



Puget Sound Polychaetes: Family Hesionidae



Family Hesionidae

General characters (from Hilbig, 1994)

- Small to moderate size; body dorso-ventrally flattened.
- Prostomium generally wider than long, bearing 1 – 2 pairs of lenticular eyes, 2 – 3 antennae, and 2 palps.
- Presence or absence of median antennae – 2-3, can be attached frontally, mid, or back of prostomium.
- Proboscis large and muscular, usually with marginal papillae or cilia.
- Tentacular segments fused to the peristomium and with each other dorsally; 2 – 8 pairs of articulated, wrinkled, or smooth tentacular cirri present (they can fall off, however). Look for the number of tentacular cirri and the number of segments bearing the tentacular cirri).
- Dorsal and ventral cirri usually well-developed, articulated to smooth.
- Branchiae are absent.
- Notosetae simple; may include capillaries, spines, furcate (forked), or pectinate (comb-like) setae; neurosetae are mostly compound spinigers.
- Variety of possible arrangements of parapodia: different genera have different relative sizes of notopodia (distinguishing genera features) (but first 3-4 setigers might be one thing, but remainder of body something else)
 - No genera with uniramous parapodia (notopodia absent)
 - Parapodia **sesquiramous** (notopodium reduced to cirrophore of the dorsal cirrus and a supporting acicula)(no notosetae),
 - **Subbiramous** (notopodium much smaller than neuropodium, bearing 1 to a very few, usually short and thin notosetae), or
 - **Biramous** (notopodium almost as large as neuropodium, bearing well-developed fascicle of often more than one kind of notosetae).

Genus-level characters

- Number of tentacular cirri.
- Number and insertion of antennae.
- Morphology of the parapodia.

General notes

- You can use Hilbig, 1994, but the majority of those California genera don't occur in Puget Sound, so it can get confusing.
- We don't get the genus *Kefersteinia*, but occasionally do get the genus *Gyptis*.

Family Hesionidae

- The “pink book” (Fauchald, 1977) has a good key to genera for Hesionids, but also has a lot that we don’t have in Puget Sound.
- Hesionids kind of all look alike, except *Heteropodarke heteromorpha*, which looks a bit different.
- Four genera are found in Puget Sound, with one species per genus.

Genus *Heteropodarke*

Heteropodarke heteromorpha Hartman-Schroeder, 1962

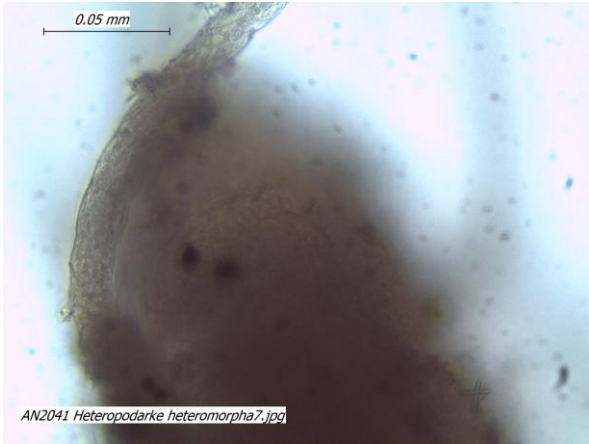
(p. 245, 256 in Hilbig, 1994)

- Parapodia sesquiramous; notosetae absent.
- Prostomium with 3 antennae, the median one attached frontally, and 1 pair of palps ventrally.
- Eight pairs of tentacular cirri on 3 visible segments (segments are difficult to see).
- Neurosetae modified on several anterior setigers, golden, stout, with distally knobbed shafts and short falcigerous blades (“dog-bone setae”). (These are definitive, don’t see them in any other Hesionids)
- Shallow, subtidal, live interstitially in sand, very tiny.
- 2 pairs of eyes.

