Invasive Species in Rural Pennsylvania Public Hearing
August 24, 2021

AGENDA

10:00 AM **Welcome and Call to Order, Senator Gene Yaw, Chairman**

10:05 AM **Panel 1: Pennsylvania State Government Approaches to Invasive Species**

Honorable Russell Redding, Secretary, Pennsylvania Department of Agriculture

Honorable Cindy Adams Dunn, Secretary, Pennsylvania Department of Conservation and Natural Resources

Timothy Shaeffer, Executive Director, Pennsylvania Fish & Boat Commission

10:40 AM **Panel 2: The Effects of Invasive Species in Rural Pennsylvania**

Dr. Jayson Harper, Director, Penn State Fruit Research and Extension Center and Professor of Agricultural Economics

Thomas C. Kase, Resource Manager, Kane Hardwood

Brian Pilarcik, Watershed Specialist, Crawford County Conservation District

11:10 AM **Panel 3: Policy Approaches to Combat Invasive Species**

Dr. Sara Grove, Professor of Political Science, Shippensburg University of Pennsylvania

Sarah Whitney, Director, Pennsylvania Sea Grant

Jody Groshek, Communications & Outreach Director, McKean County Conservation District; Allegheny Plateau Invasive Plant Management Area

Joshua Thiel, Invasive Species Coordination Section Chief, Division of Lands & Forests, New York State Department of Environmental Conservation

11:50 AM **Summary Remarks, Secretary Russell Redding**

12:00 PM **Concluding Remarks and Adjournment**

pennsylvania
DEPARTMENT OF AGRICULTURE

Remarks to the Center for Rural Pennsylvania
Hearing on Invasive Species in Rural Pennsylvania
Agriculture Secretary Russell C. Redding
August 24, 2021

Thank you Chairman Yaw, Vice Chairman Pashinski, and the entire Center for Rural Pennsylvania Board for the opportunity to join you today and discuss the impact of invasive species on our commonwealth. It is our hope that the discussion today can demonstrate the importance of addressing invasive species, and the strengths of a coordinated approach through the Invasive Species Council, federal, local, and state agencies, our research partners, and the promotion of public awareness and education.

Many of the headlines we see daily are issues exacerbated by invasive species. For instance, the presence of African Swine Fever in Germany received international attention, but the vector through which this disease appeared was invasive feral swine that crossed international borders[1]. Here in the United States, the California wildfires continue to destroy both natural and working lands. One of the drivers of these fires is the invasive grass that burns more readily and out-competes the native flora[2]. Issues like these come with a price tag, as it is estimated that the United States suffers $120 billion in damages from invasive species every year[3].

Pennsylvania is certainly not devoid of these issues. The risk of the introduction of new invasive species is especially high in Pennsylvania because we are a central national and international shipping and transport hub for the entire east coast. As global trade increases so too do the opportunities for invasive species to be brought here from other states and countries. This was the case with the spotted lanternfly, which since arriving in the commonwealth in 2014, has threatened numerous industries and caused an estimated $42.6 million in damages statewide[4]. This is just one of many species that pose significant threats to our land, economy, heritage, and future.

Unfortunately, many invasive species appear benign initially. For instance, the brown marmorated stink bug was first considered simply a nuisance, but over time became a major agricultural pest resulting in crop loss and impacted marketability. This is of great concern given the wide variety of species that it feeds on, including peaches, nectarines, apricots, soybeans, tomatoes, and corn to name a few. This also causes increased cost to growers due to the additional pesticide expenditures to protect crops, not to mention the increased environmental impact of additional pesticides.

For other invasive species, their true impact is not revealed until another invasive appears. For instance, spotted lanternfly highlighted the real threat of *Ailanthus altissima* or what is commonly referred to as the Tree of Heaven. This tree species was first introduced into Philadelphia in 1784 as an ornamental and was tolerated as it spread across the continent, despite being an invasive weed in agricultural and

1"Germany agrees to more wild boar hunting to combat swine fever", Reuters, 03.22.2021

2" Invasive Plants and Fire", USGS, 2021

3 "Economic and Social Impacts", USDA: National Invasive Species Information Center ,2021

4 "Potential Economic Impact of the Spotted Lanternfly on Agriculture and Forestry in Pennsylvania", The Center for Rural PA, 2019

wild settings. This weed has acted as a facilitator of the spotted lanternfly, serving the same role as it does in Asia where both species originate.

We are already starkly aware of other invasives that are at our doorstep like Asian Long-horned Beetle (ALB). These beetles attack and kill maple trees and other hardwood trees. Fortunately, it has never been found in Pennsylvania, but it has been introduced to several nearby states: New York, Massachusetts, New Jersey and Ohio. Should it ever make its way to Pennsylvania, the impacts to our forests and hardwood industry would be catastrophic. The risk of introduction is ever-present, as demonstrated just last year when ALB was detected for the first time in South Carolina, a state not sharing a border with any of the currently infested states. The full extent of that infestation is still being evaluated, but nearly 5000 infested trees have been found in South Carolina so far. This illustrates the unpredictability and suddenness with which an invasive species like ALB could appear in our state and have dramatic consequences.

Given these factors, Governor Tom Wolf reenacted the Invasive Species Council on December 20, 2017 with Executive Order No. 2017-07. The Council's main purpose is to develop the Commonwealth's invasive species action plans, advise the Governor on invasive species policy development, and coordinate interagency response to invasive species threats. Chaired by the Secretary of Agriculture, the council members include agency heads of the commonwealth responsible for the conservation of agricultural and natural resources and the protection of public health along with public members representing agriculture and natural resource organizations and educational institutions conducting invasive species research and outreach. The Council's goal is to minimize the harmful ecological, economic and human health impacts of invasive species through the prevention and management of their introduction, expansion and dispersal into, within and from Pennsylvania.

This council serves an important role in our agriculture community. Farmers and foresters are the stewards of our natural and working lands, which provide jobs and food for our tables. While these industries are no more responsible for invasive species introductions than any others, they bear a disproportionate burden for management and control of those invasives, as they work to protect their land and the production of agricultural and forest products. Invasives like those mentioned previously, not only do direct damage but also threaten the credibility of Pennsylvania's agricultural commodities. Our industries rely on exporting commodities to other states and countries, and these exports must be free of pests and disease for the export market to exist. The risk of contamination from invasive species can and will decrease demand for Pennsylvania goods.

We must also consider the impacts invasive species have on biodiversity. It is well established scientifically that biodiversity is critical to the resiliency of the environment and ecosystem services that we all depend on. Like pollination for our food crops, hunting, and fishing, providing clean water, healthy soil, and everything else we depend on to support life. Invasive plants out-compete our native plants and trees for nutrients and sunlight resulting in dramatic changes to the composition and structure of our forests and natural areas. What Penn's Woods look like a generation or two from now may be completely unrecognizable compared to today. After habitat loss, invasive species are the second greatest contributor to loss of biodiversity and species extinctions. Of course, these types of impacts are worsened by the increasing effects of climate change; particularly increasing temperatures and extreme weather events.

pennsylvania
DEPARTMENT OF AGRICULTURE

The Pennsylvania Department of Agriculture, fellow departments, and the Governor's Invasive Species Council are fortunate to have tools like inspection, quarantine, and management authorities; and communicate and cooperate with each other to address invasive species issues at a state level. In the first-ever PA Farm Bill, the Governor established the Rapid Response and Disaster Preparedness fund, to meet unplanned needs.

However, by the time an issue rises to the state level, the opportunity for rapid response and management is often lost. We need to be comprehensive in our approach and have dedicated resources. Invasive species do not recognize boundaries of any type, geographic, political, demographic, or otherwise. Because of this, true cooperation and partnerships at all levels must exist in order to effectively prevent and manage invasive species beyond rapid response. State agencies cannot fight the battle alone. Diverse and expansive partnerships with local leadership must be established if we are to have a chance at withstanding the assault of invasive species.

Many other states have recognized this and responded by creating a Partnerships for Invasive Species Management (PRISM) program, or other similarly focused initiative. During this hearing, we'll hear from one of the administrators of the New York State PRISM program at the New York Department of Environmental Conservation who will describe how their program works and testify to its effectiveness. Included with my testimony is a model of a PRISM-type program for Pennsylvania that has developed as a possible option for combatting invasive species.

It is our hope that the testimony today will highlight the importance of comprehensively addressing invasive species in the commonwealth. This is a problem that can only be solved by working together in common purpose. There are a number of different ways that we can combat the threat of invasive species and my ask here today is for us to be partners in combatting that threat, identifying other resources, and support our efforts to work with federal partners to achieve these goals.

Thank you for the opportunity to speak with you today about this. I'm happy to answer any questions the members of the Board might have.

pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

Remarks to the Center for Rural Pennsylvania:
Hearing on Impact of Invasive Species
Secretary Cindy Adams Dunn, Department of Conservation and Natural Resources
August 24th, 2021, 10:00 am-12:00 pm

Thank you to Chairman Yaw, Vice Chairman Pashinski, and the Center for Rural Pennsylvania for this opportunity to speak to you today.

As you know, the Department of Conservation and Natural Resources (DCNR) manages over 2.2 million acres of state forest land and 300,000 acres spanning across our 121 State Parks. The DCNR is also the jurisdictional agency over native wild plants, requiring significant staff and resources to survey, contain, control, and eradicate invasive species, non-native plants and animals to Pennsylvania. This work is a major component of DCNR's core mission "to conserve and sustain Pennsylvania's natural resources for present and future generations' use and enjoyment."

DCNR recognizes 92 plant species as invasive on DCNR lands and has placed an additional 22 plant species on a "watch list" to monitor their impact on natural communities. Invasive plant species (terrestrial and aquatic) commonly found on DCNR lands include barberry, stiltgrass, tree-of-heaven, mile-a-minute, oriental bittersweet, knotweed, purple loosestrife, water chestnut, hydrilla, and parrotfeather. The top invasive pests DCNR deals with include *Lymantria dispar* (Gypsy Moth, *L. dispar*), spotted lanternfly, emerald ash borer (EAB), hemlock woolly adelgid, and beech leaf disease.

DCNR's Bureau of State Parks (BSP) and Bureau of Forestry (BOF) practice integrated pest management (IPM), which utilizes a combination of prevention, monitoring and control methods to deal with invasive plants, insects, and diseases. The BOF has adopted Early Detection and Rapid Response (EDRR) protocols to track novel populations of invasive plants, insects, and diseases and treat them promptly to slow their spread on state forest lands. The BOF has an Invasive Plant Management Plan, Ash Management Plan, Hemlock Conservation Plan, and *L. dispar* Program Plan for lands managed by DCNR, which lay out strategies to manage invasive plants, insects, and diseases more effectively. The Bureau of Forestry's Division of Forest Health monitors and detects forest health threats, provides advice to forest managers as well as landowners, and conducts direct control and research activities. The BSP develops park specific Invasive Species and Habitat Management Plans.

