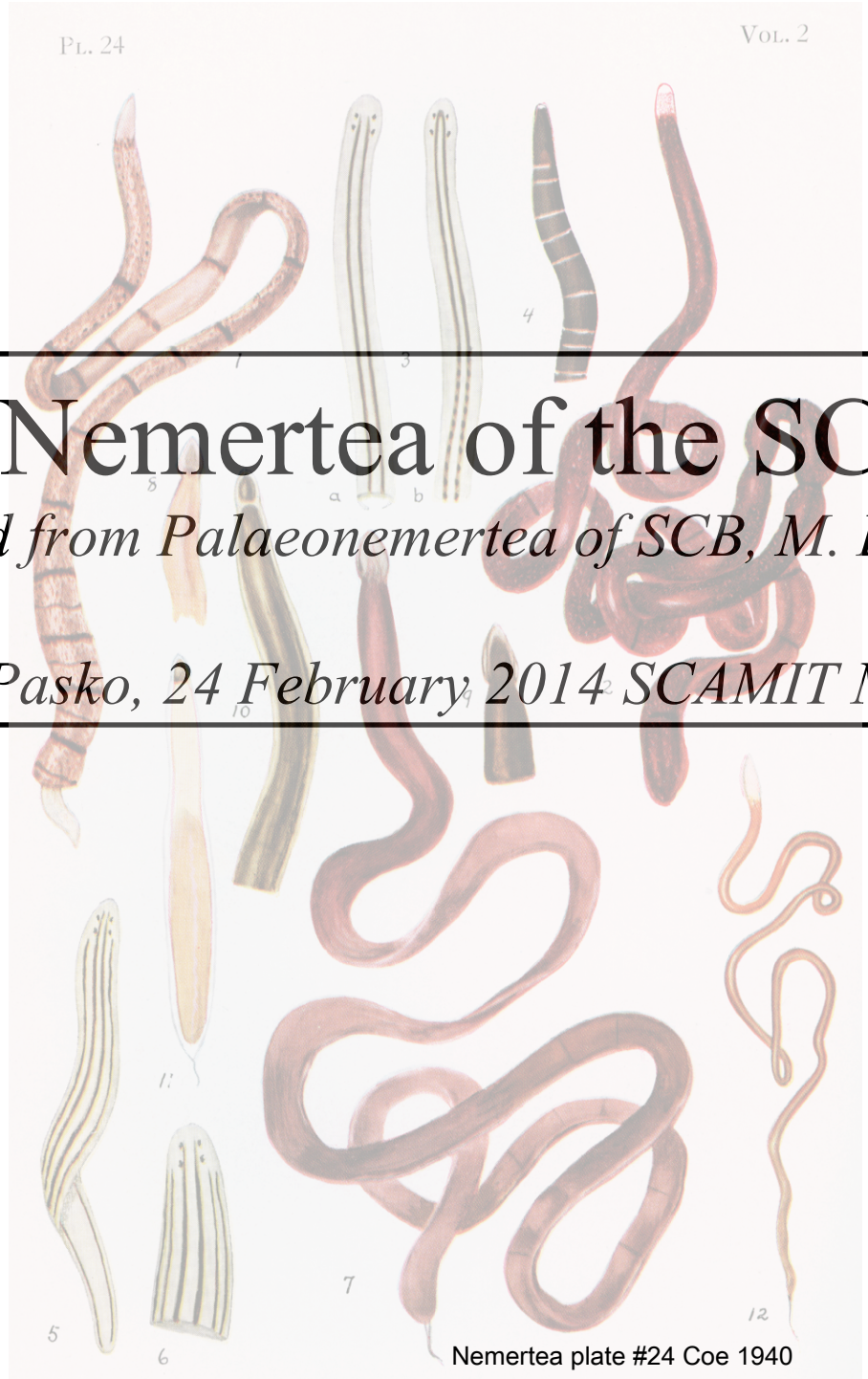
Nemertea of the SCB

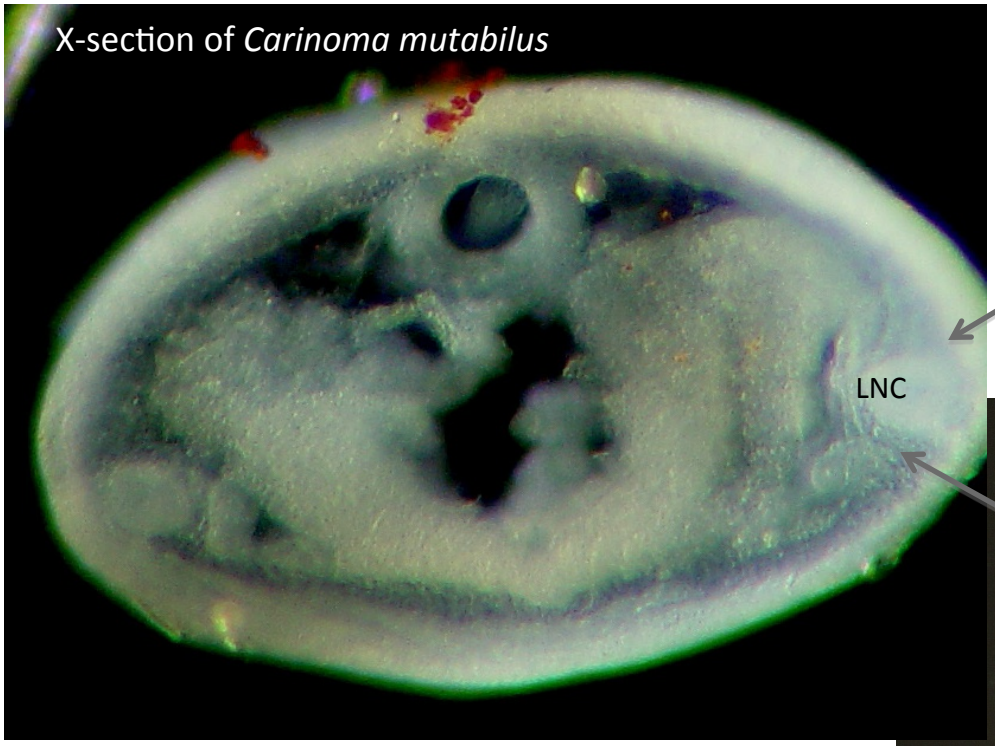
(*Revised from Palaeonemertea of SCB, M. Lilly, 2007*)

D. Pasko, 24 February 2014 SCAMIT Meeting

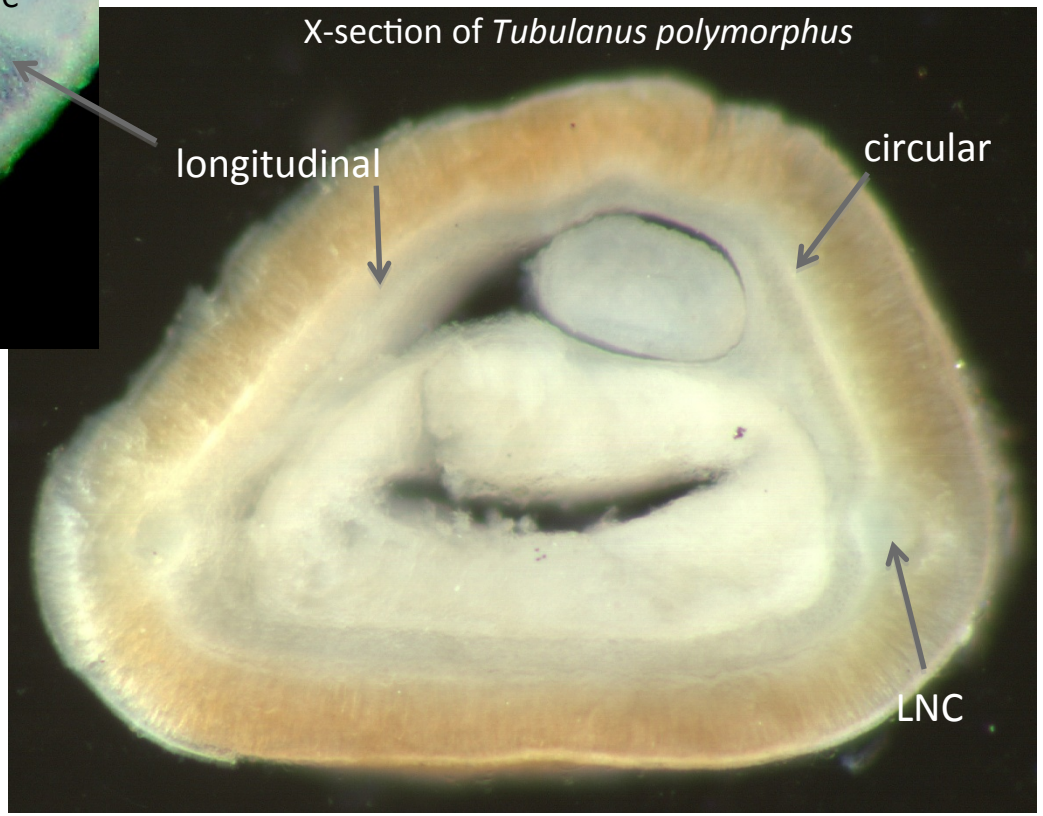


Nemertea plate #24 Coe 1940

Palaeonemerteans
(Carinomids vs Tubulanids)



Tubulanids have 3 layers of musculature: inner circular, inner longitudinal, and outer circular. The lateral nerve cord (LNC) is associated with the outer circular layer.



