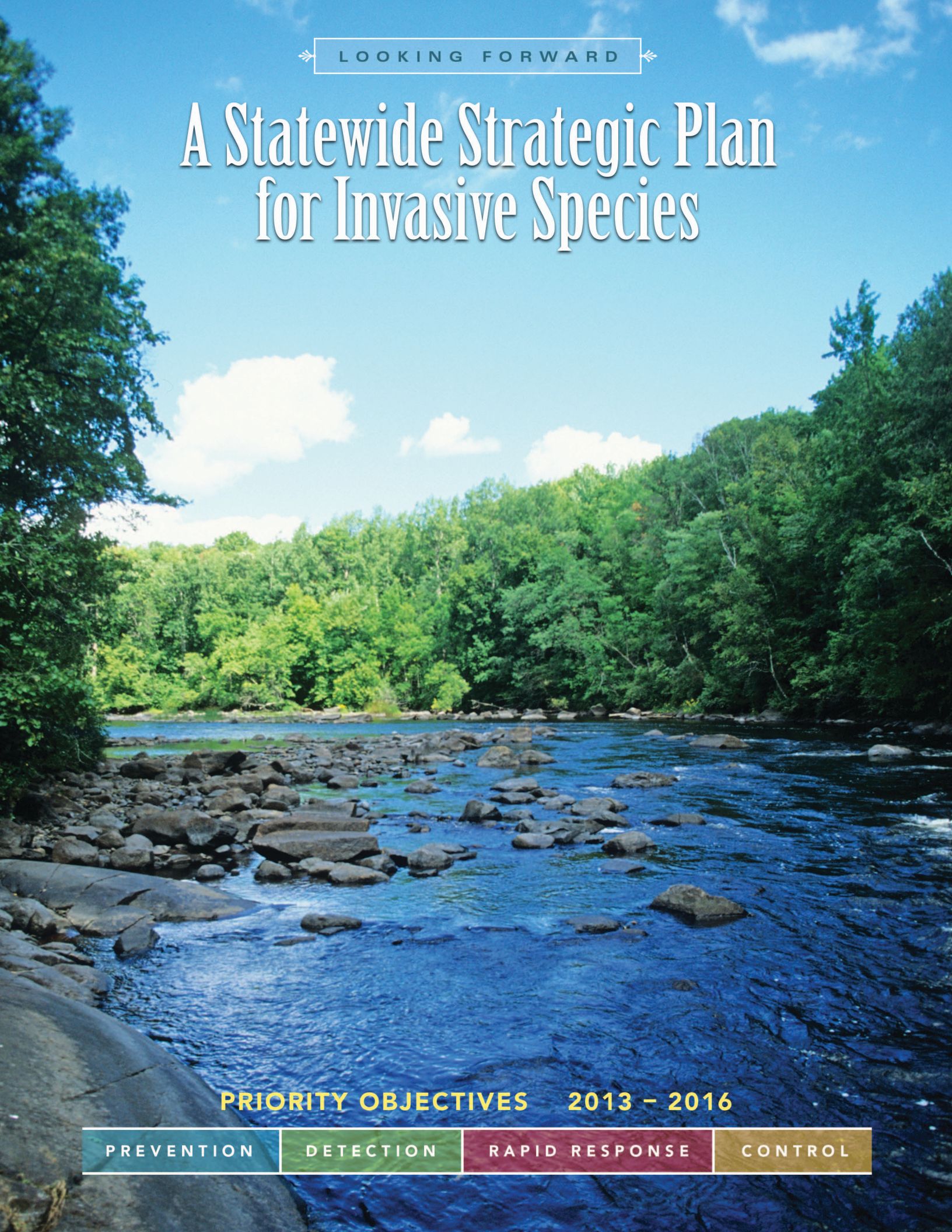

LOOKING FORWARD

A Statewide Strategic Plan for Invasive Species

PRIORITY OBJECTIVES 2013 – 2016

PREVENTION | DETECTION | RAPID RESPONSE | CONTROL

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