Amphiporus imparispinosus

Phylum: Nemertea
Class: Enopla
Order: Hoplonemertea, Monostylitera
Family: Amphiporidae

Taxonomy: Overlapping species ranges and suggested synonymy exists between *A. imparispinosus* and *A. similis* (=*A. imparispinosus* var. *similis*) and *A. leuciodus* (Coe 1901, 1905). For this reason, *A. imparispinosus* is indicated as *species inquirenda* (identity requires further investigation) (Gibson and Crandall 1989; Gibson 1995).

Description

Size: Individuals are 25–50 mm in length and very slender (Coe 1905).
Color: Solid, opaque-white and sometimes pale reddish with yellowish tinge. Also pale yellow or flesh-colored. The brain area is pink and intestinal canal brownish (Coe 1905).
General Morphology: Soft, elongate and not segmented (phylum Nemertea).
Body: Long and slender, especially for the family Amphiporidae, and slightly flattened posteriorly (Fig. 1).

Anterior: Head not strongly differentiated from rest of body (Fig. 2).

Posterior: Tapers to a blunt end. No caudal cirrus (Fig. 1).

Eyes/Eyespots: Many, small eyes present in two groups on each side of the head and are positioned anterior to brain. The first is an elongated group of 6–15 ocelli found along the anterior margin. The second, a posterior group of about the same number, (but it can be up to 30) which is internal to the first group. Fewer eyes are present in younger animals (Fig. 2).
Mouth: Anterior to brain opens into proboscis pore (class Enopla) (Corrêa 1964).
Proboscis: Very long and contained within a muscular sheath (rhynchocoel) which is almost as long as the total body length (genus *Amphiporus*). The proboscis is armed with a single stylet (suborder Monostilifera), in which the proximal end of the basal segment is rounded and wide (Fig. 3). Three accessory stylet pouches are present, each containing two or more reserve stylets (Griffin 1898; Corrêa 1964; Stricker and Cloney 1982). (The proboscis must be everted or the worm dissected to see the stylet and pouches.)
Tube/Burrow: *Amphiporus imparispinosus* does not inhabit a tube.

Possible Misidentifications

The locally represented (central CA to OR, Roe et al. 2007) hoplonemerteans (the free-living Enopla), with a central proboscis stylet (suborder Monostilifera), can be divided into ten families (Chernyshev 2005). 1) The Ototyphlonemertidae have no ocelli as adults and possess statocysts; 2) the Emplectonometatidae have a short proboscis, usually numerous ocelli (four or more); 3) the Prosorhochmidae have a very long, slender proboscis, usually two pairs of large ocelli and a distinctive smile-like fold on the head (the "smiling worms", Maslakova and Norenburg 2008); 4) The Tetrastemmatidae usually have four ocelli and are small or medium-sized nemerteans; 5) The Carcinonemertidae are small nemerteans with 0–2 eyes and are parasitic on decapod crustaceans; 6) Neesidae (e.g. *Paranemertes*) and 7) Zygonemertidae are medium to large nemerteans with numerous eyes; 8) Malacobdellidae include local species which are commensal within the mantle cavity of bivalves; 9) Oerstediidae, consisting of a single local species, are small with four eyes that can be doubled (Chernyshev 2005); 10) the Amphiporidae have many eyes and are relatively short and broad although *A. imparispinosus* is unusual in this respect (Coe 1940).

There are at least eight species of *Amphiporus* reported in the Pacific

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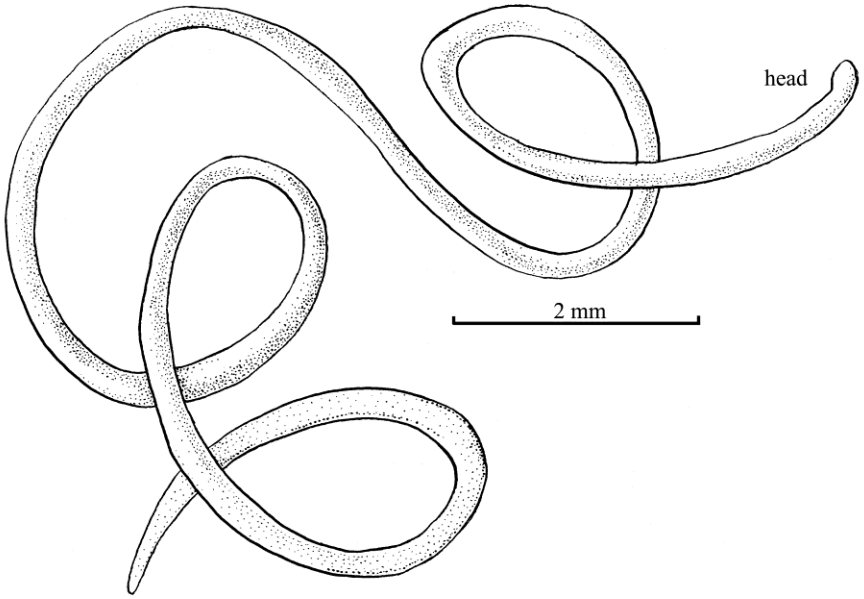
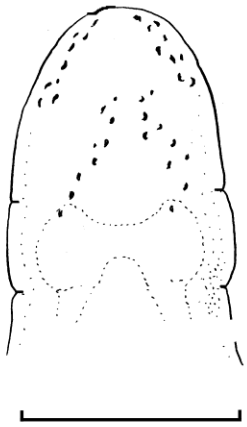
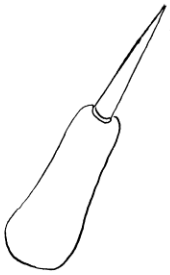
Amphiporus imparispinosus