Many DCNR staff incorporate invasive species containment as well as invasive species education into their work but there are a limited number of staff who focus solely on invasive species management. Within our Bureau of State Parks there is one person whose primary job responsibilities include aquatic invasive species management. This individual is responsible for monitoring and performing removal across the 55 state park lakes, which span 36,000 acres. They also help address aquatic invasive species on state forest lands.

We work endlessly to manage and control established invasive species so as to protect critical habitats and our valued natural lands and timber resources from being decimated. Limited staff and funding require DCNR to triage invasive species and only helps keep invasive species at bay. If we continue the status quo, we will ultimately fall too far behind and the costs to society will only increase.

Invasive species are expected to increase in numbers overtime with significantly more international trade, changes in land use, forest fragmentation (such as right-of-ways), and climate change. They pose a great risk to forest and aquatic ecosystems and may lead to significant damage and mortality of trees and plants resulting in decline of ecosystem integrity and function such as impeding a forest's ability to sequester carbon.

Climate change directly exacerbates environmental stressors on forests; specifically, increases in average, maximum, and minimum temperatures; longer growing seasons' increased average rainfall; decreased winter snow cover; more intense weather events; and longer periods of drought. Changing environmental conditions such as warmer winters can extend an invasive species range. For example, the southern pine beetle, a native forest insect pest from the south, has moved northward, and we have had outbreaks in southern Chester County resulting in the death of a few hundred acres of pitch pine. The hemlock woolly adelgid has increased in the last couple of seasons due to mild winters in 2019 and 2020. Recent seasons with high moisture levels have led to an outbreak of white pine needle damage in central areas of the state. We are also seeing potential declines in black cherry and oak species.

As climate changes, we can expect to see an increase in abundance of invasive species that are already present in the commonwealth as well as new invasive species moving into the commonwealth. Rapid response is critical to containing newly discovered invasive species. Practicing rapid detection and response will allow us to address new invaders so they do not become established. The earlier a detection can be made and quicker we can act, the more successful we'll be in containing or eradicating the species at a lower cost to taxpayers, businesses and industry, health systems, and local communities.

Invasive species are difficult and costly to control. Invasive species are a major threat to Pennsylvania's environment as well as the economies and communities that depend on our forests, waterways, and natural areas. They also negatively impact outdoor recreation opportunities and the corresponding economic benefits, timber production, and human health.

Impact on the Outdoor Recreation Industry

Our abundant outdoor recreation amenities and resources draw visitors, businesses, and young people to the state contributing to a $29.1 billion annual revenue generating industry. Invasive species impact a range of human activities and health. For example:

- Kudzu, barberry, multiflora rose, mile-a-minute and Japanese knotweed can impede human use of an area and restrict access to waterways for recreation.
- Giant hogweed can cause skin inflammations on people who come into contact with it.
- Japanese barberry thickets enhance cover and habitat for mice which can bolster tick populations and instances of Lyme disease in an area.
- *L. dispar* outbreaks create a nuisance with falling caterpillars and frass in picnic, hiking, and camping areas; and defoliation can lead to tree mortality increasing risk in public areas due to hazard trees.

Aquatic invasive plants are a common impediment to state park visitors' access and satisfaction when it comes to water-based recreation. The aquatic invasive plant, hydrilla, first spotted in 2010 at Pymatuning Reservoir, now grows across hundreds of acres of the lake during the summer to form dense mats of plant material, making it extremely difficult to boat, swim, or fish. It can easily spread to other waterbodies; fragments of the plant can hitch a ride on boats and trailers. During their period of decline, the only nesting pair of Bald Eagles reported in Pennsylvania were in the Pymatuning region. Now, Bureau of State Parks closely monitors hydrilla in Pymatuning Reservoir because it is the primary host for a bacteria that has been fatal to these birds in other regions of the country. At Frances Slocum State Park, the life cycle of another invasive aquatic plant contributes to the lake's susceptibility to Harmful Algal Blooms (HABs). HABs are major health concern for the environment, animals, and humans. Unfavorable water conditions like these lead to lower visitation to State Parks. On average since 2016, the Bureau of State Parks spends approximately $145,000 treating aquatic invasive plants. Through the support of federal grants and partners the total spent at Pymatuning for hydrilla

management since 2016 is approximately $1.5 million. The Bureau of State Parks spends $950,000 annually on direct costs (not including staff time or salary) for invasive species suppression.

Impact on the Forestry Industry

As the 5th largest exporter of hardwoods in the nation, contributing over $19 billion in economic impact, Pennsylvania and the forest products industry is significantly at-risk and impacted by invasive species.

Lymantria dispar (formerly known as the gypsy moth) has gone through boom-and-bust cycles since the late-80s when the fungus started affecting the insect. Outbreaks occur every 5 to 10 years and tend to last about 3 to 5 years. In the *L. dispar* outbreak from 2005 to 2009, over 180,000 acres of oak timber was salvaged from State Forest Lands. Thousands of acres were impacted on private lands, Game Commission Lands, and federal lands. The vast amount of dead trees in northeast PA led to one of the largest forest fires we have had in PA a few years ago. In 2021, over 400,000 acres were defoliated by *L. dispar*. This is the most acreage defoliated since nearly 700,000 acres were defoliated in 2015. *L. dispar* will be one of the most significant forest insect stressors in 2021 and 2022. For 2021, a total of 147,278 acres of State Forests and 4,041 acres of State Parks were treated by helicopter and airplane, which is the largest spray program since 2008. These treatments cost DCNR just over $4.7 million. An annual budget of at least $5 million to $7.5 million is needed to manage *L. dispar* populations and help protect existing trees. There have been no General Fund budget appropriations for *L. dispar* since 2009. Due to budget minimizations, Bureau of Forestry dropped the County Cooperative program for spraying on private residential lands (where the county/landowners provide cost-share funds) because there is not enough federal funding to match the costs and the lack of General Fund support (which in the past provided 25% of the cost share for the County Cooperative program).

Emerald ash borer (EAB) decimated our ash trees; white ash, one of the most valuable hardwoods, and one of the state's top 10 most abundant tree species saw a decline of 20% since 2013.[1] The state's entire ash tree population has been reduced from 323 million to 279 million due to EAB, and without active management it is predicted EAB will decimate nearly all populations of ash trees in the state. Researchers have estimated the responses to EAB infestation including treatment, removal, and replacement of more than 17 million ash trees cost $10.7 billion.[2] Almost 6 million board feet of ash timber (nearly $1 million in value) have been harvested from state forest lands in 2015, three times as much as other years. While this may cause a short-term boom for timber and wood products industries, this resource will not be as available for future economic benefits.

Emerald ash borer also impacts communities where ash trees line public streets. Infected ash trees along streets pose a major risk to public safety. It can cost $200 per ash tree to treat with pesticides to kill EAB, or between $1000-$2000 to remove the infected tree. Entire community streets that were once tree-lined are now bare. We are likely to see more scenes like this as other invasive insects such as Asian longhorned beetle move in.

Impact on Ecosystem Services

Invasive species can dominate (and potentially destroy) entire critical habitats. Diseases, including chestnut blight and Dutch elm disease, and insect pests, such as *L. dispar* and hemlock woolly adelgid, have significantly changed forest landscapes, to the detriment of wildlife and plant communities depending on these species. Oaks continue to be at risk from *L. dispar* defoliation, while beech bark disease continues to expand

[1] Hardwoods Development Council 2020 Report (https://www.agriculture.pa.gov/Business_Industry/HardwoodDevelopmentCouncil/Documents/2020%20State%20of%20the%20Industry.pdf)

[2] U.S. Forest Service, Emerald ash borer (https://www.nrs.fs.fed.us/disturbance/invasive_species/eab/effects_impacts/cost_of_infestation/)

and threaten beech populations. Threats to these species are especially important because they are the largest remaining sources of hard mast for wildlife.

Eastern hemlock, the Commonwealth's official state tree is under attack by the hemlock woolly adelgid and the elongate hemlock scale. Hemlock is a keystone species that creates a unique habitat that provides us with exceptional streams and waterways. This is one of the reasons why Pennsylvania has exceptional trout fishing. Loss of hemlock trees changes the stream chemistry, increases water temperature and increases light. The DCNR has been treating hemlocks since 2003 in critical habitats to keep trees alive.

Invasive plants negatively affect native plant communities in a variety of ways, including alterations to nutrient cycling, hydrology, natural fire regimes, light levels, regeneration of native tree species and understory species, and physical habitat structure. Especially critical is the direct competition with native plants for available resources, such as space, nutrients, and sunlight. Aquatic invasive species increase the potential for choked waterways, fish kills, toxic water, and harmful algae blooms.

There are concerns about native plant communities' abilities to adapt or remain resilient to additional threats. Invasive species will further reduce the resilience of native species and habitats to the impacts of climate change and may reduce diversity or contribute to species extirpation. The functionality and integrity of our native plant communities, forests, and waterways help mitigate climate change. Forests absorb and sequester a significant portion of the U.S carbon emissions, but that capability is influenced by proper land management activities, forest health, and tree productivity.

BEFORE Mills Property, Willow Street, Lancaster County, PA
2011, trees toppled by invasive vines in 3 acre area. Can you find the overwhelmed woman?

Conclusion

AFTER Mills Property, Willow Street, Lancaster County, PA 2015, after invasive removal, planting forbs and shrubs for habitat. Can you spot the happy woman?

As discussed, invasive species harm Pennsylvania and Pennsylvanians in a number of ways, negatively impacting our economy, our environment, and even our health. We need to rethink how we manage and invest in the control of invasive species. We need to build on winning strategies, through collaboration and innovation, to optimize our investments and increase opportunities for success.

A comprehensive and collective approach across state, county, municipal, and private is necessary for control and eradication of invasive species. Private landowners and local governments might not have the resources needed to effectively manage invasive species let alone repair the damage already caused by existing invasive species. Partnerships for Regional Invasive Species Management (PRISM) can help lead a coordinated effort and address gaps at the local and regional scale. New York state has been utilizing the PRISM model – a public-private partnership that has a proven track record for helping prevent and minimize the harm caused by invasive species. Pennsylvania can build a similar program but initial and dedicated funding is needed to establish the framework and bring the necessary partners to the table. PRISMs would allow for the necessary resources and coordination to swiftly contain and control invasive species as well as help restore ecosystems that have been decimated by invasive species.

Thank you for the opportunity to share about the impact of invasive species on DCNR lands.

