

## INVASIVE SPECIES CONSIDERATIONS IN COMMUNITY PLANS

*Liz Jackson, author*

### WHAT ARE INVASIVE SPECIES?

Invasive species are plants, animals or pathogens that are non-native (or alien) to the local ecosystem and whose introduction causes or is likely to cause harm (National Invasive Species Information Center, 2018). Invasive species present significant economic, ecological and in some cases health-related challenges to communities.

Examples of invasive species that are affecting Indiana include Emerald Ash Borer (EAB), an invasive insect that is killing all ash trees, Asian carp, an invasive fish that forces out native fish in our rivers and lakes and Asian bush honeysuckle, an invasive terrestrial plant that invades natural areas and prevents native plants from growing.



### WHERE ARE INVASIVE SPECIES COMING FROM?

#### Invasive terrestrial plants

Invasive plants can come from a variety of sources, but several of our most problematic plant species have been intentionally planted for landscaping or for purposes such as erosion control or wildlife habitat conservation. Once the plants are established and producing seed, they may spread into native forests, wildlife habitats and parks or disturbed sites including ditch banks, abandoned lots or roadsides. Many invasive plants are still planted for landscaping (burning bush and Callery pear are examples) and continue to spread as they produce seed or expand as a colony of plants.

Some plants have been introduced accidentally when seed is present in packing materials, soil or gravel fill, feed or other items that could contain plant seeds or parts. Evidence is growing that high deer populations may also facilitate the expansion of invasive species. White-tailed deer may over-browse their habitats and this disturbance can create growing space for invasive species to invade and spread.

As they mature and spread seed, invasive populations can grow quickly and spread to new areas. Birds and other wildlife can spread seed long distances, as can wind and water. People may also unwittingly spread invasive plants by accidentally moving seed or plants in soil, shoes, tools and equipment such as mowers and excavators, debris, vehicles and boats.

#### Aquatic invasive species

Aquatic invasive species may include aquatic plants such as Hydrilla that grow and choke waterways, or aquatic animals such as zebra mussels, which attach to water supply systems and power plants. Aquatic invasive species may be introduced intentionally, such as by people dumping their aquariums in a lake, or accidentally, by organisms transferred in ballast water or attached to boats or other recreational equipment.

#### Invasive animals, insects and diseases

Other invasive species come from humans causing an accidental and/or intentional introduction, release or spread of that species beyond its native range. Due to their potentially massive economic and health impacts, these species are generally monitored and controlled under the jurisdiction of federal and state agencies, including USDA Animal and Plant Health



Inspection Services (APHIS), U.S. Fish and Wildlife Service, Indiana State Board of Animal Health and the Indiana Department of Natural Resources' Division of Entomology and Plant Pathology, among others.

### **ECONOMIC IMPACTS OF INVASIVE SPECIES**

The annual cost of terrestrial invasive plants alone to the United States economy is estimated at \$120 billion a year, which includes economic losses, harm to the environment and control costs (Pimentel, Zuniga, & Morrison, 2005). Invasive species are a global problem, with the annual cost of impacts and control efforts equaling five percent of the world's economy (The Nature Conservancy, 2005).

A 2012 informal survey conducted by the Indiana Invasive Plant Advisory Committee found that landowners and managers in Indiana spent \$5.85 million to manage terrestrial invasive plants (Invasive Plant Advisory Committee, 2013).

Aquatic invasive species can also be very expensive or impossible to control and the resulting damage to sport fisheries, recreation and commercial resources can be serious. Lake residents in Indiana spend an estimated \$800,000 per year in public waters to chemically control nuisance Eurasian watermilfoil, an exotic water plant that can shade out native species and interferes with boating and fishing. The annual national control costs for purple loosestrife are estimated to be \$45 million per year (Indiana Department of Natural Resources, n.d.). In the United States as a whole, an estimated total of more than \$800 million is spent on the damages and control costs of aquatic weed species (Pimentel, Zuniga, & Morrison, 2005).

These are just a few examples of the costs of monitoring, control and management of invasive species. Because there is no one agency that has jurisdiction over the many species and types of invasions, economic costs are difficult to determine.

### **ENVIRONMENTAL IMPACTS OF INVASIVE SPECIES**

One of the single largest threats to our nation's natural resources, invasive species:

- *Reduce agricultural production and property values.* A study by the Department of Plant Biology at Ohio University found that in woodlands with an understory dominated by bush honeysuckle, there was a reduction of hardwood tree annual volume growth of up to 53 percent, with a subsequent reduction in timber sale value and income. Agricultural losses may occur from invasive insects and weeds reducing crop yields or the increased expenses from control of weeds and pests. According to the U.S. Forest Service, the invasive vine Kudzu has overrun more than 200,000 acres and is increasing by about 2,500 acres per year. Kudzu is an alternate host for soybean rust, resulting in potential agricultural losses.
- *Displace native plants that wildlife and fish depend on for food.* Critical pollinators and other native insects are also impacted by a reduction in native plants.
- *Put endangered and threatened wildlife species at further risk.* Invasive species are the second-leading cause of animal population decline and extinction worldwide. More than 400 of the over 1,300 species currently protected under the Endangered Species Act, and more than 180 candidate species for listing, are considered to be at risk at least partly due to displacement by, competition with and predation by invasive species (U.S. Fish & Wildlife Service, 2012). (Center for Invasive Species Management, <https://www.invasive.org/species/weeds.cfm>)

### **HUMAN HEALTH IMPACTS**

Municipalities, power plants and some industries rely on access to water to operate. Invasive species may clog and damage intake pipes, increasing maintenance and operational costs. Toxic invasive plants like giant hogweed and poison hemlock present a threat of dermal and oral toxicity to those entering infested areas.