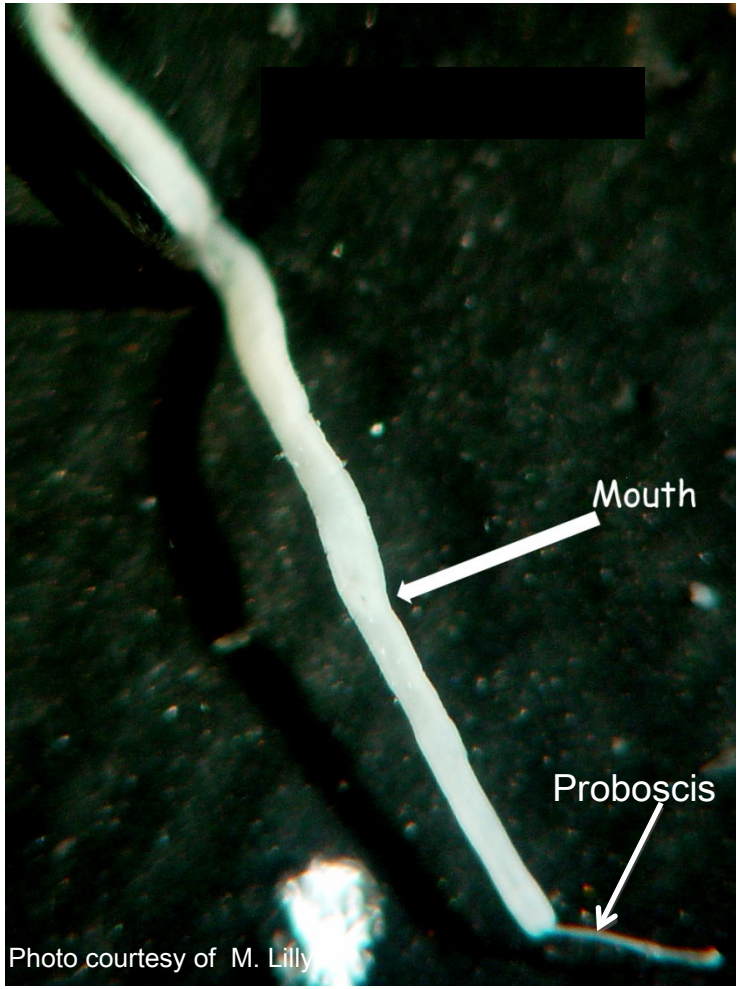
Carinomids have 2 layers of musculature: inner longitudinal and outer circular with the LNC being associated with the longitudinal muscle layer.

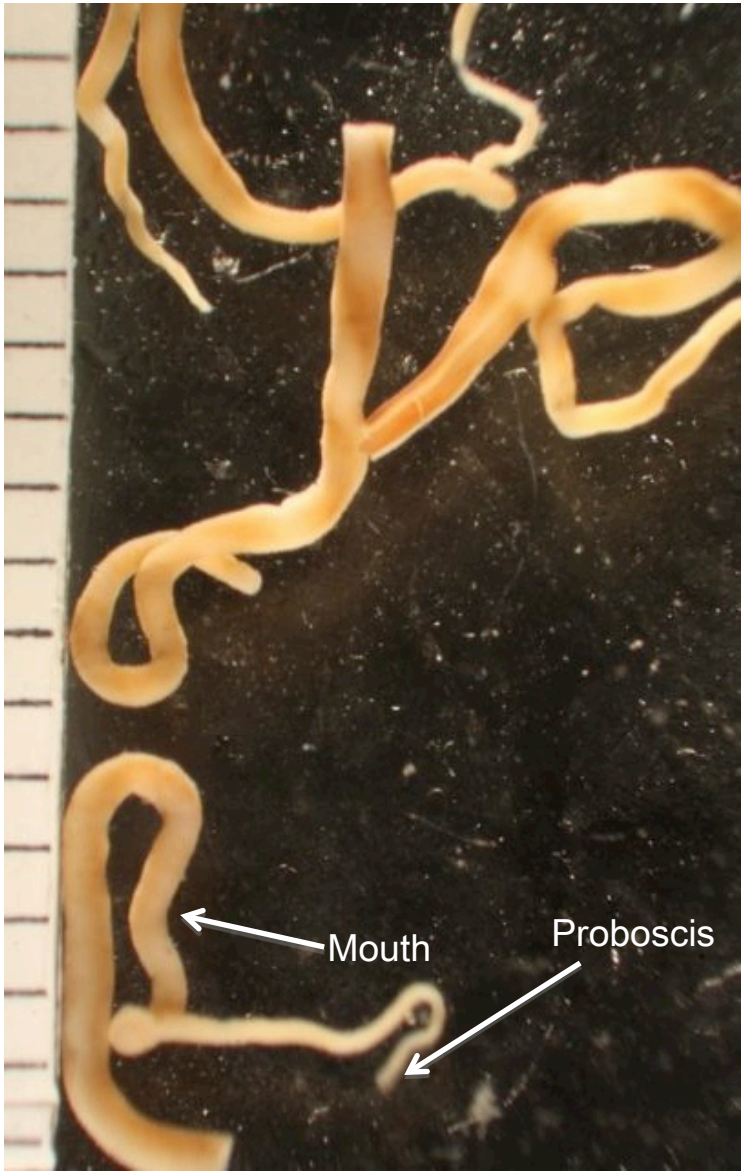
Photos courtesy of M. Lilly

Carinoma mutablis

Internal musculature of 2 layers (outer circular and inner longitudinal) with LNC migrating into longitudinal muscle from mid-body (esophageal region) to the posterior.

Procephalothrix sp

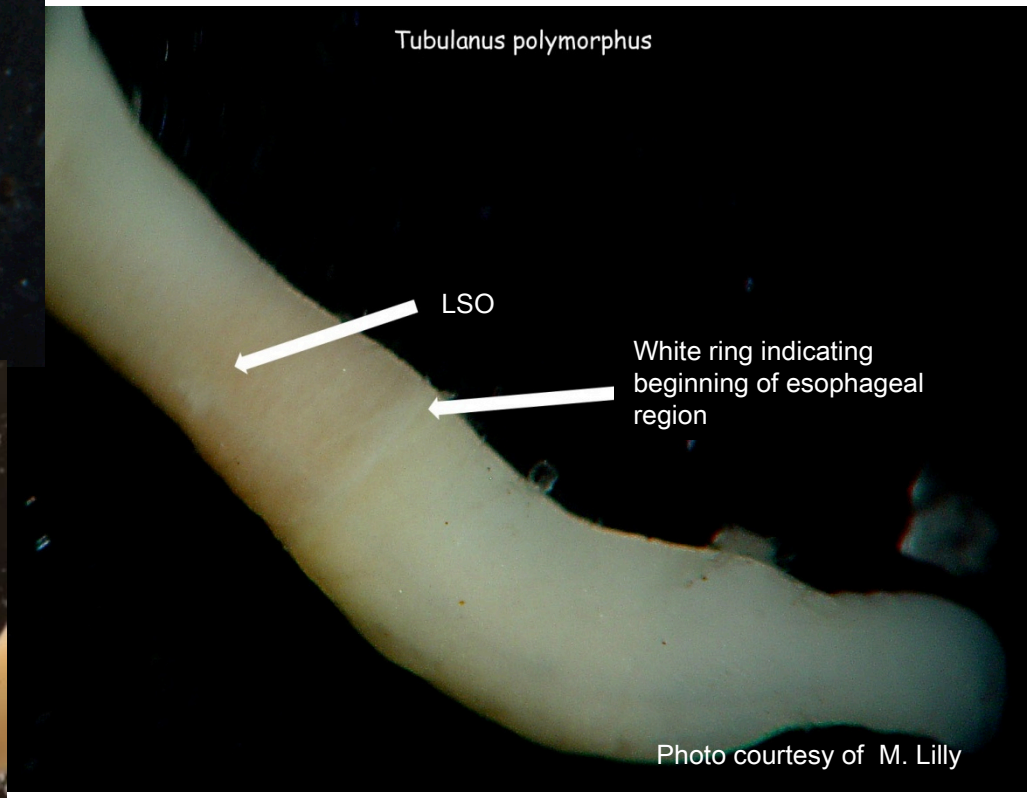




Internal musculature of 2 layers (outer circular and inner longitudinal) with mouth far removed from proboscis pore. Body typically thin and often coiled.

Tubulanus polymorphus

Internal musculature of 3 layers with LNC external to outer circular for the entire length. LSO present, distinct, but coloration variable.



Tubulanus ? polymorphus

CSO is s present, pit-like; preservation band anterior to esophageal region, indicated by white band; LSO present, posterior to preservation band.

Morro Bay specimen

Photos courtesy of T. Phillips

Tubulanus sp A

(= *T. nothus* of SCAMIT)

Internal musculature of three layers with LNC external to outer circular for the entire length. LSO present, distinct. Coloration typically not uniform, with speckled pattern continuing posteriorly. Posterior coloration varies from dark purple (as shown) to lighter colors (see following slide).

Tubulanus sp A

(= *T. nothus* of SCAMIT)

Preservation band color can vary from dark purple to a lighter reddish brown.

