Door County
Invasive Species Strategy
2018-2023

Land Conservation Committee
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For all seasons!

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Table of Contents

Executive Summary 5

Section 1: Introduction & Background 6

1.1. Door County Landscape 6

1.2. What are invasive species? 6

1.3. The Economic Impact of Invasive Species 7

Section 2: Door County Government 7

2.1. Door County Soil & Water Conservation Department 7

2.2. SWCD Invasive Species Investments 8

2.3. Door County Priority Invasive Species 8

2.4. Purpose 9

Section 3: The Door County Invasive Species Team 10

3.1. The Door County Invasive Species Team 10

3.2. Funding for DCIST 10

3.3. Mission Statement of DCIST 11

3.4. Vision Statement of DCIST 11

Section 4: A County Strategy 13

Section 5: Prevention 14

5.1. Common Pathways of Invasive Species Introduction 14

5.2. Aquatic Invasive Species Prevention Activities & Actions 15

5.2.1. Clean Boats, Clean Waters 15

5.2.2. Other AIS Prevention Strategies: Bait Dealer Initiative, Fishing Tournament Outreach, etc. 16

5.3. Terrestrial Invasive Species Prevention Activities & Actions 18

5.3.1. PlayCleanGo 18

5.3.2. Right-of-way and Transportation Corridors 18

5.3.3. Organisms in Trade 19

Section 6: Early Detection and Monitoring 20

6.1. Statewide Programs and Initiatives 21

6.2. Priority Early Detection Species 22

6.3. Finding, Reporting & Responding to Early Detection Species 24

6.4. Technology and Data Management 25

Section 7: Control & Management 27

7.1. Past & Ongoing Control Activities in Door County 27
7.2. WDNR's NR-40 Species 30
7.3. Priorities for Control & Management in Door County 30
7.4. Tools for Integrated Pest Management 32
7.4.1 Careful Consideration of Pesticide Use 33
7.5. Funding Control Projects 35
Section 8: Communication 35
8.1. Outreach and Education 35
8.2. Organizational 37
Appendices 39
Appendix A: State of Wisconsin's Department of Transportation's Highway Maintenance Manual - Chapter 7 Roadside Management recommended BMP summary 40
Appendix B: Wisconsin's NR-40 Listed Species 42
Appendix C: Wisconsin DNR's Invasive Species Response Framework's *Invasive Species Response Process Overview & Checklist* 46

List of Acronyms	
AIS	Aquatic Invasive Species
CBCW	Clean Boats Clean Waters
CISMA	Cooperative Invasive Species Management Area
CLMN	Citizen Lake Monitoring Network
CWMA	Cooperative Weed Management Area
DCIST	Door County Invasive Species Team
DCLT	Door County Land Trust
EDRR	Early Detection and Rapid Response
GLEDN	Great Lakes Early Detection Network
GLRI	Great Lakes Restoration Initiative
GPS	Global Positioning System
LNRP	Lakeshore Natural Resources Partnership
NHI	Natural Heritage Inventory data
NNIS	Non-native Invasive Species
PCG	Play Clean Go
SNA	State Natural Area
SWCD	Door County Soil & Water Conservation Department
SWIMS	Surface Water Integrated Monitoring System
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WDNR	Wisconsin Department of Natural Resources

Executive Summary

Invasive species are a growing environmental and economic threat to Door County and are defined as harmful alien species whose introduction or spread threatens the environment, the local economy, or society, including human health. Once established, invasive species are extremely difficult and costly to control and eradicate, and their ecological effects are often irreversible. The current threats posed by invasive species in Door County are significant. In response to these threats, Door County Soil & Water Conservation Department along with the Door County Invasive Species Team developed the Door County Invasive Species Strategic Plan.

The objectives of this Strategic Plan are to prevent new invaders from arriving and surviving in Door County, to slow and where possible reverse the spread of existing invasive species, and to reduce the harmful impacts of existing invasive species. This plan highlights work that has been undertaken, identifies gaps in current programs and policies, and outlines future actions necessary to meet the objectives of the Strategic Plan. This Strategic Plan also emphasizes the need for continued collaboration and coordination with local municipalities to adopt and implement a noxious weed ordinance, which contains at a minimum *Phragmites australis*, as well as maintaining the Door County Invasive Species Team, especially in education and outreach, inventory, monitoring, and management efforts.

To be successful in preventing the introduction and spread of invasive species, both government and non-government organizations, stakeholders, municipal government agencies, and members of the public must also be involved. The Door County Soil & Water Conservation Departments Strategic Plan highlights some of the important work that has been undertaken by stakeholders and members of the public, and suggests further ways these partners can help fight invasive species.

This document further explains the seriousness of invasive plants and identifies the four goals (pillars) generated by the Door County Soil & Water Conservation Department and the Door County Invasive Species Team. These goals reflect the need to provide a coordinated approach to managing invasive species throughout Door County and serves as the Door County's intended approach towards invasive species management. To extend the useful life of this Plan, it should be considered a living document and be updated as new information becomes available and/or at the five-year assessment period.

Section 1: Introduction & Background

1.1. Door County Landscape

Door County is one of the smallest counties in the State of Wisconsin at only 492 square miles. Despite its size Door County boasts 300 miles of Lake Michigan shoreline, five state parks, and 19 county parks. Door County is also one of the most biologically diverse counties within Wisconsin. The Wisconsin Department of Natural Resources (WDNR) Natural Heritage Inventory (NHI) conducted an analysis of listed state and federal species, including those whose status is special concern, threatened, or endangered. This analysis, updated in July 2017, showed that Door County contains 154 different rare species and natural habitats, including alvar, boreal forest, and Great Lakes ridge and swale communities. Out of the 72 Wisconsin counties, Door ranks second in rare species element occurrences. The Towns of Baileys Harbor, Liberty Grove, and Washington Island rank 4th, 5th and 8th out of 1,259, respectively. This diversity and wealth of natural resources has also lead to the establishment of the Gravel Island and Green Bay National Wildlife Refuges, 28 Wisconsin State Natural Areas (SNAs), and an additional 11,000 acres of land under conservation ownership by non-profit conservation organizations and land trusts for the public's responsible use and enjoyment.

The diverse cultural, recreational, and natural resources of Door County have also resulted in a varied group of stakeholders when it comes to invasive species education, management and control.

Two of Door County's federally threatened plant species: Dune thistle (*Cirsium pitcheri*) and dwarf lake iris (*Iris lacustris*).

1.2. What are invasive species?

Wisconsin Statute defines invasive species as "nonindigenous species whose introduction causes or is likely to cause economic or environmental harm or harm to human health." These species can be aquatic or terrestrial weeds, insect pests, nuisance animals, or disease-causing organisms. They can occur in all types of habitats and affect urban and rural areas throughout the state. These species have been introduced both deliberately and accidently. In general, aquatic and terrestrial invasive species may cause the following impacts, among others:

- Outcompete native species for food and habitat causing displacement or reduced populations of native species.
- Change the composition and structure of both aquatic and terrestrial communities that may have a negative cascading effect throughout food webs and nutrient cycles.
- Degrade habitat and negatively affect water quality and wildlife, including commercially valuable species.
- Alter recreational opportunities by impeding navigation in aquatic habitats or reduced accessibility within terrestrial habitats.
- Degrade shorelines and beaches both physically and aesthetically leading to negative impacts to recreation and tourism.
- Decrease property values and increase costs to utilities and municipalities.

1.3. The Economic Impact of Invasive Species

Large-scale economic analyses show that invasive species cost the United States $120 billion annually (Pimentel, Zuniga, & Morrison, 2005) while ballast-borne invasive species cost Great Lakes states $230 million annually (Rothlisberger, Finnoff, Cooke, & Lodge, 2012). Terrestrial and aquatic invasive species not only impact the county's environment, they can also be an economic burden to Door County.

According to the WDNR Invasive Species Team 2016-2017 Performance Report:

- Aquatic invasive species, like the zebra mussel, have a financial impact on industries that use water for cooling and municipalities that rely on lakes for drinking water. Zebra and quagga mussels cost the United States economy up to $1 billion annually. Costs associated with invasive species that originate in the ballast water of ocean-going vessels visiting the Great Lakes have been estimated at $138 million annually but could be as much as $800 million annually.
- Invasive species, including weeds, pests, and diseases, negatively impact Wisconsin's $59 billion agriculture industry (350,000 jobs) by increasing production costs and reducing crop yields. Canada thistle, a major agricultural pest, costs tens of millions of dollars in direct crop losses annually and additional millions in control costs.
- Wisconsin's forestry industry, a $28 billion industry (66,000 jobs), is impacted by oak wilt, gypsy moth, and more recently emerald ash borer and beech bark disease. These invasive diseases and pests both damage and kill tree species within the State and County. Costs to respond to the emerald ash borer in our region, including the treatment, removal, and replacement of ash trees, has a current annual effect of $280.5 million on municipal budgets - a figure that does not include the value of trees on private property. This beetle also increases electrical utility budgets with the removal of dead trees that could fall onto utility lines.
- Terrestrial invasive species, such as garlic mustard and wild parsnip, degrade forests and grasslands and reduce enjoyment of our trails and parks. According to the October 1, 2012 invasive species investment report provided by the WDNR to the WI Legislature," $7.6 million spent on invasive species management in 2011 increased to $9.3 million in 2012 based on preliminary spending estimates. Of this investment, about 82% was spent on aquatic invasive species."

Outdoor recreation is one of the top reasons visitors come to our state. In 2016, Wisconsin visitors reached 107.7 million and their associated spending had an estimated $20 billion impact on the state's economy. As invasive species continue to change our environment and negatively impact the accessibility and beauty of our waterways, forests, and other natural areas, Wisconsin may see a reduction in visitor spending. Door County is ranked seventh of Wisconsin's 72 counties in visitor spending with $347.8 million in 2016.

Section 2: Door County Government

Door County Government, established in 1851, provides services to the County's 30,000 year-round residents, as well as a fluctuating seasonal population throughout the year. The county seat is the City of Sturgeon Bay. The county consists of the city, fourteen towns and four villages covering the 492 square miles of the Door Peninsula.

2.1. Door County Soil & Water Conservation Department

The Door County Soil and Water Conservation Department (SWCD) has a responsibility and directive under Chapter 92 Wisconsin State Statute to promote land uses and programs which advance conservation and the protection of Door County's natural resources, which is also identified as one of the Door County's strategic priorities. The mission of conservation and environmental advocacy is the standard by which SWCD programs are developed and implemented.

Seeing the habitat degradation and safety hazards *Phragmites australis* and wild parsnip created throughout the county, in 2003 the SWCD's role with invasive species grew to one of its top management priorities. This growth prompted the official formation of the Door County Invasive Species Team (DCIST) which utilized funding obtained through a LNRP grant to draft a strategic work plan.

2.2. SWCD Invasive Species Investments

Since 2008, The Door County SWCD has secured funding through public and private grants, as well as public and private donations totaling $657,653. These monies afforded the SWCD opportunity to educate the public and expand control of invasive plants within private properties throughout the county. These investments include the following SWCD-led projects:

- 2009-2011: Phragmites control on 10-acres of public and private land on Washington Island- Efforts largely funded through the Lakeshore Natural Resources Partnership (LNRP) and private donations allowed for treatment expansion.
- 2011-2018: Control of non-native Phragmites on Door County shorelines and right-of-ways- Shoreline treatments were an expansion to private properties outside of the areas identified and treated by a WDNR-led project to control Phragmites and Lyme grass on Lake Michigan shorelines within WDNR Conservation Opportunity Areas (COAs). Funding through SWCD was largely provided by the USFS as well as public and private donations. The two projects funded two consecutive treatments of SWCD and volunteer inventoried Phragmites across 300 miles of Lake Michigan shoreline and more than 30 inventoried Phragmites acres along right-of-ways within Door County.
- 2013-2017: Control of Wild parsnip along 122 miles of road right-of-way- Funded largely through a federal grant from the United States Forest Service (USFS) as well as private and public donations.
- 2016-2018: Recommend Door County municipalities adopt a noxious weed ordinance and implement an invasive plant control program with guidance and support from SWCD Conservationist and the DCIST program and partners. This push was made due to the uncertainty of grant dollars which directly correlates with the size of the role SWCD can play with regards to on the ground invasive species management. WDNR Aquatic Invasive Species (AIS), USFS, and private donor funding has provided for the invasive species identification workshops and priority species inventories that support this effort.
- 2018-ongoing: Implementation of a cost share program for municipalities to conduct treatment of priority invasive species listed in their noxious weed ordinance. Funded through DCIST donations.

	Federal Grants	*State Grants*	*Other Grant Sources*	*Private Donations*
Aquatic Invasive Species	0	$358,053	0	$15,000
Terrestrial Invasive Species	$202,400	$28,900	$15,300	$38,000
Total Expenditures	$202,400	$386,953	$15,300	$53,000

***Table 1**: Door County SWCD invasive species expenditures from 2008-2018 broken down by type of invasive species and funding source.*

2.3. Door County Priority Invasive Species

The SWCD utilizes the Wisconsin NR-40 administrative rule to guide educational and outreach efforts and the recommended focal species, found later in this document, help support and narrow priority species selection. The county's priority species and control efforts are determined by historical financial investments of SWCD within private lands and along ROWs as well as several other factors including:

1. Public health and safety
2. Economic impact
3. Ecological impact
4. Current abundance within County

Using these criteria, four species have been selected as priority species in which the SWCD and the Door County will focus their efforts. All four of these species, shown in table on the following page, are listed as restricted in Wisconsin within Chapter NR-40. Restricted species are subject to a ban on transport, transfer and introduction.

Common Name	Latin Name	NR-40 Status
Common reed	*Phragmites australis*	R
Common/Cut-leaved teasel	*Dipsacus sp.*	R
Japanese knotweed	*Polygonum cuspidatum*	R
Wild parsnip	*Pastinaca sativa*	R

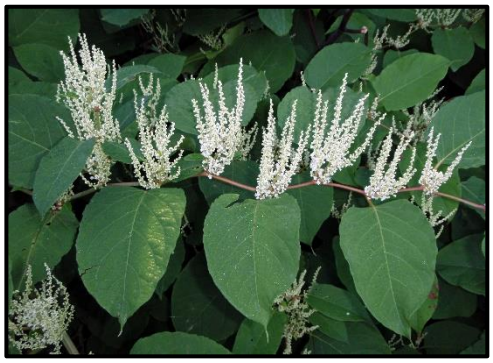
Table 2: *Priority species for the SWCD and Door County.*

2.4. Purpose

To help mitigate the threat of invasive species in Door County, SWCD and its partner organizations in the Door County Invasive Species Team (DCIST) have been successful competing for state and federal grant funding to address aquatic and terrestrial invasive species issues and carry out numerous individual small-scale invasive species projects. It is known that many listed invasive species including Japanese knotweed, European marsh thistle, Phragmites, reed canary grass, glossy buckthorn, and narrow-leaved cattail are present within the County at varying abundance and density. This plan is designed to guide future SWCD invasive species education and control efforts. This plan also provides a framework from which partners may collaborate to continue efforts to prevent, manage, and control the harmful invasive species within Door County.

SWCD efforts will continue to be focused on priority species. This plan also lists focal species that may be addressed as funding and future program initiatives allow.

