

# Best Management Practices for Preventing the Spread of Invasive Species in Wetlands



## Contents

|  |    |
|--|----|
| Purpose and Scope Statements .....                 | 1  |
| Introduction .....                                 | 1  |
| List of Wetland Best Management Practices .....    | 4  |
| Ch. 1 Pre-Activity .....                           | 4  |
| Ch. 2 During Activity .....                        | 7  |
| Ch. 3 Post-Activity .....                          | 13 |
| Ch. 4 Other Activities to Consider .....           | 13 |
| Appendix 1: Glossary .....                         | 15 |
| Appendix 2: List of Wetland Invasive Species ..... | 16 |
| Appendix 3: Helpful Website Links .....            | 18 |
| Acknowledgements .....                             | 19 |

## **Purpose and Scope Statements**

### ***Purpose***

Wetland invasive species pose a threat to local ecosystems and hydrology through changing species diversity and composition. This document describes practices that wetland users can use to aid in preventing or slowing the spread of invasive species. The goal is to provide practices that reduce the impact or spread of invasive species that are relevant to many different wetland users.

### ***Scope***

The Best Management Practice (BMP) statements in this manual are developed for wetland activities. The implementation of these BMPs is voluntary and is intended to help contractors, landowners and recreational users make the most efficient use of limited resources to prevent the introduction or spread of invasive species. However, selected BMPs may be incorporated into regulatory procedures.

### ***How this should be implemented.***

The BMPs in this document cover a wide range of areas and situations. They represent our best effort to identify effective and realistic practices that can be integrated into routine wetland activities to limit the impact of invasive species.

Landowners, recreational users, contractors and restorationists all have different roles in different circumstances. Each user should examine the BMPs and pick out those that apply to their particular activities and sites. For example, pay attention to whether your activity results in the disturbance of vegetation or soil, transport across a site, or the introduction or removal of organisms and look for BMPs that address these issues.

## **Introduction**

### ***What are invasive species and why should we care?***

Invasive species are non-native plants, animals and pathogens that are known to rapidly spread outside their natural range, altering the ecosystem and causing environmental or economic damage, or harm to human health. Invasive species may be the greatest threat to the long-term health and sustainability of Wisconsin's natural wetlands. Human activities such as urban development, farming, recreation and gardening have resulted in the introduction of many non-native plant and animal species to the state. In some cases those species end up competing with native species and can take over large areas of land. For instance, reed canary grass dominates almost half a million of Wisconsin wetland acres. The spread of invasive species into wetlands reduces local biodiversity and may also impair the functions and values of infested wetlands. Infestation of one wetland often leads to compromising other wetlands or water bodies nearby.

All people who work or play in wetlands can perform an important role in slowing the spread of invasive species. The intent of the BMPs is to provide practices to aid in reducing the spread of invasive species. This guide is intended for any individual who owns, works or recreates in wetlands.

The BMPs cover a variety of situations, so all practices will not apply to all wetland users. The approach you take to reduce the spread of invasive species will depend on several factors. If you are a landowner working on management of your wetland, a hiker traversing a wetland or a contractor installing a pipeline through a wetland, the BMPs that apply will vary. Also, you need to be aware of which species are invasive in your area. The species present onsite or nearby will also dictate which BMPs apply.

Current information on wetland invasive species can be found on the DNR website by going to <http://dnr.wi.gov> and searching for “invasive species”. Follow the link to “Wetland invasives” under the “Species information” section.

### ***Where are the risks of spreading invasive species?***

Activities that disturb the soil or alter hydrology of a wetland system are potentially the most likely to introduce or spread invasive species. In addition, the movement of people, animals or machinery through a wetland can easily provide a vector for the introduction or spread of invasive species if precautions are not taken.

Wetland activities where invasive species BMPs are critical include construction work in wetlands; where landowners, contractors and developers may be moving equipment through or working in a wetland. Restoration work in areas where wetlands have been drained or filled in the past also has the potential for spreading wetland invasives. Wetland practitioners need to be aware of activities where this potential exists and plan ahead of time to reduce the spread of invasives. Other examples of activities which have the potential to spread invasives include farming, logging and management activities such as prescribed burning and planting. Surveying, wetland delineation, research and recreational activities like hunting, hiking and gathering firewood are other activities where certain BMPs should be applied.

## **NR 40 – Wisconsin’s Invasive Species Rule**

To assist with minimizing the introduction and spread of invasive species in Wisconsin, the DNR developed a comprehensive invasive species rule to identify, classify and control invasive species. The rule became effective September 2009. It establishes a science-based assessment and classification system designed to help DNR staff and others prioritize their actions regarding invasive species. The purpose is to be more efficient and cost-effective by ensuring that energy and resources are spent on those species and populations with the greatest likelihood of harm and the greatest opportunity for control. The rule provides flexibility allowing citizens, businesses and governments to continue operations without undue restrictions.