Tubulanus cingulatus

Tubulanid musculature with four longitudinal lines (2 dorsal + 2 lateral) on dark ground color; with dark rings. Pair of “eye spots” on anterior margin of head is distinctive for this tubulanid and can aid in the identification of juvenile specimens.

Photos courtesy of M. Lilly

Tubulanus frenatus

Three dark longitudinal lines (1 dorsal + 2 lateral) on lighter ground color; with rings.
Found in SCB embayments.

Tubulanus sp SD 1

hotos courtesy of M. Lilly

One dark longitudinal line dorsally on brownish ground color, with white ring at esophageal region, LSO present, and darker rings posteriorly.

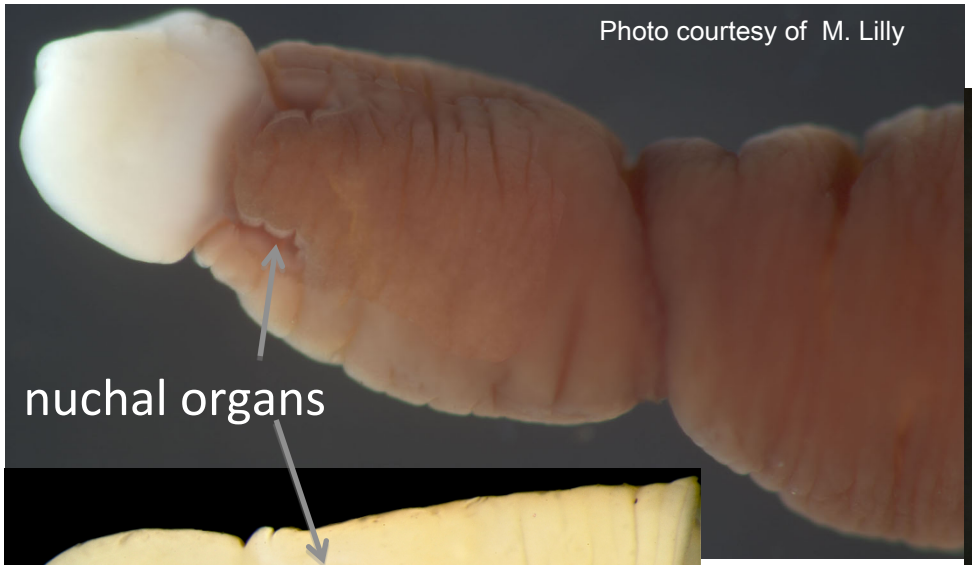
Tubulanus albocinctus (Coe 1904)

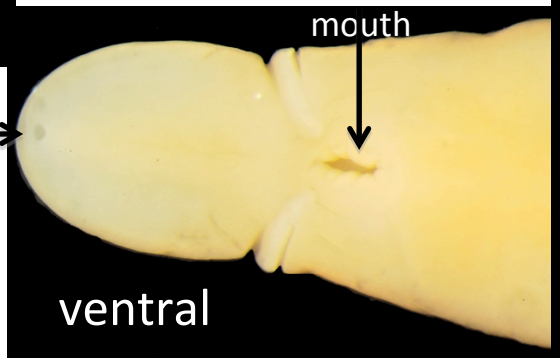
Body with reddish ground color and white rings; without longitudinal stripes.

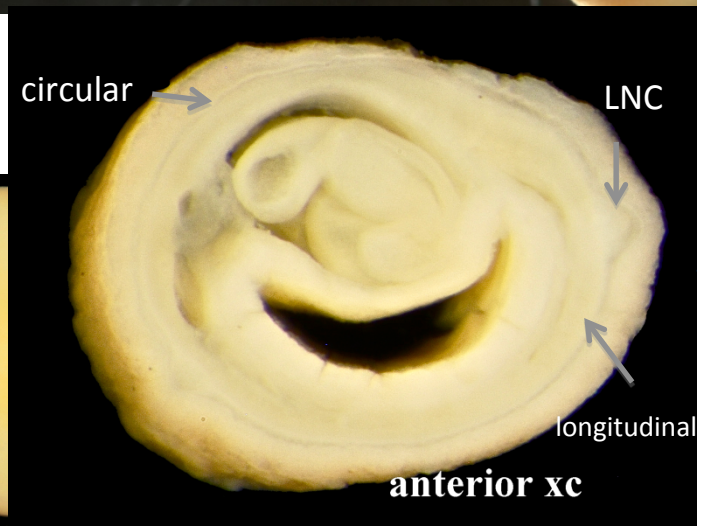
Found at depths ranging from 17m to 120m; finer sediments.

Tubulanidae sp A

(=Anopla sp A of Phillips & Tubulanidae sp SD 1)

