



Moonsnail

Background

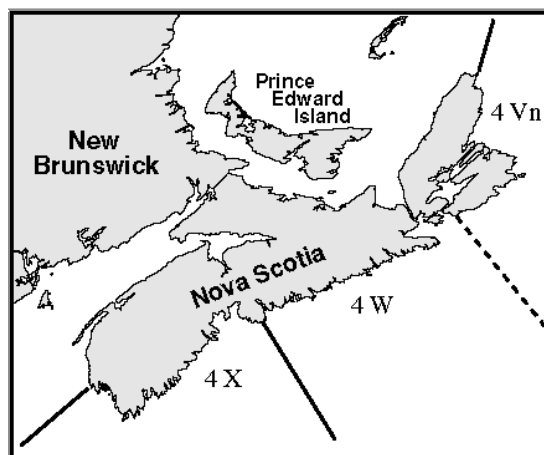
The common moonsnail or "clam drill" (*Euspira heros*) is a large carnivorous snail (shell diameter to about 4 inches or 100 mm). It can be distinguished from the whelks by the shell, which is smooth and rounded. The foot of the animal is very large and appears black when it is not extended. The shell is a dirty white to tan colour.

Moonsnail species are found in all of the world's seas. *E. heros* is found in intertidal and shallow waters from the Gulf of St. Lawrence to North Carolina. There are at least two other common species of moonsnail in Atlantic Canadian waters, but these are much smaller (approx. 1 inch or 25 mm) and may be confused with juveniles of *E. heros*. The snails bury into the sand during the day and emerge at dusk to feed, and to mate in the reproductive season.

The females lay distinct egg cases from early May until September, which appear as sand collars. Each egg case contains many thousands of eggs which hatch as planktonic larvae.

Moonsnails are considered a pest to the soft shell clam industry, where their voracious feeding can cause extensive damage to the beds. They naturally eat bivalve molluscs but are also known to be attracted to bait. Moonsnails drill a characteristic hole in the shell of their prey through which they insert their mouth to feed.

There is no commercial fishery for moonsnails, although they are consumed locally and used for bait in Nova Scotia. The foot is tasty and has earned the name "sweet meat" in some areas.



The Fishery

There is no directed fishery for the moonsnail in Canada or the United States, however, the meat makes an excellent groundfish bait and the moonsnails collected as lobster by-catch have supplied small local bait markets commanding a good price. There is a recreational fishery in the Northumberland Strait.

Historically, the moonsnails were eaten extensively by the Acadians, however, today they are not a food staple. The foot is known as "sweet meat" and is considered a delicacy in some counties.

There has been some interest recently in harvesting moonsnails as well as whelks. A draft management plan for moonsnails has been prepared, and exploratory licenses may be issued in 1997.

Resource Status

Moonsnails are distributed throughout the Gulf of St. Lawrence and around Nova Scotia to the Bay of Fundy, where they are particularly abundant in some areas. The moonsnail is found on bottoms of mud, sand, or a mixture of sand and gravel, from low water line to a depth of 40 fathoms. However, they are more common in shallower water to 17 fathoms. They are capable of burying themselves to a depth of approximately 6 inches (15 cm). Moonsnails are rarely found in rocky areas and are associated with prey species *Mya arenaria*, *Spisula solidissima*, *Mytilus edulis* and *Modiolus modiolus*. In feeding

trials, *E. heros* accepted raw fish (cod) as a food item but preferred bivalves.

E. heros has a planktonic larval stage and therefore a large dispersal range. In laboratory studies, the planktonic stage was of 4-7 day duration. Attempts to eradicate the species in areas of productive clam flats have not been successful, indicating that it may have some resilience to fishing pressure. Studies of length frequencies suggest that year class strength is variable.

There would appear to be no size distinction between the sexes in the population, however, more data are needed to confirm this suggestion as earlier data were confounded by identification of species. A tendency for females to mate with smaller males has been noted. Mating takes place in the early spring when water temperatures begin to increase. The first egg collars appear in May, with collar production peaking in July. In the laboratory egg collars were laid by a female 55 mm shell diameter (approx. 2”).

Moonsnails can be aged through the count of rings on the operculum, however there has been no attempt to validate ages inferred by this method. Data collected in 1930 suggest that growth is slow, with animals of 50mm shell height being approximately 10 years old in the Bay of Fundy.

A sample of 28 moonsnails was collected with drags in the Annapolis Basin, N.S. in May of 1994 during a scallop survey. The shell height range was 20 to 85mm with the fresh weight ranging from 3.8 to 347.8g. These data shows that the weight of the animal increases rapidly in proportion to size above 44mm shell height

Moonsnails accumulate paralytic shellfish poison through eating contaminated prey and a potential fishery would be subject to area closures.

Outlook

Should a commercial fishery be prosecuted, the fishery should be prohibited in June and July to allow for mating and egg collar production. After the water cools catch rates are expected to drop as the species becomes less active, although data are not available to confirm this effect. More data are required to determine optimum harvesting size, size at maturity, and biomass estimates. Growth rate and yield relationships may be area specific as with *Buccinum undatum*, the waved whelk.

Any fishery for *E. heros* would exclude the harvesting of smaller species of moonsnail (*E. immaculata*, *E. triseriata*, *Polinices pallidus*, *Amauropsis islandica*, *Natica clausa*) which may co-exist with *E. heros*. These species can easily be confused with juvenile *E. heros* but would not be harvested at the recommended size limit. Should a market preference for (< 1”) small animals develop, research into the biology and ecology of these species would have to be undertaken.

For More Information

Contact: E. Kenchington
Invertebrate Fisheries Division
1707 Lower Water Street
Halifax, NS B3J 2S7

Tel: (902) 426-2030
Fax: (902) 426-1862
E-Mail: Kenchington@bionet.bio.dfo.ca