1. *Amphiporus imparispinosus* (L: 30 mm) x20:
body long and slender, head not set off from body; solid color, whitish; dark intestinal area; no caudal cirrus.



2. Head x35:
ocelli arranged in two groups, one along anterior margin and the second interior (Coe, 1905).



3. Stylet and base (proboscis) x200:
basal segment rounded (Coe, 1905).

Northwest, but there are likely more (Roe et al. 2007). *Amphiporus formidabilis* is the only other slender species that resembles *A. imparispinosus* superficially, and can be differentiable by 6–12 pouches of accessory stylets, where *A. imparispinosus* has 2–3. It is also much larger than *A. imparispinosus,* 10–30 cm in length (Haderlie 1975). Theother species are rather stout and more strongly colored. *Amphiporus rubellus* is a uniform red or orange with no pattern and 10–20 ocelli on each side of its head. *Amphiporus punctulatus* is dark brown, irregularly blotched on its dorsal surface, and with a lighter head marked with two dark spots. *Amphiporus bimaculatus (=Nipponnemertes bimaculatus)* gets its name from the same sort of strong spots (which are not ocelli) on its light-colored head. Its general coloration is homogenous, not blotchy as in *A. punctulatus. Amphipours bimaculatus* secretes great quantities of mucus when disturbed (Haderlie 1980) and is known to readily evert its proboscis. A variety of *A. imparispinosus* (*A. i. similis*, Coe, 1905) varies only by having two pouches of accessory stylets not three (Coe 1940).

Because of the many identifying characteristics which are internal and not visible, it is sometimes very difficult to distinguish among nemerteans without dissecting them. Ways in which the worms flatten, contract, and coil are useful as aids to identification of live specimens.

Ecological Information

Range: Originally described from specimens collected in Puget Sound, Washington and Alaska (Griffin 1898). Known northeastern Pacific range from Siberia, Bering Sea and south to Ensenada, Mexico. *Amphiporus* is particularly rare in the tropics (Coe 1940).
Local Distribution: Coos Bay distribution at several mudflats along the South Slough and also open coast sites at Cape Arago.
Habitat: Among algae (e.g. red alga, *Corallina vancouveriensis)* shells, mussels and other growths on rocks. Individuals can exist in very exposed and surf-swept shores (Coe 1940).
Salinity: Found on the open coast, at salinities of 30.
Temperature: Latitudinal range would indicate a wide temperature tolerance, for example 10–20° C (San Pedro, CA.) to just above freezing (Bering Strait, AK).
Tidal Level: Intertidal and below to 50 m (Corrêa 1964).
Associates:
Abundance: One of the most common local *Amphiporus* species (Haderlie 1980).

Life-History Information

Reproduction: The development of *A. imparispinosus* is not known. However, individuals are likely dioecious (separate sexes) (Coe 1905) and some hoplonemerteans are hermaphroditic, with eggs and sperm released at same time. Ripe specimens of the congener, *A. formidabilis*, have been observed in winter and spring months (Washington, Stricker 1987) where oocytes were 250–350 µm in diameter surrounded by thick (up to 100 µm thick) egg jelly. Embryos cleave after six hours, develop into morulae at 20 hours and are ciliated and swimming at 42 hours (9˚ C, Stricker 1987)
Larva: Planuliform and lecithotrophic *A. formbidabilis* larvae have an apical tuft and swim for one day before settlement (9˚ C, Stricker 1987).
Juvenile:
Longevity:
Growth Rate:
Food: Predatory, killing prey with an armed proboscis that secretes toxins (Bacq 1936) and kills prey before ingestion (Jennings and Gibson 1969).
Predators:
Behavior: Does not swim or roll up spirally (genus *Amphiporus*) (Coe 1905).

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