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# *Olivella biplicata*

The purple olive

Phylum: Mollusca

Class: Gastropoda, Caenogastropoda

Order: Neogastropoda

Family: Olivoidea, Olividae, Olivellinae

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**Taxonomy:** Described by Sowerby I in 1825. Changed from *Callianax* to *Olivella* in 2010 (MolluscaBase 2019).

## Description

**Size:** large for family: to 30 mm long (Carlton and Roth 1975); mature at 16 mm (Edwards 1968); males larger than females. Width usually about twice as high as wide (Kozloff 1974a). This specimen 18 mm high, 9 mm wide.

**Color:** gray, purple fasciole (band) at base offset with dark line (fig. 1); faint vertical striations, but surface otherwise polished, unsculptured: genus *Olivella* (*Callianax*) (Carlton and Roth 1975).

## General Morphology:

### Shell:

**Shape:** stout, robust, sub-cylindrical; spire only slightly elevated; 5-6 whorls. Body whorl convex, nearly flat near thin straight outer lip; aperture elongate, triangular, with anterior notch (fig. 2).

**Columella:** strong callus, with a fold of 2 incised spiral lines or plications in lower portion: sp *biplicata* (fig. 2).

**Operculum:** small, horny, thin, half ovate, apical nucleus (not figured).

**Body:** eyeless; foot plow-shaped, for burrowing (McLean 1969). Long siphon for water intake (fig. 3). Radula with 3 teeth to the row: Neogastropoda (not figured).

**Eggs:** egg like a dome-shaped hat, about 0.5 mm diameter (fig. 4a).

## Possible Misidentifications

*Olivella* species are the only genus of the family Olividae in our north temperate waters; the larger *Oliva* is a warm water ge-

nus. The genus *Olivella* may be distinguished by its smooth surface, slight spire, elongate, notched aperture, clean sand habitat, and in *O. biplicata* by its columellar folds. At least 3 *Olivella* are found on the west coast:

*Olivella baetica*, slenderer than *O. biplicata* (2 ½ x as high as wide), shell tan or cream with red, brown or purple markings and lines: it can be found on protected beaches and subtidally. It is smaller than *O. biplicata*-only up to 19 mm. It is found in Puget Sound as well as in California (Kozloff 1974a; Carlton and Roth 1975).

*Olivella pycna*, another small olive (to 19 mm), is stout, and has brownish zig-zag lines on its whorls (Carlton and Roth 1975). It is not found in Puget Sound, but is a more southern species.

Characteristics of the family Olividae include a polished shell (indicating that the mantle often covers it), a subcylindrical, spired shell with an aperture greater than ½ the shell length. They are usually sand dwellers.

## Ecological Information

**Range:** Vancouver Island to Magdalena Bay, Baja California: Oregonian and Californian shallow water marine faunal provinces.

**Local Distribution:** outer, marine portions of most bays and estuaries, including Coos Bay, Netarts (Stout 1976).

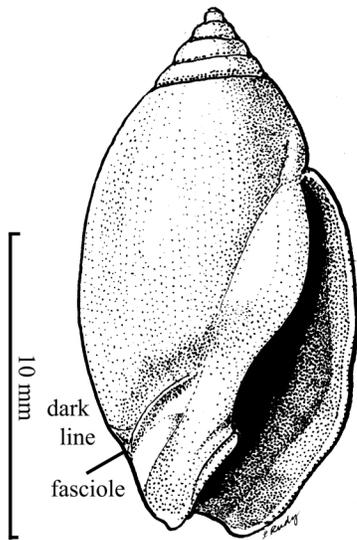
**Habitat:** sandy beaches and spits of bays, as well as outer coast. Can concentrate metals in tissues, apparently without harm (Morris et al 1980).

