

## 4.8 Invasive Species

### Description

Harmful species are species that have potential negative impacts on the environment and economy of Clinton County. Harmful species are both native and invasive. The National Oceanic and Atmospheric Administration (NOAA) defines an invasive species as “an organism that causes ecological or economic harm in a new environment and is not native.” Harmful species are species that are native to a region, but that also cause significant ecological, public health, or economic harm. Their growth is often encouraged through human activity.

Invasive species can be terrestrial (land dwelling) or aquatic (water dwelling). Terrestrial species include plants, trees, shrubs, animals, birds, and insects, as well as fungi, bacteria, molds, and viruses. Aquatic species include aquatic plants and algae, fish, mollusks, amphibians, and insects, as well as fungi, bacteria, molds, and viruses.

### Location

Invasive species have the potential to impact any location within the County. The most invasive terrestrial species degrade the State’s woodlands, wetlands, and prairies. Aquatic Invasive Species use rivers to spread. Ohio has more than 66,000 miles of streams, 312 miles of Great Lakes shoreline, nearly 2,000 inland lakes and reservoirs, and shares major watersheds with other states and Canada. Clinton County lies in the Mississippi River basin, which is an ecologically diverse river system, and is susceptible to invasions through the Ohio River and its tributaries.

### Extent

Once invasive species become widely established, controlling their spread is both technically difficult and expensive, making eradication nearly impossible. Invasive species can usually overtake native species and alter the natural wildlife habitat.

The most common invasive species in Clinton County is the **Emerald Ash Borer (EAB)** (Figure 4.8.1). It is an exotic beetle that feeds on ash trees inhibiting the tree’s ability to transport water and nutrients. This insect was first found in Ohio in 2002 and has since been found in every county in the State. Since the EAB has been found in every county, there are no quarantines in effect within Ohio’s borders. Ohio is still listed in the Federal quarantine boundary.

Figure 4.8.1: Emerald Ash Borer and Feeding Tunnels



Source: David Cappaert (Left) and National Park Services (Right)

Approximately 2,300 plant species occur in the wild in Ohio. Of these, about 78 percent are native, that is, they were found in the region before the times of European settlement. Of the remaining 22 percent, fewer than 100 have been identified to be problems in natural areas. According to the Ohio



Invasive Plants Council, there are 38 invasive plant species in Ohio that have been banned and more under consideration (Table 4.8.2). These plants cannot be sold, distributed, or imported.

Studies conducted by Ohio Department of Natural Resources, Ohio Sea Grant, and the Ohio State University have identified over 70 invasive aquatic species in Ohio (Table 4.8.3). With the exception of White Perch, it is unlawful to possess, import, or sell these species live.

**Table 4.8.2: Plant Invasive Species in Ohio as of January 7, 2018**

Scientific Name	Common Name
<i>Ailanthus altissima</i>	Tree-of-heaven
<i>Alliaria petiolata</i>	Garlic mustard
<i>Berberis vulgaris</i>	Common barberry
<i>Butomus umbellatus</i>	Flowering rush
<i>Celastrus orbiculatus</i>	Oriental bittersweet
<i>Centaurea stoebe</i> ssp. <i>Micranthos</i>	Spotted knapweed
<i>Dipsacus fullonum</i>	Common teasel
<i>Dipsacus laciniatus</i>	Cutleaf teasel
<i>Egeria densa</i>	Brazilian elodea
<i>Elaeagnus angustifolia</i>	Russian olive
<i>Elaeagnus umbellate</i>	Autumn olive
<i>Epilobium hirsutum</i>	Hairy willow herb
<i>Frangula alnus</i>	Glossy buckthorn
<i>Heracleum mantegazzianum</i>	Giant hogweed
<i>Hesperis matronalis</i>	Dame's rocket
<i>Hydrilla verticillata</i>	Hydrilla
<i>Hydrocharis morsus-ranae</i>	European frog-bit
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Lonicera maackii</i>	Amur honeysuckle
<i>Lonicera morrowii</i>	Morrow's honeysuckle
<i>Lonicera tatarica</i>	Tatarian honeysuckle
<i>Lythrum salicaria</i>	Purple loosestrife
<i>Lythrum virgatum</i> (effective January 7, 2019)	European wand loosestrife
<i>Microstegium vimineum</i>	Japanese stiltgrass
<i>Myriophyllum aquaticum</i>	Parrotfeather
<i>Myriophyllum spicatum</i>	Eurasian water-milfoil
<i>Nymphoides peltata</i>	Yellow floating heart
<i>Phragmites australis</i>	Common reed



Scientific Name	Common Name
<i>Potamogeton crispus</i>	Curley-leaved pondweed
<i>Pueraria montana</i> var. <i>lobate</i>	Kudzu
<b>Pyrus calleryana (effective January 7, 2023)</b>	<b>Callery pear</b>
<i>Ranunculus ficaria</i>	Fig buttercup, lesser celandine
<i>Rhamnus cathartica</i>	Common Buckthorn
<i>Rosa multiflora</i>	Multiflora rose
<i>Trapa natans</i>	Water chestnut
<i>Typha angustifolia</i>	Narrow-leaved cattail
<i>Typha x glauca</i>	Hybrid cattail
<i>Vincetoxicum nigrum</i>	Black Swallow-Wort