The rule establishes two legal categories – “prohibited” and “restricted.” NR 40 limits possession, transport, transfer or introduction of these species. The rule also establishes “Preventative Measures” to show what actions we can take to slow the spread of invasive species. Certain Preventative Measures, such as removing plants and draining water from boats, are required under NR40. People should take reasonable precautions to minimize the spread of prohibited and restricted species. Following the reasonable precautions outlined in the best management practices in this document will help prevent unknowing violation of the rule.

Some species that are not classified as prohibited or restricted under NR 40 (non-regulated) may still be considered invasive. There are species that have been observed to be invasive in Wisconsin or in other regions of the US that are similar to Wisconsin. Some of these species may be added to the list of regulated species in future revisions to the rule.

For the latest information on listed species and regulations, go to the DNR’s website at <http://dnr.wi.gov> and search “NR 40”.

### ***How to use this document***

The following Best Management Practices are intended to act as a guide to facilitate the thought process of limiting the introduction and spread of invasive species. They are not intended to be prescriptive, as each situation requires different actions. The ‘Considerations’ that follow the BMPs are intended to further describe the intent of the BMP, provide examples, and foster the thought process and are by no means inclusive.

The focus of these BMPs is on terrestrial wetland invasive species rather than submerged aquatic species such as Eurasian water milfoil. Additional practices have been developed for aquatic invasive species and can be found on the DNR’s website at <http://dnr.wi.gov> then search “aquatic invasive species prevention”. Naturally, there will be invasive species prevention practices that are shared between aquatic and terrestrial invasive species; the appropriate practices for the specific site conditions, any invasive species present and each activity type should be utilized.

## List of Wetland BMPs

The following list of BMPs is arranged into four categories:

- Pre-activity- things to consider before an activity takes place.
- During activity- things to consider while in a wetland.
- Post-activity- things to consider when an activity is completed.
- Other- miscellaneous practices.

The purpose of separating them into these categories is quite simple - to think about the entire process of a wetland activity, from planning to long-term management.

### 1. *Pre-activity*

#### 1.1 **Know which invasive species affect or could affect your region and property.**

Considerations:

- a. Consult the DNR's invasive species website for information about invasive species in your area. Go to <http://dnr.wi.gov> and search "invasive species."
- b. This is an important part of planning any activity because it will help figure out what is a potential threat to the wetland based on proximity and will provide a larger scale perspective to threats.

#### 1.2 **Inform and educate wetland users and the general public in the area about common invasive species, their impacts, and ways to prevent their introduction and spread.**

Considerations:

- a. Post invasive species messages, identification posters and prevention strategies at prominent locations on the property; provide informational materials directly to recreational users.
- b. Ensure staff that will be working on wetland sites have information on invasive species found in wetlands and the BMPs to prevent their spread.
- c. Educate public officials and other decision makers about invasive species.
- d. Spread the word – help educate others about invasive species and their effects on our environment, economy and recreational opportunities.

#### 1.3 **Plan to wear outer layers of clothing and footwear that are not "seed-friendly."**

Considerations:

- a. In appropriate areas, wear low-tread footwear that does not hold soil, seeds, plant parts or invertebrates.
- b. Consider dedicating a pair of shoes or boots for use only on infested properties.
- c. Wear ankle gaiters over socks and shoe laces.
- d. Avoid exposing Velcro, bulky knits (*e.g.*, wool, fleece), pants with cuffs and other fabrics or clothing styles that can carry seeds.
- e. Wear disposable shoe covers over footwear in infested areas; properly dispose of them in the trash when leaving the area.

**1.4 Inspect and clean clothing, footwear, and gear for soil, seeds, plant parts, or invertebrates before activities.**

Considerations:

- a. Plan to bring cleaning equipment for traveling between wetlands.
- b. Use items like a stiff brush, stick or small screwdriver to help remove soil, seeds, plant parts, or invertebrates from shoe treads; use boot brushes and other removal devices when provided.
- c. Wear a hat to cover hair.
- d. Preferred locations for cleaning are those where:
  - Invasive species are already established.
  - Gear is unloaded and loaded.
  - Areas are easily monitored for new infestations due to the cleaning activity, i.e. along a road, at a trail head, or in a parking lot.
- e. Do not clean clothing, footwear, or gear in or near waterways – it may promote the spread of invasive species downstream.

**1.5 Prior to starting wetland activities, scout for and locate invasive species infestations, consistent with the scale and intensity of the activity.**

Considerations:

- a. Scouting should be done to maximize results considering the scale of the site and project. Access points, trails and other areas with ground disturbance have a high probability of new invasive populations.
- b. Conduct this activity during the growing season when feasible as plants are easier to identify.
- c. Use any existing monitoring surveys and available records for the property prior to the current activity being conducted.
- d. Include the land surrounding the site you are working on when feasible.
- e. Consider the watershed if a waterway runs through or adjacent to the site. Is there a risk of invasive species traveling to or from your site via a waterway? Treat upstream populations of invasives first if possible.

