



INDIANA
INVASIVE
SPECIES
COUNCIL

2018-2019
Biennial Report



Image Credits (Clockwise from left): Japanese Stiltgrass by Luke Flory, Sudden Oak Death from California Oak Mortality Task Force, Asian Carp by Indiana Outdoor Adventure/Youtube

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Council Membership

Gubernatorial Appointments



Linda Broadfoot
Director, Indy Parks



Rick Haggard
IN Nursery & Landscape Association



Kristopher Krause
Director, Shirley Heinze Land Trust



Heather Reynolds
Council Chair (2018-2019)
Assoc. Prof. of Biology, Indiana U.



Mike Warner
Council Chair (2020-)
Certified Forester, ArborTerra

Statutory Appointments



Megan Abraham
DNR, Division of Entomology & Plant Pathology



Jeffrey Cummins
IN State Department of Agriculture



Eric Fischer
DNR, Division of Fish & Wildlife



Matthew Kraushar
INDOT



Kelli Werling
IN State Board of Animal Health



Steve Yaninek
Council Secretariat
Professor of Entomology, Purdue U



Autumn olive (*Elaeagnus umbellata*). Once promoted for wildlife and erosion control, this non-native shrub is now on Indiana's prohibited plant list because it is highly invasive in fields, pastures and forests. *Image Credit: Paul Rothrock*



Message from the Chair

“With council representatives spanning key governmental units (DNR, BOAH, ISDA, INDOT, INDY PARKS) and the conservation, green industry and research sectors, the IISC is an effective hub of communication and coordination spanning the whole range of invasive species prevention, early detection and management efforts statewide.”

In 2019, the Indiana Invasive Species Council (IISC) marked the end of its first decade as a state-mandated body under Indiana Code (Title 15. Agriculture and Animals 15-16-10). We are proud to share our accomplishments over the 2018-2019 biennium.

Indiana’s natural resources are the ultimate foundation of our society’s wealth, health, and resilience. Invasive species are non-native plants, animals or microbes that spread aggressively, replacing native organisms and posing serious threats to our natural resources, human health and well-being, and our economy. For example, the IISC’s Invasive Plant Advisory Committee estimated that in 2012, land owners and managers in Indiana representing more than 650,000 acres of public and private land spent more than \$5.85 million in management costs alone.



The IISC was established in recognition that the scale and complexity of invasive species issues and actors demands coordinated action. With council representatives spanning key state agencies (DNR, BOAH, ISDA, INDOT, INDY PARKS) and the conservation, green industry and research sectors, the IISC is an effective hub of communication and coordination spanning the whole range of invasive species prevention, early detection and management efforts statewide.

Among the accomplishments highlighted in this report, the IISC’s efforts over the 2018-2019 biennium have led to successful passage of the Terrestrial Plant Rule. By restricting the sale, distribution and use of the 44 most highly invasive plants in the state, this rule will help reduce Hoosier money and time spent on invasive species management. The IISC also continues to be the state reporting hub for early detection & distribution mapping of invasive species, a central support center for the state’s burgeoning Cooperative Invasive Species Management Areas (CISMAs), a nexus for educational outreach, and facilitator of invasive species research efforts.

Going forward, key needs to enable the IISC and its many partners to continue protecting Indiana’s environmental, economic and human well-being in the face of invasive species include a long-term funding strategy for the state’s CISMA network and an increased number of council representatives.

Sincerely:

Heather Reynolds



Activities at a Glance

Highlights of IISC activities in 2018-2019 include:

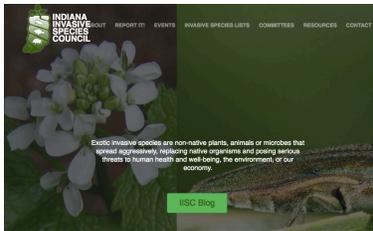
Indiana Terrestrial Plant Rule FAQ Sheet

THE RULE
Beginning April 18, 2020, no one may sell, gift, exchange, distribute, transport or introduce any of the 44 species (see list on back side) without a permit from the DNR Department of Natural Resources, Division of Entomology and Plant Pathology (DEPP). DEPP is the regulatory authority of the rule. The full text of the rule is posted at this link: https://www.in.gov/dnr/3613/16_00000001.pdf