Evidence is building that the presence of invasive plant species may be raising the risks of tick-borne disease transmission to humans. Research reported in the *Proceedings of the National Academy of Sciences of the United States of America* shows that the presence of bush honeysuckle increases the density of nymph life-stage ticks infected with bacteria that cause human disease tenfold in areas infested with bush honeysuckle when compared to areas without honeysuckle (Sakai, 2010). A study published in the journal *Environmental Entomology* in 2009 revealed that larger black-legged tick (deer tick) populations correspond with a greater abundance of dense Japanese barberry patches. The study concludes that managing Japanese barberry will effectively reduce the number of deer ticks that commonly feed on humans and carry Lyme disease (Fahrner, 2012).



### RECREATION AND LIFESTYLE IMPACTS

Changes in vegetation cover due to invasive plant species can decrease the aesthetic qualities of landscapes, which may have impacts on tourism. Invasive plant species can lessen the enjoyment of recreational activities. Unmanaged and unchecked plant invasions can inhibit access for hiking or horseback riding, limit access to hunting lands, reduce wildlife populations and can eliminate views. Invasive aquatic species can limit swimming and watersports opportunities and harm water quality. Depending on the lake, invasive species in the Great Lakes have reduced commercial fishing from 13 to 33 percent, sport fishing 11 to 35 percent and wildlife watching 0.8 percent (Lodge, 2008).

### RELEVANCE TO ECONOMIC DEVELOPMENT

Natural areas support a strong tourism and recreation industry. Natural resources support productive agriculture and forestry industries. Water resources are critical to our municipal and rural water supplies and to the tourism industry. Invasive species impact the quality and quantity of these natural resources and our economy. High-quality natural resources create a higher quality of life for citizens and can lead to increased economic development.



### HOW AND WHY WOULD YOU ADDRESS IT IN A COMPREHENSIVE PLAN?

The economic and environmental impacts on communities are dependent on the species and extent of invasives present and the areas they infest or threaten. As the extent and density of invaded areas increase, often related to increasing development, the costs of lost values and benefits to the community and the costs of control and site restoration can greatly increase. Invasive species' impacts may be mitigated by prevention and careful consideration before disturbing natural areas. Considering the current and future impacts of invasive species in a comprehensive plan could lead to improved natural areas, better recreation opportunities and reduced costs to a community.

## WHAT ARE THE BENEFITS?

Invasive plants commonly colonize edge areas, unmaintained land or disturbed sites. Awareness and inventory of invasive plants in public and private landscaping, parks, streets, roadsides and natural areas can help communities prioritize the work of managing their impacts. Detecting and controlling invasive species before they cover large areas or reach high densities provides an opportunity to maintain land in good condition at a much lower cost in terms of both money and effort. Several information sources and tools for identification and reporting of invasive species are provided in the resources section at the end of this chapter.

Being aware of the presence of invasive species and the means by which they spread can help slow or stop their spread. Halting the planting of known invasive plants and replacing existing invasive landscaping with native or non-invasive plants can yield greater success in efforts to control the damage invasive plants cause.

## WHAT ARE THE CHALLENGES?

Resources to monitor, report and control invasive species are in high demand and funding is not readily available. Public and private landowners must recognize the problem and prioritize resources for invasive species. Another challenge is recognizing and responding to an invasion before control costs become prohibitive. Invasions are often not recognized until the population has exploded and control is much more difficult.

Taking action on invasive species can also be challenging because it often involves a change in behavior and priorities. Switching from known invasive landscaping plants to native or non-invasive plants can be a good starting point to limit future infestation sources.

Finally, invasions don't recognize boundaries and easily spread and inhabit space across the entire landscape. No one jurisdiction or landowner has the ability to manage invasions across the landscape and management requires cooperation among all levels of government and all land ownerships, both public and private.

## COMPREHENSIVE PLANNING FOR INVASIVE SPECIES CONCERNS

### Federal laws

Federal invasive species laws are limited, and are generally related to organisms that would have substantial economic impacts on agriculture or devastating impacts on the ecosystem. A list of federal laws is available at <https://www.animallaw.info/article/detailed-discussion-laws-concerning-invasive-species#id-7>.



### State rules and statutes

Indiana has very limited regulations and ability to further regulate invasive species at this time. The state lists Canada thistle, purple loosestrife, multiflora rose, burcucumber, Columbus grass, shattercane and johnsongrass as noxious weeds and subject to state law, see <http://iga.in.gov/legislative/laws/2017/ic/titles/015/#15-7> for the state code. These plants are specifically prohibited from sale, planting and distribution in state code (IC14-24-12). Note that existing plants are not regulated under this statute. A list of all state laws related to invasive species can be found at <https://www.nationalplantboard.org/uploads/1/3/6/7/136771235/indianasummary.pdf>.

The Indiana Natural Resources Commission (NRC) establishes standards for declaration and control of pests and pathogens and regulation of nurseries. The Indiana Division of Entomology and Plant Pathology Director has the authority to implement and carry out these rules.

In 2019, The Indiana Natural Resources Commission adopted a rule that declares 44 invasive terrestrial plants as prohibited in the state and preventing the sale or distribution and transport of those plants. Prohibited plants could be monitored, inspected and removed per the rule. This rule provides no legal means of controlling existing plants on the restricted list. (See full rule language at the end of this section.)

Another Indiana statute regulates the possession or distribution of aquatic invasive animals and plants. See [www.in.gov/dnr/fishwild/files/fw-AIS\\_PossessionRules.pdf](http://www.in.gov/dnr/fishwild/files/fw-AIS_PossessionRules.pdf) for a complete list of the prohibited aquatic invasives.



The Indiana Invasive Species Council (IISC) was created with several roles, one of which is to make recommendations regarding invasive species to governmental agencies and legislative committees (IC 15-16-10). The IISC has no regulatory authority but has begun exploring potential statutes or rules to regulate invasive species. They have also been instrumental in creating the list of Indiana invasive plants, found here with their regulatory status: [www.entm.purdue.edu/iisc/invasiveplants.php](http://www.entm.purdue.edu/iisc/invasiveplants.php).

