

# Invasive Freshwater Golden Clams in Minnesota

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It's time to get acquainted with one of Minnesota's lesser-known aquatic invasive species, freshwater golden clams (*Corbicula fluminea*). Freshwater golden clams are small, freshwater bivalves (molluscs with two shells). They were likely introduced to North America as early as the 1920s and have been dubbed by some as "the most invasive freshwater species in the world." The most prevalent recorded impact of this species in its invaded range is to infrastructure due to clogging of water systems by shells. Raw water users such as power plants, water treatment plants, fire protection systems, irrigation systems, pulp and paper mills, and others have spent considerable amounts of money on maintenance and management due to biofouling from freshwater golden clam shells. Documented ecosystem impacts include alteration of food webs, reducing phytoplankton and chlorophyll in water columns, and causing changes to nutrient cycling in lakes.

## Is it a freshwater golden clam or a native mussel?

Minnesota is home to a diverse group of native freshwater mussels that are critical parts of our freshwater ecosystems. Sometimes native mussels or clams can be confused with invasive species like freshwater golden clams. Here are some helpful tips to distinguish between them. You can reference the images here of a freshwater golden clam and a few native mussels and clams as you go through the tips to help get a better picture.

### Look at the shape.

While there are many different shell shapes across the different species of native mussels, they all typically have some degree of irregularity to them. They can be oblong or even have a "crooked" look to them. Clam shells, on the other hand, typically look relatively symmetrical with two mirrored halves to each shell.

### Look at the size.

While there is overlap in shell size as juveniles, native mussels are typically quite a bit larger than both freshwater golden clams and native pea and fingernail clams. If the shell you have is fitting in the palm of your hand versus in your fingertips, chances are you have a native mussel. Freshwater golden clams typically max out at 2 inches across.

### Check the shell's thickness.

This tip is primarily for distinguishing between freshwater golden clams and fingernail or pea clams. Freshwater golden clams have robust shells. If the shell is fragile or thin, it's more likely a fingernail or pea clam rather than a freshwater golden clam.

### Look for ridged concentric rings.

While some native mussels may have bumps or ridges on their shells, they don't typically have rows and rows of concentric rings. Fingernail and pea clams often do have these rings but they are closer together and fine rings. In freshwater golden clams, the rings are robust and deeply ridged and can easily be felt with a fingernail across the shell.

## Where have freshwater golden clams been reported in Minnesota?

While the first record of freshwater golden clam in Minnesota dates back to 1978, they are not a widespread invasive species across the state. Minnesota sits at the edge of the predicted range for this species due to our cold winters, so most populations of freshwater golden clams in the state are limited to river systems where discharge of warmer waters from power plants, water treatment plants, or other industrial users creates a pocket of suitable habitat even through the winter months. Some river systems in Minnesota where freshwater golden clams have been documented include the Mississippi, St. Croix, St. Louis, Minnesota, and Otter Tail Rivers.

### INVASIVE SPECIES

#### Freshwater Golden Clam



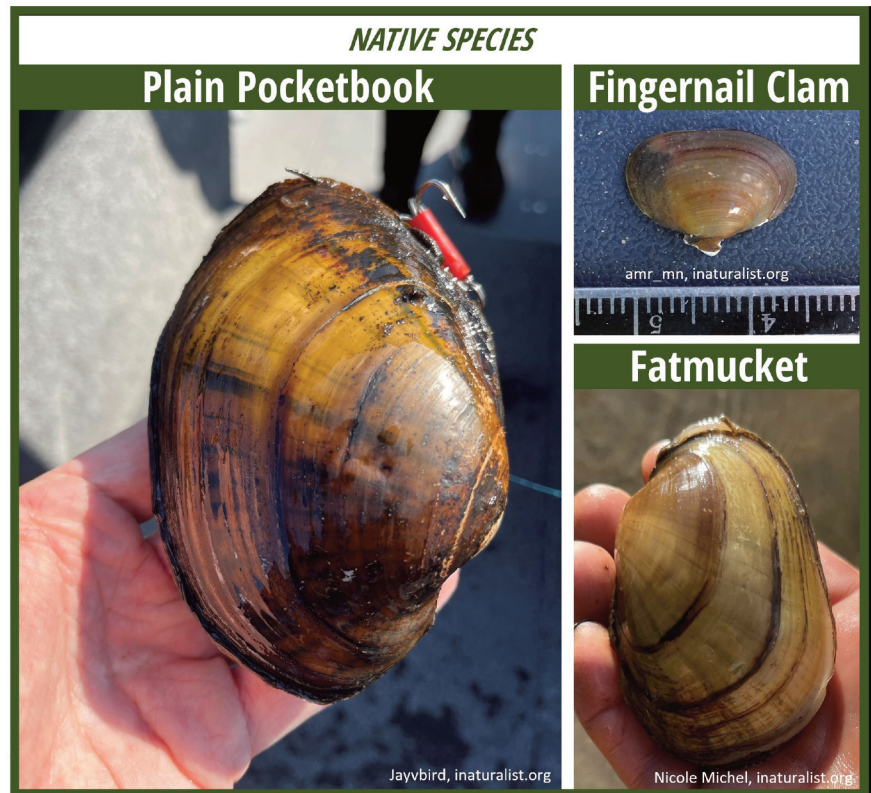
Megan M. V

## Why the renewed interest?

In 2020, a young participant of a volunteer aquatic invasive species early detection event [www.starrytrek.org](http://www.starrytrek.org) found a live freshwater golden clam in Briggs Lake (Sherburne County). This was in an area without any known warm water discharges, which led to some questions about the extent of the infestation in Briggs Lake and how the population would respond to the following winter months. After a year of sampling, researchers documented hundreds of living freshwater golden clams near the Briggs Lake public water access and later found a few live individuals at nearby Big Lake. Analysis of the shell size over the study period suggests clams were also reproducing in the lake. You can learn more about this project at <https://maisrc.umn.edu/goldenclams>. Sherburne Soil and Water Conservation District and Minnesota Department of Natural Resources (DNR) staff have continued to monitor this population and in recent years have not found any more living clams at Briggs Lake, leaving additional questions as to what the future looks like for this species in Minnesota, particularly in a changing climate.

## What should you do if you think you found a freshwater golden clam?

If you think you've found a freshwater golden clam in a water body it had not been previously recorded in, you should alert the DNR. You can view the current known distribution of freshwater golden clams by viewing the distribution maps on EDDMapS [www.eddmaps.org/project/midwest/distribution/](http://www.eddmaps.org/project/midwest/distribution/). You can report a finding to DNR by contacting the AIS Specialist for your region [www.dnr.state.mn.us/invasives/ais/contacts.html](http://www.dnr.state.mn.us/invasives/ais/contacts.html) or by submitting a report via EDDMapS [www.eddmaps.org/midwest](http://www.eddmaps.org/midwest). Good, clear photos of what you found are very helpful when submitting your report. Save the shell you found in a container (a zipper food storage bag is sufficient) in case the AIS Specialist for your area would like to examine what you found.





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