



Blogging The Battle

Aquatic Invasive Species

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What are invasive species?

An [invasive species](#) is when a non-native species is introduced to an area not naturally found and has the potential to cause harm to the environment. When conditions are favourable, invasive species are able to outcompete the native species. The common traits of successful invasive species are fast reproduction and growth rates, lack of predators, and native species with no defense against this new competitor.

Impacts of invasive species:

- Damage and reduction of habitats
- Reducing biodiversity
- Significant costs for species management or removal
- Reduction of recreational areas

Protecting Alberta's Water

Aquatic Invasive Species (AIS), non-native plants and animals, are making their way into Alberta's waterways. Within the Battle River and Sounding Creek watersheds no aquatic invasive species have been detected. Preventing the spread of these species into lakes, rivers, and streams in these watersheds will protect our drinking water sources, recreational opportunities, biodiversity, and irrigation for food production.

Species of Concern

Eurasian watermilfoil is an ongoing issue in the Okanagan basin and is easily transferred between waterways on boats.

Zebra mussels have been found in Montana and Manitoba. In 2020, invasive mussels were found on 30 boats inspected at Alberta's three watercraft

inspection stations. There is a greater need for the public to follow prevention procedures.

Prussian carp have been found in the Red Deer River. The release of aquarium fish into waterways is the suspected cause of introduction of this aquatic invasive species.

Residents in the Watershed Can Help Protect Our Waterways



More About These Threats to Our Waterways

*Prussian Carp (*Carassius gibelio*)*



Originating from Europe and China, prussian carp were suspected to be introduced from an illegal pet release but it is unknown how they arrived in Alberta. Currently they are found in the Red Deer River, Bow River, and South Saskatchewan River. There have been none reported in the Battle River

watershed. Often mistaken for a goldfish or common carp, the prussian carp can go undetected in areas allowing for successful establishment. Prussian carp are known as a bioturbator, which is a species that reworks soils while foraging for food. This fish species can live in areas with high turbidity and low oxygen levels. They have also adapted a way to reproduce asexually which allows population levels to increase. A [study](#) found that the presence of prussian carp can decrease certain native fish species and benthic macroinvertebrates. A big part of their diet includes macroinvertebrates and their hunting habits increase turbidity causing unsuitable

habitats. There are many knowledge gaps about the true impacts of introduction. More needs to be done with monitoring expansion rates and potential barriers on active removal. Some [organizations](#) have started to use eDNA to detect a more comprehensive distribution of the species.

Goldfish (Carassius auratus)

Goldfish are a common household pet, but many have been released into water bodies when families no longer want them. This has resulted in goldfish being found in [over 70 locations](#) all over Alberta. This species is known to grow based on the space available, so they might be small inside an aquarium but when released into the wild they can get up to 14 inches in length. At bigger sizes they will need to eat more and they possess similar



destructive feeding habits as the prussian carp. Goldfish can survive in any quality of habitat as long as there is ample vegetation. Females can lay around 500-1000 eggs in a spawning period and even have the [ability to hybridize](#) with other carp species to increase their populations. Many control and management methods have been developed, but they are expensive and difficult to accomplish complete eradication. [Some methods](#) can include electroshock and netting to sort out the goldfish, or use of a pesticide that kills species with gills but this can only be used in isolated water bodies with no other fish species.

