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## Less is More: Invasive Species Removal in Ohio's Miami Valley Region as part of a Green Jobs Guarantee Program

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## **Less is More: Invasive Species Removal in Ohio's Miami Valley Region as part of a Green Jobs Guarantee Program**

When it comes to plants and other wildlife, it is important to distinguish between quality and quantity. More green space may be pleasing to the eye, but if the green space contains invasive plants, it can cause more harm than good. Unfortunately, invasive species can be found all over Ohio – in state parks, nature preserves, local park systems, farm land, and citizens' back yards. In this proposal, the negative impact of invasive species in Ohio will be analyzed from ecological, economic, and sociocultural lenses. The concept of an Invasive Species Removal Technician as part of a green jobs guarantee program will then be explored. Finally, some challenges in this program's implementation and potential solutions will be examined.

Ohio battles invasive species in several forms, including plants, wildlife, insects, and aquatic wildlife. To fully understand the full impact of invasive species, it is helpful to understand how they are defined against non-invasive, native plants. The National Invasive Species Council offers a two-pronged definition that is particularly well-suited to the Social Ecology sustainability model, which incorporates environmental, social, and personal lenses (Mulligan, 2018). To be considered invasive, a species must be both alien to the area and be capable of causing harm to the environment, economy, or human health (U.S. Department of Agriculture, n.d.). The Ohio Department of Natural Resources offers three additional criteria, specifically for invasive terrestrial plants, which can be helpful in understanding invasive species of all types. Invasive plants tend to crowd out native plants, impact components of the food chain which rely on native plant populations, and can reduce biodiversity when native plants are crowded out (Ohio Department of Natural Resources, n.d.).

To further understand the ecological impact of invasive species in Ohio, consider the

invasive bush honeysuckle and Ohio's Cardinal population. Bush honeysuckles provide food and shelter for cardinals but are decreasing the quality of the population. The berries produced by honeysuckles are less nutritious than other native shrubs, and when cardinals who feed on honeysuckle berries continue to mate, the population becomes less genetically fit (the opposite of "survival of the fittest"). As honeysuckles continue to invade areas in Ohio, the shrubs that provide superior berries are pushed out of the area, reducing local biodiversity (Knebusch, 2013). Studies also indicate that cardinals nesting in honeysuckles produce less offspring than those who do not, which can lead to a decline in population (Knebusch, 2013). As cardinal populations decline, the local food chain can become severely disrupted.

To understand the economic impact of invasive species, consider feral swine, which have been sighted in southeastern Ohio. As with honeysuckle, feral swine can impact the environment negatively and are particularly destructive due to some of their behaviors – wallowing in mud pits to cool down and rooting in the soil for food. These behaviors can reduce soil quality, destroy native plants and wildlife, and increase the spread of invasive species like honeysuckle and garlic mustard. When these behaviors move into agricultural areas, the economic impact becomes visible – crops can be destroyed or eaten, soil can begin to erode, and diseases can be passed on to livestock (Plasters, Hicks, Gates, & Titchenell, 2013).

The USDA's definition of invasive species includes a social component specifically related to human health. This can be seen easily with the example of feral swine – when diseases are passed on to livestock, it can impact human health if those products are consumed. The current coronavirus pandemic is a rare but serious example of when zoonotic diseases can be particularly catastrophic to human health. While not encapsulated in the official USDA definition, invasive species can also impact cultural aspects of Ohio life. The example above of

bush honeysuckle's impact on cardinal populations has cultural significance as the cardinal is Ohio's state bird. From a ceremonial standpoint, how would Ohio be portrayed if it could not protect the populations of its own state bird?

The economic, environmental, and social impacts of invasive species can be integrated handily by applying them to de Groot, Wilson, and Boumans' concept of ecosystem functions – processes, components, goods, and services. Invasive species can disrupt the regulation and habitat of the natural ecosystem easily and quickly; if just one habitat for one species is compromised, the entire food pyramid can be at risk. Decline of livestock and crops due to invasive species can disrupt the production functions of the state's agricultural areas. Finally, to integrate the social impact, invasive species can have a huge impact on information functions. The historical value or quality of learning and researching in an ecosystem preserve is less potent if the entire area has been overtaken by wild garlic (de Groot, Wilson, & Boumans, 2002).

In order to bolster the Miami Valley region's employment rates, environmental resources, and sociocultural resources, a program for Invasive Species Removal Technicians (ISRTs) is proposed. This program would be under Ohio's Green Jobs Guarantee program, which will seek to place unemployed Ohio workers in jobs that are focused on our state's environment. While the program can be implemented statewide, the specific tasks of ISRTs in each region will vary – for example, workers in the Great Lakes region may need to focus more on aquatic invasive species. This proposal will focus specifically on invasive terrestrial plants in the Miami Valley region and how ISRTs can help slow the spread of these plants.

