

Hoof Snails (Family Hipponicidae) of B.C. and Washington

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Hoof snails are limpet-like, sometimes called horse hoof limpets because of their thick rounded shape and the horseshoe-shaped muscle scar in the interior of the shell. Hoof-snails are sedentary, attaching to the substrate with a thin calcareous plate (Fig. 1), making them a “bivalved” gastropod. The top (dorsal) shell may be flattened or elevated, and some may have a hooked apex. Strong concentric ridges may be crossed with radial ridges. The exterior is white, usually with some brown periostracum. The apex is often worn and smooth. The interior of the upper shell is white, smooth and has a characteristic



Figure 1

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Figure 1 - The hoof snail secretes a calcareous plate for attachment to the rock.



Figure 2

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Figure 2 - Bill Merilees collects hoof snails from under a rock ledge where a loose slab was removed.

horseshoe shaped muscle scar. Bill Merilees first found the hoof snails at Ucluelet, on the open coast of Vancouver Island, B.C., by removing a loose piece of a rock ledge (Fig. 2). On subsequent collecting trips, over the past two years (2015-2016), we have found many clusters of hoof snails at three sites at Ucluelet.

The species-level classification of these limpet-like gastropods is under review and there may be at least two species in B.C. and northern Washington. Recent collections and dna sequencing over a broad geographic range will likely help resolve some of the issues. The **Flat Hoof Snail**, *Antisabia* sp. A, (Fig. 3) to 25 mm diameter, was initially called *Hipponix antiquatus* (an Atlantic species), later named *Hipponix cranioides* Carpenter, 1864, but this has lately been considered a synonym of *Antisabia panamensis* C.B. Adams (McLean, 2007), which was described from the Pacific coast of Panama. Whether or not this is a single widespread Eastern Pacific species or two or more species is under investigation by Doug Eernisse (California State University Fullerton). The holotype of *H. cranioides* was collected by



Figure 3

Figure 3 - Northern Flat Hoof Snail, *Antisabia* sp. A (may be *A. cranioides*)
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James Swan in Neah Bay, Washington (USNM 15508). The type material also includes 14 paratype specimens; some are flat and others are high (Palmer, 1958).

What appears to be a second species, the **Hooked Hoof Snail**, *Antisabia* sp. B (Fig. 4), was found at Big Beach, Ucluelet, B.C. on rocks in crevices. The apex overhangs the posterior margin, but it does not have the

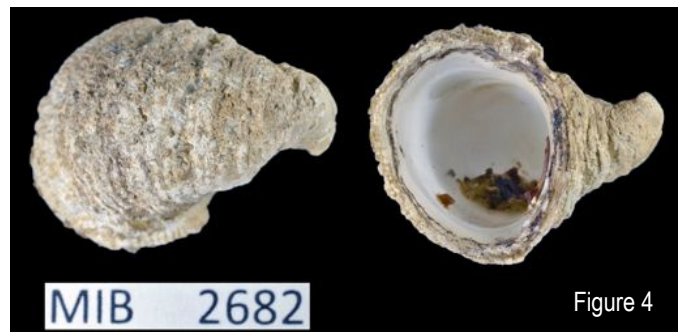


Figure 4

Figure 4 - Hooked Hoof Snail, *Antisabia* sp. B (may be *A. tumens*)
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strong radial ridges and periostracum of fine hairs that are characteristic of the Sculptured Hoof Snail, *H. tumens* Carpenter, 1864. The reported range of *H. tumens* has been limited to southern California to Baja California, Mexico (McLean, J. 1969). The diameter of our specimen of *Antisabia* sp. B was 11 mm, similar to that reported for *H. tumens*, maximum length 12 to 15 mm. It is interesting that some BC specimens resemble Keep's (1935) description, resembling "horn of plenty". Further collections and DNA sequencing is required to determine if this is a northern range extension of *H. tumens* or a new species. Images and data from the B.C. hoof snails will be posted on the Canadian Bar Code of Life website (BOLD).

The morphology of the hoof snail shells are likely influenced by the fact that they permanently attached to the substrate and over time, crowding may result in some shells becoming elevated, while others are flattened. Considering that they are under rocks and in crevices, the surrounding substrate may also influence the shell growth and shape.

McTaggart-Cowan (1973) discussed a third species that has been found in B.C., possibly an introduction of *Antisabia conica* (Schumacher, 1817), based on two collections, one at Haida Gwaii (Queen Charlotte Islands) and a second report from Table Island, central BC coast. McTaggart-Cowan concluded that the Table Island specimen illustrated (Griffith 1971) as *H. tumens* was misidentified.

At Ucluelet, hoof snails are typically found on the upper surface of rocks that are covered over by another rock. They were not found directly on the underside of intertidal rocks. There were also the occasional specimens in crevices and in empty pholad holes, a common habitat in California (Yonge, 1953, as *H. antiquatus*). The hoof snails feed on organic fragments, detritus, and pieces of algae, using an extendable snout or proboscis, and rely on the surf conditions and water movements to bring food.

Reproduction

A high density of hoof snails, which are sedentary, and close proximity of the small males to the females is presumed to be required for successful reproduction (Yonge, 1953, 1960). Males are smaller than the females, and eventually transform into females. Egg sacs are brooded under the shell and the young emerge as crawl away juveniles. In February, 2015, we found most large specimens of the hoof snails (*Antisabia* sp. B) contained yellow egg sacs (Fig. 5).

Acknowledgements

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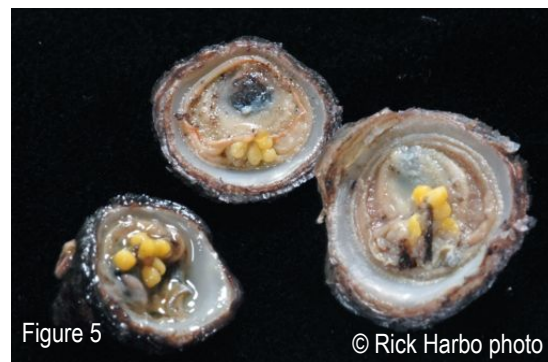


Figure 5

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Figure 5. - *Antisabia* sp. B with yellow egg sacs