INVASIVE FISH

Distribution Map

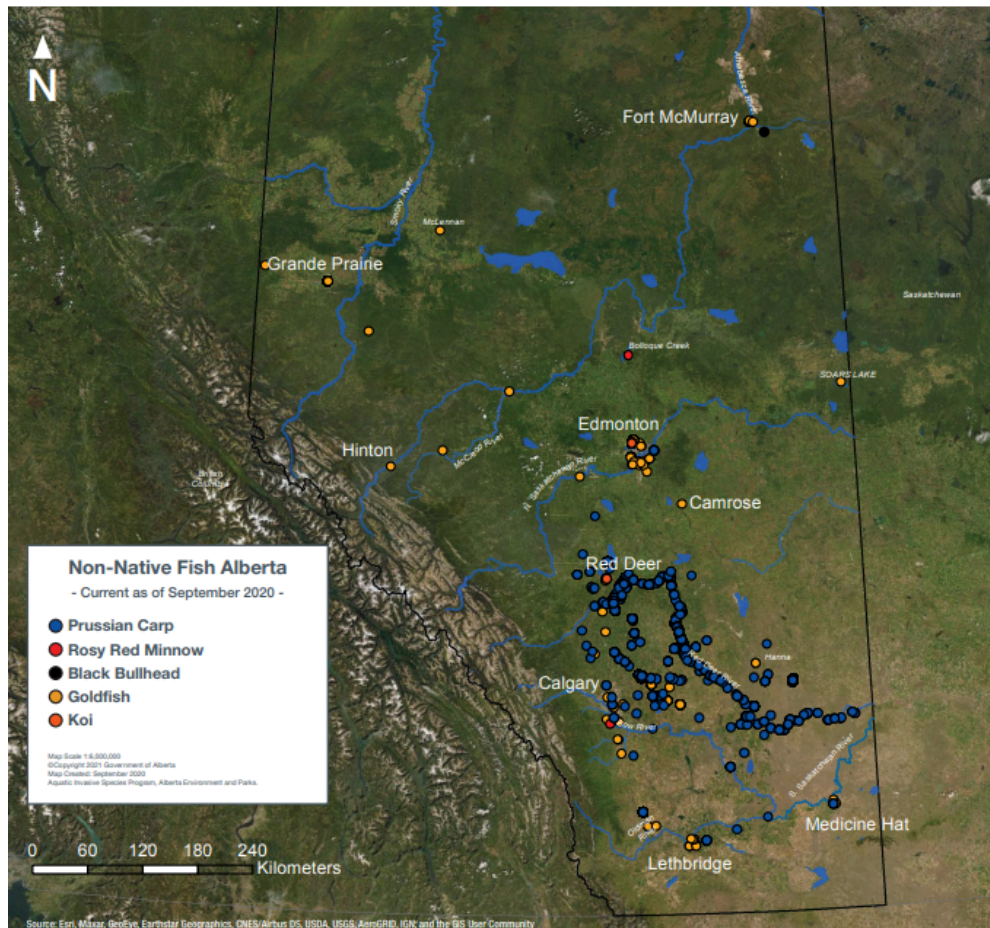


Figure 1: Distribution map of invasive fish species in Alberta as of 2020 taken from the Government of Alberta.

Eurasian Milfoil (Myriophyllum spicatum)



Introduced from Eurasia and North Africa through the release of ballast water in ships coming from those countries. [Currently](#) it is present in Ontario, Quebec and British Columbia. It spreads from recreational boats and other equipment that has not been cleaned properly between water bodies. Eurasian milfoil has seed with poor germination rates, so it uses [stem fragmentation](#) and root runners to

increase population. Root development can even start before it detaches from the parent stem allowing a colony to start from a single plant. These plants are also known to grow in a variety of substrates, except gravel, and are tolerant to low temperatures down to 15 degrees. Some of the [possible management](#) can include rototilling and harvesting, biological controls such as watermilfoil weevils, or use of herbicides. These controls are not long-term and few have been successful.

*Zebra Mussels (*Dreissena polymorpha*)*

Zebra mussels are native to the Black and Caspian seas. They were introduced to North America through the [release of ballast water](#) from ships as a result of the expansion of international trade. Currently they are found in Manitoba, Ontario and Quebec. Native mussels are free living compared to the zebra mussels that attach to substrates. [Zebra mussels](#) attach themselves with



byssal threads and can take as little as six months to completely cover an intake pipe. The small size of the mussels can allow them to go undetected on boats and they can survive out of water for 30 days. Females are able to produce 40 thousand - 1 million eggs in one cycle allowing populations to increase exponentially. Zebra mussels are excellent filter feeders. A group of 700 thousand individuals can filter 2.5 million litres every four minutes leading to drastic ecosystem changes. With less algae present, more sunlight can reach greater depths resulting in more plant growth. To prevent accidental introductions, [boat inspection stations](#) are used. There are only a few permanent stations in Alberta near the Saskatchewan and US borders.

