

Moon Snail

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Polinices beros

Class: Gastropoda
Order: Littorinimorpha
Family: Naticidae
Genus: Polinices



They can be seen in spring and summer moving in the sand hunting for food items.

Distribution

In North America this marine snail is distributed along the coastal waters of the Atlantic from Labrador south to the Carolinas.

Habitat

They inhabit soft-sediment marine environments all along the coast.

Food

Moon snails are carnivorous. They are one of the top predators of the intertidal environment.

Reproduction

They are dioecious, meaning the sexes are separate. Sexual maturity relates to size and age. Mating commences in April and continues until late July. Paired snails go through a pre-conjugal march. They move together prior to copulation. Fertilization is internal. Mating takes place most frequently during night low tides. Pairs can be observed in the late evening.

In Atlantic Canada they occur in Labrador, the Gulf of St. Lawrence, Quebec, New Brunswick, and Nova Scotia. They are abundant in the Bay of Fundy. In the USA they continue south along the eastern seaboard to North Carolina.

Moon snails mostly live on sandy substrates. They are found on sandy or muddy bottoms, or a mixture of sand and gravel. They can often be seen ploughing along in the sand searching for prey. Rarely do they inhabit rocky areas. They occur at a variety of depths but are more common in shallower water.

These are very active predators. They feed primarily on barnacles, clams, and mussels. Recent studies of bore holes in victim's shells indicate a more varied diet than previously estimated. These studies were conducted in Cape Breton Island, Nova Scotia.

The female lays eggs in a distinctive round, molded, sand collar. It is formed by one layer of sand, then a layer of tiny eggs, and then another layer of sand. The snail's mucous is added and molded by its foot. The use of sand helps to form the collar into the circular shape and adds texture. The whole egg collar is held together by the mucous and becomes somewhat gelatinous. The snail keeps the collar from connecting making it appear slightly incomplete. This process takes several hours. It looks like a bowl without a bottom or an old-fashioned collar man used to wear. It has a plain edge. A similar species *Polinices duplicata* has a wavy edge. Finally she lifts it up and leaves it in the mud. When first made it has a lively look. Later, after it has served its purpose and washes up on the beach it dries out and becomes brittle.





Development

Eggs, in their collars, are laid in shallow water from spring through fall. The eggs in each collar hatch out in about 6 weeks. Most marine snails lay eggs in these protective cases.

Characteristics

This species of moon snail is quite large. It can attain a width of 10 to 15 cm and can be almost as high as it is wide giving it a globular appearance. The shell is smooth and grayish-white to brownish in colour.

Adaptations

The foot is very versatile. It is used to burrow, glide over surfaces, deliver mucous and chemicals, and is involved in reproduction and feeding. They wrap their foot around a prey item then secrete an acidic enzyme to break down the victim's calcium carbonate shell. Using its radula which works like a file it drills a hole into the softened shell and inserts digestive enzymes.

Status/Threats

These occur in large numbers. They are preyed upon by birds, mainly gulls.

Sightings in Nova Scotia

They are very common in Nova Scotian waters. Low tides in spring and summer are the best viewing times.

The female has to reach a certain size before being capable of reproduction. The number of eggs produced relates to the size and the age of the female and can be from 100,000 to 500,000. Larval duration of about 45 days varies being influenced by environmental conditions. They go through several stages of development during this time and emerge as veligers (free swimming larvae). Finding suitable sediment triggers metamorphosis and they emerge as tiny juvenile moon snails.

It has a very large and fleshy foot composed of muscle tissue. The body containing the interior organs is above the foot. The snail's mantle covers its body. It secretes the protective shell. *Polinices heros* has an operculum. This serves as a trapdoor or lid to close off the shell opening and seal in the snail. Males are smaller. Females can live up to 14 years.



They can burrow down to a depth of 15cm. They also dig down to search for food. The radula has microscopic tooth-like structures used to rasp, drill, and scrape. It can also be used in prying open shells of bivalves. After the digestive enzyme has taken effect the snail uses its proboscis (elongated mouth) to extract the softened tissue inside the molluscs shell.

This species can pump water into its mantle and foot, increasing its mass by 3 or 4 times. When threatened, the snail pumps the water out of its body, pulling entirely inside the shell, sealing the opening with its operculum (lid).

The forming of the snail's egg cases, referred to as sand collars, occurs below the sand surface. It may take the female 10 to 14 hours to create these with her foot. She begins at low tide, continues working through high tide while submerged, and finishes on the ebb tide. Quite a feat.

They are considered a pest to the soft shell clam industry, where their voracious feeding can cause extensive damage to the beds. They are used as bait. Juveniles and veligers are vulnerable to predation.



Washed up pieces of sand collars frequently appear on the shoreline. They look like thin pieces of rubber in the shape of a round collar. They are often mistaken as beach litter or garbage and overlooked.