

# ***Invasive Plant Management Plan***

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## **Introduction**

### **A. What is the problem?**

Invasive plants pose serious ecological and economic threats to Wisconsin’s forest resources, including tree mortality, reduction in growth, poor regeneration, and damage to wildlife habitat. They can limit recreational use and are difficult and expensive to manage once populations are established. An invasive plant is defined as a plant not native to the ecosystem under consideration (*i.e.*, nonindigenous) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Most nonindigenous plants were introduced for food, fiber, or ornamental purposes, and escaped cultivation with the unintentional assistance of humans or animals, or by water or wind. Introduced species are no longer regulated by the insects, fungi, disease, grazing, or competition that controlled them in their native habitats, enabling them to become established in natural plant communities and wild areas, replacing native vegetation. Most introduced species cannot thrive in Wisconsin’s climate, and thus do not become invasive. However, the absence of natural enemies allow a few species to out-compete native vegetation and become problem species

### **B. What is the threat?**

Invasive plants currently threaten all of Wisconsin’s natural resources, from northern lakes and forests to oak woods and wetlands in the south. Each year, large acreages of Wisconsin’s forests are overtaken by unwanted plants. More than 70 species of non-native plants are currently causing ecological and economic damage to a significant portion of our public and private forest land, and many more are on the way. Problems in neighboring states and in the northeastern U.S., where climates and soils are similar, indicate that future invasions are likely to be common and much more severe. Some species are already here, but are not yet widespread. Others are not yet present in Wisconsin, but are a very serious problem in nearby states, and are certain to arrive here soon. The arrival of additional invasive species and the spread of existing invaders pose a serious but poorly addressed threat to many of the resources that sustainable forestry protects, including biological diversity, forest productivity, soil and water quality, and socioeconomic values. These resources can be protected via a three-fold management

strategy: 1) preventing new introductions, 2) early detection and eradication of new infestations, and 3) long-term management of established populations.

### **C. Why create an Invasive Plant Management Plan?**

Invasive plants pose number of management challenges for Wisconsin's state forests. State Forest land was set aside to preserve important watersheds and unique ecosystems. They provide recreational opportunities, habitat for wildlife and rare species, quality forest products, and serve as an example of sustainable management of forest resources. These benefits and resources are threatened by the spread of invasive plants. Management and control of these invaders is an important part of sustainable forestry principles that will ensure the economic, ecological and social benefits of Wisconsin's state forests for years to come.

The purpose of the State Forest Invasive Plant Management Fund is to support the State Forests' efforts to identify and manage invasive plant issues. This may include managing new outbreaks, controlling populations affecting regeneration, and identification and control of populations that are likely to spread. The Invasive Plant Management Plans are designed to aid State Forests in prioritizing and submitting projects for funding under the State forest Invasive Plant Management Fund.

## PART 1- STATEWIDE PROGRAM PERSPECTIVE

### 1. INVENTORY

Wisconsin State Forests have a number of different invasive inventory systems, each meeting different needs.

The first system, established in 2006, called Wisconsin State Forest Invasive Plant Inventory (WisIPI), is specific to northern state forests. The IPI is not a comprehensive property inventory rather a focused inventory in places with a high likelihood of invasive introduction, e.g. recreation trails, campsites, etc. The inventory includes a spatial element (a single point) with an attribute for the size of the area as well as other detail information about the invasive species. Each State Forest has a completed inventory and associated spatial and tabular data. Data available at:

<http://dnr.wi.gov/forestry/GIS/Data%5FMaps/data%5Fdownload/#available>

The second system is the Wisconsin Forest Inventory and Reporting System, (WisFIRS). The purpose of this system is to inventory forest stands and schedule forest management activities. Invasive species was added as a viable to be collected at the stand level in 2007. The inventory attributes include the ability to record up to 4 invasive species, and the density of each species.

The third system is WisCFI, a systematic continuous plot inventory across all state forests. The annual inventory includes invasive species information for each plot. The system is not used to identify management practices.

**Objective:** Maintain and update WisIPI property spatial and tabular invasives inventory as needed.

**Action:** Identify opportunities to enhance the usability for maintaining and adding new information in the existing WisIPI data base.