### Local regulation and ordinances

One method a local jurisdiction can use to manage plant pests is through a weed control board, whose operation is in statute (IC-16-16-7). Unfortunately, at this time the list of noxious weeds under control of a local weed board includes five weeds, none of which are considered invasive woodland plants. In other states, local weed control boards are used to regulate a number of invasive plants that are determined through state statute. This is an area that could be explored for creating regulations at the local level, but would require state legislation.

Zoning ordinances are another avenue to address local concerns. Dearborn County has a list of plants that are considered “Unacceptable Plants” in the Landscaping portion of its Zoning Ordinance. The plants listed in Section 2280 are identified using both their scientific and common names, along with the reasons for their inclusion as unacceptable plants (invasive species, susceptibility to pests, maintenance issues). The Ordinance states: “The plants listed within this section are not entirely prohibited; however, the use of these species should be limited to agricultural or residential areas where they can be properly installed, monitored and maintained in accordance with this Ordinance” (Dearborn County, n.d.)

Knox County Commissioners passed an ordinance in August 2018 preventing the sale, trade or import of listed invasive plants into the county, but it does not include existing plants or seed. The ordinance will take effect on January 1, 2020, leaving time for landscapers to clear inventory. The Knox County Natural Resource Specialist on behalf of the commissioners is the enforcing authority with the Knox County Invasive Species Board being the hearing authority. (See the Knox County ordinance at the end of this chapter.)

Should a community wish to pursue opportunities for regulation of invasive species, it is recommended that they contact the IISC or the Director of the Division of Entomology and Plant Pathology for guidance. Any new regulation may require either a rule approved by the Natural Resources Commission or a new statute approved by the state legislature. Since regulations are not widely used to address invasive species, guidelines or prevention and monitoring programs are commonly used to reduce invasive species impacts.

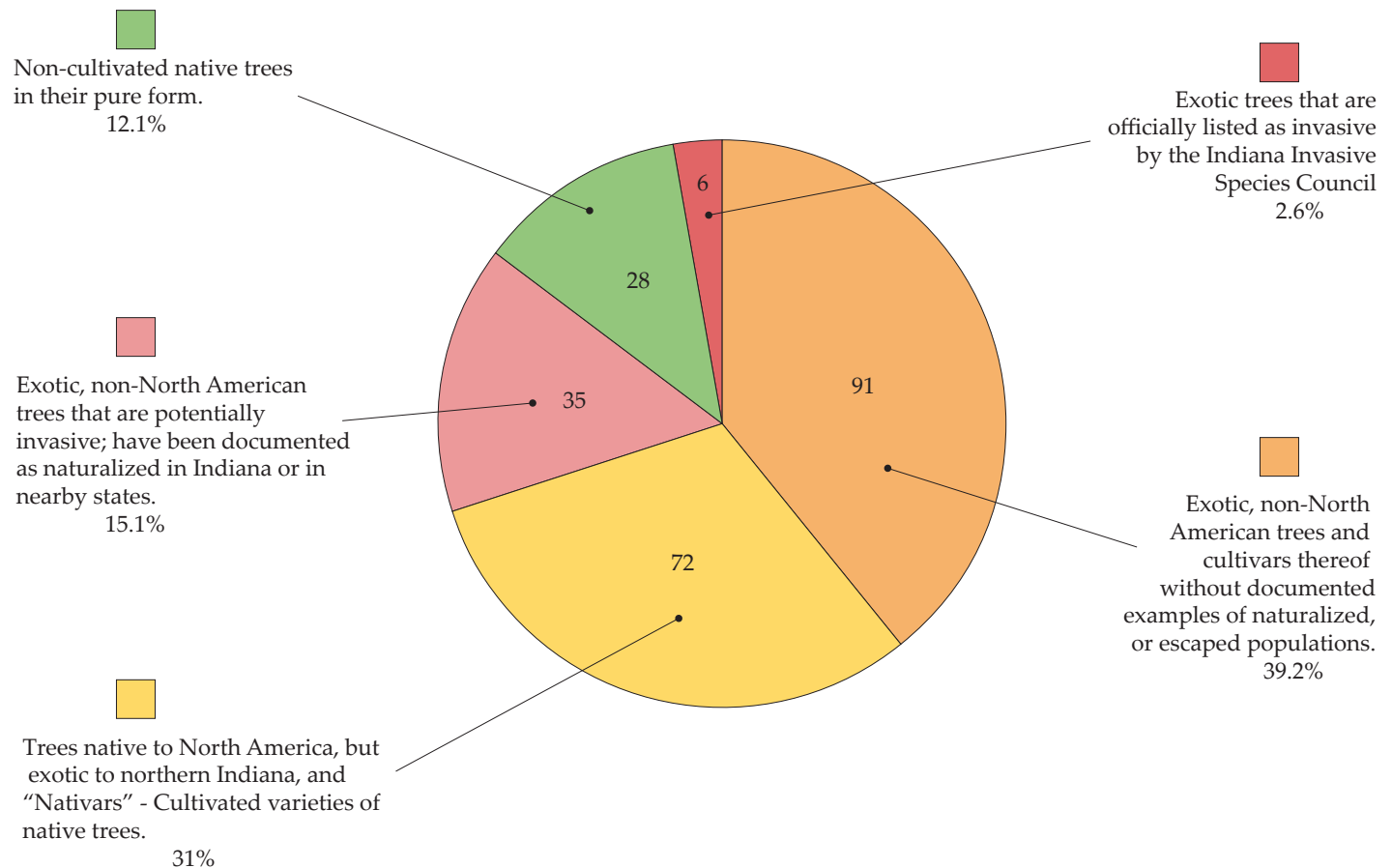
## LOCAL POLICIES TO ADDRESS INVASIVE SPECIES

### Planting guidelines

Establishing community planting guides for public property can facilitate moving away from invasive landscape plants and toward native plants and provide an example to private landowners. Some communities have adopted local guidelines or ordinances covering the planting and care of trees and shrubs, particularly on but not necessarily limited to public lands. Lists of invasive species that should be avoided in plantings should be included in these documents, such as those in Dearborn County (Dearborn County, n.d.). Promoting native plants and pollinators can be a positive program for the community.