This plan addresses county-wide invasive plant prevention, monitoring, and control efforts and aims to heighten awareness of the problems associated with invasive species. The best way for the SWCD and DCIST to achieve long-term and relevant advances in the battle against invasive species is to work collaboratively with all stakeholders in a deliberate manner. This plan provides a strategic and focused direction for implementing an invasive species management program. Providing strategic guidance to all partners, citizens, and municipalities will help increase efficiencies, reduce redundancies, and foster collaboration and compliance across the invasive species spectrum. In addition, many aspects of invasive species management are constantly in flux, including policies, threats and available funding. This plan is intended to be dynamic and allow flexibility as needed to address changing needs and priorities. It is intended that this plan be reviewed annually and updated every five years to reflect current conditions.



Four priority invasive species for Door County. Starting top left and clockwise: Common reed (*Phragmites australis*), teasel (*Dipsacus* spp.), Japanese knotweed (*Polygonum cuspidatum*), and wild parsnip (*Pastinaca sativa*).

Section 3: The Door County Invasive Species Team

3.1. The Door County Invasive Species Team

The Door County Invasive Species Team (DCIST), which is comprised of the Door County SWCD, USFWS, WDNR, University of Wisconsin Extension, Door County Land Trust, The Ridges Sanctuary and The Nature Conservancy, have been working collaboratively since 2000 managing invasive species within Door County's unique places. Maintaining and protecting high quality habitats are necessary for the survival of species left unimpeded. The DCIST addresses the nonindigenous species that disturb the ecologic and economic balance of Door County and believes it can promote biodiversity and help ensure the continued viability of our tourism, land and water resources, and quality of life for Door County visitors and residents alike. The DCIST is overseen by a steering committee comprised of partner organizations and concerned citizens. SWCD was designated as the fiscal manager of the DCIST in 2003 and remains the fiscal manager. A funding policy was adopted by the Door County Land Conservation Committee in 2018 on appropriate handling of DICST funds. The structure of the organization itself has been informal, with support for the group not being expressed under a Memorandum of Understanding (MOU) or similar document.

The overall goal of the DCIST, and thus this Plan, is to maintain the integrity of Door County's native terrestrial and aquatic plant communities by preventing and removing invasive species using an integrated approach that maximizes the effectiveness of the action while minimizing the undesirable impacts of the invasive species and the management action.

While the DCIST has maintained an active invasive species outreach and education program since 2000, this is the first comprehensive invasive species plan. Development of such a plan provides inclusive guidance and documentation for project managers and cooperators, provides a context for systematic evaluation and adaptive management, facilitates the transfer of information to the public and DCIST partners, improves fiscal accountability by focusing on species and/or places where efforts yield the most benefit, enhances the effectiveness of the program by providing the required environmental analysis of more aggressive control measures, improves efficiency by identifying and eliminating redundancies between program elements, and finally, lays a course for the future by identifying additional program elements that are needed to achieve the DCIST's invasive species management goals.

This plan will function as an extension to the June 2003 report titled "Future Plans and Accomplishments of the Door County Invasive Species Team", which was generated for the Door County Soil and Water Conservation Department and serves as a Strategic Plan for the DCIST partnership.

This plan builds upon DCIST's 2003 report and addresses:

- The change in the invasion landscape from 2003 to current conditions to determine updated management and control priorities provided to limit the spread and impact of invasive species.
- Pathways of introduction and spread have become more apparent and steps that DCIST and its partner organizations may take to address these pathways are clearly defined.
- DCIST has changed through new partners, programs, and funding opportunities. Updates in this plan will help DCIST benefit most from these partnership and resources.
- Provides guidance should funding not be attained for continued outreach and control efforts.
- Clearly define the roles and responsibilities of the partnership.

3.2. Funding for DCIST

As the fiscal manager for the DCIST, Door County SWCD handles incoming donations, grant monies, and designated funds for the DCIST program, often at the discretion of the steering committee. State, Federal and local grants are a major contributor to the funding of a part-time DCIST coordinator and to control activities across Door County. These grants are sought after and

administered by the Door County SWCD with support of the DCIST steering committee. In 2018, to provide more formality and accountability the Door County Land Conservation Committee approved a policy of how the SWCD may apply for, accept, and utilize invasive species funding. SWCD holds donations in accounts designated solely for the purpose of managing invasive species within Door County. In accordance with SWCD policy 20-DCIST Donation Fund Policy, activities funded with donations must be directly linked to managing priority invasive species and yield tangible, on the ground benefits.

Use of DCIST funds will be considered for one or any of the following:

i. SWCD invasive species grant application match
ii. SWCD-recognized and DCIST-identified invasive species project administration and activities
iii. SWCD Municipal Cost Share Program

The diverse habitats of the Door Peninsula (starting top left and clockwise):

Great Lakes beach and dune complex, Newport State Park, Door County. *Photo by Eric Epstein, WDNR.*

Interdunal Wetland and Boreal Forest. Jackson Harbor Ridges SNA, Washington Island. *Photo by Eric Epstein, WDNR.*

Second-growth mesic hardwood with substantial component of American beech. *Photo by Drew Feldkirchner, WDNR.*

Rich fen dominated by wire-leaved sedges, bordered by a conifer swamp and sandy ridges Northeastern Door Peninsula. *Photo by Eric Epstein, WDNR.*

3.3. Mission Statement of DCIST

To sustain diverse ecosystems through prevention of monocultures of invasive plants within Door County peninsula lakeshore basin, for future generations in partnership with public and private landowners.

DCIST is committed to educating, preventing, minimizing, and eradicating invasive plants and reducing the impact on Door County's natural resources, economic viability and human welfare. The partnership promotes an open information exchange, public and private sector coordination, citizen involvement, education of the public, and the comprehensive and cooperative management of local resources that is intended to protect biodiversity.

3.4. Vision Statement of DCIST

Coordinate a network of functions and processes that work in concert to detect invasive plants early and to respond quickly.

DCIST envisions a system that prevents invasive plants outbreaks through an early detection and rapid response program which can reduce long-term management costs and preserve pristine habitats. This is fostered through education and training of both DCIST partners, members, and private landowners to identify, inventory, and monitor priority invasive plants within Door County.

3.5. Current DCIST Staff

Since 2007, DCIST has hired a paid, part-time coordinator funded through grants from several State and Federal sources. This coordinator is hired under contract with the SWCD and in the past, have been private contractors, staff at The Ridges Sanctuary, and staff at The Nature Conservancy. This coordinator has been tasked with convening the steering committee regularly, hosting public meetings and trainings, assisting private landowners in identifying and controlling priority invasive plants, collecting inventory data, and other tasks specific to the grants which fund the position.

In addition, when funding is available, the SWCD has hired one or two limited-term employees (LTE) that support SWCD and DCIST invasive species efforts. These employees carry out activities such as the inventory and control of invasive plants or conducting outreach with private landowners.

Year	*AIS funding*	*Terrestrial IS Funding*
2009	$26,000	$10,400
2010	$28,000	$14,700
2011	$28,000	$3,600
2012	$11,000	$550
2013	$6,800	$2,000
2014	$17,800	$2,000
2015	$17,800	$2,550
2016	$17,800	$2,550
2017	$7,500	$6,250
2018	$10,000	$6,250
Total	**$170,700.00**	**$46,850.00**

Table 3: *DCIST Coordinator expenditures separated by year and the type of funding utilized (aquatic or terrestrial).*

Section 4: A County Strategy

The mission of the DCIST, and that of SWCD, reflects the partnership's desire to reduce the economic and environmental damage which can be caused by invasive species. The strategic plan's four goals (pillars) which support this mission are: prevention; early detection and monitoring; control and management; and communication. The plan's six activity areas address elements of all four of these pillars. Each pillar is comprised of an overall goal with action items addressing actions that will be taken to achieve that goal based on the five foundational concepts shown below. These activities will assess the leadership and coordination roles of partners, provide guidance for adaptive management, support targeted monitoring and research, determine outreach and education programs, and address regulation and policy concerns. Each of the following sections within this plan address one of these pillars and activity areas that the DCIST will work within to achieve that pillar's goal(s).

Figure 1: Pillars and activity areas of the Door County Invasive Species Strategy. The pillars reflect goals that support the mission of the DCIST and the six activity areas below the pillars address specific elements that are needed to achieve that mission.

Section 5: Prevention

Overall Goal:

1) **Limit the number of invasive species introduced to Door County and slow the spread of those invasive species already present within the county.**

Preventing the introduction of non-native, invasive species is the most efficient, economical, and effective option to addressing invasive species. While natural dispersal and range expansion exists, nearly every problematic biological invasive has been human mediated. Most often, human behavior is responsible for the initial introduction of that species to a new geographic location or habitat. Since human behavior can change and actions can be taken to reduce or eliminate the risk of invasions resulting from that activity, every invasion is theoretically preventable. Preventing the continued movement of invasive species in Door County will protect the economy, environment, and social quality of the County. The greatest prevention benefit can come from identifying and addressing the pathways that lead to the introduction of new species. Among some of the pathways of invasion in Door County include recreational and commercial watercraft, horticulture, aquaculture, commerce, tourism, or travel. Closing these pathways can not only prevent new species from establishing in Door County, but can also contain those already present.

5.1. Common Pathways of Invasive Species Introduction

Pathways are the means by which invasive species are introduced or spread from one geographic area to another. DCIST and its partners strive to prevent the introduction and spread of invasive species through new and existing pathways. This includes engaging both the public and partners in managing invasive species pathways, potential impacts and preventing the introduction of new invasive species into the County. Several of the common pathways and sub-pathways of species introduction have been identified in the table below. The DCIST partnership is actively working to address and educate on several of these key pathways including, but not limited to, recreational use of firewood, habitat alteration, highway rights-of-way, nursery plant stock, recreational trail and boat users, and equipment cleaning.

Pathways	***Sub-Pathways***
Firewood or Wood	Recreational use Commercial use
Habitat Alteration and Restoration	Mowing Land clearing/development Logging Revegetation
Hitchhikers	Travelers Baggage and gear Shipped materials Pets and animals
Organisms in Trade	Whole plants/plant parts Pet trade Food and game animals
Recreation	Trail users (cyclists, hikers, etc.) Hunters and anglers Wildlife viewers
Transportation	Cars, trucks, buses, semis Construction and Maintenance equipment Helicopters, planes, trains

Table 4: *Common pathways and sub-pathways by which invasive species are introduced and spread.*

5.2. Aquatic Invasive Species Prevention Activities & Actions

5.2.1. Clean Boats, Clean Waters

Door County's exceptional water resources make it a popular place for water-based recreation for both residents and non-residents, including recreational boating, fishing, diving and hunting. The travel and tourism associated with these activities is a boon to Door County's economy and are part of life in northeastern Wisconsin. Unfortunately, any activity that involves traveling between different waterbodies presents some risk of transporting aquatic invasive species (AIS). Any gear or equipment used on the water may become fouled with AIS or material that contains AIS, and the transportation and use of that gear or equipment on a different waterbody could introduce AIS. This is of even greater concern as much of Door County is situated on Lake Michigan and the bay of Green Bay, which host a wide array of AIS not presently found in the inland lakes of Door County and much of Wisconsin's 15,000 lakes and 84,000 river miles. These species include starry stonewort, a macro-alga, and the spiny waterflea, a microscopic zooplankton.

The state of Wisconsin has embarked on many initiatives to help address the spread of AIS through the recreational boating pathway. This includes the passage of Wisconsin's NR-40 administrative rule, which makes it illegal to transport aquatic vegetation and bilge and live well water on public roadways. Additionally, the Clean Boats, Clean Waters (CBCW) program, which started as a small volunteer program in 2002, is a statewide boater education program that inspects more than 100,000 boats each year. Door County has participated in the CBCW program since 2008 using the DCIST coordinator's and LTE's time. DCIST has maintained this effort using Wisconsin DNR AIS education grants. As invited by the Wisconsin DNR, Door County has also participated in CBCW special projects in the past, which aim to collect expanded data that can be used to further analyze boater attitude and behavior.

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Total Boats Inspected	475	339	582	1,100	915	1,106	770	567	527	505	387	7,273
Boats Inspected by SWCD Staff			Prior data not available						315	346	291	
Total People Contacted	923	645	1,160	2,555	1,770	2,483	1,433	1,258	967	721	798	14,713
Hours Spent on CBCW	198	144	213	471	351	800	475	202	242	252	163	3,511

Table 5: *Clean Boats, Clean Waters efforts in Door County for the past 10-years. Unless noted, these numbers reflect overall effort by not only Door County SWCD staff, but also the Wisconsin DNR, Wisconsin Sea Grant, and other organizations.*

Boaters on Lake Michigan who interacted with CBCW volunteers and staff at landings were most often in the following water bodies five days prior to visiting Lake Michigan: Lake Winnebago, Clark Lake, Kangaroo Lake, and the Fox River. Those who were boaters on Clark Lake responded that they had previously been boating in Green Bay, High Falls Reservoir, and Sturgeon Bay Ship Canal. While most boaters questioned were not on another waterbody in the past five days, it is clearly important for Door County to continue to address the recreational boating pathway to prevent the spread of AIS from Lake Michigan and Green Bay to other waterbodies in the northeastern Wisconsin.

Action Items:

- Continue to implement the CBCW program at priority boat launches – *Ongoing as funding is available, SWCD staff (LTE's).*
- Host CBCW trainings and recruit volunteers to adopt boat landings. – *Annually as funding is available, DCIST coordinator*
- Continue coordination of statewide CBCW outreach campaigns that target recreational boaters and anglers (e.g. Drain Campaign and July 4th Landing Blitz) – *Annually as funding is available, DCIST coordinator & SWCD staff.*

5.2.2. Other AIS Prevention Strategies: Bait Dealer Initiative, Fishing Tournament Outreach, etc.

While DCIST has invested in the CBCW efforts for more than 10 years, which targets recreational boaters and anglers on larger bodies of water, little has been done to reach other segments of the recreational activity pathway including user groups that don't use boats (e.g. wading anglers) or use them in ways that aren't easily addressed by the standard CBCW program (e.g. waterfowl hunters, kayakers). While these may make up a smaller percentage of the recreational users, reaching these audiences is important to further reduce the risk of invasions into Door County and AIS leaving Door County bound for other uninfested locations. Another audience not addressed through previous efforts are the businesses that support these recreational activities – marinas, lake and dock service providers, aquatic plant harvesters and other similar companies. These are businesses that either use watercraft in similar ways to recreational users or service recreational watercraft. Future efforts should explore the impact of this influential water user group in Door County and the potential to engage this community in the boater education aspect.

When staff or partner time is available, DCIST will aim to have a presence at high profile fishing tournaments with non-resident participants that occur in Door County. This may be in the form of attending the large tournament pre-meetings and actual events with outreach materials, or by having a booth or display in areas where the resident public is more likely to frequent when visiting the tournament grounds. In 2015, DCIST staffed a joint tent with the Wisconsin DNR AIS program at the BassMaster Elite Series Angler of the Year Tournament held in Sturgeon Bay. This tournament brought in over 10,000 people to the area and provided an excellent venue for DCIST to talk to a broad audience about invasive species.

DCIST partners and other entities should also be aware of best management practices preventing the spread of AIS on any small vessels, water quality testing equipment, aquatic plant rakes, or other equipment that they may employ to conduct aquatic surveys or collect information on the status of water quality, biological communities, and habitat. When any equipment is used in multiple waterbodies including lakes, river, and wetlands within the County or state the most up-to-date BMP's from the Wisconsin DNR should be employed. Currently, the *DNR Boat, Gear, and Equipment Decontamination and Disinfection Manual Code 9183.1* outlines the minimum decontamination requirements to be followed by DNR employees, agents, or service providers. The Wisconsin DNR also recommends that permittees should follow this manual code. It is advised that DCIST staff and partners also follow this manual code to help prevent the spread of AIS within Door County.