Written Testimony to The Center for Rural Pennsylvania
Public Hearing on Invasive Species in Rural Pennsylvania
August 24, 2021

Submitted by: The Pennsylvania Fish and Boat Commission

The Pennsylvania Fish and Boat Commission (Commission) is the state natural resource agency responsible for managing fish, reptiles, amphibians, and other aquatic organisms inhabiting the approximately 85,000 miles of streams and 99,000 acres of lakes within the Commonwealth. The agency's mission is to protect, conserve, and enhance these resources and to provide fishing and boating opportunities. The Commission strives to fulfill this mission on behalf of the 3 million anglers and boaters who enjoy these recreational activities, and for the benefit of the Commonwealth's freshwater ecosystems.

Central to the Commission's mission is addressing the threats of aquatic invasive species. Invasive species are non-native to their area of introduction and can often spread and establish viable populations in their new environment. Invasive species can also harm our native ecology, the economy, and human health. In Pennsylvania, aquatic invasive species inhabit and cause harm in our freshwater ecosystems. Pennsylvania has nearly 200 documented aquatic invasive species, of which approximately 60 species are considered a major threat to the Commonwealth's native resources. Aquatic invasive species, including fish, invertebrates, reptiles, and plants, have been documented throughout much of the Commonwealth, with most infestations associated with Lake Erie and urban areas in southeast and southwest Pennsylvania. Some prominent examples of aquatic species present in the Commonwealth include the Round Goby, Northern Snakehead, Flathead Catfish, Zebra and Quagga Mussels, Rusty Crayfish, Red Swamp Crayfish, and aquatic plants such as Hydrilla and European Water Chestnut.

By increasing the focus on invasive species in recent years, the agency has been working to identify current and anticipated aquatic invasive species in Pennsylvania, their capacity for expansion, and the resultant impacts on anglers, boaters, and native ecosystems, so that the Commission can develop potential measures to address these threats. Avoiding establishment and spread of aquatic invasive species can be particularly challenging, in part, due to natural and human-sourced mechanisms.

Pennsylvania is encompassed by three major drainage basins (Ohio, Susquehanna, Delaware), international ports in Philadelphia and Erie, and is at the crossroads of many transportation systems, all of which provide pathways for movement. Many aquatic invasive species were first transported to the U.S. through commercial markets such as aquaculture or the aquarium pet trade, or in Great Lakes shipping via ballast water. Subsequent aquatic invasive species have spread among waterbodies within or among states by transfer (known as "hitchhiking") from boats or fishing equipment. Spread may also occur through the sale or collection as fishing bait and subsequent release by anglers into new waterbodies, aquarium pet release, escape from aquaculture facilities, or illicit stocking.

Notably, aquatic invasive species are not exclusively from other countries or regions. In some cases, they may be native to a part of the Commonwealth but can cause substantial damage if introduced into a drainage where they do not naturally occur. An example of an aquatic invasive species that is native to only a portion of Pennsylvania is the Flathead Catfish, a large fish with a current state record of over 56 pounds. Flathead Catfish are native to western Pennsylvania in the Ohio River basin but have been introduced into the Delaware and Susquehanna River basins to the east. This voracious predator of other fishes poses a threat to existing sport fisheries where it has been introduced outside of its native range.

Arguably among the most damaging aquatic invasive species in the U.S. are the Zebra Mussel and the closely related Quagga Mussel, collectively known as Dreissenid mussels. In Pennsylvania, Dreissenid mussels were initially found in Lake Erie, but have since spread to other waters of the Commonwealth such as Raystown Lake, Huntingdon County, which supports many popular sport fisheries. By attaching to native mussels, and through expansive and rapid reproduction, these small shellfish can overwhelm basic functions of native mussels. Consequently, Dreissenid mussels are of major concern to the 11 native mussel species listed as

threatened or endangered here in Pennsylvania. Beyond impacts to native mussels, the non-native, invasive Dreissenid mussels attach to and encrust hard surfaces; clog industrial and residential freshwater intake pipes; damage docks, boat hulls and motors; and ruin beaches with the washup of millions of hard, sharp shells. Furthermore, Dreissenid mussels can consume over 90% of plankton in aquatic ecosystems[1], almost eliminating the base of the food web. The consequences of this fundamental impact can contribute to declines of small fishes and invertebrates, and lead to a loss of quality and quantity of sportfish that support recreational and commercial fisheries.

Beyond invasive aquatic vertebrates and invertebrates, threats to the Commonwealth's aquatic ecosystems also include invasive aquatic vegetation such as Hydrilla, which can grow in dense submerged mats several feet high. Hydrilla, often referred to as "the perfect weed," grows quickly and poses a high risk of spread to new waterbodies. One small fragment of this plant transported on a boat or trailer can quickly establish a new population in another waterbody. Hydrilla and similar aquatic invasive vegetation affect recreational fishing and boating by growing in thick mats which overwhelm shallow areas in ponds, lakes, and slow-moving rivers, blocking formerly navigable waters. Furthermore, these dense mats of invasive aquatic vegetation can also harm native species of conservation concern. Hydrilla is found in several major waterbodies in the Commonwealth, including Raystown Lake and Pymatuning Reservoir. Though not currently known to occur in Lake Erie, if introduced, it would pose a major threat to aquatic resources and negatively impact recreational and commercial fisheries.

With their motility and capacity to easily gain footholds in new areas, there is concern for aquatic invasive species not yet established in Pennsylvania, such as the Bighead Carp and Silver Carp, collectively referred to as Asian carp. The current upriver advancement of these fishes in the Ohio River basin is of particular concern to Pennsylvania. These large fishes feed primarily on plankton, the base of many aquatic food webs. By taking this resource from smaller fishes and invertebrates, they may completely alter aquatic ecosystems. In parts of the Mississippi River Basin where Bighead and Silver Carp have become established, studies indicate these fishes can comprise over 90% of the fish biomass of these ecosystems[2], substantially impacting recreational and commercial fisheries. In addition to ecosystem effects, these species pose a

substantial risk to human health given their propensity to jump into boats, striking occupants and, in some cases, even knocking them unconscious.

In 2005, the combined damages and costs of control for both aquatic and terrestrial invasive species in the U.S. was estimated at over $120 billion.[3] For Zebra Mussels alone, a 2005 study estimated the annual economic damages and control cost at over $5 billion nationally.[4] In addition to the Ohio River, the Great Lakes offer a pathway for Bighead and Silver Carp to reach Pennsylvania, and preventing their expansion to the Great Lakes from Illinois through an array of nonstructural barriers was calculated at over $850 million dollars.[5] No comprehensive estimates are available on total damages and effective control costs for aquatic invasive species in Pennsylvania, yet given these examples, the price tag is likely to be extremely high.

Given the increasing threat of aquatic invasive species throughout the Commonwealth, the Commission has sharpened its focus on detection, containment, and education. In 2020, the Commission hired a dedicated aquatic invasive species coordinator to develop and initiate programs within the agency and with external partners for spread prevention, management, detection, inventory, and assessment of aquatic invasive species. Additionally, the coordinator is responsible for implementation of Pennsylvania's Aquatic Invasive Species Management Plan and developing individual control plans for high priority species. The coordinator regularly participates in state and regional work groups and panels focused on invasive species issues such as the Pennsylvania Governor's Invasive Species Council, the Mid-Atlantic Panel on Aquatic Invasive Species, and the Pennsylvania Controlled and Noxious Weed Committee.

In the field, the Commission is actively posting aquatic invasive species advisory signage at boat launches and fishing access points and is planning for boat cleaning areas at launches in 15 high-risk locations. This is coupled with a robust public outreach and education effort, in partnership with Pennsylvania Sea Grant and other conservation groups, utilizing the Commission's website and social media accounts. Additionally, the Commission is revising regulations contained in Title 58 to further prevent the introduction and spread of aquatic invasive species by implementing mandatory boat cleaning requirements, fish stocking authorizations, and restrictions on the use and disposal of baitfish in Commonwealth waters.

Despite these targeted efforts, aquatic invasive species continue to threaten and degrade the integrity of Pennsylvania's freshwater ecosystems, our recreational fisheries and boating opportunities, and species of conservation concern. Comprehensive strategies for these pervasive, long-term threats to the Commonwealth's aquatic resources must be identified, and this will take a coordinated, interagency approach.

A major tool in the fight against the spread of invasive species is early detection. Early detection consists of regular surveys with the purpose to identify invasive species when populations are small and there is potential for eradication. By comparison, major infestations require substantial resources to manage, and may be too established to eradicate. Despite the need for critical, proactive, cost-effective measures such as early detection, original populations of aquatic invasive species are often not detected initially and therefore unable to be managed in early stages due to limited resources by state agencies and other stakeholders.

State agencies and conservation partners commonly note the lack of dedicated funding at the state level as a major barrier to effective control of invasive species in the Commonwealth. There is limited internal funding for staff and other resources for prevention, detection, and control of invasive species. Therefore, agencies and partner organizations typically rely on external grants as a primary funding source. These grants are limited and do not provide for long-term comprehensive invasive species control. A recent survey of state agency staff and partner organizations by the Pennsylvania Governor's Invasive Species Council (PISC) inquired about major impediments to managing invasive species in their area. The common theme among respondents was a lack of funding and staff to effectively address invasive species issues statewide. The Commission agrees with PISC, our fellow Commonwealth agencies, and external partners that dedicate, state-level funding is critical for effective invasive species management.

The Commission supports PISC's proposal to devote this funding towards building Partnerships for Regional Invasive Species Management (PRISM), a regional based management strategy that has shown proven results in our neighboring state of New York. Establishing a fully staffed PRISM network, focused on regional invasive species management, would provide essential resources to state agencies and other stakeholders to effectively control invasive species within the Commonwealth. The agency is committed to working with the members of the Center

for Rural Pennsylvania, the General Assembly, and other partners to address the threat of aquatic invasive species to Pennsylvania's anglers, boaters, and natural resources.

References:

[1]Holland, R.E. 1993. Changes in planktonic diatoms and water transparency in Hatchery Bay, Bass Island Area, Western Lake Erie since the establishment of the zebra mussel. Journal of Great Lakes Research. 19:617-624.

[2]MICRA. 2002. Asian carp threat to the Great Lakes. River Crossings: The Newsletter of the Mississippi Interstate Cooperative Resource Association. 11:1-2.

[3]Pinmentel, D., R. Zuniga, and D. Morrison. 2005. Update on the environmental and economic costs associated with alien-invasive species in the United States. Ecological Economics. 52:273-288.

[4]Lovelle, S.J. and S.F. Stone. 2005. The Economic Impacts of Aquatic Invasive Species: A Review of the Literature. U.S. Environmental Protection Agency, Working Paper # 05-02.

