About MISC

The MARYLAND INVASIVE SPECIES COUNCIL (MISC) provides leadership concerning invasive species and encourages efforts that prevent the introduction of, and manage the impact of, invasive species on Maryland ecosystems.

The Maryland Invasive Species Council (MISC), established in April 2000, is a group of concerned scientists, land managers, business people and citizens acting to reduce the spread of invasive plants, animals and diseases.

Membership is open to all interested government agencies, organizations, and parties operating or conducting business in Maryland. Present membership includes representatives from federal, state and local government agencies, universities, the horticulture, landscaping and pet industries, and not-for-profit organizations.

For further information concerning membership or to attend a meeting, visit https://mdinvasives.org/category/announcements/

INVASIVE SPECIES

in Maryland

Maryland Invasive Species Council

www.MDInvasiveSp.org

Invasive Species

Kudzu blankets forest edges, Asian tiger mosquitoes transmit West Nile virus to humans, birds, dogs and horses and the American elms that once lined our streets, die of Dutch elm disease. These are just a few examples of the detrimental effects of invasive species in Maryland. Plants, animals, fungi or any other living thing that is not native to an area can have an unforeseen and sometimes severe negative impact on the natural balance of an ecosystem.

Non-native or "exotic" organisms are living things that were introduced to an area through human activities and did not evolve in or migrate to a specific area. Exotic pests can be from across the ocean or from as close as a neighboring state. Not all exotic organisms are bad. Many of our domestic animals and food crops are exotic to the Mid-Atlantic and Maryland. Common examples of desirable exotic organisms include chickens, European honey bees, chrysanthemums, and apples.

Unfortunately some exotic animals become troublesome when introduced into a new environment. These pest species are often referred to as being "invasive". The Presidential Executive Order 13112, 2/3/99 defines an invasive species as "alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health". Invasive species cause harm by outcompeting native species, reducing food sources for native animals, changing nutrient cycling, and causing environmental changes which can lead to a loss in diversity, erosion, degraded soils and reduced water quality in our lakes and rivers.

Examples of invasive species are numerous and include the species described in this brochure and many more including imported fire ants, chestnut blight, Asian longhorn beetle, garlic mustard and Japanese honeysuckle. **In 2000 the state of Maryland spent 1.8 million dollars on detecting, managing, and eradicating exotic invasive species.**

Print Resources

- Alliance for the Chesapeake Bay. 2003. Citizen's Guide to the Control of Invasive Plants in Wetland and Riparian Areas.
- Kaufman, S.R. and W. Kaufman. 2007. Invasive Plants: A Guide to Identification, Impacts and Control of Common North American Species. Stackpole Books, Mechanicsburg, PA. 458 pp.
- Miller, J.H., S.T. Manning and S.F. Enloe. 2010. A management guide for invasive plants in southern forests. Gen. Tech. Rep. SRS-131. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 120 pp.
- Sarver, M.J., A. Treher, L. Wilson, R. Naczi, and F.B. Kuehn. 2008. Mistaken Identity? Invasive Plants and Their Native Look-alikes: an Identification Guide for the Mid-Atlantic. Dover, DE: Delaware Department of Agriculture and USDA Natural Resources Conservation Service. 68 pp.
- Slattery, B.E., K. Reshetiloff, S.M. Zwicker. 2005. Native Plants for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed. U.S. Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, MD. 82 pp.
- Swearingen, J., B. Slattery, K. Reshetiloff, and S. Zwicker. 2010. Plant Invaders of Mid-Atlantic Natural Areas, 4th ed. National Park Service and U.S. Fish and Wildlife Service, Washington, DC. 168 pp.
- Tallamy, D.W. 2010. Bringing Nature Home: How You Can Sustain Wildlife with Native Plants. Timber Press, Portland OR. 358 pp.

Photo Credits from Bugwood.org:
Emerald ash borer exit hole: David R. McKay, USDA APHIS PPQ
Zebra mussels: Randy Westbrooks, U.S. Geological Survey
Zebra mussel: Amy Benson, U.S. Geological Survey
Northern Snakehead: U.S. Geological Survey Archive, U.S. Geological Survey
Sudden Oak Death: Joseph O'Brien, USDA Forest Service