Action Items:

- Continue participation in the WDNR Bait Dealer Initiative by providing local bait shops with consistent information to display and distribute on AIS prevention steps – *Ongoing as funding allows, SWCD staff.*
- The DCIST coordinator will share resources and BMPs for decontamination with partners and volunteers including the WDNR Manual Code. A training on proper disinfection should be provided for DCIST partners (may take the form of a website with a Q&A document, recorded webinar, videos or in-person training) - *2019, DCIST coordinator and WDNR staff.*
- Purchase and install waterless boat cleaning stations at County run boat launches as an extra measure for waterbody protection
    - ✓ *SWCD and County Parks department will partner to obtain funding through various grantors and friends group- 2020*
- As opportunities arise, have a presence at professional and local fishing tournaments to educate both anglers and attendees on preventing AIS spread. – *Ongoing, DCIST coordinator in cooperation with UW Sea Grant and the WDNR.*
- Determine high-risk user groups in Door County that may require additional actions to reduce that risk (e.g. paddleboards, kayaks, personal watercraft) and should be addressed through targeted outreach – *2019, DCIST steering committee*
    - ✓ Explore if the WDNR or other organizations in the state have developed outreach materials for those user groups identified – *2019 as funding allows, DCIST coordinator.*
    - ✓ Create or modify existing outreach materials for the groups identified as needed – *2019 as funding allows, DCIST coordinator.*
- Determine what actions businesses and service providers that support recreational activities can take to help prevent the spread of AIS and where these businesses are located in Door County – *2019-2021 as funding allows, DCIST coordinator & DCIST steering committee*
    - ✓ Create or modify existing outreach materials as needed and begin fostering relationship with the businesses and service providers identified above – *2019-2023 as funding allows, DCIST coordinator.*

5.3. Terrestrial Invasive Species Prevention Activities & Actions

5.3.1. PlayCleanGo

With partial funding from the USDA Forest Service, the Minnesota Department of Natural Resources (MNDNR) launched the outreach campaign **PlayCleanGo: Stop Invasive Species in Your Tracks®** in 2012. Since then the campaign has expanded and currently is comprised of more than 500 partner organizations across North America, including DCIST.

The campaign's goal is to protect valuable natural resources while encouraging folks to enjoy the great outdoors. Using community based social marketing to build brand recognition, the objective is to slow (and where possible to stop) the spread of invasive species by changing public and worker behaviors at risk of spreading harmful pests living on land or in water. **PlayCleanGo** promotes awareness, understanding, and cooperation by providing a clear call to action to be informed, attentive and accountable for stopping the spread of all invasive species.

Action Items:

- Build a catalog of **PlayCleanGo** branded materials specific to Door County and its recreational user groups (e.g. hunters, off-road vehicles, kayakers, etc.). Materials should include simple steps for that user group to take to prevent the spread of invasive species – *2018, DCIST coordinator*
- Generate a list of businesses, organizations and stakeholders within each of the identifies user groups – *2018, DCIST coordinator*
- Conduct outreach with these user groups on invasive species prevention and provide materials for display throughout the County. – *2018-2020 as funding allows, DCIST coordinator, SWCD staff (interns), & DCIST partners*

Images Left to Right:

DCIST at FarmTech Days

County wide LTE invasive species workshop.

DCIST at Land Trust buckthorn blast.

5.3.2. Right-of-way and Transportation Corridors

With 107 miles of State roads, 279 miles of County road, and 650 miles of Town roads within Door County, DCIST also recognizes that transportation corridors are a pathway for the spread of invasive species in Door County. Although this pathway is largely focused on terrestrial species, these corridors often require draining which creates opportunities for wetland invasive plants such as Phragmites, to move along roadside ditches and other transportation corridors. Species that spread along roadways and corridors threaten public safety (i.e. increased risk of fires, impaired views, improper drainage, etc.) and ecological functions and values when they intersect adjacent habitats. DCIST wild parsnip treatments from 2012-2016 and *Phragmites australis* from 2011-2017 continue to mitigate a number of those concerns. The Door County Highway Department, a DCIST partner as of 2017, has made invasive species within county right-of-ways a management priority. The department utilizes the State of Wisconsin's Department of Transportation's Highway Maintenance Manual; specifically Chapter 7 Roadside

Management, which can be found at http://wisconsindot.gov/Pages/doing-bus/local-gov/hwy-mnt/mntc-manual/chapter07.aspx, or summarized in Appendix A in this report.

Best management practices have also been created to help manage many of the aspects of this pathway. The Wisconsin Council on Forestry has created a "Utility and Transportation Rights-of-way Best Management Practices (BMPs) Manual" that covers a broad set of voluntary practices to minimize the further introduction and spread of invasive species within transportation and utility corridors. Transportation corridors are primarily roads and railroads. The right-of-way (ROW) for roads are either owned by local or state governments or on easements across private property. Utility-type corridors are used for a variety of lines and pipelines and can include underground or above ground lines and pipelines.

County right-of-ways prior to DCIST and SWCD partnership.(Left-Phragmites australis; Right-wild parsnip)

Treatments will now occur in right-of-ways and on adjacent private properties for all County priority species

Action Items:

- Share these BMPs with DCIST partners, volunteers, and other relevant stakeholders. Encourage all DCIST partners to follow these BMPs when doing projects in recreational, transportation, and utility corridors – *2018, DCIST coordinator*
- Any time DCIST funds are utilized to hire a private contractor to conduct invasive species work, it shall be required within the contract that the above BMPs be followed to the extent possible during all phases of the project – *Ongoing, SWCD, DCIST coordinator & DCIST partners if applicable*
- Provide training on transportation and right-of-way BMPs to County Highway Department staff, DCIST partners, municipal staff and private contractors as applicable – *2018-2020, SWCD staff & DCIST coordinator*

5.3.3. Organisms in Trade

Plants and animals that have been introduced through trade pose a significant threat to Door County's land and water. For the most part, these plants and animals have been obtained deliberately for a specific purpose, including landscaping, as pets, for bait, etc. This trade can occur through traditional sales to retail stores or markets, biological suppliers, as well as increasing sales through the global internet marketplace. Invasive species obtained through trade can find their way into the environment through a variety of pathways. Uneducated consumers may purposefully release unwanted pets or plant species and associated pathogens, believing it is a humane action without known the potential consequences. Plants and animals may also be distributed unintentionally through sales as contaminant species associated with legitimately sold species (e.g. jumping worms), or through misidentification and unfamiliarity with a given species common or scientific name.

The Wisconsin DNR is working on the organisms in trade pathway by using the NR-40 administrative code to control what species are available in trade and to require industry to take actions to prevent the spread of invasive species through transportation of organisms in trade. The Wisconsin Department of Agriculture, Trade, and Consumer Protection also has authority over licensed nurseries with sales of more than $500 annually and regulates the industry through a permit and inspection program.

Action Items:

- Generate a catalog of outreach materials that highlight native alternatives to invasive plants that are commercially available or commonly used in landscaping or forestry in Door County – *2018, DCIST coordinator*
- Conduct outreach with landscapers and nurseries to raise awareness of NR-40, especially those who bring in less than $500 annually and are not permitted by DATCP – *Ongoing as funding allows, DCIST coordinator & SWCD staff*
- Educate the public about selecting non-invasive plants and pets and to properly dispose of unwanted plants and animals – *Ongoing as funding allows, DCIST coordinator*
    - ✓ Consider participation in or the hosting of a Habitatitude event for the safe surrender of exotic pets – *2020-2023 as funding allows, DCIST coordinator*

Photos:

Samples of educational materials for the Habitatiude program and organisms in trade.

Section 6: Early Detection and Monitoring

Overall Goals:

1) **Increase the likelihood that invasive species in Door County will be identified and reported to DCIST.**
2) **Develop and enhance the capacity of the DCIST partnership address early detection species with emphasis on priority EDRR species and those listed as prohibited under Wisconsin's NR-40 Administrative Rule.**
3) **Coordinate data collection and management throughout the DCIST partnership and ensure that data collected in Door County is compatible with technology information systems within the State and region.**

Eradication of an invasive species is most likely to succeed when the established population is small, making the effort to detect very low numbers of target species worthwhile. Rapidly responding to new invasions is dependent on a complete and adequate early detection system and coordination within DCIST. This section addresses monitoring in the context of prevention and early detection, as opposed to control, which will be addressed in the next section. Monitoring activities for prevention purposes help partners and stakeholders understand the distribution of invasive species to better direct prevention resources, to better understand invasion pathways, and to increase the potential for eradication of newly established species. Recording the locations of invasive species searches, documenting past control efforts, and being able to share that information with partners is also critical to successful invasive species management.

6.1. Statewide Programs and Initiatives

In recent years, DCIST and its partner organizations have been participating in a number of statewide programs and initiatives that focus on or contribute to the detection of new invasive species infestations. Since 1986, the Citizen Lake Monitoring Network, jointly administered by the University of Wisconsin Extension Lakes program and the Wisconsin DNR, has trained thousands of volunteers across the state to monitor the physical and biological aspects of lakes. The CLMN program includes protocols for monitoring 12 AIS in Wisconsin and has proven to be an effective tool for engaging citizens in monitoring efforts. More information on the CLMN program can be found at https://dnr.wi.gov/lakes/CLMN/ and https://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/programs/clmn/default.aspx.

In 2009, The River Alliance of Wisconsin initiated Project Riverine Early Detectors (RED) and more recently AIS Bridge Snapshot Day to train citizens to monitor for AIS along streams and rivers. In 2017, DCIST participated in the WDNR's Bait Shop Initiative through education and outreach and intends on continuing the outreach. In addition, the Water Action Volunteers (WAV) is a citizen scientist project that aims to collect water quality data in rivers and streams. The role of DCIST with these programs in the past has been to respond to any findings of AIS and provide educational opportunities to community members. In 2014, DCIST partner, Ridges Sanctuary hosted a Project RED workshop and the Ridges continues to be a hub for WAV volunteers.

The Wisconsin First Detector Network (WIFDN), coordinated through the University of Wisconsin – Extension, is a citizen science network that empowers people to take action against invasive species through invasive species monitoring, management, and outreach. WIFDN provides training and resources through a combination of webinars, instructional videos, and hands-on workshops, in addition to providing volunteer opportunities to citizen scientists. Training topics include terrestrial and aquatic invasive species biology, identification, and reporting. The program emphasizes species of concern to Wisconsin (e.g. emerald ash borer, late blight, giant hogweed), but also discusses general resources for other species. In 2016, DCIST hosted a WIFDN training in Sturgeon Bay where participants were trained to recognize early detection species in northeastern Wisconsin and in the use of the Great Lakes Early Detection (GLEDN) phone application for reporting.

Action Items:

- Participate annually in AIS Bridge Snapshot Day through the River Alliance of Wisconsin. – *Ongoing, DCIST coordinator*
    - ✓ Inventory and prioritize bridges, boat launches and parks in Door County – *2018, DCIST partnership*
    - ✓ Solicit volunteers and conduct training on the day of the event with a goal of 10 volunteers participating annually – *Ongoing, DCIST coordinator*
- Utilize the Wisconsin First Detector Network (WIFDN) to help train and mobilize volunteers in Door County to recognize new pests, diseases, and invasive plants.
    - ✓ Host one WIFDN training in Door County every two years – *2019 and 2021, DCIST coordinator*
- Continue to engage and coordinate volunteers through the Citizen Lake Monitoring Network, as means of tracking water quality within Door County's Inland Lakes, and observing changes in the aquatic vegetation or animal community within these lakes. – *Ongoing, currently coordinated through UW-Extension Lakes and the Wisconsin Lakes Partnership.*

6.2. Priority Early Detection Species

Wisconsin's NR-40 administrative rule identifies and classifies invasive species as either prohibited or restricted in Wisconsin. NR-40 defines invasive species as non-native species whose introductions will cause economic or environmental harm, or harm to human health. Species listed as prohibited are either not currently present in the State or have very limited distribution. Prohibited species represent the highest priority for prevention, containment and control. These species are a priority for all pillars of this plan including monitoring, control and communications. Restricted species are invasive species that are known to be present in Wisconsin and are often the focus of management activities and citizen action. Efforts to prevent the arrival and contain the spread of prohibited species is the highest priority. A current list of the NR-40 regulated species can be found on the Wisconsin DNR website (dnr.wi.gov) by doing a keyword search for "NR-40". The complete list is also included as Appendix B. In addition, DCIST has developed a priority species list for Door County that are shown in Table 2 on the following page. This list includes the designation of early detection species considered to be the biggest threat or most likely to be found in Door County based on proximity of infestations to Door County, vectors for species spread, and other factors.

Action Items:

- Review priority species list with DCIST partners, other natural resources professionals, and relevant stakeholders. Determine the top ten early detection species citizen monitors are most likely to find in coming years and focus educational efforts on these species. – *2018, DCIST partnership*
    - ✓ Develop and implement a ranking system that considers NNIS impacts on species and communities of greatest conservation need, quality of life in Door County, current distribution of species, and feasibility of management. – *2018, DCIST partnership*
- Annually reassess and if necessary, reprioritize species list based on new findings and current distributions of species. Biannually review national and regional NNIS alert system databases for new terrestrial and aquatic species threats to Door County and northeast Wisconsin. – *Ongoing, DCIST coordinator*
    - ✓ Evaluate newly found species for inclusion in DCIST LOOKOUT flyers, alerts, and/or outreach materials – *As needed, DCIST steering committee*

Common Name	Latin Name	NR-40 Status in Door	Plant Type
Amur cork tree	*Phellodendron amurense*	Prohibited	Tree
Princess tree	*Paulownia tomentosa*	Prohibited	Tree
Callery pear	*Pyrus calleryana*	Non-restricted	Ornamental shrub
Amur maple	*Acer tataricum subsp. Ginnala*	Restricted	Tree/shrub
Amur honeysuckle	*Lonicera maackii*	Prohibited	Shrub
Common barberry	*Berberis vulgaris*	Prohibited	Shrub
Porcelain berry	*Ampelopsis brevipedunculata*	Prohibited	Perennial vine
Japanese honeysuckle	*Lonicera japonica*	Prohibited	Perennial vine
Lesser celandine	*Ranunculus ficaria*	Prohibited	Herbaceous groundcover
Policeman's helmet	*Impatiens glandulifera*	Prohibited	Herbaceous annual
Balfour's touch-me-not	*Impatiens balfourii*	Restricted	Herbaceous annual
Grecian foxglove	*Digitalis lanata*	Prohibited	Herbaceous perennial
Yellow bedstraw	*Galium verum*	Not listed	Herbaceous perennial
Yellow archangel	*Lamium galeobdolon*	Not listed	Herbaceous perennial
Brown knapweed	*Centaurea jacea*	Restricted	Herbaceous perennial
Chinese lespedeza	*Lespedeza cuneate*	Prohibited	Herbaceous perennial
Garden valerian	*Valeriana officinalis*	Restricted	Herbaceous perennial
Scotch broom	*Cytisus scoparius*	Prohibited	Shrub
Perennial pepperweed	*Lepidium latifolium*	Prohibited	Herbaceous perennial
Hill mustard	*Bunias orientalis*	Prohibited	Herbaceous biennial
Herb bennet	*Geum urbanum*	Not listed	Herbaceous perennial
Japanese hedgeparsley	*Torilis japonica*	Restricted	Herbaceous biennial
Wild chervil	*Anthriscus sylvestris*	Prohibited	Herbaceous, monocarpic perennial
Giant hogweed	*Heracleum mantegazzianum*	Prohibited	Herbaceous biennial/monocarpic perennial
Johnsongrass	*Sorghum halepense*	Prohibited	Warm-season perennial grass
Graceful cattail	*Typha laxmanii*	Prohibited	Perennial wetland plant
Southern cattail	*Typha domingensis*	Prohibited	Perennial wetland plant
Japanese stilt grass	*Microstegium vimineum*	Prohibited	Annual grass
Palmer amaranth	*Amaranthus palmeri*	Not listed	Herbaceous annual
Java waterdrop	*Oenanthe javanica*	Prohibited	Herbaceous perennial
Water lettuce	*Pistia stratiotes*	Prohibited	Aquatic, floating perennial
Water hyacinth	*Eichhornia azurea, E. crassipes*	Prohibited	Aquatic, anchored or floating perennials
Tall manna grass	*Glyceria maxima*	Restricted	Semi-aquatic, perennial grass

Table 6: *Priority early detection species for Door County. Based on those NR-40 species which are most likely to be found in Door County based on their current distributions, vectors for spread, and the level of risk posed with their establishment,.*

6.3. Finding, Reporting & Responding to Early Detection Species

The Wisconsin DNR's Invasive Species Response Framework was developed in 2012 to aid resource managers who are responsible for responding to newly discovered populations of AIS. The framework provides guidance on the necessary components of an effective response while acting as an internal protocol for responding to newly detected populations of suspected invasive species. This framework will be followed by DCIST when:

- A terrestrial species that is listed as prohibited in Door County is found.
- An aquatic invasive species that is listed as prohibited in Door County is found.
- A restricted invasive species that has not been discovered in Door County is identified.

