Photo: Phil Lambert, Royal British Columbia Museum

Varnish Clams

Background

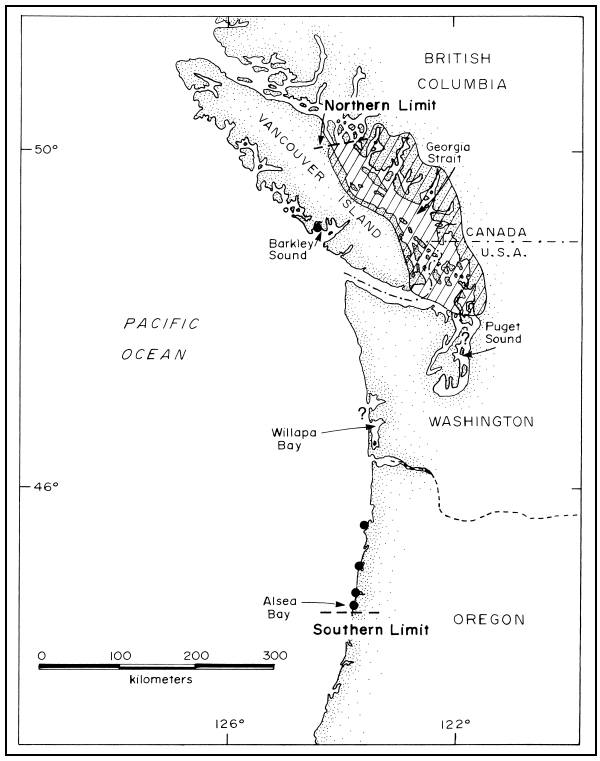
Varnish clams (Nuttallia obscurata) are a relatively recent addition to the fauna of British Columbia. They arrived in the early 1990's, possibly introduced as larvae in ballast water from trans-oceanic transport vessels.

Varnish clams have a thick, shiny brown periostracum on the outside of the shells. The inside of the shells is purple. The hinge ligament is external and large. The body, mantle and siphons are white. The siphons are long, and split for their entire length.

Varnish clams are well established in Georgia Strait, and are slowly dispersing southward into Puget Sound. They have been collected from Barkley Sound on the west coast of Vancouver Island, and are known from several estuaries in coastal Oregon.

Varnish clams are found relatively high in the intertidal zone of sand/gravel beaches. They are often found in association with streams, freshwater runoff or groundwater seepage. Where their distribution overlaps that of Manila and littleneck clams, they are generally found deeper in the substrate than other species.

Varnish clams grow to at least 64 mm total length, and a maximum weight of approximately 45 g.



Summary

- Varnish clams are a recently introduced clam found throughout Georgia Strait and on the west coast of Vancouver Island.
- There is relatively little information available on varnish clam biology or population dynamics.
- Varnish clams may represent an opportunity to diversify production from both the intertidal clam fishery and aquaculture tenures.

Species Biology

Varnish clams are synchronous broadcast spawners, with pelagic larvae. Seasonality of spawning, larval period duration and

season of settlement are unknown in the northeastern Pacific.

Varnish clams are capable of filter-feeding, selectively removing food particles from the water column. They have also been observed to utilize pedal feeding, collecting organic detritus from the sediment using the foot.

Little is known about age and growth of varnish clams, but there is evidence that they may grow at rates similar to Manila clams, *Venerupis philippinarum*, achieving 38 mm in length in about four years. Size and age at maturity are not known.

Anecdotal and survey information indicate that varnish clams have established fairly large populations on most beaches in Georgia Strait in a relatively short time (< 10 yr).

Varnish clams are typically found associated with Manila, littleneck (*Protothaca staminea*), softshell (*Mya arenaria*), and *Macoma* clams. They are host to juvenile pea crabs, *Pinnixia faba*, sometimes with relatively high infestation rates. These crabs are found in other intertidal clams, but generally mature only in horse clams, *Tresus capax*.

Varnish clams are preyed on by moonsnails (*Euspira lewisi*), gulls, crows and oystercatchers.

The Fishery

Varnish clams are not fished commercially at the present time. Some varnish clams were marketed from aquaculture leases in 1998, but this was halted by Fisheries and Oceans Canada and the Canadian Food Inspection Agency (CFIA) pending determination of human health risk due to coliform contamination or Paralytic Shellfish Poisoning (PSP). Some work was undertaken by CFIA to determine rates of accumulation and depuration of PSP toxins, and more extensive work will follow as potential fisheries are explored.

Varnish clams are fished recreationally, but landings or relative importance in the recreational fishery is not known.

Industry Perspective

Intertidal clam fishers have expressed interest in developing varnish clams as a commercial resource.

Aquaculturists have expressed interest in exploiting varnish clam production on tenured ground, and concern that varnish clams could affect production of Manila clams from aquaculture tenures. The ecological relationships of varnish and Manila clams has not been explored to date.

Resource Status

Although varnish clams are known to be abundant on many beaches in Georgia Strait, little is known about resource status and potential productivity under harvested conditions.

Outlook

Pending market testing, resolution of human health concerns by CFIA and development of management plans for rational development of fisheries, varnish clams may represent an opportunity to diversify production from both the intertidal clam fishery and aquaculture tenures.

Management Considerations

Conservation objectives and management tactics have not been developed for varnish clams. Because there appears to be potential as a commercial resource, development of varnish clams fisheries should proceed in a precautionary manner, guided by biologically-based thresholds or targets. The rate of fishery development will be dependent on the time required to develop information required to rationally manage the fishery.

It is not known whether the size limit of 38 mm currently enforced for Manila and littlenecks would enable varnish clams to spawn at least once before entering the fishery. When varnish clams live in association with Manila clams, varnish clams cannot be harvested without displacing, and possibly adversely affecting Manila clams. Opportunities to harvest varnish clams may be limited to situations where they are available in the absence of Manila clams, or where conservation thresholds for Manila clams have not been achieved, and the two species can be harvested simultaneously.

References

Gillespie, G.E., M. Parker and W. Merilees. 1999. Distribution, abundance, biology and fisheries potential of the exotic varnish clam (*Nuttallia obscurata*) in British Columbia. PSARC Working Paper I99-22. 38 p.

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