FREQUENTLY ASKED QUESTIONS
Why is the rule necessary? Impacts of invasive species include: loss of biodiversity, degradation of natural habitats, negative effects on property values, decreased agricultural yields, negative impacts on public utilities, recreation, and tourism, Indiana landowners and managers spend greater than \$8.6 million dollars annually to manage invasive plants in Indiana.
How were the 44 species determined to be invasive? Species included in the terrestrial plant rule were assessed through a scientific and transparent system by a team of experts that included representatives from horticulture, landscape, survey, research, conservation, and Purdue Agriculture. Links to assessments are available from the Official Indiana Invasive Plant list at: https://www.in.gov/dnr/3613/16_00000001.pdf
Why aren't all the invasive plants on the Official Indiana Invasive Plant list in this rule? The rule includes plants ranked high on the official list, except for Callery pear and Norway spruce. These two species were not included in the rule because the State determined that including them would cause too great of an impact to growers of those species.
Are all 44 species sold for landscaping? No, DEPP reported about 22 of the 44 regulated species are sold in trade, however, this rule also prohibits the sharing, transport, and exchange of all species listed.
May I purchase a species online? Not legally.
May I share a species with friends or family? Not legally.
What if I have one of the 44 species growing on my property - is it illegal? No, but you cannot share, transport, exchange, or sell it.
What is the punishment for violating the rule? DEPP has authority to issue a \$500 fine per incident per day.
Will other species be added to the rule? As plant species are assessed, those ranked high will proceed through the rule assessment process for potential inclusion in the future.
Are there Nonnative "Weeds"? No, Nonnative "Weeds" are a different regulatory category and include Canada thistle, horsetail, Johnson grass, staminate, and Columbin grass.

How Can You Help?
If you use these invasive plants, do not sell, give, exchange, or transport them after April 18, 2020 unless you already possess them. Contact information is found here: https://www.in.gov/dnr/3613/16_00000001.pdf
You can help us gather data to help us assess plants by reporting on EDDMapS by reporting on the IICEDMAPP app. Information on how to use both applications is found here: https://www.in.gov/dnr/3613/16_00000001.pdf
You can remove invasive species from your landscape and plant native species.
You can avoid using Callery pear, Norway spruce, and other invasive plants on the official list that did not get included in the rule.
FOR ADDITIONAL INFORMATION:
For information about invasive species please visit the following links:
Indiana Invasive Species Council: <https://www.invasivespecies.org/>
Coastal Invasive Species Program: <https://www.invasivespecies.org/>
Invasive Plant Advisory Committee: <https://www.invasivespecies.org/>

- Working with IN DNR's Division of Entomology & Plant Pathology (DEPP) to draft the Terrestrial Plant Rule, restricting the sale, distribution and transport of 44 highly invasive plants, now adopted as 312 IAC 18-3-25 by the Indiana Natural Resources Commission
- Developing & distributing a fact sheet to educate the public about the Terrestrial Plant Rule and supporting production of a field guide to assist practitioners in identifying the state's newly regulated invasive species under the Terrestrial Plant Rule
- Hosting the 3rd Biennial IISC Conference, "Grassroots Networking and Resources to Manage Invasive Species in Indiana" in Danville, Indiana
- Rolling out a new IISC website design to enhance ease of navigation and access to resources for invasive species reporting and management
- Assessing 22 plant species for invasiveness, adding four new species to the official IISC Invasive Plant List
- Assisting Purdue Extension with a campaign to raise public awareness about *ReportINvasive*, a digital reporting system that feeds into the nationwide Early Detection & Distribution Mapping System (EDDMapS)
- Promoting the use of digital reporting, with 3244 new reports of invasive species in Indiana made since 2017 through EDDMapS
- Reaching out to nursery stock growers & sellers, and to the Survivor Tree Seedling Program, with information about the invasive tree species Callery Pear
- Holding 11 "Networking Conversations" with other federal & state agencies and non-governmental organizations to enhance communication and coordination on preventing, detecting and managing invasive species
- Supporting Indiana University research on emerging aquatic invasive species starry stonewort and Cooperative Invasive Species Management Areas (CISMAs), and Purdue University research on economic costs of invasive species



How to Use Report IN

- Report IN is a reporting system for invasive species in Indiana.
- Reports can be made on a computer at [EDDMapS.org/Indiana](https://www.in.gov/dnr/3613/16_00000001.pdf) and on the Great Lakes Early Detection Network (GLEDN) smartphones etc. in the field using the EDDMapS database. This guide covers both.
- Here's the home page for Report IN ([EDDMapS.org/Indiana](https://www.in.gov/dnr/3613/16_00000001.pdf)):

There are the buttons you'll use to do everything.