Occurrences meeting the criteria listed above will be reported to the Wisconsin DNR for verification and then communicated to stakeholders. A team of DCIST partners with insight from the Wisconsin DNR will identify resources to develop and implement a plan for further reconnaissance, control and outreach/education. The plan should assess areas to inventory for the species, verify available resources (both staff and potential funding), determine the appropriate response, identify additional stakeholders, ascertain necessary permits or permissions, and recognize outreach needs to adjacent private landowners. Following plan implementation, monitoring and evaluation will assess project success and guide restoration.

Because new invasions are dynamic, the Wisconsin DNR's framework does not attempt to provide answers or solutions to all the issues associated with rapid responses. How an individual species invades – their number, density and distribution, proximity to other known invasions, the time of the year, and numerous other factors – determines what actions are possible and useful. The framework is designed to be applied to a wide range of invasion types, as well as being adaptable over time as staff of program needs change. The framework's *Invasive Species Response Process Overview & Checklist* is included under Appendix C of this plan.

Photos: DCIST participation in a starry stonewort , an early detection species, field day hosted by Michelle Nault of the WDNR in Sturgeon Bay.

Action Items:

- Utilize the WDNR Invasive Species Response Framework as described above to communicate when a new or prohibited species is identified in Door County. Using the framework, work with other state and local organizations to ensure consistent responses to new invasions – *Ongoing, SWCD and County staff, DCIST coordinator, DCIST partners, etc.*
- Make the rapid response framework/communications protocol widely available to DCIST partners and any other stakeholders conducting invasive species inventory or control – *2018, DCIST coordinator*
- Develop an AIS monitoring protocol and toolkits for Door County – *2018, DCIST coordinator & SWCD staff*

- ✓ Recruit volunteers to adopt a crossing or shoreline to monitor during the growing season with a goal of six volunteers trained and monitoring one year after protocol development – *2019, DCIST coordinator*

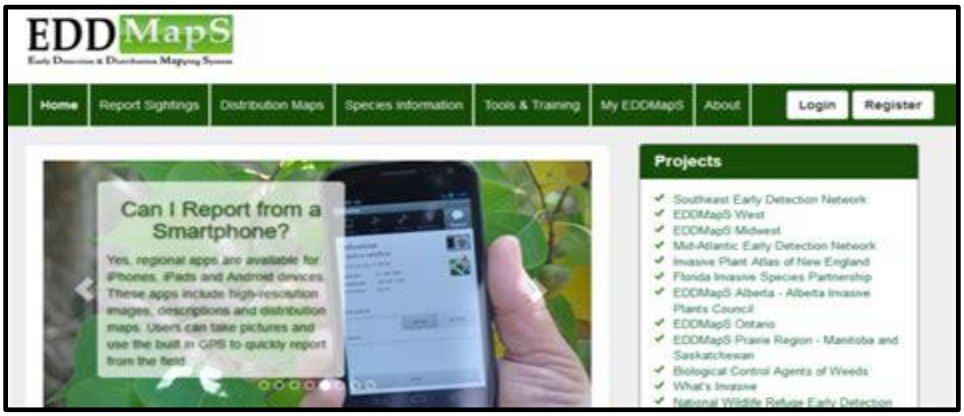
- Support DCIST partners, volunteers and members of the public by assisting in the identification of unknown species – *Ongoing, DCIST coordinator, SWCD staff & DCIST steering committee*
- Improve detection of early detection species by expanding the network of partners and volunteers that are able to recognize these species within Door County and efficiently and effectively report them – *2018-2023, DCIST coordinator & partners*
  - ✓ Host a minimum of one training annually for partners, volunteers and citizens on invasive species mapping reporting techniques. Include information on the identification of new and imminent early detection species – *Annually, DCIST coordinator and WIFDN*
  - ✓ Encourage all partners, members, cooperators, and contractors to report new NNIS sightings to DCIST and the WDNR. Maintain a list of regional partners, cooperators and contractors – *Ongoing, DCIST coordinator*.
- Identify priority locations in Door County that need early detection mapping and/or monitoring. Examples include areas deemed "high risk" as likely invasive species entry or spread points (e.g. parks, roads). Utilize upcoming models such as the habitat suitability models being developed by the Renz Lab/UW-Extension in Madison to guide these efforts – *2019-2020, DCIST coordinator & steering committee*
- Make DCIST partners and volunteers aware of new findings by implementing an alert notification through the DCIST website, e-newsletter, and email – *2019-2020 as funding allows, DCIST coordinator*
- Develop an NNIS alert network with CISMAs within northeastern Wisconsin. Communicate through this network as new threats and emerging issues are identified – *2020-2023 as funding allows, DCIST coordinator*

6.4. Technology and Data Management

An important component in invasive species early detection and rapid response is being able to track and monitor the locations of invasive plants within Door County and northeastern Wisconsin. Tracking is done through surveying or inventory efforts, which are typically completed by the DCIST coordinator, partners or volunteers. Maintaining a database of all known infestations can both help identify the "leading edge" of an invasive plant species and stop or minimize it while it is still a manageable problem. It also allows DCIST to prioritize control needs and strategies at a county-wide scale ensuring that the greatest invasive species threat is being addressed. There are several web-based mapping systems for invasive species in the Midwest including the Early Detection & Distribution Mapping System (EDDMaps), the Great Lakes Early Detection Network (GLEDN), and the Midwest Invasive Species Information Network (MISIN). These systems are designed to be fast and easy to use and don't require GIS experience or software. They also aggregate data form other mapping projects and cooperators to display invasive species distributions at a county, state and national level scales. For aquatic invasive species occurrences the WDNR has the Surface Water Integrated Monitoring System (SWIMS).

Until recently, DCIST partners have primarily collected data independent of one another and stored that data with their respective organizations in independent formats. Volunteers typically collected data with the use of handheld GPS units that would later be uploaded by that organization and used to guide individual control or management projects. Often, these data were not shared outside of that organization. In the past two years, the DCIST partnership has begun aggregating data on invasive species in Door County into one GIS database. This database will facilitate better planning and coordination at a county-wide scale and ensure that DCIST is truly addressing the highest priority species in Door County. The data was also made available for public viewing through the Door County's Web Map found at http://map.co.door.wi.us/.

In addition, DCIST has begun encouraging partners and staff to report invasive species infestations through the GLEDN smartphone app. This easy-to-use smartphone app allows users to record data offline using their phone's GPS, and later upload it using cellular data or a Wi-Fi connection. Any infestations reported within Door County automatically go to the DCIST coordinator or a natural resources professional for verification. Regardless of who verifies the report, the DCIST coordinator is alerted to the sighting and can add it to the DCIST database and in turn the County Web Map at the end of each season. In addition, the data is stored in the GLEDN online database and contributes to a more comprehensive, Great Lakes wide dataset that can be utilized for large-scale planning and research. The app can be downloaded at https://apps.bugwood.org/apps/gledn/. Currently, DCIST data is provided to the WDNR at the end of each field season and is paired with and entered into their SWIMS site through the WDN Water Resources Management Specialist.



Photos (left to right): Sample of handheld GPS unit available for loan to volunteers through Soil & Water Conservation Department for invasive inventory, EDDMapS webpage, and home page of the GLEDN application available for smartphones.

Action Items:

- Evaluate and select one regionally- or nationally-recognized invasive species database (i.e. GLEDN, EDDMaps, MISIN) to receive DCIST NNIS data – *2018, SWCD and DCIST steering committee.*
- Establish standardized protocols for reporting and addressing early detection species in Door County for use by DCIST staff, partners, and volunteers. These protocols should be compatible with the requirements of a selected regional or national database – *2018-2019, SWCD, DCIST coordinator & DCIST steering committee*.
    - ✓ Distribute these protocols through multi-media outlets including the DCIST webpage, YouTube videos, printed documents, and other methods – *2018-2019, DCIST coordinator,*
- Develop a user-friendly geodatabase and management system to serve as a central warehouse for data collection and viewing by DCIST partners and the public. Explore the use of ArcGIS online for this purpose. Ensure that this database will integrate with the selected regional or national database and that information about newly discovered invasive species is available in a useful and accessible format for stakeholders and partners – *2018-2019 DCIST coordinator & steering committee.*
    - ✓ Continue to share static invasive species occurrences with members of the public and volunteers through the Door County Web Map and SWIMS until another database is available for online viewing – *2018-2019, SWCD*
    - ✓ Train DCIST partners in the use of the geodatabase and determine whom will have capabilities for inputting data – 2019 DCIST coordinator & steering committee.
- Use new geodatabase and management system to identify high priority geographical areas and species which DCIST would target through education and control efforts – *2019-2023, SWCD, DCIST coordinator & steering committee.*

Photos:

DCIST volunteer participation in Phragmites australis inventory along Lake Michigan shorelines.

Section 7: Control & Management

Overall Goals:

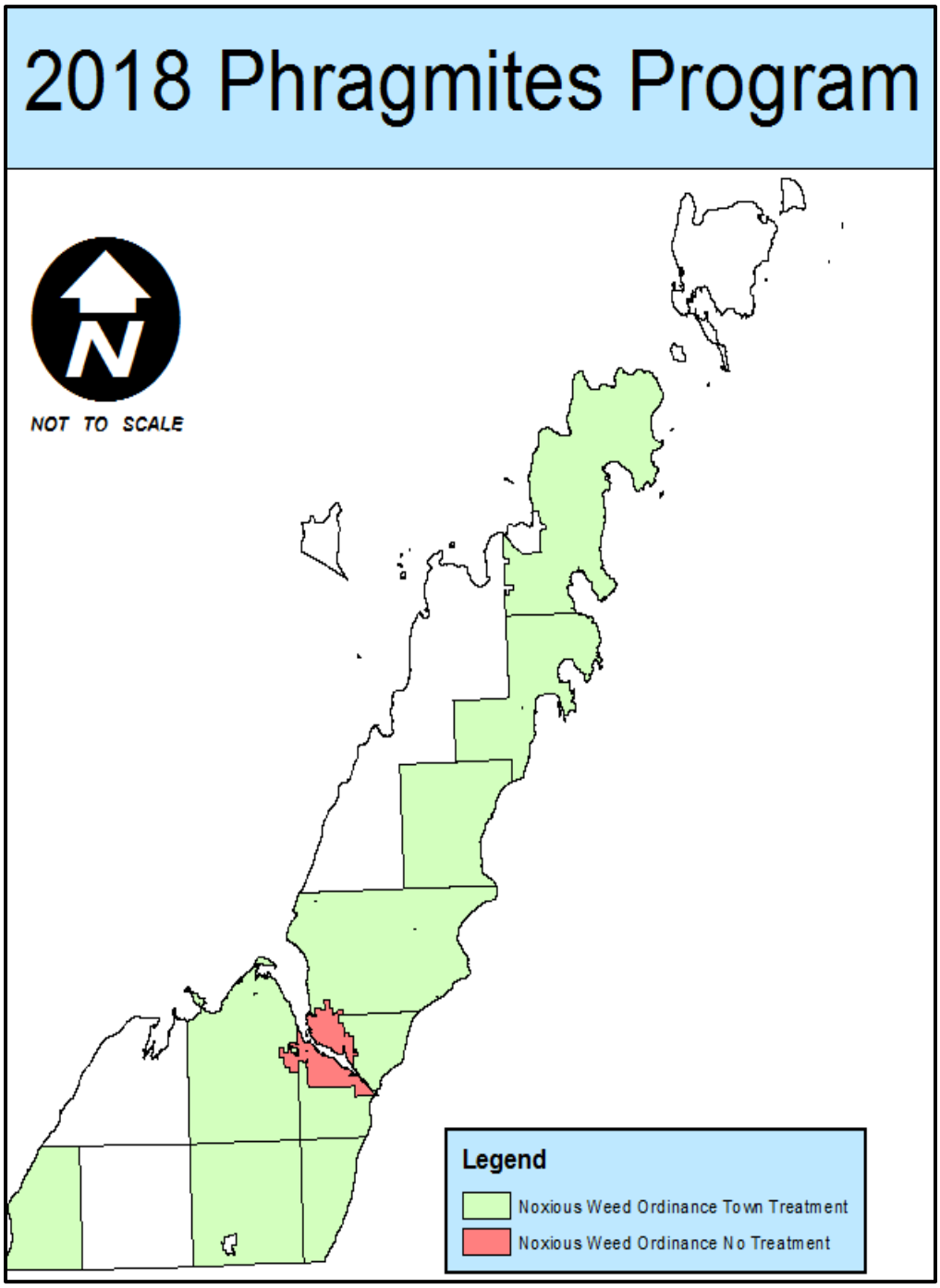
1) **Maintain Phragmites australis as the county's focal species until fewer than 10 acres remains throughout the county and its shorelines.**
2) **Determine next highest priority species for management and control in Door County and use an integrated pest management approach to make recommendations to the public and conduct control activities.**
3) **Foster municipal invasive species programs.**
4) **Seek funding to continue large-scale control initiatives for priority species within the county.**
5) **Coordinate data collection and management throughout the DCIST partnership and ensure that data collected in Door County is compatible with technology information systems within the State and region.**

Once an invasive species is established throughout Door County, it is at least difficult, if not impossible or cost prohibitive to eliminate it. While eradication of a species may not be feasible, tools do exist to manage existing populations and reduce the negative impacts of that species. Control activities not only benefit the habitat that they are taking place in, but also reduce the potential for that species to further spread within the County. It should be noted that eradication is often the exception, rather than the rule, and that tempered expectations should exist when undertaking control efforts. This includes understanding that suppression of populations can still achieve desirable management goals.

7.1. Past & Ongoing Control Activities in Door County

Since 2008 the SWCD, along with the support of the DCIST, has managed an invasive species control program that includes activities outlined in section 1.2.2. of this plan. With grant funding becoming increasingly competitive comes the uncertainty of obtaining consistent funding to continue treatment projects. SWCD and DCIST have a new approach to continue management efforts that goes beyond grants by encouraging local municipalities to redefine, adopt, and implement a noxious weed ordinance for priority species.