[5]USACE. 2018. The Great Lakes and Mississippi River Interbasin Study: Brandon Road Final Integrated Feasibility Study and Environmental Impact Statement. Will County, Illinois. U.S. Army Corps of Engineers, Rock Island and Chicago Districts, Rock Island and Chicago, Illinois.

Dr. Jayson K. Harper, Testimony on Invasive Species in Rural Pennsylvania, August 24, 2021

Good morning, I am Dr. Jayson Harper, Professor of Agricultural Economics and Director of the Penn State Fruit Research and Extension Center in Adams County. For more than twenty years I have been involved in evaluating the economic impacts of invasive species affecting agriculture. My introduction to this issue began with the discovery of plum pox virus in Adams County in 1999. Since then, I've done considerable work on brown marmorated stink bug and spotted lanternfly. Although Pennsylvania faces challenges from a multitude of invasive species including insects, weeds, and aquatic pests, I will be limiting my remarks to my experiences with these three invasive species in agriculture.

The negative impacts of invasive species have been increasingly recognized as globalization increases the pathways and speed of these invasions. Economists use various techniques to measure the costs of invasive species, including valuing commercial losses and estimating "non-market" effects (in some cases, economic benefits can arise from introduction of non-native species). Controlling invasive species has become increasingly important for society and eradication is often the first thought when discussing them. Unfortunately, eradication efforts often incur high costs and may be met with social opposition. When control efforts are unsuccessful or when damages associated with the invasion are low relative to the costs of control, then it may be socially desirable to abandon eradication efforts and instead concentrate on managing the resulting damage.

The largest eradication effort in U.S. history has been for the boll weevil. First observed in Texas in the late 1890's, boll weevils had spread throughout the South by the 1920's. A concerted effort to eliminate it began in the late 1950's and boll weevil was declared to be eradicated in all cotton growing states except Texas in 2009. It was a substantial long-term effort requiring scientific advances, government support, and stakeholder commitment. Boll weevil caused massive economic losses and was a major cause of the social dislocation resulting in the Great Migration. It also led to crop diversification with the introduction of peanuts and soybeans into Southern crop mixes.

Once established, invasive species are extremely difficult to eradicate especially in complex environments like that in Pennsylvania. The successful eradication of plum pox virus was facilitated by several factors: 1) a small group of motivated stakeholders (affected fruit growers), 2) an introduced species that spread slowly and affected only a single genus of plants (*Prunus*), 3) government support for

indemnifying growers for the removal of infected orchards, 4) effective quarantine efforts, and 5) a commitment to long-term monitoring. I believe that providing indemnification for the growers by the Commonwealth of Pennsylvania and the Federal government was the critical step to making these efforts effective. Politically there was support nationally to contain plum pox and not allow it to spread to other places with valuable *Prunus* species (for example, almonds in California). In October 2009, after ten years and the destruction of over 1,500 acres of fruit trees, Pennsylvania was declared to be free of plum pox virus and the moratorium on replanting *Prunus* was lifted.

In the case of the spotted lanternfly, efforts to contain the invasive species is complicated by its ability to spread relatively quickly and its ability to survive in a varied landscape. Spotted lanternfly does not appear to have much impact on agronomic crops like corn and soybeans, but has a large impact on certain specialty crops (ie., grapes) and high-value tree species (ie. black walnut). The high cost of monitoring and sanitation required by quarantine efforts have fallen heavily on nursery growers and the timber industry. Indemnification for growers effected by spotted lanternfly would no doubt be appreciated, but unlike with plum pox virus, would not be part of the long-term control effort. Spotted lanternfly is more analogous to the brown marmorated stink bug in many ways. Both spread relatively quickly, survive in a varied landscape (including suburban and urban environments), and attack a variety of crops. The major difference is that the brown marmorated stink bug feeds directly on crops and causes readily apparent economic damage, while the spotted lanternfly causes damage that weakens and kills the plants gradually. Although the brown marmorated stink bug has now spread widely in the U.S., it has gone from a being a pest of major economic impact to one that can now be managed effectively. Like the boll weevil, it required a long-term research and extension effort to get to this point. Unfortunately for pests like the brown marmorated stink bug and the spotted lanternfly, eradication is probably not feasible at this point. However, with the support of the Commonwealth of Pennsylvania and the Federal government, I am convinced that our on-going research and extension efforts will result in developing the management tools our citizens need to manage the spotted lanternfly effectively and economically.

Center for Rural Pennsylvania Testimony on Invasive Species from:

Thomas C. Kase, Resource Manager

Collins Pine Company, Kane Hardwood Division

August 24, 2021

Good morning Honorable Chairman Yaw and all the Honorable Committee Members!

I am here to present to you the perspective and costs of invasive species to the forest products industry in Pennsylvania. Collins is a family owned business that has been in business in Pennsylvania since 1855. We own and manage 118,000 acres in seven counties in the northwestern part of the state. We have been certified by the Forest Stewardship Council (FSC) since 1995, ensuring that we are managing our forest sustainably.

I have been working as a forester in northwestern Pennsylvania for 32 years and have witnessed the negative impacts of invasive species both firsthand and the aftermath of huge forest salvage efforts. As my career was starting, there was a massive insect outbreak of Gypsy Moth in the forest. Private forests, state lands and federal lands were all impacted. Forest owners allocated resources to conduct an aerial spray program and/or timber salvage programs to capture the value of dead and dying trees before they became worthless. Just on the Collins Pennsylvania Forest (CPF) alone about 2,300 acres were salvaged as a stand replacing event. Not only was this timber harvested before being fully mature, but there was also the opportunity cost of what else Collins did not accomplish as part of their management plan for that 3 year salvage period. Gypsy Moth outbreaks have occurred periodically since the 1980's, including this year in our area. Spray programs have reappeared on some ownerships this year, and may expand to more next year. Aerial application of controls can cost as much as $30/acre to protect the forest resource.

Even as bad as Gypsy Moth has been, its impact is small in comparison to Emerald Ash Borer (EAB). Like Gypsy Moth, this invasive came to us from Asia. Around the turn of the century, it was first discovered in Michigan not far from the port of Detroit. It has spread through most of the range of ash trees, and an infestation is eventually fatal to the trees. We first discovered it on the CPF in 2013 and began an aggressive pre-salvage program, knowing that the trees would die and become un-merchantable. Collins has harvested over 25 million board feet of ash to prevent it from going to waste. Ash is being eliminated as a timber species, not just on our forest but across the state, and across the entire range of ash trees. Losing ash is just another reduction to the biodiversity of our forests.

Hemlock Wooly Adelgid (HWA) is another Asian invader to our forests. As the name implies, its host is our state tree, the Eastern Hemlock. Hemlock is not economically the most important species in our forest, but it is one of the most ecologically important trees for our riparian forest. The year round stream cover provided by hemlocks is critically important to maintaining cold, clean water.

Beech Bark Disease (BBD) is a disease/fungi complex that is caused by the invasive beech scale insect. This invasive problem began in Massachusetts in the 1920's and has now moved through the forests of western Pennsylvania. Beech, like hemlock, does not have a great timber value, but it does have a huge ecological value providing food and shelter for many species of forest dwellers.

Most recently, Spotted Lanternfly is our newest insect threat. Thankfully, we have not found this invasive insect on our forest yet, but it is right at our doorstep in Cameron County. This insect will have devastating impacts on our vineyards and orchards, but could also cause huge economic losses to our forest products industry.

Not only are we challenged by this handful of invasive insects, we also have multiple invasive plants that threaten sustainable forest management. Glossy buckthorn is one of these plants that can take over the growing space on the forest floor and prevent desirable native tree seedling development and growth. Pulling, cutting and herbiciding the plants all have significant costs ($50-$200/acre), and these treatments may be needed multiple times on the same site.

Japanese and Giant Knotweed are plants that can completely occupy a site and choke out all the native vegetation. Since they do well in wet soils they thrive along our stream corridors and in our wet road ditches. Penn DOT and municipalities are the biggest contributors to the spread of this invasive plant that is very difficult to eradicate once it is established. Multiple years of chopping down and herbiciding may finally kill it off.

Japanese Stiltgrass is another invasive plant that is a costly threat to sustainable forest management. Like knotweed, it is common along our roads and is easily spread by mowing and ditch cleaning efforts. It can grow into such thick mats of tall grass that it prevents desirable native plants from geminating and becoming established on the forest floor. One herbicide application rarely eliminates the population completely, so at least one cleanup effort the next year is needed, if not two or more. The initial herbicide treatment may cost as much as $150-$200/acre.

Lastly, I will speak about Goatsrue, a USDA noxious plant that is growing within our forest. This plant is poisonous to livestock, and if you have it on your property you must eradicate it from the site. The biggest challenge with Goatsrue is the seed can remain viable in the soil for up to 26 years. So if the plant has ever produced seeds, long term monitoring efforts are required to ensure the site is not reestablished from the seed bank in the soil.

So the common theme to all these insects and plants is prevention. If Pennsylvania can prevent additional invasive species from becoming established, that is a key place to allocate resources. The control and/or eradication of existing invasive species are also important to the forest ecosystems of our Commonwealth.

So a huge part of prevention and control efforts is education. State and local municipalities, natural resource professionals, and the general public need to be able to identify these invasive species to successfully implement an Early Detection, Rapid Response (EDRR) program.

Ultimately, the best way to prevent the problems and costs of invasive species is to stop them before they are released into our natural environment. This means we need to have a more thorough inspection protocol at our points of entry, specifically at the ports. Inspections of items coming into our country from other parts of the world need to be more stringent. It is not a matter of if there is a next threat, but when is the next threat coming to Pennsylvania and what species from what part of the world. I can only imagine the trees, work hours and dollars saved if some inspector would have discovered and prevented Emerald Ash Borer at the port a couple decades ago! Our Collins Pennsylvania Forest would be one species richer and 25 million board feet stronger!

I thank you for this opportunity to address this Committee, and appreciate your attention to this issue.

Crawford County Conservation District

Impact of Aquatic Invasive Species on Rural Pennsylvania

Testimony before the

Center for Rural Pennsylvania

Submitted by:

Brian S. Pilarcik,
Crawford County Conservation District Watershed Specialist
Pennsylvania Lake Management Society Western Region Director

21742 German Road
Meadville, Pa 16335
814/763-5269
www.crawfordconservation.org

Presented on:

August 24, 2021

Thank you for providing the opportunity to discuss the impacts of aquatic invasive species (AIS) on rural Pennsylvania. My name is Brian Pilarcik, I have served as Watershed Specialist at the Crawford County Conservation District since 2000, and have served on the board of directors of the Pennsylvania Lake Management Society since 2001 as both Western Region Director and President. As such I have had the opportunity to witness firsthand some of the challenges AIS pose to rural Pennsylvania as well as some of the ways they have been addressed. I would like to focus on one particular project that I believe embodies the struggle happening statewide to combat both environmental and economic impacts of AIS.