**1.6 Plan activities to limit the potential for the introduction and spread of invasive species.**

Considerations:

- a. Plan to limit the addition of any supplemental nutrients to the activity site in the form of fertilizer or nutrient-rich topsoil.
- b. Plan to limit inputs from offsite (such as stormwater or runoff containing sediments, nutrients or pollutants) that may increase the likelihood of invasive species establishment or spread.
- c. Refer to “during activity” BMPs to ensure compliance.

**1.7 Develop a prioritized action plan for managing invasive species on the property based on threats to the property, feasibility of control and likelihood of spreading.**

Considerations:

- a. Consider the likely response of invasive species or target species when prescribing activities that result in disturbance, such as soil disturbance, increased sunlight, or altered hydrology.
- b. Consider the need for action based on:
  - the degree of invasiveness;
  - severity of the current infestation;
  - the extent of activities as described in consideration 'a';
  - amount of additional habitat or hosts at risk of invasion;
  - potential impacts to native communities; and,
  - feasibility of control with available methods and resources.

**1.8 Plan for long-term management of invasive species after activities.**

Considerations:

- a. Consider invasive species that may invade and how to control any existing invasive populations.
- b. Long-term management generally refers to conducting inventories to understand which invasive species are present; controlling the species that pose the greatest threat; and conducting monitoring for effectiveness.
- c. Develop a plan for encouraging desirable wetland vegetation after activities that will result in ground or vegetation disturbance.
- d. Understand that any disturbance may lead to invasive species invasions and should be considered as part of the project or activity.

**1.9 Educate yourself and provide training on identification, prevention and management techniques of known invasive species to those involved in the site or its management.**

Considerations:

- a. Learn to recognize locally known invasive species common to the site and provide training in identification of invasive species and pests to other site workers.
- b. Audiences may include: employees, contractors, volunteers, land owners, land managers and recreationists.
- c. Refer to the [DNR invasive species website](#) for educational resources.



## 2. During Activity

### 2.1 Prior to moving tools and equipment onto and off of an activity area; scrape, brush or wash soil and debris from exterior surfaces, to the extent practical, to minimize the risk of transporting propagules.

#### Considerations:

- a. Methods of cleaning include any one of the following, but are not limited to: (use most effective method that is practical)
  - Brush, broom, or other hand tools (used without water)
  - Power washer
  - Car washes
  - High pressure air (some equipment may have air tank, leaf blower)
  - Steam cleaning
  - Portable wash station that contains runoff from washing equipment

*Note: Containment and disposal must be in compliance with wastewater discharge regulations. More information can be found on the DNR website – <http://dnr.wi.gov> Keyword: “nondomestic wastewater”.*
- b. Clean equipment at the shop during routine equipment maintenance activities.
- c. Preferred locations for cleaning are those where:
  - Invasive species are already established or as near as practical to the infested area.
  - Areas that are easily monitored and controlled, if necessary, for new infestations due to the cleaning activity, i.e. along an already infested road, access points.
- d. Do not clean equipment, vehicles or trailers in or near waterways or wetlands as it may promote the spread of invasives downstream.
- e. Make prior arrangements to clean equipment in conjunction with the specific activity. Risk consideration varies with equipment types, with possible introduction and spread of invasive species.

### 2.2 If construction mats are used ensure they are free of invasives (particular consideration if using timber mats) before arriving on site and clean as with other equipment when moving. Properly treat or dispose of invasive species, or any materials that may harbor invasive species.

#### Considerations:

- a. Onsite disposal of infested materials in piles within an infested area may be an option. Locate the pile in an area that facilitates easy monitoring and control if infestations spread from the pile.
- b. Place materials in a bag and send to landfill, where possible.
- c. Materials may be composted but only if the compost pile reaches very high temperatures (likely to be only commercial compost facilities), and the finished compost can be monitored for weed emergence.
- d. Materials may be burned if local ordinances allow it. Locate the burn pile in an area that facilitates easy monitoring and control if infestations spread from the pile.



## 2.3 Avoid spreading seeds and other propagules from infested to non-infested areas during activities.

### Considerations:

- Treat infestations before other activities begin in order to limit the spread of propagules.
- Carry out activities under conditions that minimize the risk of spread, e.g., frozen ground, snow cover, seed/propagule absence, etc. (See Figure 1)
- Clean equipment after activities in infested areas.
- Run equipment air intake fans in reverse before moving from infested to non-infested areas.
- Check non-infested areas for new invasions where activities have taken place 1-2 years after the activity.

