

Baltic Baltic Macoma

Macoma baltica

Class: Bivalvia
Order: Veneroida
Family: Telinidae
Genus: Macoma

Distribution

Macoma baltica lives in the northern parts of both the Atlantic and Pacific oceans. It extends to the subarctic both in North America and in Europe.

Habitat

This is an infaunal species living on the soft sea bottom buried in mud or silt. It usually occurs in fairly shallow waters but can go to a depth of 30 m.

Food

They are both deposit as well as suspension feeders. Food preferences are determined by the substrate on which it burrows.

Reproduction

The sexes are separate. The main breeding period lies between February and May, with a second spawning in autumn. Eggs and sperm are released into the water column for fertilization.



They occur along the Burntcoat Head shoreline.

The European distribution ranges from southern France north to the White Sea and Pechora Sea, and includes the inner brackish parts of the Baltic Sea. In eastern North America it is distributed from the Gulf of St. Lawrence Bay north to Hudson Bay, in the Pacific from Washington to the Beaufort Sea in Alaska, and also on the Russian coast. These occur in Nova Scotian coastal areas, including Burntcoat Head.

It lives in the upper part of the intertidal or shallow subtidal zones. They have a preference for fine sediments with high ratio silt-clay percentages into which they settle themselves. Mud flats are utilized. In the brackish Baltic Sea it lives submerged down to depths over 100 m. Globally this is an unusual occurrence.

It maintains contact with the overlying water by means of its inhalant and exhalant siphons. Through the siphons, it feeds on organic matter on the sediment surface or in the water. These siphons are quite long. They are separate to each other and are retractable.



Females need to be large enough before they are capable of reproduction. Adults of similar size may be of different ages. Sexual maturity is a function of size rather than age. The timing and duration of gametogenesis and spawning varies a great deal. Environmental factors, such as latitude, immersion time and winter temperatures influence the timing and number of eggs produced by a female. Immersion relates to time spent feeding and resulting body mass. Seasonal variations in types of food available impacts fecundity as well.



Development

After being fertilized, eggs develop into larvae which have two tiny, transparent shells and a small foot. The free-swimming veliger larva live a planktotrophic, pelagic life for several weeks. They float around in the currents until they metamorphose into juveniles.

Characteristics

Shells are smooth, fairly flat, oval or somewhat trigonal in shape. Shell colour is polymorphic. It varies between individuals and locations. White, pink, yellow and orange all occur.

Adaptations

Macoma is a euryhaline species, being capable of living in a wide range of water salinity, i.e. 10% of ocean salinity. It is also capable of withstanding low winter temperatures. Maturation occurs when the shell reaches 6 mm or more with corresponding ages of individuals from the same population varying between 10 and 22 months.

Status/Threats

As a species these are not under threat globally. Regional populations can be under severe threat.

Sightings in Nova Scotia

These occur all around Nova Scotian coastal areas.

Juveniles produce long byssus threads secreted into the water column. This thin mucous thread increases drag force on the animal and allows it to be transported over distances by the currents. They migrate between intertidal zones. At this stage the juveniles are still small, approximately 2 to 10 mm long, and mostly translucent, but the colour of their shells is visible in some, particularly the more brightly coloured ones. As the animals grow, the colour of the outside and inside of the shells starts to diverge; in most older animals, the inside of the shell continues to display bright colours, while the outside increasingly becomes chalky white.

Juveniles spend their first year in a growth season, drifting to and fro, growing and developing before settling down into their eventual chosen location in the mud.

The growth stages are clearly visible, usually marked by bands of colour. They grow to be between 20-30 mm long. Shells are variable in colour, with shades of white, yellow, pink, orange, or purple, often drawn out in concentric bands. Colour remains visible in worn-out dead shells. Inside the animal itself is yellowish, tinged with brown.



The thin mucous (byssal) threads produced by young *macoma* allows them to migrate seasonally from high to low tidal zones. Currents carry them fairly long distances. *Macoma* have the ability to modify their feeding mode according to food availability and quality by means of their very long, individually separated stretchable siphons. The upper siphon is larger than the lower. While buried in the sand the two siphons stick up, but can be retracted. They are able to shift positions while buried in the sand and when disturbed will quickly burrow deeper. The foot inside is quite powerful.



Larva, juveniles, and adults are heavily predated by marine animals and coastal birds. Fish, crabs and shrimp nip off the extended siphons. Destruction of marine habitat comes from a variety of sources including water pollution, dredging, coastal development and climate change.



They are well established in the Bay of Fundy, the Minas Basin and Cobequid Bay.