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# *Eteone pacifica*

A paddleworm

Phylum: Annelida

Class: Polychaeta, Errantia

Order: Phyllodocida, Phyllodociformia

Family: Phyllodocidae, Eteoninae

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**Taxonomy:** Treadwell described this species as *Eteone maculata* in 1922. This name was replaced by *E. pacifica* in 1936, which was later synonymized with *E. bistriata* (Hartman 1936). Some authors referred to this species under the subgenus *Mysta* (Ushakov 1955 in Banse 1972; Hartman 1936) while others (Berkeley and Berkeley 1942) recorded *E. pacifica* as a subspecies of *E. spetsbergensis*. The genus *Eteone* was revised into three genera (*Eteone*, *Hypereteone*, *Mysta*) by Wilson (1988) based on anal cirri morphology and the presence and location of proboscis papillae. While the presence of three major groups are apparent, splitting *Eteone* into these genera has not been recognized by most authors and *E. pacifica* is the name most commonly seen (Pleijel 1991; Blake 1992; Blake 1997; Blake and Ruff 2007) with synonyms including *E. maculata*, *E. Mysta bistriata*, *E. Mysta pacifica*, *E. spetsberensis pacifica* (Hartman 1936; Banse 1972).

## Description

**Size:** Individuals to 50 to 100 mm in length and 2 to 3 mm in width (Hartman 1968; Blake and Ruff 2007).

**Color:** Body color is pale to bright yellow green with small black spots. Spots are round laterally and square dorsally (Blake and Ruff 2007).

**General Morphology:** Long and slender body with long, pointed prostomium anteriorly (Fig. 1). This species is easily recognizable by its body pigmentation.

**Body:** 200–300 total body segments (Fig. 1) where first segment incomplete dorsally (*Eteone*) and expands into tentacular cirri

(Fig. 2).

**Anterior:** Prostomium definitely trapezoidal, longer than wide (Fig. 2). Anterior bears several paired appendages (see **Anterior appendages**) and minor nuchal papilla (Banse 1972).

### Trunk:

**Posterior:** Anal appendages include one lateral pair (Fig. 1).

**Parapodia:** Uniramous, with short, rounded dorsal cirri (Fig. 4). Ventral cirri are narrower than dorsal, rounded and approximately the same length as parapodium.

**Setae (chaetae):** Setae are compound (Phyllodocidae, Blake 1975) and spinigerous with long blades and smooth shafts of unequal length (Banse 1972) (Fig. 4). Setal appendages are pointed distally (Hartman 1968).

**Eyes/Eyespots:** Eyes absent or inconspicuous.

**Anterior Appendages:** Prostomium bears two pairs of small frontal cirri. The first segment has two pairs of thick, conical, tentacular cirri, the ventral pair being the larger (Fig. 2).

### Branchiae:

### Burrow/Tube:

**Pharynx:** Pharynx bears a proboscis that is fleshy and smooth with no paragnaths (side teeth) (Fig. 3).

### Genitalia:

### Nephridia:

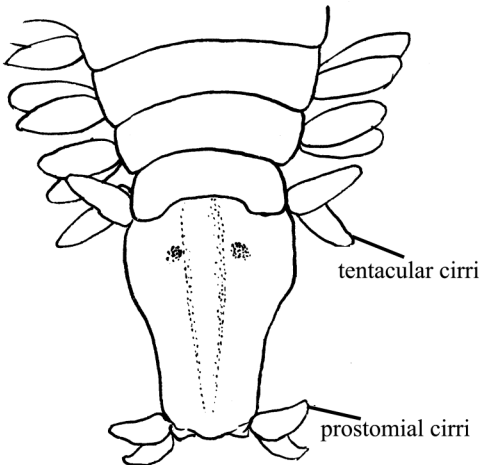
## Possible Misidentifications

Phyllodocids can have flattened, globular, leaf- or paddle-like parapodial cirri (Blake 1975). The family Phyllodocidae is characterized by individuals that are long and slender and a prostomium that usually bears four an-

# *Eteone pacifica*

1. *Eteone pacifica* x5:  
color pale yellow green with  
black spots; one pair lateral  
anal appendages.