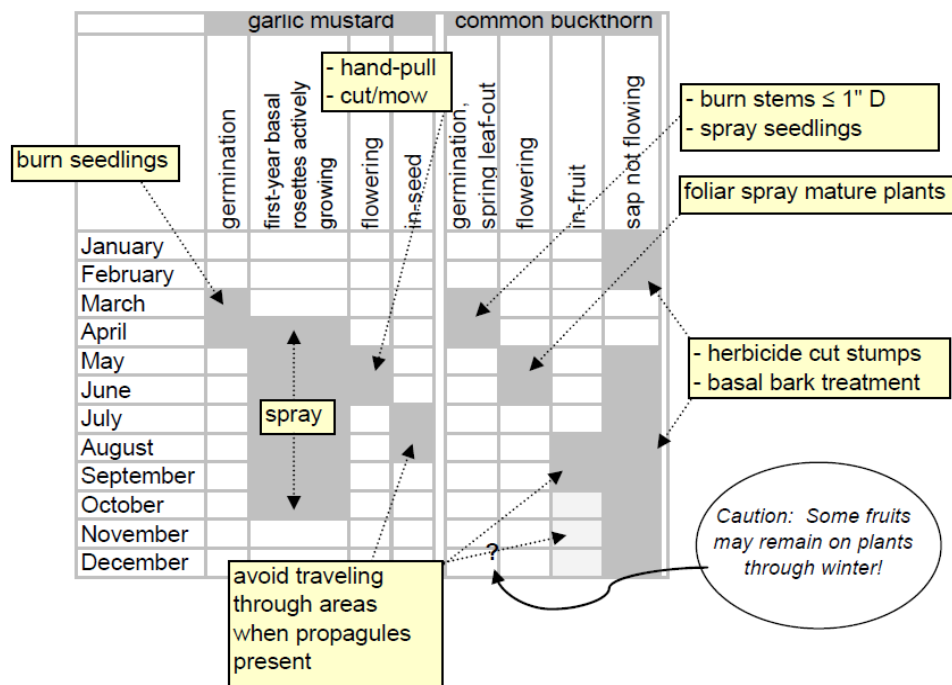


Figure 1: An example of identifying time windows for invasive species management. The goal of this chart is to present basic planning concepts. Source: Wisconsin's Forestry Best Management Practices for Invasive Species.

## 2.4 Remove soil, seeds, plant parts and other debris from shoes and clothing prior to leaving an area.

### Considerations:

- This includes all personal gear including bags, backpacks, etc.
- Inspect and remove soil, seeds, plant parts or invertebrates from the coat and feet of animals before and after activities.
- Use items like a stiff brush, stick or small screwdriver to help remove soils, seeds, plant parts or invertebrates from shoe treads; use boot brushes and other removal devices when provided.

- d. Wear a hat to cover hair.
- e. Preferred locations for cleaning are those where:
  - Invasive species are already established.
  - Gear is unloaded and loaded.
  - Areas are easily monitored for new infestations due to the cleaning activity, i.e. along a road, at a trail head or in a parking lot.
- f. Do not clean clothing, footwear or gear in or near waterways or wetlands – it may promote the spread of invasive species downstream.

**2.5 Take reasonable steps to avoid traveling through or working in isolated populations of invasives during activities that may result in spread.**

Considerations:

- a. Evaluate the site to determine the least impactful route to and location for activities in order to avoid invasive species.
- b. Take into consideration the impacts to sensitive wetlands and the time of year. Avoiding damage to wetland species may mean you choose to move through areas with invasives. Ensure that equipment or gear is cleaned after such movements.

**2.6 Avoid unnecessary soil disturbance where invasive plants could rapidly colonize areas of disturbed soil.**

Considerations:

- a. Disturbed soil may create favorable conditions for the establishment and spread of invasive plants. Ground disturbance may uproot existing vegetation and expose soil, creating a seedbed for invasive plants that can overwhelm desirable vegetation.
- b. Determine the amount of necessary disturbance based on the intensity and goals of the activity.
- c. After a soil disturbance, encourage prompt regeneration of desirable vegetation or cover exposed soil with a layer of mulch (weed-free preferred) to reduce germination or introduction of invasive plants.
- d. After a soil disturbance, monitor the area and treat new invasive plant infestations. This should begin while other activities may be concluding and continue into post-activity monitoring.

**2.7 Stabilize disturbed soil in a timely manner to prevent the establishment of invasive species.**

Considerations:

- a. Use erosion control/stormwater management technical standards to prevent erosion.
- b. Where site conditions permit (e.g. existing seedbank in soil), allow natural re-vegetation to occur.
- c. Use native seed or non-invasive cover crops that are appropriate to favor establishment and vigor for re-vegetation.
- d. Ensure the species specified in the re-vegetation plan are the ones being used.

- e. Monitor site to assess the re-establishment of native vegetation and supplement plantings/seedings if needed.
- f. Ensure that mulch and other materials are weed-free (see <http://wcia.wisc.edu/mulch.pdf> for a list of certified weed-free mulch providers).