Pymatuning Reservoir Hydrilla Infestation Response:

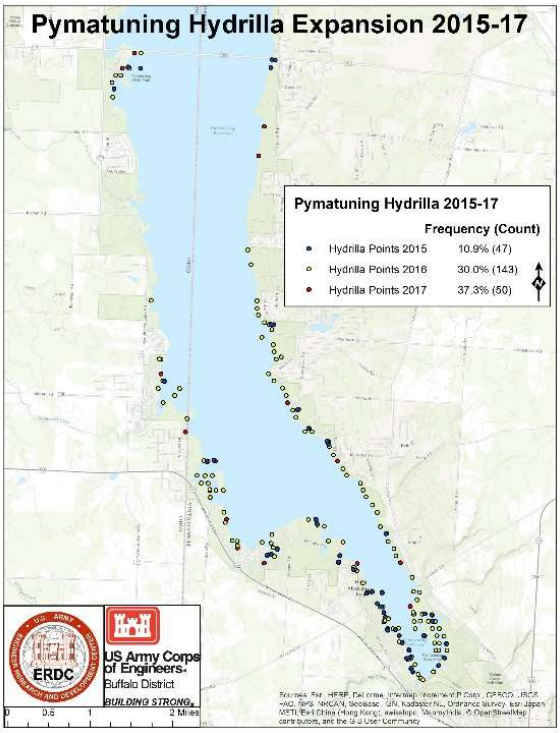
- Pymatuning Reservoir is a 17,000-acre multi-use reservoir located on the border of northeast Ohio and northwest Pennsylvania.
- 3.1 million visitors are estimated to annually visit Pymatuning State Park. The Park is operated by **Pennsylvania Department of Conservation and Natural Resources.** A sister Pymatuning State Park on the western side of the reservoir is operated by the Ohio Department of Natural Resources.
- Over 2,000+ acres of the shallow northwest end of the lake form the Pymatuning Wildlife Management Area, also known as Sanctuary Lake. The area is managed by the **Pennsylvania Game Commission,** and is a major resting location for migrating waterfowl as well as a major bird nesting area.
- The reservoir is well known regionally and nationally for its excellent bass, muskie, walleye, and crappie fishery. Sanctuary Lake is also the site of one of the largest warm water fish hatcheries in the world, the Linesville State Fish Hatchery operated by the **Pennsylvania Fish and Boat Commission**.

In 2010 a routine aquatic vegetation survey was conducted on the south end of Pymatuning Reservoir by the Crawford County Conservation District and Pennsylvania Department of Environmental Protection. During that survey a small population of hydrilla was found near the dam. Hydrilla is widely regarded as the **"almost perfect aquatic weed"** by aquatic plant managers for its ability to rapidly outcompete native aquatic plants and form a dense "shag carpet" effect from the bottom to surface of a waterbody as seen in the picture to the right of mooring area B on Pymatuning Reservoir.

In 2010 hydrilla was just moving into the northeast United States and was not well known in Pennsylvania aquatic plant management circles. Also, in 2010 aquatic plant management by Pennsylvania state agencies was not widely practiced and the potential impact of the

infestation was greatly underestimated. As such, hydrilla in Pymatuning Reservoir was not addressed immediately. The Crawford County Conservation District spent the next 4 years lobbying for a renewed interest and response to the infestation while it was in its early stages and still manageable.

- In 2014 the Crawford County Conservation District, with the permission of DCNR Pymatuning State Park organized a stakeholder meeting to discuss possible response to the infestation.



- As a result of the 2014 meeting, in 2015 the Crawford County Conservation District was able to secure the assistance of the US Army Corps of Engineers ERDC and University of Florida to help coordinate and conduct a reservoir wide survey.

- The survey utilized 6 boat crews from 8 separate County, State (PA/OH), and Federal agencies to visit 1915 vegetation samples points on the reservoir.

- In 2015 the survey identified 10.9% of the sample points contained hydrilla. That frequency increased to 30% in 2016 and 37.3% in 2017.

- In 2016 hydrilla was causing use impairments by socking boats in mooring areas on the south end of the reservoir.

- In 2016 the District partnered with Pymatuning State Park to secure grant funding to start a pilot Launch Steward program. The funding also paid for invasive species disposal stations and 3 wash stations. Since 2016 the pilot program has been expanded to 9 parks statewide.

- In the fall of 2018 a large mat of hydrilla broke away and clogged the gates of the dam. Pymatuning State Park had to hire divers to clear the gates so they could maintain their mandate to manage water levels for the Shenango River.

- Since 2018 the partners in the Pymatuning Hydrilla Response project have been able to secure piecemeal funding to ramp up hydrilla treatment to ~750ac annually. The result has been a drastic decrease in use impairments at the Reservoir.

It is now understood that hydrilla posed then, and still poses a strong risk of severely compromising the ecology and economic value of Pymatuning Reservoir. The lake's shallow depths (average depth = 15 feet) make a large fraction of the lake subject to risk of invasion. **If no action were taken, a conservative estimate of dense infestation up to a depth of 10 feet across the entire lake indicates that over 6,500 acres of the lake's reported total 17,088 acres is at strong risk of hydrilla invasion, including <u>all</u> of Sanctuary Lake.** If the infestation should ever get to that high density, it should also be recognized that a lake-wide infestation of hydrilla would represent a major challenge to the uses and ecology of the lake and require an exponential increase in cost of management. **An initial cost projection**

for a single cycle of managing an infestation up 6,500 acres in size is between $2.2 - $2.9 million *annually*.

As a serious threat to one of Pennsylvania's top fisheries and tourist destinations this project also had regional implications. On a statewide and federal scale, the Pymatuning hydrilla infestation could have been a perfect springboard for spread to other Pennsylvania lakes as well as neighboring states and the Great Lakes. On a more local scale the economic impact of a severely degraded reservoir could have been severe.

- With over 3.1 million visitors per year the potential to spread hydrilla to neighboring waters was and is a very real threat. Data from Pymatuning launch steward surveys show travel to and from Pymatuning from as far north as Canada and south to Louisiana.
- An unchecked hydrilla population in Pymatuning Reservoir has the potential for severe recreation related economic impact to Crawford County, PA as well as Ashtabula County, OH.
    - A 2010 Penn State Economic Impact Study: *The Economic Significance and Impact of Pennsylvania State Parks* found the following:
        - *"For Pymatuning State Park, visitors (both local and non-local) spent an estimated $77,175,000 on their trips to this park in 2008."*
        - *"This spending resulted in $68,586,000 in sales, contributing to 1,177 jobs with $23,360,000 in labor income, and $36,189,000 in value added"*
        - *"Pymatuning State Park hosted 3,004,508 visitors, spending $77 million."*
        - *"The direct contribution to the local economy was 1,004 jobs and 1,177 jobs including secondary effects."*
        - *"Omitting spending by visitors from the local area, the impact of visitors from outside the local region was 633 direct jobs and 747 jobs including secondary effects."*

Because of early action taken locally, severe impacts to the economy and ecological integrity of Pymatuning Reservoir have not yet happened.

The Crawford County Conservation District was in a unique position to recognize the threat and act early to essentially "hold the line" while other local and regional stakeholders mobilized and pulled in needed pieces to form a coalition that is still active and thriving in 2021.

Since that initial meeting coordinated by the Crawford County Conservation District in 2014:

- DCNR was able to fill a vacant statewide Aquatic Resource Manager position (Nick Decker) that is essential to the success of the response.
- Pymatuning State Park was able to fill a vacant Assistant Manager position with one of DCNR's best invasive species management professionals (Stacie Hall).

- Army Corps of Engineers has continued to provide assistance with a now annual multi agency vegetation survey, as well as support with management strategy development.
- Ohio Department of Natural Resources has contracted with Cleveland Metroparks to provide the assistance of Ohio's most experienced hydrilla manager to the project (Mark Warman)
- Pennsylvania SeaGrant (Sarah Whitney and Sara Stahlman) has stepped in to provide assistance with outreach and grant writing.
- The Crawford County Conservation District continues to provide critical assistance to all phases of the hydrilla response.

This coalition of stakeholders has spent the last 7 years pulling in piecemeal funding and providing outreach and education. Although largely unseen by the public, this action has likely saved the Commonwealth significant resources and funding had the project been delayed further**.** However, it should also be noted if dedicated invasive species resources had been available in 2010 those savings would have surely been much greater.

The lessons learned from this ongoing project are now proving valuable to new infestation responses around the Commonwealth:

- **Rapid action on new infestations of aquatic invasive species is critical to preventing economic and ecological harm.**
- **Local, connected entities and coalitions can be more effective and efficient at coordinating an initial response than larger entities with less flexibility.**
- **A dedicated funding source in 2010 would have allowed the local coalition to rapidly act rather than spend time pulling in funding piece by piece allowing the project to be more cost effective and efficient.**
- **A response effort is only as good as the people involved. Pymatuning Reservoir was lucky to have the specific resource personnel fall into place at the right time to make the response effective. The *right* people, not just people are needed to ensure success.**
- **While currently effective, if the Pymatuning Hydrilla Response runs out of funding options we could easily lose the ground we have won over the past 7 years.**

In conclusion, local partnerships such as the informal Pymatuning hydrilla project or more formally groups like the Allegheny Plateau Invasive Plant Management Area that Jody Groshek from McKean County Conservation District will describe in her testimony could act more quickly and efficiently as future invasive species infestations occur. These examples of invasive species success in Pennsylvania are currently more the exception than the rule, however with more formal and dedicated support they can act as a model for increased future success.

Thank you for the opportunity to testify about the impacts of aquatic invasive species (AIS) on rural Pennsylvania. I would be happy to answer any questions.

Testimony Prepared by Dr. Sara Grove and Dr. Michael Moltz
Department of Political Science, Shippensburg University

As a global leader in agriculture, food and lumber production, Pennsylvania's economy depends on having environmental conditions that promote these industries. Furthermore, the Commonwealth's extensive network of rivers serves both commercial and recreational interests. Invasive species jeopardize not only land and water, but furthermore threaten the future well-being of the Commonwealth.

In 2018, The Center for Rural Pennsylvania issued a Request for Proposals (RFP) to examine how governments address the threats from invasive species through enactment of statutes and implementation of regulations. My co-author, Dr. Michael Moltz, and I received funding through the Center's grant program to answer this question.

Our research began with compiling a database of existing statutes and regulations through December 2018. Our database contains references to 493 statutes and regulations from across the United States. California, New York, Maine, Washington, and Wisconsin have the highest number of statutes and regulations.

