Invasive Species Awareness Week 2/24-2/28

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To celebrate Invasive Species Awareness Week, I have prepared 5 small articles each pertaining to a different invasive species affecting Preble County now or in the past. Read along each day of the week to learn how to identify, remove, and keep invasives from hijacking your property. Of the roughly 2,300 species of plants in Ohio, just about 78 percent are native. That means over 500 species that are currently residing here were introduced at some point. Generally, invasive plants have been brought in for a potentially good reason. Reasons such as, horticulture, forage crop, culinary or medicinal use, erosion control, and even by accident. If you have ever identified Amur Honeysuckle, you can see how it can blanket a forest. I believe that proper identification is the first true step to eradicating anything invasive. Make sure you know what you are looking at before you try to get rid of it!

There are invasive pests invading our space too. The Emerald Ash Borer (EAB) is certainly the celebrity on the invasives list for the last 15 years, and for obvious reasons. Ash trees once made up to 20 percent of our forested areas. Roughly 33 percent of ash have been invaded to no avail. The trees die to lack of 'food' and water because the EAB feeds on the tree's inner bark lining responsible for the transport of such resources. If you would like to learn more, please give us a call at (937)456-5159.

What is an invasive species? What does that truly mean? Not to fog any descriptions, but some invasives are more destructive and bothersome than others. That is where the term noxious comes to play as well. A noxious weed, harmful weed, or injurious weed, is a weed that has been designated by an agricultural or other governing authority as a plant that is harmful to agricultural or horticultural crops, natural habitats or ecosystems, or humans or livestock. In other words, not all invasive species are noxious, there are certainly varying degrees. I will present those of most concern for our area. Our very own coveted Red Maple is considered invasive in the Northeast U.S.

Monday- Autumn-Olive (*Elaeagnus umbellata*)

Growing up to a height of 20' tall, this shrubby tree has planted its feet in all 88 of our counties. I chose this first because I believe it needs to be highlighted alongside honeysuckle. Autumn olive is commonly confused with honeysuckle if you aren't paying close attention, if you cut either one down you are doing everyone a service.

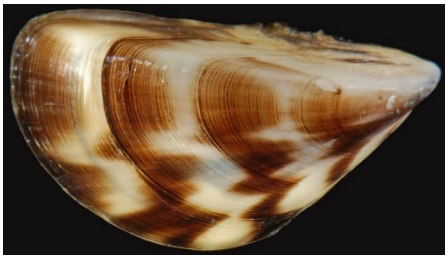
The leaves, growth structure, and berries produced are very similar to one another. However, autumn olive has the occasional thorn, honeysuckle does not. The flowers are another way to easily tell the two apart in the spring. Autumn olive flowers are bell-shaped and have four petals. They are cream or pale yellow in color and bloom in early spring. Some enjoy the fragrance; others may find it more off-putting. Honeysuckle has white-pink, tubular flowers with 5 petals that bloom in spring. The flowers are fragrant and fade to yellow as they age. I think a majority of people would agree honeysuckle smells better than autumn olive. Honeysuckle is capable of blooming twice in a single season! Another telling sign is the shiny silvery underside of autumn olive leaves.

Autumn olive was originally planted in the U.S as an ornamental plant. Once people saw how hardy the shrub was, it was then planted for erosion control and wildlife habitat. At least the berries are slightly healthier for birds than honeysuckle is. From there, we continued to plant it until just the past few decades.

The birds continue to do their part to disperse the seed around. Removal is similar to honeysuckle. It is best to use mechanical and chemical means to prevent new shoots from arising.



<u>Tuesday</u>- Zebra Mussel (*Dreissena polymorpha*)



Don't forget about the water too! There are many invasive mollusks, crustaceans, and aquatic plants that have came along to Ohio over the years. Although we may not be directly near infected areas of zebra mussels, they are considered to be one of the most destructive to our ecosystems as a whole. Zebra mussels are such a problem because they have no real competition, an extremely fast reproduction cycle, and the speed at which they can overtake native mussels is alarming. According to the Center for Invasive Species Research at the University of California, Riverside, the cost of management of zebra mussels in the Great Lakes alone exceeds $500 million per year. The life span out of water is around an entire week.

The zebra mussel has a maximum size of around 2 inches. Usually, they are around the size of a fingernail. The repeating light brown and dark brown bands on the shell give the mollusk it's 'zebra-like' stripes. The stripes are not always present. The mussels originated in lakes and rivers around Russia. They were first observed in North America around 1988. Since then, they have continued to spread to the Great Lakes and many other bodies of water throughout the mid-west and Texas.