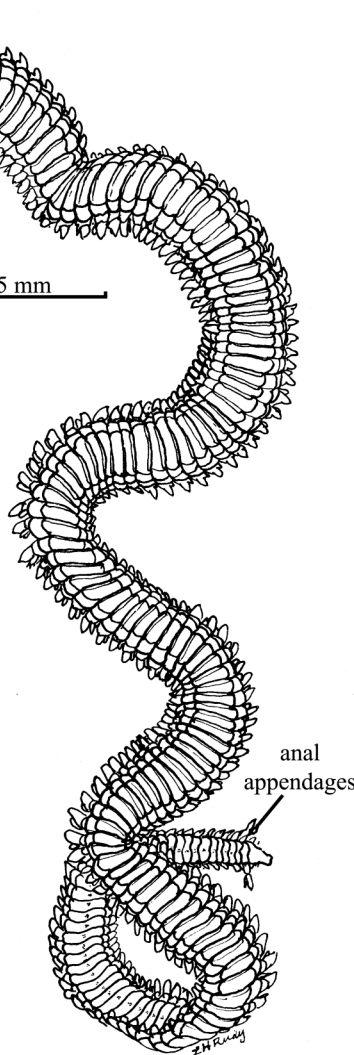
5 mm



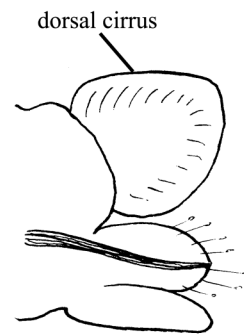
tentacular cirri

postomial cirri

2. Prostomium:  
two pairs of short tentacular  
cirri; small eyes; two pairs  
small postomial cirri.

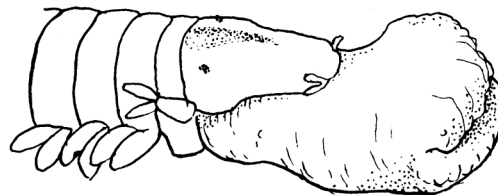


anal  
appendages



dorsal cirrus

4. Medial uniramous  
parapodium: dorsal cirri  
rounded, thin.



3. Proboscis, everted:  
fleshy, smooth; no paragnaths.

tennae (and occasionally a medial one). Additionally, they have 2–4 pairs of tentacular cirri, uniramous parapodia and compound setae. Other polychaete families with similar morphology are Syllidae and Nereidae, although neither has uniramous parapodia. Phyllodocid genera are differentiable by a “tentacular formula” which combines important taxonomic characters including the arrangement of tentacular cirri, the fusion of tentaculate segments and the occurrence of setae on those segments (Blake and Ruff 2007). The genus *Eteone* has only two pairs of short tentacular cirri and short prostomial antennae (Fauchald 1977) (Fig. 2a).

Four other local species of *Eteone*, all smaller than 50 mm, differ from *E. pacifica* in several ways. The species most similar to *E. pacifica* is *E. lighti* where the later species has two eyes and a broad trapezoidal prostomium, becoming very narrow with triangular dorsal parapodial cirri (not round). *E. lighti* body color is pale, or white.

Other species of *Eteone* include *E. californica*, which also has a broad truncate prostomium, but has a nuchal papilla between its dark red eyes, and wide, dorsal parapodial cirri. Its ventral cirri are very short in the posterior parapodia, it has small brown pigment spots on its body (Banse and Hobson 1974), which comprises 80–95 total segments. *E. californica* is slightly smaller than *E. lighti* at 20 mm in length, on average, and the setae in *E. californica* have a pair of large teeth with 4–5 denticles on shaft tip (Blake 1997). *E. dilatatae* is a long, slender worm with up to 250 segments and is found on sandy beaches of the outer coasts in central and southern California (Hartman 1936; Blake and Ruff 2007). *E. dilatatae* is pale green in body color and characterized by a long prostomium and subrectangular dorsal cirri (Blake and Ruff 2007). *E. balboaensis* is a rare and eyeless species from southern California (Hartman

1936). *E. longa*, is described in the Puget Sound literature, but not in guides from California and Oregon (Blake and Ruff 2007), has a long, symmetrical conical dorsal cirrus, and a ventral cirrus almost as long as the parapodial lobe; its anal cirri are broad and spheroidal (Banse and Hobson 1974; Kozloff 1974).

## Ecological Information

**Range:** Type locality is Washington state (Hartman 1968). Known range includes western Canada to central California.

**Local Distribution:** Coos Bay collection sites in South Slough and outer shore, including Cape Arago and Sunset Bay (Hartman and Reish 1950).

**Habitat:** Intertidal muddy sand at littoral depths (Hartman 1968). *E. pacifica* is common in large muddy areas, upper Coos Bay (Porch 1970).

**Salinity:** *E. pacifica* was collected in Coos Bay where surface water salinity varies from 10–30.

**Temperature:** Surface water temperature where *E. pacifica* was collected in Coos Bay varies from 8–18 °C.

**Tidal Level:** Individuals collected at about +1.2 m tidal elevation in Coos Bay.

**Associates:** Other polychaetes, as well as the tanaidacean, *Leptocheilia dubia*, the amphipod, *Corophium brevis*, and clam, *Macoma* sp. (in South Slough).

**Abundance:** High abundances in Coos Bay were several hundred individuals/m<sup>2</sup> (Berkeley and Berkeley 1948)

## Life-History Information

**Reproduction:** Many benthic polychaetes, including phyllodocids, can reproduce via epitoky, where all or a portion of the worm transforms into a pelagic form (called an epitoke) that releases gametes (Pleijel and Rouse 2006). Reproductive modes among phyllodocids range from broadcast spawning to internal fertilization or pseudocopulation where females deposit eggs into gelatinous

benthic masses. Although the reproduction and development of *E. lighti* is not known, *E. viridis* females deposit eggs (100 µm in diameter) into gelatinous masses under rocks and amongst algae, but this has not been observed in *E. longa* (eggs 80 µm in diameter) (Fernald et al. 1987; Crumrine 2001).

**Larva:** The development of other known *Eteone* species proceeds through trochophore and nectochaete stages where advanced larvae are large and predatory and usually collected near the bottom of plankton samples (Lacalli 1981; Fernald et al. 1987; Crumrine 2001). Of the local *Eteone* species, only the larvae of *E. longa* are known and can be identified from plankton samples (Thorson 1946; Blake 1975; Crumrine 2001).

**Juvenile:** Sexual maturity in another *Eteone* species, *E. longa*, is reached at 20–30 mm in length (females reaching maturity at longer lengths) (Rasmussen 1956).

**Longevity:**

**Growth Rate:**

**Food:**

**Predators:** In Tillamook Bay, predators of *Eteone* species include *Hypomesus pretiosus* (surf smelt) in the lower bay and *Parophrys vetulus* (English Sole) in mid-bay (Forsberg et al 1977).

**Behavior:** *E. pacifica* likely swim by utilizing their paddle-shaped parapodia, as do other paddle worms.

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