

WAVED WHELKS in TUSKET SHOAL

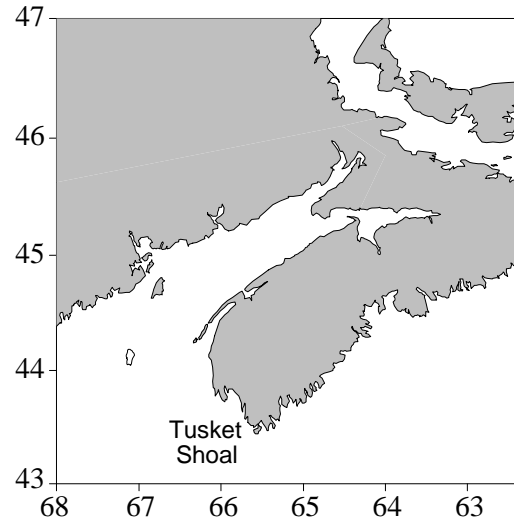
Background

The most common species of *Buccinum* is *B. undatum*, locally referred to as the Buckie, Waved Whelk, Rough Whelk or Common Whelk. It has a shell which can be up to 15 cm long and is the species which is often caught in lobster traps. The flesh of the foot is a mottled black and white. *Buccinum* lives to depths of 180 m as well as in shallow waters. Larger animals are found in deeper water.

Buccinum is a carnivore, and captures its prey with its foot. It is known to be a scavenger and will feed readily on dead fish, hence its attraction to bait in lobster traps. Whelks feeding on bivalve molluscs are susceptible to the accumulation of phycotoxins (PSP, DSP, etc.) which occur in their prey. Seasonal closures due to PSP can be anticipated, and if coincident with the mating and egg laying period (May to August) may prove beneficial to recruitment.

In mid-May the whelks aggregate for copulation, often migrating shoreward. Egg laying begins soon after copulation and may extend to the end of August. On average, a female will lay 340,000 eggs per egg mass and the number of egg masses laid per female is unknown. Embryos develop in the egg cases and hatch after 5 to 8 months, in the late autumn to late winter. Only 1% of the eggs hatch, with approximately 3700 hatchlings emerging from a single egg mass. There is no planktonic larval phase, implying that dispersal is limited. The female begins gonad development immediately after egg laying.

Buccinum undatum supports small local fisheries in the Gulf of St. Lawrence and off Newfoundland. In the Quebec region, trap limits (100 per license), trap volume limits (max. external vol. < 0.3m³), area restrictions and license limits are defined in the licensing policy as effort controls. There is a current interest in developing a whelk fishery in Nova Scotia.



The Fishery

There is no directed fishery toward whelks at the present time, however, exploratory licenses may be issued in 1996.

Resource Status

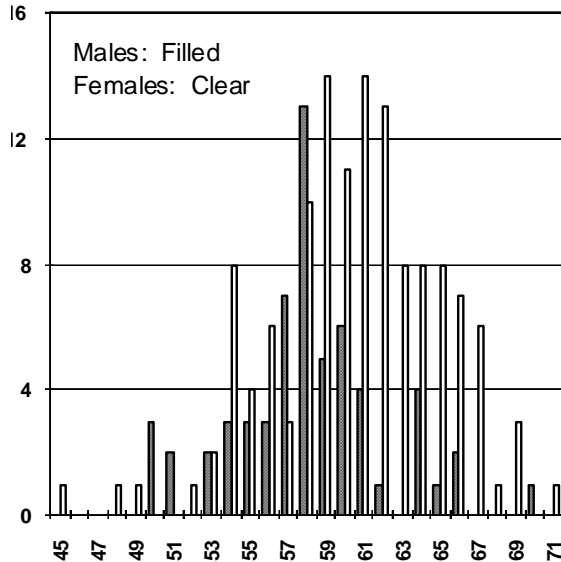
In the absence of a fishery, data are unavailable on the status of the resource. However, a **test fishery** was conducted in the Tusket Shoals area of Lobster Bay in October 1995, and preliminary information is available from that survey. The whelks were fished with modified lobster traps, i.e. with entrance heads knitted over to prevent the capture of large lobsters. Frozen herring was used as bait, and was replaced at each trap haul. Four to 20 traps were fished from a lobster boat and hauled after 1 to 3 days soak. The traps were placed in 5 to 8 fathoms of water, in areas known to contain whelks, as observed during the spring lobster fishery. Traps were placed in groups of 4 to 6 spaced approximately 100 feet apart. 26 hauls were made over a period of one month.

Catch rate in the Tusket Shoals area was highly variable. 27% of the lines had zero or 1 whelk, while another 27% had over 100 animals in a haul. The higher catch rates were achieved at three locations suggesting a highly aggregated distribution of the species.

Very few small whelks (< 50 mm) were caught during the test fishery in October. More research on

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the distribution, habitat preference and catchability of small whelks is required.



Shell Height Frequency Distribution from 20 Trap Hauls in the Tusket Shoal Area.

Preliminary data on whelks from the Lobster Bay area (Tusket Island) of southwest Nova Scotia indicate that the **size distribution** and **meat yield** are markedly different from that reported for the Gulf of St. Lawrence. The maximum shell height (71 mm) in the Tusket Island sample was 20 mm smaller than that reported in the literature for the New Brunswick north coast. The shell weight is considerably greater than those reported for a 60 mm sized whelk from the Gulf or the New Brunswick side of the Bay of Fundy. In the Tusket Shoal area, the shell height of an animal with a 15 g foot weight would be approximately 80 mm. This weight has been offered as a minimum mass for marketing. The size of the whelks in the Tusket Island area is too small for established markets.

Females are significantly larger than males and are heavier than males in total weight for a given size. This difference is due to a heavier shell and heavier soft parts, but not to a heavier foot (meat). The foot weight (marketable product) does not differ between the sexes for a given size.

Whelks are carnivores and prey on bivalve molluscs as well as carrion. They are preyed upon by cod, dogfish, crabs, starfish and lobsters. *Buccinum* competes with other whelk species such as *Neptunea decemcostata* and *Colus stimpsoni* which are poisonous and therefore not marketable.

Other species caught in the whelk traps include the sea urchin, hermit crab, lobster, sculpin, snow crab, ocean pout, sea cucumber and monkfish.

Outlook

Several aspects of the biology of this species warrant a conservative management approach. Their distribution appears to be highly aggregated, at least during the October trial fishing experiment. Whelks appear to form small, locally adapted stocks, and local management zones may provide a unit consistent with the nature of the resource. The resource may not be large enough to support a sustainable directed fishery, and this species may be more efficiently harvested as a by-catch of the lobster fishery. Lobster by-catch will be a concern in most areas, and the management plan should implement an even distribution of effort to avoid overfishing of aggregations.

Additional biological data from different populations along the Atlantic Coast are required in order to recommend an optimal fishing strategy for this species.

For More Information

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References

- Kenchington, E.L. and M.J. Lundy. 1996. A Summary of a Whelk (*Buccinum undatum*) Test Fishery in the Tusket Island Area of Southwest Nova Scotia with a Review of Biological Characteristics Relevant to the Development of this Resource. *DFO Atl. Fish. Res. Doc.* 96/12, 17 pp.