

## Scraping for Answers

### New Distribution Records and Habitat Information for TAYLOR'S DWARF-MUSSEL, '*Musculus*' *taylori* (Dall, 1897)

by W. (Bill) Merilees<sup>1</sup>, R. Harbo<sup>2</sup>, and André Martel<sup>3</sup>

<sup>1</sup> [bmerilees@hotmail.com](mailto:bmerilees@hotmail.com) <sup>2</sup> [rharbo@shaw.ca](mailto:rharbo@shaw.ca) <sup>3</sup> [amartel@mus-nature.ca](mailto:amartel@mus-nature.ca)

- Life Sciences, Malacology, Canadian Museum of Nature - November 10, 2011

It has been 120 years since the Reverend George Taylor collected some small mussels "nestling at the roots of coralline algae, in the vicinity of Victoria, B.C." (Newcombe, 1891). These mussels, were initially named *Modiolaria taylori* Dall 1897, and later designated as '*Musculus*' *taylori* (Dall, 1897). The shell is ovate-elongated and inflated with a thick periostracum, green to brown to red. There is a radial ridge (depression or "sulcus") from the beaks to the central margin. The interior of the shell is iridescent.

They are still a mystery and a recent compilation and review of the NE Pacific bivalves, by Coan et al. (2000) suggests that a new genus is required. Their smaller size, shell sculpture and the larval development, brooding internally rather than utilizing the byssal nest, appears to warrant separation, and for them to be known as "dwarf-mussels".



Fig. 1. Rev. G.W. Taylor (DFO Canada)



Fig. 2. '*Musculus*' *taylori*, to 5 mm length, collected by W. (Bill) Merilees, Francis Point, Ucluelet Peninsula, B.C. May, 2011. Note specimen on lower left with an internal brood. (R.Harbo photo).

#### Previous distribution records

Due to its brooding behaviour, Taylor's dwarf-mussel is one of a few bivalves previously thought to have its distribution limited to BC waters. Coan et al. (2000) list the range being from Victoria (Newcombe, 1891) to Hot Springs Island, in Haida Gwai (McTaggart Cowan, 1964).

#### New Distribution Records

Recent samples scraped from the intertidal zone have contained '*M.*' *taylori*, resulting in an expanded range for this species. The scraped area was approximately 23 x 23 cm (9" x 9").



Fig. 3. '*Musculus*' *taylori* in a byssal net attached to algae, from Cape Beale (André Martel photo).

To the north, '*M.*' *taylori* was found at Tanu (April, 2003), a short distance north of Hotsprings Cove. To the south, this mussel was found at three sites on the Olympic Peninsula, Washington: Waddah Island, Neah Bay (May, 2007), Sekiu (June, 2006), and the southernmost site, north of Slip Point, Clallum Bay, Strait of Juan de Fuca, Washington (May, 2007).

For Vancouver Island, '*M.*' *taylori* was found at approximately 30 locations, in semi-protected areas from Discovery Island, Victoria, Strait of Juan de Fuca, up the west coast of Vancouver Island and around the top, south to Bauza Cove, near Telegraph Cove, in Johnstone Strait (Fig. 2). Adult '*M.*' *taylori* were found at Cape Beale by scraping red turf algae from the basaltic rocks at low tide, just south of the Cape Beale lighthouse. Specimens were kept byssally attached to their natural algal substrate and taken to the lab where imaging was done under an Olympus SZX12 stereomicroscope (Fig. 3).

Unlike other '*Musculus*' spp., e.g. '*M.*' *niger*, Taylor's dwarf-mussel was not found at sites sampled in the Strait of Georgia.

### **Dispersal of 'Musculus' taylori**

It may be expected that because '*Musculus' taylori* broods and releases juvenile mussels, it would have high densities and a limited distribution. Near Ucluelet, B.C., in 2011, '*M. taylori* was found in great numbers, as many as 572 in a scraped area of approximately 23 x 23 cm (9" x 9"), which expands to 10,900/m<sup>2</sup>. Later examination indicated that the majority of these had large juveniles within the adult shell, ready for release (**Fig. 4**). Not all juveniles, however, will remain at their site of origin. The dispersal of '*Musculus' taylori* has been recorded by drifting and attaching with byssal threads to collectors (Martel, 1991). The study demonstrated that several marine bivalves and gastropods of the NE Pacific region lacking a planktonic larval stage are commonly found in the water column and can rapidly disperse locally by drifting. This feature enhances rafting opportunities that allow even farther dispersal.

### **Habitat notes**

Taylor's dwarf mussel, '*M. taylori*, was found in the lower intertidal area on semi-protected rocky beaches, particularly where there is a shallow crust of sand held in place by mats of coralline or other algae species. Numerous intertidal scrapings from the Strait of Georgia did not yield any '*M. taylori* specimens. Drill holes in the shells of '*M. taylori*, suggest predation by snails, most likely by *Ocenebra* spp. also found in the samples.



**Fig. 4.** Adult '*Musculus' taylori* from Prasiola Point, in Trevor Channel, Barkley Sound. By gently prying open the valves brooded embryos inside the marsupial chambers of the gills can be seen. The embryos appear to represent a volume that is far superior to that of the entire visceral mass. (A. Martel photo).

### **REFERENCES**

- Coan, E.V., P.V. Scott and F.R. Bernard. 2000. Bivalve seashells of Western North America. Marine Bivalve Mollusks from Arctic Alaska to Baja California. Santa Barbara Museum of Natural History Monographs Number 2. Studies in Biodiversity Number 2. Santa Barbara Museum of Natural History, Santa Barbara, California: 764 pp.
- Dall, W.H. 1897. Notes of some interesting species of shells from British Columbia and the adjacent region. Natural History Society of British Columbia, Bulletin 2: 1-18, pls. 1,2 (Jan).
- Martel, A. and Chia, F.S. 1991. Drifting and dispersal of small bivalves and gastropods with direct development. Journal of Experimental Marine Biology and Ecology 150:131-147.
- McTaggart Cowan, I. 1964. New information of the distribution of marine mollusca on the coast of British Columbia. Veliger 7:110-113.
- Newcombe, C.F. 1891. Report on the Marine Shells of British Columbia. Art. V. Papers and Communications Read Before the Natural History Society of British Columbia. Vol. 1. No. 1.