



Puget Sound Polychaetes: Nereididae

Family Nereididae

Family-level characters (from Hilbig, 1994)

- Prostomium piriform (pear-shaped) or rounded, bearing 2 antennae, two biarticulate palps, and 2 pairs of eyes.
- Eversible pharynx with 2 sections, the proximal oral ring and the distal maxillary ring which possesses 2 fang-shaped, often serrated terminal **jaws**; both the oral and maxillary rings may bear groups of papillae or hardened **paragnaths** of various sizes, numbers, and distribution patterns.
- Peristomium without parapodia, with 4 pairs of tentacular cirri.
- Parapodia uniramous in the first 2 setigers and biramous thereafter; parapodia possess several **ligules** (strap-like lobes) and both a dorsal cirrus and ventral cirrus. Shape, size, location of ligules is distinctive. They are more developed posteriorly, so often need to see ones from median to posterior setigers.
- Setae generally compound in both noto- and neuropodia; some genera have simple falcigers (blunt-tipped setae)(e.g., *Hediste* and *Platynereis*); completely lacking simple capillary setae.

Genus and species-level characters

- The kind and the distribution of the setae distinguish the genera and species.
- The number and distribution of paragnaths on the pharynx.

Unique terminology for this family

- **Setae** (see Hilbig, 1994, page 294, for pictures of setae)
 - **Homogomph** – two prongs of even length where the two articles of the compound setae connect.
 - **Heterogomph** – two prongs of uneven length where the two articles of the compound setae connect.
 - **Spinigers** - long articles in the compound setae.
 - **Falcigers** – short articles in the compound setae.
 - So, there can be homogomph falcigers and homogomph spinigers, and heterogomph falcigers and heterogomph spinigers.
- **Pharynx**
 - Eversible, divided into two parts
 - Oral ring (proximal), with paragnaths.
 - Maxillary ring (distal), bears jaws, paragnaths.
 - Rings are divided into numbered sections that help distinguish the species.

Family Nereididae

Other tidbits

- When juvenile, often don't have adult characteristics, can only get to genus or even to family.
- Almost never see the posterior end, but pygidium is not diagnostic.
- Hilbig, 1994 has many genera we don't find in Puget Sound, so use Banse and Hobson, 1974. However, use caution, as the genera names have all been changed (Bakken and Wilson, 2005). Genera won't be correct, but species will, so go with the species name.

Characters of Puget Sound species (from Banse & Hobson, 1974)

- Possessing two antennae and a pair of enlarged palps attached distally on prostomium.
- With 4 pairs of tentacular cirri.
- All ventral cirri simple.
- Notopodia with dorsal ligule (after setiger 2).
- Tentacular cirri smooth.

(**bolded** text, below, indicates genus level characters)

Genus *Cheilonereis*

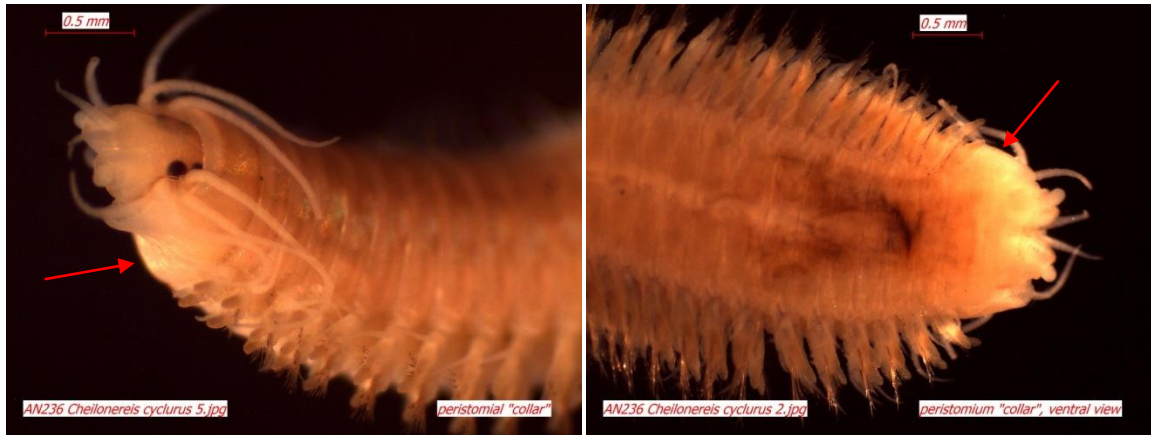
Cheilonereis cyclurus (Harrington, 1897) (description from Bakken and Wilson, 2005)