**2.8 Manage stock piles of materials to limit the spread of invasive species.**

Considerations:

- a. Materials include: fill, gravel, wood chips, compost, mulch, seed, etc.
- b. Cover exposed piles of soil or construction materials with plastic sheeting.
- c. Plant cover crops to prevent the establishment of invasive species. Plant fast-growing non-invasive grasses to shield and bind the soil.
- d. Mechanically disturb stockpiled soil to prevent growth of invasives and treat any infestations promptly before the plants set seed.

**2.9 Keep and reuse on-site materials rather than importing new materials when feasible.**

Considerations:

- a. If materials are nutrient-rich or are infested with invasive species propagules, make sure the materials are replaced in the infested area.
- If burying infested soil, make sure it is buried at an appropriate depth to prevent growth (e.g. Japanese knotweed- 6 feet, reed canary grass- 3 feet).

**2.10 Avoid the off-site transport of invasives and materials that may contain invasives.**

Considerations:

- a. Avoid transport of invasives from an infested site to decrease the chance of their spread along roadsides or to other sites. Become familiar with and follow current state regulations on invasive species. See the DNR invasives rule website, as some species may not be transported without a permit.

**2.11 If you must transport material that may contain invasive species or materials containing invasives, manage the load to limit the spread of invasive species and bring it to a designated area for appropriate disposal.**

Considerations:

- a. If transporting these materials in an open-aired vehicle, tightly cover the material with a tarp so material does not fly off the back of the vehicle and spread along roadsides.
- b. If transporting these materials in bags or buckets, make sure to securely close the container and check for holes prior to transport.
- c. Reduce exposure of materials to weather elements that have the likelihood of spreading invasive insects, diseases and propagules. (e.g. transporting or dumping infested soil in high winds or rain).
- d. Remove loose materials from side boards and tailgate prior to transport.
- e. Become familiar with and follow current state regulations on invasive species. See the DNR invasives rule website.

**2.12 Ensure that off-site materials are free of invasive species and their propagules.**

Considerations:

- a. If you have to use off-site material, use material which is free of invasive propagules and low in nutrients.
- b. Become familiar with and follow current state regulations on invasive species transport or introduction. See DNR invasives rule website.

**2.13 Avoid adding any additional nutrients to the activity site in the form of fertilizers or nutrient rich topsoil.**

Considerations:

- a. The addition of nutrients can sometimes lead to the spread of invasive species.
- b. Nutrients should be added only when soil analysis determines that they are necessary to establish vegetative cover on newly disturbed sites.
- c. Take into consideration the fact that waterlogged soils can release more phosphorus than dry soils due to anaerobic conditions when placing new topsoil.

**2.14 Avoid planting invasive species.**

Considerations:

- a. Refer to <http://dnr.wi.gov> for a list of non-native invasive plants.
- b. Recognize that some native species may act invasive in certain situations.
- c. Some native plants have invasive strains; know which one you are working with, e.g., *Phragmites australis* (common reed grass).
- d. Avoid use of invasive cover crops.

**2.15 Control invasive plants to maximize effectiveness and minimize spread.**

Considerations:

- a. Consider the control technique, species and time of year in order to maximize effectiveness of control. See Figure 1.
- b. Control invasive plants, within the appropriate time window such that introduction and spread of invasive species is limited (i.e., not while plants are setting seed).
- c. Employ control methods that limit negative impacts on native communities or species when possible.
- d. Vegetating treated areas may be necessary to prevent re-infestation.

**2.16 Promote the establishment and health of non-invasive, native plants.**

Considerations:

- a. Diversify the planting material within the context of your design to encourage the establishment of suitable wetland plants. Planting a wide range of species that are native to the wetland type will help insure that some of those species will establish given a wide range of soil and hydrologic conditions that may vary micro-topographically.

- b. When available and appropriate, purchase, sell and propagate native species, cultivars and varieties known to be less susceptible to invasive pests as alternatives to more susceptible ones.
- c. Choose plants that are most suitable for the conditions of your site (hydrology, soils, etc.).
- d. Use local native genotypes as much as possible.

**2.17 Avoid unnecessary wounding of trees and shrubs to reduce the introduction of pathogens and insects.**

Considerations:

- a. Cut or prune trees at the appropriate time.
- b. Avoid wounding during periods of high risk transmission. Refer to current DNR and UW Extension research and literature for specifics, for example, oak wilt and Dutch elm disease. Be sure to check your local ordinances first; local ordinances may use more restrictive dates than the state recommends.
- c. Erect barriers to protect existing trees and other vegetation from injury during planting and installation activities occurring in the same general area. See *American Standards for Tree Care Operations – Management of Trees and Shrubs During Site Planning (ANSI A300 Part 5)*.

**2.18 Stay on designated trails, roads, and other developed areas when possible and observe animal restraint rules. When off-trail, avoid areas that are infested with invasive species.**

Considerations:

- a. There are times in which you cannot avoid infested areas, so if you must travel through areas containing invasive species, try to remove all invasive species propagules before traveling through an un-infested area.
- b. Follow animal restraint rules and use reasonable precautions to limit animal potential to spread invasive species (e.g. avoid travelling through stands of invasives, comb/brush fur and properly dispose of any propagules).

