

Chapter XXIV —Class Bivalvia



(Freshwater Clams and Mussels)— Phylum Mollusca

This group includes clams and mussels which typically occur in most freshwater habitats and may be particularly abundant in certain streams. Although the clams and mussels have a wide range of tolerances to pollution with some species being very sensitive to water quality, habitat and biological conditions, a number of species of this group (especially clams) can tolerate somewhat degraded conditions. (Kellogg, 1994)

There are approximately 270 species of freshwater bivalves in North America, 7 of which have been introduced, the most infamous of which are the Asian clam and the zebra and quagga mussels. There is no general agreement on the usage of “clams” and “mussels”, The zebra mussels attach to surfaces of rocks and other firm substrates by means of byssal threads. “Clams” is used to refer to burrowing forms and includes all the native freshwater bivalves in North America. Nevertheless, the term, “freshwater pearly mussel” is commonly used to refer to any member of the family Unionidae. (Mackie, 1998)

This group is distinguished by:

- Characteristic two shells attached by an external hinge which enclose the body of the bivalve.
- No eyes or distinct head.
- Soft, fleshy body (foot) may be seen extending from shell.

As a general rule, mussels are large and have a flat, more oblong shell shape, while freshwater clams are smaller (3/4 inch) and typically more round. In addition, freshwater clams are usually symmetrical with the umbo (the highest point on the shell) equally distant from both ends. Mussel shells are usually lopsided with the umbo closer to the end.

(Peckarsky et al., 1990) All freshwater clams are filter feeders, subsisting on phytoplankton, zooplankton, detritus, and bacteria. Some species of fish consume clams regularly, and several species of mammals, most notably muskrats and racoons prey heavily on unionaceans. The shells of unionaceans are used in the Japanese cultured-pearl industry.

- The corbiculid clams (superfamily Sphaeracea, family Corbiculidae) are represented in North America by a single species, *Corbicula fluminea*. A hermaphrodite, *C. fluminea* lives two to three years. The species is said to be intolerant of low winter temperatures, so it is not clear how widely it will be able to establish itself in the northeastern United States. *C. fluminea* often occurs at spectacularly high density (more than 10,000 individuals/sq.m.). It has been accused of competitively displacing native bivalves and can cause serious economic problems by attaching to the inside of and clogging pipes that carry cooling water to power plants.
- The sphaeriid clams (superfamily Sphaeracea, family Sphaeriidae) are tiny (3-20 mm) bivalves known as fingernail clams or pea clams. These are hermaphrodites as well. Sphaeriids live for a year or two. These clams are especially abundant in standing waters, both permanent and temporary; a few species are common in running waters.
- The two families of clams of the superfamily Unionacea that occur in the northeastern United States, the Unionidae and Margaritiferidae, have similar biological characteristics. The unionaceans are the large (3-20 cm) pearly mussels of lakes, streams, and rivers.

Many species live for 20 years or more, and one species, *Margaritifera margaritifera*, has been reported to live for more than a century.

(Mackie, 1998) There are two families of bivalves native to North America, the **Sphaeriidae** (fingernail clams) and the **Unionidae** (freshwater pearly mussels), and two families that were introduced from Europe, the **Corbiculidae** (Asian clams) and the **Dreissenidae** (zebra and quagga mussels).

References

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