Next, we classified governmental efforts according to their goals. A statute or regulation that worked to avert the introduction of new invasive species into a state was labelled as "Prevention". "Control" was the designation for policies directed toward halting or stopping the spread of existing invasive species, while "Eradication" was the classification for governmental efforts to eliminate existing invasive species.

Approximately fifty percent (49.8%) of the efforts to address invasive species involved control, often of specific insects, plants, or aquatic life. Nine percent of the statutes and regulations focused on prevention, while only four percent emphasized eradication. Nearly one out of every five policies had mixed goals, typically, control and prevention.

As of the end of 2018, Pennsylvania had eight statutory provisions focusing on invasive species, with the most recent being the Controlled Plant and Noxious Weed Act of 2017.

Later in this panel, you will hear from Josh Thiel of the New York Department of Environmental Conservation about his agency's efforts. Dr. Moltz and I wanted to take this opportunity to highlight another neighboring state, Ohio. As of the publication of report, Ohio has seventeen (17) regulations, three of which emphasize prevention, four that emphasize control, and seven that address both prevention and control; the remaining regulations addressed administrative structures. None of the Ohio statutes or regulations emphasized eradication. These regulations target noxious weeds and pests.

In addition to the database, we completed four case studies related to the identification, suppression, and eradication of invasive species. Two of the case studies focused on gypsy moths and invasive weeds based upon interests expressed by the Governor's Invasive Species Council. We chose to examine invasive species pathways and rapid response teams for our third and fourth case studies based upon a review of the literature on prevention, as well as U.S. Department of Agriculture data and reports. The Center for Rural Pennsylvania's website contains a copy of our full report (2019), including these case studies.

Our analysis of the statutory and regulatory efforts to control invasive species shows that there is no uniform approach to addressing the issues. However, governments' efforts to control invasive species can be characterized as slow and reactionary. Congress has paid sporadic attention to these issues, leaving most efforts to regulatory agencies (typically, the U.S. Department of Agriculture and the U.S. Department of the Interior). Once invasive species are detected, states' efforts focus on control with less effort dedicated to prevention and little directed toward eradication.

Pennsylvania's efforts fit into this pattern with no dedicated funding streams for addressing outbreaks of invasive species at the time of our report. Rather when threats arise from invasive species, departments use general fund monies or rely on grants from the federal government until the next budget cycle.

Our policy case studies show the benefits of inter-agency cooperation and interstate coordination. Management expertise and funding are critical because invasive species do not respect agency or state boundaries. Effective efforts to control and prevent the spread of invasive species require a holistic approach.

Upon reviewing reports from federal and state agencies involved in controlling the spread of invasive species, a common theme emerges – funding is inadequate. The national government provides funding primarily through programs under the U.S. Department of Agriculture. Funding is typically associated with the Farm Bill and directly linked to invasive species that threaten agriculture, while funding to address invasive aquatic species comes from the U.S. Fish and Wildlife Service.

Furthermore, federal agency efforts rely on cooperation with their state counterparts. States use a variety of funding mechanisms to support their efforts to detect, suppress, and eradicate invasive species. Our report details innovative funding schemes from eleven states, including Maryland and New York.

Based upon our research, we identified five policy considerations. We are pleased to report that one of our recommendations has been acted upon – a statewide invasive species coordinator, Kristopher Abell. The four remaining policy considerations include:

- Promoting inter-agency cooperation to solve problems with noxious weeds along state highways;

- Developing regulations for mandatory inspection of watercraft and a timetable for implementation, including a fee structure and personnel needs and costs;
- Developing a funding mechanism to support early detection and rapid response, as well as providing agencies with sufficient discretion in accessing the funds; and
- Consulting with the Governor's Office of General Counsel regarding the development of policies related to private property access to promote early detection and rapid responses to address threats from invasive species.

Remarks to the Invasive Species in Rural Pennsylvania Public Hearing
Sarah N. Whitney
Director
Pennsylvania Sea Grant College Program
Penn State University
August 24, 2021

Chairman Yaw, and members of the committee, thank you for the opportunity to appear before you today to discuss the impact of invasive species and potential policy solutions.

Pennsylvania Sea Grant Background:
For more than 20 years, Pennsylvania Sea Grant has supported ocean and Great Lakes watersheds and communities through research, extension, and education programming.

Pennsylvania Sea Grant is one of 34 programs of the National Sea Grant College Program, whose mission is to enhance the practical use and conservation of natural resources in order to create a sustainable economy and environment.

The Pennsylvania Sea Grant team of scientists, educators, and communicators builds bridges between science and people to promote the importance of maintaining sustainable coastal and river ecosystems for the health of local communities and families and to ensure a thriving economy. Pennsylvania Sea Grant's work is supported by the National Oceanic and Atmospheric Administration (NOAA), Penn State University, and through federal, state, and local funding.

Pennsylvania Sea Grant Experience with Invasive Species:
Pennsylvania Sea Grant has worked on invasive species issues, and in particular aquatic invasive species – also referred to as (AIS) since it began in 1998. These efforts include sharing information with boaters and anglers about the steps they can take to prevent the spread of aquatic invasive species, developing resources to assist field staff with identifying and detecting AIS, planning and training conservation professionals to conduct AIS rapid response activities, and coordinating funding and logistics to control invasive species. The vast majority of these efforts have been accomplished in collaboration with the agencies and organizations who are testifying today.

Examples of our work to reduce the impact of invasive species in Pennsylvania include,

1) Develop and distribute educational materials and resources that promote national guidance to prevent the spread of aquatic invasive species.
2) Actively participate in state and regional events to promote awareness across multiple vectors and audiences, such as boaters, anglers, water gardeners, and aquarium owners.
3) Develop the *Pennsylvania Field Guide to Aquatic Invasive Species*, a printed, waterproof resource profiling approximately sixty aquatic species of significant concern for invasion and spread in Pennsylvania, which has been distributed to water conservation officers, resource

managers, and educators across the state. We have also developed a smart phone application for iphones and have just started development for the android version.

4) Led the development and continued implementation of the *Pennsylvania Aquatic Invasive Species Rapid Response Plan*; including state-wide agency training and mock rapid response exercises, and the development of reporting, early detection, and rapid response tools to streamline the communication and response process for new invasive species infestations in Pennsylvania.
5) Provide leadership and coordination for the Lake Erie Cooperative Weed Management Area (CWMA), which brings partners together to plan, prioritize, and implement activities to control invasive species and protect threatened and endangered species within the Lake Erie watershed in Pennsylvania. Partners utilize the tools and actions outlined in the Pennsylvania Invasive Species Management Plan, and tailor them to meet local needs.
6) Participate in state coordination efforts through the Pennsylvania Invasive Species Council and regional coordination efforts for aquatic invasive species through the national Aquatic Nuisance Species Task Force in both the Great Lakes and the Mid Atlantic region.

Why are aquatic invasive species a concern in Pennsylvania?

Invasive species are alien species whose introduction does or is likely to cause harm to economies, the environment, and possibly to human health. These species are, with respect to a particular ecosystem, any species, including its seeds, eggs, spores or other biological material capable of propagating that species, that is not native to that ecosystem (Office of the President of the Unites States, 1999). Aquatic invasive species are a sub-set of invasive species that impact aquatic ecosystems. Based on the definition from the federal Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, aquatic invasive species are defined in this document as non-native species that threaten the diversity or abundance of native species, the ecological stability of infested waters, human health and safety, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.

Article 1, Section 27 of the Pennsylvania Constitution states that *the people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.* The value of Pennsylvania's aquatic resources demands a comprehensive response to the threat posed by aquatic invasive species.

The Commonwealth hosts more than 84,000 miles of streams and shares five major watersheds with other states and Canada, which has potential AIS management implications. In order for Pennsylvania to be effective in addressing AIS issues impacting the Commonwealth, it is critical that agencies and organizations collaborate and coordinate on all aspects of AIS prevention and management with neighboring states in the Great Lakes and Mid-Atlantic regions.

Aquatic invasive species impact both commercial and recreational freshwater activities. For example, thick mats of hydrilla can limit boating, fishing, and swimming opportunities, and eventually the value of lakeshore properties may decrease. Extensive infestations can hamper agricultural practices and hydroelectrical power production by reducing flow rates and clogging water intake pipes and filters. Zebra mussels can smother native mussels and are costly to remove from water treatment facilities. Rusty crayfish can destroy fish habitat.

The **cost to control aquatic invasive species** in Pennsylvania will be significant (based on costs in other states), but it is a small amount compared to the value and economic benefit of tourism in Pennsylvania related to fishing, boating, and visiting state parks.

Fishing and boating bring dollars and jobs to Pennsylvania's economy.

- According to **the USFWS's 2016 National Surveys of Fishing, Hunting and Wildlife-Associated Recreation**, **the wildlife recreation industry totals over $2.8 billion annually** in Pennsylvania.
- According to the **National Marine Manufacturer's Association, recreational boating** in Pennsylvania generates a total annual economic impact of **$3.8 billion**, which includes direct, indirect, and induced spending. (Source: SOURCE: NMMA 2018 Economic Impact Study, NMMA 2019 Boat Registrations Report, 2018 NRBSS. www.nmma.org).

Pennsylvania does receive some federal funding for aquatic invasive species management. In 2006, Pennsylvania Sea Grant worked with members of the Pennsylvania Invasive Species Council to develop the Pennsylvania Aquatic Invasive Species Management Plan. The goal for the Pennsylvania Aquatic Invasive Species Management Plan is to minimize the harmful ecological, economic and human health impacts of aquatic invasive species through the prevention and management of their introduction, expansion and dispersal into, within and from Pennsylvania.

Because Pennsylvania has an approved aquatic invasive species management plan, the Commonwealth is eligible for federal funding through the US Fish and Wildlife Service and the Great Lakes Restoration Initiative. This funding totaled $6.3 million to prevent AIS introduction and spread since 2007.

What can be done about aquatic invasive species in Pennsylvania?

- **Rapid response and control activities** are needed to reduce and eliminate new and existing populations of invasive species in Pennsylvania.

- **Prevention activities** such as boat launch check stations, which look over boats and trailers before they launch/leave and removes vegetation and sediment, and education to boaters and anglers about the steps they can take to clean their gear, are needed to slow the spread of aquatic invasive species from one water body to another, and to make sure that money and efforts spent to control AIS are not lost due to a location being re-infested as a later date.

- **More locally coordinated efforts** to conduct the above activities, such as in New York with the partnerships for regional invasive species management

- **Dedicated state funding** to implement the above activities

Thank you for your work to address this issue.