Resources on Invasive and Native Species

Websites

- Maryland Invasive Species Council, www.mdinvasivesp.org
- Aquatic and Invasive Plants, http://aquat1.ifas.ufl.edu/welcome.html
- Early Detection and Distribution Mapping System, www.eddmaps.org
- Home and Garden Information Center, www.hgic.umd.edu
- Invasive Plant Atlas of the United States, www.invasiveplantatlas.org
- Invasive Species Images, www.invasive.org
- Maryland Native Plant Society, www.mdflora.org
- Mid-Atlantic Early Detection Network, www.maedn.org
- Mid-Atlantic Invasive Plant Council, www.maipc.org
- Mid-Atlantic Panel on Aquatic Invasive Species, www.mapais.org
- Mistaken Identity? Invasive Plants and their Native Look-alikes, www.delawareinvasives.net
- NatureServe, www.natureserve.org
- Pest Threats in Maryland, www.pestthreats.umd.edu/
- Plant Conservation Alliance "Weeds Gone Wild" www.nps.gov/plants/alien or www.weedsgonewild.org
- St. Louis Codes of Conduct for Nurseries and Botanic Gardens, www.mobot.org/invasives/codesN.html
- U.S. Department of Agriculture Federal Noxious Weed Program, www.aphis.usda.gov/plant_health/plant_pest_info/index.shtml
- U.S. Geological Survey, Non-indigenous Aquatic Species, http:/nas.er.usgs.gov
- Chesapeake Natives, www.chesapeakenatives.org/
- Lady Bird Johnson Wildflower Center, www.wildflower.org/ladybird/
- National Invasive Species Council, www.invasivespecies.gov
- Native Plants for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed, www.nps.gov/plants/pubs/chesapeake
- Plant Conservation Alliance, www.nps.gov/plants
- U.S. National Arboretum, www.usna.usda.gov/Gardens/faqs/InvasivesAlternatives.html

This brochure contains introductions to twelve invasive species that threaten Maryland's ecosystems and economy. A more complete list is available on the MISC web page. New invasive species arrive in Maryland frequently and the MISC web site features regular updates. The species selected for this brochure were selected because they represent the scope of the invasive species problem in Maryland and because they:

- Are currently regulated by a state and/or federal law,
- Are widely recognized by biologists and resource managers to degrade natural ecosystems, and/or negatively affect native species, or
- Are known to have significant economic impacts on agricultural ecosystems, public infrastructure or natural resources, including impact on recreational activities or have deleterious effects on human health.

Volunteers weed warriors clear a forest of invasive shrubs and vines.

This Brochure is designed to educate Maryland citizens and help prevent the spread of invasive species.

Species Descriptions

Wavyleaf basketgrass, *Oplismenus undulatifolius* - This recently discovered perennial grass can grow in almost total shade. Like Japanese stiltgrass it forms mats cov-ering the forest floor, shading and crowding out native plants and slowing regeneration of trees and shrubs. It reproduces vegetatively by stolons and by sticky seeds that are carried to new places on hiking boots, horse hooves, auto tires, and road maintenance equipment.

Oriental bittersweet, *Celastrus orbiculatus* - The colorful orange fruits of this ornamental vine often appear in fall flower arrangements. The seeds are spread into forests and fields. The woody vines twine around trees killing small trees and overgrowing shrubs. Although some birds eat the fruits, areas invaded by Oriental bittersweet have less diversity of plants that can be food sources.

Callery pear, *Pyrus calleryana* - Lining Maryland highways, this pear tree's white blooms cover the tree in early spring. When new cultivars were introduced to replace the weak-branched 'Bradford' pear cultivar, cross-pollination between the cultivars produced small fruits that are spread by birds and mammals to open, sunny areas.

- *Minimize disturbance*. Many invasive species, especially plants, are adapted to disturbance and rapidly take over newly disturbed areas. Keep open areas on your property to a minimum and monitor disturbed areas for species that spread quickly.

- *Remove invasive species* before they become a problem. The best way to control invasive species is through prevention, early detection and rapid response. Pull, cut, spray or remove fruits of problem plants to prevent spread of seeds. Report unusual plants, insects or animals to your local Extension agent or Animal Control board, and seek their assistance.

- *Spread the word*. Invasive species have ecological, economic and social impacts that affect our environment, health, safety and quality of life.

- *Report your observations.* State government agencies and conservation groups will want to know if you see an invasive species. Share what you know and learn with your friends and neighbors.

Kids show off the multiflora rose shrub they uprooted.

What can you do?

Invasive species spread in many ways, including unintentionally by people. You can slow the spread of invasive species and prevent new invasions by being an aware, responsible and vocal steward of your own property.

- *Scout for invasive species*. Learn which plants and animals are problems in Maryland so you can recognize them. The MISC website (www.mdinvasivesp.org) features helpful descriptions and pictures.

- *Avoid introducing invasive species*. Check with plant sellers before you buy, to make sure that the plant you want, whether native or exotic, is not invasive. Ask about non-invasive alternatives for your garden.

- *Keep wildlife wild.* Don't approach or attempt to feed wildlife, or release exotic pets and aquarium fish into the wild.