DCIST strives to have an informed, invested, and involved community by educating landowners and now municipal leaders. An ordinance allows a municipality to treat invasives on private properties, but more importantly provides a mechanism for dealing with vacant and/or absent owner properties. With an ordinance in place landowners who are working to control invasive species on their property will not see their efforts impeded by others that are unable or simply unwilling to do their part. The noxious weed ordinance shows community members that municipalities are serious about protecting their community's property values, aesthetic values, and recreational opportunities.



SWCD's efforts over the past year have resulted in eight out of 14 Towns within Door County adopting a noxious weed ordinance (Figure _). With assistance from DCIST partners, municipalities have begun to finance and continue management efforts on their own with the support of the SWCD and DCIST program. The relationships that the SWCD holds with the municipalities provides opportunity for sincere discussions and guidance for an individualized invasive species management program. Since 2015, the Shores of Jacksonport Association (SOJA) has been inventorying Phragmites in the Town of Jacksonport and coordinating treatments utilizing contractors and volunteers. In 2017, the Town of Nasewaupee took inventory data collected by DCIST and hired a private contractor to treat Phragmites within road right-of-ways and on private lands in the town. Also in 2017 the Town of Sevastopol utilized data collected by DCIST and volunteers to hire a contractor to treat Phragmites on right-of-ways and private lands. While each Town is carrying out treatments slightly differently, an overall model is emerging for municipal leadership, coordination and financial support for invasive species efforts. In 2018, nine towns (Baileys Harbor, Clay Banks, Forestville, Jacksonport, Liberty Grove, Nasewaupee, Sevastopol and Sturgeon Bay) will be implementing Town Phragmites control programs.

DCIST and the Door County SWCD will continue large-scale treatment activities on priority species as funding allows. Large-scale treatments may take place on public or private land or within the road right-of-way. When conducting control work with staff and/or volunteers, DCIST will adhere to all legal requirements regarding property ownership, herbicide application and permitting, and equipment use. Staff, partners and volunteers will follow all equipment and herbicide label instructions, and document landowner permission, required certifications, and records of control activities.

The DCIST coordinator also works with private landowners who wish to control invasive species on their own property. The coordinator serves in an educator role – doing one-on-one site visits with landowners to identify invasive species, providing resources, materials and best management practices, and demonstrating to landowners the options for control of invasive species found on their property. Typically, 20-40 site visits will be conducted in a given growing season. This model has proved to be successful, with landowners who received a visit often carrying out control activities independently on their property afterward or volunteering in the future with invasive species efforts.

Action Items:

- Develop and maintain a list of recommended private contractors for NNIS control efforts and make referrals for restoration activities that go beyond the scope of DCIST's assistance – *Ongoing, SWCD & DCIST coordinator*
- Continue to offer landowner one-on-one site visits. Provide landowners with information on control and management options that would be appropriate for their property – *ongoing, DCIST coordinator.*
- Initiate a municipal cost-share program with DCIST donation monies – *2018, SWCD*
- Identify and recruit volunteers that will represent each Township that has passed an ordinance related to invasive species – *ongoing, DCIST coordinator & SWCD*
- Assist towns that have passed ordinances with inventory and data compiling as needed. Provide Towns with educational presentations and materials as requested – *ongoing, DCIST coordinator & SWCD*
- Attend town board meetings and encourage Towns that have not yet passed a noxious weed ordinance to do so – *ongoing, SWCD with support of DCIST coordinator.*
- Continue to carry out large-scale treatments for Phragmites and wild parsnip in rights-of-way and on private land, or other priority species as determined by the DCIST steering committee and SWCD. Seek funding to continue these initiatives if none is currently available – *ongoing, SWCD & DCIST coordinator*
- Continue to hire LTE(s) to aide in priority control projects and programs - *Seasonally as funding allows, SWCD*
- Generate handout with cost-share options for landowners seeking to control invasive plants on their property – *2019, DCIST coordinator*

7.2. WDNR's NR-40 Species

Species listed as prohibited and restricted under Wisconsin's NR-40 administrative rule are illegal to transport, transfer (buy/sell) and introduce. Prohibited species are also illegal to possess and the Wisconsin DNR has a legal authority to mandate control actions on prohibited species when they do appear. DCIST recognizes that species listed as prohibited are the highest priority for control, however there are few of these species currently known to Door County. Because of this, controlling the impact of restricted species on a more local scale is a priority in Door County.

7.3. Priorities for Control & Management in Door County

This list, while not comprehensive, is intended to serve as a guideline for DCIST staff and partners, as well as others managing invasive species in Door County. Species are separated into three categories based on overall distribution within the county as well as other ranking considerations such as ecological and health threats. A species may be considered early detection in one area, but more widespread in another (e.g. wild parsnip in southern and northern Door County). As such, when prioritizing control efforts, managers should examine the local abundance of a species as well as the population size, density, and negative impacts to gauge its control priority. This list will be reviewed annually and adjusted as needed based on changes in species distribution, research, and state regulations.

Early Detection Rapid Response (Highest Priority) - When an early detection species is identified, DCIST will seek to use a Wisconsin DNR Early Detection Rapid Response grant to address the initial infestation. See also: Section 5.2 for table of early detection species.

Tier 1 – High Priority: Overall, species placed in this category exist only in isolated or scattered populations throughout The County. Several species on this list have yet to be found in Door County, but their listing under the Wisconsin NR-40 administrative rule and their proximity to this region of the state make them a detection priority.

Common Name	Latin Name	NR-40 Status
Chinese yam	*Dioscorea oppositifolia*	P
Common reed	*Phragmites australis*	R
Common/Cut-leaved teasel	*Dipsacus sp.*	R
Crown vetch	*Coronilla varia*	R
European marsh thistle	*Cirsium palustre*	R
Flowering rush	*Butomus umbellatus*	P
Japanese knotweed	*Polygonum cuspidatum*	R
Leafy spurge	*Euphorbia esula*	R
Lyme grass	*Leymus arenarius*	P
Oriental bittersweet	*Celastrus orbiculatus*	R
Purple loosestrife	*Lythrum salicaria*	R
Swallow-wort	*Cynanchum sp.*	P
Tall manna grass	*Glyceria maxima*	R
Wild parsnip	*Pastinaca sativa*	R

Table 7: *Tier 1 - high priority invasive species within Door County.*

Tier 2 – Mid Priority: This category consists species that are more widespread than Tier 1 species, but at levels still considered manageable. Species in this category can negatively impact natural areas, requiring control and management efforts, but due to their wider distribution eradication of the species may be unlikely.

Common Name	Latin Name	NR-40 Status
Aquatic forget-me-not	*Myosotis scorpioides*	R
Bull/musk thistle	*Cirsium spp.*	R
Common tansy	*Tanacetum vulgare*	R
Garden valerian	*Valeriana officinalis*	R
Glossy buckthorn	*Rhamnus frangula*	R
Hairy willow-herb	*Epilobium hirsutum*	R
Hounds tongue	*Cynoglossum officinale*	R
Hybrid/narrow-leaved cattail	*Typha spp.*	R
Japanese barberry	*Berberis thunbergii*	R
Poison hemlock	*Conium maculatum*	R
Spotted knapweed	*Centaurea stoebe*	R
Yellow iris	*Iris pseudacorus*	R

Table 8: *Tier 2 - mid-priority invasive species in Door County.*

Tier 3 – Low Priority: These species are considered to be low priority within Door County. This category includes species considered very widespread in the area, making control efforts extremely difficult and reoccurrence likely. Species that are not considered high ecological threats may also be added to this category.

Common Name	Latin Name	NR-40 Status
Autumn olive	*Eleagnus angustifolia*	R
Bishop's goutweed	*Aegopodium podagraria*	R
Common buckthorn	*Rhamnus cathartica*	R
Curly-leaved pondweed	*Potamogeton crispus*	R
Dames rocket	*Hesperis matronalis*	R
Eurasian water-milfoil	*Myriophyllum spicatum*	R
European bush-honeysuckles	*Lonicera spp.*	R
Garlic mustard	*Alliaria petiolate*	R
Heliborine orchid	*Epipacatis helleborine*	R
Lily-of-the-valley	*Concallaria majalis*	N
Periwinkle	*Vince minor*	N
Reed canary grass	*Phalaris arundinacea*	R
Sweet clover	*Melilotus spp.*	N
Woodland forget-me-not	*Myosotis sylvatica*	R

Table 9: *Tier 3 - low priority invasive species for Door County.*

Action Items:

- Refine the above tiered species lists based on species' potential ecological and economic impacts, past control efforts, management objectives of infested areas, feasibility of management and distribution in the County, available resources, and human health and safety impacts – *2018, DCIST steering committee with input from other natural resources professionals*
- Seek an existing or develop a new prioritization tool to rank infestations for follow-up action, monitoring, further research, or further control. (e.g. WRISC prioritization tool) – *2018, DCIST coordinator & steering committee.*
- Maintain and revisit the agreed upon DCIST priority invasive species list – *annually, DCIST steering committee*
- Identify high priority geographical areas to address invasive species control and management processes and identify key partners and species present within those areas. Previous areas identified in DCIST planning efforts were Newport/Mink River, Washington/Rock/Plum/Pilot/Detroit Islands, Rdiges/Toft Point/North Bay/Mud Lake, Kangaroo Lake/Meridian Park/Piel Creek, Clark Lake/Lost Lake/Whitefish Dunes/Cave Point/Logan Creek, Southern Lake Michigan Shoreline, Little Sturgeon Bay/Brussels Hill/Kayes Creek/Gardner Swamp Complex, Bay Shore Bluff Area, Ahnapee River Corridor, North End Black Ash Swamp, Potawatomi Park/Sawyer Harbor, Chambers Island, Ephraim Swamp, Peninsula State Park, Hibbards Creek/Thorp Pond, White Cliff Fen, Ellison Bluff County Park, Door Bluff County Park, Oak Road Wetland Complex, Hungry Settlement Swamp, Little Sister Bay, Bjorklunden – *2019, DCIST steering committee*

7.4. Tools for Integrated Pest Management

DCIST has numerous control tools at its disposal including physical, chemical and biological control options depending on the species and timing. Chemical and physical control methods have been used to provide relief from the impacts of well-established populations, and to prevent the spread of small, localized populations. Targeted manual removal efforts have also been effective at containing small populations. Using all thorough options, in addition to education and outreach that will be addressed in the next section, in consort with each other is the basis for an effective integrated pest management program that delivers desirable environmental outcomes.

7.4.1 Careful Consideration of Pesticide Use

Natural areas are subject to invasion by unwanted species, both native and nonnative. These may be species we wish to control and, in fact, may be required by law to control. The question of what to do in such cases can be perplexing. The consequences that follow the establishment of invading species range from creation of a simple nuisance, to complicating a management operation, or to threatening the preserved community. The first of these consequences is trivial and probably is best ignored. The second and third consequences are the conditions these guidelines address. The primary objective of is to preserve whole communities and their inherent natural processes. The interactions, synergisms, and dynamics of ecosystems literally tie each entity, abiotic as well as biotic, to all other components of the ecosystem. To alter one component is to alter others, at least to some degree. Hence, monitoring to detect adverse effects of pesticide applications is difficult and loaded with flawed assumptions. Any decision to control unwanted species, either plant or animal, needs careful consideration based on clear, specific management objectives. The use of pesticides should be considered only as a last resort.

Photo: Some of the different treatment techniques recommended by DCIST and its partners. Left to right- backpack treatments for large patches, bundle cut for small populations among a delicate flora, and cut stump for woody species.

Before pesticide use is recommended the following conditions should be considered:

- Other control methods have been tried and found ineffective.
- Persistence of the unwanted species is proving to be detrimental to management objectives.
- Is it possible treat the target species and only that species by direct contact to minimize collateral damage, e.g., stump painting or application to individual leaves via hand-swiping etc.
- The pesticide being used should have proven efficacy and if possible quickly degrades into benign substances.
- The pesticide must be applied by individuals trained in the application and handling of pesticides and instructed in the use of such substances in State Natural Areas.

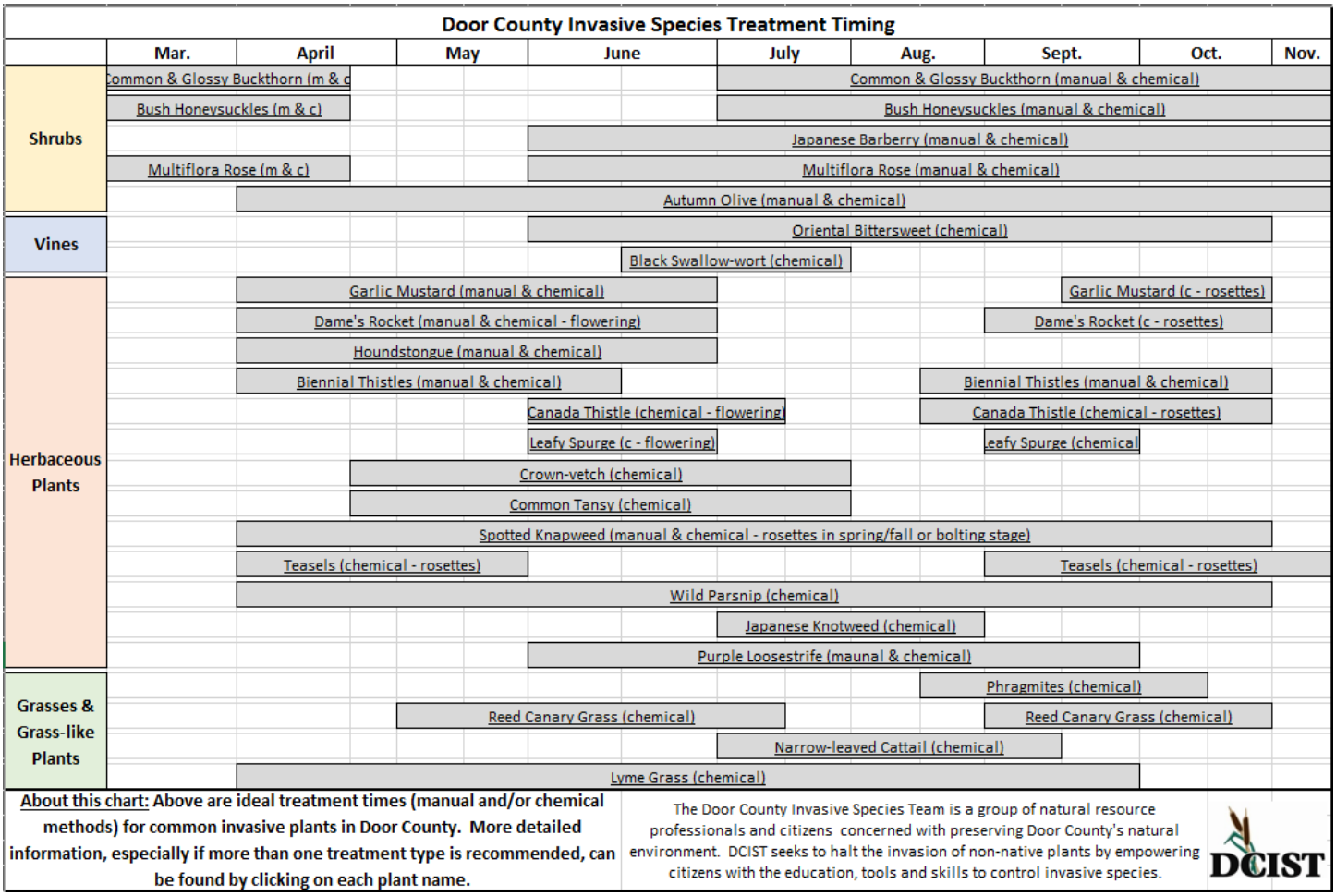


Figure 2: *Treatment timing calendar for common invasive plants in Door County created by the DCIST coordinator to provide guidance to natural resources professionals and landowners.*

Action Items:

- Advocate integrated pest management (IPM) practices, utilizing a combination of control techniques to effectively manage invasive populations on a case-by-case basis while limiting the economic and environmental impacts of treatment. A general overview of the methods that may be employed is given below. Explore resources available for outreach with private landowners on IPM strategies – *ongoing, DCIST coordinator*
    - ✓ Manual and mechanical treatments such as pulling, cutting or otherwise stressing or physically removing plants can be used to control some invasive plants, particularly if the population is relatively small.
    - ✓ Chemical - In some instances, herbicide application is the only practical way to control an invasive species due to the physiology of the plant or the extent of the population.
    - ✓ Biological control, or biocontrol for short, is the use of animals, fungi, or other microbes to feed upon, parasitize or otherwise stress a targeted pest species. Successful biocontrol projects significantly reduce the abundance of the pest or prevent the damage caused by the pest.
    - ✓ Cultural control involves the use of the methods such as flooding, smothering (covering with a light barrier), controlled by prescribed or wild fire, or the use of cover vegetation to reduce the impact of invasive species.