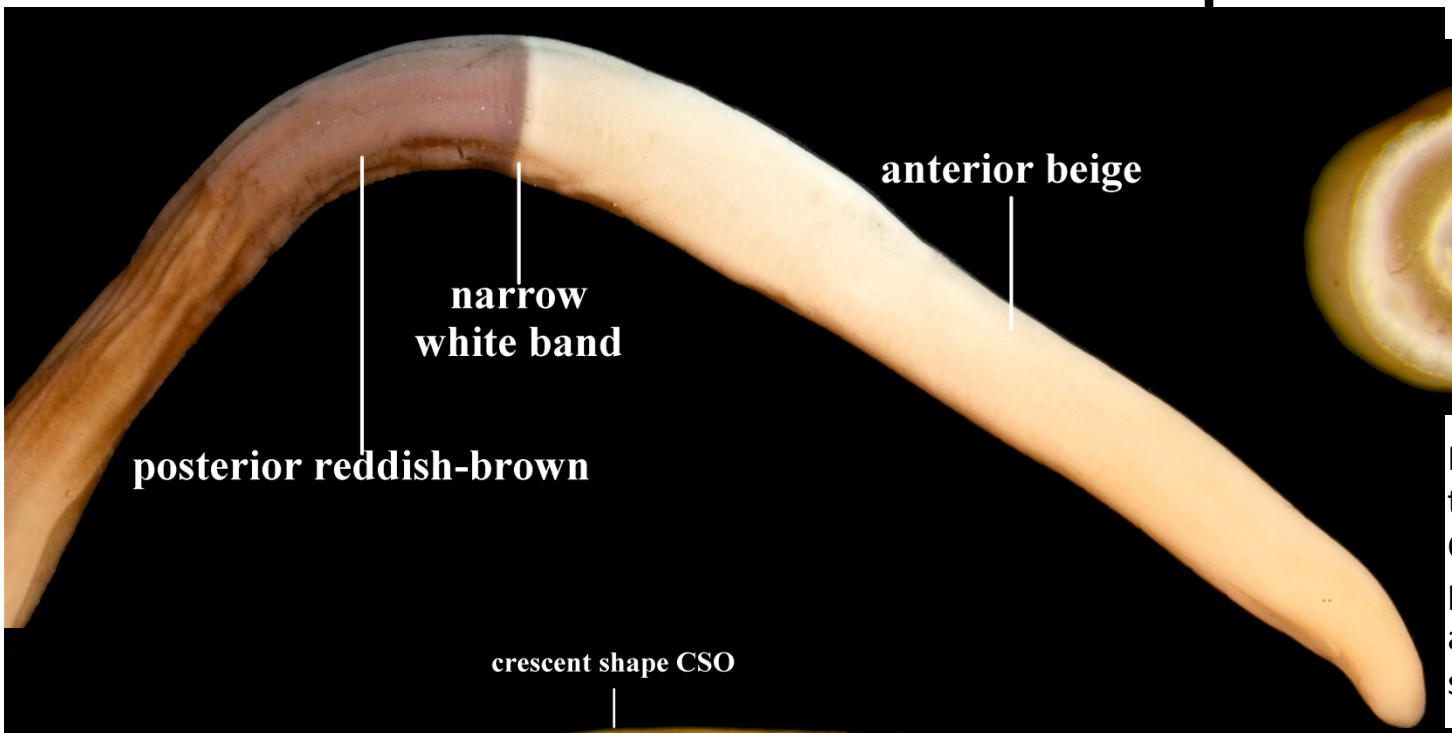




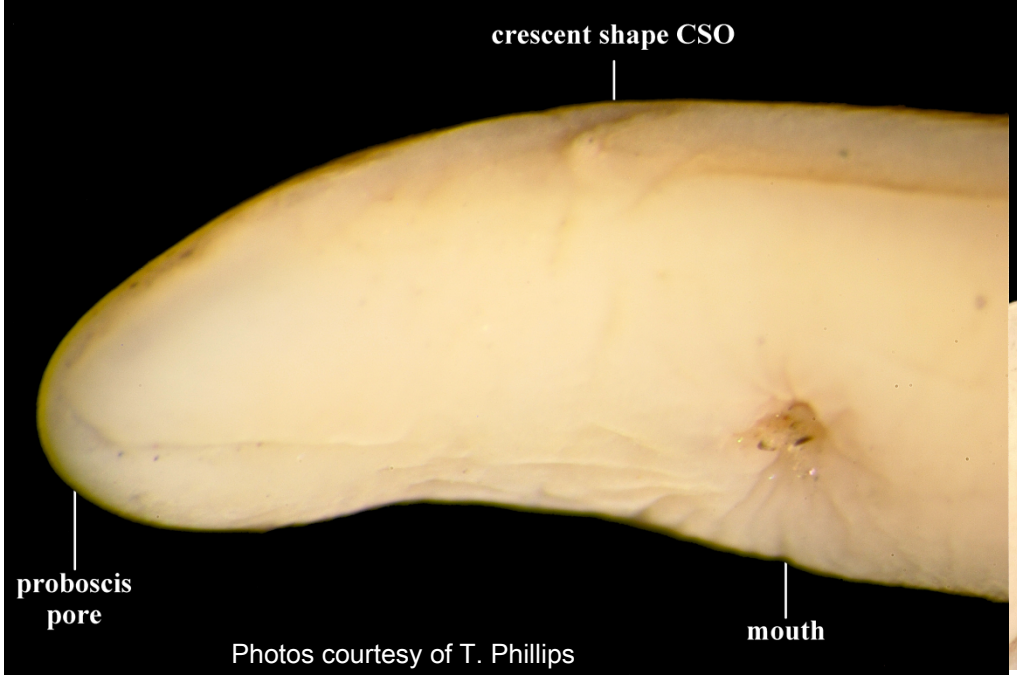


Dorsal, ventral, X-section photos courtesy of T. Phillip

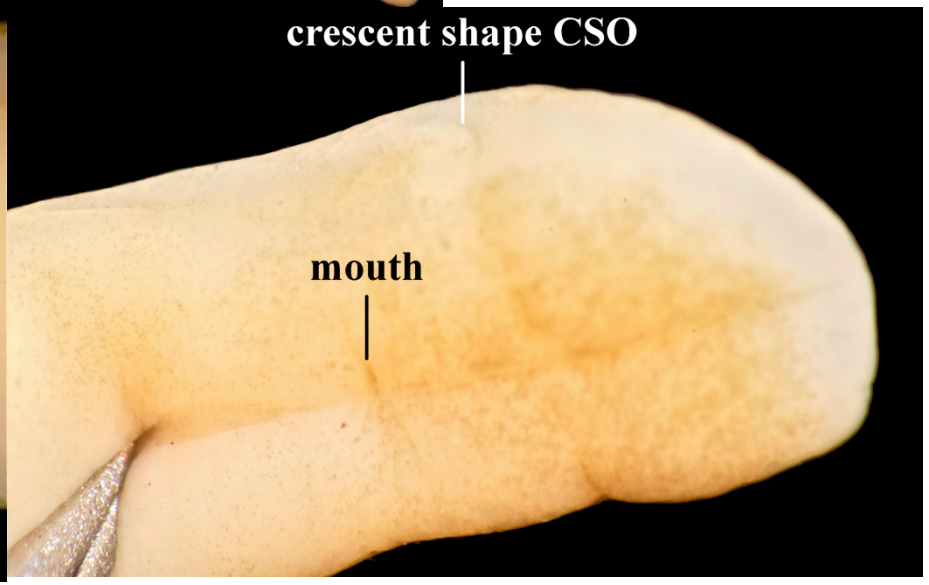
Tubulanidae sp B



Note thickened epidermis and thick longitudinal muscle layer. CSO present; white band present; color band in esoph-ageal region; LSO absent; brown speckling ventrally on head.

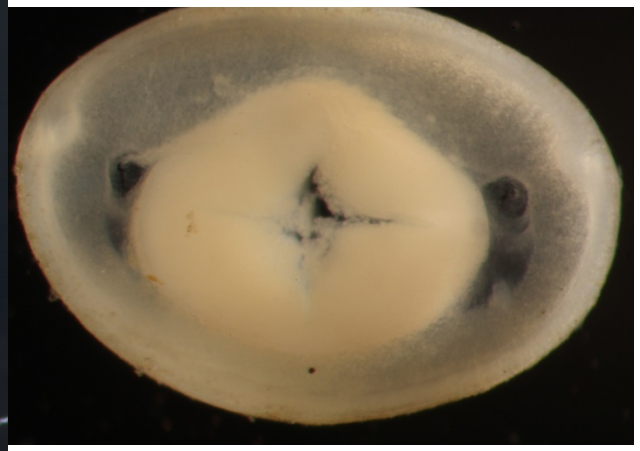


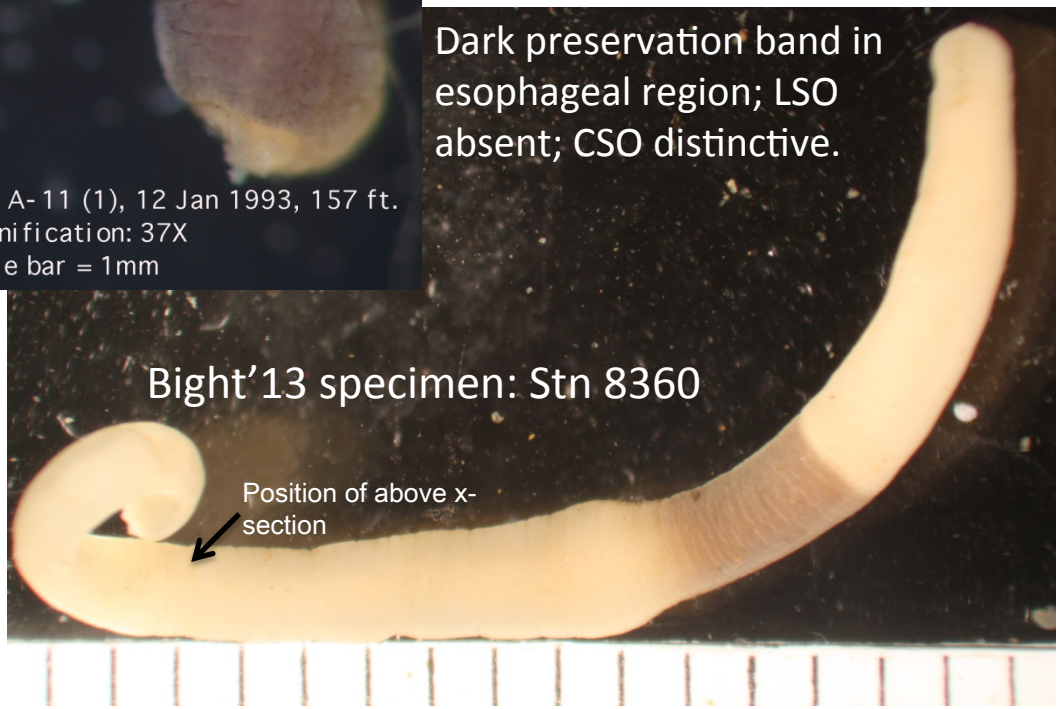
Photos courtesy of T. Phillips



Tubulanidae sp C

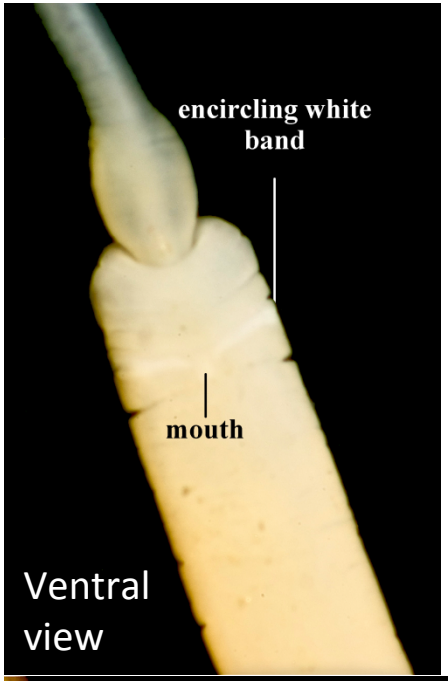
(= Palaeonemertea sp C SCAMIT)



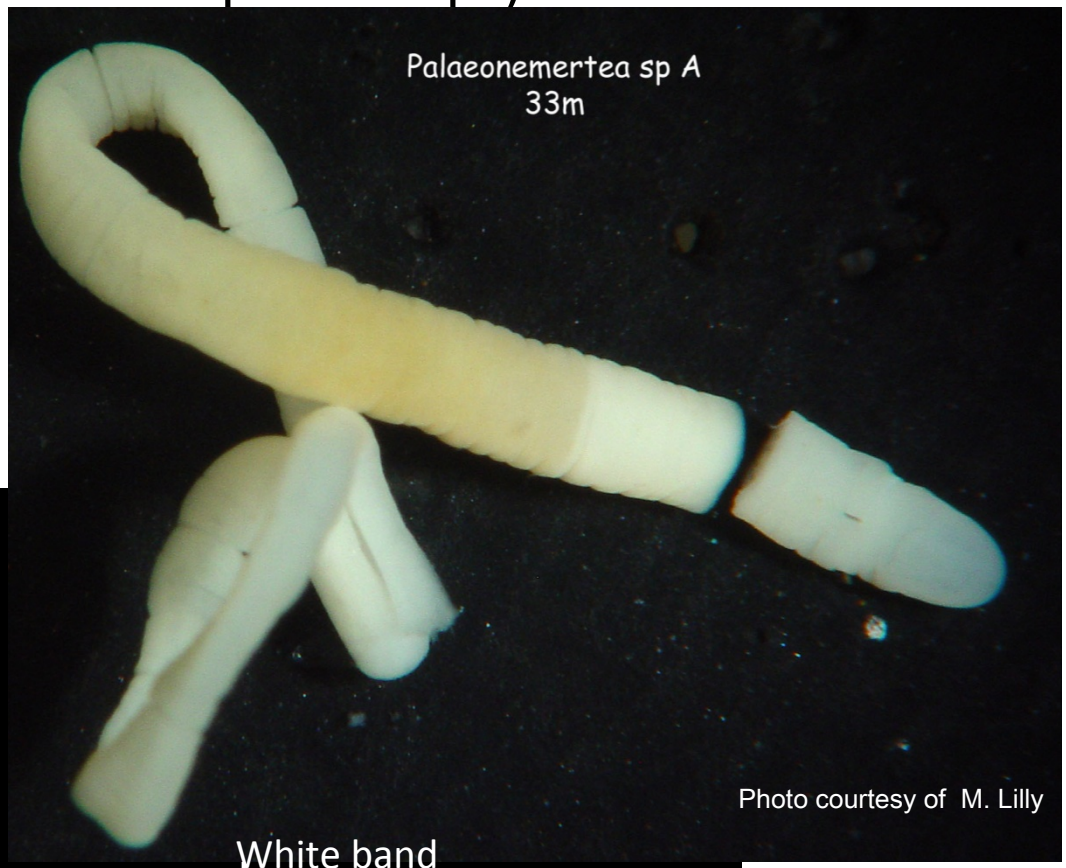


Tubulanidae sp D

(= Palaeonemertea sp A Phillips)



Anterior region pale with darker esophageal region (though often faded); CSO absent; LSO absent(?); encircling white band which runs through the mouth.