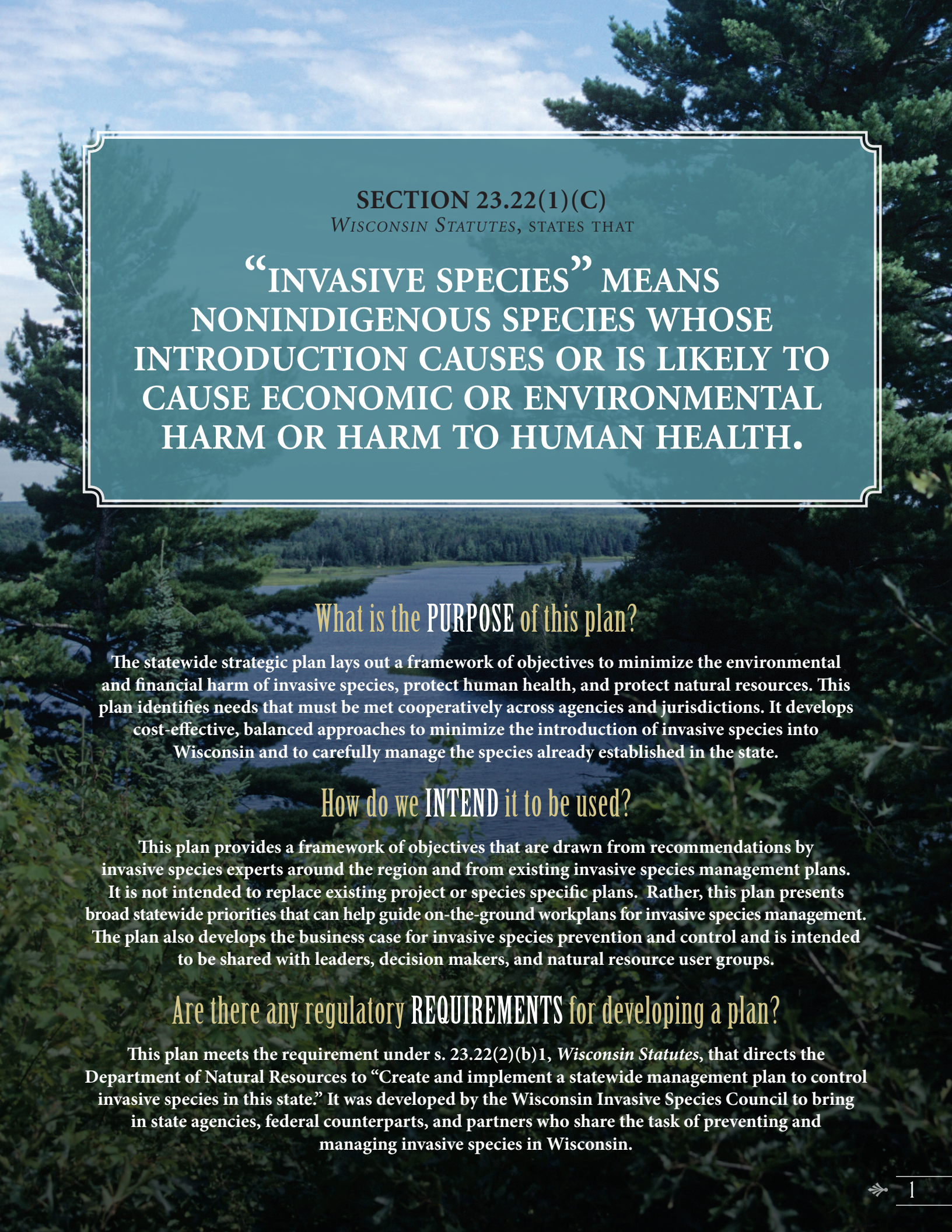


SECTION 23.22(1)(C)
Wisconsin Statutes, states that

"INVASIVE SPECIES" MEANS NONINDIGENOUS SPECIES WHOSE INTRODUCTION CAUSES OR IS LIKELY TO CAUSE ECONOMIC OR ENVIRONMENTAL HARM OR HARM TO HUMAN HEALTH.