**Table 4.8.3: Aquatic Invasive Species in Ohio**

Type	Scientific Name	Common Name
Fish	<i>Alosa pseudoharengus</i>	Alewife
Fish	<i>Carassius auratus</i>	Goldfish
Fish	<i>Carassius carassius</i>	Crucian Carp
Fish	<i>Carassius gibelio</i>	Prussian Carp
Fish	<i>Channa</i> app. and <i>Parachanna</i> app.	Snakeheads
Fish	<i>Claris batrachus</i>	Walking Catfish
Fish	<i>Ctenopharyngodon idella</i>	Diploid Grass Carp - White Amur
Fish	<i>Ctenopharyngodon Idella</i>	Grass Carp
Fish	<i>Cyprinus carpio</i>	Common Carp
Fish	<i>Fundulus catenatus</i>	Northern Studfish
Fish	<i>Fundulus diaphanus</i>	Eastern Banded Killifish
Fish	<i>Gambusia holbrooki</i> and <i>Gambusia affinis</i>	Eastern & Western Mosquitofish
Fish	<i>Gasterosteus aculeatus</i>	Three Spine Stickleback
Fish	<i>Gymnocephalus cernuus</i>	Ruffe
Fish	<i>Hypophthalmichthys harmandi</i>	Large-scale Silver Carp
Fish	<i>Hypophthalmichthys molitrix</i>	Silver Carp
Fish	<i>Hypophthalmichthys nobilis</i>	Bighead Carp
Fish	<i>Lates niloticus</i>	Nile Perch
Fish	<i>Leuciscus idus</i>	Ide
Fish	<i>Morone americana</i>	White Perch



Type	Scientific Name	Common Name
Fish	<i>Mylopharyngodon piceus</i>	Black Carp
Fish	<i>Neogobius melanostomus</i>	Round Goby
Fish	<i>Osmerus mordax</i>	Rainbow Smelt
Fish	<i>Perca fluviatilis</i>	European Perch
Fish	<i>Percottus glenii</i>	Amur Sleeper
Fish	<i>Petromyzon marinus</i>	Sea Lamprey
Fish	<i>Phoxinus phoxinus</i>	Eurasian Minnow
Fish	<i>Proterorhinus marmoratus</i>	Tubenose Goby
Fish	<i>Pseudorasbora parva</i>	Stone Moroko
Fish	<i>Rhodeus sericeus</i>	Bitterling
Fish	<i>Rutilus sericeous</i>	Roach
Fish	<i>Sander lucioperca</i>	Zander
Fish	<i>Scardinius erythrophthalmus</i>	European Rudd
Fish	<i>Scardinius erythrophthalmus</i>	Rudd
Fish	<i>Silurus glanis</i>	Wels Catfish
Fish	<i>Tinca tinea</i>	Tench
Mollusks	<i>Bellamya (Cipangopaludina)</i>	Mystery Snails
Mollusks	<i>Bithynia tentaculata</i>	Faucet Snail
Mollusks	<i>Corbicula fluminea</i>	Asian Clam
Mollusks	<i>Dreissena bugensis</i>	Quagga Mussel
Mollusks	<i>Dreissena polymorpha</i>	Zebra Mussel
Mollusks	<i>Limnoperna fortunei</i>	Golden Mussel
Mollusks	<i>Potamopyrgus antipodarum</i>	New Zealand Mudsnail
Crustaceans	<i>Bythotrephes longimanus</i>	Spiny Waterflea
Crustaceans	<i>Cercopagis pengoi</i>	Fishhook Waterflea
Crustaceans	<i>Cherax destructor</i>	Yabby
Crustaceans	<i>Cherax tenuimanus</i>	Marron
Crustaceans	<i>Dikerogammarus villosus</i>	Killer Shrimp
Crustaceans	<i>Eriocheir sinensis</i>	Chinese Mitten Crab
Crustaceans	<i>Eriocheir sinensis</i>	Chinese Mitten Crab
Crustaceans	<i>Faxonius virilis</i>	Virile Crayfish
Crustaceans	<i>Hemimysis anomala</i>	Bloody-red Shrimp
Crustaceans	<i>Procambarus clarkii</i>	Red Swamp Crayfish