Tubulanidae sp E

With thickened epidermis and thick circular and longitudinal muscle layers; white ring faint; coloration limited to anterior region of body, posterior region beige. Pit-like CSO present; LSO posterior to preservation band.

Photo courtesy of M. Lilly

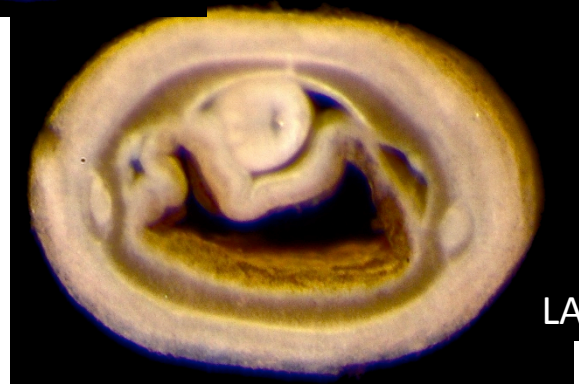
Tubulanidae sp Hyp2

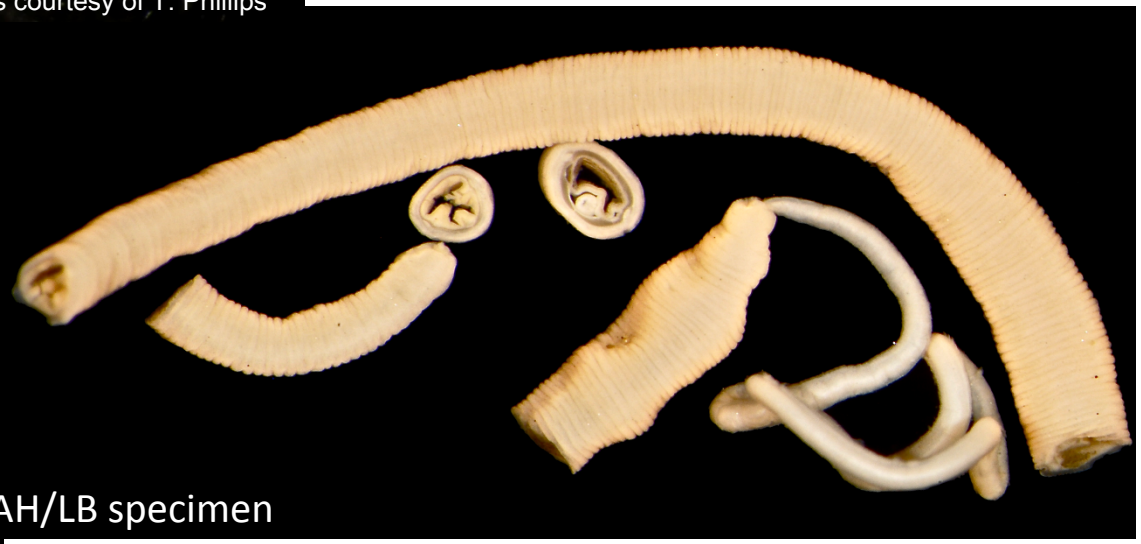
Oblique view

Photos courtesy of T. Phillips

Tubulanidae sp SF1

Photos courtesy of T. Phillips

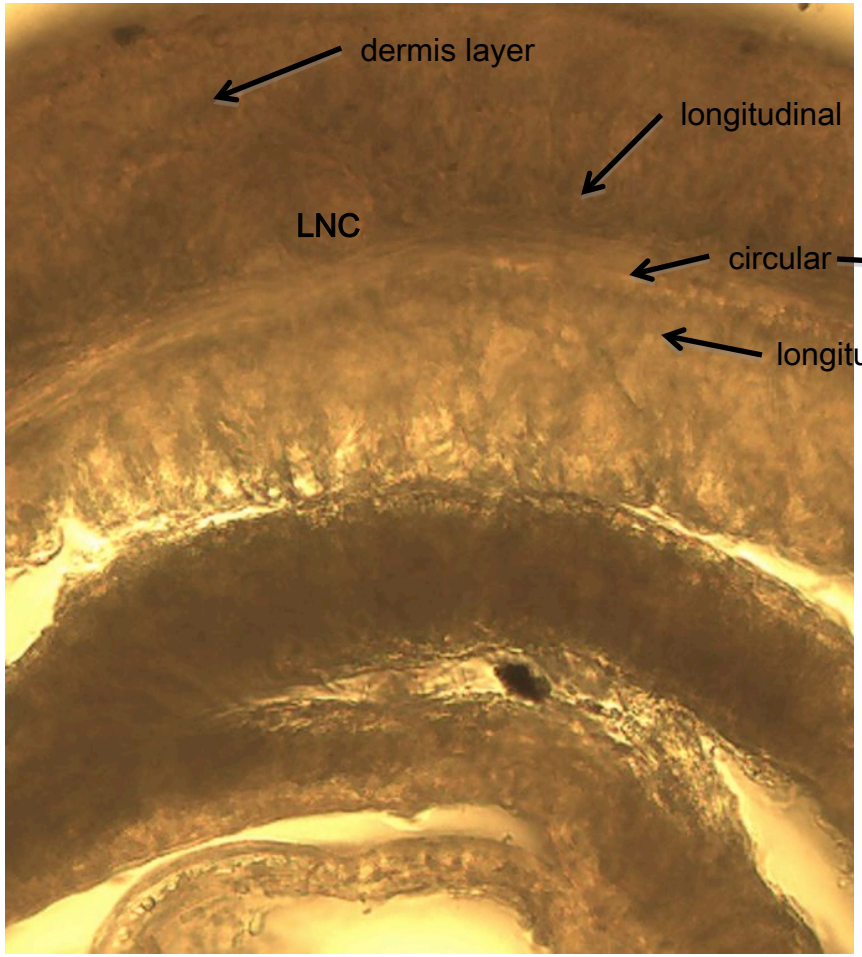


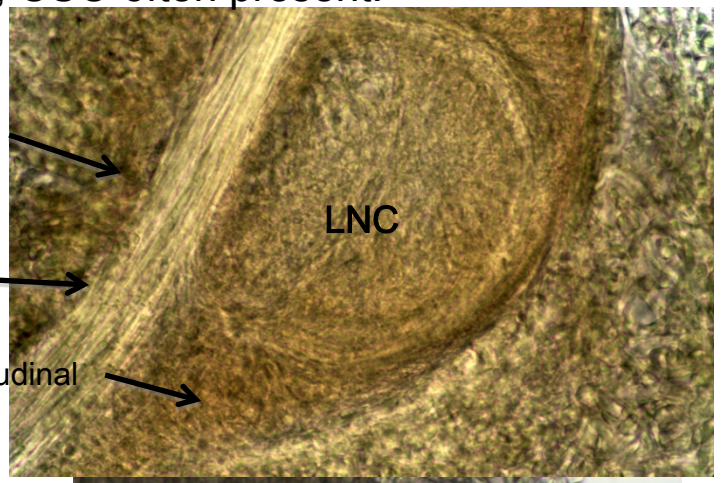


Palaeonemertea sp OC1

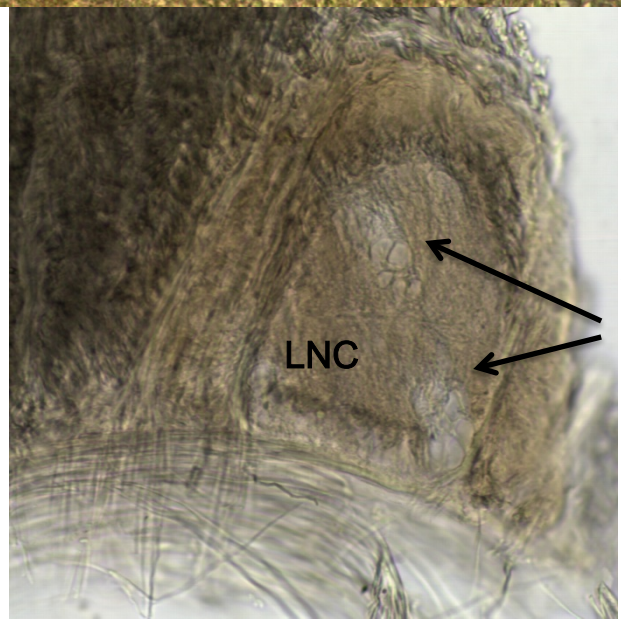
Heteronemertea

Most common taxa in SCB (Lineidae, Baseodiscidae) with cephalic slit or shallow furrow; Internal musculature of 3 layers (outer longitudinal muscle, middle circular, and inner longitudinal muscle); dermis often thickened; CSO often present.





