

THE
**FRENCH
 CREEK**
watershed



A COMMUNITY TREASURE

FACT SHEET

written by John Tautin

Native Freshwater Mussels

Freshwater mussels, sometimes called clams, have always been and continue to be, an important food source for muskrat, minks, raccoons, otters, fishes, and some birds such as herons. Historically, Native Americans not only ate mussels but also used the shells for utensils, tools, and to make jewelry. Between the late 1800s and

mid-1900s, shells were harvested to supply a multi-million dollar pearl button industry. However, with the invention and widespread use of plastics during the 1940-50s, the pearl button industry collapsed. But by the

1950s the Japanese found a new use for mussel shells in cultured pearl production. The shells are cut and finished into beads and inserted into oysters to serve as nuclei for pearls. Still today, thousands of tons of mussel shells (especially Washboard, Mapleleaf, and Three-ridge mussels) are exported from the United States to Japan for this purpose.

Worldwide, there are about one thousand species of mussels. Mussels can be found on every continent but Antarctica. While the entire continent of Europe only has eight different species of mussels, there are twenty-five different species of mussels in French Creek, and about three-hundred in the United States. These important animals are threatened, however. Today, over half of the species of mussel in the Midwest are threatened or endangered. In the French Creek watershed, thirteen species of mussels are listed as endangered or threatened in Pennsylvania. Four species (the northern riffleshell, and clubshell, rayed bean, and snuffbox) are endangered at the federal level. These four species have been lost from over 95 percent of their historic range.



fluted shell
Lasmigona costata



Elktoe
Alasmidonta marginata



kidney shell
Ptychobranthus fasciolaris



northern riffleshell
Epioblasma torulosa rangian

clubshell
Pleurobema clava



Four Federally Endangered Species That Live in French Creek

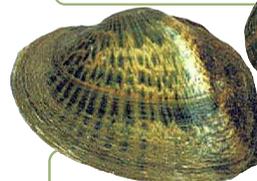
**Why are mussels
 threatened?**

— As relatively stationary filter feeders, mussels are subject to the conditions of their aquatic environment. Most of the declines in native mussel populations occurred when river systems underwent dramatic changes in water and habitat quality. Major changes in land use throughout the 20th century, and major waterworks projects that dammed or diverted rivers eliminated many species in the Tennessee and Ohio basins.

Much recent public interest in mussels has stemmed from the media attention the zebra mussel has received. This non-native mussel creates problems for humans by clogging intake lines and blocking water flow (particularly in the Great Lakes). Originally from Europe, the mussel is small in size, but colonies can attach to freshwater mussels, impede water flow,

compete for available food and oxygen, and eventually kill the mussel. Recently, zebra mussels colonized a headwater lake in the French Creek watershed and adults have been found in the creek. Researchers studying the mussel are predicting that the zebra mussel might only cause problems in specific sections of the creek.