**Action:** Develop training materials for property staff to understand how to keep WisIPI inventory updated.

**Action:** Provide data to internal and external partners through the web.

**Action:** Evaluate the value of the initial attributes and identify missing attributes and refine as needed.

**Action:** Evaluate the attributes in the southern forest inventory system and the northern forest WisIPI and identify opportunities to merge the two.

**Action:** Evaluate opportunities to integrate WisIPI into existing land management information systems (e.g. WisFIRS).

**Action:** Incorporate Great Lakes Indian Fish & Wildlife Commission (GLIFWC) data into invasive species inventory database.

**Objective:** Include invasive species information in forest recon.

**Action:** All recon stands evaluated should be inventoried for invasives.

**Action:** Define forest recon inventory reporting needs and develop a core report in WisFIRS.

## **2. PRIORITIES**

A common first priority in invasive plant management is to limit the introduction of species; the second is to limit the spread. The most effective means of managing invasive plants is preventing them from establishing in the state, and then a particular property.

**Objective:** Inform the forest staff on the invasive plants that pose the greatest threats.

**Action:** Develop a communication network that lists the species of greatest concern and the movement of such.

**Objective:** Complete the actions in order to assist the state foresters in prioritizing invasive plant management.

**Action:** Maintain comprehensive invasive inventory on state forests

**Action:** Develop statewide and property specific invasive management plans

**Action:** Control invasive species

**Action:** Monitoring control efforts

**Action:** Educate staff and public on invasives on the horizon, as well as existing populations on the move.

## **3. CONTROL PLAN**

**Objectives:** Develop a control plan based on statewide priorities and threats.

**Action:** Ensure that the property specific plan is consistent with the potential threat a species has to a property.

**Action:** Ensure that the property specific plan is consistent with the distribution and movement of invasive species.

## **4. MONITORING**

Monitoring is the periodic inspection of post-activity sites that will evaluate the success of invasive species management plans and consequently help detect new invasions early. Monitoring programs should be simple and integrated into other routine activities such as reforestation surveys whenever possible.

**Objective:** Monitor and document control work.

**Action:** Identify monitoring needs and design a system to capture information.

**Action:** Develop a system to store control activities and track over time.

## **5. TRAINING, EDUCATION AND OUTREACH**

**Objective:** Provide the tools necessary to educate staff on identification and control of invasive plants.

**Action:** Develop curriculum that staff can use to train staff.

**Action:** Train/inform property staff on the identification of invasive species.

**Action:** Train/inform property staff on the new control methods of invasive species.

**Action:** Inform our publics and partners on the importance of and mitigation techniques for invasive control through kiosks and discussion with user groups.

## **6. PARTNERSHIPS**

Establishing partnerships is an excellent way of adding to resources designated to invasive plant management.

**Objective:** Maximize resources to manage invasive plants by utilizing partnerships.

**Action:** Identify local partnerships opportunities to participate in regional invasives efforts.

**Action:** Inform the appropriate property when a new regional Cooperative Weed Management Area (CWMA) is formed.

## **7. LEGAL AND POLICY**

This includes codes, rules, policy and guidance that apply to or include invasive plants.

**Objective:** Ensure staff is updated on existing and new policies as they arise.

**Action:** Provide existing statutes, manual codes, handbooks, others that apply to invasive plant and their management and update as they change or are added to.

**Action:** Ensure property master plans authorize the control of invasive species in appropriate places using appropriate techniques.

## **8. FUNDING OPPORTUNITIES**

**Objective:** Be an informational resource to assist in the search for funding.

**Action:** Identify funding needs to implement property plans.

**Action:** Provide funding sources to implement property plans.  
(Including Wildlife and Endangered Resources funding)

## PART 2- PROPERTY SPECIFIC PLANS

*The property specific invasive species management plan is for the property manager or the forester(s) of each property, as well as individuals or organizations identified in “partnerships” below. The objectives, projects, and level of detail within each plan will vary depending on property needs.*

### **Background on the Property**

The Northern-Highland American Legion State Forest (NHALSF) is located in Vilas, Oneida, and Iron Counties in northeast Wisconsin. The NHALSF is over 220,000 acres in size; one of the largest piece of publicly owned land in the state. The NHAL was created to protect the headwaters of the, Flambeau, Wisconsin, and Manitowish Rivers, and also contains over 900 lakes within its boundaries, 6% of Wisconsin’s total lakes. The road density is relatively high with US HWY 51 and County HWY M running north to south and State HWY 70 and CTY HWY N running east to west. In addition many smaller roads serve the numerous private land holdings within the forest. The surrounding lands are mostly forested with private, National Forest, tribal, county and state wildlife area ownerships. Recreational opportunities include canoeing, kayaking, biking, hiking, camping, swimming, and snowmobiling.