The City of South Bend created a document titled “Trees Suitable for Planting in South Bend City Limits.” Of the trees that are endorsed as being considered suitable for planting, 56.9 percent are not native to North America. Only 12.1 percent are true native trees (in green on the chart below), which should be the goal of any planting program. This problem isn’t endemic to South Bend or even to Indiana, but is an example of the lack of knowledge about invasive species, and illustrates that care must be taken when developing planting guidelines.

## SUMMARY OF THE DOCUMENT “STREET TREE MASTER PLANTING LIST 2017” CITY OF SOUTH BEND, IN



South Bend Street Tree Master Planting List 2017

(Source: Steve Sass, Ecological Advisory Committee Member, South Bend Department of Parks and Recreation, April 2018)

## LAND DEVELOPMENT GUIDELINES

A common pathway for invasions to occur or spread is when land is disturbed, such as the development of housing, industry, roads, trails or utilities. Guidelines could be established prior to development through contracts, local zoning or subdivision control ordinances, or in economic development plans to minimize invasive species impacts. Those might include treating invasions on the land before beginning development, requiring equipment to be cleaned before entering and leaving the property, requiring the use of uncontaminated construction and landscape materials, requiring the use of best management practices (BMPs) or prohibiting the planting of new invasive plants. See the Resources section for a list of voluntary BMPs that might be considered on development sites.

## BEST MANAGEMENT PRACTICES (BMPs)

There are a number of suggested steps to prevent and control further invasions of invasive species. Local communities should encourage government agencies and local landowners to use best management practices (BMPs). Invasive species BMPs are included below.

## BUILDING AWARENESS

Working with local landscaping and nursery businesses to inform them about invasive plants still in trade and native or non-invasive options might help them provide alternatives to citizens looking for landscaping plants.

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Promoting native plants for Indiana landscaping

Grow Natives

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### Grow Natives

The "Grow Indiana Natives" program encourages the use of Indiana native plants instead of invasive plants in landscaping. The program is sponsored by the Indiana Native Plant Society. Learn more about it [here](#).

Ready to Buy Natives?  
Click the blue button below!

Buy Natives

"We've been a member of Grow Indiana Natives since it started in Monroe County in 2011. It has been a great partnership that allows us to highlight the many native perennials, trees, and shrubs we have for sale. We've seen increases in the sale of native plants since we joined the program, and are now carrying a more diverse selection of native plants because of it." - Jason Fulton, co-owner Mays Greenhouse, Bloomington.

Indiana Native Plant Society

Some of these businesses might also be well positioned to assist with invasive species removal work and restoration with desirable plants. A statewide program, "Grow Indiana Natives," (<https://indiananativeplants.org/landscaping/gin-home/>) has been developed to encourage the nursery industry to sell native plants through a voluntary certification program.

Communities can provide resources to increase local awareness of invasive species concerns. Signage and boot cleaning stations can be placed at public trailheads to avoid the spread of seed. Boat docks are good areas to place signage to recommend cleaning boats and emptying ballast water. See the Resources section for invasive species organizations that can assist with education and resources.

## LOCAL ORGANIZATIONS

Developing a local organization to address invasive species may be a more successful approach for communities to consider. These groups, commonly known as Cooperative Invasive Species Management Areas (CISMAs) or Cooperative Weed Management Areas (CWMAs), organize community members, public lands agencies and private landowners to prevent, control and educate with the goal of reducing invasive species impact locally. Watershed groups and county Soil and Water Conservation Districts also address invasive species as part of their mission to improve the environment. A common goal of these organizations is to remove invasive species infestations from public lands. Grant programs and resources exist to assist the startup of local groups. The Southern Indiana Cooperative Invasives Management (SICIM) organization is working to develop local groups in at least 60 counties across Indiana. You can learn more about the group at [www.sicim.info](http://www.sicim.info).

## REPORTING AND MONITORING

To report by phone, for any type of suspected invasive species, call the Indiana DNR Invasive Species Hotline toll-free at 1-866 NO EXOTIC (1-866-663-9684). EddMaps provides an online reporting system and real-time tracking and distribution maps of invasive species in Indiana using a smartphone or computer. EddMaps is located at [www.eddmaps.org/indiana/](http://www.eddmaps.org/indiana/).

## BEST MANAGEMENT PRACTICES (BMPs) FOR INVASIVE SPECIES

The Invasive Plant Advisory Committee of the Indiana Invasive Species Council has developed Best Management Practices (BMPs) to prevent the introduction and spread of invasive species. This information is also available at [www.entm.purdue.edu/iisc/bmps.php](http://www.entm.purdue.edu/iisc/bmps.php).