- **Peristomium expanded anteroventrally to form a collar.**
- Maxillary ring of pharynx with conical paragnaths arranged in discreet rows; oral ring with conical paragnaths.
- Dorsal ligule foliose (leaf-shaped), greatly enlarged in posterior parapodia; dorsal cirri inserted between 2 lobes on the dorsal ligule.
- Notosetae include homogomph spinigers; **homogomph falcigers present from about setiger 27.**
- Neurosetae include homogomph spinigers and heterogomph falcigers.



Whole body, dorsal view – note foliose (leaf-shaped) dorsal ligules in posterior parapodia (l,r)

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Anterior, lateral (l) and ventral (r) views – note “collar” formed by expanded peristomium

Genus *Nereis*

Nereis procera (Ehlers 1868) (description from Hilbig, 1994)

- Pharynx with small, often inconspicuous, conical paragnaths; paragnaths sparse, widely spaced, absent from areas I and V, and exhibiting a great deal of variability in the distribution pattern.
- Peristomium with 4 pairs of tentacular cirri, the posterior pair longer than the others, extending to setiger 4 to 12.
- All parapodial ligules conical, of similar length, proportions not changing from anterior to posterior of animal.
- Notopodial homogomph spinigers anteriorly, replaced by **1 or 2 homogomph falcigers after setiger 25-30**.
- Neurosetae include homogomph spinigers, heterogomph spinigers and falcigers.

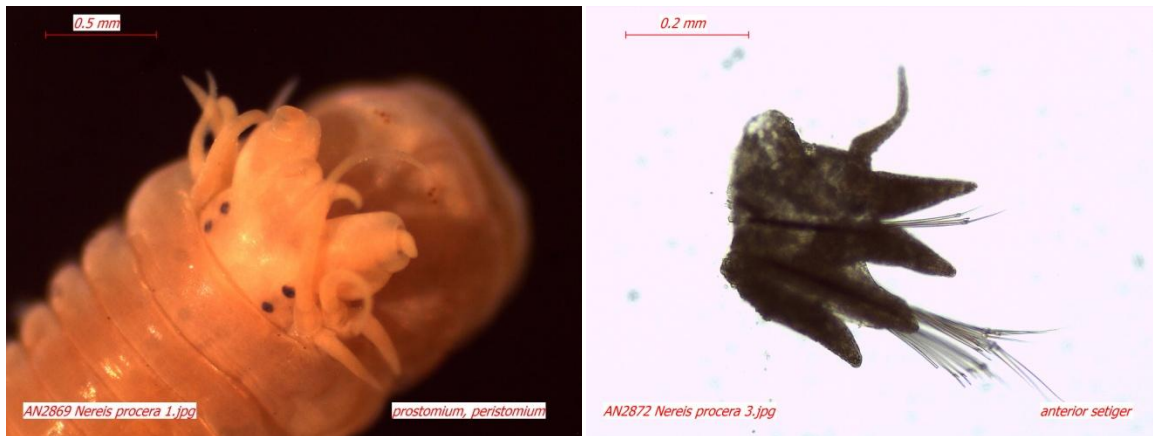


Anterior, dorsal view (l); anterior end, dorsal view, note elongate posterior tentacular cirrus extending to setiger 6 (r)