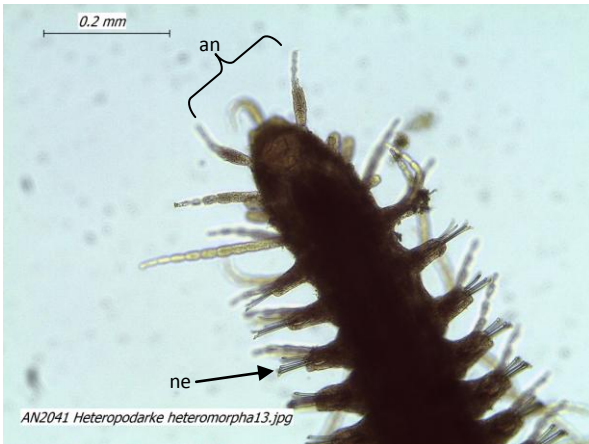
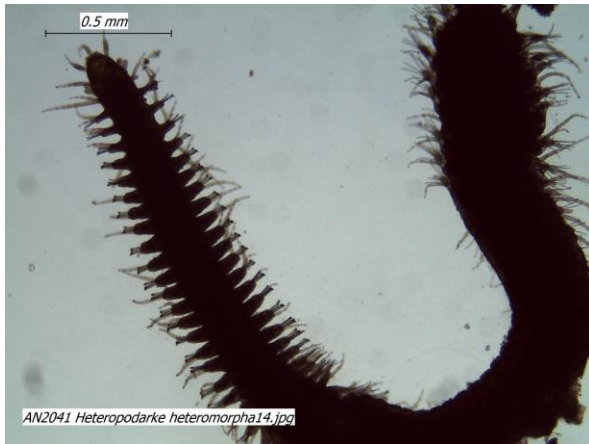


Partial specimens, anterior and mid-body, stereoscope view (l,r)

Family Hesioniidae



Anterior end, ventrolateral view, note eyespots (l); prostomium, dorsal view, note eyespots (r)



Anterior (l,r) and mid-body (l), compound microscope view, three antennae (an), sesquiramous parapodia, “dog-bone” anterior neurosetae (ne). Eight pairs of tentacular cirri not all visible



Note median antennae (l); “dogbone” anterior neurosetae (r)

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“Dogbone” anterior neurosetae (l,r)



“Dogbone” anterior neurosetae (l); mid- to posterior neurosetae (r)

Genus *Microphthalmus*

Microphthalmus sp.

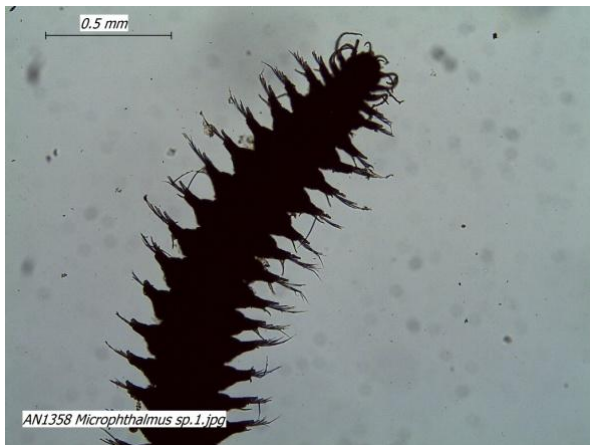
- We are only looking at these at the genus level for Puget Sound.
- Found around the gills of Terebellides, living in mud tube, mutualistic relationship?
- Also live in sandy sediments, may be different species.
- Prostomium anteriorly rounded, with one pair of simple, filiform palps, a pair of tapering frontal antennae, and a tapering median antenna inserted at the posterior margin; one pair of ocelli present.
- Six pairs of filiform tentacular cirri on the first three segments.
- Parapodia subbiramous, with dorsal and ventral cirri that extend about to the tips of the neuropodial lobes.
- Notopodia with aciculae emergent and, in the median and posterior setigers, a single pectinate comb seta with numerous teeth.
- Neuropodia with compound heterogomph setae having bidentate, finely serrated blades.

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- Pygidial lamella hemispherical with a smooth margin; filiform lateral cirri exceeding the plate in length.