**2.19 Make sure that invasive animals such as fish, crayfish, insects or pathogens are not inadvertently transported.**

Considerations:

- a. Follow suggested actions to prevent the spread of aquatic invasive species when moving equipment in aquatic areas and areas of known or suspected populations of invasive animals. Go to the DNR's Aquatic Invasive Species page for more information and decontamination procedures (See Appendix 3 for website).
- b. If moving timber products to or from site follow the appropriate Forestry BMPs to prevent the spread of pests and pathogens (See Appendix 3 for website).
- c. Get firewood that was harvested where you will burn it or buy Wisconsin certified wood which is free of harmful tree pests and diseases. Be sure to follow firewood regulations. Visit <http://dnr.wi.gov> keyword "firewood" for more information.

### **3. *Post-activity***

#### **3.1 Create an invasive species monitoring plan for properties/sites under your management.**

Considerations:

- a. Monitoring plans include periodic inventory and monitoring of any control work to ensure effectiveness,
- b. When your management activity on the property/site is completed, pass on your surveys and management plans to the landowner or land manager.

#### **3.2 Monitor each site following all activities; determine necessary actions based on presence of invasive species.**

Considerations:

- a. Monitoring may be necessary for several years after the completion of a project to ensure that invasive plants do not become established and control efforts have been effective.
- b. Employ the appropriate level of surveillance based upon the species and level of infestation. Particular attention should be paid to areas of disturbance, entry/exit points and routes through a site.

#### **3.3 Keep records of any invasive species surveys done on the site, activities done on the property to control invasive species, and activities that could affect invasives.**

Considerations:

- a. It is important to be able to track activities to properly understand the invasion and possible management techniques. Having records of invasive species surveys, management and control efforts will assist in assessing the effectiveness of management activities.

### **4. *Other activities to consider***

#### **4.1 Volunteer to help control invasive species.**

Considerations:

- a. Contact public and private landowners, agencies, and nonprofit conservation organizations to find out about volunteer opportunities. See the DNR invasive species website (<http://dnr.wi.gov>, search “invasive species control” for resources for information on control).

#### **4.2 Report infestations of invasive species.**

Considerations:

- a. Report them to the appropriate land manager or property owner.
- b. Also report them to the DNR at <http://dnr.wi.gov>; search “reporting invasive species” for reporting instructions.
- c. Report appropriate species. It is not necessary to report already well-established invasive species unless the species is new to an area or on a

special high quality site, e.g., report a new reed canary grass infestation in a high quality sedge meadow.

- d. Report species as early as possible to optimize control options.

#### **4.3 Incorporate invasive species prevention into planning for special events.**

Considerations:

- a. Special events include: field trips, work parties, bird walks, etc.
- b. Place cleaning stations at entrance and exit points.
- c. Plan travel routes to avoid areas of heavy infestation.
- d. Provide participants with informational brochures and other educational materials related to invasive species prevention.
- e. Identify invasive species in the area to educate participants.
- f. Consider adding a component of removal and proper disposal of invasive species as part of the event.
- g. Plan events for proper times of the year to help avoid the spread of invasive species – dependent on the species found on or near the site. Prepare the area before the event to minimize the spread of invasives as a result of the event (mow, treat invasives, burn, etc.)

#### **4.4 Explore and use current available resources to prevent the introduction and manage the spread of invasive species.**

Considerations:

- a. Consider grant opportunities for funding invasive species control efforts. See Appendix 3 for some suggested sites to start looking for grants.
- b. Find or establish a group of volunteers to manage a site, or engage with existing volunteers in the area.

#### **4.5 As opportunities arise, interact with and engage researchers to further our understanding of invasives.**

Considerations:

- a. Contact the DNR, universities, local resource agencies and non-profit conservation organizations.



## Appendix 1: Glossary

Germination – the process whereby seeds, spores, or propagules sprout and begin to grow.

Genotype – the genetic constitution of an individual organism.

Invasive species – a species that is not native to the ecosystem under consideration whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

NR40 – Wisconsin Department of Natural Resources Invasive Species Identification, Classification and Control Rule. This classifies invasive species in Wisconsin as *Prohibited* or *Restricted* and regulates the transportation, possession, transfer, and introduction of those species. The rule also establishes “Preventive Measures” to show what actions we can take to slow the spread of invasive species.

Microtopography – uneven ground on a relatively small scale, often refers to specific habitat for an individual species.

Propagule – any reproductive structure or part of a plant, such as a fruit, seed, bud, tuber, root, stem with rooting structures or shoot that can grow independently of its parent source.

