

Invasive Species 101

What are invasive species?

Non-native, or exotic, species that do not occur naturally in a particular ecosystem are called invasive species. Invasive plant and animal species have invaded many waters, doing irreparable harm to reservoirs, lakes, streams, and wetlands. Their introduction can cause economic or environmental harm or impact human health. Invasive species can be plants, animals, and other organisms. They are characteristically adaptable, aggressive, and have a high reproductive capacity. They often thrive in areas beyond their natural range of dispersal. Their vigor combined with a lack of natural enemies often leads to outbreak populations, which in turn cause ecological balance and water-quality issues.

Have invasive species been found in the Occoquan Reservoir or Occoquan watershed?

Yes, water chestnut, or *Trapa natans*, has been found in isolated areas of the Occoquan Reservoir. Zebra mussels have not yet been found in the reservoir, but are believed to be a threat because they have been found in the Occoquan watershed.

Water Chestnut 101

What is water chestnut?

Water chestnut is an invasive floating-leaved plant that can form dense mats at the water's surface, crowding out native aquatic species. Water chestnut is hardy and can survive across a range of climates. It prefers slow-moving, nutrient-filled waters, such as ponds, lakes, and shallow streams.

What does it look like?



Water chestnut has floating, green, triangular leaves that are shiny and waxy above and coated with fine hairs on the underside. The feathery submerged leaves are whorled around branching stems that can reach lengths of 16 feet. It flows from mid to late-July.

How does it spread?

Water chestnut primarily reproduces by spreading its sharp, barbed nuts, each of which can produce 10 to 15 plants that in turn can produce up to 20 seeds. The nuts float downstream and sink to the wet sediments, remaining viable for up to 12 years. Barbed water chestnut nuts can also spread by attaching to the feathers of waterfowl.

Can water chestnuts be eliminated?

While complete elimination may be a challenge, proliferation of water chestnut is best controlled if the plants are removed from the Occoquan Reservoir before the seeds are dropped. Early detection is very important to controlling and eliminating populations of this plant.

What are the impacts and threats to the Occoquan Reservoir?

Water chestnut is highly competitive. It spreads rapidly and displaces native species, reducing biodiversity. It can drive out native fish populations as it gathers in dense mats that block sunlight and reduce oxygen in the water. If left uncontrolled, water chestnut can significantly degrade water quality. Some bodies of water have become so choked with these non-native plants that it is practically impossible to get a boat through or to fish.



Zebra Mussels 101

What are zebra mussels?

Zebra mussels, or *Dreissena polymorpha*, are tiny, bivalve mollusks that are native to Eastern Europe. They have spread across the country since their introduction to the United States in the Great Lakes region many years ago.

What do they look like?

Zebra mussels get their name from the striped pattern of their shells. Each mollusk is patterned with dark and light stripes on the small shell. Usually the shell is a light color, tan or beige, with zigzag stripes. However, some are almost completely brown



and the stripes are not pronounced. Even rarer are those that are mostly light-colored with little striping.

How does it spread?

The zebra-mussel larvae are invisible to the naked eye. They can be transported unknowingly from one water body to another by "hitching" rides with anglers, boaters, and other outdoor recreationists.

Can zebra mussels be eliminated?

Zebra mussels were found and eradicated from the Millbrook Quarry in the Occoquan watershed. This multi-year effort, led by the Virginia Department of Game and Inland Fisheries (VDGIF), was the first successful open water body eradication of a zebra-mussel infestation.

What are the impacts and threats to the Occoquan Reservoir?

Zebra mussels inhabit fresh to brackish or even estuarine waters and can clog water systems and water-supply intakes and create ecological imbalance. Zebra mussels also have the potential to attach themselves to the propeller and all areas of a motor, which can affect the performance of the engine and actually jam steering equipment. Because of these issues and the costs associated with its eradication, it is in everyone's best interests to remain vigilant.



Preventing Invasive Species 101

What can I do to stop invasive species in the Occoquan Reservoir?

Because human actions are the primary means of invasive species introductions, you play a vital role in helping protect the Occoquan Reservoir from becoming infested. Aquatic invasive species can spread in many ways, including on aquatic plants, on recreational equipment, and in improperly discarded water.