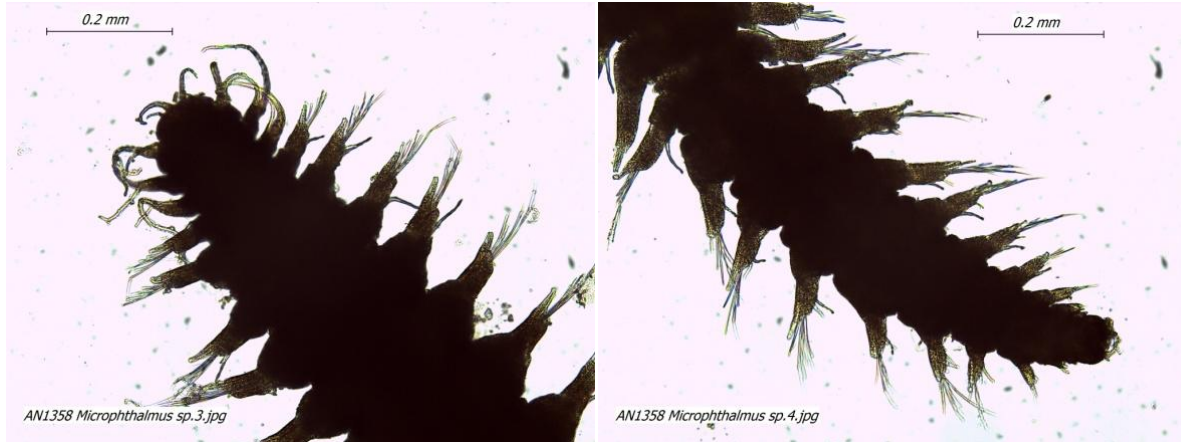


Whole body, stereomicroscope view (l)

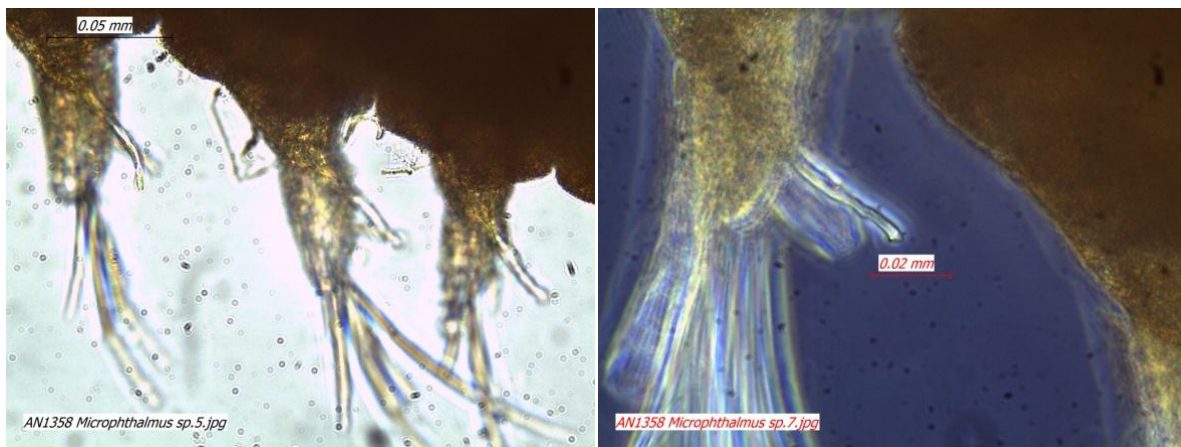


Anterior end, compound microscope view (l); posterior end (r)

Family Hesioniidae



Anterior end (l); Posterior end (r) - compound microscope views – prostomium anteriorly rounded, with one pair of simple, filiform palps, and a pair of tapering frontal antennae (tapering median antenna not seen); six pairs of filiform tentacular cirri on the first three segments; parapodia subbiramous, with dorsal and ventral cirri that extend about to the tips of the neuropodial lobes



Notopodia with aciculae emergent

Genus *Oxydromus*

Oxydromus pugettensis (Johnson, 1901)

(synonyms = *Ophiodromus pugettensis* and *Podarke pugettensis*)

