

Invertebrate communities



nrg

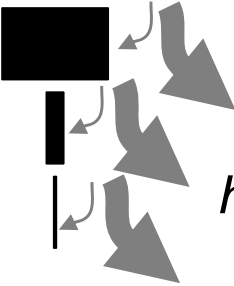


1° producers

2° prod/1° cons

3° prod/2° cons

4° prod/3° cons



heat

Distribution of marine life

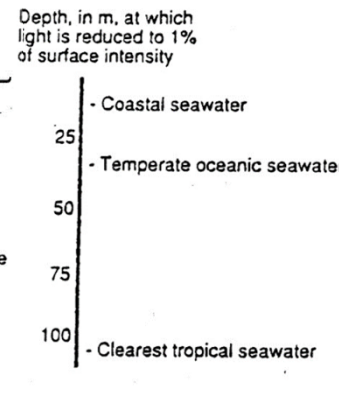
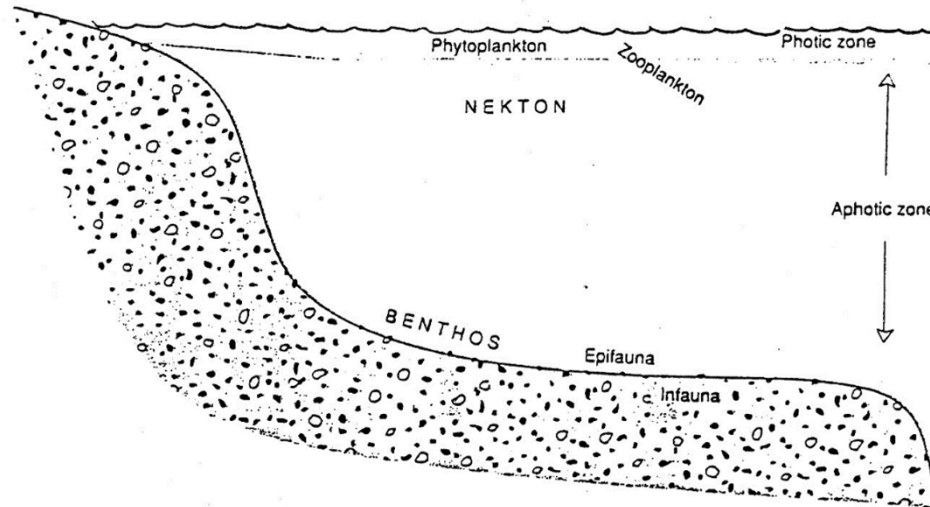
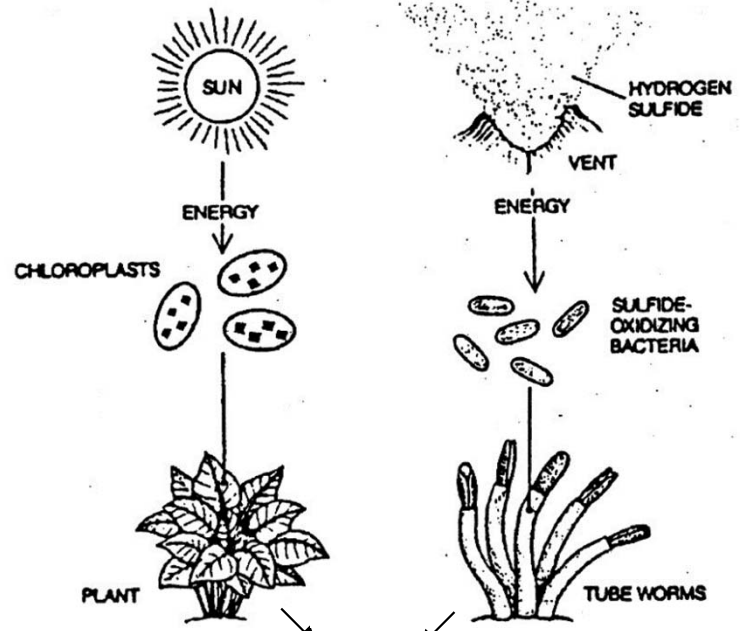


Figure 2.14 A spatial classification of marine organisms.

