Species ID Guide Template

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Calliostoma ligatum (Blue top snail)

Description

Calliostoma ligatum's shells are cone-shaped with three distinct convex whorls, and are generally 2.5 to 3 cm in diameter and 1.7 to 3 cm tall (Tuskes 2019; Crowles 2004; Meschkat et al., 2013).). The colour of their unbeaded spiral ridges generally alternates between light golden or tan and chocolate brown, although spirals can be white, grey, black or red. If the shell is worn or damaged a distinctive blue inner layer is visible, which can also be seen in the inner edge of empty shells. The shell has a closed umbilicus, and its opening is rounded with a pearly interior. The snail's foot has a distinctive bright orange sole.

Calliostoma ligatum is present from central Alaska to southern California (Metschkat et al., 2013; Harbo 2011). It can be found intertidally but also at depths of up to 30 meters in eel grass and kelp beds, and rocky areas. Blue top snails are omnivorous, and although they mainly consume *Macrocystis* and other brown algae they also eat diatoms, ascidians, sponges, bryozoans, and detritus (Crowles 2004; Meschkat et al., 2013). Their main predators are sea stars and sunflower stars, but, interestingly, they do not demonstrate antipredator behaviour towards predatory snails (Hoffman, 1980). As broadcast spawners, male *Calliostoma ligatum* release sperm into the water column, while eggs are released by females sheathed in mucous strands that await fertilization (Holyvoak 1988). After fertilization, they undergo several changes over 12 days to become planktonic larvae, veligers, and then juvenile snails. They reach sexual maturity after 1 year. Blue top snails may be confused for Purple-ringed top snails (*Calliostoma annulatum*), but the beaded spirals on Purple-ringed top snails are easily differentiated from the smooth spirals of Blue top snails. Other snails in the area either do not have a similar top-like shell morphology, or lack the distinguishable spirals and orange foot of the top snails.

Identification Questions

1) Is the shell of the snail top shaped (not cone shaped) with three convex whorls?

2) Does the snail have a bright orange foot?

3) Are the spiral ridges on the snail's shell smoothed (not beaded)?

Figures

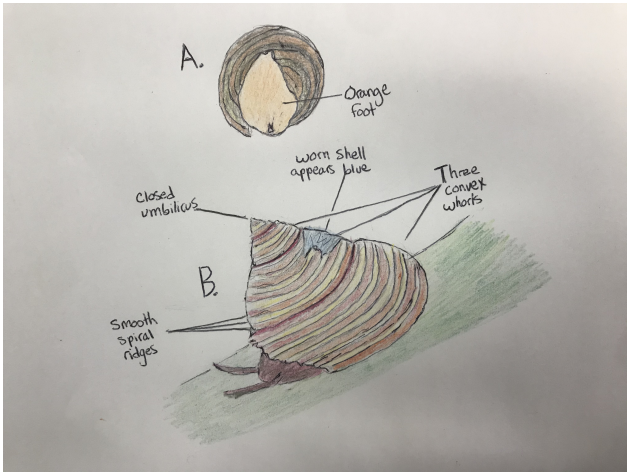

Figure 1: Calliostoma ligatum positioned in ventral (A) lateral (B) views with important identifying characteristics labelled.

Figure 2: Calliostoma ligatum shells (containing Hermit crabs) collected at Scott's Bay.

