
Conopea galeata

Seawhip Barnacle, Brown Barnacle

Phylum: Arthropoda
Class: Hexanauplia
Order: Sessilia
Family: Archaeobalanidae

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Taxonomy: *Lepas galeata* was described by Linnaeus in 1771, although the original type specimen was subsequently lost (Pilsbry 1916). The genus *Conopea* was described and established by Say in 1822. In this publication, Say included the previously described species *Balanus galeatus* (= *Lepas galeata* Linnaeus 1771). Darwin (1854) later synonymized *Conopea elongata* with *C. galeata*. There are currently 21 known species in the genus *Conopea*, and all live in obligate epibiotic relationships with gorgonian and antipatharian corals (Carrison-Stone et al. 2013). Species in the genus are widespread throughout temperate and tropical oceans, and all species in the genus are understudied (Carrison-Stone et al. 2013).

Description

Size: The basis is elongated along the carina-rostrum axis, and the diameter along this axis can reach upwards of 15 mm (Carrison-Stone et al. 2013; Newman and Abbott 1980). The basis is narrower along the lateral axis.

Color: Basis and test are often cream-white in color. Light to vivid purple is sometimes observed on the parietes and basis of the barnacle (Carrison-Stone et al. 2013) (Fig. 1A).

General Morphology: The basis for *C. galeata* is boat-shaped and often elongated along the carina-rostrum axis (Molenock and Gomez 1972; Newman and Abbott 1980; Zullo 1966) (Fig. 1B). Frequently the barnacle individual is covered by the coenenchyme of the host gorgonian or antipatharian coral with only the operculum exposed (Carrison-Stone et al. 2013; Farrapeira 2010; Molenock and Gomez 1972; Newman 2007; Newman and Abbott 1980; Newman and Ross 1976; Wicksten and Cox 2011; Zullo 1966).

Mouthparts: The terga are notably truncated towards the apical region (Newman 2007; Zullo 1966). The scuta have large and subtle depressor muscle pits (Zullo 1966). The

opercular opening is often circular to diamond-shaped (Fig. 1C).

Other species-specific parts: The test of *C. galeata* is composed of 6 plates where the rostrum overlaps the adjacent cranio-lateral plates (Newman 2007). All plates comprising the test are solid and lack longitudinal tubes (Newman 2007; Newman and Ross 1976).

Sexual Dimorphism: While *C. galeata* are hermaphrodites, they are commonly seen with complementary dwarf males within the opercular opening (Molenock 1972; Newman 2007; Newman and Abbott 1980).

Possible Misidentifications

The Archaeobalanid barnacle *Armatobalanus nefrens* is observed on and embedded within hydrocoral hosts, with only the opercular opening exposed (Newman and Abbott 1980). However, *A. nefrens* lacks the distinct boat-shaped basis found in *C. galeata* and instead has a basis that is mostly flat and sharply pointed terga (Newman 2007). Furthermore, *C. galeata* are found only on gorgonian and antipatharian coral hosts (Carrison-Stone et al. 2013).

Ecological Information

Range: This species is considered cosmopolitan, with a published distributional range that extends from North Carolina to Venezuela, southern California to Panama, and the Galápagos Islands (Carrison-Stone et al. 2013; Farrapeira 2010; Lang 1979; Molenock and Gomez 1972; Newman 2007; Newman and Abbott 1980; Newman and Ross 1976; Wicksten and Cox 2011;).

Local Distribution: *Conopea galeata* individuals are commonly found attached to *Chromoplexaura marki* colonies collected from the subtidal rocky reef offshore of Cape Arago, OR.

Habitat: Individuals of *Conopea galeata* are found only attached to subtidal gorgonian and

antipatharian corals. Their elongated, boat-shaped basis attaches directly to exposed host coral skeleton and grows between the coral coenenchyme and the axial skeleton (Ross and Newman 1999). This settlement and growth pattern results in the formation of gall-like protuberances along the branches of the host coral colonies (Carrison-Stone et al. 2013; Molenock and Gomez 1972; Newman and Abbott 1980; Wicksten and Cox 2011;).

Temperature: Thought to be restricted to warmer waters (Lang 1979). However, the presence of *Conopea galeata* in the subtidal off Oregon may indicate either a broader distribution or potential range expansion.

Depth: 2 – 540 m (Newman and Ross 1976).

Associates: *Conopea galeata* are often associated with the host corals *Lophogorgia chilensis*, *Eugorgia rubens*, *Muricea californica*, *M. fruticose*, *Leptogorgia virgulata*, and *L. setacea* (Farrapeira 2010; Molenock and Gomez 1972; Wicksten and Cox 2011).

Abundance: Unknown for this species.

Life-History Information

Reproduction: Like most other Balamorphid barnacles, *C. galeata* are hermaphrodites (Molenock and Gomez 1972; Newman 2007; Newman and Abbott 1980). However, *C. galeata* have also been observed with complemental dwarf males on the scuta, ensuring cross-fertilization (Molenock and Gomez 1972; Newman and Abbott 1980). The dwarf males do not feed (Newman and Abbott 1980). Sex ratios of cyprid *C. galeata* larvae are 1:3 males to hermaphrodites and appear to be genetically determined (Gomez 1975).