Methods of Prevention

Once an invasive species is introduced, the [cost of control](#) increases as populations become more established as demonstrated in figure 2. [Prevention and early detection](#) is important to avoid the extra costs of long-term control. [Public education programs](#) increase awareness on how aquatic invasives can be spread is one of the major strategies in prevention. [Clean, Drain, Dry](#) and [Don't Let it Loose](#) are some of the major programs that the government and other organizations promote. Early detection can help municipalities eradicate invasives more successfully. In Alberta, you can use [EDDMapS](#) (Early Detection and Distribution Mapping System) to submit possible invasive sightings and then an inspector will verify it. If no action is taken to control invasive species early on, then prevention and eradication turns into

containment and long-term management. It takes public engagement and support to be successful in stopping the spread of any invasive species.

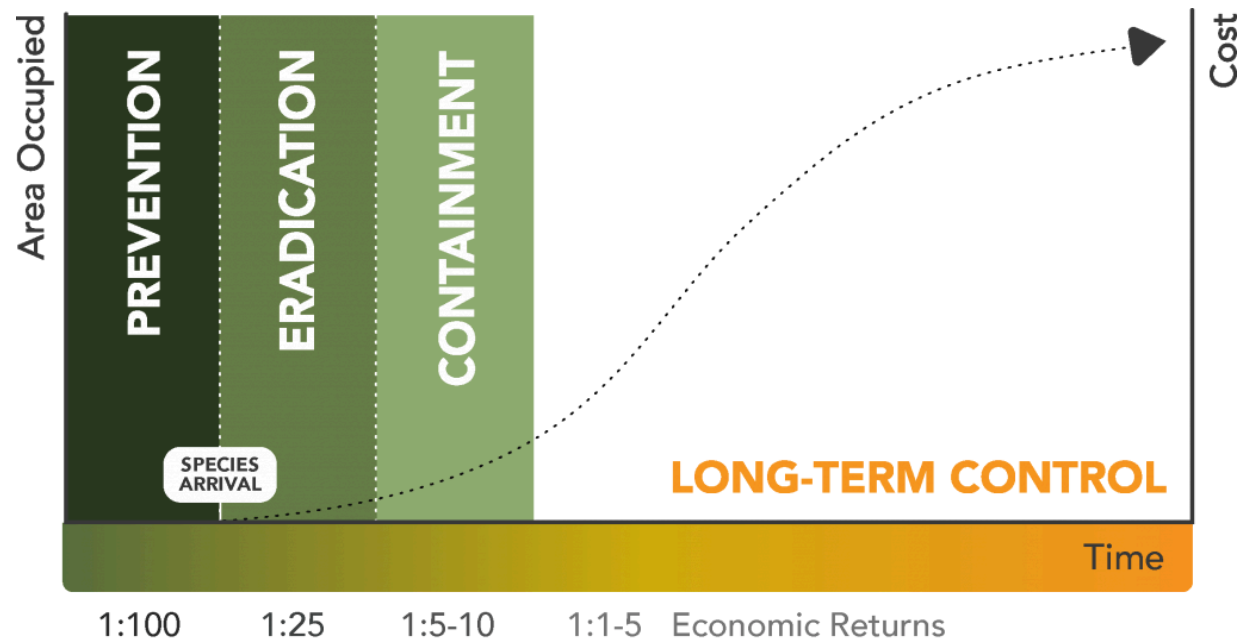


Figure 2: Invasive species curve taken from the Invasive Species Centre

Resources

- [Government of Alberta Aquatic Invasives](#)
- [Invasive Species Centre](#)
- [Alberta Invasive Species Council](#)
- [Clean, Drain, Dry](#)
- [Don't Let it Loose](#)
- [EDDMapS](#)

