
Pista pacifica

Phylum: Annelida
Class: Polychaeta
Order: Terebellida
Family: Terebellidae

Description

Size: Individuals are large reaching up to 37 cm in length and 5–6 mm in width (Hartman 1969) and inhabit tubes that can reach lengths of 1 m (Winnick 1981).

Color: Anterior segments light red to brownish pink with 12 tongue-shaped maroon lobes (Fig. 2). “Scutes” (or ventral pads) on the first segments and ventral surface gray with ochre and light yellow spots. Posterior pink and blackish, dark red branchiae and white tentacles with light gray and brown stripes.

General Morphology: These relatively large polychaetes are generally recognized by the morphology of their tube. The characteristic hood-like tube anterior extends above the sediment surface (Hartman 1969; see Kozloff 1993 plate 325).

Body: Worm is soft and fragile, particularly the feeding tentacles. Thoracic and abdominal regions are distinct with largest segments medial (Fig. 1). Body can be divided into two regions based on associated parapodia: anterior region with biramous parapodia and a posterior region with only neuropodia (family Terebellidae, Fauchald 1977).

Anterior: Prostomium is rounded and peristomium with hood-like membrane bearing tentacles (Hartman 1969) (Fig. 2). Segments 1–4 with ventrolateral lappets, which are most conspicuous on segments three and four (Hartman 1969).

Trunk: Thorax with 17 setigers (16 uncinigers) and biramous parapodia.

Tongue-shaped pads or lobes, called scutes, are present through setiger 10 (Fig. 2). Lateral lappets present on second and third branchial segments (Hartman 1969; Hilbig 2000). Abdomen with about 300 segments, bearing reduced neuropodia only and no notopodia (family Terebellidae,

Fauchald 1977). Prominent ventral groove present abdominally (Fig. 2).

Posterior: Posterior gradually tapers to a broad and flattened pygidium (Fig. 2).

Parapodia: Biramous. Notopodia bear capillary notosetae that are long, slender and limbate (= winglike) (Fig. 2). Zipper-like thoracic neuropodia contain uncini (Fig. 3), which are avicular (= beak-like) on first few segments and become short-stemmed posteriorly.