- Assemble a clear and consistent set of outreach materials for the control of priority invasive species in Door County, including guidelines, policies, procedures, approved methods, and timing charts. Provide training sessions on the control of these species to landowners annually – *2019-2023, DCIST coordinator*
- Monitor and document results of control work and conduct follow-up treatments as needed and able. *2018-2023, DCIST Coordinator & SWCD staff*
- Include invasive species considerations in guidance for restoration projects. This includes advising partners, agencies, townships, highway departments, landowners and other interested parties on best management practices and appropriate restoration methods using native species. 2019-2023, *DCIST Coordinator & SWCD staff with guidance from committee*
- Include restoration as a component in DCIST control efforts when able and where appropriate. 2019-2023, *DCIST Coordinator*

7.5. Funding Control Projects

When an early detection (e.g. prohibited) species is identified, DCIST will seek to use a Wisconsin DNR Early Detection Rapid Response grant to address the initial infestation. DCIST also seeks to have a WDNR-approved AIS Management Plan for the Door Peninsula, which will allow DCIST to apply for AIS control grants from the state in the future. Additional sources of funding for control and post-control site restoration should continue to be sought.

Section 8: Communication

Overall Goals: Expand the public's awareness of and involvement in DCIST and invasive species efforts. Build both financial and volunteer support for these efforts. Maintain organizational integrity of the DCIST partnership.

Addressing the problems caused by invasive species through strong communication instills and/or improves public awareness of invasive species and those of concern throughout the county. It shares the resource professional's knowledge of invasive species impacts, and what individuals can do to prevent their introduction and spread. However, reaching each person whose activities may affect our natural environment is a daunting task. Collaboration, cooperation and coordination across federal and state agencies, local governments, and the public and private sectors is necessary for a successful program and facilitating this effort is a primary goal of DCIST.

To accomplish this, DCIST has:

- Developed informational websites;
- Conducted workshops and training events;
- Created outreach materials for local distribution that include traveling displays, species pamphlets, invasive species identification cards, fact sheets on proper control methods and disposal and similar items.

8.1. Outreach and Education

The goal of education and outreach is to expand the public's awareness of and involvement in DCIST and invasive species - in a sense, creating a network of well-informed land stewards across the landscape. Providing up-to-date information on invasive species lends opportunity of prevention, early detection and proper control. Materials that are shared includes information intended for the public as well as specific information for target audiences. All information that is generated is provided by DCIST partners and is conveyed in plain language for the understanding of all potential audiences. Through these outreach efforts DCIST can build a network of citizens that report invasive species occurrences, maintain up-to-date information on invasive species threats, management and research as well as a list of regional partners, cooperators and contractors.

Action Items

- Work with steering committee to determine target audiences for education and outreach campaigns based on projects occurring within their respective properties or species of concern – *Ongoing, SWCD, DCIST Steering Committee & Coordinator.*
- Utilize a variety of resources (peer reviewed literature, paper/digital publications, webinars, professional contacts, etc.) to keep DCIST staff, partners, and members knowledgeable and up-to-date on current invasive species issues – *Ongoing, DCIST Coordinator.*
- Promote the sharing of information among partners, members, natural resources professionals, and other interested parties – *Monthly, All DCIST Partners through organized steering committee meetings and public events.*
- Encourage DCIST staff and partners to attend local and regional invasive species conferences, conventions, and meetings as able – *Ongoing, opportunities are shared by SWCD staff and DCIST coordinator.*
- Develop, maintain, and advertise online workday calendar and DCIST equipment loan program – *ongoing, DCIST coordinator*
- Work with partners to provide NNIS identification and control training workshops targeting parks, right-of-way, nursery and landscape professionals, seasonal employees/LTE's within Door County, and private citizens. Keep abreast and share current advances in invasive species control methods – *as funding allows, DCIST Coordinator*
- Host a partner and member forum/meeting that is open to the public – *annually, DCIST Steering Committee*
- Continue to publish and release monthly/bi-monthly DCIST newsletters. Increase recipients of e-newsletter to 1,000 by 2022. The e-newsletter will include updates on DCIST meetings, events, and pertinent invasive species science and research updates – *a minimum of six times per year, DCIST coordinator*
- Develop and offer education programs targeting land managers, staff, and volunteers who work to manage high priority natural areas. Provide training in identification and control of high priority invasives and recent advances in invasive species control methods – *2019-2020, DCIST coordinator & SWCD staff*
- Host at least two educational events annually to build public engagement and raise invasive species awareness. This may include hosting guest speakers, showing invasive species documentaries, providing a presentation as part of another Door County event, or other similar events – *annually as funding allows, DCIST coordinator.*
- Provide DCIST representation and invasive species education at area meetings, conferences, and other functions that would advance the mission of DCIST by reaching citizens, municipalities, etc. Examples of this may include home and garden shows, Farm Technology Days, etc. – *as opportunity arises, DCIST coordinator & steering committee*
- Develop additional educational materials as able; distribute at public functions and places; examples include pens, magnets, posters, signs, buttons, pamphlets, calendars, booklets, etc. – *2019-2020 as funding allows, SWCD staff & DCIST coordinator*
- Utilize traditional media (i.e. press releases, newspapers, radio, and television) to reach Door County residents- *DCIST Coordinator and SWCD staff- ongoing*
- Maintain the DCIST email (dcist1@gmail.com) as a consistent and convenient contact for the public. Email should be checked a minimum of two times weekly. Maintain a member email list used to inform public and partners of events and invasive species news – *ongoing, DCIST coordinator*
- Reach a broader audience using social media including Facebook and Instagram. Through weekly updates, provide accurate, detailed and updated information via these accounts and the DCIST website – *ongoing, DCIST coordinator*
    - ✓ Develop communications/education/outreach social marketing plan (assemble existing material, identify new additional materials needed, develop partnership strategy) – *2020-2021, DCIST coordinator & steering committee*

- Create a traveling invasive species display to engage the public in understanding the impacts of invasive plants. Maintain a list of table display venues and speaking opportunities. Coordinate display schedule, transport, set-up, maintenance, updates and staffing. Explore options for purchase of table display and/or large poster for display with equipment, etc. – *2019-2020, DCIST coordinator, SWCD staff, and steering committee*
- Co-promote invasive species activities during Wisconsin's Invasive Species Action Month held annually each June – *ongoing, DCIST coordinator*
- Update, print and distribute the general DCIST brochure and "Top 15" invasive species brochure – *2019, DCIST coordinator & SWCD staff*
- Develop a list of strategic partners and organizations in Door County that would help promote the mission of DCIST. Introduce these entities to the DCIST and the tools available to them – *2019, DCIST coordinator*

8.2. Organizational

The overall objective of organization action items is to maintain and expand the DCIST partnership and to build on the strong foundation that currently exists within the DCIST. Invasive plants are a problem for the many agencies and organizations that make up the partnership, as well as for the citizens DCIST works with on the landscape. Partnerships are unique arrangements, and every collaboration is different with its own culture and internal dynamics. The best results from a strategic partnership generally happens when each partner delivers excellence in their areas of expertise that may be different but are related to the overarching group. By having the DCIST partnership, each partner can focus on its strengths, whilst having reliable people in other organizations to cover the areas outside its expertise. Growing partners and members within the DCIST network will increase both on-the-ground and financial support within Door County for this effort.

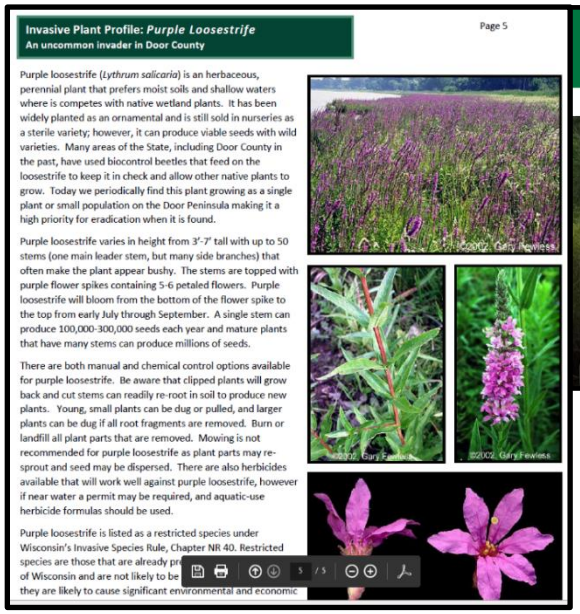
Organizational structure is about identifying and maintaining leadership to accomplish control, education, outreach and other objectives through cooperation of resources and team building. It is expected that the entire partnership, including the coordinator, SWCD and DCIST steering committee member organizations, will work toward these action items to maintain the partnership into the future. Therefore, some of these action items do not specify the entity that will take the lead on that item.

Action Items:

- Maintain the DCIST structure and partnership and steering committee - *ongoing*
  - ✓ Maintain at least one DCIST staff position to serve as the group coordinator and project manager; determine if organizational independence is desired and/or feasible and if MOU or similar agreement is wanted.
  - ✓ Create long-term goal(s) for DCIST's organizational status - *2023*
- Work across jurisdictional and geographical boundaries to strengthen the coordination among current and potential partners – *DCIST Coordinator- ongoing*

- ✓ Continue to participate in the Phragmites Advisory Council led by Bay Lake Regional Planning
- ✓ Continue to participate in the Green Bay Conservation Partners round table.
- ✓ Continue to participate in AIS and CISMA workshops provided by WDNR

- Seek funding opportunities to support DCIST activities. Raise a minimum of $25,000 annually in grant awards or private donations to support general operations, a part-time coordinator, programs, and annual work plans - *ongoing*
  - ✓ Continue to seek funding through competitive grants and gifts, exploring federal, state and local sources. The type and availability of funding opportunities varies. Update and manage a list of Foundations and grant programs complementary to the DCIST goals and objectives – *ongoing*
  - ✓ Explore additional ways to raise undesignated funds: donations, sales, auctions, meeting fees, etc.
    - Funding opportunities will be reviewed on a regular basis with proposals being drafted and reviewed as able by DCIST staff, steering committee members, and fiscal administrator.
- Develop a diverse, stable funding mechanism to oversee partnership coordination and maintain partnership cohesiveness.
  - ✓ Establish an annual budget and job responsibilities for a county-wide invasive species coordinator – *annually, SWCD staff & DCIST steering committee*.
- Recruit and/or maintain a steering committee with a minimum of eight and a maximum of 15 active members that possess the skills and commitment to strengthen DCIST. Define and prioritize steering committee responsibilities and member expectations – *2019 and ongoing, DCIST coordinator & steering committee*
- Schedule bi-monthly steering committee meetings and post the dates on the website
  - ✓ Develop and distribute the agenda, financial report and past meeting minutes prior to each meeting– *minimum of six times per year, DCIST coordinator & SWCD for financial report*
- Evaluate need for control and management, education and outreach, early detection and mapping sub-committees within the larger steering committee – other sub-committees could include monitoring, AIS and Terrestrial, funding, technical, policy – *DCIST Coordinator and steering committee partners 2020-2023*
- Following this strategic plan develop annual work plans for the DCIST coordinator and the partnership using clearly defined criteria to evaluate and prioritize activities – annually, *DCIST coordinator, SWCD staff with input from steering committee*
- Explore means by which to recruit, engage and maintain members who will serve as volunteers and ambassadors for the program. Continue to identify community "champions" that will work within their municipality to advance the DCIST efforts and SWCD invasive species work with a goal of having a person identified within each municipality within the timeframe of this plan – *DCIST coordinator & SWCD staff 2018-2023*


Invasive Plant Profile: *Purple Loosestrife*
An uncommon invader in Door County

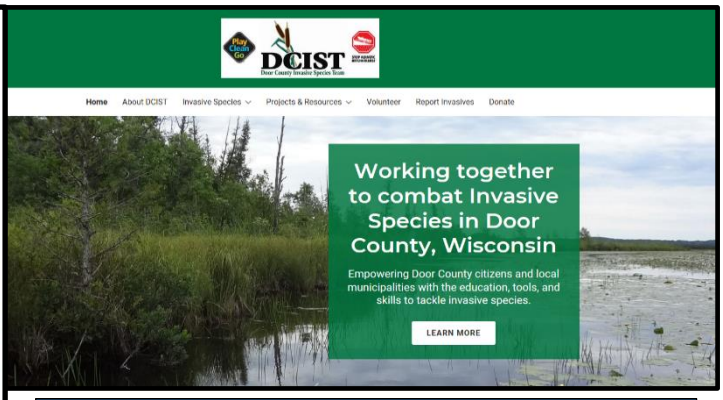
Page 5

Purple loosestrife (*Lythrum salicaria*) is an herbaceous, perennial plant that prefers moist soils and shallow waters where is competes with native wetland plants. It has been widely planted as an ornamental and is still sold in nurseries as a sterile variety; however, it can produce viable seeds with wild varieties. Many areas of the State, including Door County in the past, have used biocontrol beetles that feed on the loosestrife to keep it in check and allow other native plants to grow. Today we periodically find this plant growing as a single plant or small population on the Door Peninsula making it a high priority for eradication when it is found.

Purple loosestrife varies in height from 3'-7' tall with up to 50 stems (one main leader stem, but many side branches) that often make the plant appear bushy. The stems are topped with purple flower spikes containing 5-6 petaled flowers. Purple loosestrife will bloom from the bottom of the flower spike to the top from early July through September. A single stem can produce 100,000-300,000 seeds each year and mature plants that have many stems can produce millions of seeds.

There are both manual and chemical control options available for purple loosestrife. Be aware that clipped plants will grow back and cut stems can readily re-root in soil to produce new plants. Young, small plants can be dug or pulled, and larger plants can be dug if all root fragments are removed. Burn or landfill all plant parts that are removed. Mowing is not recommended for purple loosestrife as plant parts may re-sprout and seed may be dispersed. There are also herbicides available that will work well against purple loosestrife, however if near water a permit may be required, and aquatic-use herbicide formulas should be used.

Purple loosestrife is listed as a restricted species under Wisconsin's Invasive Species Rule, Chapter NR 40. Restricted species are those that are already pr
of Wisconsin and are not likely to be
they are likely to cause significant environmental and economic



Photos: DCIST outreach efforts through newsletter distribution (left) that highlights an invasive species on a monthly basis. The new DCIST website home page allow for the most current information, google calendar and much more. Viewable at www.doorinvasives.org

Appendices

Appendix A: State of Wisconsin's Department of Transportation's Highway Maintenance Manual - Chapter 7 Roadside Management recommended BMP summary.