Link to download the GLEDN app.

When you create a profile or sign in, you have a profile.

Statistics on number of reports in Indiana.

Recent Indiana reports.

Helpful guide to reporting invasive species in EDDMapS.

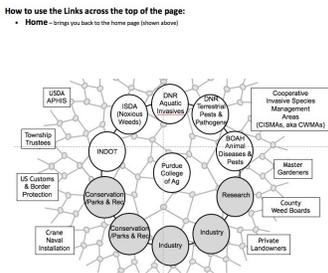


Image Credits: IISC



Invasive Species of Note

	Name	Comments
Terrestrial Plants	Black Swallow-wort <i>Cynanchum louiseae</i>	Several populations in Marion and Wayne counties. Monitoring and treatment of existing and new populations is ongoing.
	Kudzu <i>Pueraria montana</i>	Vine spreading throughout southern Indiana. Treatments conducted by DNR each year to slow down spread.
	Mile-a-minute <i>Polygonum perfoliatum</i>	One population in Monroe county. Monitoring and treatment of existing and new populations is ongoing.
Aquatic Plants	Hydrilla <i>Hydrilla verticillata</i>	Declared eradicated in 2019 from Lake Manitou, expanding in range in the US.
	Starry stonewort <i>Nitellopsis obtusa</i>	Rapidly expanding, highly impactful macro-algae in Indiana.
	Asian Carp <i>Mylopharyngoon piceus</i> , <i>Hypophthalmichthys sp.</i>	Present in Indiana's river systems and a high priority for outreach and education.
	Gypsy moth <i>Lymantria dispar</i>	Sites treated at Fulton/Marshall County Line as part of a DNR management program that has kept gypsy moth north of U.S. Hwy 30 for 30 years with only 232 acres of noticeable defoliation.
	Spotted Lanternfly <i>Lycorma delicatula</i>	Asian planthopper that feeds on several crops including walnut, grape and stone fruit trees. Not currently in Indiana, however moving west and can be transported through trade.
	Wild hogs/Feral swine <i>Sus scrofa</i>	Indiana participates in the USDA APHIS National Feral Swine Damage Management Program; Current Status: Stage 2 – Elimination Phase.
Pathogens	Boxwood Blight <i>Calonectria psuedonaviculata</i>	Aggressive fungal pathogen found in Indiana since 2018. Moves in the nursery trade. Boxwood material infested with this pathogen can also be found in fresh cut wreaths during the winter months.
	Sudden oak death <i>Phytophthora ramorum</i>	Stop sale orders and removal/destruction of plants successfully prevented introduction of sudden oak death after its arrival on container rhododendron plants at garden centers in spring 2019.
	Thousand Cankers Disease <i>Geosmithia morbida</i>	Pest of concern in walnut trees. Not yet found in Indiana with the presence of the walnut twig beetle that vectors it. DNR continues to survey for it.



Mile-a-minute vine.
Image credit: Univ. of Maryland Extension



Wild swine. Image credit: USDA APHIS



Hydrilla lake infestation. Image credit: NIIPP.net

Early Detection & Distribution Mapping System

Early detection allows for rapid response and the best potential to eradicate and control an invasive species before it becomes established to the point where management is the only option. For early detection to translate into eradication, it is critical to have a team of qualified and willing people outfitted with the proper training and tools to deploy to a location and eradicate a new population.

