Chelyosoma columbianum

Flat-topped Tunicate

Phylum: Chordata
Class: Ascidiacea
Order: Phlebobranchia
Family: Corellidae

Carmen Reddick

Taxonomy: *Chelyosoma columbianum* was originally described by Huntsman in 1912. The only synonym is *Chelyosoma columbiana,* a literature misspelling (Shenkar et al. 2020b).

Description
Size: The distance between an individual's two siphons is up to 19 mm in length and perpendicularly its width is up to 14 mm.
Color: Yellowish hue and often clear or transparent (Van Name 1945).
General Morphology: Smooth, sac-like, elliptical-shaped test protecting internal parts (Van Name 1945).
Test and Disk: Test is not a true part of the body, as it is a secretion of mantle and the body can be completely removed from it. Asymmetrical, flat-topped disk created by test (Van Name 1945).
Siphons: Branchial and atrial siphons. Siphonal plates are at the same level as the disk (Van Name 1945).
Plates: Number of plates may differ among individuals, but there are generally two central plates, two intermediate, and 12 marginal plates found level to the disk. (Van Name 1945).
Musculature: Siphonal and marginal muscles, as well as distinguishable short muscle strands that cross all the lines located away from the margin (Van Name 1945).
Internal Parts: Inside the test's protective layer is the mantle, another sac-like membrane (Van Name 1945). This species is known to have between 50 and 100 tentacles, 12 to 22 languets, and 33 to 42 bars on each side of its pharynx. Stigmata are coiled with a maximum of 2.5 turns. Gastric folds run vertically, intestine is narrow, and dorsal tubercle is transverse. Loop is narrow and located to the right posterior side (Huntsman 1912).

Possible Misidentifications
Chelyosoma productum can be found in the same region as *C. columbianum*. The two species can be distinguished by the appearance of their test and disk. *Chelyosoma columbianum* is the smaller of the two species (Huntsman 1912) and has a very flat disk and a low profile, with its height typically much smaller than its width. *Chelyosoma productum* is significantly taller, with a width to height ratio of about 1:1. *Chelyosoma productum* also lacks the visible short muscle strands found in *C. columbianum* (Van Name 1945).

Ecological Information
Range: Originally discovered in Departure Bay and Burrard Inlet, British Columbia (Huntsman 1912). Now known to inhabit the North Pacific Ocean from Alaska to Columbia (Shenkar et al. 2020b).
Local Distribution: Found near Stonewall Bank offshore of Newport, Oregon. Full local distribution is unknown and occasionally on cobbles off Cape Arago.
Habitat: Rocky and shell hash sea floor (Huntsman 1912).
Temperature: Identified in Stonewall Bank where sea temperatures range from 6.6 °C to 22.3 °C (NDBC 2009).
Depth: Found between 18 and 313 meters (Van Name 1945).
Associates: Lives in association with coralline algae, the vase sponge *Aphrocallistes vastus*, the Anthozoan *Pachycerianthus fimbriatus*, the Bryozoan *Cellaria* sp., the brachiopods *Crania californica* and *Laqueus californianus*, the sea star *Stylasterias forreri*, and other tunicates including *Bathypera feminalba*, *Boltenia polyplacoderma*, and *Halocynthia igaboja, and Rhopalea cloneyi*. (Vàzquez and Young 1996).
Abundance: Likely uncommon (Van Name 1945) but common on walls of Saanich Inlet

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and Barkley Sound (C.M. Young, personal communication).

Life-History Information:
Little is known specifically about the reproduction, larval and juvenile stages, predators, and behavior of *C. columbianum*, therefore these categories will detail information known about the shallow-water congener *C. productum*.
Reproduction: All solitary ascidians are hermaphrodites and most phlebobranch ascidians are capable of self-fertilization. In C. productum, gametes are released after sunrise in response to light (Young and Braithwaite 1980).
Larva: Tadpoles of this species have not been described, but it expected that they swim for no more than a few days, like those of related phlebobranchs (Cloney, Young, and Svane 2003)
Juvenile: Juveniles of *Chelyosoma productum* have been described by Young and Braithwaite 1980. In this species, juvenile form depends on the proximity of neighboring conspecifics; crowded individuals develop a long epidermal ampulla.
Longevity: Unknown
Growth Rate: Unknown
Food: Filter feeds on small plankton (Van Name 1945).
Predators: Unknown. Other plebobranch ascidians in the same region are preyed upon by the gastropod *Fusitriton oregonensis* (Young 1985). *Chelyosoma productum* are capable of cannibalizing their own larvae (Young 1988).
Behavior: Unknown

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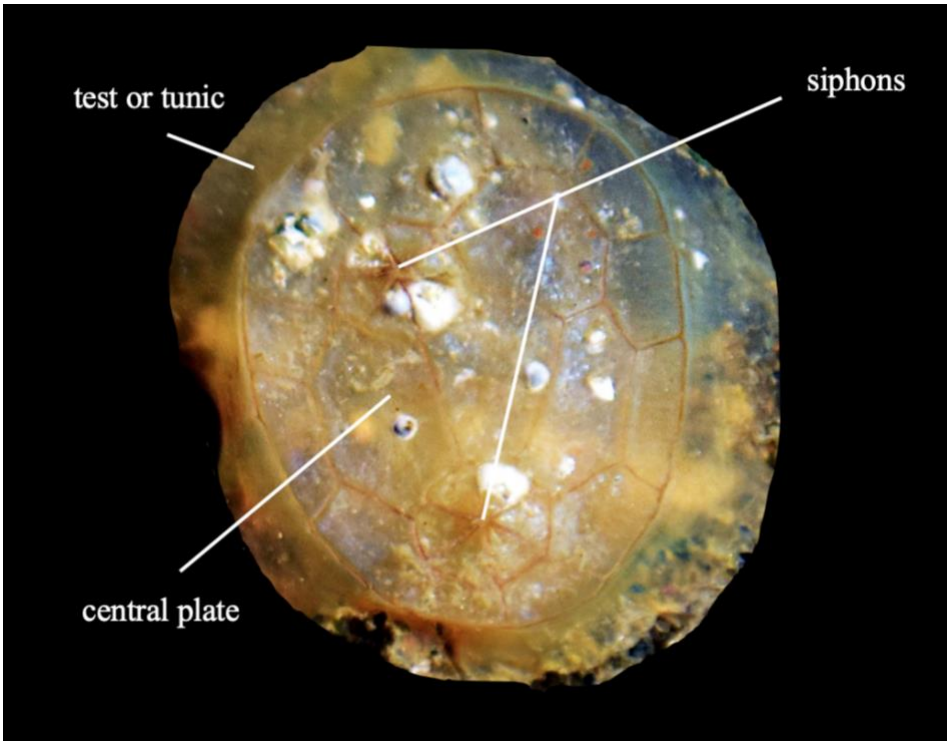

Figure 1. Sessile adult *C. columbianum* with a yellowish, transparent test permanently attached to a rock. Individual was collected from 120 m near Stonewall Bank offshore of Oregon in September 2019. Photograph by M. Hainey.

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