Family Nereididae



Dorsal (l) and ventral (r) views of everted pharynx with paragnaths



Peristomium, dorsal view, with 4 pairs of tentacular cirri (l); anterior parapodium with conical ligules of similar length (r)



Posterior parapodium with conical ligules of similar length (l); homogomph falciger from posterior setiger (r)

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Genus *Hediste*

Hediste limnicola (Johnson, 1903) (description from Rudy and Rudy, 1983)

- Pharynx with large, conspicuous paragnaths in distinct pattern on both oral and maxillary rings.
- Parapodia with conical ligules, the notopodial ligule always smaller than the neuropodial ligule.
- Notosetae consist of homogomph spinigers only.
- Neurosetae include homogomph and heterogomph spinigers, heterogomph falcigers, and **conspicuous fused (simple) falcigers above acicula.**

Genus *Alitta*

Alitta virens ((Sars, 1835)) (description from Rudy and Rudy, 1983, as *Alitta brandti*)

Alitta can be diagnosed by the presence of a presetal notopodial lobe as large as the dorsal notopodial ligule and a postsetal neuropodial lobe present throughout the body.

Alitta virens is closely related to *Alitta brandti* (both may be part of a species complex; has been synonymized with *A. brandti* by various authors; needs more study according to Bakken & Wilson, 2005); indistinguishable from *A. brandti* morphologically, differs in reproduction and life history.

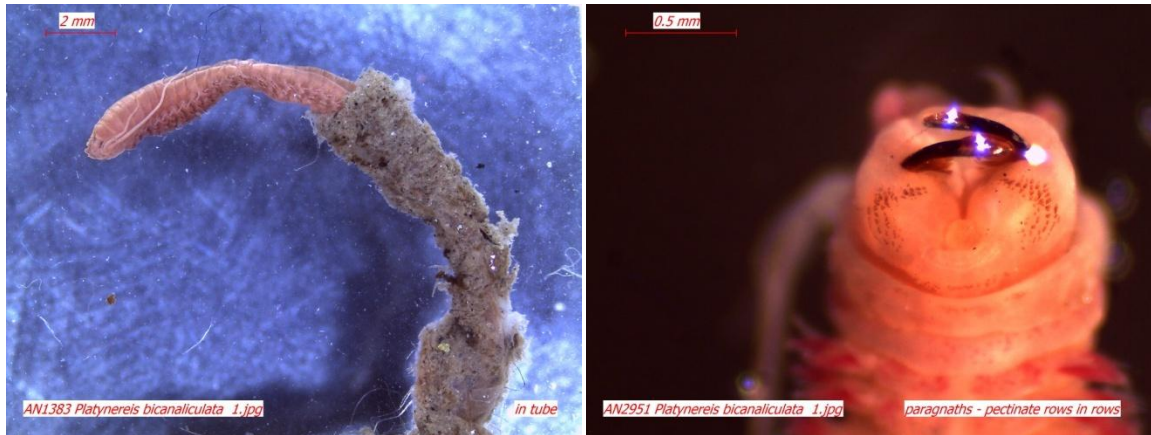
- Pharynx with conical paragnaths in all areas of both maxillary and oral rings.
- Posterior parapodia with broadly expanded, leaf-like dorsal ligules.
- Notosetae consist of homogomph spinigers only.
- Neurosetae include homogomph and heterogomph spinigers and heterogomph falcigers.