### 1. *Develop an organizational Invasive Species Strategy:*

- Goals
- Objectives and Priorities
- Tactics: policies and procedures on:
  - Employee education and training
  - User education
  - Contracting and sourcing
  - Monitoring
  - Prevention
  - Control projects
- Schedule regular assessments to measure and celebrate your success

### 2. *Create and maintain an invasive species knowledge base:*

- Maps: where are current infestations?
- Reporting and mapping process for staff and users
- Documentation of control projects (exact location, treatment protocol, dates, herbicide concentrations, weather and soil conditions, etc.) and assessment of results initially and after additional growing seasons

### 3. *Think ahead. Pre-plan major land development or maintenance activities:*

- Avoid disturbing heavily infested areas when possible
- Pre-treat areas that must be disturbed well in advance
- If possible, conduct such activities when seeds are not easily movable
- If possible, use existing roads, trails, landings, staging areas and designated equipment cleaning areas

### 4. *Use native plants and seeds, and make sure they are from “weed-free” sources:*

- Use species that are appropriate to site and conditions
- Ensure that species received are as specified
- Ensure that new plants and seeds are not contaminated
- Use “trusted sources” whenever possible (reference the Indiana Native Plant Society Sources of



Native Indiana Plants list at <https://indiananativeplants.org/native-plants/>

- Ask for guarantees or make-good provisions in sourcing contracts
- ### 5. *Use uncontaminated construction/landscaping material (mulch, fill, gravel, straw, etc.):*
- Use trusted sources whenever possible
  - Ask for guarantees or make-good provisions in sourcing contracts
  - Look to create on-site sources if possible
  - Monitor stockpiles regularly
- ### 6. *Keep tools, equipment, vehicles and clothing clean:*
- Require contractors to bring clean vehicles and equipment to your site
  - Designate contained areas for cleaning and disposal
  - Educate and encourage users to inspect and clean clothing, equipment, pets, etc. before and after entry
- ### 7. *Have a long-term plan for managing invasives:*
- “An ounce of prevention...”
  - Prioritize locations and species, taking into account severity of infestation, degree of invasiveness, feasibility of control, “value” of habitat at risk, etc.
  - Optimize treatment timing and technique
  - Evaluate, measure and document success
- ### 8. *Monitor disturbed locations and high-risk areas:*
- Monitor regularly and frequently
  - This is especially important following natural disasters and major development or maintenance projects



#### 9. Require contractors to follow BMPs:

- Incorporate BMP requirements into requests for proposal (RFPs) and contracts
- Inspect and document infestations before and after contractor activity
- Ask for guarantees or make-good provisions

#### 10. Educate recreational users (and neighbors) on invasive species BMPs:

- Provide basic education when possible:
  - What are invasive species?
  - Why are they bad?
  - How to identify key species
- Offer a mechanism for reporting invasives
- Provide cleaning stations at key entry and exit points
- Regulate entry of infested material when possible (campfire wood, hay, bait, etc.)

*And one to grow on:* Actively look for funding opportunities, partnerships and volunteers to assist in preventing and reducing invasive species.

## CASE STUDIES/EXAMPLES OF PRACTICES AND/OR IMPLEMENTATION

### Monroe County Identify and Reduce Invasive Species Group (MC-IRIS): “Adopt a Kudzu Site”

The Department of Natural Resources’ Division of Entomology and Plant Pathology (DEPP) identifies more than 100 sites for the Kudzu vine in Indiana, with five of those sites in Monroe County. This invasive species is a concern because it carries soybean rust, a disease critical to soybean crops. MC-IRIS is collaborating with DEPP by adopting the five kudzu sites in the county. DEPP has already treated those five sites for two to three years, greatly reducing the size of each kudzu infestation. MC-IRIS now visits each site annually and continues treatments as needed, freeing up DEPP resources to take on kudzu in other counties. You can learn more at [mc-iris.org/adopt-a-kudzu-site.html](http://mc-iris.org/adopt-a-kudzu-site.html).

### Monroe County Identify and Reduce Invasive Species (MC-IRIS): Grow Native Project

An estimated 86 percent of invasive woody species come from landscape plantings. MC-IRIS started the Grow Native project to promote the sale of native plants and reduce the sale of invasive plant species. In 2016, the Indiana Native Plant and Wildflower Society (INPS) took this program statewide. In an effort to help consumers make more ecological landscaping

choices, INPS provides local retailers selling native plants with Grow Native signs, plant stakes and stickers to identify the native species that they have for sale. In addition to selling native plants, some retailers are going “invasive free” and agreeing not to sell any of the invasive horticultural plants on the list created by the Indiana invasive plant list, see [www.entm.purdue.edu/iisc/invasiveplants.php](http://www.entm.purdue.edu/iisc/invasiveplants.php). Keep your eye out for the Grow Native logo at Monroe County plant retailers to ensure you are purchasing plants native to Indiana (MC IRIS, 2016).

## REFERENCES AND RESOURCES

- Purdue Extension publication listings
  - Commercial Greenhouse and Nursery Production: Alternative Options for Invasive Landscape Plants: <https://www.purdue.edu/fnr/extension/commercial-greenhouse-and-nursery-production-alternative-options-for-invasive-landscape-plants/>
  - Invasive Plant Species in Hardwood Tree Plantings: [www.extension.purdue.edu/extmedia/FNR/FNR-230-W.pdf](http://www.extension.purdue.edu/extmedia/FNR/FNR-230-W.pdf)
  - Mile-a-Minute Vine Fact Sheet: [www.extension.purdue.edu/extmedia/FNR/FNR-481-W.pdf](http://www.extension.purdue.edu/extmedia/FNR/FNR-481-W.pdf)
  - Japanese Chaff Flower Fact Sheet: [www.extension.purdue.edu/extmedia/FNR/FNR-477-W.pdf](http://www.extension.purdue.edu/extmedia/FNR/FNR-477-W.pdf)
  - Poison Hemlock Fact Sheet: [www.extension.purdue.edu/extmedia/FNR/FNR-437-W.pdf](http://www.extension.purdue.edu/extmedia/FNR/FNR-437-W.pdf)
  - Palmer Amaranth Biology, Identification, and Management: [www.extension.purdue.edu/extmedia/WS/WS-51-W.pdf](http://www.extension.purdue.edu/extmedia/WS/WS-51-W.pdf)
- Videos
  - Oriental bittersweet: [www.youtube.com/watch?v=mtw5Gi3S09c](http://www.youtube.com/watch?v=mtw5Gi3S09c)
  - Wintercreeper: [www.youtube.com/watch?v=rRxHICeBECg](http://www.youtube.com/watch?v=rRxHICeBECg)
  - Callery pear: [www.youtube.com/watch?v=yvnd13TJUJc](http://www.youtube.com/watch?v=yvnd13TJUJc)
  - Multiflora rose: [www.youtube.com/watch?v=KMThwvYeFX0](http://www.youtube.com/watch?v=KMThwvYeFX0)
  - Asian bush honeysuckle: [www.youtube.com/watch?v=uYoRgE7xTQo](http://www.youtube.com/watch?v=uYoRgE7xTQo)
  - Burning bush: [https://www.youtube.com/watch?v=ndpBydKVLLe0&ab\\_channel=PurdueExtension](https://www.youtube.com/watch?v=ndpBydKVLLe0&ab_channel=PurdueExtension)
  - Arrest that Pest! Emerald Ash Borer in Indiana: <https://extension.entm.purdue.edu/arrestthatpest/index.php?page=videos>

