

Blue Blue Mussel

Mytilus edulis

Class: Bivalvia
Order: Mytiloidea
Family: Mytilidae
Genus: Mytilus

Distribution

These mussels are found in coastal areas of the northern Atlantic Ocean, including North America, Europe, and the northern Palearctic.

Habitat

Their depth ranges from 5 to 10 metres. They are usually found in subtidal and intertidal beds on rocky shores remaining attached to a variety of substrates.

Food

They are suspension filter feeders, collecting anything small enough to ingest. Water is drawn in through a small opening.

Reproduction

Mussels have separate sexes. Fully developed sperm and eggs are released into the water column for fertilization. Spawning peaks in spring and summer. Reproductive output is influenced by temperature, food availability, and tidal exposure.



These are easily seen on the shoreline nearby.

They occur in eastern coastal areas of Canada from Hudson's Bay south to Newfoundland and the Maritime provinces. They are quite plentiful in Nova Scotian waters. They continue south to North Carolina, and occur in several areas of the south-western Atlantic including Chile and Argentina. In the eastern Atlantic they are found from the White Sea in northern Russia to southern France, throughout the British Isles, with large commercial beds in England, Wales, and Scotland.

They are very opportunistic in their "attachments". On rocky shores of open coasts they can be found in crevices, on rocks, piers, and other stable surfaces. They occupy sheltered harbours and estuaries, often occurring as dense masses. It may also occur on soft sediments in estuaries. Mussels are farmed commercially in many areas of the world.

Particles collected include phytoplankton, dinoflagellates, small diatoms, zoospores, flagellates, other protozoans, various unicellular algae, and detritus. Water drawn inside, passes across the gills. This is powered by the combined effect of many cilia: hair-like projections from cells lining the spaces inside the mussel's shell. After particle extraction water is then expelled.

In most populations, resting gonads begin to develop from October to November, with gametogenesis occurring throughout winter so that gonads are mature in early spring. A partial spawning in spring is followed by rapid gametogenesis, with gonads maturing by early summer, resulting in a less intensive secondary spawning in late August or September.





Development

After the egg is fertilized it turns into a ciliated trocophore larva then changes into a veliger (planktonic) larva. The larval stage has ciliated fan-like protrusions and is free swimming for three to four weeks. It then goes through a final metamorphosis into a juvenile and finds a primary settlement location.

Characteristics

This hinged bivalve has a rounded triangle shape. The exterior colour is blue, purple, and brown. It has concentric growth lines. The interior of the shell is smooth and is a pearly-white with a blue outer edge. When opened up the two sides are identical and pear-shaped. Inside are two short siphons responsible for directing flow of water in and out.

Adaptations

These mussels are well acclimated to a 5 to 20 °C temperature range, with an upper sustained thermal tolerance limit of about 29 °C for adults. They are eurythermal, able to withstand freezing conditions for several months.

Status/Threats

They are heavily predated by a variety of animals, especially at the larval stage, and also as young adults.

Sightings in Nova Scotia

These are very prolific.

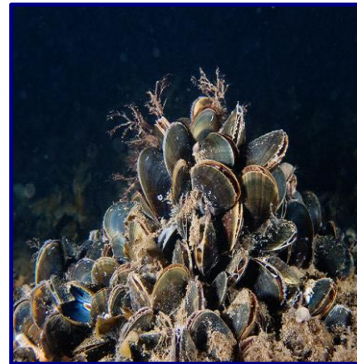
In optimal conditions, larval development may be complete in less than 20 days but larval growth and metamorphosis between spring and early summer, at 10 °C, usually takes 1 month. The primary settlement location is often in openings in the substrata, or amongst bryozoans or other filamentous structures, often situated away from mature mussels. After weeks there, the juvenile doubles in size and detaches to drift again and find a permanent substrate to attach itself. The young adult will attach to the sea floor with a byssal thread or, if such open substrate is not stable, may attach to another mussel, creating a mussel bed. A juvenile mussel can easily detach itself and change location, either by using its foot to actively crawl or by floating passively in the water column.

Larva



The main body of the mussel contains organs for respiration, digestion, circulation and reproduction. The mantle, which extends from either side of the visceral mass, is attached to the entire periphery of both valves of the shell. This flap of tissue protects the soft body. In the center of this mass is the darkly pigmented foot, which can be extended to secrete new byssal threads. The posterior adductor muscle is much larger than the anterior adductor muscle. In empty shells, the scars of these muscles are clearly visible. In two places posteriorly, the mantle is modified to form an inhalant and exhalant siphonal aperture to direct feeding currents into and out from the mantle cavity. New shell growth is initiated from the mantle margin and can be observed as “growth rings”. Records indicate ages in excess of 15 years.

Byssal threads



The strong, thread-like anchor (byssal thread), allows the mussel to attach itself securely to almost any substrate. These threads are secreted as a liquid by a gland near the foot, and the threads harden upon contact with water. They are tough but not necessarily permanent structures. To find protection or food the mussel moves by releasing these strong threads and using its foot to move to a new location. They congregate together in large colonies. Mussels resist dehydration during low tide by using their strong muscles to keep their shells tightly closed. They partially open on incoming tides.

Cultivated mussels.



Mussels have been harvested by man over the centuries. There are now huge commercial enterprises around the world in several countries with suitable marine habitats. This includes eastern Canada.