- Parapodia sesquiramous in setigers 1 and 2, rarely 3, subbiramous in from setiger 3 or 4.
- Prostomium with 3 antennae, the median one attached in middle of prostomium, 1 pair of biarticulate palps, and 2 pairs of eyes.
- Proboscis short, muscular, lacking terminal papillae. Like a turban.
- Six pairs of smooth tentacular cirri arising from 2 visible segments.
- Notopodia reduced to small lateral projection of dorsal cirrophore, with 2 aciculae; bearing 2 **furcate** setae with unequal tines. (longer tine is 4x longer than the shorter tine)
- Neuropodia bearing numerous compound neurosetae.

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- This is the only species of *Oxydromus* that we get in Puget Sound.

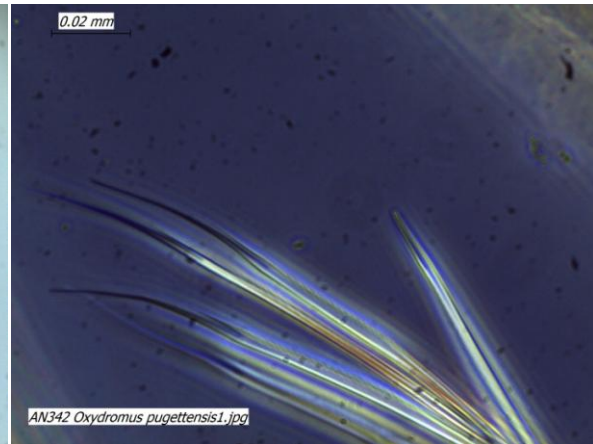


Whole body, dorsal view (l); anterior, prostomium, dorsal view, note eyes

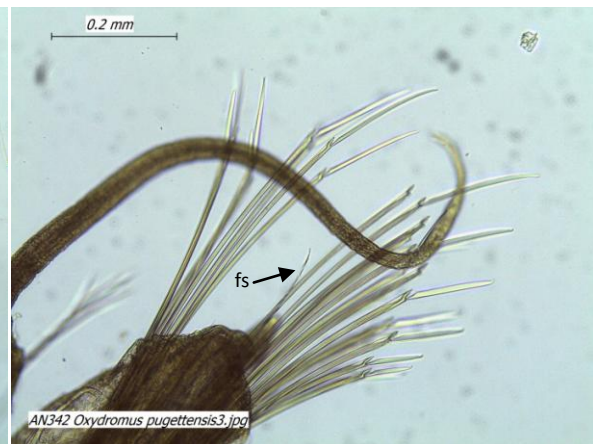


Anterior end, dorsolateral view, note three antennae, a pair of biarticulate palps, and everted pharynx lacking papillae (l); posterior end (r)

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Furcate setae with unequal tines (longer tine is 4x longer than the shorter tine) (l);
in phase contrast (r)



Sub-biramous mid-body parapodium, notopodium (no), neuropodium (ne), furcated setae (fs) (l,r)