- Websites
  - ReportInvasives: [ag.purdue.edu/reportinvasive/](http://ag.purdue.edu/reportinvasive/)
  - Purdue Department of Forestry & Natural Resources Extension [www.purdue.edu/fnr/extension/](http://www.purdue.edu/fnr/extension/)
  - Indiana Invasive Species Council: [www.entm.purdue.edu/iisc/](http://www.entm.purdue.edu/iisc/)
  - Purdue Plant & Pest Diagnostic Laboratory: <https://ag.purdue.edu/btny/ppdl/Pages/default.aspx>
  - Indiana Department of Natural Resources Division of Entomology and Plant Pathology: [www.in.gov/dnr/entomolo/](http://www.in.gov/dnr/entomolo/)
  - Southern Indiana Cooperative Invasives Management [www.sicim.info/](http://www.sicim.info/)
  - Indiana Invasive Species Council Top Ten List of BMPs for Invasive Species: [www.entm.purdue.edu/iisc/bmps.php](http://www.entm.purdue.edu/iisc/bmps.php)
  - Midwest Invasive Plant Network (MIPN): [www.mipn.org/](http://www.mipn.org/)
- Technical Assistance
  - Purdue Forestry and Natural Resources Extension Specialists: [www.purdue.edu/fnr/extension/](http://www.purdue.edu/fnr/extension/)
  - Indiana Department of Natural Resources District Foresters provide assistance for Indiana landowners with forest management questions: [www.in.gov/dnr/forestry/4750.htm](http://www.in.gov/dnr/forestry/4750.htm)
  - USDA Natural Resources Conservation Service (NRCS) provides a wide range of conservation technical assistance: <https://www.nrcs.usda.gov/wps/portal/nrcs/in/home/>
  - County Soil and Water Conservation District offices are often jointly located with the USDA NRCS and can provide information on local conservation issues and resources: [iaswcd.org/](http://iaswcd.org/)
  - Indiana Department of Natural Resources Division of Entomology and Plant Pathology: [www.in.gov/dnr/entomolo/](http://www.in.gov/dnr/entomolo/)

## REFERENCES

Aquatic invasive species (AIS). (n.d.). *Indiana Department of Natural Resources*. Retrieved from <https://www.in.gov/dnr/fishwild/3628.htm>

Article 22: Landscaping, buffering, screening & fences. (n.d.) *Dearborn County, Indiana*. Retrieved from [https://www.dearborncounty.org/egov/documents/1481142887\\_42441.pdf](https://www.dearborncounty.org/egov/documents/1481142887_42441.pdf)

Fahrner, A. (2012). Beware the impact of invasive plants. *Cary Institute of Ecosystem Studies*. Retrieved from <https://www.caryinstitute.org/newsroom/beware-impact-invasive-plants>

Grow native project. (2016). *Monroe County Identify and Reduce Invasive Species (MC IRIS)*. Retrieved from <https://www.mc-iris.org/grow-indiana-natives.html>

Invasive Plant Advisory Committee. (2013). Invasive plant management costs Hoosiers over \$5 million in 2012. *Purdue University: Entomology – College of Agriculture*. Retrieved from [https://www.entm.purdue.edu/iisc/pdf/Invasive\\_Plant\\_Management\\_Costs\\_Report.pdf](https://www.entm.purdue.edu/iisc/pdf/Invasive_Plant_Management_Costs_Report.pdf)

Lodge, David and D. Finnoff. (2008). *Annual Losses to Great Lakes Region by Ship-borne Invasive Species at least \$200 Million*. Retrieved from [https://www.invasive.org/gist/products/library/lodge\\_factsheet.pdf](https://www.invasive.org/gist/products/library/lodge_factsheet.pdf)

National Invasive Species Information Center. (2018). *United States Department of Agriculture National Agricultural Library*. Retrieved from <https://www.invasivespeciesinfo.gov/index.shtml>

Nature Conservancy, The. (2005). Economic impacts. *Invasive.org*. Retrieved from <https://www.invasive.org/gist/economics.html>

Pimentel, D., Zuniga, R., and Morrison, D. (2005). Update on the environmental and economic costs associated with alien-invasive species in the United States. *Ecological Economics*, 52, 273-288.

Sakai, Jill. (2010). Invasive shrubs increase spread of tick-borne disease. *University of Wisconsin-Madison*. Retrieved from <https://news.wisc.edu/invasive-shrubs-increase-spread-of-tick-borne-disease/#sthash.jKpCSPow.dpuf>

The cost of invasive species. (2012). U.S. Fish & Wildlife Service.

## INDIANA NATURAL RESOURCES COMMISSION INVASIVE TERRESTRIAL PLANT RULE

1 TITLE 312 NATURAL RESOURCES COMMISSION Proposed Rule LSA Document #18-316

Adds 312 IAC 18-3-25 to designate as pests or pathogens, certain invasive terrestrial plants and to prohibit and restrict the sale, distribution, and transport of these invasive terrestrial plants.

