

Chestnut Astarte

Astarte castanea

Class: Bivalvia
Order: Veneroida
Family: Astartidae
Genus: Astarte

Distribution

This species of *Astarte* can be found along the Atlantic coast of North America.

Habitat

This is a coastal, shallow waters bivalve, occurring at depths of 0 to 50 metres.

Food

As with the majority of bivalves *Astarte* are filter feeders.

Reproduction

The majority of bivalves are also dioecious, meaning the sexes are separate. There is no copulation between bivalves. Males and females release sperm and eggs into the water for fertilization.



Empty shells wash up on the shoreline

To the north it occurs in the Gulf of St. Lawrence including the St. Lawrence estuary, New Brunswick, Prince Edward Island and Nova Scotia. It continues south down along the Gulf of Maine to New Jersey. It occupies the Bay of Fundy and is found locally. It also occurs in areas of the United Kingdom.

It is benthic, living on the ocean floor in areas that are soft and muddy, or sandy. It lives in areas of the Atlantic where the climate is temperate. It is infralittoral. This means living in the region of shallow water closest to the shore.

They filter the surrounding water for planktonic and minute detrital food items. They are both deposit feeders and surface grazers. Food particles may be suspended in the water or deposited on the ocean floor.

The timing and duration of gametogenesis, which is the formation of gametes, or reproductive cells such as ova and sperm, varies with each species of *Astarte*. Surrounding conditions influence the timing of spawning. The boreal forms spawn over a relatively short period in spring and summer. In Arctic waters it takes place over longer periods. *Astarte castanea* is a temperate species and spawning begins in spring and summer.



Development

Fertilization is in response to environmental conditions. After it takes place the eggs develop into larvae. The length of time this takes varies being dependant also on surrounding conditions such as water temperature.

Characteristics

The Chestnut *Astarte* has a periostracum (skin like covering) which is a light brown to chestnut brown colour. The triangular shaped shell has fine, concentric ridges that radiate from its centre. These ridges or grooves are alternatively strong and weak and show through the skin covering.

Adaptations

The shell is quite heavy and thick with a strong hinge and a flexible ligament. The interlocking teeth help to strengthen closure. The periostracum (skin covering) is also quite strong and durable. They have adaptive colouration. Shells thrown up from deeper waters are darker coloured than those found in sandy areas.

Status/Threats

Storms, dredging and water pollution threaten regional populations.

Sightings in Nova Scotia

Typically a bivalve starts life as a trochophore (early stage larva), before becoming a veliger. The free-swimming veliger larva lives a planktotrophic, pelagic life for several weeks. They float around in the currents until they metamorphose into juveniles. They begin to look like tiny clams. These 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 along the shallow coastal waters. They may create temporary burrows before a final one is selected.

The genus *Astarte* is characterized by a pointed umbo. The umbo forms while the animal is a juvenile, and radial growth subsequently proceeds around that area.

The umbo is situated above the hinge line. Like all molluscs *Astarte* have annual growth lines. They grow to between 2.5 and 3.2 cm. The foot is bright scarlet red or orange coloured, due to the haemoglobin found in its blood. This is actually an uncommon trait in molluscs and can therefore be used to distinguish between species.

The sexes are similar in appearance.



The development of this very distinct skin covering (periostracum) is complex. An electron microscopic study of the outer and middle folds of the mantle edge of *Astarte castanea* reveals the fine-structural details of the cells which are involved in the formation of the shell's skin covering. As the periostracum matures, the two membranous layers remain remarkably constant in width, whereas the two inner layers, dark homogeneous and fibrous translucent, increase in thickness. The fibrous translucent layer is the third layer of the fully mature periostracum.

They have many natural predators at all stages of development - crabs, waterfowl, fish, jellyfish etc



These occur in Nova Scotian waters. They can be found on the Burntcoat Head shoreline.