Forested cover types account for about 79% of the NHALSF. Aspen is the most common cover type, followed by, Northern Hardwood, Red, White, and Jack Pine, Oak, White Birch, Swamp Conifer, and Swamp Hardwood . A large percentage of the forest is in the Northern Highlands Pitted Outwash and Winegar Moraine Land Type Association. The Northern Highlands Pitted Outwash contains sands and loamy sands. The Moraine contains loams and sandy loams.

## **1. PRIORITIES**

### **A. INVENTORY AND MAPPING**

*Good inventory practices can keep long-term control costs down by ensuring that new infestations are detected early. The 2006-2007 State Forest Invasive Plant Inventory (SFIPI) was the beginning of an effort to inventory the extent of invasive plants on state lands. It is critical that land managers continue these efforts by integrating invasive plant inventory into standard operations allowing them to maintain knowledge of existing invasives and their locations within the property and detect new populations early. Inventory priorities include areas that are susceptible to invasion, such as transportation corridors and recently disturbed areas, and ecologically sensitive areas that may not withstand invasion. In addition to the terrestrial invasive species mentioned below, the NHALSF has several aquatic and semi-aquatic invasive species occurring in many of the wetland and lake systems on the forest.*

There were several different invasive species observed in the NHALSF during the 2006-07 inventory. While many were naturalized weeds and species of lesser concern, there were still several species that are highly invasive. These species

are garlic mustard (*Alliaria petiolata*), Japanese barberry (*Berberis thunbergii*), spotted knapweed (*Centaurea biebersteinii*), glossy buckthorn (*Rhamnus cathartica*), and non-native honeysuckle (*Lonicera spp.*).

**Glossy Buckthorn** – There is one very large infestation of glossy buckthorn located in and around the village of Lake Tomahawk. The likely source of this infestation is private landowners planting it for landscaping purposes. Since this infestation is so extensive, the most appropriate strategy may be to work on the smaller outlying populations before focusing on the core population. Controlling the spread of this population should be a priority because glossy buckthorn can invade natural swamps and wetlands displacing native vegetation.

**Garlic Mustard** - No garlic mustard was identified along the river corridors on the NHALSF. There were several small infestations that were found and treated at Indian Mounds Campground, and Big Lake Campground. There is also one large infestation and several small infestations located on private land adjacent to the State Forest. The large infestation is located three miles north of Boulder Junction Wisconsin. The property is Dairyman’s Country Club, a 5,000 acre golf and forest complex completely surrounded by NHALSF land. The forester, Ralph Hewitt, is aware of the situation, and a control day is being planned for this spring. This should be a number one priority for eradication. Garlic mustard quickly takes over a forested site and has been known to even affect the growth of large mature trees.

**Exotic Honeysuckle** - This species is a major problem in and around the Star Lake area. The species was likely planted for landscaping purposes in and around the original logging village of Star Lake and has since invaded the campground, plantation, old field, and adjacent private property. Honeysuckle can quickly spread and take over an area, disrupting natural regeneration.

**Japanese Barberry**- Japanese barberry is an ornamental shrub that has escaped cultivation. This species was planted in and around the homes of the original village of Star Lake. The plant is very invasive and can spread quickly in a forested environment. Research has shown that barberry can actually change soil chemistry making restoration of infested sites difficult. The plant spreads by berry dispersal and through stump and root sprouting. It is critical that the barberry be controlled to the extent possible before a timber harvest. Control work that was attempted on the Star Lake population was hindered by the presence of logging slash. In addition, Michael Maine and Colleen Matula observed that in disturbed areas and gaps the population of barberry was very dense and was the dominant shrub in the openings.