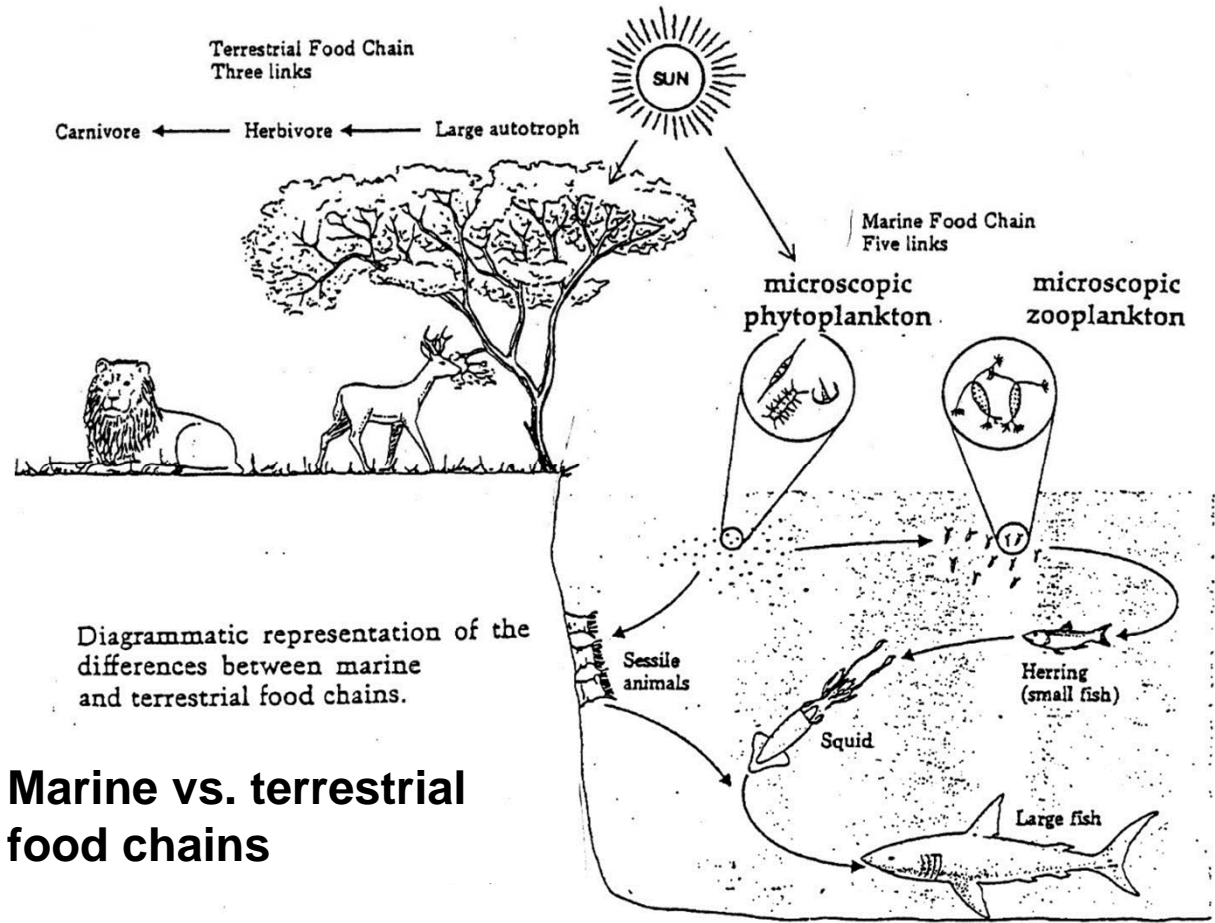
Sources of nrg input

PHOTOSYNTHESIS

CHEMOSYNTHESIS



Calvin cycle



Marine vs. terrestrial food chains

Variation in depth of the photic zone

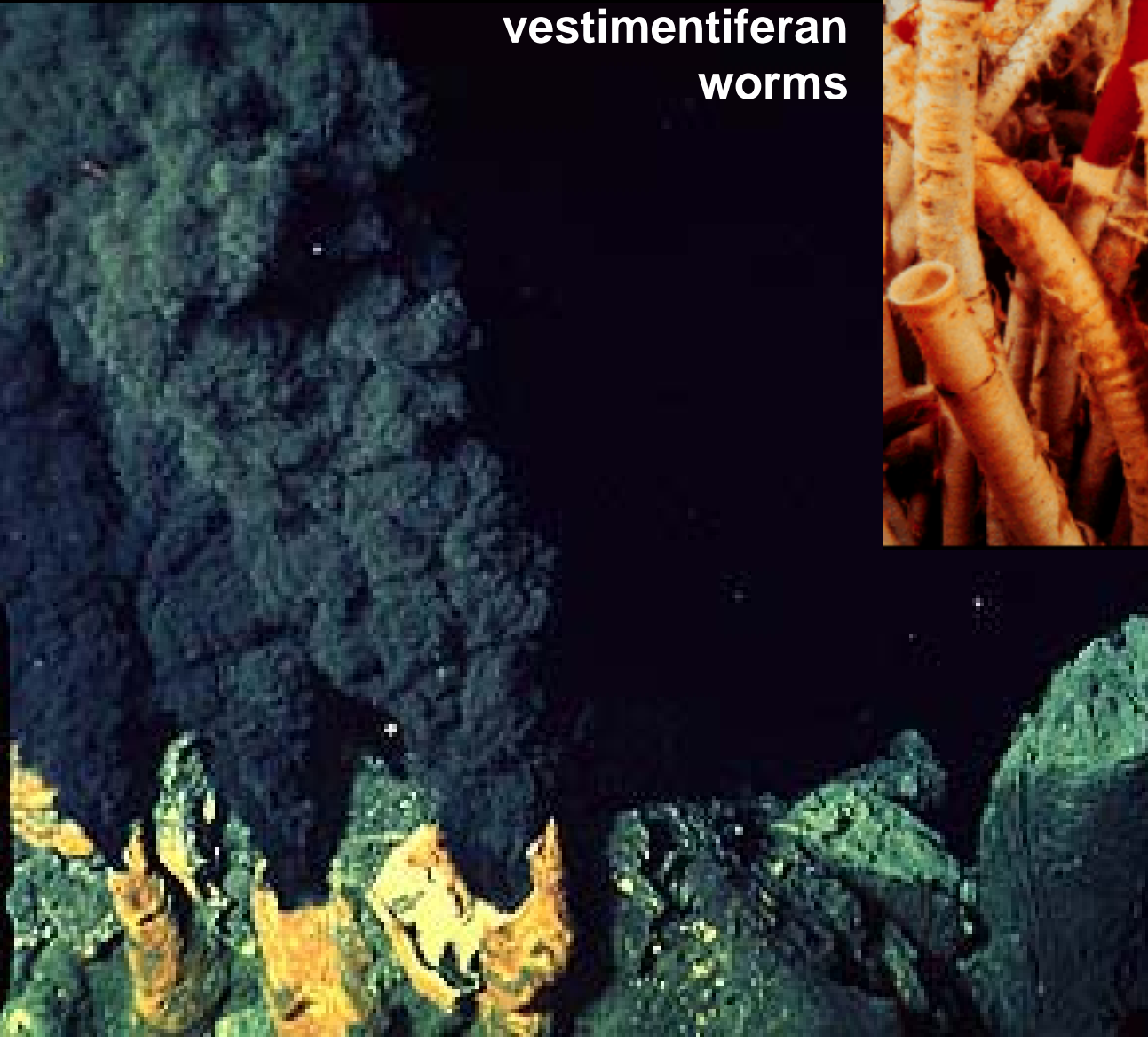


Ph. Annelida, Cl. Polychaeta
F. Siboglinidae

vestimentiferan
worms



0855
6305
6412
0923



big jellies



squid



small jellies



larvaceans



amphipods



krill



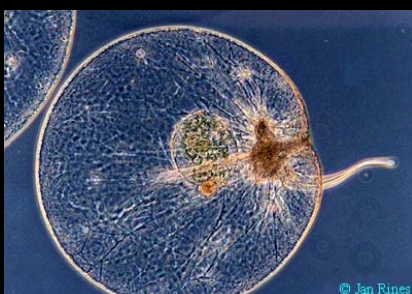
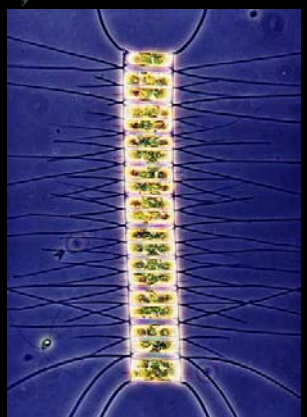
invertebrate larvae