McKean County Conservation District

Allegheny Plateau Invasive Plant Management Area

Testimony before the

Center for Rural Pennsylvania

Submitted by:

Jody Groshek, Communications & Outreach Director

and APIPMA Steering Committee Member

Presented on:

August 24, 2021

Good morning. My name is Jody Groshek and I am the Communications and Outreach Director for the McKean County Conservation District. The McKean County Conservation District provides leadership and stewardship to ensure the protection and sustainability of McKean County's natural resources by fostering public and private partnerships.

Conservation Districts statewide implement state and regional programs for the benefit of Pennsylvania's natural resources. Many Districts also enter into delegation agreements with the state to administer clean water and nutrient management programs (delegated through PA DEP and the State Conservation Commission). Despite no dedicated funding, 28% of Conservation Districts currently have established invasive species programs, with most providing education and outreach. Invasive species impact many facets of environmental work. Riparian buffer plantings can fail if invasive plants monopolize the project site; Dirt, Gravel, and Low Volume Road projects can be impacted by invasive species growing on disturbed roadsides and this can provide a vector for seeds to spread to other sites; aquatic invasive species harm ecosystem balance in lakes, ponds, rivers, and streams. Invasive insects have significant economic impacts to agriculture and forests. Knowledge of invasive species, their identification, prevention, and management, is important for Conservation District staff.

The PA Association of Conservation Districts implemented an invasive species survey completed by 50 conservation districts in 2019. Ninety-six percent of PA Conservation Districts envision taking part in cooperative invasive species work if there is opportunity to participate in a CISMA (Cooperative Invasive Species Management Area; or PRISM (Partnership for Regional Invasive Species Management). While 28% of Districts are doing invasive species work; the other 64% state that their current financial resources are a limiting factor to integrate any invasive species work, although most are willing to do so.

The McKean County Conservation District became involved in the formation of a local partnership beginning in 2017. Myself and the previous Penn State Extension Forestry Educator Dr. Kimberly Bohn attended several meetings of the neighboring Sinnemahoning Invasive Plant Management Area (SIPMA) and decided to investigate the potential of a new collaborative in the McKean County area. Numerous partners, ranging from state and federal agencies to non-government organizations, to local trail groups, were invited to attend an initial meeting. The response was overwhelmingly positive, and numerous partners agreed to commit to form a collaborative. Dr. Bohn had extensive experience with CISMAs in Florida and we worked with a smaller steering committee to develop a draft strategic plan that was adopted in 2018. APIPMA currently has over 50 partners and has achieved a great deal in 3 ½ years on basically a "shoestring" budget of small grants.

A Program Coordinator was hired with a start-up grant from the National Fish and Wildlife Foundation "Pulling Together" program (which unfortunately no longer exists). The coordinator began as a summer intern for the District in 2018 and moved into full time employment (with other District responsibilities) in the fall of 2018. Around the time APIPMA was formed, a new Allegheny Forest Health Collaborative was starting. They requested for APIPMA to act as lead for the Non-native Invasive Plant (NNIP) Working Group. This role has greatly increased APIPMA exposure and support. APIPMA outreach through the press, social media, and numerous workshops has exponentially increased public awareness in the area. The District receives numerous calls and requests for technical assistance from citizens who want to manage their invasive plant problems after learning more from our outreach efforts. Others request plant identification when they learn of noxious or invasive plants that may be on their property.

During its short existence APIPMA has coordinated a five county, multi-partner collaborative - sharing information; disseminating education pieces; providing training for citizens, students, professionals, and local workforce personnel on the best ways to identify, manage, and treat invasive plants; and has started an active treatment program for prioritized species. APIPMA is recognized statewide and is an active participant in the PA Invasive Species Council. Committed, passionate partners have made this possible.

In summary, formally organized and fully funded invasive species partnerships will play a key role in many facets of preventing and managing problems statewide. Their power lies in the ability to act rapidly to threats; utilize local entities and trusted partners, many of which already work with Conservation Districts; and relying on dedicated personnel acting locally understand and recognize county and regional needs. Leadership, continued outreach, and consistent work by these partnerships moving forward requires dedicated funding at a state level. Conservation Districts are able to take effective, rapid actions on a variety of land ownerships. Districts are grassroots, "boots on the ground" organizations who can pull together various partners to efficiently accomplish conservation projects and goals. This work is a daily occurrence in District offices. Invasive species management is most effective when local partners can act quickly, especially with early detection, rapid response threats, to take actions. Brian Pilarcik has also demonstrated this with his aquatic invasive experiences in Crawford County.

Thank you for allowing me the opportunity to provide this information to the Committee.

I am happy to answer any questions.

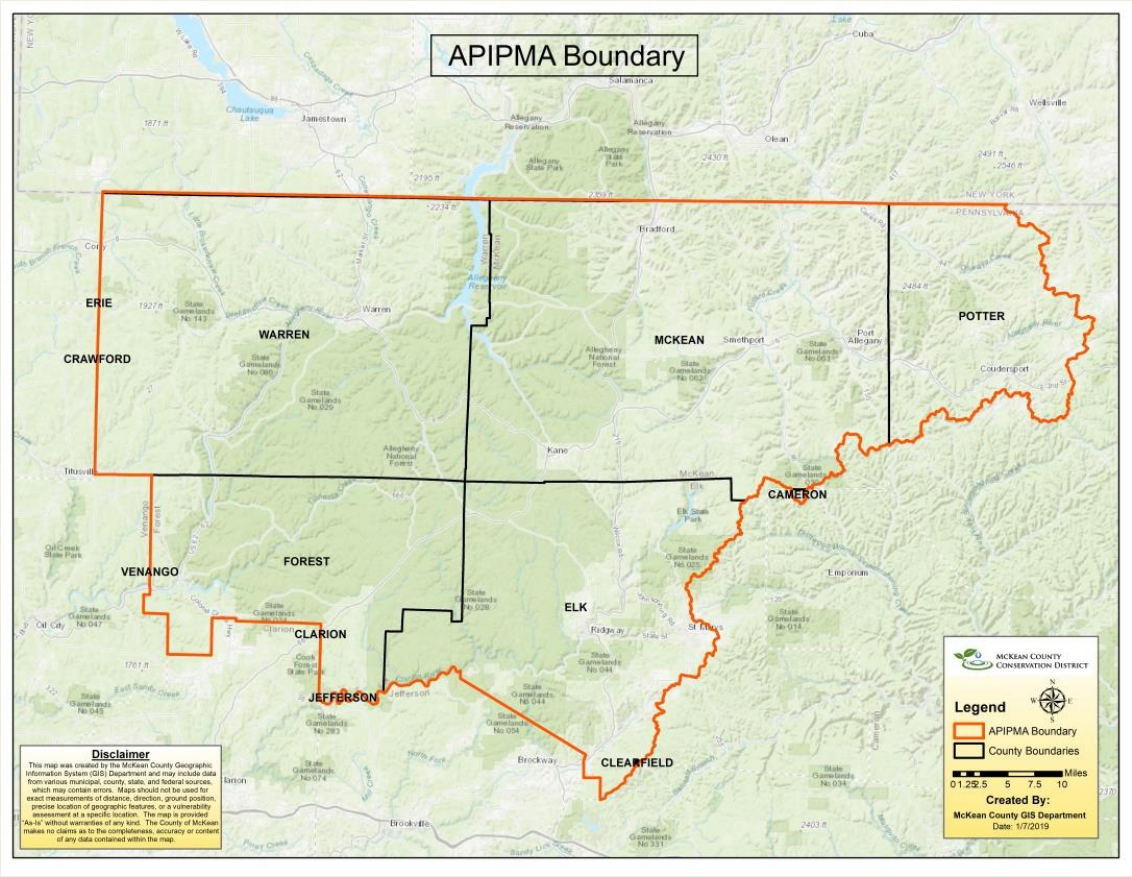
Allegheny Plateau Invasive Plant Management Area

McKean County Conservation District

Testimony before the Center for Rural Pennsylvania
Jody Groshek, Communications & Outreach Director and APIPMA Steering Committee Member
August 24, 2021

About APIPMA

- Established in 2017
- Invasive plant cooperative between stakeholders- including local, state, and federal land agencies; industry professionals; community groups; private landowners (over 50 partners)
- In addition to ecological considerations, the boundaries for APIPMA's region include areas where additional individuals and organizations have committed to be active in the establishment and activities of the cooperative.
- Cooperative invasive species management is a key component to tackle invasive issues statewide – plants, insects, aquatic invasives, even animals. Includes landscape level work and sharing of resources.
- Early establishment of APIPMA five-year strategic plan and two year workplans to guide partnership to achieve goals.



Read more about the Allegheny Invasive Plant Management Area at https://www.mckeanconservation.com/invasive-plants.html

Key CISMA Benefits

- Partnerships are key to success. Partners share information, seek grants, work across ownership and county boundaries.
- Invasive species know no boundaries.
- For management success and public support, awareness grows through outreach. Citizens quickly understand and assist with efforts when they notice effects of invasive species in their backyard. They take action and support CISMA efforts.
- Support Department of Agriculture efforts to locate and control Noxious Weeds which cause threats to human and animal health. Provide education to the public and agriculture community about their hazards.

Key CISMA Challenges

- Funding: Current CISMAs ebb and flow depending on available funding. Sustained funding will ensure consistent and reliable progress for education, identification, mapping, and active management.
- Rapidly emerging Early Detection Rapid Response species require quick responses locally.
- Climate change provides ideal conditions for invasive species to spread, as they are extremely adaptable and tolerate a wide range of ecosystem variance.
- People: Having the right people who are passionate about their local natural areas is extremely important.

APIPMA Success Stories

- Work with students and schools has long-lasting impacts.
- Outreach and exposure leads to citizens' concern.

Training professionals:

Ecology, identification, management and control methods, iMapInvasives training, PennDOT, municipalities, other agencies, Pesticide update credits for license holders

Public education:

Ecology, identification, management and control methods, iMapInvasives training ,Quizzed on identifying invasive plants with samples and specimens, Education and awareness through press, newsletters, and social media.


The Bradford Era

Garden season just around the corner

National Invasive Species Awareness Week

New cooperative group forms to tackle invasive plants in the Allegheny Plateau

Above: Kane High School students who mapped and pulled invasive plants

APIPMA Success Stories

- Community involvement leads to more avenues for projects. A Japanese knotweed treatment project in the Kane area is effectively eliminating this plant from the top of the Tionesta watershed; with tremendous community support.
- Partnerships with state agencies open doors and expand opportunities. APIPMA and MCCD are currently working side by side with PDA to effectively work towards eradication of Goatsrue, a PA and Federal Noxious weed poisonous to livestock.
- Opportunities for one-on-one technical assistance site visits to landowners who wish to treat their plant infestations.

