

HELP PROTECT OUR WATERS

STOP

AQUATIC INVASIVE SPECIES

ZEBRA and QUAGGA MUSSELS

The zebra mussel (*Dreissena polymorpha*) and quagga mussel (*Dreissena rostriformis bugensis*) are two aquatic invasive species that everyone should be aware of.

Zebra mussels are native to the Caspian and Black sea region of Eastern Europe and Asia, while quagga mussels are native to Ukraine. Zebra mussels were first discovered in Lake St. Clair in 1988, and were likely introduced to North America around 1986 through an ocean-going ship that discharged ballast water into the Great Lakes. Quagga mussels were confirmed in the Great Lakes a short time later, both species now present outside this region. In 2013, zebra mussels were confirmed to be present in Lake Winnipeg, Manitoba.

Both species are capable of living up to and possibly longer than five years, are fast to mature with one female capable of producing up to one million eggs each year. Spawning begins when water temperatures rise to approximately 9 °C for quagga mussels and 12 °C for zebra mussels and may continue into fall. The eggs hatch into free-swimming microscopic larvae called **veligers**. This life stage can last between eight to 33 days, while the larvae remain suspended in the water. Near the end of this life stage, the mussel secretes a calcium-based shell and settles onto hard surfaces where it attaches. A clear characteristic of both zebra and quagga mussels are their tough **byssal threads** used to attach to hard surfaces like rocks, wood, cement, and watercraft hulls. Quagga mussels, unlike zebra mussels, can use softer substrates where they either attach or partially bury themselves. **Native mussels do not attach**, instead they bury into soft substrates on lake and river bottoms.



How to identify:

Zebra Mussels

- **Size:** Adults typically one to three cm long; with juveniles as small as a grain of sand and larvae are microscopic.
- **Colour:** Can vary with brown-black to yellow-white bands in a zigzag pattern.
- **Shape:** Triangular, or "D"- shaped; Sits flat on ventral side.

Quagga Mussels

- **Size:** Adults typically 4 cm long; with juveniles as small as a grain of sand and larvae are microscopic.
- **Colour:** Bands can vary from black to brown to cream with few to no zigzag patterns.
- **Shape:** Curved more rounded shell that tapers near hinge; topples over – will not sit flat on ventral side

Although there are some slight differences in their appearance – just remember, if the mussel is attached it is a non-native species that represents a threat to Saskatchewan waters and requires action to be taken. Young attached mussels may not be visible, but will feel like sandpaper to the touch and will require removal.

How they can spread

Adult and juvenile mussels can attach themselves to the watercraft hull, engine, trolling motors, trailer, and any related equipment that made contact with the water. With the ability to close their shell and survive out of water in moist conditions for up to 30 days, this life stage can easily be transported overland across long distances. Although there are some slight differences in their appearance – just remember, if the mussel is attached it is a non-native species that represents a threat to Saskatchewan waters and requires action to be taken. Young attached mussels may not be visible, but will feel like sandpaper to the touch and will require removal.

As larvae, they can easily survive and be transported undetected in standing water found in live wells, storage compartments, ballast tanks, bilge areas or on wet equipment and gear (e.g. ropes, PFDs, fishing gear).

Once introduced, water currents can then spread the free-swimming larvae through inter-connecting waterways.

Problem for Saskatchewan

These invasive mussels, and other aquatic invasive species, threaten aquatic habitats, fisheries, recreational resources and water-based infrastructure that could cost Saskatchewan millions of dollars a year.

They can spread quickly and tolerate a wide range of environmental conditions, with water calcium concentration the limiting factor.

Once introduced it is virtually impossible to eradicate them – making prevention key to stopping their spread in the west.

They compete with native species, damage habitats and affect the species dependent on them. In addition, these mussels can be a costly issue for watercraft operators, reduce recreation potential, and lower waterfront property values. Water intake structures can be severely clogged, which can significantly increase the costs for water uses such as irrigation, power generation, municipal water supply and industrial activities.

Prevention

The ministry is seeking public co-operation to prevent the spread of zebra and quagga mussels, as well as other aquatic invasive species.

Every time you leave the water please follow the important steps of **CLEAN, DRAIN, DRY** before heading to another lake or river.

Should you be coming for a visit or returning home from out of province, please take these same steps to make sure your watercraft and related equipment are clean and free of aquatic invasive species before entering Saskatchewan.

Current Saskatchewan Regulation

The Fisheries Regulations prohibit Saskatchewan residents and visitors from importing, possessing, transporting or selling aquatic invasive species, including zebra and quagga mussels that are considered to be a significant risk to Saskatchewan waters.

Report any sightings to the nearest Ministry of Environment office or call the TIP line at 1-800-667-7561 and for more information go to www.environment.gov.sk.ca/invasivespecies.