copepods



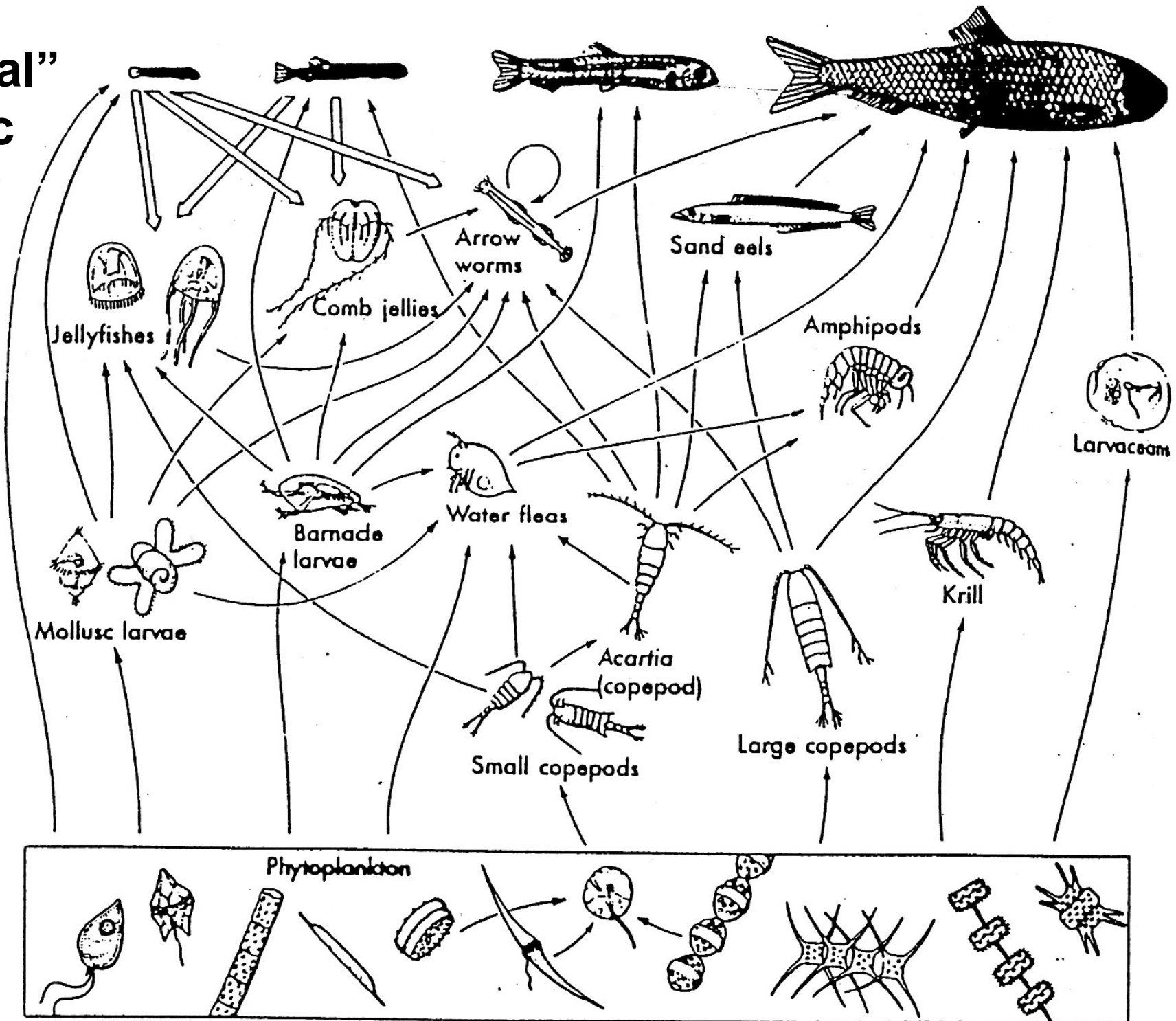
phytoplankton



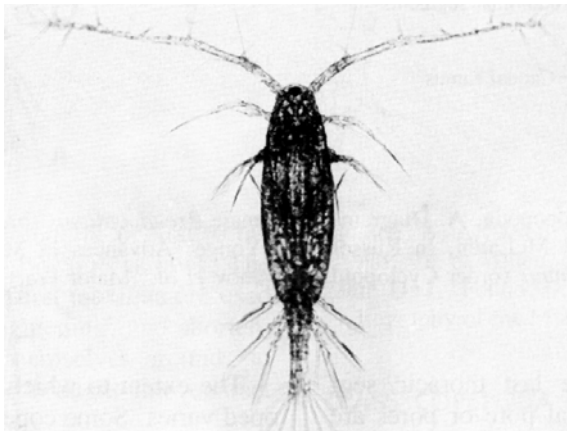
Plankton net



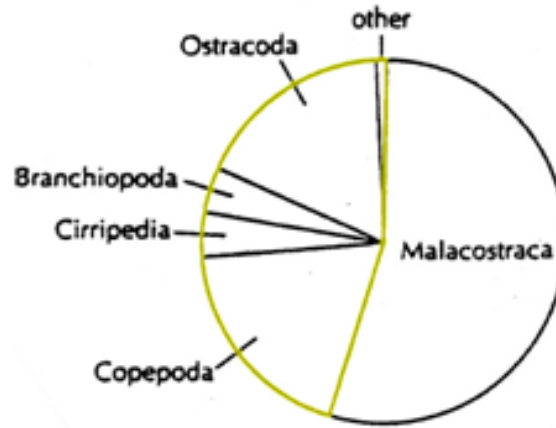