APIPMA assisted with a 2020 Legislative Tour for the Allegheny Forest Health Collaborative

Above: Japanese knotweed and Goatsrue treatment project sites; 57 landowners have signed up to participate in the programs. Japanese knotweed on the site pictured has been eradicated since treatment began.

Summary

- Invasive species are a growing ecological concern nationwide. Formal Cooperative Invasive Species Management Areas can provide structured partnerships to effectively manage invasive species on a landscape level.

- Climate change favors the spread of adaptable invasive species; necessitating strategies for management to protect native ecosystems – for native plants, wildlife, pollinators, and humans.

- PA Conservation Districts can help address invasive species issues and would be integral with the establishment of Cooperative Invasive Species Management Areas. Conservation Districts within each county already provide outreach on invasive species, are familiar with potential partners, and are able to effectively utilize grant funds.

APIPMA Contact information

Maddie Stanisch, McKean County Conservation District

(814) 887-4020

mmstanisch@mckeancountypa.org

Jody Groshek, McKean County Conservation District

(814) 887-4017

jdgroshek@mckeancountypa.org

Katie Schmidt, Penn State Extension Forestry Educator

(814) 887-5613, extension 203

kns5242@psu.edu

NEW YORK
STATE OF
OPPORTUNITY

Department of
Environmental
Conservation

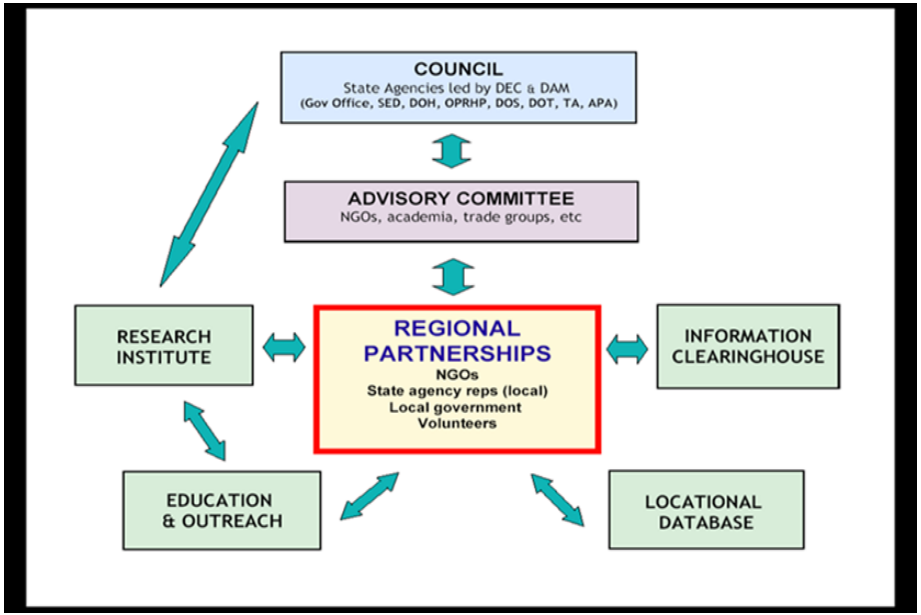
New York State's Invasive Species Program

August 2021
Justin Perry, Josh Thiel, Dave Adams
Bureau of Invasive Species & Ecosystem Health, NYSDEC

NYS Invasive Species Task Force

Final Report 2005, Included 12 Recommendations

Led to the establishment of the ISCS within DEC and the Promulgation of ECL Article 17 in 2008 which Established the Council (9 agencies) and Advisory Committee (25 NGOs)



Invasive Species Council

- Created to coordinate state entities and partners to address the environmental and economic threats of invasive species
- Co-led by NYSDEC and NYS Dept. of Ag. & Markets
  - 9 members: NYSDEC, NYSDAM, Dept. of Transportation, NYS Education Dept., Dept. of State, Office of Parks, Recreation & Historic Preservation, Thruway Authority, Canal Corporation and the Adirondack Park Agency

Invasive Species Advisory Committee

- Created to provide information, advice and guidance to the Invasive Species Council
- Up to 25 members from stakeholder organizations
- Membership: Farm Bureau, NYC Dept. of Environmental Protection, New York Sea Grant, Natural Heritage Program, SUNY ESF, NYS Turf Grass Association, etc.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Invasive Species Coordination Section

- Goal: Facilitating a coordinated, comprehensive and strategic framework to address all taxa of invasive species in New York State
- Section within NYSDEC's Bureau of Invasive Species & Ecosystem Health

Invasive Species Coordination Section

Coordination:

- $13 Million SFY 2021/22 Environmental Protection Fund (EPF)
- Oversee, direct and administer the 8 PRISMs, NYISRI, *i*MapInvasives
- 2019 grant program - $2.8 million in AIS spread prevention, rapid response & control grants, research projects, lake management planning

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Invasive Species Coordination Section

Aquatic Invasive Species:

- Watercraft steward program
- Watercraft Inspection Steward Program App (WISPA)
- Hydrilla rapid response & management
- Research
- eDNA

Invasive Species Coordination Section

Terrestrial Invasive Species:

- Coordinating DEC's response to terrestrial invasive species finds
- Developed Rapid Response Framework for Invasive Species policy
- Species assessments

Invasive Species Coordination Section

Education & Outreach:

- Invasive Species Awareness Week (ISAW) campaign
- Statewide E&O Committee
- IS curriculum for middle & high school students
- IS documentary
- Creating outreach products

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Invasive Species Coordination Section

Regulations:

- Part 575 Regulated & Prohibited Species
- Part 576 AIS Spread Prevention

Partnerships for Regional Invasive Species Management (PRISMs)

- Public-Private interface
- **Stakeholder education**
- Management activities
- Implement prevention programs
- Conduct surveillance & mapping of infestations
- Early detection & rapid response
- Habitat restoration & monitoring
- Volunteer recruitment/training
- Act as regional communication hubs

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

New York State PRISMs

- Eight (8) established partnerships statewide; eco-political regions
- Formally established via individual competitive Service Contracts
- Scope of Work elements borrowed from the CWMA Cookbook
- Funded by the Environmental Protection Fund (EPF)
- Required to develop 5-Year Strategic Plans, Annual Workplans and Quarterly/ Annual Reports; Quarterly invoices processed for reimbursement of related expenses
- Meet Quarterly and have Monthly Conference Calls

*i*MapInvasives

- New York State's invasive species database and mapping tool
  - Documenting and sharing invasive species observation, survey, assessment and treatment data
  - The coordination of early detection and rapid response efforts though email alerts
  - Data analysis and summaries in the web interface and GIS

iMapInvasives
Sharing information for strategic management

NEW YORK
Department of Environmental Conservation

New York Invasive Species Research Institute

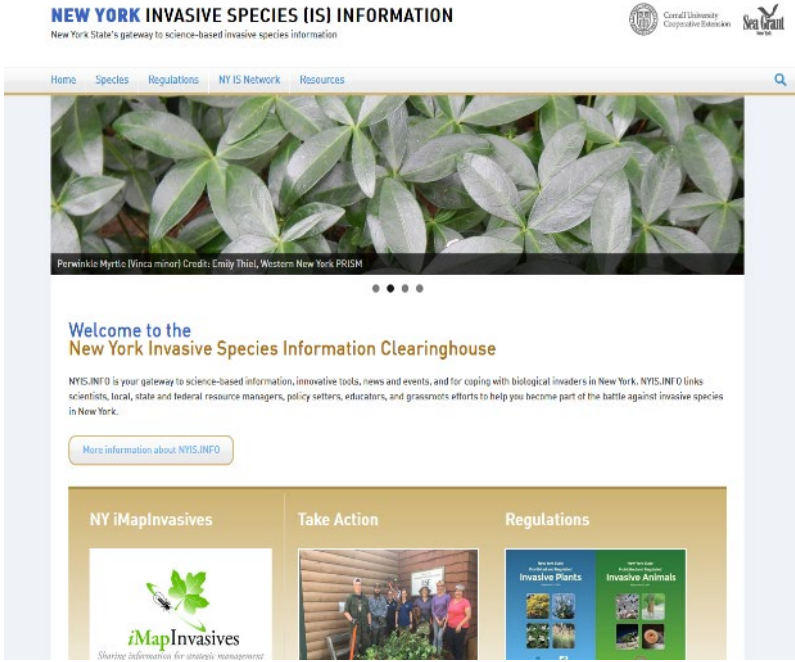
- Mission: coordinate invasive species research to help prevent and manage the impact of invasive species in New York State
- Promote information sharing and collaboration
- Facilitate interaction and cooperation between scientists, natural resource managers and state offices

NYISRI
New York Invasive Species Research Institute

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

Invasive Species Clearinghouse – nyis.info

- Gateway for New Yorkers to access timely, accurate scientific and policy related information so they can make informed decisions about preventing, eradicating, controlling and managing IS
- Run by Cornell/Sea Grant
- 2019 website redesign



NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

Thank You!

Justin Perry, Josh Thiel &

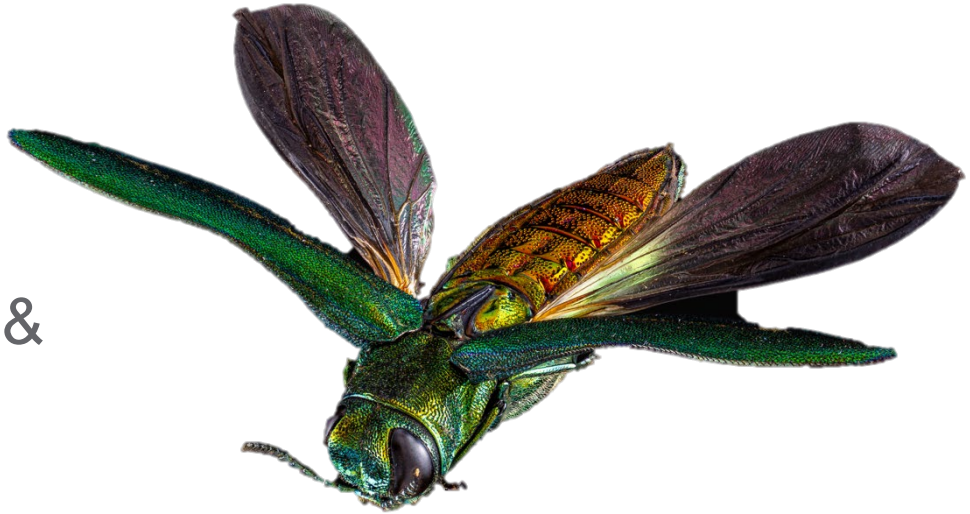
Dave Adams

Bureau of Invasive Species & Ecosystem Health

625 Broadway, Albany, NY

isinfo@dec.ny.gov

(518) 402-9425



NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation