What Can You Do To Help?

I Investigate the invasive species in your area or region

N Native and NON invasive plants in your landscaping

V Vigilance against transporting non-native invasives from one site to another

A Awareness of how harmful non-native invasives can be to our native diversity, our economical structure, and our health

S Share what you know with fellow sportsmen and women, friends, and neighbors

I Initiate control efforts for invasive species in your local community

V Volunteer with local and state agencies to control and remove these species

E Educate yourself and those around you on this very important issue.

FOR MORE INFORMATION ON INVASIVE SPECIES, CONTACT:

ODNR Division of Wildlife
2045 Morse Road, Blg. G
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614/265-6309 or -6346
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U.S. Fish & Wildlife Service
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Reynoldsburg, Ohio 43068
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www.fws.gov/midwest/reynoldsburg/

OTHER PARTNERS SUPPORTING THIS MESSAGE:

Ohio Lepidopterists
Metro Parks
Stop Aquatic Hitchhikers
Ohio Ornithological Society
Pheasants Forever
National Wild Turkey Federation

Ted Strickland, Governor • Sean D. Logan, Director
David M. Graham, Chief
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Invasive Alien Species: Impacts to Fish and Wildlife in Ohio

INTRODUCTION

What are invasive species? The National Invasive Species Council defines an invasive species as one that *"is both non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm, or harm to human health".* Approximately 50,000 alien or non-native species have been introduced to the United States. At least half of this number (25,000) are plants and 20,000 are microbes (pathogens and diseases). Arthropods (including insects) make up 4,500 and the remaining are: 138 fish, 97 birds, 88 mollusks (or mussels), 53 reptiles and amphibians, and 20 mammals. While some of these species, such as corn, wheat, cattle, and poultry, provide more than 80% of the U.S. food system, some become unintentionally well established and cause more than $120 billion a year in damages to agriculture, industry, recreation, forestry, human health, and the environment. Only a small fraction of non-native species that are introduced become established and a very low percentage (approximately 10%) become invasive and harmful. However, these 5,000+ species can be incredibly damaging.

Garlic mustard

Many non-native species were introduced to the United States for legitimate, well-intentioned purposes, such as erosion control, horticulture, forage, and medicinal uses, while others have arrived by accident often as stowaways in boats or cargo. In general, most plant and vertebrate animal introductions were intentional, while most invertebrate animal and microbe introductions were accidental. In most cases, when species were introduced, their invasive nature was unknown and typically not considered. In the past 40 years, the rate and risks of invasive aliens have increased enormously due to human population growth, movement of people and materials, and environmental alteration. More materials are being traded among nations than ever before, creating more opportunities for accidental introductions.

Tartarian honeysuckle

Given the overwhelming nature of invasive aliens on a national scale, one may wonder what specific impacts invasive species have on fish and wildlife in Ohio. This brochure provides some examples of invasive plants and animals known to be affecting Ohio's natural habitats, and fish and wildlife species. Due to the lack of natural controls, high reproductive ability, and the difficulty with management options for most invasive species, some non-native species are able to out-compete native species and displace many of them. The introduction of invasive species to high-quality habitats causes a reduction in overall biological diversity and changes to food webs. At least 42% of the federally endangered and threatened species in the U.S. are at risk due to invasive species. There are numerous examples of Ohio rare species, such as native mussels, birds, butterflies, plants, reptiles, and amphibians that are threatened by invasive species, but these incidences may be easily overlooked. More noticeable impacts of invasive aliens may be encountered when fishing, hunting, hiking, boating, and observing plants and wildlife in a variety of habitats. Even planting invasive species in your backyard or landscaping can have negative impacts on nearby natural habitats. Loss of habitat translates to a corresponding reduction in wildlife populations.

Eastern prairie fringed orchid

EXAMPLES OF THE WORST INVASIVE SPECIES IN OHIO

Animals	Plants
Zebra and quagga mussels	Purple loosestrife
Sea lamprey	Garlic mustard
Round goby	Amur honeysuckle
Spiny waterflea	Reed canary grass
Ruffe	Giant reed grass *(Phragmites)*
Asian carp	Narrow-leaved cattail
House sparrow	Glossy buckthorn
European starling	Multiflora rose
Gypsy moth	Autumn-olive
Emerald ash borer	Japanese honeysuckle
Asian long-horned beetle	Canada thistle
Multi-colored Asian lady beetle	Eurasian water-milfoil

What is so bad about the bush honeysuckle and autumn-olive I planted on my property for wildlife habitat?

Many organizations and agencies in Ohio have encouraged planting non-native shrubs, such as bush honeysuckle and autumn-olive, for wildlife habitat in the past. Introduced for their hardiness and ease of growing, it was not known at the time how invasive these species could be, nor how much impact they would have on woodlands, stream edges, old fields, and shrub-land, and overall native plant diversity. In addition, research has now shown that these non-native shrubs do not provide adequate nesting opportunities due to structure differences, nor do they provide high-quality food sources for birds due to lower protein content. Native shrubs, such as spicebush, winterberry, serviceberry, dogwood, witch-hazel, and *Viburnum* species, provide much better habitat and nutrition for wildlife species. The dense understory provided by non-native bush honeysuckles, autumn and Russian olive, multiflora rose, and glossy buckthorn choke out native shrubs, tree seedlings and saplings, and wildflowers.

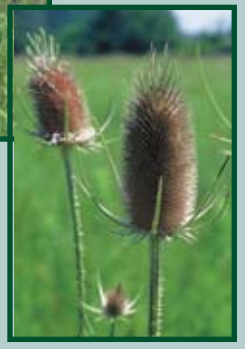
Amur honeysuckle

Autumn-olive

How are invasive species changing grasslands and prairies in Ohio?