The Ohio Department of Natural Resources lists 10 different invasive plants that are considered most problematic in Ohio. Of these ten, 5 are identified as being potentially problematic in the Miami Valley region:

- Autumn-olive, which can be found throughout Ohio
- Reed Canary Grass, which can be found throughout Ohio in wetland areas
- Garlic Mustard, which can be found throughout Ohio
- Multiflora Rose, which can be found throughout Ohio
- Bush Honeysuckles, which can be found throughout Ohio (Ohio Department of Natural Resources, n.d.)

ISRTs would be responsible for low-skill removal and control of the species listed above at various sites in the Miami Valley region, and any additional species that may be problematic to certain areas within the region. The skill needed to control the species could increase as technicians remain in the program and receive additional training. For example, as part of the program, technicians could obtain licenses for the application of certain pesticides, depending on the area's need.

Technicians would participate in a thorough but quick training before beginning hands-on work. They would first learn why invasive species tend to have a negative impact on Ohio's environmental, economic, and sociocultural resources. They would then be introduced to several different invasive species – depending on their work site, the species introduced and emphasized may vary. Technicians would learn about what to look for in identifying an invasive species (shape, feel, and smell of the plant or its leaves, for example) and how to differentiate the species from other non-invasive plants. Technicians would then learn about how to properly track the locations of the species using some technical equipment or maps, and how to properly remove and dispose of the invasive plants. While technicians could be placed at a variety of sites, it is proposed that the program begin by placing workers with the Ohio Department of Natural Resources (ODNR). This would limit technicians to Ohio's state parks and nature preserves.

With the launch of a successful program within the ODNR, technician positions could be added to parks and preserves managed by individual regions, counties, or cities within the Miami Valley Region. Over time, technicians could even be dispatched to county extension sites, to provide invasive plant removal as a free or low-cost service to residents and farmers.

Currently, park rangers at the ODNR and other agencies do engage in the study and removal of invasive species. However, an independent policy research group found that ODNR's allotted state budget has remained the same since 1988; accounting for inflation means that the ODNR has lost funding over the years (Patton, 2017). The presence of dedicated invasive species removal technicians, funded as part of a green jobs guarantee program, would provide many benefits to the region's environmental, economic, and sociocultural resources.

The most obvious of the benefits provided by ISRTs is an antidote to the harmful effects in the examples mentioned above. As bush honeysuckles decrease, cardinal populations increase in quality; removal of zebra mussels saves nearby infrastructure from damage and repair costs; triumph over a colony of emerald ash borers saves an ash tree that has been on a family's property for generations. As the invasive species are hindered, the region will see an increase in the quality of its environmental, economic, and sociocultural resources.

However, the benefit begins before any species are removed. Technicians would be trained to survey natural areas, mapping the presence of invasive species using paper maps or (ideally) electronic equipment. These surveys would be repeated regularly throughout the year; consequently, a database of invasive species growth information could be assembled. This database could prove helpful for park rangers to better track invasive species growth and create long-term prevention and management plans. The data could also be utilized by the region's academic community to better understand invasive species and how they spread.

With additional training, technicians could engage in proactive management by replacing invasive species with native plants. This will need to be done in close conjunction with the assigned park ranger to ensure that appropriate plants are introduced to the site. This is a long-term benefit that could decrease the spread of invasive species by bolstering the area's native growth.

As technicians leave the green jobs guarantee program, their benefits may extend beyond ODNR's parks and preserves. A technician with sustained growth and experience in the program may be well-equipped to enter the landscaping industry and could help create a shift towards native landscaping. Private landscaping focused on using native plants helps conserve natural resources and financial capital, as less effort is needed for these plants to thrive. For example, a citizen attempting to grow tropical plants in their yard will likely need to use a lot of water, purchase special soil, fertilize often, or apply pesticides. On the other hand, growing native Ohio wildflowers and grasses will require less of these since the native plants are already suited to Ohio's soil and climate. Native plants also provide excellent habitats and food sources for native wildlife, including pollinators, birds, and mammals. It's a win-win for the consumer and the environment – the consumer helps bolster the local ecosystem and is rewarded with beautiful native plants decorating their property (U.S. Forest Service, n.d.).