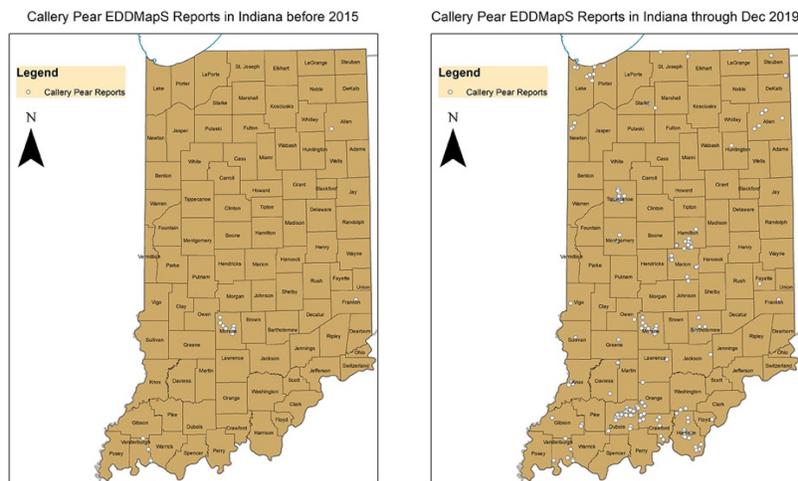
Successful EDRR programs:

- 1) Identify threats early enough to allow efficient & environmentally friendly measures for eradication or control
- 2) Provide complete and timely information to responsible agencies, the public and partners

History of EDRR in Indiana: The IISC hosted a 2013 conference at Purdue University on early detection and rapid response (EDRR). A key outcome was an online reporting system for Indiana, *ReportIN* (www.EDDMapS.org/Indiana), developed in partnership with EDDMapS, The Nature Conservancy, Purdue University, Division of Nature Preserves, Board of Health, and the Indiana Native Plant and Wildflower Society. Since the inception of EDDMapS in Indiana, 49,012 reports of invasive species have been made in the state.

Since 2013, IISC's Indiana Plant Advisory Committee (IPAC) and CISMA members have conducted EDDMapS training around the state, averaging approximately 25 trainings a year to various groups, agencies and individuals. In addition, IPAC has strategically sent invasive species alerts to our IPAC and CISMA listservs (over 600 people). This large pool of trained spotters has helped identify and locate new populations of invasive plants throughout the state. A team of specialists around the state review and consult with experts to ensure that reports reflect accurate species identification. Since 2013, 4,653 invasive plants have been reported in Indiana through EDDMapS. IPAC and other botanists reviewed over 900 new vascular plant records in 2019 alone.

Impact of EDRR: EDRR reports help to determine the distribution of invasive plants across the state, enhancing invasive species eradication and management efforts. For example, as shown in the maps below, after targeted EDDMapS training was conducted, records of Callery pear distribution across the state dramatically increased pre- vs. post-2015.



As another example, after 2018 reports of black swallow-wort in two counties, IPAC and SICIM coordinated with local managers who immediately began surveying and treating the black swallow-wort populations.

Biennial Conference & Other Outreach

2018 Biennial Conference: “Grassroots Networking and Resources to Manage Invasive Species in Indiana”, Danville, IN fairgrounds

The IISC held its 3rd biennial conference on February 15, 2018 at the Hendrick’s County 4-H Fairgrounds and Conference Center in Danville, IN. Co-sponsored by The Nature Conservancy, Indiana Association of Soil and Water Conservation Districts, EcoLogic LLC, ArborTerra Consulting and the Indiana Forest and Woodland Owner’s Association, the conference’s theme was fostering greater coordination among grassroots invasive species efforts. Cooperative Invasive Species Management Areas (CISMAs, formerly known as Cooperative Weed Management Areas) are cross-jurisdictional partnerships between non-profits, landowners and governmental units. Two networking sessions fostered relationship building within and between existing and newly forming CISMAs across the state. The conference also featured updates on the emerald ash borer, spotted lantern fly and various aquatic invasive species, the Terrestrial Plant Rule, statewide CISMA-building efforts by The Southern Indiana Cooperative Invasives Management (SICIM), using citizen science to manage invasive species via EDDMapS, the Grow Indiana Natives initiative, and use of social media.



Over 200 attendees networked at the 2018 IISC Biennial Conference. Image Credit: Matt Kraushar

- 218 attendees across 22 organizations
- 64% attendees completed the conference survey
- 73% of those surveyed were satisfied with program content
- Attendees seek more invasive species identification training & help coordinating efforts

New Website Design

The IISC overhauled its website, creating a cleaner, smart phone-friendly design featuring more invasive species images, easier navigation and consolidated presentation of resources for invasive species and their management. See <http://indianainvasivespecies.org>.

ReportINvasive

IISC supports efforts by Purdue Extension to raise awareness and increase invasive species reporting in the state through their newly created *ReportINvasive* website.

Callery Pear Awareness Raising

Thousands of Indiana nursery stock growers or sellers and the Survivor Tree Seedling Program were contacted about the economic and ecological harms of the highly invasive tree species Callery pear. Recipients were encouraged to consider the many beautiful and beneficial native alternatives to Callery pear. View the letters at:

https://www.entm.purdue.edu/iisc/pdf/IISC_Callery_Pear_Nursery_trade_letter.pdf
and https://www.entm.purdue.edu/iisc/pdf/IISC_Callery_Pear_Survivor_Tree_letter.pdf

Networking Conversations

In 2018, the IISC shifted to a quarterly meeting schedule and initiated regular networking conversations with other stakeholders to enhance communication and coordination on preventing, detecting and managing invasive species. USDA APHIS PPQ, DNR Community & Urban Forestry, DNR Nature Preserves, IUPUI & IUB researchers, SICIM and County Weed Boards are among the conversations held to date.



Indiana Plant Advisory Committee

Overview

The IISC created the Invasive Plant Advisory Committee (IPAC) in 2010. IPAC members, along with other botanical experts, review EDDMapS reports throughout the year, produce educational resources, and assist with educational workshops and outreach events to share research, general news and knowledge about invasive plants.

Accomplishments of Note in 2018-2019

- Worked with several agencies and groups to create the Terrestrial Plant Rule Fact Sheet and an associated plant identification pocket guide featuring the species included in the Terrestrial Plant Rule that was adopted in April 2019
- Assessed and recommended 4 new species for the official IISC Invasive Plant List and updated invasiveness rankings for 20 species on the official IISC Invasive Plant List
- Reviewed ~950 new reports of invasive plant species in Indiana made through *ReportInvasive*, a digital reporting system developed by the IISC that feeds into the nationwide Early Detection & Distribution Mapping System (EDDMapS).

IPAC Membership



Dawn Slack
IPAC Chair
Director of Stewardship, TNC



Ellen Jacquart
President, IN Native Plant Society
President, Monroe County Identify & Reduce Invasive Species



Will Drews
Natural Resources Specialist
Knox County Soil & Water Conservation District



David Gorden
Landscape Architect, Mark M. Holeman, Inc.
Midwest Invasive Plant Network



Stephanie Schuck
Outdoor Ed & Restoration Coord.
Marion University
Nina Mason Pulliam



Victor Shelton
State Agronomist/Grazing



Larry Bledsoe
Department of Entomology
Purdue University



Brian Kruse
Staff Forester
USDA-Indiana NRCS



Vicky Meretsky
Professor
O'Neill School of Public & Environmental Affairs
Indiana University, Bloomington



Brenda Howard
Senior Ecologist, Land Stewardship
Dept. of Public Works
City of Indianapolis



Ross Miller
Operations Manager
Countryside Landscaping Services



Sue Arnold
Herb Society of Central Indiana
Marion County Master Gardener
Indiana Garden Clubs



Phil Cox
Ag & Natural Resources Extension Educator
Cooperative Extension Service
Purdue University



Research

IISC provided contacts, advice and letters of support for invasive species research that helped lead to funding from Indiana University’s Environmental Resilience Institute (<https://eri.iu.edu/>) for two projects conducted by Research Fellows at the institute.

- What will Midwestern aquatic invasions look like in a changing climate? *Nitellopsis obtusa* (starry stonewort) is an emerging aquatic invasive plant of Midwest lakes. Led by aquatic invasion biologist Dr. Ranjan Muthukrishnan with social scientists Dr. Abigail Sullivan and Dr. Matthew Houser and University of Minnesota aquatic and wetland biologist Dr. Dan Larkin, this interdisciplinary project is evaluating starry stonewort’s responses to climate change and developing best management strategies. By conducting this joint social-ecological study across a suite of lakes from Indiana to Minnesota, the team will gain rich insight on how to best tailor management strategies for ecological and climatic contexts. Furthermore, by working with stakeholders to develop and share model results, this project stands to advance the practice of participatory science and generate more realistic and practical invasive species management recommendations.
- Assessing collective action and social-ecological fit through CISMAs
Cooperative Invasive Species Management Areas (CISMAs) are a relatively new (< 30-year old), yet promising strategy for forging invasive control partnerships between landowners, non-profits, and governmental units across jurisdictional boundaries. Led by social scientist Dr. Abigail Sullivan, this project is surveying Indiana’s burgeoning CISMA network to identify the factors that promote successful CISMA outcomes. Systematic analysis of CISMAs are lacking, which limits efforts by the Indiana Invasive Species Council, other governmental units, and NGOs to effectively support their work. Dr. Sullivan’s work will provide the evidence-based information needed to tailor support towards successful CISMA outcomes given their particular social-ecological context.