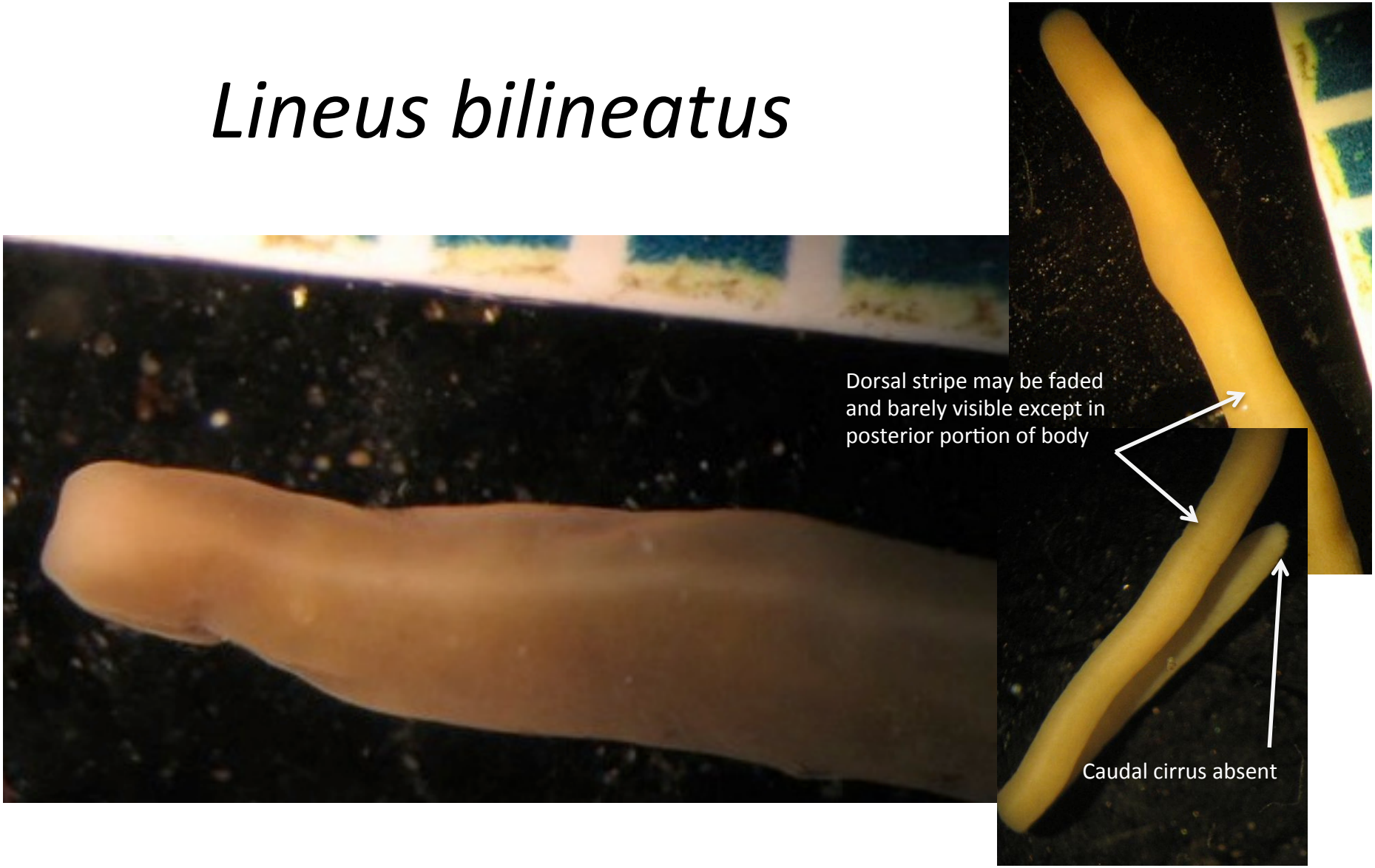
LNC from *Micrura*, without neurocord cells



LNC from *Cerebratulus* with neuro-cord cells

Neurocord photos courtesy of M. Lilly

Lineus bilineatus



One of the more common Lineids typically with greenish-olive background color, whitened anterior margin of head, and white mid-dorsal stripe. The head is often bluntly squared to gently rounded, and the cephalic slits are typically narrow and smooth. Caudal cirrus absent. *L. bilineatus* is reported from all shelf depths.

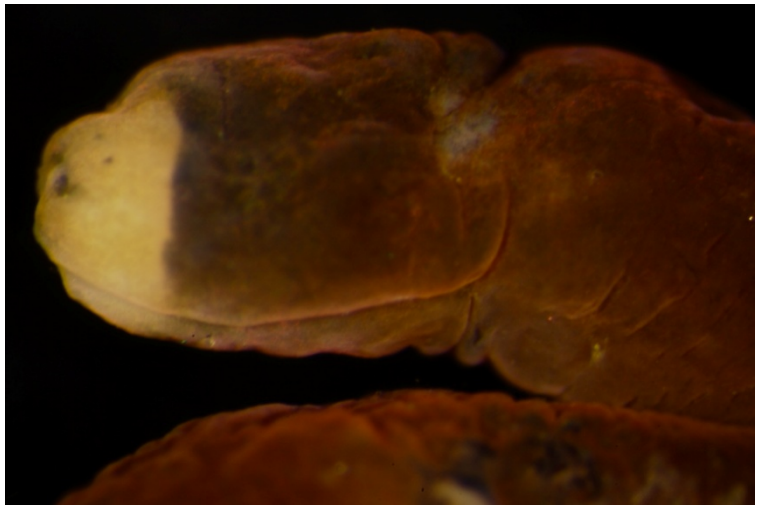
Lineus pictifrons

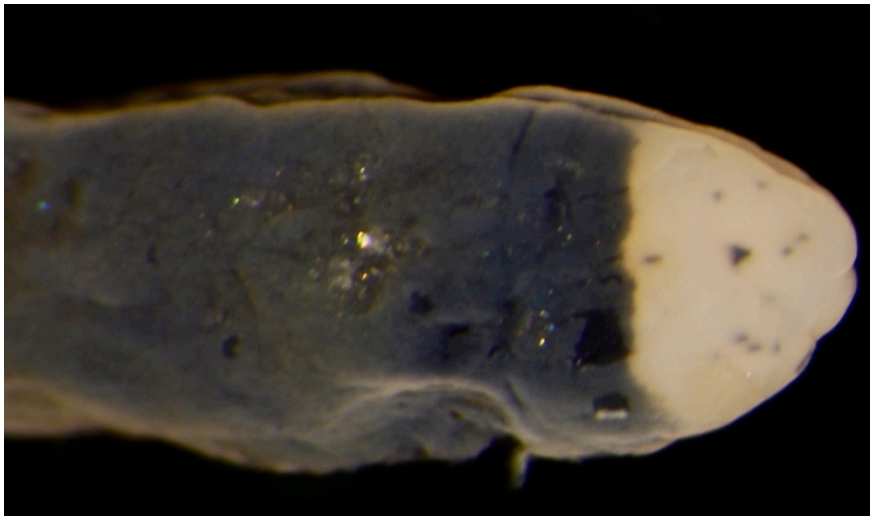
Micrura alaskensis

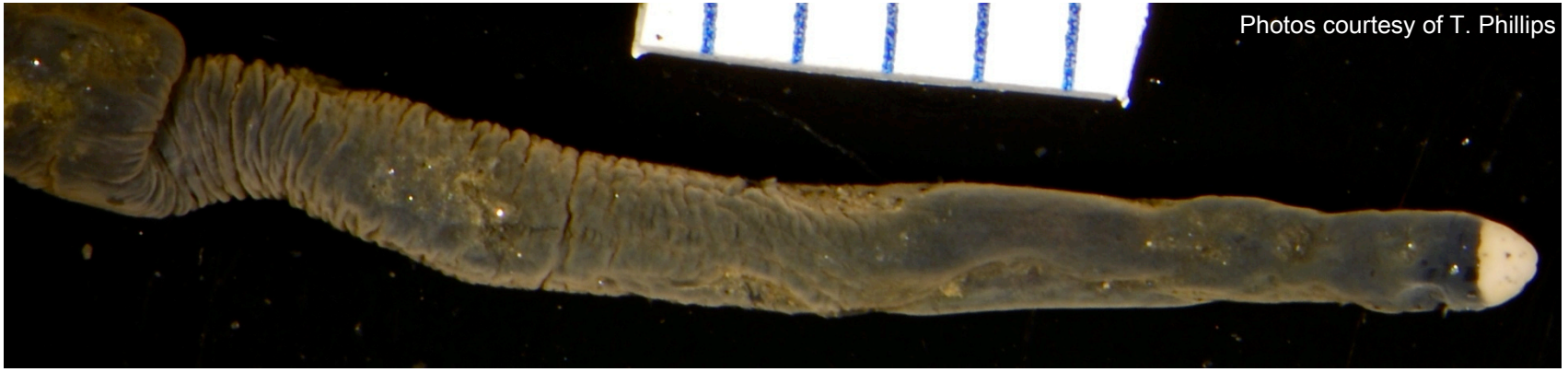
Body generally uniform in width, rounded throughout or narrowed posteriorly, typically smooth but may also be wrinkled; head not set-off by difference in color; body often ochre to brownish coloration, and uniform; cephalic slit narrow, smooth. Cirrus present.

