

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 First 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 GLFWIC 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 Governor Knowles State Forest (GKSF) is located in Polk and Burnett Counties in northwest Wisconsin. The GKSF is over 30,000 acres size and stretches for 55 miles along the St. Croix National Scenic River-way. The road density is relatively low with State HWY 70 dividing the Forest in half. The northern part of the forest is bounded by CTY HWY F. River Road and West River Road border the southern half of the forest. The surrounding lands are mostly state wildlife areas, private, and county forest ownership. Recreational opportunities include canoeing, kayaking, biking, hiking, camping, horseback riding, snowmobiling and ATVing.

Forested cover types account for about 32% of the GKSF. Scrub Oak is the most common cover type followed by white, red, jack pine, swamp hardwood, Aspen, swamp conifer, and northern hardwood. A large percentage of the forest is in a Sandy Outwash Plain Land Type Association which has sandy, highly permeable soils with low fertility. The soil and forest types make prescribed fire a useful management tool to control invasives.

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.

There were several different invasive species observed in the GKSF during the 2006-07 inventories. 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*), leafy spurge (*Euphorbia esula*), spotted knapweed (*Centaurea biebersteinii*), common buckthorn (*Rhamnus cathartica*), and non-native honeysuckle (*Lonicera spp.*).

Common Buckthorn – There is one large population of common buckthorn (*Rhamnus cathartica*) located in the woodlot behind the Ranger Station, and on

the adjacent woodlot. The infestation is so severe it has completely taken over the wood lot, altering natural regeneration and is a likely seed source for other scattered individuals and populations in the forest.

Garlic Mustard – There was a large patch of garlic mustard located along the Lagoo Hiking Trail below the ridge on National Park Service land. The population is spreading to the top of the ridge into the state forest.. NPS and WDNR staff treated the population, but continued monitoring is needed. Garlic mustard is shade tolerant, alleopathic and completely displaces native vegetation including tree seedlings. The plant is a cool-season biennial which means it is the first to green up in the spring and the last to go dormant. This aids in treatment and identification.

Exotic Honeysuckle – Populations were found in a variety of locations, but tended to be more dominant in the mesic sites located closer to the St. Croix River. This plant has the potential to completely dominate the river corridor out competing and eliminating native riparian shrubs.

Leafy Spurge – There was a moderate size population located along Gile Rd exclusively on state forest land. The plant was found in an open area and in a Jack Pine woodlot. The management of Leafy Spurge is difficult and often requires a lot of follow up. The best way to control it is a combination of bio-control and chemical. The bio-control agent has been released in this area and it should be monitored to see if it is successful.

Spotted Knapweed – This plant is the most common and widespread invasive species on the state forest. It is commonly found in roadside ditches, disturbed sites, infested gravel pits, and along hiking trails. Mowing activities are likely contributing to the spread of this species. Many populations were observed in prairie remnants, barren/woodland landscape, and along the Kohler Peet Hiking Trail; some of these populations may be isolated enough to attempt some management. Knapweed is alleopathic and can eliminate all other vegetation where it becomes established. The best way to control this is with the chemical Milestone and using a bio-control Weevil.

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, as opportunities exist, including invasive inventory when planning timber sales, and including invasive inventory when updating forest recon stand updates using existing WISFIRS stand based inventory system.*

Inventory and Mapping Projects for Governor Knowles 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.
 5. The St Croix Campground and campsites should be surveyed twice a year once in the spring and in the fall.

B. CONTROL, RESTORATION, AND MONITORING

Control Objectives: Control invasive plants that impact tree regeneration, biodiversity 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 Governor Knowles State Forest:

1. Control garlic mustard in high use recreation areas. In the spring and or fall with either glyphosate or weed torch.
2. Control aggressive invasive plants along the horse trails.
3. Work with adjacent landowner(s) on Buckthorn infestation.
4. Work with townships and state forest mowing crews to time the mowing of ditches and trails to help prevent the spread of Spotted Knapweed.
5. Treat spotted knapweed along the Kohler Peet Hiking Trail.
6. Re-check the bio-control effort of Leafy Spurge. This is on Gile Rd and should be done during the growing season.
7. Control buckthorn in high use recreation areas, and follow up on the scattered individuals that were removed from timber sale sites this should be a priority for follow up control efforts. This species has the potential to invade all the same habitats currently being occupied by exotic honeysuckle in addition to areas with dense shade. Like honeysuckle, birds are distributing seeds of this species. There are two timber sale sites along West River Rd were small numbers of Buckthorn were found and removed. These sites should be revisited in the spring.
8. Evaluate invasive control needs when establishing timber sales and include mitigation actions during sale preparation, during and post harvest.
9. 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 (not likely a good control measure on the GKSF)
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 Governor Knowles State Forest:

1. GKSF 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 Governor Knowles State Forest:

1. Monitor success of weed torch treatment of Garlic Mustard along the Lagoo Hiking trail.
2. Monitor high recreational use areas i.e. ATV trails, campgrounds, hiking and horseback riding trails.
3. Monitor success of leafy spurge bio-control effort.
4. Monitor invasive species status when conducting regeneration checks.
5. Identify monitoring needs for invasive species control tracking.
6. Submit annual summary of control efforts to Tom Boos
7. Submit annual herbicide report to:

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107 Sutliff Avenue
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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 Governor Knowles 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
 - 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
 - Work with friends group on invasive species identification, location, and control needs
 - Enlist the local Upper Chippewa Cooperative Weed Management Association in a regular (i.e. annual, semi-annual, etc) weed control day
 - Identify local groups or volunteers interested in invasive control projects
4. Install signs and washing stations at ATV trailheads or 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 Governor Knowles State Forest:

1. Participate in the Northwoods regional CWMA consortium.
2. Work with the National Park Service on joint control projects.
3. Identify contractors that have experience working with invasives. Keep a current list of contractors who can do inventory, control and monitoring.
4. List any legal and policy issues that apply to the property
5. 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.

6. Explore options for local, regional and state funding to control invasive plants and list the resources.
7. Submit projects for special state forest funding
 - The gypsy moth fund can cover invasive species projects.
 - Federal funding through grants is available.

Appendix

Lagoo Hiking Trail	10/15/2008	11am	Overcast 50-55F	5-10mph
Timbersale West River RD	10/15/2008	4pm	Partly cloudy 50-55F	5-10mph
Ranger Station Grantsburg	10/16/2008	9am-1pm	Partly cloudy 50-60F	5-10mph

Priority treatment Sites

Lagoo Hiking Trail
 Timbersales West River Rd
 Ranger Station Grantsburg