Grasslands and prairies in Ohio are limited to small, remnant native habitats as well as restored sites on public land. Although many native grassland and prairie species are known from Ohio, invasive plants, such as smooth brome, reed canary grass, tall fescue, Canada thistle, common and cut-leaved teasel, have been able to encroach on these small sites, displace native species, and reduce overall native plant diversity. Many rare native birds and butterflies depend on grassland and prairie habitat in Ohio including bird species such as bobolinks, Henslow's sparrows, Northern bobwhites, loggerhead shrikes, and short-eared owls as well as several species of butterflies including the regal and silver-bordered fritillaries, Dion skippers, and two-spotted skippers. Invasive, non-native plants should be controlled in the best native remnant and restored prairies and grasslands in the state to ensure these species' survival.

Common teasel



Northern bobwhite

What's the big deal with zebra mussels and round goby in Lake Erie?

Lake Erie has long been subjected to large numbers of invasive animals and plants becoming established in its waters and along its coasts. Both zebra mussels (and the related quagga mussels) and the round goby were introduced to the Great Lakes through the ballast water of ships. Zebra mussels can sometimes reach densities of several hundred thousand in a square meter of lake bottom, altering physical habitat, blocking water intake pipes, and eliminating native mussels from Lake Erie. By selectively filtering algae from the water, zebra mussels may promote blooms of noxious blue-green algae that seriously degrade water quality. Round gobies are small, aggressive, bottom-dwelling fish that feed on mollusks, small invertebrates, and the eggs and larvae of other fish, threatening native sport fish including smallmouth bass. If a smallmouth bass nest is left unprotected by the adult fish for just a few minutes, it can be wiped out by gobies. The Division of Wildlife has enacted regulations to limit smallmouth bass fishing during the nesting period. Round gobies eat zebra mussels, further concentrating toxic substances and bacteria which can be passed along to other fish and birds, potentially causing widespread die-offs.

Zebra mussels

Round goby

Do invasive species impact my fishing success?

Yes, there are many ways that invasive species can ruin your fishing trip! Once they become established in a water body, invasive species may devastate populations of native fishes. Some invaders, such as sea lampreys, prey directly upon native fishes. Others, like Asian carp or spiny water fleas, compete with native species for food or habitat. Many invasive species can also seriously degrade habitat. Plants, such as Eurasian water-milfoil, grow so densely that they can choke off parts of a lake to the point where fish habitat is lost and fishing and boating are nearly impossible. Even a familiar species like common (Asian) carp harms native fishes by muddying waters which can smother native fish eggs and prevent beneficial native vegetation from growing. Round gobies are a nuisance to anglers because they steal or swallow baits intended for sport fish.

How do invasive plants affect woodland wildlife abundance and diversity?

Invasive plants reduce the number and variety of forest wildlife primarily by reducing available food and lowering habitat quality. When native plants are out-competed by non-native invasive plants, habitat quality declines, and the abundance and diversity of forest wildlife also decreases. For example, over 150 forest wildlife species in Ohio depend on acorns produced by oak trees for survival and reproductive success. Invasive vines and shrubs, such as Japanese honeysuckle and the non-native bush honeysuckles, can completely shade out oak tree seedlings and saplings and, over time, reduce the oak component of the woodland. Fewer acorn-producing trees equates to lower food availability and reduced habitat quality for wildlife such as white-tailed deer, squirrel, grouse, and turkey. Invasive plants can also affect the reproductive success of forest wildlife. Non-native shrubs such as bush honeysuckle have been shown to reduce nesting success and abundance of birds, such as American robins, Northern cardinals, and wood thrushes, especially in forested areas near urban landscapes in Ohio. On a local scale, restoring the native shrub community may improve nest success and abundance of forest birds.

Wood thrush

Japanese honeysuckle

What happened to all the frogs and toads in my wetland? Is purple loosestrife really that bad?

Less than 10% of Ohio's original wetlands remain and many are threatened by invasive plants. Plants such as purple loosestrife, *Phragmites,* reed canary grass, and glossy buckthorn form dense single-species stands in wetlands. These dense stands choke out the diversity of food and shelter needed by many of our native wildlife species. Invasive plants can even alter the structure of wetlands so that native wildlife species do not develop properly. For example, researchers at Cornell University have studied the effects of invasive plants on amphibians such as frogs, toads, and salamanders. Data indicate that American toads in invasive purple loosestrife stands have a 50% decrease in survival rate as compared to those toads in native cattail wetlands. It appears that purple loosestrife changes the chemical composition of wetlands, altering the algae community which in turn is toxic to developing American toads.

Purple loosestrife

Are invasive species a threat to any endangered species in Ohio?

Over 40% of the nation's federally endangered and threatened species are impacted by invasive species. Invasive plants and animals threaten endangered species by changing natural fire cycles, chemically altering the environment, and competing for space/shelter, food, and water. For example, two federally listed mussels, the northern riffleshell and clubshell, no long occur in Lake Erie due in part to the invasive zebra mussel. Large numbers of zebra mussels can attach to one native mussel, interfering with feeding, movement, and overall survival. Running buffalo clover and Eastern prairie fringed orchid, both federally listed plants in Ohio, are threatened by invasive Japanese honeysuckle, periwinkle, purple loosestrife, *Phragmites,* and reed canary grass. These invasive plants can out-compete rare native plants for space and light resources. Control of plant and animal invasive species is necessary for the recovery of many endangered species throughout the nation.