

Direct feeding on kelp by *Littorina* and *Lacuna* snails (Family Littorinidae) in the NE Pacific

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Most *Littorina* and *Lacuna* species are found browsing directly on algae or seagrasses or grazing on the films of diatoms growing on the marine plants.



L. scutulata on intertidal rockweed, *Fucus* (R. Harbo). Gerald Island, Strait of Georgia, B.C. July 2009.



Nancy Elder, USGS, captured *Lacuna vincta* feeding on the surface layer of Bull kelp, *Nereocystis leutkeana*. Strait of Juan de Fuca, near Ediz Hook, Port Angeles, WA August 2009.

consume any macroalga (kelps, *Ulva* and other algae) and blunt-shaped teeth are produced in response to grazing response to grazing on epiphytes found on eelgrass. It may take as long as three weeks to produce new teeth in response to a changing diet and mismatches between *Lacuna* tooth morphologies and food type can result in lower consumption rates.

The Checkered periwinkle, *Littorina scutulata* Gould, 1849 is commonly found grazing on surface films of microscopic algae and soft-bodied seaweeds, shown here on the intertidal rockweed, *Fucus*.

Diver Conor McCracken captured an image of snail, *Lacuna porrecta* Carpenter, 1864 eating a kelp stipe at Crocker Rock, in Browning Passage, just north of Port Hardy, B.C.

The kelp blade is missing and the algal tissue is decomposing, making it soft enough for the radula of the snails to rasp through the surface.

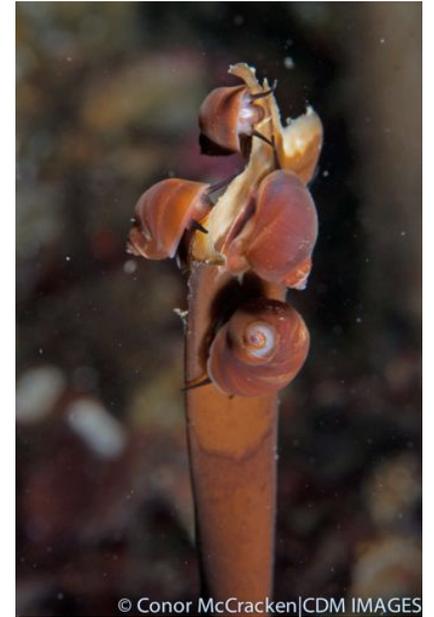
L. porrecta is often brown, but may also have similar color patterns as *L. vincta* (Montagu, 1803). *L. porrecta* grows to 12 mm shell height compared to *L. vincta*'s 16 mm.

L. porrecta has an inflated whorl and the height of the aperture is usually more than half the height of the shell. It has a broad umbilicus shelf which is usually white. This species is common on the outer coast from at least Vancouver Island south to California. It is most commonly found on low intertidal kelp, including *Saccarina* (= *Hedophyllum*) and various *Laminara*, but can also be found on eelgrass.

The Northern banded *Lacuna*, *L. vincta*, is found from northern Alaska to California. It is found on a number of kelps, but densities on the Bull kelp, *Nereocystis* in Alaska can reach up to an astounding 1,540 snails/m² on juvenile blades (Chenelot and Konar, 2007). It has been suggested that at some localities, the large densities of grazing snails may limit the growth and survival of kelp plants. This could impact on the maintenance of healthy kelp beds.

At Friday Harbor Laboratories, San Juan Island, WA, Dr. Diana Padilla (Stoney Brook University) is leading studies on the feeding behaviours of *L. vincta* and *L. variegata*.

Lacuna feed using a rasping radula, a long chitinous ribbon with repeated rows of teeth. New teeth are constantly produced at the distal end of the radular ribbon while old teeth are shed anteriorly (Padilla et al. 1996) throughout the life of the snail. Amazingly, two distinctly different radular tooth morphologies are generated in response to different food types (Padilla, 1998). Pointed teeth are produced when the snails



Lacuna porrecta, feeding on a decomposing kelp stipe. Crocker Rock, Browning Passage, Northern Vancouver Island, B.C. October, 2012.



Sharp-pointed radula of *Lacuna*, feeding on kelps and algae (D. Padilla image)

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