**Spotted Knapweed** – This plant is fairly widespread throughout the state forest. It is commonly found in roadside ditches, fields, trails, disturbed sites, and infested gravel pits. Knapweed spreads readily via prolific seed production, and is likely aided through the application of infested gravel. The plant is allelopathic

and can quickly displace native plants. Knapweed is widespread in the Powell Marsh area. The area was treated with chemical this fall. This site is an excellent candidate to release weevil larvae for bio control. Spotted knapweed can be controlled, but it usually requires an integrated approach of bio-control, chemical treatment, and carefully planned mowing. The mowing should be timed to avoid spreading the seeds.

**Tansy-** Tansy is an aggressive weedy plant that forms dense patches along roadsides, old fields, log landings and other disturbed sites. It has a low shade tolerance which prevents it from invading the forest. The main threat from this plant in spots it is found is displacing native disturbance adapted species.

**Inventory and Mapping Objectives:** Identify property priorities and opportunities for inventory and mapping of invasive plant species, including identification of areas needing inventory and opportunities for updating the WisIPI.

**Inventory and Mapping Projects for Northern-Highland American Legion State Forest:**

1. Make invasive plant inventory part of all timber sale planning. Complete a pre/post timber sale inventory as an early detection measure. Survey of roads and landings within the harvested unit. This inventory should be done twice a year once in the spring and once in the fall for active timber sales, and once a year in the spring for previously harvested timber sales.
2. Include invasive plant inventory in forest recon stand updates using existing WISFIRS stand based inventory system
3. Identify additional areas to be inventoried using the WisIPI and update WisIPI as opportunities exist.
4. Do pre/post project inventories for activities where there is potential for introduction and spread of invasive plants, including trail reconstruction, parking lot construction, etc. This should be done twice a year in the spring and fall.

**B. CONTROL, RESTORATION, AND MONITORING**

**Control Objectives:** Control invasive plants that impact regeneration and threaten to spread. Those areas that are at the early stages of invasion should be target for control before the severe infections. High quality areas should be priority for treatment.

**Control Projects for Northern-Highland American Legion State Forest:**

1. Control garlic mustard in high use recreation areas.
2. Control aggressive invasive plants along highly used trails and post signs about introducing invasive species. We need to state which ones? Any thoughts?

3. Work with adjacent landowner(s) on garlic mustard infestation, especially at the Dairyman's property.
4. Control buckthorn in high use recreation areas. The Lake Tomahawk infestation should be a high priority, and this should be done in cooperation with State Forest staff and other sources of labor. Like honeysuckle, birds are distributing seeds of this species.
5. Follow up on Spotted Knapweed treatment at Powell Marsh and release of Bio-control agents.
6. Work on continuing to control and remove Japanese barberry and honeysuckle from the Star Lake area.
7. Evaluate invasive control needs when establishing timber sales and include mitigation actions during sale preparation, during and post harvest. Of critical need is to control barberry within any timber sale especially around the Star Lake area before the harvest occurs.
8. Determine any areas with physical limitations, herbicide limitations, mechanical limitations, or labor limitations that will affect the control of invasive plant species.

Example Treatment Options:

Chemical Control

Cut-stump treatment

Basal bark

Foliar

Girdling

Biological Controls

Manual

Controlled Burns (is a good control measure on the NHALSF) If the permission and qualified people on hand, NHAL is a good place to control burn.

Spot Treatment with Fire

**Ecological Restoration Objectives:** Restoring native vegetation to degraded sites. The restoration process involves the following: analyzing the site and natural communities in the area, determining goals of the restoration, research and background info, determining whether to seed or allow adjacent vegetation to establish, and monitoring.

**Restoration Projects for Northern-Highland American Legion State Forest:**

1. NHAL currently has no planned restoration projects

**Monitoring Objectives:** Monitor areas of previous infestations that have undergone control measures. Report monitoring of control efforts to the program coordinator (Tom Boos).