Compound neurosetae, mid-body

Genus *Podarkeopsis*

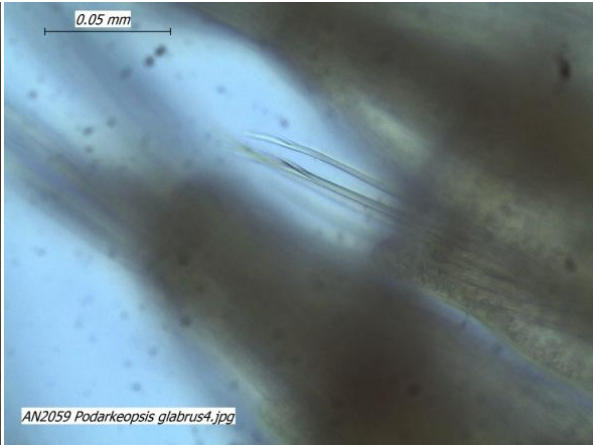
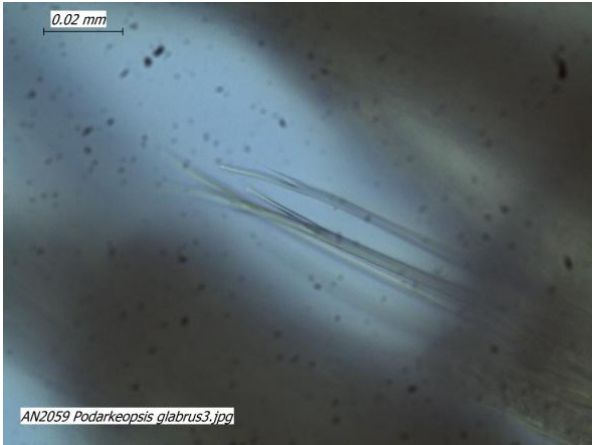
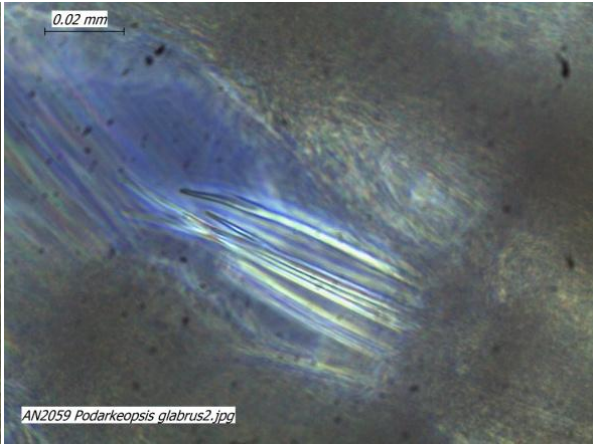
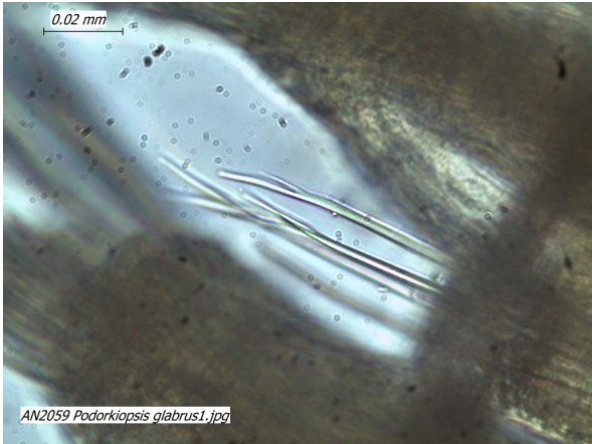
Podarkeopsis glabrus Hilbig, 1992

- Parapodia sesquiramous in setigers 1 – 4, biramous after that.
- Prostomium quadrangular, slightly wider than long, with three antennae and a pair of biarticulate palps; anterior pair of eyes large, kidney-shaped, and posterior pair minute.
- Proboscis with 10 large terminal papillae. (fewer and larger than *Micropodarke*)
- Eight pairs of tentacular cirri on three segments. First four setigers sesquiramous.
- Notosetae present from setiger five, and include coarsely serrated spines, slender, finely serrated capillaries, and furcate setae with unequal tines.
- Neurosetae compound falcigers; dorsalmost neurosetae with very long, slender blades.
- Pygidium small, with a pair of slender ventrolateral cirri.
- Most common *Hesionidae* in Puget Sound
- Looks like *Oxydromus pugettensis*
- *Podarkeopsis perkinsi* occurs, but is rare in Puget Sound.



Whole body, dorsal view (upper left); anterior end, dorsal view- note quadrangular prostomium, slightly wider than long, with three antennae and a pair of biarticulate palps; eyes; eight pairs of tentacular cirri on three segments; proboscis with few large terminal papillae (upper right and lower l,r)

Family Hesioniidae



Furcate setae with unequal tines (five views)

Genus *Micropodarke*

Micropodarke dubia (Hessle, 1925)