What is the PURPOSE of this plan?

The statewide strategic plan lays out a framework of objectives to minimize the environmental and financial harm of invasive species, protect human health, and protect natural resources. This plan identifies needs that must be met cooperatively across agencies and jurisdictions. It develops cost-effective, balanced approaches to minimize the introduction of invasive species into Wisconsin and to carefully manage the species already established in the state.

How do we INTEND it to be used?

This plan provides a framework of objectives that are drawn from recommendations by invasive species experts around the region and from existing invasive species management plans. It is not intended to replace existing project or species specific plans. Rather, this plan presents broad statewide priorities that can help guide on-the-ground workplans for invasive species management. The plan also develops the business case for invasive species prevention and control and is intended to be shared with leaders, decision makers, and natural resource user groups.

Are there any regulatory REQUIREMENTS for developing a plan?

This plan meets the requirement under s. 23.22(2)(b)1, *Wisconsin Statutes*, that directs the Department of Natural Resources to "Create and implement a statewide management plan to control invasive species in this state." It was developed by the Wisconsin Invasive Species Council to bring in state agencies, federal counterparts, and partners who share the task of preventing and managing invasive species in Wisconsin.

Invasive species harm our environment, cost billions of dollars annually across the nation, and threaten core business sectors such as agriculture, tourism, forestry, and energy. The list of invasive species "knocking at our door" continues to grow—Asian carp are moving towards Wisconsin from both the east and west up the Mississippi River watershed; numerous forest pests such as the emerald ash borer are threatening our urban and rural forests; and the fungus that causes white-nose syndrome is quickly approaching our state with the potential to eliminate most of our native cave dwelling bats.

Summary

The network of partners who prioritize, coordinate, and carry out invasive species prevention and control is growing and citizens are recognizing the serious threat invasive species pose across the state. In 2002, state agencies joined with private partners in forming the Wisconsin Invasive Species Council (Council) as directed by s. 23.22, *Wisconsin Statutes*. In 2011 and 2012 the Council hosted discussions that formed the framework for the first statewide strategic plan on invasive species. The Council held five sessions focused on invasive species economics, prevention, detection, rapid response, and control. Thirty-two speakers representing more than fifteen organizations described both current efforts and what is missing in the work to successfully manage invasive species. These discussions of both our strengths and gaps laid the foundation for the statewide strategic plan.

Photo by Ted Lawrence, GLFC

Photo by Marianne Prue, Ohio Department of Natural Resources – Division of Forestry, Bugwood.org