**Monitoring Projects for Northern-Highland American Legion State Forest:**

1. Monitor success of attempts to reduce or eliminate the garlic mustard patch in Indian Mounds and Big Lake Campground.
2. Monitor success of Spotted Knapweed treatment at Powell Marsh
3. Monitor success of Japanese Barberry and Honeysuckle removal at Star Lake.
4. Monitor the spread and size of the Buckthorn infestation in and around Lake Tomahawk.
5. Monitor high recreational use areas i.e. campgrounds, hiking and trails.
6. Monitor invasive species status when conducting regeneration checks.
7. Identify monitoring needs for invasive species control tracking.
8. Please submit annual summary of control efforts to Tom Boos
9. Submit annual herbicide report to the appropriate person in your region. Refer to [Manual Code 4230.1](#) to determine who that is. It should be the same person that approves the herbicide application. It is also required to enter the herbicide application information into the Chemical Use Report Database.

### **C. TRAINING, EDUCATION AND OUTREACH**

**Training Education and Outreach Objectives:** Provide the tools necessary to educate staff and the public on invasive plants and their management. Incorporate prevention measures and early detection strategies into work plans.

#### **Training, Education, and Outreach Projects for Northern-Highland American Legion State Forest:**

1. Develop training program/materials for property staff on the identification and control strategies for invasive species.
  - Learn to recognize the invasive plants that are present within the property
  - Learn to recognize some invasive plants that are not yet present or in low numbers on the property
2. Develop educational materials:
  - Develop invasive plant information kiosks in appropriate areas and the Crystal Lake Nature Center
  - Set up invasive plant display with brochures at the main office
  - Develop signs describing control efforts where practical
  - Develop naturalist series presentations on invasive plants
3. Develop an outreach program:
  - Work with adjacent landowner(s) on garlic mustard infestation and Buckthorn infestation
  - Work with friends group on invasive species identification, location, and control needs
  - Enlist the local Weed Management Association in a regular (i.e. annual, semi-annual, etc) weed control day
  - Identify local groups or volunteers interested in invasive control project
4. Install signs and boot cleaning stations at appropriate locations within the Forest.

5. Establish demonstration plot or trials to educate the public on removal.
6. Implement Forestry Best Management Practices for Invasive Species (i.e. prevention, cleaning equipment, staff training etc.)

#### **D. PARTNERSHIPS, RESEARCH, POLICY**

**Partnerships, Research and Policy Objectives:** Maximize resources to manage invasive plants by forming and utilizing partnerships, remaining apprised of invasive plant legislation, ordinances and guidance, and by seeking funding for research projects.

#### **Partnership, Research, and Policy Projects for Northern-Highland American Legion State Forest:**

1. Participate in the regional CWMA consortium.
2. Identify contractors that have experience working with invasives. Keep a current list of contractors who can do inventory, control and monitoring.
3. List any legal and policy issues that apply to the property
4. Organize tours for internal WDNR and government officials to show the impacts of invasive plants first hand. Depending on how large one of the invasive infestation is, this would be an opportunity to showcase effort in inventory and control on the state forest.
5. Explore options for local, regional and state funding to control invasive plants and list the resources.
6. Submit projects for special state forest funding
  - The gypsy moth fund can cover invasive species projects.
  - Federal funding through grants is available.
  - Partnership with local weed cooperative can provide opportunities.

Appendix

Sw 15-25 W/NW 10- 20mph	Chemical	SK	ATV-Tank/BSP sprayer	ATV 4.5oz BSP .65oz	Milestone/liberate	1
67F W/NW 10- 20mph	Chemical	SK Tansy	4gal BSP	.15oz/1gal	Milestone/liberate	.1
67F 5-10mph	Chemical Torch	SK GM	4gal BSP Propane-Weed Torch		0.16 Milestone/liberate	.2
65F 20-30mph	Chemical	GM	4gal BSP	5oz	Aqua-neat	s
20-30mph	Cut-stump	JB	Brush Saw/Pruner squirt bottle	undilluted	Element 3A	1
20-30mph	Chemical	JB	4gal BSP	5oz	Aqua-neat	s
65F 5-10mph	Cut-stump	BL	Hand Saw squirt bottle	undilluted	Element 3A	s

Priority Treatment Sites

1. Powell Marsh ditches and surrounding area for spotted kanweed
2. Timbersale landing for the timbersale off of Bean Rd which species?
3. Indian Mounds Campground garlic mustard
4. Big Lake Campground which species?
5. Star Lake Plantation and surrounding area for barberry
6. Lake Tomahawk buckthorn and surrounding area
7. Dairyman’s Country Club garlic mustard problem



