

**Impact:**

- Reduces livestock and wildlife forage
- Displaces native plant species by shading and outcompeting
- Results in monocultures and reduces biodiversity

# **List of Actions: Existing Invasive Species**

## **Preventative Measures**

Prevention is only a small piece of the puzzle regarding invasive species. There are many other measures that coincide with prevention such as: detection, control, monitoring, and restoration. Prevention is a primary means to address invasive species.

Preventative measures to address invasive species in the Nordhouse Dunes Wilderness are:

- ✓ Ensure employees are complying with the cleaning area for vehicles, equipment, and clothing.
- ✓ Conduct annual inventories for invasive species in high risk areas such as trails, campsites, and shoreline.
- ✓ Provide training for employees to identify invasive species. Early detection and eradication can be effective in helping reduce the risk of widespread infestations within the wilderness area.
- ✓ Limit or avoid all traffic through infested areas where known invasive weeds are present.

## **Education**

The Forest will provide information, training, and field guides to help employees determine if they are in a weed infested area.

Enter into cooperative agreements with other agencies to promote public awareness of invasive weeds and provide opportunities to help eradication efforts (ie workdays). The Forest will provide information to the general public at the District Office, trailheads, and for dissemination by employees on foot patrol while in the wilderness area.

## **Removal**

Weed removal in the wilderness will primarily by hand-pulling. When hand-pulling is conducted, the weed, including the flowers, fruiting structures, and roots should be pulled together. All parts of the invasive weed pulled should be placed in the proper container or garbage bag to prevent further spread while packing it out of the wilderness area. Refer to Guidelines for Selection of the Minimum Requirement Alternative for other removal processes.

## Invasive Species of Concern

\* The following species are watch-list species that do not currently exist in the Wilderness but have the potential to occur. If found their location needs to be documented and addressed promptly.



**Autumn Olive**  
*Elaeagnus umbellata*

### Description:

- Deciduous shrub, small tree up to 20' tall
- Leaves are alternate, lance-shaped, dark green above and silver-white scaled below, creating a two-toned effect
- Flowers: Light yellow borne along twigs after the leaves appear

### Impact:

- Drought tolerant and thrives in a variety of soils
- Out competes and displaces native plant species
- Provides dense shade interfering with succession and the nutrient cycle



**Baby's Breath**  
*Gypsophila paniculata*

**Description:**

- Height: 2-4'
- Leaves: Simple; opposite; narrowly lance-shaped; 1-4'' long; 0.4'' wide; hairless
- Flowers: White; tiny; 0.125-0.25'' wide; 5 petals; numerous; occur at ends of branches; bloom in July and August

**Impact:**

- Prefers disturbed areas, especially in dunes
- Prefers sunny, alkaline sands
- Displaces native plant species, including the federally threatened Pitcher's Thistle
- Out competes native grasses



**Black Locust**  
*Robinia pseudoacacia*

**Description:**

- Deciduous tree that can grow from 30'-90', with a 2'-4' diameter trunk
- Leaves: pinnately compound; alternate; up to 12'' long, 7-21 paired leaflets with additional leaflet at the tip; thin, oval, dark blue-green above and pale beneath
- Flower: white and yellow; pea-like; drooping cluster 4''-8'' long; bloom in May and June

**Impact:**

- Prefers rocky, sandy or loamy, well-drained soil in open, sunny locations
- Dense stands can develop and shade out important and native vegetation
- Suspected of producing chemical compounds that prevent other plants from growing (alleopathic)



**Leafy Spurge**  
*Euphorbia esula*

**Description:**

- An erect, tough, woody stem that ranges from 0.1 to 1m in height
- Seeds are released explosively and may be projected up to 4.6m from the parent shoot
- Flowers: yellow-green inflorescences
- Aggressive, deep-rooted perennial herb

**Impact:**

- Reduces native plant diversity
- Negative impact on wildlife populations, especially native birds
- Patches often dominate rangeland, pastures and prairies





**Multiflora Rose**  
*Rosa multiflora*

**Description:**

- Shrubby, arching thorny plant with numerous arching stems (canes), may reach 3 m in height
- Fringed stipule at base of leaf stem, looks like feathers
- Large clusters of showy, fragrant, white to pink flowers occur in dense to sparse panicles.

**Impact:**

- Disrupts cattle grazing
- Exclude native shrubs and herbs from establishing
- May be detrimental to nesting of native birds



**Phragmites**  
*Phragmites australis*

**Description:**

- Reed grass that can grow 3'-20'
- Leaves: linear; green or grayish green; wide at the base; smooth; flat; rough on the margins
- Seed heads: large, dense, feather-like, grayish-purple plumes; 5-16" long; produced in late July thru September

**Impact:**

- Become so dense that diverse wetland plant communities are eliminated, and navigation becomes difficult
- Large colonies can also block irrigation systems and cause flooding
- Alters nutrient cycling



**Purple Loosestrife**  
*Lythrum salicaria*

**Description:**

- Height: 20 – 60”
- Leaves: Entire opposite, 1 1/4” – 4” long, lance shaped
- Stems: stiff, four to six-sided and angular Flowers: 1/2 - 3/4 inches wide with 5 or 6 petals grow in a dense clustered spike, bright

**Impact:**

- Adapts readily to natural and disturbed areas
- Dense, homogeneous stand that reduces local biodiversity, and degrades wetlands
- Single plant can produce an estimated 2-3 million seeds per year



**Giant Hogweed**  
*Heracleum mantegazzianum*

**Description:**

- Height: 8-15 feet tall
- Leaves: Large 3-5 feet wide, compound and sharply lobed
- Stems are hollow, 2-4 inches wide and ridged with purple blotches and coarse hairs
- Flowers are flat-topped and white; can be up to 2.5 feet across

**Impact:**

- Giant hogweed is a public health hazard because of its potential to cause severe skin irritation.
- Adapts readily to natural and disturbed areas



**Garlic mustard**  
*Alliaria petiolata*

**Description:**

- First year plants appear as a rosette of green leaves close to the ground. Second year produces a flowering stalk 2-3.5 feet tall
- Leaves have scalloped edges and a distinct garlic odor when crushed
- Flowers: clusters of small white flowers with 4 petals each
- Produces long slender seed pods that remain visible through the summer

**Impact:**

- Dominates understory of forests
- Produces chemicals that inhibit the growth of other plants
- Results in dense, homogeneous stands that reduce biodiversity and threaten the existence of native wildflowers and tree seedlings
- Single plant can produce an estimated 3,000 seeds

## **List of Actions: Invasive Species of Concern**

### **Preventative Measures**

The previous seven invasive species are not yet known to exist in the Nordhouse Dunes Wilderness. As such, these species have been placed on a watch list. Preventative measures to prevent the possibility of these species becoming a problem in the wilderness are:

- ✓ Ensure employees are complying with the cleaning area for vehicles, equipment, and clothing.
- ✓ Provide training for employees to identify invasive species of concerns. Early detection and eradication can be effective in helping reduce the risk of widespread infestations within the wilderness area.