Photo by Al Hicks, NYSDEC, Bugwood.org

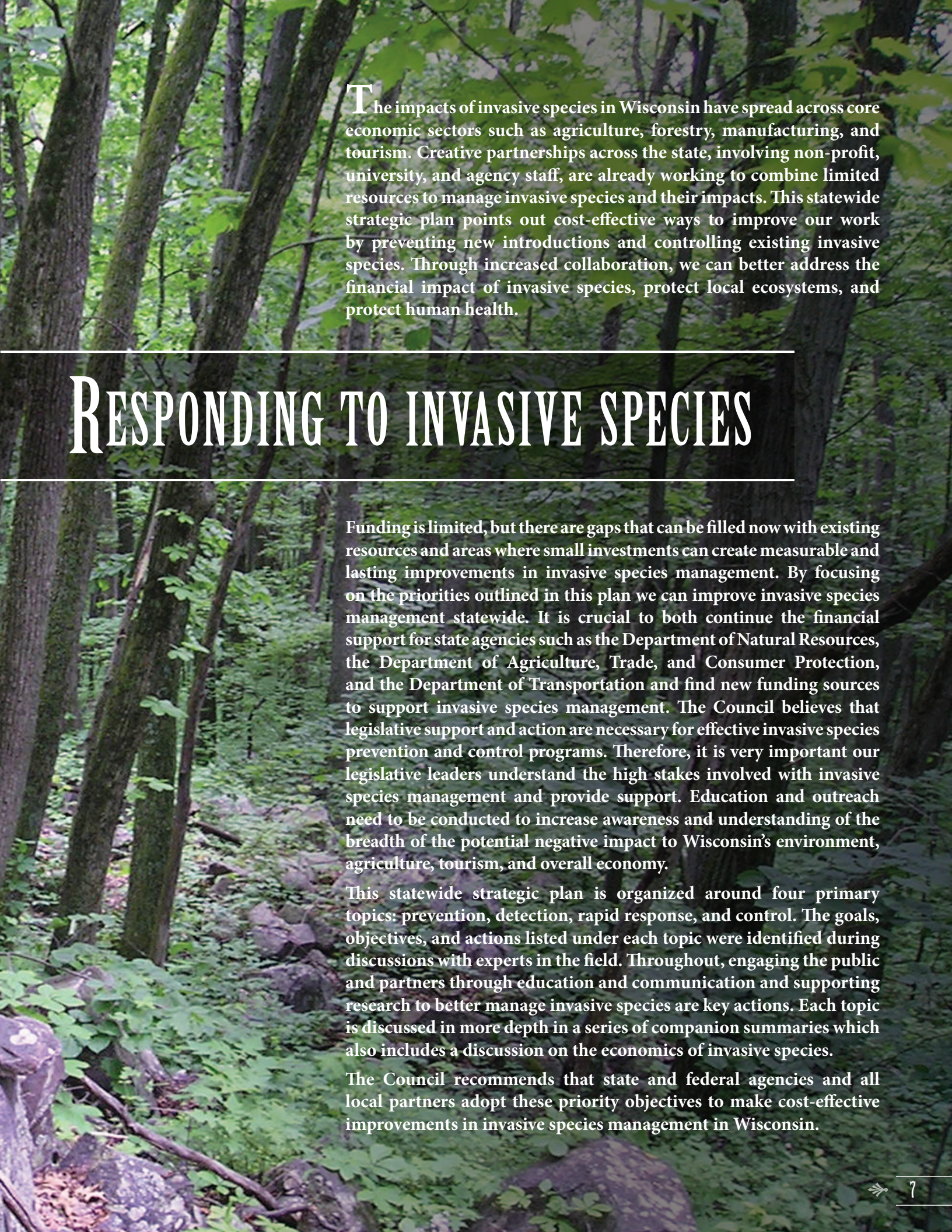
THE TOP FIVE PRIORITIES TO IMPROVE OUR WORK THAT EMERGED FROM THESE DISCUSSIONS WERE:

1. Improve education and outreach about the impacts of invasive species and what citizens and lawmakers can do to make a difference.
2. Prevent the introduction and spread of invasive species through new and existing pathways.
3. Improve detection of invasive species by growing networks of partners, supporting the use of information technology, and leveraging current research.
4. Create a dedicated fund for rapid response to new invasive species in Wisconsin.
5. Secure adequate long-term funding to control established invasive species including coordinated, competitive aid to support local actions and partnerships.

Invasive species have a wide range of adverse effects on Wisconsin's environment and citizens including negative impacts to natural resources, costs to control damaging species, aesthetics, and harm to human health. The following are examples from 2012, including estimates of the economic scope of what is at stake.