The proposed ISRT position is not without its challenges. By providing this position to unemployed workers in Ohio, there could be decreased need for college interns who seek experience in this line of work. In addition, there could be a decreased need for volunteer workers who are often called upon to assist with invasive species removal and native planting. It is important that the ODNR and other agencies carefully analyze their current workforce to balance the need for full-time technicians and to create educational opportunities for the next

generation of natural resource stewards.

The seasonality of invasive species growth may also present some issues, as species may not be visibly present in the winter. Fortunately, winter could still be a time to survey natural areas where invasive species were removed and make note of the area's characteristics. A technician and park ranger might find, for example, that areas with plenty of leaf cover in the winter may be especially prone to invasive species growth later in the spring, resulting in more pointed management and prevention strategies. Another solution is to cross train technicians to do more. Technicians could be responsible for tracking the location and spread of non-invasive species, could assist with park maintenance, and could even assist visitors.

To conclude, consider again the typology of ecosystem functions mentioned earlier. It is easy for anyone with basic environmental knowledge to think of ways that invasive species might disrupt the functions presented by de Groot et al. The jump from theory to palpable evidence is shaky – some functions are extraordinarily difficult to quantify, such as aesthetic beauty. But enough is quantifiable that a 2009 literature review of invasive species and ecosystem functions presented many startling figures and specific examples, which have surely increased almost 11 years later. To prevent invasive species from further damaging our ecosystem functions, the authors of the literature review argue that economic instruments are one of many tools that must be used (Pejchar & Mooney, 2009). Currently, the state of Ohio prohibits 38 invasive species from being sold within the state's borders (Ohio Department of Agriculture, 2018) – a fine strategy for defense, but one that is not necessarily offensive. The proposed program is an innovative economic instrument that can fill this gap and pave the way for green jobs and a greener region.



## References

- de Groot, R. S., Wilson, M. A., & Boumans, R. M. (2002). A typology for the classification, description, an valuation of ecosystem functions, goods, and services. *Ecological Economics*, 41, 393-408.
- Knebusch, K. (2013, March 7). Fighting Ohio's Invasive Species: 'Everyone Can Be Part of the Battle'. *Ohio State University College of Food, Agricultural, and Environmental Sciences*. Retrieved April 8, 2020, from <https://cfaes.osu.edu/news/articles/fighting-ohios-invasive-species-everyone-can-be-part-the-battle>
- Mulligan, M. (2018). *An Introduction to Sustainability: Environmental, Social, and Personal Perspectives* (Vol. 2). Abingdon: Routledge.
- Ohio Department of Agriculture. (2018, May 15). *Invasive Plants*. Retrieved April 20, 2020, from Ohio Department of Agriculture: <https://agri.ohio.gov/wps/portal/gov/oda/divisions/plant-health/invasive-pests/invasive-plants>
- Ohio Department of Natural Resources. (n.d.). *Invasive Species in Ohio*. Retrieved April 8, 2020, from Ohio Department of Natural Resources: <http://ohiodnr.gov/invasivespecies>
- Ohio Department of Natural Resources. (n.d.). *Ohio's Top Invasive Plants*. Retrieved April 20, 2020, from Terrestrial Plants: <http://ohiodnr.gov/invasiveplants>
- Patton, W. (2017). *Basic services in Ohio continue to be weakened in the 2018-19 state budget*. Columbus: Policy Matters Ohio.
- Pejchar, L., & Mooney, H. (2009). The Impact of Invasive Alien Species on Ecosystem Services and Human Well-Being. In C. Perrings, H. Mooney, & M. Williamson, *Bioinvasions and Globalization: Ecology, Economics, Management, and Policy, 2009* (pp. 161-182). Oxford: Oxford University Press.
- Plasters, B., Hicks, C., Gates, R., & Titchenell, M. (2013). *Publications - Wildlife*. Retrieved from Ohio Woodland Stewards: <https://woodlandstewards.osu.edu/sites/woodlands/files/d6/files/pubfiles/W-26-13.pdf>
- U.S. Department of Agriculture. (n.d.). *Invasive Species Definition Clarification and Guidance*. Retrieved April 8, 2020, from National Invasive Species Information Center: <https://www.invasivespeciesinfo.gov/invasive-species-definition-clarification-and-guidance>
- U.S. Forest Service. (n.d.). *Why Garden with Native Wildflowers?* Retrieved April 20, 2020, from Native Gardening: [https://www.fs.fed.us/wildflowers/Native\\_Plant\\_Materials/Native\\_Gardening/index.shtm](https://www.fs.fed.us/wildflowers/Native_Plant_Materials/Native_Gardening/index.shtm)