- Only species in the genus
- Prostomium rectangular, wider than long, with 2 frontal antennae, 2 biarticulate palps, and 2 pairs of eyes.
- Proboscis terminating in about 25 papillae; jaws absent.
- Six pairs of tentacular cirri on the first 3 segments.
- Parapodia sesquiramous; notopodia lacking notosetae, with 1 – 3 aciculae.
- Superior and inferior compound neurosetae have finely serrated, distally bidentate blades. Those in the middle part of the fascicle have blades with an additional three to four long, thick, coarse spines along the basal cutting margin.
- In addition to ventral cirri, there are ventral "lobes" that originate slightly posteriorly to the bases of the parapodia, reach two-thirds the length of the parapodia in the first three or four setigerous segments; they are about four times as long as they are wide. Posteriorly they are much shorter." (Banse and Hobson, 1968, pg 13). (This lobe is unique among the species of Hesionidae in PS)

Literature (with descriptions of *M. dubia*)

Fauchald, K. 1977 - p. 73

Banse, K. and K. Hobson, 1974 - p. 47

Banse, K. and K. Hobson, 1968 - p. 13

Imajima, M. and O. Hartman, 1964 - p. 83

Okuda, S. 1938 - p. 89

Comments on *M. dubia* descriptions in literature

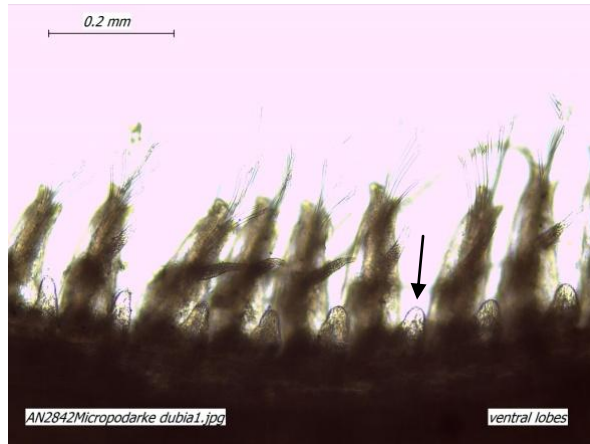
When using Fauchald, 1977 (the "pink book") to key out *Micropodarke*, couplet 16 should be reversed for *Neopodarke* (currently referred to *Nereimyra*) and *Micropodarke*.

In the original description of *Neopodarke woodsholea*, Hartman (1965) gave the following description for the proboscis: "The proboscis is thick, muscular, and smooth on the outer surface and terminates distally in 10 widely spaced digitate papillae."

In her generic definition she stated "*Neopodarke* differs from *Micropodarke* Okuda (1938) in that the proboscis terminates distally in 21 instead of 11 papillae."

The description of *Micropodarke* by Okuda, 1938 states "The proboscis is extruded, the terminal portion of which is provided with 21 subulate papillae." Hartman, in her original description somehow reversed the papillae characters for *Neopodarke* and *Micropodarke* in her generic description for *Neopodarke*. Fauchald apparently followed this line when writing his key to the hesionids.

Family Hesionidae



Mid-body ventral view – note ventral “lobes”

Additional species of Hesionidae found in Puget Sound

Microphthalmus sp 1

Microphthalmus *szcelkowi*

Podarkeopsis *perkinsi*

Literature

Banse, K. and Hobson, K.D. 1968. Benthic polychaetes from Puget Sound, Washington, with remarks on four other species. *Proceedings of the United States National Museum* 125(3667): 1-53.

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

Fauchald, K. 1977. The polychaete worms, definitions and keys to the orders, families and genera. *Natural History Museum of Los Angeles County: Los Angeles, CA (USA) Science Series* 28:1-188

Hilbig, B. 1994. Chapter 9. Family Hesionidae Sars, 1862. Pages 243-269. 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.

Imajima, M. and O. Hartman. 1964. The polychaetous annelids of Japan. *Allan Hancock Foundation Occasional Paper* 26:1-452.

Okuda, Shiro 1938. Polychaetous annelids from the vicinity of the Mitsui Institute of Marine Biology. *Japanese Journal of Zoology*, 8: 75-105.

Family Hesionidae

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/1403237.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 February 12, 2014 at the Department of Ecology.