Impact of invasive species

- Aquatic invasive species such as the zebra mussel financially impact industries that use water for cooling and municipalities that rely on lakes for drinking water. Our fisheries industry has been adversely impacted by pathogens including viral hemorrhagic septicemia (VHS) and invasive fish species (including white perch, round goby, sea lamprey). The cost to manage these invaders once they are in our waters is substantially higher than preventing the invasion.
- Invasive species, including weeds, pests, and diseases, also negatively impact Wisconsin's $59 billion agriculture industry (350,000 jobs) by increasing production costs and reducing crop yields.
- Wisconsin's forestry industry, a $28 billion industry (66,000 jobs), is impacted by oak wilt, gypsy moth, and more recently, the emerald ash borer and beech bark disease, all of which damage and kill trees.
- Natural regrowth of tree seedlings, especially of the sugar maple, our state tree, are being limited by invasive plants and non-native earthworms. Over the long term, this will change the composition of our forests.
- Terrestrial invasive species, such as garlic mustard and wild parsnip, invade and degrade our forests and grasslands and reduce enjoyment of our trails and parks. Outdoor recreation is one of the top reasons visitors come to our state.
- Tourism supported over 181,000 jobs and $16 billion in tourism business sales in 2011 largely due to traveler spending. This generated $1.3 billion in state and local taxes and $950 million in federal taxes. As invasive species continue to change our environment and negatively impact the use and beauty of our lakes, forests, and hiking trails, Wisconsin may lose valuable visitor spending.



The impacts of invasive species in Wisconsin have spread across core economic sectors such as agriculture, forestry, manufacturing, and tourism. Creative partnerships across the state, involving non-profit, university, and agency staff, are already working to combine limited resources to manage invasive species and their impacts. This statewide strategic plan points out cost-effective ways to improve our work by preventing new introductions and controlling existing invasive species. Through increased collaboration, we can better address the financial impact of invasive species, protect local ecosystems, and protect human health.

Responding to invasive species

Funding is limited, but there are gaps that can be filled now with existing resources and areas where small investments can create measurable and lasting improvements in invasive species management. By focusing on the priorities outlined in this plan we can improve invasive species management statewide. It is crucial to both continue the financial support for state agencies such as the Department of Natural Resources, the Department of Agriculture, Trade, and Consumer Protection, and the Department of Transportation and find new funding sources to support invasive species management. The Council believes that legislative support and action are necessary for effective invasive species prevention and control programs. Therefore, it is very important our legislative leaders understand the high stakes involved with invasive species management and provide support. Education and outreach need to be conducted to increase awareness and understanding of the breadth of the potential negative impact to Wisconsin's environment, agriculture, tourism, and overall economy.

This statewide strategic plan is organized around four primary topics: prevention, detection, rapid response, and control. The goals, objectives, and actions listed under each topic were identified during discussions with experts in the field. Throughout, engaging the public and partners through education and communication and supporting research to better manage invasive species are key actions. Each topic is discussed in more depth in a series of companion summaries which also includes a discussion on the economics of invasive species.

The Council recommends that state and federal agencies and all local partners adopt these priority objectives to make cost-effective improvements in invasive species management in Wisconsin.

Photo by US Coast Guard, Petty Officer 3rd Class William B. Mitchell

Prevention

Preventing the introduction of non-native, invasive species is the most efficient, economical, and effective option, and it is a high priority.

The greatest prevention benefit can come from identifying pathways that lead to the introduction of multiple species, sharing these findings between groups, and working to close these pathways. Wisconsin as a state isn't able to do this in isolation, but we can push for greater protection of our resources at the national level. Currently, U.S. Department of Agriculture staff are able to inspect less than 1% of shipments arriving at American ports and the volume of imports keeps rising. More effort at key points of entry outside of Wisconsin's borders is needed.

Regional partnerships and networks help identify species that pose a risk to Wisconsin before they cross the border, providing a valuable early warning. Locally, awareness through education is the first step to preventing the spread of invasive species already established in Wisconsin. The Wisconsin Council on Forestry and numerous partners developed invasive species best management practices (BMPs) that could be used by many different groups to guide action to reduce the risk of spreading terrestrial invasive species. Best management practices to prevent the spread of aquatic invasive species between lakes, ponds, and rivers are already supported by a statewide aquatic invasive species partnership that includes extensive outreach, education, and enforcement. The ongoing work to encourage awareness and action to prevent invasive species is a shared strength that should be supported.

GOAL: *Reduce the number of invasive species introduced into the Great Lakes region and slow the spread of invasive species within Wisconsin.*

Prevent the introduction and spread of invasive species through new and existing pathways.