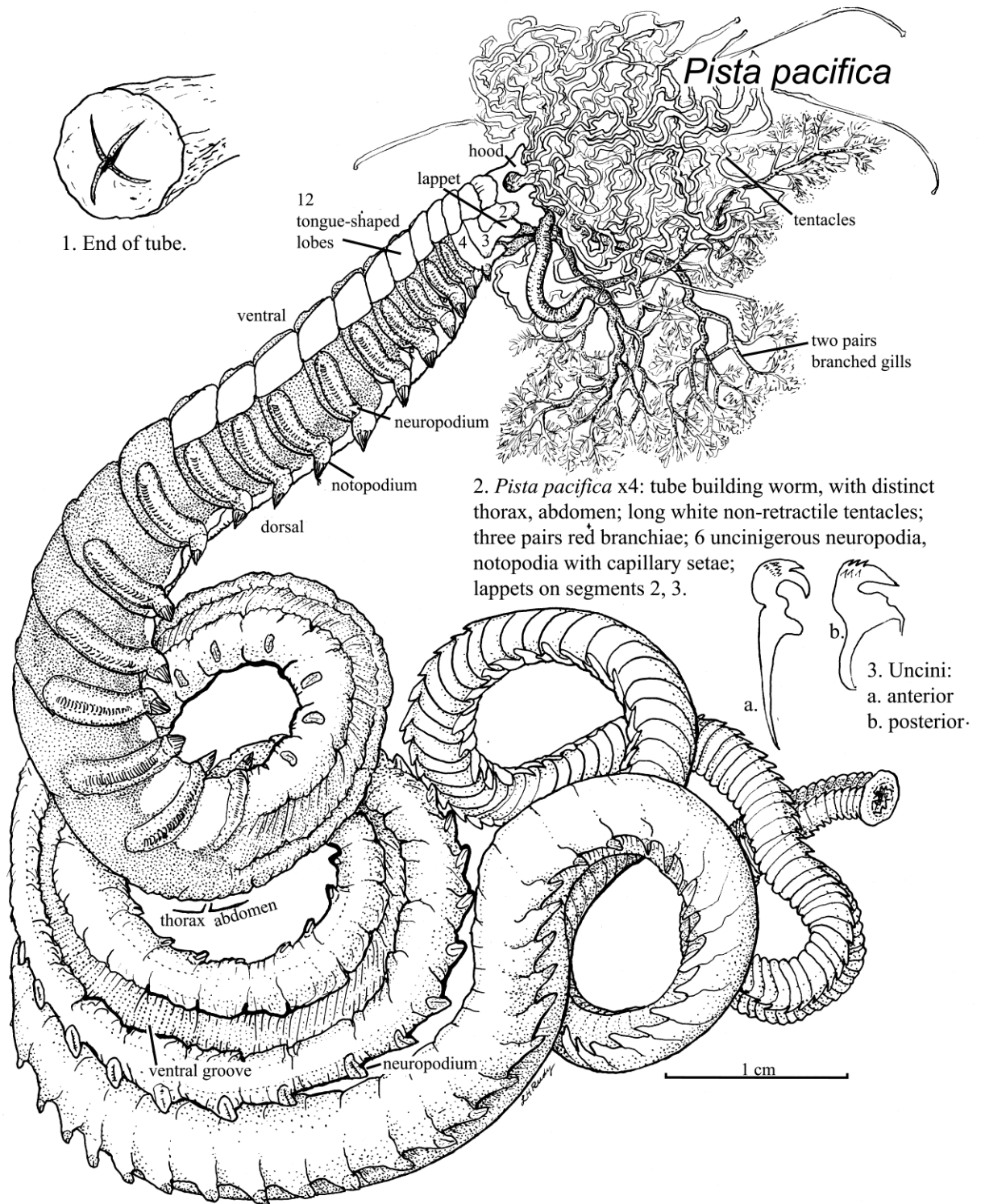
Setae (chaetae): Setae begin on segment four and consist of small fascicles arising from branchial bases. Capillary notosetae begin at segment four (Hartman 1969). Six single-row uncinigerous neurosetae begin at segment five where the first few are long-handled and avicular (Hartman 1969; Hilbig 2000) and the rest are short (Blake and Ruff 2007) (Fig. 3). The remaining 10 uncinigerous neurosetae are double-row (Hartman 1969). Abdominal uncini are avicular (Hartman 1969).

Eyes/Eyespots: None.

Anterior Appendages: Feeding tentacles are long (Fig. 2), filamentous, mucus covered and white with light stripes.

Branchiae: Three pairs of dark, red, branched gills, which are plumose and arise dorsally from segments two, three and four (Hartman 1969; Hilbig 2000) (Fig. 2). Branchiae contain vascular hemoglobin, which transfers oxygen to coelomic hemoglobin (Terwilliger 1974).

Burrow/Tube: Sand covered tube is cylindrical and consists of a rough, large anterior with overlapping membrane (often broken when animal is collected). Posterior end of tube with characteristic “star of *Pista*” pattern (Fig. 1) (Terwilliger 1974). The worm inhabits the vertical tube, which extends several centimeters above the surface sediment (Abbott and Reish 1980; Winnick 1981). The orientation of the tube has been



shown to correspond to the predominant current direction (90° orientation, Winnick 1981).

Pharynx:

Genitalia:

Nephridia: The nephromixia (organs for reproduction and secretion) of the Amphitritinae and, specifically, the genus *Pista* have been described in detail (Smith 1992). *Pista pacifica* is unique within this genus in having two pairs of excretory and three pairs of reproductive nephromixia. The reproductive nephromixia are joined on each side of the body by a common duct (Smith 1992).