Larva: There are 6 distinct naupliar stages and one cyprid stage documented for *Conopea galeata* (Molenock and Gomez 1972). From hatching, it takes 9 –14 days for larvae to settle (Lang 1979; Molenock and Gomez 1972). Naupliar stages 2 – 6 all have medial spines on the dorsal shield, which grow in number and complexity with each subsequent larval molt (Lang 1979; Molenock and Gomez 1972). These spines become serrated in naupliar stages 5 and 6, and small spines become present along the edge of the body from stage 3 onward (Molenock and Gomez 1972). Mean body lengths for the

larval stages of *C. galeata* are described in detail in Molenock and Gomez (1972).

Juvenile: Settling cyprids lack the postecdysial stage observed in other Balanoid barnacles (Molenock and Gomez 1972).

Settled juveniles have carnia-rostrum diameters between 330 – 430 µm and have two eyespots (Molenock and Gomez 1972).

Longevity: Unknown for this species. Related Archaeobalanid barnacles have highly variable lifespans.

Growth Rate: Unknown for this species, but growth rate and morphology are likely influenced by localized barnacle density on the host gorgonian and antipatharian coral.

Food: Like other barnacles, *Conopea galeata* is a filter and suspension feeder, capturing plankton and small particles in the water.

Predators: Unknown for this species. The ability to settle on host corals and the propensity for this species to become embedded in host coenenchyme tissue likely reduces predation rates (Farrapeira 2010).

Behavior: Unknown for this species.

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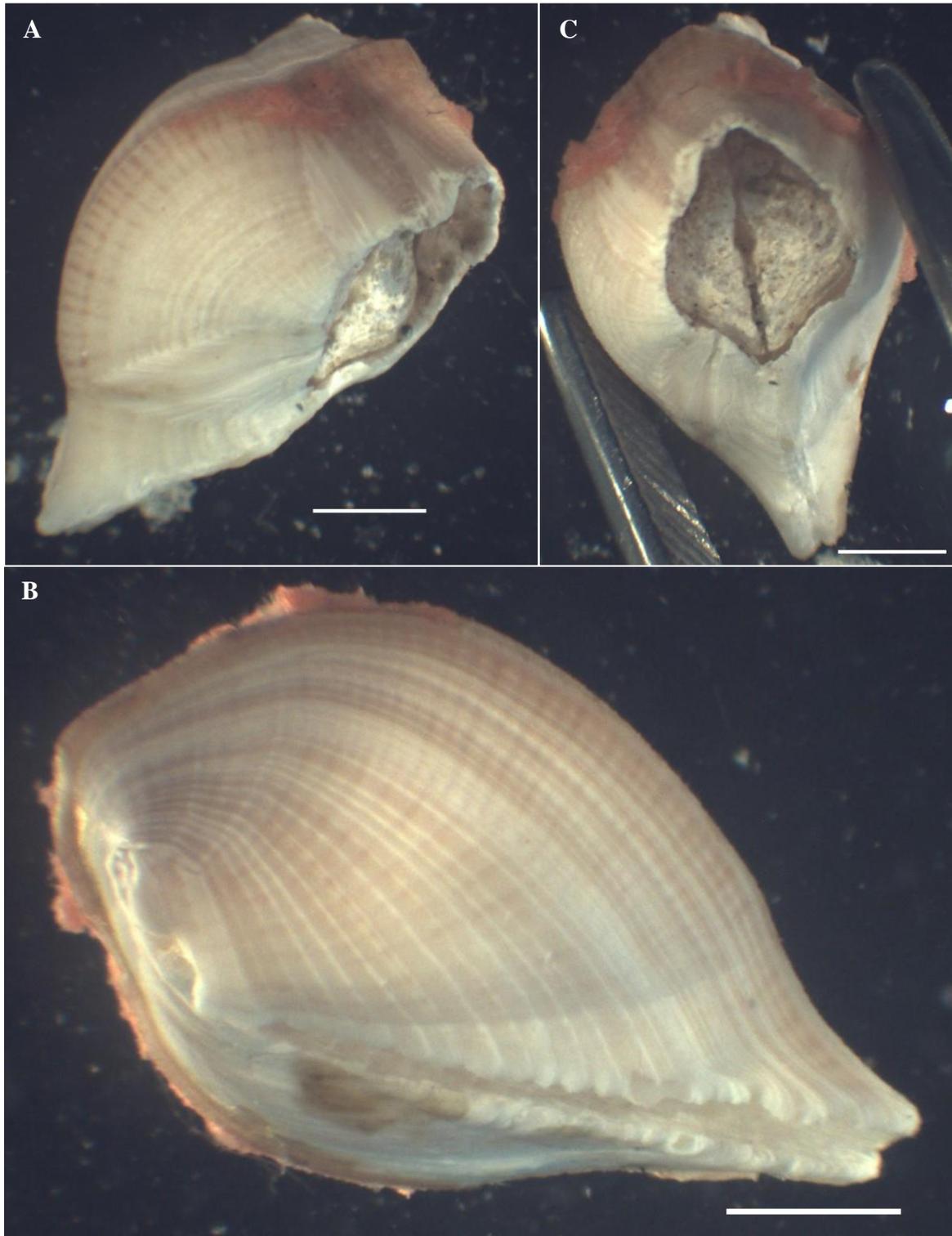


Fig. 1. A) Lateral view with pigmentation on the parietes and basis. B) Basis showing notch where the host gorgonian axial skeleton ran. C) Opercular opening for *Conopea galeata* showing the scuta plates. Individual pictured was collected from 45 m depth offshore of Cape Arago, OR. Scale bars represent 2 mm.