- **ACTION:** Increase funding and attention toward efforts to identify and manage likely pathways that move invasive species.
- **ACTION:** Engage with state and federal regulatory partners and import industries to focus incentives and legislation on preventing new invasive species from reaching Wisconsin.
- **ACTION:** Include risk analysis in the decision-making process for commodity imports.

Engage the public and partners in managing invasive species pathways, potential impacts, and preventing the introduction of invasive species into terrestrial, wetland, and aquatic systems.

- **ACTION:** Increase public awareness and adoption of terrestrial best management practices (BMPs).
- **ACTION:** Work with partners to create multi-media information packets on invasive species. When available, set the timing of the media releases to coincide with particular events such as the opening of fishing season and park events.
- **ACTION:** Schedule volunteer trainings, media events, and educational programs in cooperation with aquatic invasive species partnership members, cooperative weed management areas (CWMAs), counties, and other regional organizations.

Stop new introductions of aquatic invasive species to the Great Lakes - both via ship ballast water and connections to other watersheds (Chicago canals).

- **ACTION:** As determined to be economically feasible, implement measures to eliminate inter-basin exchange in Wisconsin as identified in the Great Lakes-Mississippi River Inter-basin Study.
- **ACTION:** Support the development of on-board ship technology for the treatment of ballast water to International Maritime Organization (IMO) standards or greater.

Ensure that there are enough inspectors and screening of international cargo to address increasing trade and to support improved pre-departure treatment for both foreign and domestic shipments.

- **ACTION:** Build international and interstate cooperation in controlling shared pathways.
- **ACTION:** Develop the tools to identify and prioritize prevention actions for goods and cargo, and provide these tools to invasive species managers and business people.

Reduce the number of invasive organisms in trade.

- **ACTION:** Work cooperatively with the pet, plant, and seed industries, and others to prevent the sale of invasive species.
- **ACTION:** Strengthen partnerships with the nursery industry to develop a comprehensive communication plan to provide educational resources at the point-of-sale about alternatives to invasive species for gardeners.
- **ACTION:** Educate the public about selecting non-invasive plants and pets and to properly dispose of unwanted plants and animals.

Increase integration and coordination between state and federal agencies in preventing the movement of invasive species through targeted action against specific pests and by pathway management.

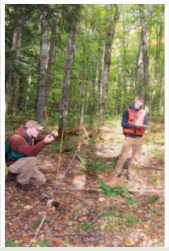
- **ACTION:** Support an increased role for federal agencies in removing invasive species from transport pathways.
- **ACTION:** Support the development of pathway-oriented risk assessments.

Focus local prevention efforts on those ecosystems most vulnerable to invasion.

- **ACTION:** Support research to assess the vulnerability of ecosystems and develop site-based prioritization or triage for invasive plants, pests, and pathogens for Wisconsin natural resource managers.

Detection

Looking with a purpose.



Eradication of invasive species is most likely to succeed when the established population is small, making the effort to detect very low numbers of a target species worthwhile. The most common response to the early detection of an invasive species includes some form of manual, chemical, or mechanical control, resulting in attempted eradication. Other responses besides launching an eradication effort can include changing the quarantine status of an area, using education and outreach to reduce the likelihood that the newly established population will spread, or shifting management practices to reduce the impact of the newly established species.

Monitoring for the spread of invasive species is the next step along the continuum of looking for species not known to be present. The value in considering early detection and monitoring together under the broader term detection is that both efforts for new species and species that are present and subject to control or containment work have some level of overlap. Training many individuals to identify and report species also has a great deal of overlap for both detection and monitoring. Recording the locations of invasive species searches, documenting past control efforts, and being able to share that information with partners are critical to successful invasive species management.

GOAL: *Increase the likelihood that invasive species in Wisconsin will be found and reported to those responsible for taking action.*

Improve detection of invasive species by growing networks of partners, supporting the use of information technology, and leveraging current research.