Appendix B: Complete Wisconsin NR-40 species list.

Appendix C: Wisconsin DNR's Invasive Species Response Framework's *Invasive Species Response Process Overview & Checklist*

Appendix A: State of Wisconsin's Department of Transportation's Highway Maintenance Manual - Chapter 7 Roadside Management recommended BMP summary

An overview of the Utility and Transportation Rights-of-way BMPs relevant to invasive species prevention and control in Door County. Considerations for each of these BMPs can be found in the full manual. Additional BMPs for forestry, recreational activities, and more can be found at https://councilonforestry.wi.gov/Pages/InvasiveSpecies/Overview.aspx.

Soil Disturbance BMPs

BMP SD 1: Prior to implementing activities, scout for and locate invasive species infestations, consistent with the scale and intensity of the operations that are to occur at the site.

BMP SD 2: Consider the need for action based on: 1) the degree of invasiveness; 2) severity of the current infestation; 3) amount of additional habitat or hosts at risk for invasion; and 4) potential impacts; and 5) feasibility of control with available methods and resources

BMP SD 3: Plan activities to limit the potential for introduction and spread of invasive species, prior to construction.

BMP SD 4: Provide appropriate resources in identification of known species for corridor workers.

BMP SD 5: Minimize soil disturbance which may include using existing roads, access points, staging areas and/or alternative construction methods.

BMP SD 6: Avoid invasive species populations when feasible and minimize the spread of invasive species during soil disturbance activities.

BMP SD 7: Prior to moving equipment out of an infested area and then into an uninfested area, clean soils, seeds, plant parts, or invertebrates from exterior surfaces, to the extent practical, to minimize the risk of transporting propagules.

BMP SD 8: Stabilize disturbed soils using erosion control/storm water management technical standards as soon as possible.

BMP SD 9: Use non-invasive or native seed for cover crops or revegetation.

Vegetation Management and Inspection/Monitoring BMPs

BMP VM 1: Prior to implementing activities, scout for, locate and document invasive species infestations.

BMP VM 2: Plan activities to limit the potential introduction and spread of invasive species, prior to construction.

BMP VM 3: Assess available resources and seed new resources to prevent invasive species spread.

BMP VM 4: Provide training in identification, control and prevention of known invasive species to employees and contractors performing vegetation management activities.

BMP VM 5: Prior to moving equipment out of an infested area and then into an uninfested area, clean soils, seeds, plant parts or invertebrates from exterior surfaces, to the extent practical, to minimize the risk of transporting propagules.

BMP VM 6: Inspect and clean clothing, footwear, and gear for soils, seeds, plant parts, and invertebrates before and after activities.

BMP VM 7: Properly dispose of soils, seeds, plant parts or invertebrates found during inspection and cleaning.

BMP VM 8: Locate and use staging areas that are free of invasive plants to avoid spreading seeds and other viable plant parts.

BMP VM 9: Consider the likely response of invasive species when conducting activities that result in disturbed soil, increased sunlight, fire, etc.

BMP VM 10: Ensure that invasive species control treatments are applied within the appropriate time window.

BMP VM 11: Monitor right-of-ways during day-to-day activities and post-management activities; determine necessary treatments based on the presence of invasive species.

Transportation of Material BMPs

BMP TM 1: Take steps to avoid the movement of invasives to non-infested areas during transport activities.

BMP TM 2: Prior to transporting materials, manage the load to limit the spread of invasive species.

BMP TM 3: Prior to moving equipment out of an infested area and then into an uninfested area, clean soils, seeds, plant parts or invertebrates from exterior surfaces, to the extent practical, to minimize the risk of transporting propagules.

BMP TM 4: Dispose of soils, seeds, plant parts or invertebrates found during inspection and cleaning.

BMP TM 5: Establish staging areas and temporary facilities in locations that are free of invasive species.

BMP TM 6: Use soil and aggregate material from sources that are free of invasive species.

BMP TM 7: Manage stock piles to limit the spread of invasive species.

BMP TM 8: Do not transport woody material that may contain invasive species.

BMP TM 9: If you must transport woody material that may contain invasive species, bring them to a designated area for appropriate disposal.

BMP TM 10: Keep and reuse onsite materials rather than importing new materials.

Revegetation and Landscaping BMPs

BMP RV 1: Plan activities to limit the potential introduction and spread of invasive species, prior to revegetation.

BMP RV 2: Select non-invasive or native species for revegetation and landscaping activities.

BMP RV 3: Inspect and clean clothing, footwear and gear for soils, seeds, plant parts or invertebrates before and after activities.

BMP RV 4: Prior to moving equipment out of an infested area and into an uninfested area clean soil and debris from exterior surfaces, to the extent practical, to minimize the risk of transporting propagules.

BMP RV 5: Revegetate disturbed soils as soon as feasible to minimize invasive species establishment.

BMP RV 6: Allow natural revegetation of the ground lay to occur only where site conditions permit.

BMP RV 7: Ensure the species specified in the plan are the ones being used.

BMP RV 8: Monitor the revegetation site for invasive species.

WISCONSIN CH. NR 40 INVASIVE SPECIES LIST

EFFECTIVE LISTING DATE
September 1, 2009 [A]
June 1, 2011 [B]
May 1, 2015 [C]

ALGAE AND CYANOBACTERIA

PROHIBITED CATEGORY:

1. *Caulerpa taxifolia* (Killer algae)[C]
2. *Cylindrospermopsis raciborskii* (Cylindro, cyanobacteria)[A]
3. *Didymosphenia geminata* (Didymo or rock snot)[A] except in Lake Superior
4. *Nitellopsis obtusa* (Starry stonewort, alga)[A]
5. *Prymnesium parvum* (Golden alga)[A]
6. *Stigonematales* spp. (Novel cyanobacterial epiphyte of the order Stigonematales linked with avian vacuolar)[A]
7. *Ulva* species (including species previously known as Enteromorpha species)[A]

RESTRICTED CATEGORY:

None.

PLANTS

PROHIBITED CATEGORY:

1. *Achyranthes japonica* (Japanese chaff flower)[C]
2. *Akebia quinata* (Fiveleaf akebia or Chocolate vine)[C]
3. *Ampelopsis brevipedunculata* (Porcelain berry)[A] including the variegated cultivar
4. *Arundo donax* (Giant reed)[C]
5. *Azolla pinnata* (Mosquito fern)[C]
6. *Berberis vulgaris* (Common barberry)[C]
7. *Cabomba caroliniana* (Fanwort, Carolina fanwort)[A]
8. *Cardamine impatiens* (Narrow leaf bittercress)[C]
9. *Celastrus loeseneri* (Asian loeseneri bittersweet)[C]
10. *Centaurea diffusa* (Diffuse knapweed)[C]
11. *Centaurea repens* (Russian knapweed)[C]
12. *Centaurea solstitialis* (Yellow star thistle)[A]
13. *Crassula helmsii* (Australian swamp crop or New Zealand pygmyweed)[A]
14. *Cytisus scoparius* (Scotch broom)[A]
15. *Digitalis lanata* (Grecian foxglove)[C]
16. *Dioscorea batatas* or *Dioscorea polystacha* (Chinese yam)[C]
17. *Dioscorea oppositifolia* (Indian yam)[A]
18. *Egeria densa* (Brazilian waterweed or wide-leaf anacharis)[A]
19. *Eichhornia azurea* (Anchored water hyacinth)[C]
20. *Eichhornia crassipes* (Water hyacinth, floating)[C]
21. *Fallopia sachalinensis* or Polygonum sachalinense (Giant knotweed)[A]
22. *Fallopia* x *bohemicum* or *F.* x *bohemica* or *Polygonum* x *bohemicum* (Bohemian knotweed)[C]
23. *Glossostigma cleistanthum* (Mudmat)[C]
24. *Heracleum mantegazzianum* (Giant hogweed)[A]
25. *Hydrilla verticillata* (Hydrilla)[A]
26. *Hydrocharis morsus–ranae* (European frogbit)[A]
27. *Hydrocotyle ranunculoides* (Floating marsh pennywort)[C]
28. *Hygrophila polysperma* (Indian Swampweed)[C]
29. *Impatiens glandulifera* (Policeman's helmet)[C]
30. *Ipomoea aquatica* (Water spinach, swamp morning-glory)[C]
31. *Lagarosiphon major* (Oxygen–weed, African elodea or African waterweed)[A]
32. *Lepidium latifolium* (Perennial or broadleaved pepperweed)[A]
33. *Lespedeza cuneata* or *Lespedeza sericea* (Sericea or Chinese lespedeza)[A]
34. *Limnophila sessiliflora* (Asian marshweed)[C]
35. *Lonicera japonica* (Japanese honeysuckle)[A]
36. *Lythrum virgatum* (Wanded loosestrife)[C]
37. *Microstegium vimineum* (Japanese stilt grass)[A]
38. *Myriophyllum aquaticum* (Parrot feather)[A]
39. *Najas minor* (Brittle naiad, or lesser, bushy, slender, spiny or minor naiad or waternymph)[A]
40. *Nelumbo nucifera* (Sacred Lotus)[C]
41. *Nymphoides peltata* (Yellow floating heart)[A]
42. *Oenanthe javanica* (Java waterdropwort or Vietnamese parsley)[C]
43. *Oplismenus hirtellus* ssp. *undulatifolius* (Wavy leaf basket grass)[C]
44. *Ottelia alismoides* (Ducklettuce)[C]
45. *Paulownia tomentosa* (Princess tree)[A]
46. *Petasites hybridus* (Butterfly dock)[C]
47. *Phellodendron amurense* (Amur Cork Tree)[C] except male cultivars and seedling rootstock
48. *Pistia stratiotes* (Water lettuce)[C]
49. *Polygonum perfoliatum* or *Persicaria perfoliata* (Mile–a–minute vine)[A]
50. *Pueraria montana* or *P. lobata* (Kudzu)[A]
51. *Quercus acutissima* (Sawtooth oak)[A]
52. *Ranunculus ficaria* (Lesser celandine)[C]
53. *Rubus armeniacus* (Himalayan blackberry)[C]
54. *Rubus phoenicolasius* (Wineberry or wine raspberry)[A]
55. *Sagittaria sagittifolia* (Hawaii arrowhead)[C]
56. *Salvinia herzogii* (Giant Salvinia)[C]
57. *Salvinia molesta* (Giant salvinia)[C]
58. *Sorghum halepense* (Johnsongrass)[C]
59. *Stratiotes aloides* (Water Soldiers)[C]
60. *Taeniatherum caput-medusae* (Medusahead)[C]
61. *Torilis arvensis* (Spreading hedgeparsley)[A]
62. *Trapa natans* (Water chestnut)[A]
63. *Tussilago farfara* (Colt's foot)[C]
64. *Typha domingensis* (Southern cattail)[C]
65. *Typha laxmannii* (Graceful cattail)[C]
66. *Vincetoxicum rossicum* or *Cynanchum rossicum* (Pale or European swallow–wort)[A]
67. *Wisteria floribunda* (Japanese wisteria)[C]
68. *Wisteria sinensis* (Chinese wisteria)[C]

PROHIBITED/RESTRICTED CATEGORY:

1. *Anthriscus sylvestris* (Wild chervil)[A] restricted in Adams, Barron, Chippewa, Crawford, Columbia, Dane, Dodge, Dunn, Fond du Lac, Grant, Green, Green Lake, Iowa, Jefferson, Juneau, Kenosha, Lacrosse, Lafayette, Marquette, Milwaukee, Monroe, Ozaukee, Polk , Racine, Richland, Rock, Sauk, Sheboygan, Taylor, Vernon, Walworth, Waukesha, and Washington counties; prohibited elsewhere – Updated county list in 2015
2. *Bunias orientalis* (Hill mustard)[A] restricted in Dane, Grant, Green, Iowa, Lafayette, and Rock counties; prohibited elsewhere – Updated county list in 2015
3. *Cirsium palustre* (European marsh thistle)[A] restricted in Ashland, Bayfield, Chippewa, Clark, Door, Florence, Forest, Iron, Langlade, Lincoln, Marathon, Marinette, Menominee, Oconto, Oneida, Price, Rusk, Sawyer, Shawano, Taylor and Vilas counties; prohibited elsewhere – Updated county list in 2015
4. *Conium maculatum* (Poison hemlock)[A] restricted in Buffalo, Crawford, Dane, Grant, Green, Iowa, Jefferson, Kenosha, La Crosse, Lafayette, Milwaukee, Monroe, Ozaukee, Racine, Richland, Rock, Sauk, Sheboygan, Trempealeau, Vernon, Walworth, and Waukesha counties; prohibited elsewhere – Updated county list in 2015
5. *Epilobium hirsutum* (Hairy willow herb)[A] restricted in Brown, Calumet, Door, Kenosha, Kewaunee, and Manitowoc counties; prohibited elsewhere – Updated county list in 2015
6. *Glyceria maxima* (Tall or reed mannagrass)[A] restricted in Brown, Calumet, Columbia, Dane, Dodge, Door, Fond du Lac, Green, Jefferson, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Rock, Sheboygan, Walworth, Washington, Waukesha and Winnebago counties; prohibited elsewhere – Updated county list in 2015
7. *Humulus japonicus* (Japanese hops)[A] restricted in Buffalo, Crawford, Dane, Grant, Green, Iowa, Jackson, La Crosse, Lafayette, Monroe, Pepin, Richland, Sauk, Trempealeau, and Vernon counties; prohibited elsewhere – Updated county list in 2015
8. *Leymus arenarius* or *Elymus arenarius* (Lyme grass or sand ryegrass)[A] restricted in Door, Kenosha, Kewaunee, Manitowoc, Milwaukee, Ozaukee, Racine, and Sheboygan counties; prohibited elsewhere – Updated county list in 2015
9. *Linaria dalmatica* (Dalmatian toadflax)[C] restricted in Juneau and Bayfield counties; prohibited elsewhere
10. *Lonicera maackii* (Amur honeysuckle)[A] restricted in Adams, Brown, Buffalo, Calumet, Columbia, Crawford, Dane, Dodge, Fond du Lac, Grant, Green, Green Lake, Iowa, Jefferson, Juneau, Kenosha, Kewaunee, La Crosse, Lafayette, Manitowoc, Marquette, Milwaukee, Monroe, Outagamie, Ozaukee, Racine, Richland, Rock, Sauk, Sheboygan, Vernon, Walworth, Washington, Waukesha, Waupaca, Waushara and Winnebago counties; prohibited elsewhere – Updated county list in 2015
11. *Phragmites australis* non-native ecotype (Phragmites or Common reed non-native ecotype)[A] restricted in Brown, Calumet, Columbia, Dane, Dodge, Door, Florence, Fond du Lac, Forest, Green Lake, Jefferson, Kenosha, Kewaunee, Langlade, Manitowoc, Marathon, Marinette, Marquette, Menominee, Milwaukee, Oconto, Outagamie, Ozaukee, Portage, Racine, Rock, Shawano, Sheboygan, Walworth, Washington, Waukesha, Waupaca, Waushara, and Winnebago counties; prohibited elsewhere - Moved to Prohibited/Restricted from Restricted in 2015
12. *Solidago sempervirens* (Seaside goldenrod)[C] restricted in Kenosha, Milwaukee and Racine counties; prohibited elsewhere
13. *Torilis japonica* (Japanese hedgeparsley or erect hedgeparsley)[A] restricted in Adams, Brown, Calumet, Columbia, Crawford, Dane, Dodge, Door, Fond du Lac, Grant, Green, Green Lake, Iowa, Jefferson, Juneau, Kenosha, Kewaunee, La Crosse, Lafayette, Langlade, Manitowoc, Marathon, Marinette, Marquette, Menominee, Milwaukee, Monroe, Oconto, Outagamie, Ozaukee, Portage, Racine, Richland, Rock, Sauk, Shawano, Sheboygan, Vernon, Walworth, Washington, Waukesha, Waupaca, Waushara, and Winnebago counties; prohibited elsewhere – Updated county list in 2015
14. *Vincetoxicum nigrum* or *Cynanchum louiseae* (Black or Louise's swallow–wort)[A] restricted in Columbia, Crawford, Dane, Grant, Green, Iowa, Jefferson, Juneau, Kenosha, La Crosse, Lafayette, Milwaukee, Monroe, Racine, Richland, Rock, Sauk, Vernon, Walworth and Waukesha counties; prohibited elsewhere