Type	Scientific Name	Common Name
Plant	<i>Butomus umbellatus</i>	Flowering-rush
Plant	<i>Egeria densa</i>	Brazilian Waterweed
Plant	<i>Hydrilla verticillata</i>	Hydrilla
Plant	<i>Hydrocharis morsus-ranae</i>	European Frog-bit
Plant	<i>Iris pseudacorus</i>	Yellow Iris
Plant	<i>Ludwigia peploides</i>	Creeping Water-primrose
Plant	<i>Lysimachia nummularia</i>	Moneywort
Plant	<i>Lythrum salicaria</i>	Purple Loosestrife
Plant	<i>Marsilea quadrifolia</i>	European Water Clover
Plant	<i>Myriophyllum aquaticum</i>	Parrotfeather
Plant	<i>Myriophyllum spicatum</i>	Eurasian Watermilfoil
Plant	<i>Najas minor</i>	Brittle Naiad
Plant	<i>Nelumbo nucifera</i>	Pink Lotus
Plant	<i>Nitellopsis obtusa</i>	Starry Stonewort
Plant	<i>Nymphoides peltata</i>	Yellow Floating Heart
Plant	<i>Phalaris arundinacea</i>	Reed Canary Grass
Plant	<i>Phragmites australis</i>	Common Reed (Phragmites)
Plant	<i>Pistia stratiotes</i>	Water Lettuce
Plant	<i>Potamogeton crispus</i>	Curly-Leaf Pondweed
Plant	<i>Trapa natans</i>	Water Chestnut
Plant	<i>Typha angustifolia, Typha x glauc</i>	Narrowleaf and Hybrid Cattails

Other invasive species that have the potential to impact Clinton County and the surrounding counties in Ohio include:

The **Gypsy Moth** has been migrating into Ohio from Pennsylvania and Michigan. In the caterpillar stage, the Gypsy Moth targets more than 300 different trees and shrubs. A healthy tree will typically die within two years of a Gypsy Moth infestation. Gypsy Moth eggs are laid during July and overwinter until late April to mid-May. An egg mass can contain up to 600 eggs. Before feeding, the larvae are dispersed by the wind to other trees or areas. The Gypsy Moth can lead to heavy defoliation and can make trees more susceptible to other invasive or harmful species. Preferred host plants include alder, aspen, gray birch, white birch, hawthorn, larch, linden, mountain ash, oaks, Lombardy poplar, willows, and witch hazel. Trees that are susceptible to older larvae only include beech, red cedar, chestnut, hemlock, plum, pine, and Colorado blue spruce.

**Hemlock Wooly Adelgid** are small invasive pests that can be found on the underside of hemlock needles. They feed on the sap causing the tree to dry up and die. It was first found in North America in the 1950s. Today, they are a huge problem in northeast Ohio.

**Asian Long-Horned Beetles** are wood-boring beetles native to Asia that were unintentionally introduced to North America, likely in wood packing material. Clermont County experienced an infestation in 2011.



They pose a significant threat to forested land. There are no known Asian Long-Horned Beetle infestations in Clinton County.

**Mute Swans** are non-native invasive species found on public lakes across Ohio, originally known as winter visitors with the first published record in the United States in 1936 and Ohio in 1987. During the breeding season, March through May, adult mute swans become highly territorial and will fight to push native birds out of their nesting area. Mute swans have attacked humans and pets during this time as well. Mute swans can consume submerged aquatic vegetation and usually uproot the whole plant leaving nothing behind. This takes away natural habitat from fish and leaves little food source for native waterfowl. The removal of aquatic vegetation can also cause water quality issues and erosion problems.

**White Nose Syndrome** is a fungal disease infecting and killing bats. Bats provide several ecological benefits such as plant pollination, seed dispersal, pest control, and contributions to the medical field. In Ohio, there are 11 species of bats that consume tons of nocturnal insects each year including moths, beetles, flies, true bugs, and hoppers. A White Nose Syndrome case was confirmed in Ohio in 2011.

## History

Clinton County has been impacted by the Emerald Ash Borer, with infestations starting as early 2010. The extent of this damage is unknown. Additionally, it is possible that any of the other species listed above have at one point affected the County and its residents.

## Probability

Since there are many invasive species throughout Ohio, it is probable that Clinton County will experience some of the invasive species listed above (**Tables 4.8.2 and 4.8.3**).

## Vulnerability Assessment

### *Infrastructure Impact*

There are no likely impacts to public roadways or utilities. Public trees may be destroyed or impacted by various invasive species. Aquatic invasive species could destroy water quality, make poor habitat for fish, and clog water intake pipes. Some species also increase fire potential and can be problematic to levees, dams, and irrigation systems.

### *Population Impact*

There are no likely impacts on the local population. Recreational activities such as boating and fishing may be mildly impacted.

### *Property Damage*

Property damage, in the form of reduced values from impacts on landscaping, is likely.

### *Loss of Life*

Loss of life because of invasive species is very unlikely. Some of these species consumed as food could lead to diseases and other health impacts in humans.

### *Economic Losses*

Economic impacts can vary greatly depending on the target and the invasive species and their impacts on those targets. Agricultural and horticultural revenue losses may be experienced if crops and plants are affected by an invasive species. Also, there may be indirect economic losses with degradation of forested lands and tree canopies. Examples include reduction in viable lumber for construction, increased heating and cooling costs, and reduced property value.



## Future Trends

### ***Land Use and Development Trends***

There could be slight impacts on development and land use due to invasive species. Some invasive species can be particularly damaging to crops, agricultural land, and wetlands. Future development may involve site investigation to identify any potential invasive species on the property.