Possible Misidentifications

The Terebellidae are one of a number of tube-building polychaete families with soft tentacles for deposit feeding and with gills on their anterior segments (Blake and Ruff 2007). Many terebellids occur in our Northwest bays. All of them have bodies with numerous segments and two distinct regions, a tapering abdomen with neurosetae only and both capillary setae and uncinigerous tori on the thorax. They all have a modified and reduced head with the prostomium and peristomium at least partly fused and many non-retractible filiform tentacles emerging from the folded prostomium. Terebellids are relatively large, usually over 5 cm in length, and have feeding tentacles (“spaghetti worms”), which are not completely retractile into the worm's mouth. Their branchiae are not simple, but consist of masses of aborescent or filamentous structures. There are 14 local terebellid genera (Blake and Ruff 2007): *Amaeana*, *Eupolymnia*, *Lanice*, *Loimia*, *Nicolea*, *Neoamphitrite*, *Neoleprea*, *Polycirrus*, *Proclea*, *Ramex*, *Spinospaera*, *Streblosoma*, *Thelepus* and *Pista*.

Within the genus *Pista*, there are three local species. The species with most similar morphology to *P. pacifica* is *P. elongata*. The latter species, however, has lappets on the second segment, but not on the third (as in *P. pacifica*). *Pista elongata* can further be differentiated from *P. pacifica* as the former species has no tongue-shaped

lobes on the fourth segment and its tube has a sponge-like, reticulated top (Blake and Ruff 2007). Furthermore, the tubes of *P. elongata* are in crevices among rocks, not in estuarine mud. *Pista agassizi* (= *P. brevibranchia*) is only known from California, where habitat is unknown (Blake and Ruff 2007). *Pista agassizi* has two pairs of branchiae (rather than three in *P. pacifica*), lateral lappets on segments 1–3 transitioning to smaller lobes on segments 4–6 and there is no indication of the ventral pads or scutes, which are present in *P. pacifica* (Blake and Ruff 2007). *Pista cristata* and *P. fasciata* are not currently reported between central California and Oregon (Blake and Ruff 2007). *Pista cristata*, from Puget Sound, has gills, which form a globular mass, and reaches lengths up to 9 cm. *P. fasciata*, also from Puget Sound, has prominent prostomial lobes.

Ecological Information

Range: Type locality is Vancouver Island, Canada (Hartman 1969). Range includes California to western Canada.

Local Distribution: Coos Bay sites include South Slough and Cape Arago Coves.

Habitat: Deep mud, sandy estuaries and protected bays (Abbott and Reish 1980), where it makes large tubes and is commonly found in areas of dense eel grass (Porch 1970).

Salinity:

Temperature:

Tidal Level: +0.15 m to subtidal.

Associates: The polynoid worm, *Halosydna brevisetosa*, inhabits the tube of *Pista pacifica* (Abbott and Reish 1980), in a commensal association. Other associates include white “nodding heads”, or entroprocts, which are found on worm midsection.

Abundance: 3.5/m² in eelgrass areas of South Slough (Winnick 1981).

Life-History Information

Reproduction: Terebellid reproductive and developmental modes are highly variable. Among local species, *Eupolymnia heterobranchia* (= *crescentis*), *Neoamphitrite robusta*, *Lanice conchilega* and *Amaeana*

occidentalis are free spawners, with lecithotrophic larvae of short pelagic duration (seven days). *Ramex californiensis* and *Thelepus crispus* brood their larvae within their tubes (Blake 1991; McHugh 1993). Little is known about the development of *Pista pacifica*, and although self-fertilization has not been confirmed for any terebellid, hermaphroditic *P. pacifica* individuals have been observed (McHugh 1993).

Larva: The only unifying feature among terebellid larvae is that they are all non-feeding (McHugh 1993). Immediately following metamorphosis (aulophore stage), two local species are known to feed in the plankton, *Lanice conchilega* and *Liomia medusa* (McHugh 1993), but they are non-feeding in their first larval stage. The development of *P. pacifica* is not known. The only locally known terebellid larvae are those of *Lanice conchilega* and *Amphitrite cirrata* (Crumrine 2001).

Juvenile:

Longevity:

Growth Rate:

Food: Detritus, picked up by thread-like tentacles and passed to mouth by cilia and mucus glands (Abbott and Reish 1980).

Predators:

Behavior:

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