RESTRICTED CATEGORY:

1. *Acer tataricum* subsp. *ginnala* (Amur maple)[C] *except all cultivars
2. *Aegopodium podagraria* (Bishop's goutweed)[C]
3. *Ailanthus altissima* (Tree of heaven)[A]
4. *Alliaria petiolata* (Garlic mustard)[A]
5. *Alnus glutinosa* (Black alder)[C] *except all cultivars and hybrids
6. *Artemisia absinthium* (Wormwood)[C]
7. *Berberis thunbergii* (Japanese barberry)[C] *This restriction only applies to the parent type, the variety atropurpurea, the hybrid of B. thunbergii x B. Koreana, and the following cultivars. Berberis thunbergii cultivars: Sparkle, 'Anderson' Lustre Green™, Erecta, 'Bailgreen' Jade Carousel®, Angel Wings, Painter's Palette, Inermis ('Thornless'), Pow Wow, Golden Ring, Kelleriis, Kobold, 'JN Variegated' Stardust™ and Antares. Variety atropurpurea cultivars: Marshall Upright ('Erecta'), Crimson Velvet, 'Bailtwo' Burgundy Carousel®, Red Rocket, 'Monomb' Cherry Bomb™, 'Bailone' Ruby Carousel®, JN Redleaf, Rose Glow and Silver Mile. Hybrid of B. thunbergii x B. koreana cultivars: Tara and 'Bailsel' Golden Carousel®
8. *Butomus umbellatus* (Flowering rush)[A]
9. *Campanula rapunculoides* (Creeping bellflower)[A]
10. *Caragana arborescens* (Siberian peashrub)[C] *except the cultivars Lorbergii, Pendula, and Walkerii
11. *Carduus acanthoides* (Plumeless thistle)[A]
12. *Carduus nutans* (Musk thistle or Nodding thistle)[A]
13. *Celastrus orbiculatus* (Oriental bittersweet)[A]
14. *Centaurea biebersteinii, Centaurea maculosa* or *Centaurea stoebe* (Spotted knapweed)[A]

15. *Centaurea jacea* (Brown knapweed)[C]
16. *Centaurea nigra* (Black knapweed)[C]
17. *Centaurea nigrescens* (Tyrol knapweed)[C]
18. *Chelidonium majus* (Celandine)[A] - Moved to Restricted from Prohibited/Restricted in 2015
19. *Cirsium arvense* (Canada thistle)[A]
20. *Coronilla varia* (Crown vetch)[C]
21. *Cynoglossum officinale* (Hound's tongue)[A]
22. *Dipsacus laciniatus* (Cut–leaved teasel)[A]
23. *Dipsacus sylvestris* or *Dipsacus fullonum* (Common teasel)[A]
24. *Elaeagnus angustifolia* (Russian olive)[A]
25. *Elaeagnus umbellata* (Autumn olive)[A]
26. *Epipactis helleborine* (Helleborine orchid)[A]
27. *Euonymus alatus* (Burning bush)[C] *including the cultivar 'Nordine' and excluding all other cultivars
28. *Euphorbia cyparissias* (Cypress spurge)[A]
29. *Euphorbia esula* (Leafy spurge)[A]
30. *Fallopia japonica* or *Polygonum cuspidatum* (Japanese knotweed)[A]
31. *Filipendula ulmaria* (Queen of the meadow)[C]
32. *Galeopsis tetrahit* (Hemp nettle, brittlestem hemp nettle)[A]
33. *Galium mollugo* (White bedstraw)[C]
34. *Hesperis matronalis* (Dame's rocket)[A]
35. *Impatiens balfourii* (Balfour's touch-me-not)[C]
36. *Iris pseudacorus* (Yellow iris)[C]
37. *Knautia arvensis* (Field scabiosa)[C]
38. *Lonicera morrowii* (Morrow's honeysuckle)[A]
39. *Lonicera tatarica* (Tartarian honeysuckle)[A]
40. *Lonicera* x *bella* (Bell's or showy bush honeysuckle)[A]
41. *Lysimachia nummularia* or *L. nummelaria* (Moneywort)[A] *except the cultivar Aurea and yellow and gold leaf forms
42. *Lysimachia vulgaris* (Garden yellow loosestrife)[C]
43. *Lythrum salicaria* (Purple loosestrife)[A]
44. *Morus alba* (White mulberry)[C] *except male cultivars
45. *Myosotis scorpioides* (Aquatic forget-me-not)[C]
46. *Myosotis sylvatica* or *M. sylvaticum* (Woodland forget-me-not)[C]
47. *Myriophyllum spicatum* (Eurasian watermilfoil)[A]
48. *Najas marina* (Spiny naiad)[C]
49. *Pastinaca sativa* (Wild parsnip)[A] *except for the garden vegetable form
50. *Phalaris arundinacea* var. *picta* (ribbon grass or gardener's garters and other ornamental variegated varieties and cultivars)[C] *this restriction does not include the parent type - reed canary grass.
51. *Pimpinella saxifraga* (Scarlet pimpernel or Burnet saxifrage)[C]
52. *Populus alba* (White poplar)[C]
53. *Potamogeton crispus* (Curly–leaf pondweed)[A]
54. *Rhamnus cathartica* (Common buckthorn)[A]
55. *Rhamnus frangula* or *Frangula alnus* (Glossy buckthorn)[A] *including the Columnaris (tall hedge) cultivar but excluding the cultivars Asplenifolia and Fineline (Ron Williams)
56. *Robinia hispida* (Rose acacia or Bristly locust)[C]
57. *Robinia pseudoacacia* (Black locust)[C] *except all cultivars
58. *Rosa multiflora* (Multiflora rose)[A]
59. *Tanacetum vulgare* (Tansy)[A] *except the cultivars Aureum and Crispum
60. *Typha angustifolia* (Narrow-leaf cattail)[A]
61. *Typha* x *glauca* (Hybrid cattail)[A]
62. *Ulmus pumila* (Siberian elm)[C] *except hybrids and individuals used as rootstock
63. *Valeriana officinalis* (Garden heliotrope or Valerian)[C]

Phase-out: Restricted only plants located in Wisconsin prior to their effective listing date may be transported, transferred, and introduced without a permit for a period not to exceed 3 years for herbaceous plants and woody vines, or 5 years for trees and shrubs, from their effective listing date.

FISH AND CRAYFISH

PROHIBITED CATEGORY:

1. Channidae (Snakehead family)[A] including *Channa argus* (Northern snakehead) , *Channa bleheri* (Rainbow snakehead), *Channa gachua* (Dwarf snakehead), *Channa maculata* (Blotched snakehead), *Channa marulius* (Bullseye snakehead), *Channa punctata* (Spotted snakehead), and *Channa striata* (Chevron snakehead)
2. *Ctenopharyngodon idella* (Grass carp)[A]
3. *Cyprinella lutrensis* (Red shiner)[A]
4. *Hypophthalmichthys molitrix* (Silver carp)[A]
5. *Hypophthalmichthys nobilis* (Bighead carp)[A]
6. *Mylopharyngodon piceus* (Black carp)[A]
7. *Sander lucioperca* (Zander)[A]
8. *Scardinius erythrophthalmus* (Rudd)[A]
9. *Tinca tinca* (Tench)[A]
10. All other nonnative fish and nonnative crayfish except:
    a. Established nonnative fish species and established nonnative crayfish species
    b. Nonnative viable fish species in the aquarium trade
    c. Nonnative fish species in the aquaculture industry
    d. Nonviable fish species
    e. Genetically modified fish species

RESTRICTED CATEGORY:

1. Established nonnative fish species and established nonnative crayfish species
    a. *Alosa pseudoharengus* (Alewive)[A]
    b. *Cyprinus carpio* (Common carp)[A]
    c. *Gambusia affinis* (Western mosquitofish)[A] - Moved to Restricted from Prohibited in 2015
    d. *Gambusia holbrooki* (Eastern mosquitofish)[A] - Moved to Restricted from Prohibited in 2015
    e. *Gasterosteus aculeatus* (Three-spine stickleback)[A]
    f. *Gymnocephalus cernuus* (Ruffe)[A]
    g. *Morone americana* (White perch)[A]
    h. *Neogobius melanostomus* (Round goby)[A]
    i. *Orconectes rusticus* (Rusty crayfish)[A]
    j. *Osmerus mordax* (Rainbow smelt)[A]

k. *Petromyzon marinus* (Sea lamprey)[A]
l. *Proterorhinus marmoratus* (Tubenose Goby)[A]

2. Nonnative viable fish species in the aquarium trade
   a. *Acipenser ruthenus* (Sterlet)[A]
   b. *Carassius auratus* (Goldfish)[A]
   c. *Cyprinus carpio* (Koi carp)[A]
   d. *Leuciscus idus* (Ide)[A]
   e. *Misgurnus anguillicaudatus* (Weather loach)[A]
   f. *Myxocyprinus asiaticus* (Chinese hi-fin banded shark)[A]
   g. *Rhodeus* spp. (Bitterling)[A]
3. Nonnative fish species in the aquaculture industry
   a. *Lepomis microlophus* (Redear sunfish)[A]
   b. *Oncorhynchus gorbuscha* (Pink salmon)[A]
   c. *Oncorhynchus kisutch* (Coho salmon)[A]
   d. *Oncorhynchus mykiss* (Rainbow trout)[A]
   e. *Oncorhynchus tshawytscha* (Chinook salmon)[A]
   f. *Salmo salar* (Atlantic salmon)[A]
   g. *Salmo trutta* (Brown trout)[A]
   h. *Salvelinus alpinus* (Arctic char)[A]
   i. *Salvelinus fontinalis* x *Salmo trutta* (Tiger trout)[A]
   j. *Tilapia* spp. (Tilapia)[A]
4. Nonviable fish species
5. Viable genetically modified native and nonnative fish species.

Aquatic Invertebrates Except Crayfish

PROHIBITED CATEGORY:

1. *Bithynia tentaculata* (Faucet snail)[A]
2. *Bythotrephes cederstroemi* (Spiny water flea)[A]
3. *Cercopagis pengoi* (Fishhook water flea)[A]
4. *Corbicula fluminea* (Asian clam)[A]
5. *Daphnia lumholtzi* (Water flea)[A]
6. *Dikerogammarus villosus* (Killer Shrimp)[C]
7. *Dreissena rostriformis* (Quagga mussel)[A]
8. *Eriocheir sinensi* (Chinese mitten crabs)[A]
9. *Hemimysis anomala* (Bloody shrimp)[A]
10. *Limnoperna fortunei* (Golden mussel)[C]
11. *Melanoides tuberculata* (Malaysian trumpet snail)[C]
12. *Potamopyrgus antipodarum* (New Zealand mud snail)[A]

RESTRICTED CATEGORY:

1. *Cipangopaludina chinensis* (Chinese mystery snail)[A]
2. *Cipangopaludina japonica* (Japanese trapdoor snail or Japanese mystery snail)[C]
3. *Dreissena polymorpha* (Zebra mussel)[A]
4. *Valvata piscinalis* (European valve snail)[C]
5. *Viviparus georgianus* (Banded mystery snail)[C]

Terrestrial Invertebrates and Plant Disease-Causing Microorganisms

PROHIBITED CATEGORY:

1. *Adelges tsugae* (Hemlock woolly adelgid)[A]
2. *Anoplophora glabripennis* (Asian longhorned beetle)[A]
3. *Dendroctonus ponderosae* (Mountain Pine Beetle)[C]
4. *Geosmithia morbida* (Thousand cankers disease of walnut)[C]
5. *Lymantria dispar* (Asian race)[A] (Asian Gypsy moth)[A]
6. *Phytophthora ramorum* (Sudden oak death pathogen)[A]
7. *Pityophthorus juglandis* (Walnut twig beetle)[C]

RESTRICTED CATEGORY:

1. *Agrilus planipennis* (Emerald ash borer)[A] - Moved to Restricted from Prohibited in 2015
2. *Amynthas* or *Amynthus* species (Jumping worm)[A] - Moved to Restricted from Prohibited in 2015
3. *Lymantria dispar* (European Gypsy moth)[A]

Cryptococcus fagisuga (Scale associated with beech bark disease)[A] - removed from ch. NR 40 on May 1, 2015

Terrestrial and Aquatic Vertebrates Except Fish

PROHIBITED CATEGORY:

1. *Myiopsitta monachus* (Monk or Quaker parakeet or parrot)[A]
2. *Myocastor coypus* (Nutria)[C]
3. *Sus domestica* (Feral domestic swine)[A]
4. *Sus scrofa* (Russian boar & other wild swine)[A]

RESTRICTED CATEGORY:

None.

Trachemys scripta elegans (Red-eared slider with a carapace (top shell) length of less than 4 inches)[A] - removed from ch. NR 40 on May 1, 2015

Fungus

PROHIBITED CATEGORY:

6. *Pseudogymnoascus destructans* (White-nose syndrome fungal pathogen)[B]

RESTRICTED CATEGORY:

None.

Appendix C: Wisconsin DNR's Invasive Species Response Framework's *Invasive Species Response Process Overview & Checklist*

THE INVASIVE SPECIES RESPONSE PROCESS OVERVIEW & CHECKLIST

Early Detection & Reporting (p. 5)

Report new populations of suspected invasive species on the DNR website at http://dnr.wi.gov/topic/Invasives/report.html or by contacting the Invasive Species Program Specialist at invasive.species@wisconsin.gov.
Document possible invasives with photographs when possible.

Verification

- Interview the reporter to validate the detection
- Get verification of identification by a recognized expert, accredited lab, or herbarium
- Voucher a specimen, when appropriate
- Conduct a site visit to verify location and population size
- For prohibited species, obtain a definitive confirmation of identification via a second expert and/or biological analysis

Communication

- Notify appropriate resource managers at the local, regional, state and national levels
- Notify local stakeholders and consider a local or statewide press release
- Select members for management team and identify a lead coordinator
- Establish an internal communications plan
- Begin planning external communications

Assessment

- Delimit the population and determine demographics of population
- Determine appropriate timeline based on level of threat
- Compile a knowledge base – literature reviews and species expert interviews
- Prevent the spread – identify dispersal vectors/pathways and restrict where feasible
- Begin marshalling resources – estimate needs and identify potential sources

Planning

- Decide on a reasonable and feasible control action (containment, eradication, partial or temporary suppression, or no action)
- Determine which management actions to undertake for selected control
- Secure permits, if needed

Implementation

- Lead coordinator facilitates implementation of response plan
- Continue public outreach efforts

Monitoring & Evaluation

- Monitor progress and adapt the plan, as needed
- Conduct response action effectiveness monitoring – evaluate the effectiveness of the response
- Conduct surveillance monitoring – confirm that the population was contained
- Document and disseminate findings and "lessons learned"

Restoration

- Develop and implement a site restoration plan to restore impacted areas, if needed.