The vast majority of the organism's natural enemies are not present in North America. Ecologically similar species do exist, but these species are unlikely to be able to eliminate those mussels already established and have a limited role in their control. For example, our native birds, ducks, and fish can prey upon the populations of zebra mussels but; a single female zebra mussel is able to lay over 1 million eggs in a single year! With a large influx of new food, bird populations have exploded in the surrounding areas infected with the zebra mussel. This further inhibits native growth because of the increased predation. Even worse, the zebra mussel has utilized the shells of our larger native mussels for a home. Up to 10,000 zebra mussels have been found on just a single shell of a native mussel leading to malnourishment and death.

Zebra mussels are filter feeders, meaning they eat by intaking water and filtering out particles that are consumed. This creates extremely clear water conditions, setting up an attack for algae. The mussel also filters out pollutants quite well, leading to poisoning of wildlife that is consuming the mollusk in large quantities. You can see how everything the zebra mussel affects, in turn, negatively impacts our native

habitats. There have been some successful treatments to alleviate the pressure, but none have been foolproof or absolute. The best thing we can do is to ensure all watercraft we own and use is cleaned extremely well after being on the water anywhere. Look for boat and trailer washing stations near pullout spots. Allowing the watercraft to dry for around 5 days in the sunlight before heading to a new body of water is highly recommended. Performing best practices, will limit the spread until a greater solution arises.

Wednesday- Spotted Lanternfly (*Lycorma deliculata*)

Today's featured invasive species is the Spotted Lanternfly (SLF). Currently 18 of the 50 states have identified the pest in their borders. The spotted lanternfly is a hitchhiking pest that is native to Asia. It lays its eggs October through December on any hard surface including grills, vehicles, trailers, firewood, outdoor furniture, bikes and toys. The pest was first detected in 2014 in Pennsylvania. It likely arrived in the United States on goods shipped from overseas. SLF feeds on a variety of plants including grapes, hops, stone fruits, and hardwood trees. Juveniles are black with white spots, and will turn red as they age. Adults are easier to identify denoted by a wide yellow and black barred abdomen. Adult SLF have large brown wings with black spots at the front and a speckled band at the rear. Their hind wings are scarlet with black spots at the front and white and black bars at the rear. See pictures to familiarize yourself!

Although SLF has not decimated our forests like emerald ash borer, some industries may take a big hit if they are infected. In 2022, Ohio's wine and grape industries supported over 40,000 jobs and raked in $6.6B dollars (USDA). That makes Ohio number 7 in the U.S. for wine economic output. Grape vines often take many years to fully establish and produce lots of grapes. To lose a large crop could be a major setback to vineyards across the state. SLF damage is caused by the insect feeding on the trunk and branches of woody plants. Nymphs feed on a wide range of plants, sucking sap from young stems and branches. Adults tend to focus feeding on tree of heaven and grapevine. (Thursday's Invasive is Tree of Heaven). The feeding can result in oozing sap, wilting, leaf curling, and dieback. In addition, during feeding the SLF secretes honeydew which can buildup on and underneath the plant, which in turn promotes the growth of black sooty mold. Black sooty mold around the base of plants or oozing sap may indicate the presence of the spotted lanternfly, however other pests can cause these symptoms as well. SLF is not known to kill plants other than grapevines, black walnut saplings and tree of heaven. SLF can feed on more than 100 plant species, and has the potential to greatly impact the viticulture, tree fruit, nursery, and timber industries (USDA).

Preble county is not under quarantine, nor has SLF been identified here. But it has been spotted just 2 counties south. We all need to do our part to prevent the spread of this invasive species sooner than later. Smash and scrape technique on egg masses, reporting sightings, and doing your own field work in your city or property are all proactive tasks to help prevent the spread.

Thursday- **Tree of Heaven** *(Ailanthus altissima)*

Tree of Heaven (TOH), the favored food by the previous invasive insect, has no benefit of keeping around our landscape here in Ohio. TOH was originally brought to the U.S. in the early 1800's as a food source for silkworms, alongside the worms themselves. The silkworms were not able to be utilized as much as in Asian climates. But the TOH absolutely thrived in the States. As early as 1886, the City of Atlanta, Georgia adopted an ordinance against the Ailanthus tree. In it, the tree is declared a public nuisance and allows for a fine of $50 for any person owning or occupying any lot with the Tree of Heaven. Presently, 42 states have TOH in their borders. The main issues surrounding the tree are the lack of predators, quick growth, and its ability to root sprout. Once you cut a branch or tree down, there is a foul smell likened to rotten peanut butter.