Prohibited Species – invasive species that are not currently found in Wisconsin, with the exception of small pioneer stands of terrestrial plants and aquatic species that are isolated to a specific watershed in the state or the Great Lakes but which, if introduced into the state, are likely to survive and spread, potentially causing significant environmental or economic harm or harm to human health. With certain exceptions, the transport, possession, transfer and introduction of Prohibited species is banned.

Restricted Species– invasive species that are already established in the state and cause or have the potential to cause significant environmental or economic harm or harm to human health and includes established nonnative fish and crayfish, fish in the aquaculture trade, fish in the aquarium trade, and non-viable fish species. Restricted species are also subject to a ban on transport, transfer and introduction, but possession is allowed, with the exception of fish and crayfish.

Watershed – an area drained by a specific stream, river, or other body of water; varies in size and extent.

## Appendix 2: Wetland Invasive Species<sub>1</sub>

### Wetland Invasive Species – Regulated Plants

Links on common name will take you to the DNR factsheet for each species with information on distribution, photos, and possible control methods.

| <u>Classification</u>  | <u>Common Name</u>                       | <u>Scientific Name</u>                               |
|------------------------|--|--|
| Prohibited/Restricted* | <a href="#">Amur honeysuckle</a>         | <i>Lonicera maackii</i>                              |
| Restricted             | <a href="#">Bells honeysuckle</a>        | <i>Lonicera x bella</i>                              |
| Restricted             | <a href="#">Canada thistle</a>           | <i>Cirsium arvense</i>                               |
| Restricted             | <a href="#">Cattail hybrid</a>           | <i>Typha x glauca</i>                                |
| Prohibited             | <a href="#">Chinese yam</a>              | <i>Dioscorea oppositifolia</i>                       |
| Restricted             | <a href="#">Common buckthorn</a>         | <i>Rhamnus cathartica</i>                            |
| Restricted             | <a href="#">Common teasel</a>            | <i>Dipsacus fullonum</i> subsp.<br><i>sylvestris</i> |
| Restricted             | <a href="#">Cut-leaved teasel</a>        | <i>Dipsacus laciniatus</i>                           |
| Restricted             | <a href="#">Dame’s rocket</a>            | <i>Hesperis matronalis</i>                           |
| Prohibited/Restricted  | <a href="#">European marsh thistle</a>   | <i>Cirsium palustre</i>                              |
| Restricted             | <a href="#">Flowering rush</a>           | <i>Butomus umbellatus</i>                            |
| Restricted             | <a href="#">Garlic mustard</a>           | <i>Alliaria petiolata</i>                            |
| Prohibited             | <a href="#">Giant hogweed</a>            | <i>Heracleum mantegazzianum</i>                      |
| Prohibited             | <a href="#">Giant knotweed</a>           | <i>Polygonum (Fallopia)</i><br><i>sachalinense</i>   |
| Restricted             | <a href="#">Glossy buckthorn</a>         | <i>Frangula alnus</i>                                |
| Prohibited/Restricted  | <a href="#">Hairy willow herb</a>        | <i>Epilobium hirsutum</i>                            |
| Prohibited             | <a href="#">Japanese honeysuckle</a>     | <i>Lonicera japonica</i>                             |
| Prohibited/Restricted  | <a href="#">Japanese hops</a>            | <i>Humulus japonicus</i>                             |
| Restricted             | <a href="#">Japanese knotweed</a>        | <i>Polygonum (Fallopia)</i><br><i>cuspidatum</i>     |
| Prohibited             | <a href="#">Japanese stilt grass</a>     | <i>Microstegium vimineum</i>                         |
| Prohibited             | <a href="#">Mile-a-minute vine</a>       | <i>Polygonum (Persicaria)</i><br><i>perfoliatum</i>  |
| Restricted             | <a href="#">Morrow’s honeysuckle</a>     | <i>Lonicera morrowii</i>                             |
| Restricted             | <a href="#">Narrow-leaved cattail</a>    | <i>Typha angustifolia</i>                            |
| Restricted             | <a href="#">Phragmites, common reed</a>  | <i>Phragmites australis</i>                          |
| Prohibited/Restricted  | <a href="#">Poison hemlock</a>           | <i>Conium maculatum</i>                              |
| Prohibited             | <a href="#">Porcelain berry</a>          | <i>Ampelopsis brevipedunculata</i>                   |
| Restricted             | <a href="#">Purple loosestrife</a>       | <i>Lythum salicaria</i>                              |
| Prohibited/Restricted  | <a href="#">Tall or reed manna grass</a> | <i>Glyceria maxima</i>                               |
| Restricted             | <a href="#">Tartarian honeysuckle</a>    | <i>Lonicera tatarica</i>                             |
| Prohibited/Restricted  | <a href="#">Wild chervil</a>             | <i>Anthriscus sylvestris</i>                         |

<sub>1</sub> Prohibited and restricted species definitions can be found in the Appendix 1: Glossary.