**Salinity:** full sea water.

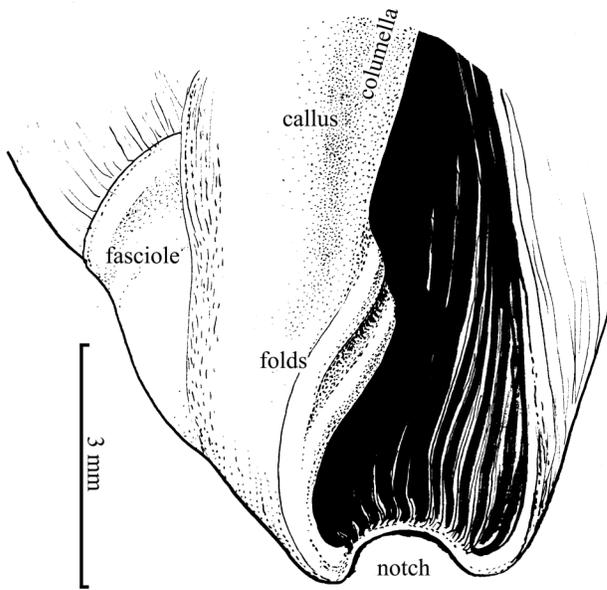
**Temperature:**

**Tidal Level:** low intertidal to subtidal waters:

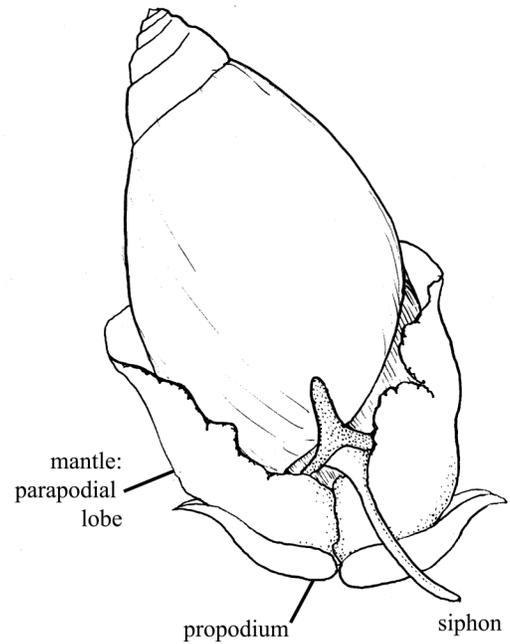
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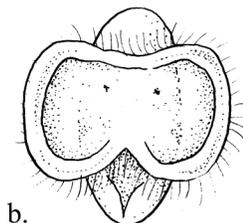
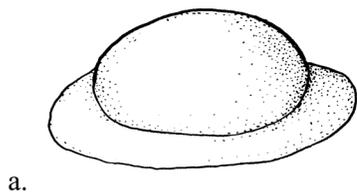
1. *Olivella biplicata* (anterior view, H:18mm) x4.5:  
about twice as high as wide; polished surface: gray with  
purple fasciole; stout, subcylindrical; slight spire; 5-6 whorls;  
long aperture



2. Columella and aperture x12:  
columella with strong callus, two fold;  
aperture notched



3. *O. biplicata* (dorsal view)



4. Egg and larva x100:  
a. egg case  
b. veliger (frontal view)

(Edwards, 1968)

lives in quite a wide band (Kozloff 1974b); found higher than and associated with the razor clam: *Siliqua patula*.

**Associates:** *Siliqua patula*; parasitic nematodes (Edwards 1969): in southern California, hydroids on spire.

**Abundance:** common intertidally (Carlton and Roth 1975).

### Life-History Information

**Reproduction:** dioecious (two sexes); mating behavior observed at every low tide, all year: no 'year classes' in Oregon waters. Mate selection by chemosensory means; internal fertilization. Only sexual dimorphism observable is larger size of males. Sterility rate may be as high as 50% due to trematode infestation. Single egg cases deposited usually on empty shells; egg development time variable: 10-28 days (Edwards 1968). Veligers nonpelagic: swim near substrate (Edwards 1968).

**Larva:** Veliger 0.2-0.3 mm (fig. 4b) (Edwards 1968).

### Juvenile:

**Longevity:** possibly several years: as many as ten (Edwards 1968).

**Growth Rate:** to maturity (16 mm) in one year. Males grow faster than females and are larger. Growth rate varies from 0.1 mm to 9.7 mm/year (Stohler 1969). Few young reach maturity; mostly populations of older animals, which have a low mortality rate (Edwards 1969).

**Food:** family is carnivorous; scavengers animal matter; large *Olivella* will eat polychaetes (Edwards 1969).

**Predators:** *Pisaster brevispinus* (Coos Bay, North Spit) (Edwards 1969); small *Cancer antennarius* and *C. magister*; shorebirds, particularly gulls; fish; man, for ornament (Stohler 1969). In southern California: mollusks *Octopus*, *Polinices*, *Conus*, echinoderm *Astropecten* (Stout 1976).

**Behavior:** reacts to predator *Pisaster*

*brevispinus* by crawling or by rapid upside down swimming (Edwards 1969). Trails near surface. shell partly exposed. Larger animals active at night and hide from predators during the day.

### Bibliography

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Updated 1988

Taxonomy updated 2019

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