- *Avoid transporting invasive species*. Seeds of invasive plants and immature stages of insects are easily moved from place to place on firewood, hiking boots, car tires, pants cuffs, and camping or recreational gear. Invasive zebra mussels colonize boat hulls.

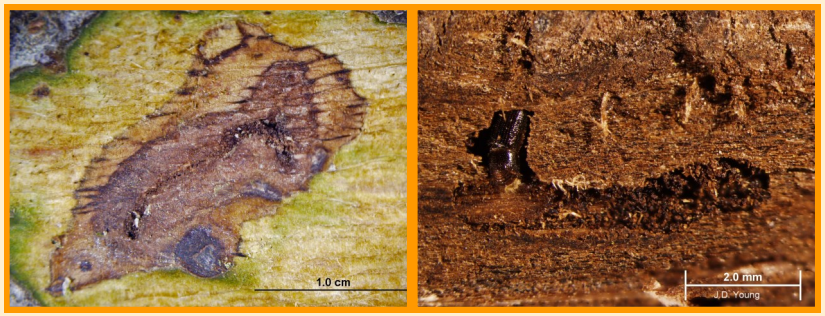
- *Check that your gear or boat is clean*. Especially be clean when entering wildlands or other natural areas, or new bodies of water.

- *Leave species in their natural habitats*. Don't bring species into Maryland from distant parts of the US, or other regions of the world.

Canada thistle, *Cirsium arvense* - Not from Canada, this thistle was probably accidentally introduced in colonial times from the Mediterranean region. It grows as a perennial weed with an extensive underground root system that makes it difficult to control once it has become established. It also spreads via wind-borne seed and readily colonizes agricultural fields and disturbed areas. Control is regulated by law in many states, including Maryland.

Emerald ash borer, *Agrilus planipennis* - This metallic green woodboring beetle was first detected in the US in 2002 and showed up in Maryland in 2003. It poses a serious threat to both native and ornamental ash (*Fraxinus*) trees. Signs of this pest include "D" shaped exit holes on trunks and branches and sprouts emerging from the base of the tree. It is illegal to transport firewood or ash trees from quarantine areas.

Brown marmorated stink bug, *Halymorpha halys* - First reported in Allentown, Pennsylvania in 2001 this stink bug is native to Asia. A strong flyer and avid hitchhiker, it spreads rapidly. It feeds on a wide range of plants and is a serious pest of fruit, vegetable, field, and nursery crops. It is difficult to control but an effective bait is under development.



Thousand cankers disease (TCD), *Geosmithia sp. (vector = Pityophthorus juglandis)* - A disease that is always fatal to walnut trees. TCD is similar to Dutch elm disease in how it spreads. Small bark beetles carry and transfer fungal spores to healthy trees while constructing galleries to lay their eggs in. The movement of infested firewood and timber could easily bring these pests into Maryland.

Sudden oak death, *Phytophtora ramorum* - This fungus-like microbe is responsible for the death of thousands of oak trees in California. It has been brought east on nursery stock including viburnums, rhododendrons and camellias. Due to the vigilance of nursery inspectors and homeowners who reported diseased plants, it has not been found in the wild in Maryland.

Northern snakehead, *Channa argus* - This is an aggressive, air-breathing, toothed, predatory fish that was first found in a Maryland pond in 2002. Sold in live fish markets, snakeheads are edible. Because they eat other fish, crayfish, frogs, small turtles and small mammals and can travel short distances over land, the northern snakehead is spreading rapidly and changing aquatic ecosystems.

Resident Canada geese, *Branta canadensis* - You've seen them browsing on lawns and golf courses; these geese do not migrate south for the winter, but stay in Maryland year-round. This bird consists of several subspecies that were introduced and became established in Maryland during the early 20th century. Resident Canada geese have high reproduction and survival rates, allowing their population to increase rapidly. Local flocks consume large amounts of vegetation in the Chesapeake Bay and other wetlands, cause damage to agricultural fields and create nuisance conditions due to waste buildup. Control methods and sport hunting are regulated by State and federal agencies.

Rock snot, Didymo, *Didymosphenia geminata* - Named for its color and consistency, rock snot coats the bottom of streams in dense mats. It is a diatomaceous single-celled alga whose silica shell and tough stalks make it abrasive and difficult to control. It clings to man-made materials including felt-soled waders, inner tubes and fishing gear. Because it thrives in cold, fast water, it can threaten prime trout fishing streams.

Zebra mussel, *Dreissena polymorpha* - Advancing on the Chesapeake Bay, this small mussel establishes in fresh and brackish water. It arrived in the Great Lakes in the ballast water of ships traveling from Eastern Europe. It has since spread as far as the Susquehanna River and upper Chesapeake Bay traveling on boat hulls. It grows in dense colonies that overwhelm native mussels and can clog underwater pipes and valves.