- **ACTION:** Build First Detector networks for new pests, diseases, and invasive plants in cooperation with state and federal agencies.
- **ACTION:** Increase reports of priority species by training natural resource managers and the public on identification of priority targets and taking notice of newly established species.

Share knowledge on discoveries of newly established species in Wisconsin to allow an appropriate response.

- **ACTION:** Develop an accessible and user-friendly database and reporting system, and train staff and citizens on using the system.
- **ACTION:** Make information about newly discovered invasive species available in a useful and easily accessible way to stakeholders.
- **ACTION:** Establish standard monitoring protocols for target species; distribute these protocols through multi-media outlets including the web, YouTube videos, printed documents, and other methods.

Increase detection capacity by training field biologists, foresters, naturalists, and other land and water stewards to identify priority invasive species.

- **ACTION:** Use coordinated integration of citizen science, smart phone technology, social media, and databases to automate and simplify the reporting, verification, and response process.
- **ACTION:** Develop and grow networks that can search for invasive species and train participants in using reporting resources and prioritization tools for invasive species response.

Invest in research to improve current detection methods with decreased cost and an increased effectiveness.

- **ACTION:** Create a monitoring protocol to evaluate detection methods and determine the most effective way to look for invasive species.

Rapid Response

Planning for success and acting to prevent the establishment of invasive species.

Eradication of a known invasive species is more likely to succeed if there are a few individuals confined to a small area. Research on what leads to successful eradications has found this limited distribution of the target population combined with effective control tools are both necessary. Rapid response increases the likelihood that the target species will be controlled if it is discovered before it is allowed to spread. In order to be successful, we need to improve our detection and reporting methods, increase the accessibility of control resources, and have a strong response plan in place.

There are benefits from responding to new populations of invasive species while they are still limited in their size and distribution, even if eradication is not the goal for a particular species. When a species is not a good candidate for an eradication effort, rapid response can buy time or shift management to minimize harm from the newly established species. For example, efforts to slow the spread of invasive species regionally, such as the emerald ash borer, allow communities to spread mitigation costs over a longer period. When more than 20% of the urban tree canopy may need to be replanted, this can be an important consideration.

GOAL: *Identify, detect, and respond to high priority invasive species early enough to prevent harm that would otherwise be caused by them becoming established widely.*

Create a dedicated fund for rapid response to new invasive species in Wisconsin.

ACTION: Support the creation of a revolving fund for rapid response.

ACTION: Identify groups of invasive species, such as invasive species that impact grasslands, that are currently not funded by other sources, and prioritize building state resources for these underserved ecosystems.

Strategically focus rapid responses on species that are the most likely to cause harm.

ACTION: Develop prioritization methods to determine the risk posed by nonnative species and rank new finds for follow-up action such as monitoring, further research, eradication, watch, or control.

ACTION: Catalog regionally useful risk assessments and identify a prioritized list of species, including regulated invasive species, that should be addressed first.

Construct and sustain communication networks before outbreaks occur.

ACTION: Encourage staff and partners to take advantage of planned practice or tabletop exercises to develop and improve contacts and communication.

ACTION: Develop response action plans for each taxa group identified in the Invasive Species Identification, Classification and Control Rule (ch. NR 40, Wis. Admin. Code).

ACTION: Establish networks of individuals trained in common protocols for responding to reports of prohibited invasive species and other high priority species.

Grow Wisconsin's capacity to respond effectively.

ACTION: Develop interagency rapid response teams and local cross-disciplinary groups that address multiple species via joint training and funding. Teams should include local partners and leverage local groups such as cooperative weed management areas (CWMAs).

ACTION: Encourage more widespread training in incident command system approaches for improved coordination of responses to all species.

Improve survey capacity, data sharing, and data modeling to accurately identify the location of invasive species and record areas already searched.

ACTION: Develop statewide and regional capacity to create better maps of the locations of invasive species and to identify new populations quickly.

ACTION: Ensure that data on locations can be shared rapidly among partners for all invasive species.

Control

Reducing the damage, containing the threat, and restoring native ecosystems.