To identify TOH, look for smooth gray bark, almost like our beech trees. The leaves of TOH are what makes it easy to identify. Tree of Heaven has the largest pinnately compound leaves of any tree found in Ohio. Kentucky coffeetree has bipinnately compound leaves, and the walnuts' is not quite as long. The foul odor is released if you crush a handful of leaflets also. The TOH can outcompete with our native stand forest by utilizing any disturbed areas. The tree has been noted to grow as much as 3 to 7 ft per year for the first 4 years of growth. Once it has settled in, the roots extend outward sprouting new 'clones'. Whenever the roots are near concrete or a foundation, they are very destructive and able to bust up perfect sidewalks/paths/ you name it. Sprouts will come up seemingly anywhere within a 50-foot radius. That's not to mention on top of the ~300,000 wind dispersed seeds it can produce in a year's time.

One of the most troublesome qualities of TOH against our native species, would be its allelopathy. A chemical known as ailanthone is released to prevent the growth of competing plants. Ailanthone is found in all parts of the tree. Possessing allelopathic traits can further the chances of TOH taking over an area. Paired with its massive leaves to block sunlight, TOH can spread through an area like wildfire with little competition. To control this, a cut and spray technique is used. Mowing the area for at least a year after cutting a large tree down is important to remove root shoots and seedlings.

I could write pages and pages about this calloused species. I ask you, the reader, to perform a small search of TOH on your own. The TOH has been the topic for many novels and art pieces in the last century. Many deeming its foolish persistence in harsh environments synonymous with humans growing up in tough areas. The following excerpt is from "A Tree Grows in Brooklyn" written by Betty Smith in 1943.

"There's a tree that grows in Brooklyn. Some people call it the Tree of Heaven. No matter where its seed falls, it makes a tree which struggles to reach the sky. It grows in boarded up lots and out of neglected rubbish heaps. It grows up out of cellar gratings. It is the only tree that grows out of cement. It grows lushly...survives without sun, water, and seemingly earth. It would be considered beautiful except that there are too many of it."

Friday- White Amur Grass Carp (*Ctenopharyngodon idella*)

I know what you are thinking. Don't you sell these every year for your fish sale? The answer is a complicated yes and no. This is more of a success story than the other articles have been thus far. A known invasive species that is still being sold and utilized for cleaning ponds of unwanted weeds. Actually, in recent years, the white amur was one of the most farmed fish globally, producing roughly 5 million tons per year according to the FAO in 2014.

The white amur was named from its original habitat of the Amur River in Russia. Easily achieving 50 pounds as an adult, and upwards of 6' in length. Adult grass carps feed primarily on aquatic plants, both higher aquatic plants and submerged terrestrial vegetation, but may also eat detritus, insects and other invertebrates. They eat up to three times their own body weight daily, and thrive in small lakes and backwaters that provide an abundant supply of vegetation. The carp has been likened to a cow underwater. The fish is eaten in Asian culture very readily. The assumption that white amur is a bottom feeder and has too many bones has plagued the palatability in the U.S. There have been many tries to get people to eat grass carp throughout the years. The one thing to worry about, as with eating all fish, is the chance the fish has absorbed pollutants and toxins. For this reason, larger grass carp are not typically eaten. Now for the reason we are able to sell grass carp and readily purchase them.

It was discovered that sterile triploid White Amur could be produced by a brief pressure treatment on their fertilized eggs. Putting the eggs into a strong canister with a simple hydraulic bottle-jack setup like car mechanics use to seat bearings, the hyperbaric condition caused many of the first cell-divisions to retain an extra set of chromosomes. This is triploidy when 3 sets of DNA are in every cell instead of the normal diploidy when only 2 sets are there. This triploidy renders the fish sterile (non-reproducing), and after the fish reach six inches or so in size, a blood sample is taken and put in a medical analyzer (a Coulter Counter) that can detect the slightly larger red blood cells of a triploid fish. This ensures only sterile fish are released. The Ohio Division of Wildlife (ODW) took the bait in 1987, to allow the importation of sterile triploids amur into Ohio. The US Fish and Wildlife Service also got involved to certify each interstate shipment of triploids before the trucks left the south. This arrangement has continued to the present day, and demand has remained strong. The cost and negative effects of some herbicides have been weighed against the rather inexpensive natural means of white amur herbivory in our ponds. In short, white amur is invasive. It and it's 3 Asian carp relatives, have wreaked havoc on our watercourses and native fish populations. But it showcases how research, time, and technology has changed the way we thought about incorporating something that doesn't belong.

"Wilderness is a resource which can shrink but not grow... creation of new wilderness in the full sense of the word is impossible."
— Aldo Leopold