Genus *Platynereis*

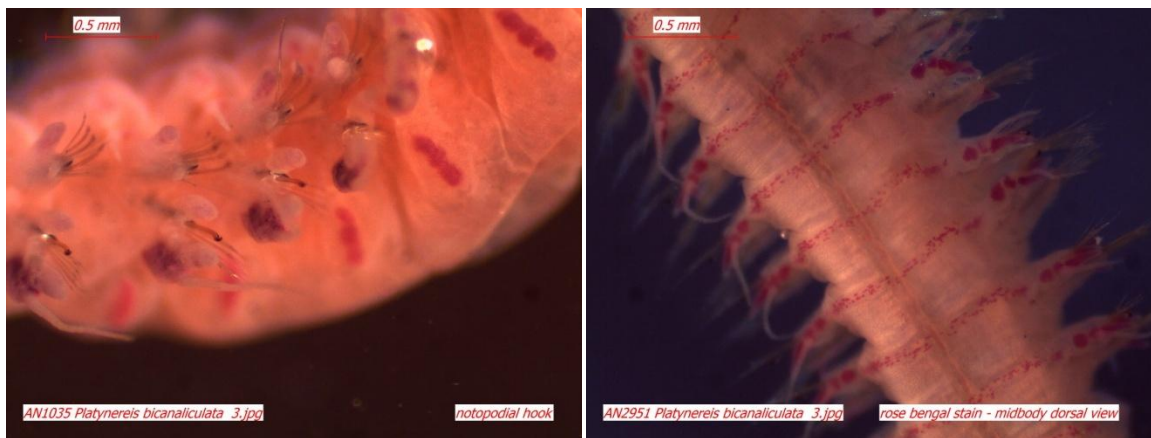
Platynereis bicanaliculata (Baird, 1863) (from Banse and Hobson, 1974)

- Pharynx with paragnaths in pectinate (comb-like) rows; completely lacking discreet conical paragnaths.
- Parapodia with dorsal ligule subequal to other ligules throughout the body.
- Notosetae include homogomph spinigers, and **in median and posterior notopodia, a simple hook-like seta.** Heavy, dark brown hook, simple - not compound that can be seen under dissecting scope in larger animals.
- Neurosetae include homogomph and heterogomph spinigers and heterogomph falcigers present.
- Rose bengal stain is quite red on parapodia.
- They stick things to their tube; layered "art" on tube.
- Fairly common in Puget Sound; in shelly, rocky habitat.
- Usually find them in the samples with some hard substrate.

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In tube, anterior end, lateral view (l); paragnaths in pectinate rows, pharynx, ventral view (r)



Posterior notopodia with simple, heavy, dark brown hook-like seta (l); rose bengal staining on parapodia and setigers, midbody, dorsal view (r)

Additional species of Nereididae found in Puget Sound

Eunereis wailesi

Nereis vexillosa

Nereis zonata

Literature

Bakken and Wilson, 2005. Phylogeny of nereidids (Polychaeta, Nereididae) with paragnaths. *Zoologica Scripta* 34(5):507-545.

Banse, K. & Hobson, K.D. 1974. Benthic errantiate polychaetes of British Columbia and Washington. *Bull. Fish. Res. Board Can.* 185, 111 pages.

Family Nereididae

Hilbig, Brigitte 1994. Chapter 12. Family Nereididae Johnston, 1845. Pages 301-327. IN: Blake, J.A.; B. Hilbig; and P.H. Valentich-Scott (editors). Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel. Volume 4 -The Annelida Part 1. Oligochaeta and Polychaeta: Phyllodocida (Phyllodocidae to Paralacydoniidae). Santa Barbara Museum of Natural History, Santa Barbara, California. ISBN 0-93649-09-03.

Rudy, P. Jr., and L. H. Rudy. 1983. Oregon Estuarine Invertebrates. FWS/OBS LC 83-600-712. U.S. Fish and Wildlife Service. 225 p.

More Information

More information about Puget Sound benthic invertebrates is available at:
<http://www.ecy.wa.gov/programs/eap/sediment/>

This document is available on the Department of Ecology's website at
<https://fortress.wa.gov/ecy/publications/SummaryPages/1403242.html>.

If you need this document in a format for the visually impaired, call (360) 407-6764. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call (877) 833-6341.

These notes were compiled by Kathy Welch and Maggie Dutch after a polychaete workshop held on March 26, 2014 at the Department of Ecology.