Nucella lamellosa (Frilled/Wrinkled Dogwinkle)

Description

Nucella lamellosa's shell can have very variable characteristics, such as color and texture. Typically in solid colours, they can be light brown, grey, to white, but can also have banding patterns (Harbo, 2011). Some have even been observed in orange and purple colouring with coloured bands. Their 'frilled' name comes from their lamella, which look like wrinkles or ruffles in the whelk's shell. A shell can have up to 12 lamellae (Proudfoot & Fretwell, 2015). Presence or absence of frills in this species has been observed to vary with both wave and predator (*Cancer productus*) exposure. Typically, wave exposed snails have smooth shells. Their shells are not 'polished' looking and are spirally coiled with 5-7 whorls (Bering et al. 2017). Overall, shell shape is elongated into a point and can reach up to 80mm in height (Proudfoot & Fretwell, 2015). The shell mouth opening is ovate and the lip of the shell is smooth and rounded with white coloring (or outside shell colour) on the inside (Bering et al. 2017). Its operculum is strongly spiraled and usually big enough to fully close the snail's shell mouth opening, and it has a closed umbilicus (Bering et al. 2017). Color, texture, thickness, coloured banding, and sometimes shape can vary widely for this species (Proudfoot & Fretwell, 2015). As there are 4 Nucella species in BC, this snail is commonly mistaken for its relatives. Greyish or white *N. lamellosa* can look a lot like *Nucella canaliculata*, however *N. canaliculata* is typically more streamlined in shape and doesn't have any frills on its shell (Proudfoot & Fretwell, 2015). *N. lamellosa's* range extends from Alaska (Aleutian Islands) to California (central) (Proudfoot & Fretwell, 2015; Harbo, 2011). This range suggests Frilled Dogwinkles can live in a breadth of conditions, but distributions suggest preference for cold temperate waters (Bering et al. 2017). In terms of habitat preferences, these snails inhabit the rocky intertidal, specifically mid to low zones but can be in shallow subtidal locations as well (Proudfoot & Fretwell, 2015; Harbo, 2011). The Frilled Dogwinkle inhabits rocky crevices, rock faces, as well as barnacle and mussel beds. Frilled Dogwinkles are predatory and feed on mussels and acorn barnacles (among other mollusks) by drilling into them with their radula and using a siphon that penetrates the prey's shell to feed on internal tissues (Carefoot, 2021). Mating occurs in winter and spring. Sexually mature (>4yrs old) snails aggregate to breed with a group at their original hatching site (Bering et al. 2017). Females spawn eggs after 20 months and baby snails hatch from them after 140 days. Eggs are contained in capsules that protect them from factors such as salinity stress. Eggs ("sea oats") are pale yellow and shaped like ~10mm vases, they can be observed on rocks in clusters (Bering et al. 2017).

Questions

1) Does the snail have 5-7 whorls, with the last whorl being the largest by far?

2) Does it have an oval aperture that is around half the length of the shell?

3) Is the lip thick, rounded, and smooth, with white or the shell's outer color showing through?

Figures

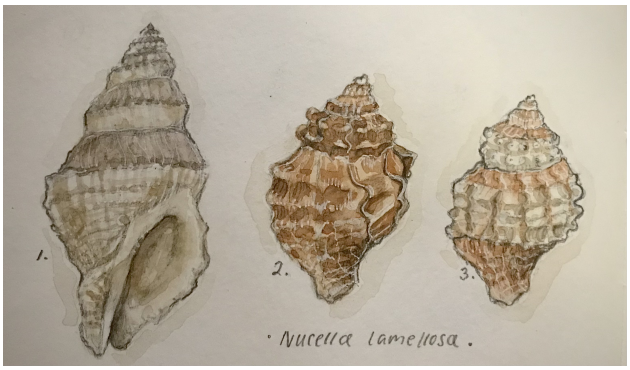

Figure 3: A drawn diagram of *Nucella lamellosa* (L.Wall). These drawings show the morphological variety in shell colours, textures, and banding. 1) shows underside of the snail, highlighting the oval aperture. 2) shows an upright view of the snail, showing frills, five distinct whorls, and brown colouring. 3) shows a banding colour pattern and less frilly surface.

Figure 4: Photos showing two varieties of *N. lamellosa* snails collected from Scotts Bay in Bamfield, BC on October 15th 2021 (L.Wall). This highlights the variation in snail color and size, with smooth shell morphology suggesting plastic suitability to their wave-exposed habitat.