\*Species classified as “Prohibited/Restricted” are prohibited in certain parts of the state but restricted in other parts of the state. Refer to the Wisconsin DNR website for a map showing where these species are prohibited and restricted.

## Wetland Invasive Species – Non-regulated Plants<sub>1</sub>

| <u>Common Name</u>                 | <u>Scientific Name</u>         |
|------------------------------------|--------------------------------|
| Balfour’s jewelweed                | <i>Impatiens balfourii</i>     |
| Garden valerian                    | <i>Valeriana officinalis</i>   |
| Giant reed                         | <i>Arundo donax</i>            |
| Japanese chaff flower              | <i>Achyranthes japonica</i>    |
| Lesser celandine                   | <i>Ranunculus ficaria</i>      |
| Limnophila, Asian marshweed        | <i>Limnophila sessiliflora</i> |
| Marsh forget-me-not                | <i>Myosotis scopioides</i>     |
| Moneywort                          | <i>Lysimachia nummularia</i>   |
| Mosquito fern, water velvet        | <i>Azolla pinnata</i>          |
| Ornamental jewelweed               | <i>Impatiens glandulifera</i>  |
| Reed canary grass                  | <i>Phalaris arundinacea</i>    |
| Salvinia species                   | <i>Salvinia</i> spp.           |
| Seaside goldenrod                  | <i>Solidago sempervirens</i>   |
| Water spinach, swamp morning-glory | <i>Ipomoea aquatic</i>         |
| Watercress                         | <i>Nasturtium officinale</i>   |
| Woodland forget-me-not             | <i>Myosotis sylvatica</i>      |
| Yellow iris                        | <i>Iris pseudacorus</i>        |

<sub>1</sub>These species are not regulated because they may have beneficial uses, but they may also have adverse environmental, recreational or economic impacts or cause harm to human health. It is legal to possess, transport or transfer these species, but caution is advised.

## Wetland Invasive Species – Regulated Animals

| <u>Classification</u> | <u>Common Name</u>  | <u>Scientific Name</u>           |
|-----------------------|---|----------------------------------|
| Prohibited            | Red swamp crayfish  | <i>Procambarus clarkia</i>       |
| Restricted            | Red-eared slider with a carapace (top shell) length of less than 4” | <i>Trachemys scripta elegans</i> |
| Restricted            | Rusty crayfish  | <i>Orconectes rusticus</i>       |

## Appendix 3: Helpful Resources

### Wisconsin Department of Natural Resources:

Home Page:

<http://dnr.wi.gov>

NR 40 Invasive Species Rule:

<http://dnr.wi.gov/topic/invasives/classification.html>

Wisconsin Wetland Invasive Species Strategy:

<http://dnr.wi.gov/topic/wetlands/invasives.html>

Invasive Species Prevention

<http://dnr.wi.gov/topic/invasives/prevention.html>

Invasive Species Control

<http://dnr.wi.gov/topic/Invasives/control.html>

Aquatic Invasive Species Prevention

<http://dnr.wi.gov/topic/invasives/prevention.html>

Regulations on Firewood

<http://dnr.wi.gov/topic/invasives/firewood.html>

*A Field Guide to Invasive Plants in Wisconsin*, Wisconsin DNR, 2012

[Link to PDF on DNR website](#)

There are a wide range of invasive species identification cards, leaflets, brochures and posters. All are available via the DNR's website at:

[http://dnr.wi.gov/topic/Invasives/documents/TR\\_Pub\\_Catalog.pdf](http://dnr.wi.gov/topic/Invasives/documents/TR_Pub_Catalog.pdf)

Lakes/AIS grants (some wetlands or wetland invasives may be eligible)

<http://dnr.wi.gov/lakes/grants/>

Other grant suggestions are found in Appendix D of the Forestry BMPS

<http://council.wisconsinforestry.org/invasives/pdf/AppendicesA-F.pdf>

### Invasive Species Best Management Practices:

<http://council.wisconsinforestry.org/invasives/>

### Wisconsin Invasive Species Council:

<http://invasivespecies.wi.gov/>

### Invasive Plants Association of Wisconsin:

<http://ipaw.org/>

### Freckmann Herbarium Plant Search:

<http://wisplants.uwsp.edu/namesearch.html>

This document meets one of the objectives of the Wisconsin Wetland Invasive Species Strategy (WWIS, January 2012). It was reviewed by the Wetland Team, DNR Invasive Species Team and others.

## **Acknowledgements**

Thomas Boos, Wisconsin DNR  
Katie Beilfuss, Wisconsin Wetlands Association  
Sally Gallagher, UW-Madison  
Rebecca Graser, US Army Corps of Engineers  
Jeff Kraemer, Stantec, Inc.  
Mark Pfoost, US Fish and Wildlife Service  
Stacy Schumacher, Wisconsin DNR  
Pat Trochlell, Wisconsin DNR  
Bernadette Williams, Wisconsin DNR  
Brock Woods, UW-Extension

*This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to relevant facts.*