Micrura wilsoni

Body generally uniform in width; white head set-off from dark body, often with pigment spots; white coloration does not necessarily continue along cephalic slit. Cephalic slit narrow, smooth. Cirrus present.

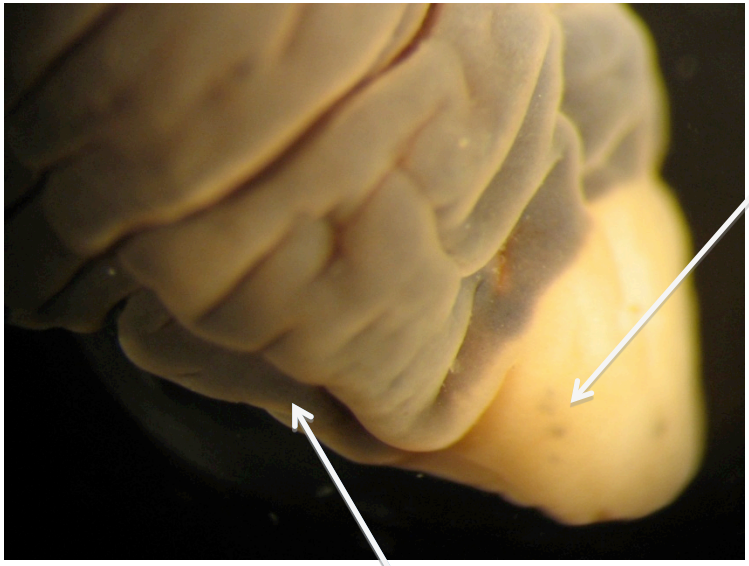






Photos courtesy of T. Phillips

Cerebratulus albifrons



Pigment spots

Cephalic slit, large, wide, thick and often gaping

Body broadened anteriorly, head spatulate, posteriorly flattened

Coloration of *Cerebratulus albifrons, C. montgomery*i *and Micrura wilsoni* are similar. X-section may be required to view presence of neurocord cells in larger specimens. *Micrura* typically do not have an expanded anterior/head region as seen in *Cerebratulus*.

Cerebratulus lineatus

Baseodiscus delineatus

Baseodiscidae are recognized by their typical heteronemertean musculature and absence of a cephalic groove, though they are sometimes apparent as a barely visible shallow furrow or whitish line. *B. delineatus* has longitudinal pigment lines and eyes along each side of the head.

Photo courtesy of T. Phillips

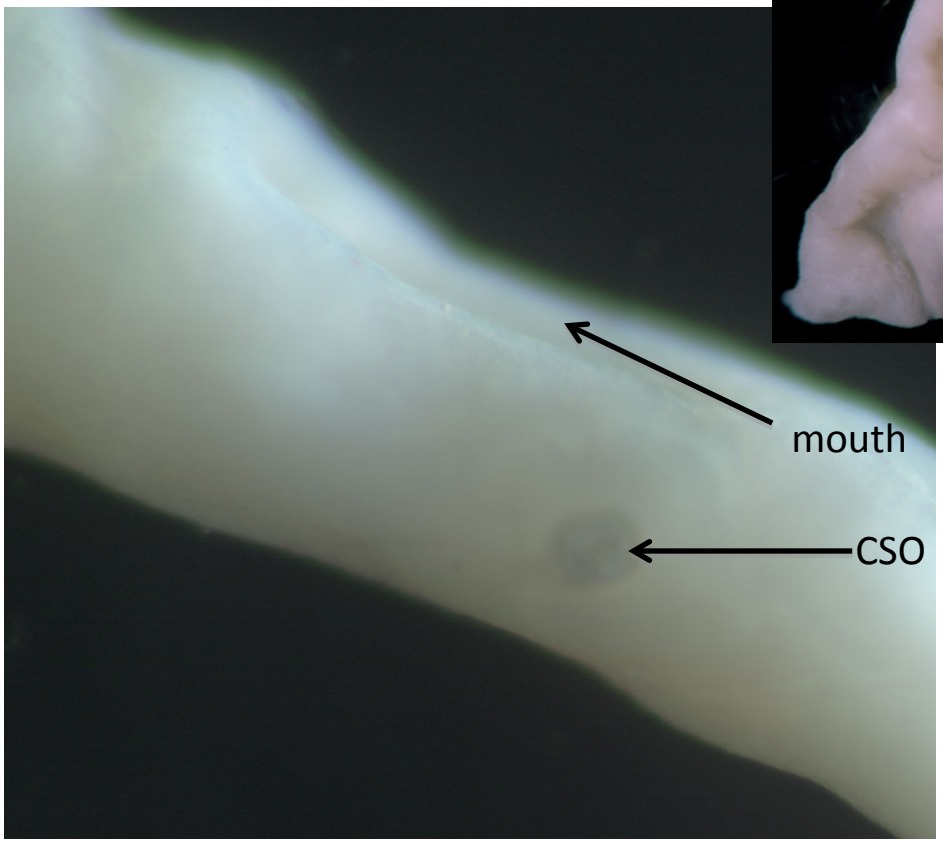
Cleared specimen showing eyes

Specimens from San Diego Bay

Baseodiscus punnetti

Baseodiscus princeps

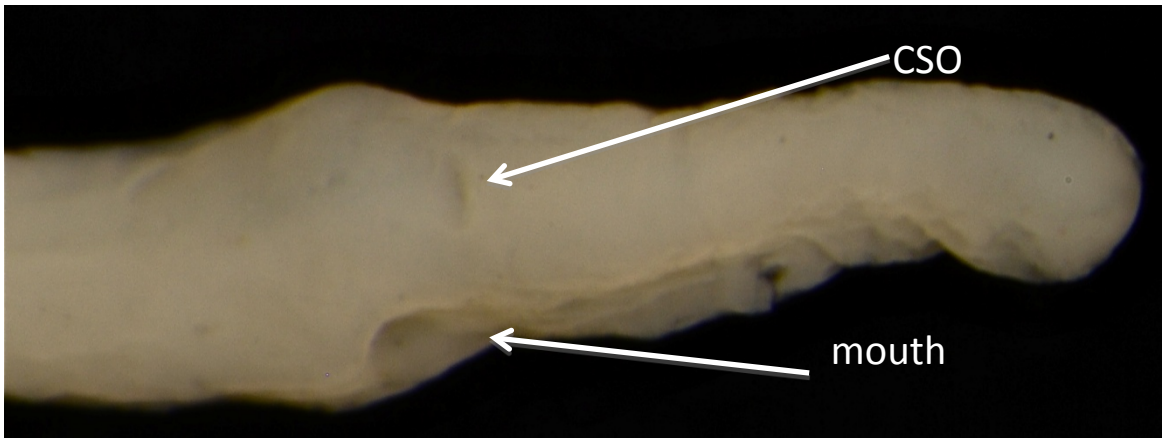
Zygeupolia rubens



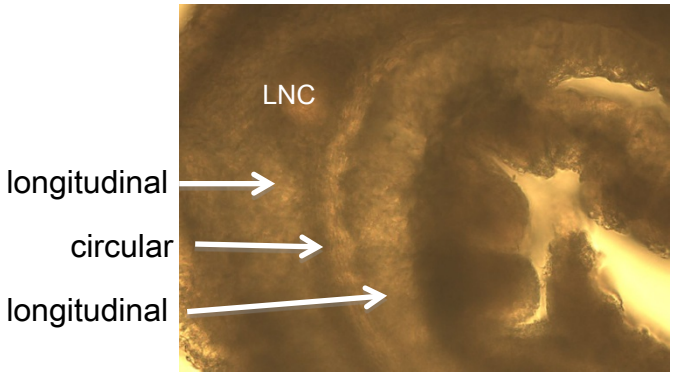
Sharply tapered anterior end; cephalic slit/ depression absent; caudal cirrus present. Anterior end often highly contracted making CSO difficult to see. Typical heteronemertean musculature. Most often found in sandy substrates.