Report any sightings of water chestnut or zebra mussels in the Occoquan Reservoir.

We need your help!
If you see water chestnut or zebra mussels in the Occoquan Reservoir, call the Fairfax Water Occoquan Reservoir Information Line immediately at 703-289-6060, TTY 711.

Because the Occoquan Reservoir covers almost 1,600 acres, the challenge

for efficient removal is to detect an infestation of water chestnut or zebra mussels in the early stages. That is why we need your help.

If you see water chestnut or zebra mussels in the Occoquan Reservoir, please report it to the Fairfax Water Occoquan Reservoir Information Line at 703-289-6060, TTY 711. Please provide the location of the water chestnut or zebra mussels as specifically as possible, including any nearby cross streets or significant landmarks. Include your name and contact information, too, so we can get in touch with any questions.

The information line is available 24/7, so please call as soon as you can after you see the water chestnut or zebra mussels.

Dispose of plants, fish, or animals properly.

Don't put plants, fish, or animals into a body of water unless they came out of that body of water. Do not release them into storm drains because most storm drains lead to water bodies or wetlands. This is an important prevention step since many plants and animals can survive even when they appear to be dead.

The two categories below describe some common situations where people may feel compelled to release aquatic plants or animals.

1. Don't release anything from an aquarium - water, plants, fish, or animals - into or near a body of water or a storm drain. Explain to your children how you could be hurting all of the streams and lakes around the country and killing other fish and animals that already live in the water.

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the Occoquan Reservoir

2. Don't release unused bait into the water where you are fishing, whether it came from a bait shop or another body of water. Do not re-use bait from one body of water to another. If you do not plan to use the bait in the future, dump it in a trash can or on the land far away from the water. Also, be aware of any bait regulations in the area where you are fishing. In some waters it is illegal to use live bait. Releasing live plants and animals into an aquatic environment is one of the main ways that invasive species become established.

◆ **Educate yourself and friends about how to avoid spreading invasive species. Find out what your local, state, and federal governments and others are doing and how you can help.**

Natural-resource agencies are a great resource if you suspect the presence of an invasive species. They can help you identify the species and recommend ways to stop it. You can learn more by visiting the following Web sites:

- National Invasive Species Information Center
United States Department of Agriculture
www.invasivespeciesinfo.gov
- National Invasive Species Council (NISC)
www.invasivespecies.gov
- Invasive Species in Virginia
Department of Conservation and Recreation
www.dcr.virginia.gov/natural_heritage/vaisc

◆ **Practice responsible water recreation.**

One of the primary ways that invasive species get into lakes, rivers, and wetlands is by "hitching" rides with anglers, boaters, and other outdoor recreationists. It is important for boat owners to follow these steps to stop aquatic hitchhiking. If you leave a body of water without taking these precautions, you may be transporting harmful species from one lake, river, or wetland to another.

The following steps can help to ensure that zebra mussels and other invasive species are not unknowingly transported into the Occoquan Reservoir:

- Eliminate water from all equipment before transporting anywhere. Drain water from your boat, motor, bilge, live wells, and bait containers before leaving the water access. Many of the invasive species are very small and can be easily overlooked.
- Clean and dry anything that came in contact with the water before transporting it to another body of water. This includes boats, trailers, recreational vehicles, equipment, fishing gear, boots, clothing, anchors, decoys, floats, nets, even your dog!



- Spray, rinse, and dry boats and recreational equipment to remove or kill species that were not visible when leaving a water body. It is advisable to spray or rinse with high pressure and hot tap water above 104° F or 40° C or with salt water. If this is not possible, dry your boat and recreational equipment for at least five days between uses in different water bodies.
- Wash your dog with very warm water and brush its coat thoroughly.
- To clean hard-to-treat equipment that cannot be exposed to hot water, dip items into vinegar for 20 minutes to kill harmful aquatic hitchhiker species or soak in a 1 percent salt solution for 24 hours.

This table provides correct mixtures for the salt solution:

Gallons of Water	Cups of Salt
5	2/3
10	1 1/4
25	3
50	6 1/4
100	12 2/3



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