Atlantic Razor Clam

Ensis directus

Class: Bivalvia
Order: Veneroida
Family: Pharidae
Genus: Endis

Empty shells occur year-round on the shoreline.

Distribution

Ensis directus is found on the North American Atlantic coast, from Labrador in Canada south to Florida in the United States.

Also known as the Atlantic Jackknife clam it is native to the N.A. Atlantic coast. It inhabits the Bay of Fundy and the Gulf of St. Lawrence and occurs in all the Maritimes provinces. This species has been introduced to many areas in Europe and its distribution is increasing. It is identified as *Ensis americanu*s.

Habitat

It lives in the intertidal or subtidal zones along the Atlantic coast.

It prefers coastal areas with sandy bottoms, as well as muddy, fine sand with small amounts of silt in the low and subtidal zones in bays and estuaries. It is not migratory and therefore it remains in its habitat year round. It is usually found in colonies.

Food

The clam is a filter feeder. It extracts minute particles of food from water drawn into a cavity within its shell (mantle cavity).

When feeding, *E. directus* stays very close to the surface with its siphons sticking upwards through the water. The siphons draw water into the shell mantle cavity by using (hair like) cilia. These cilia cover the ctenidia, or gills, in the clam. It passes along the gills and combines with mucous. The food is now trapped and the cilia drive the food into the digestive tract. At the larval stage they feed on plankton.

Reproduction

There are separate male and female sexes with sexual maturity being reached at one year of life. Spawning occurs in early June when testes and ovary have sufficiently developed. Sperm and eggs are released into the water for fertilization.

Reproduction can be triggered by a series of factors, of which water temperature is among the most important. Conditions such as churning of the water caused by wind, waves, or currents, can also induce spawning, as can the presence of gametes or phytoplankton in the water. Eggs and sperm released in great numbers into the water are carried by currents over a wide area. There is usually a larger quantity of spermatozoa than of eggs. Fertilized eggs develop into larva. Larval development takes about 2-3 weeks at 18° C. Water temperature has a strong influence on the rate of larval growth.

Development

First stage larvae are very small, ciliated and free-swimming (trochophores). They develop quickly to a second stage (veligers). This phase lasts longer. They remain free-swimming, living a planktonic lifestyle as they further develop to the pediveliger stage by growing gills and a foot. They are now approaching the settlement stage to become juvenile clams.

Characteristics

The adult shell is thin, elongated, and slightly curved. Being a bivalve it has two parts connected by a ligament allowing it to open and close. One side never completely closes. The shell colour ranges from yellowish to dark brown. The length is about six times its width. It can grow to being 20 cm long.

Adaptations

It is a very fast burrower and a good swimmer. It burrows by using a series of valve and foot motions to draw itself downwards into the substrate. It is very sensitive to vibrations and can withdraw very quickly from the surface.

Status/Threats

Predators include crabs, moon snails and shore-birds.

Sightings in Nova Scotia

These are quite common on nearby shorelines.

Lapsed time for larvae to develop into being ready for settlement varies according to environmental conditions. It may take up to two weeks or more. Slow growth larvae linger longer in the water column. As they progress to becoming pediveligers, the velum (swimming and feeding aid) is reduced, lessening their swimming ability. They drop down to the seafloor. Using their flexible, muscular foot they explore the bottom for suitable settlement sites. They are quite mobile and move from one selection site to another before settling down to go through metamorphosis. The body develops as does the mantle. This thin membrane (mantle) covers the soft body organs. It is separated into two parts, each secretes the shell and lines it. Both parts are usually identical and are made of calcium carbonate and protein.

siphons

Young clams remain mobile, using bysall threads to assist in relocation. The well developed foot resides at the bottom of the shell. It is a soft and very important organ. So also are the siphons, being necessary for survival. The foot extends downwards to burrow vertically in the sand. When fully extended it is almost as long as the clam's body or one half of the shell length. The siphons extend upwards towards the surface. These can be seen at low tide above the waterline. The valves (shell) are covered with a protective, elastic cuticle.

This is a well-muscled clam. Various muscles assist in the opening and closing of the shell, expulsion of water and sand, and propulsion. Not only can it burrow with great rapidity it can also leap and swim. By quickly opening and closing its shell and drawing in its foot, it can expel water and propel itself through the surrounding water.

There is no major threat to these globally. They are quite plentiful in the Maritimes. The potential exists for commercial harvesting, but methodology is problematic.

Empty shells

The common name comes from the shell's resemblance to an old fashioned straight razor. The shell edge is also very sharp.