Photo by Northwoods CWMA

Once eradication is not feasible for an invasive species, the next step is determining what the response will be given the resources available to manage it balanced against the value of the resources being protected from harm. Control efforts reduce invasive species to more acceptable levels and on-going management prevents their spread or re-emergence to damaging levels. Control of widespread invasive species is important for local communities that feel the impact of widespread, abundant invasive species.

Control and management of invasive species is most often accomplished using a range of management methods known as integrated pest management (IPM). This creates a safety net should any one of the options fail to successfully reduce the target species. Several complementary methods may also be more successful when they are used together. For example, widespread species may be controlled best by chemical or mechanical means that limit collateral damage in high value sites whereas in more disturbed areas, simply mowing at appropriate times of year may be all that is necessary to limit spread. These diverse and integrated programs are often much better accepted by the public rather than reliance on one option such as pesticides. One of the long-term approaches that can fit into IPM is biological control where a highly species-specific predator or parasite attacks the target invasive species. The goal of this approach is to reduce the density and impact of an invasive species so it becomes part of the background instead of a dominant and harmful part of the community.

GOAL: *Reduce the impact of widespread invasive species to avoid loss of native biological diversity, harm to agriculture and habitats, and damage to other resource values.*

Secure adequate long-term funding to control established invasive species including coordinated, competitive aid to support local actions and partnerships.

ACTION: Leverage effort across groups by supporting participating cooperative weed management areas (CWMAs), regional, and county-based groups. Develop a source for competitively awarding state funds for these partnerships to grow cooperative work that includes managing invasive species on both state and private lands.

Improve education and outreach about the impacts of invasive species and what citizens and lawmakers can do to make a difference.

ACTION: Share information on the likelihood of eradication, cost of control, and methods to prevent spread for individual species to provide a realistic picture of what control work can accomplish.

Foster partnerships across jurisdictions to manage invasive species more effectively regionally and engage fully all local parties in decision making for invasive species control.

ACTION: Address policy barriers for effective partnerships on a statewide level including solutions to liability regarding the reasonable use of herbicides and protecting landowners who allow access to private lands by volunteers.

ACTION: Make research available widely, and include invasive species stewardship into existing training and University of Wisconsin-Extension education networks to improve control practices and improve project outcomes including native species restoration.

Work to contain widespread species recognizing that preventing local spread supports management goals.

ACTION: Expand the development of best management practices (BMPs) to contain widespread invasive species and balance control with long-term restoration goals.

ACTION: Improve regional mapping for widespread invasive species allowing improved targeting of control efforts.

Support research to increase the number of control tools for invasive species and improve the effectiveness and specificity of existing control methods.

ACTION: Invest in biological control development, release, and monitoring for widespread, high impact invasive species in Wisconsin.

ACTION: Support research on the natural history of invasive species to better identify vulnerable points in their life cycle where control could be more effective and support the development of new control methods.

ACTION: Develop control tools for smaller scale invasive species projects that may not attract commercial research investments due to limited distribution or impacts.

Closing Remarks

Putting the pieces together to protect Wisconsin.

Prevention, detection, rapid response, and control efforts are crucial pieces for solving Wisconsin's invasive species puzzle. It is both possible and important to successfully prevent and control invasive species. Losing valuable habitat for native species, reducing access to lands, lakes, and rivers, and seeing lost production in agricultural and forest lands due to the continued spread of invasive species is preventable if there is investment and action taken on invasive species. There is already a strong base of volunteers and state and local staff managing invasive species. There may be an occasional setback in our prevention or control efforts with individual species, but there are many local examples of success and these should be modeled and used to expand partnership efforts. More resources are needed for outreach, research, and management but there is a strong base to grow from. Everyone in Wisconsin has a stake in seeing this succeed, and adopting the goals, objectives, and actions outlined in this plan will enhance the state's success.

This plan was prepared in cooperation with the Wisconsin Invasive Species Council and approved by the Department of Natural Resources on February 6, 2013.

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