Heteronemertea sp Hyp1

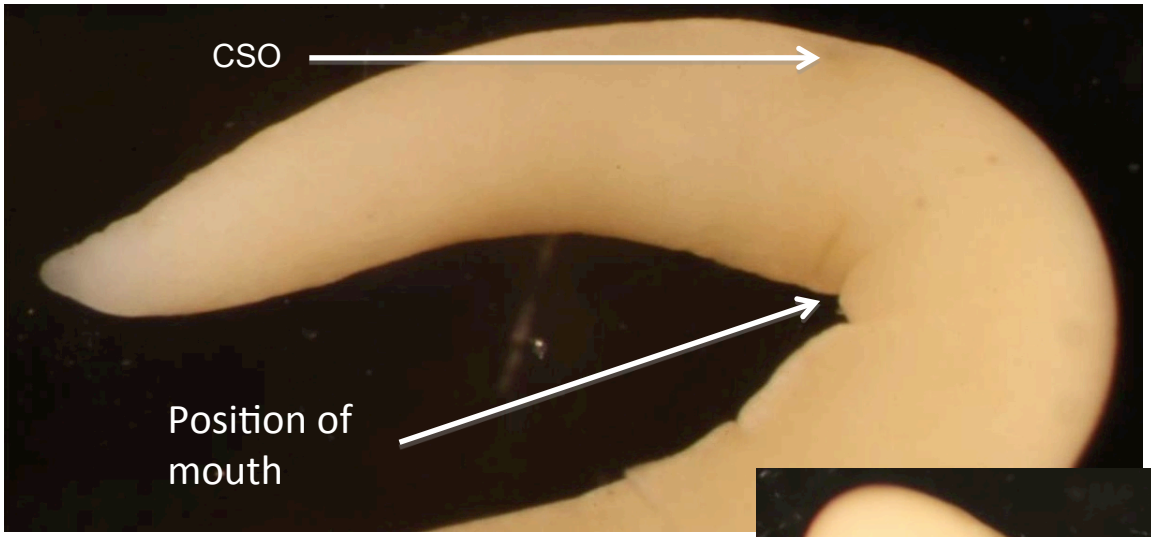
Specimens from Santa Monica Bay, CLA-EMD Monitoring



Elongate heteronemertean with cephalic groove absent, CSO prominent; cirrus present; and typical heteronemertean musculature.

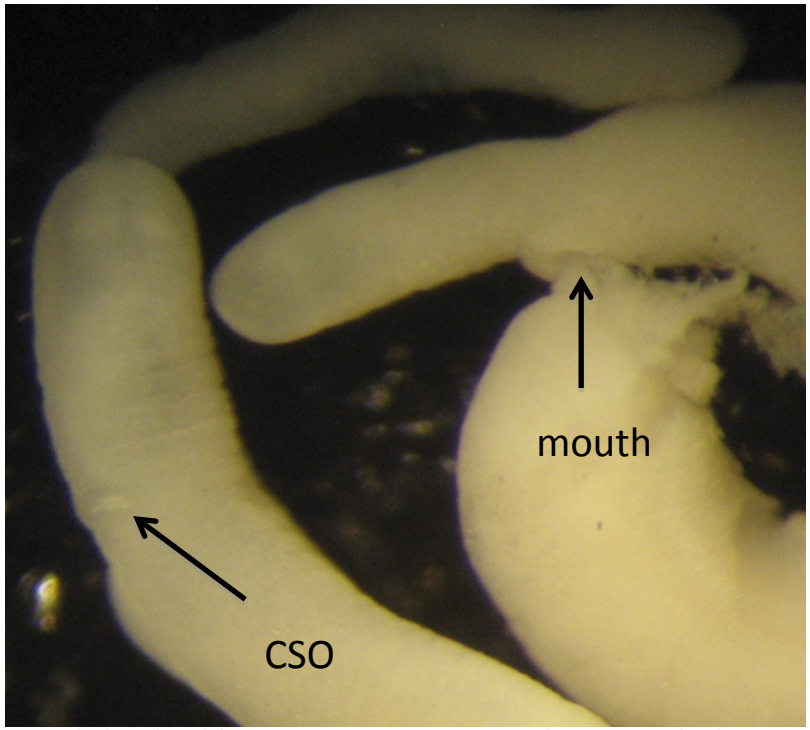


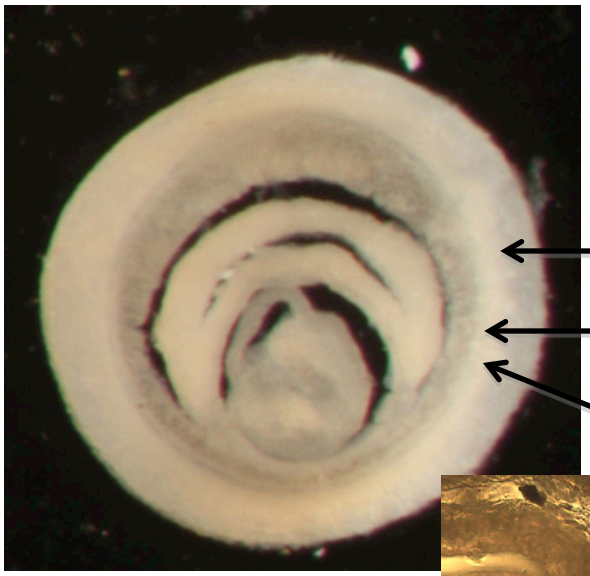
Heteronemertea sp Hyp2

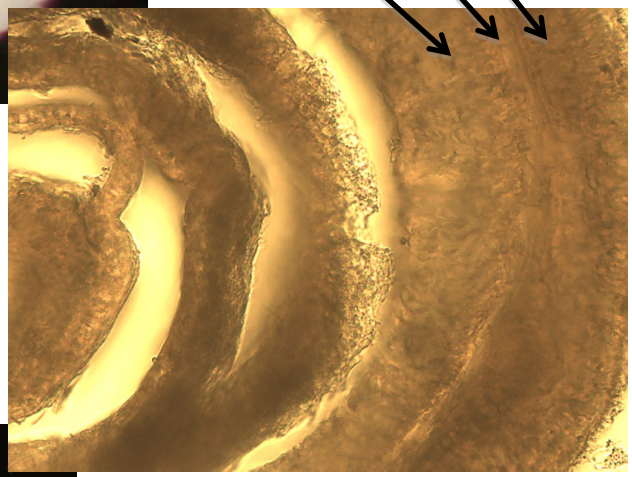


Elongate, smooth heteronemertean without cephalic groove or any hint of a furrow; CSO is apparent as a distinct pit and slightly thinned area; mouth seemingly far removed from tip of strongly tapered head; cirrus present. Musculature consists of well developed inner and outer longitudinal muscle layers (separated by a circular layer) with thickened dermis external to outer longitudinal. Color beige.

Heteronemertea sp SD2



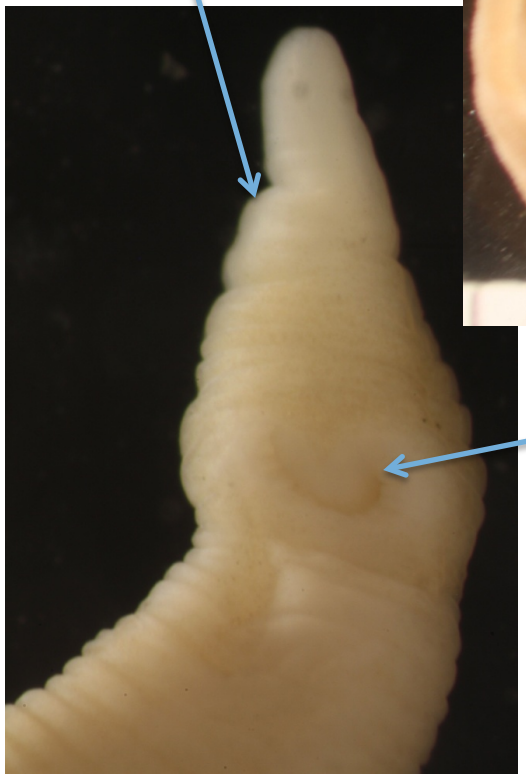




Smooth bodied heteronemertean without cephalic groove or furrow; CSO is distinctly C-shaped and often glistening; mouth often open or protruded; head more narrow than body but gently rounded. Most specimens represented by anterior fragments only. Most common at 60 m.

Lineidae sp LAH1

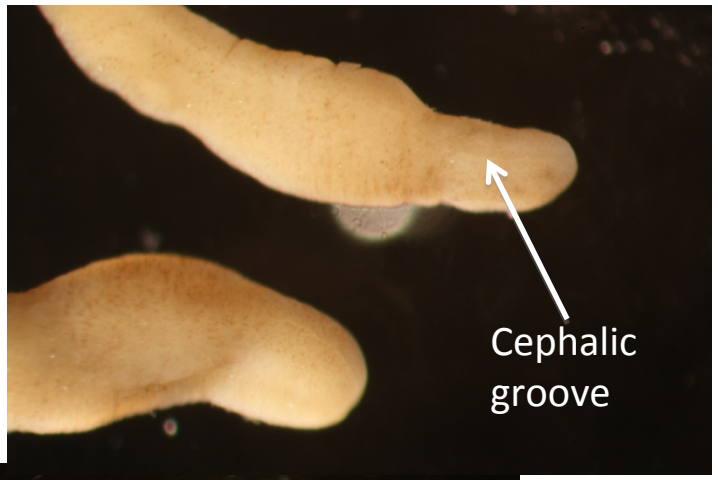
Specimens from Bight'13 Port of Los Angeles/Long Beach stations 8333, 8399, 8360, 8340, 8356. All between 10 – 20 m depth.



Elongate heteronemerteans with narrow, thin, very shallow cephalic slit (furrow-like); mouth large, centrally located, often gaping; head tapered with slightly rounded anterior end; anterior portion of body often wrinkled or deeply lined; cirrus present. Musculature typical heteronemertean type. Color beige to off-white. Body mostly uniform width except for tapering head and tail; not distinctly flattened posteriorly. Neurocord cells not observed.

Lineidae

Some specimens look distinctive; but may not provide enough information or distinguishing characters to ID with confidence. When in doubt, dissect to confirm musculature, clear for eyes if necessary, and back off to Class, Order, or Family.



Palaeonemertea