Starry Stonewort (*Nitellopsis obtusa*).

Image Credit: Dave Hansen



Starry Stonewort invasions threaten inland lake health & recreation
Image Credit: Dave Hansen

Institutions/ governance	Ecology	Collective action problem	Success	Fit
Leadership	Spatial distribution of invasives	Stakeholder interests	Reduction in invasives	Level of institutional capacity
Group size	Climate patterns	Norms of trust/ reciprocity	Increase in social capital	Level of challenge to address ecological conditions
Network/group connections	Growth or replacement rate of invasives	History or past experiences	Efficiency	Level of challenge to address social conditions
Operational /collective-choice rules	Invasion intensity	Perception of harm/ dependence on resource	Equity	
Resources (e.g., funding)		Clarity of group’s managed boundaries	Increase in biodiversity	

Preliminary framework structure for assessing success and social-ecological fit of CISMAs.

Image Credit: Abigail Sullivan



Fiscal Profile

IISC 2018 and 2019 Account Activity and Balance

Opening balance		\$5,044.46
Revenue		
Feb-18	Allocation from Purdue University (Dean of Agriculture)	\$1,825.00
Mar-18	Conference Sponsorship	\$3,200.00
Mar-18	Conference Registration Online Revenue	\$1,919.37
Mar-18	Conference Registration Walk in Revenue	\$250.00
		<hr/> \$7,194.37
Expenses		
Feb-18	Council letter mail merge and distribution	-\$1,825.00
Mar-18	Conference catering	-\$1,072.50
Mar-18	Public announcement (conference publicity)	-\$112.74
Apr-18	Hendricks Co 4-H Conference Center rental	-\$200.00
Jun-18	Public announcement (Council meeting*)	-\$112.74
Jul-18	DNR Community & Urban Forestry School Year Calendar	-\$200.00
		<hr/> -\$3,522.98
Closing balance		\$8,715.85

Additional" in-kind" support received from Purdue University includes:

- IT support for managing and maintaining the Council listservs
- Web support for the IISC website (<https://www.entm.purdue.edu/iisc>) including a major redesign in 2018
- An allocation in time (support staff) and money (\$1,825) from the Purdue Dean of Agriculture to mail merge and distribute a letter pointing out the threat of selling Callery pear from the Council to all ornamental plant producers and retailers in the Indiana in 2019
- Secretarial support for the Council including taking minutes and other miscellaneous administrative activities



Looking Forward: Key Needs

As we look forward to the next two years the Indiana Invasive Species Council has identified the following key needs enabling our critical role as network hub for the diverse organizations working on prevention, early detection and management of invasive species in Indiana.

1. Develop a strategy that will address the long-term funding needs and support for the emerging Cooperative Invasive Species Management Areas (CISMAs) across the state.
2. Develop a framework for how we effectively address the Indiana invasive species problem, to serve as a discussion guide for a future Legislative Summer Study Commission.
3. Add Callery pear and Norway maple to Indiana's newly enacted Terrestrial Plant Rule and continue to identify and evaluate emerging invasive species threats.
4. Re-evaluate the Invasive Species Council's statute, organizational structure and responsibilities prior to its legislative reauthorization in 2022. In particular, we seek to increase the number of IISC representatives from 11 to 16, as follows:
 - a. Increase the number of industry and conservation representatives by 4 and add Cooperative Invasive Species Management Areas to the list of potential conservation organizations. This increase in breadth would allow the IISC to better address the many economic and environmental issues that invasive species are causing in Indiana.
 - b. Redefine the existing Terrestrial Invasive Species Coordinator representative as the DNR Division of Fish and Wildlife Terrestrial Invasive Species Coordinator position. Add a new Insect and Plant Disease representative, to be filled by the Division of Entomology and Plant Pathology.
5. Continue to identify and quantify the short-term and long-term costs and environmental impacts of the invasive species problem in Indiana.