Effective 30 days after filing with the Publisher.

312 IAC 18-3-25 SECTION 1. 312 IAC 18-3-25 IS ADDED TO READ AS FOLLOWS: 312 IAC 18-3-25 Prohibited invasive terrestrial plants Authority: IC 14-10-2-4; IC 14-24-3 Affected: IC 14-24 Sec. 25.

(a) The following are prohibited invasive terrestrial plants and are declared pests or pathogens regulated under this section: (1) *Achyranthes japonica* (Japanese chaff flower). (2) *Ailanthus altissima* (tree of heaven). (3) *Alliaria petiolata* (garlic mustard). (4) *Alnus glutinosa* (black alder). (5) *Artemisia vulgaris* (mugwort). (6) *Arthraxon hispidus* (small carpgrass). (7) *Berberis thunbergii* (Japanese barberry). (8) *Carduus acanthoides* (spiny plumeless thistle). (9) *Carduus nutans* (musk thistle). (10) *Celastrus orbiculatus* (Asian bittersweet). (11) *Centaurea stoebe* (spotted knapweed). (12) *Cirsium vulgare* (bull thistle). (13) *Conium maculatum* (poison hemlock). (14) *Convolvulus arvensis* (field bindweed). (15) *Coronilla varia* (crown vetch). (16) *Dioscorea polystachya* (oppositifolia) (Chinese yam). (17) *Dipsacus fullonum* (common teasel). (18) *Dipsacus laciniatus* (cut-leaved teasel). (19) *Elaeagnus umbellata* (autumn olive). (20) *Euonymus fortunei* (wintercreeper). (21) *Euphorbia esula* (leafy spurge). (22) *Frangula alnus* (glossy buckthorn). (23) *Hesperis matronalis* (dame's rocket). (24) *Humulus japonicus* (Japanese hops). (25) *Lepidium latifolium* (pepperweed). (26) *Lespedeza cuneata* (sericea lespedeza). (27) *Ligustrum obtusifolium* (blunt leaved privet). (28) *Lonicera japonica* (Japanese honeysuckle). (29) *Lonicera maackii* (Amur honeysuckle). (30) *Lonicera morrowii* (Morrow's honeysuckle). (31) *Lonicera tatarica* (Tatarian honeysuckle). (32) *Lonicera x bella* (Bell's honeysuckle). (33) *Microstegium vimineum* (Japanese stiltgrass). (34) *Morus alba* (white mulberry). (35) *Phalaris arundinacea* (reed canarygrass). (36) *Phellodendron amurense* (Amur cork tree). (37) *Phragmites australis* subspecies *australis* (common reed). (38) *Polygonum perfoliatum* (mile-a-minute vine). (39) *Reynoutria japonica* (Japanese knotweed). (40) *Reynoutria sachalinensis* (giant knotweed). (41) *Reynoutria x bohemica* (Bohemian knotweed). (42) *Rhamnus cathartica* (common buckthorn). (43) *Vincetoxicum nigrum* (black swallow-wort). (44) *Vincetoxicum rossicum* (pale swallow-wort).

(b) This section applies to any part or life stage of the species identified in subsections (a).

(c) Except as provided in subsection (d), with respect to any species identified in subsection (a) a person must not: (1) Sell, offer or grow for sale, gift, barter, exchange, or distribute a species; (2) Transport or transfer a species; or (3) Introduce a species. (4) Subdivisions (1) and (2) of this subsection are effective one year after the effective date of this rule.

(d) Exempted from this section are the following: (1) A person who possesses a species identified in subsection (a) under a permit issued by the state entomologist. (2) A person engaged in a project approved by the state entomologist for the destruction of a species. 3

(e) A person who discovers a species identified in subsection (a) may do the following: (1) Report the discovery to the state entomologist or to the following address: Department of Natural Resources Division of Entomology and Plant Pathology 402 West Washington Street, Room W290 Indianapolis, IN 46204 (2) Include in the report provided under subdivision (1): (A) The location of the discovery, including the name of the county. (B) The date of the discovery. (C) Contact information for the person making the report, including telephone number and address.

## KNOX COUNTY INVASIVE SPECIES ORDINANCE

### KNOX COUNTY, INDIANA BOARD OF COMMISSIONERS

#### ORDINANCE NO. 11 - 2018

### AN ORDINANCE PROHIBITING THE SALE AND PLANTING OF CERTAIN INVASIVE PLANT SPECIES (NOT SEEDS) IN KNOX COUNTY, INDIANA

**BE IT ORDAINED** by the Knox County Commissioners, Knox County, Indiana that:

**WHEREAS**, the Knox County Commissioners recognize the detrimental effect that invasive plant species have on Knox County agriculture, forests, natural habitats and to animal and human health in general; and

**WHEREAS**, the Indiana Invasive Species Council has warned that landowners are spending significant funds managing the impact of invasive species in Indiana; and

**WHEREAS**, the Knox County Commissioners desire to mitigate the impact of invasive plants by preventing their purposeful introduction into Knox County, Indiana; and

**WHEREAS**, invasive species are exotic plants that cause harm to human health, economic harm, and harm to our natural areas and ecosystems; and

**WHEREAS**, invasive species with a rating of medium or high on the Indiana Invasive Species Council list (located at <https://www.entm.purdue.edu/iisc/invasiveplants.php>) are causing harm to the natural ecosystem of Knox County, Indiana; and

**WHEREAS**, the Indiana Invasive Plant Advisory Committee determines the ratings of the invasive plants and that listing, as may be amended from time to time, may be found at <https://www.entm.purdue.edu/iisc/invasiveplants.php>; and

**WHEREAS**, the Knox County Commissioners find that the attached list of plants, not seeds (Exhibit A) as amended by the State of Indiana or the Hearing Authority created herein, with noted exceptions crossed out, should no longer be sold, traded or imported into Knox County; and

**NOW, THEREFORE, IT IS HEREBY ORDAINED BY THE BOARD OF COMMISSIONERS OF KNOX COUNTY, INDIANA**, as follows:

**Section 1. INVASIVE SPECIES.** Invasive species are non-native plants, animals or microbes that pose serious threats to human health and well-being, the environment, or our economy. Invasive plants are capable of rendering forests unrecognizable, by shading out native plants, saplings and wildflowers. Particular invasive plants are capable of hybridizing native plants and can negatively affect soil chemistry.