rayed bean
Villosa fabalis

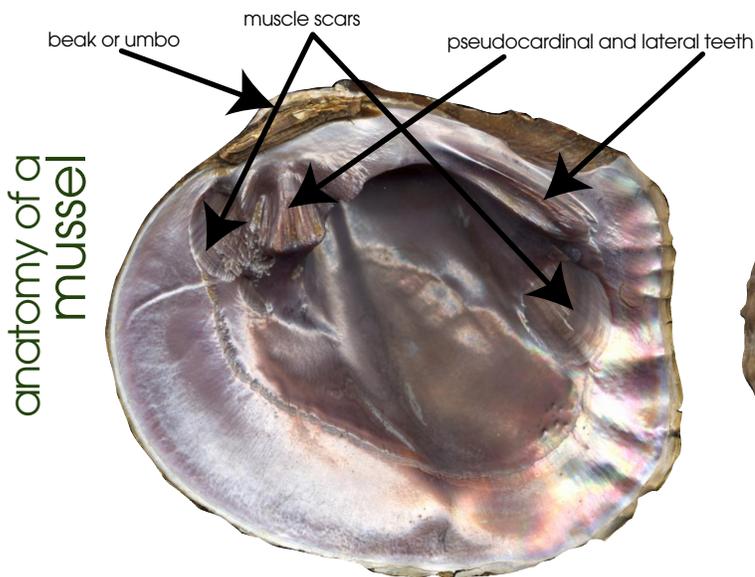


snuffbox
Epioblasma triquetra

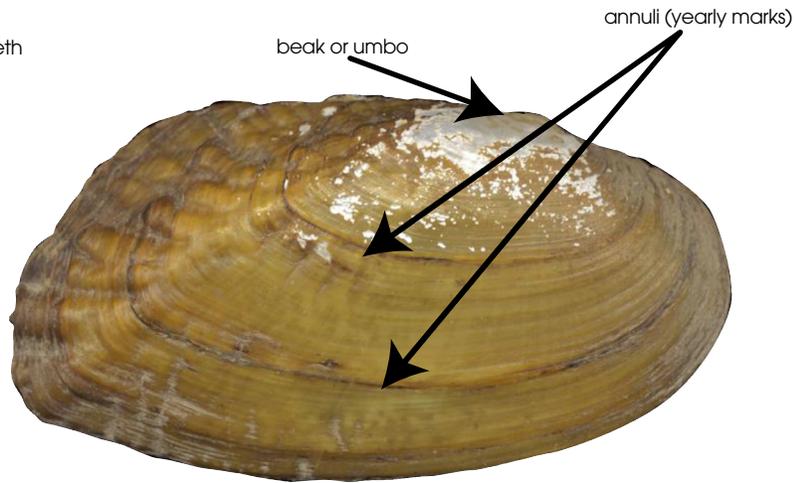


www.frenchcreekconservancy.org





anatomy of a mussel

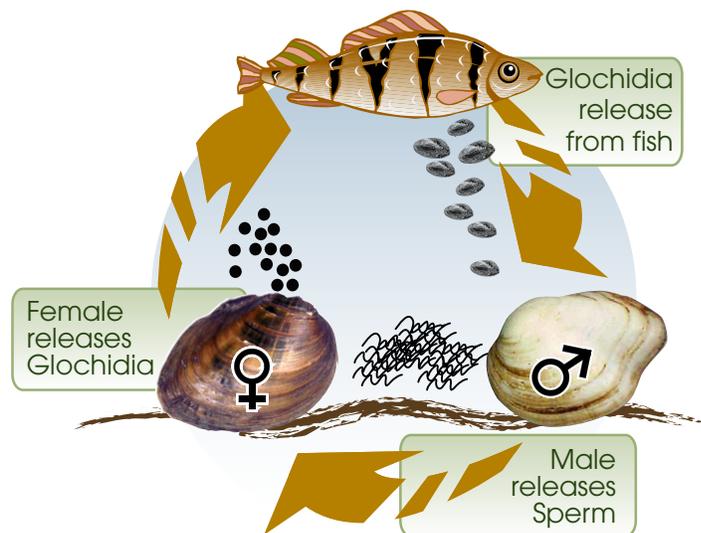


Life of a Freshwater Mussel

Freshwater mussels are descended from the salt water organisms, oysters, and clams. Part of the phylum Mollusca (also including snails, squids, and marine clams), mussels have a soft body with a digestive tract, gills, and a muscular foot, all housed within two hard shells, which are joined at the back and strengthened by hinge teeth. The mussels continuously pump water through their bodies: water enters through the incurrent or branchial siphon, and exits through the excurrent or anal siphon. Oxygen and food (plankton and organic matter) are filtered out during this process.

Mussels spend their entire adult lives partially or wholly in mud, sand or gravel in permanent bodies of water. Usually, the only part visible is the tip of their shells and their two siphons. Although the mussel's foot can be used for movement, adult mussels rarely travel more than 100 meters in a lifetime. Different species have varying maximum ages, ranging from 10-100 years. The age of many mussel species can be estimated by counting dark rings on the shell, thought to be caused by winter resting periods.

Freshwater mussels have a unique way of reproducing. The male releases sperm into the water, which is carried by the current and enters the female through the incurrent siphon. Eggs are fertilized and develop into an intermediate larval stage known as glochidia. The glochidia are stored in the female's gills. In the spring or summer, depending on the mussel species, the glochidia are expelled into the water where they attach themselves onto a passing fish. Many mussel species will produce a lure, a piece of their living tissue, which might look like a minnow or another potential food source, to attract a host fish. By hitching a ride on a fish mussels can disperse far distances. This means of reproduction is the only way mussels can move upstream. Therefore, the health of a mussel population depends upon not only clean water and food sources, but also on an abundance of host fish and lack of barriers to dispersal (eg. dams).



Freshwater Mussel Species in French Creek

- | | |
|-------------------------------------|-------------------------------------|
| mucket | <i>Actinonaias ligamentina</i> |
| elktoe | <i>Alasmodonta marginata</i> |
| three-ridge [†] | <i>Amblema plicata</i> |
| cylindrical papershell [†] | <i>Anodontoides ferussacianus</i> |
| spike | <i>Elliptio dilatata</i> |
| northern riffleshell | <i>Epioblasma torulosa rangiana</i> |
| snuffbox [†] | <i>Epioblasma triquetra</i> |
| long-solid [†] | <i>Fusconaia subrotunda</i> |
| plain pocketbook | <i>Lampsilis cardium</i> |
| wavy-rayed lampmussel | <i>Lampsilis fasciola</i> |
| pocketbook | <i>Lampsilis ovata</i> |
| fatmucket | <i>Lampsilis siliquoidea</i> |
| white hellsplitter [†] | <i>Lasmigona complanata</i> |
| creek heelsplitter [†] | <i>Lasmigona compressa</i> |
| fluted-shell | <i>Lasmigona costata</i> |
| black sandshell | <i>Ligumia recta</i> |
| clubshell [†] | <i>Pleurobema clava</i> |
| round pigtoe [†] | <i>Pleurobema sintoxia</i> |
| kidneyshell | <i>Ptychobranchus fasciolaris</i> |
| giant floater | <i>Pyganodon grandis</i> |
| rabbittsfoot [†] | <i>Quadrula cylindrica</i> |
| creeper | <i>Strophitus undulatus</i> |
| paper pondshell | <i>Utterbackia imbecillis</i> |
| rayed bean mussel [†] | <i>Villosa fabalis</i> |
| rainbow mussel [†] | <i>Villosa iris</i> |

†=PA proposed threatened • e=PA proposed endangered