**Section 2. PROHIBITION OF SALE OF PLANTS (not seeds).** Invasive plant species identified on Exhibit A (with exceptions) shall not be sold in Knox County, Indiana by nurseries, retailers, grocery stores, chain stores or any other vendor (collectively "Vendor(s)") beginning January 1, 2020. Other potential invasive species identified in Exhibit B shall not be regulated at this time, but nurseries, retailers, etc. are encouraged to avoid selling them due to some invasive tendencies in the surrounding area. If the species in Exhibit B or other plant species become ranked Medium or High on the Indiana Invasive Plant list, they may be regulated by this ordinance.

**Section 3. INVASIVE SPECIES ALREADY PLANTED.** For those landowners who have invasive species already located on their property, this Ordinance does not require that they be removed as this Ordinance is not retroactively applied.

## **KNOX COUNTY INVASIVE SPECIES ORDINANCE** *(continued)*

**Section 3.1.** Landowners are encouraged to remove invasive species and can contact the Cooperative Invasive Species Management Authority (CISMA), currently located at 604 South Quail Run Road, Vincennes, Indiana 47591, Phone Number 812-882-8210 for technical and advisory support.

**Section 4. ENFORCING AUTHORITY.** The Knox County Natural Resource Specialist, or another appointee of the Knox County Commissioners shall be the enforcing authority and shall be authorized to inspect points of sale to determine if any Vendors are operating in violation of this Ordinance. The Enforcing Authority shall be authorized to administer and to proceed under the provisions of the law in ordering the removal and disposal of any of the invasive species as specified herein.

**Section 4.1.** The Knox County Commissioners will address the compensation for the Enforcing Authority during the budget process in 2019 for the 2020 budget and for each year thereafter.

**Section 5. CONTENTS OF ORDER AND NOTICE OF HEARING.** The enforcement authority may issue an order requiring action relative to any violation of this Ordinance, including:

- (1) order to cease and desist of the sale of the invasive plants;
- (2) order the immediate disposal of the offending plants;
- (3) order the immediate surrender of the offending plants to Knox County for it to dispose of the same if the vendor does not have adequate disposal facilities;
- (4) notice that costs of enforcement and disposal will be assessed against the vendor;
- (5) notice of a hearing date to be held, no sooner than ten (10) days after the service of the Order on the Vendor and no more than sixty (60) days after the service of the order on the Vendor.

**Section 6. HEARING AUTHORITY.** The Knox County Commissioners shall appoint a five (5) member board to be known as the Knox County Invasive Species Board (KCISB). The KCISB shall be the Hearing Authority herein. The KCISB shall use the State Invasive Plant Species List (plants not seeds) as modified to address local Knox County requirements.

**Section 6.1 Board Appointments.** The initial terms of the five members will be staggered with one member serving one year, one member serving two years, one member serving three years, one member serving four years and one member serving five years. After the initial terms, all appointments are for five years or until a replacement is appointed. All appointments serve at the pleasure of the Knox County Commissioners. At all times, at least one member shall be associated with the agricultural industry and one member shall be associated with the horticulture industry.

The Hearing Authority shall meet in January of each year to organize and thereafter as needed based on Orders issued by the Enforcement Authority, or changes made by the State of Indiana to the invasive species plant list necessity meeting to discuss.

**Section 6.2 Hearings, Penalties and Judicial Review.** At the conclusion of any hearing at which a continuance is not granted, the Hearing Authority may make findings and take action to:

- (1) affirm the order;
- (2) rescind the order; or
- (3) modify the order, but unless the person to whom the order was issued, or counsel for that person, is present at the hearing, the hearing authority may modify the order in only a manner that makes its terms less stringent.
- (4) Impose penalties as follows:
  - (A) A fine not exceeding \$2,500 for the first violation; and
  - (B) A fine not exceeding \$7,500 for second and subsequent violations; and
  - (C) A separate violation shall be deemed committed upon each day during which a violation occurs or continues.

## **KNOX COUNTY INVASIVE SPECIES ORDINANCE** *(continued)*

(D) The Hearing Authority has the sole discretion to determine if the violation(s) applies per plant or per location.

Judicial review of the hearing authority's order may be had by filing a complaint within ten (10) days of the action of the hearing authority. The Knox Superior Court II is the Court of judicial review for violation of this ordinance.

Upon the expiration of the above ten (10) days, the Enforcement Authority shall take the action contained in the Order.

Failure of the Vendor to pay the costs and/or fines associated with the violation of the Ordinance may result in a damages action being filed against the Vendor in the Knox County Superior Court II.

**Section 7. EMERGENCY ACTION.** The Enforcing Authority may take emergency action if the Enforcement Authority finds a Vendor's violation so egregious that emergency action must be taken in order to protect life, safety, or property. Emergency action may be taken without issuing an order or giving notice. However, this emergency action must be limited to removing plants in violation of this Ordinance to prevent further danger to Knox County's ecosystem.

**Section 8. SEVERABILITY.** Should any section, paragraph, sentence, clause, or any other portion of this Ordinance be declared by a court of competent jurisdiction to be invalid for any reason, the remaining provision or provisions shall be given the effect intended by Knox County in adopting this Ordinance. To this end, the provisions of this ordinance are severable.

**Section 9. PUBLISHING.** The Knox County Auditor shall cause this ordinance to be published within thirty (30) days of passage.