"Typical" pelagic food web



1° producers



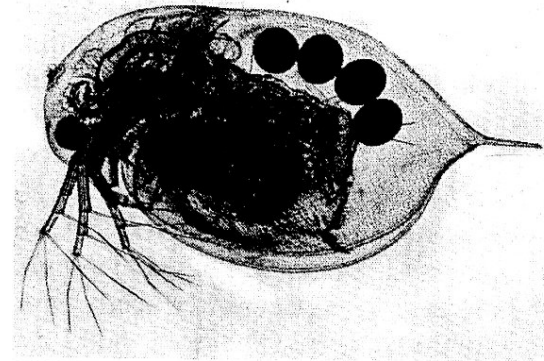
Subcl. Copepoda
e.g. *Calanus*



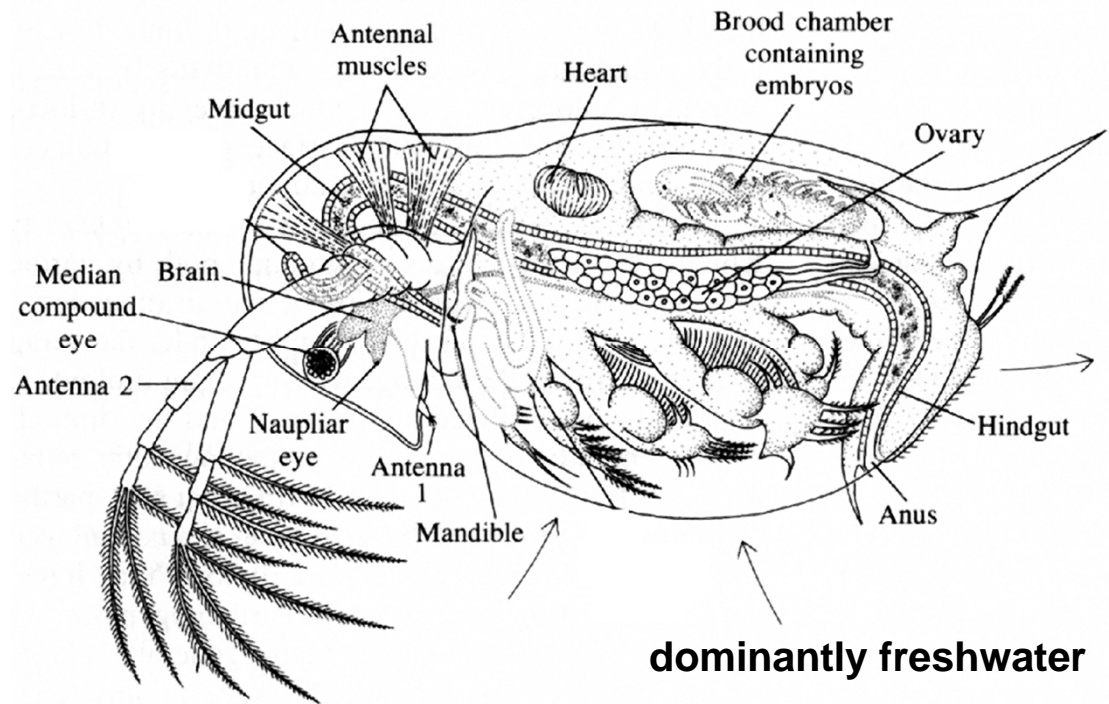
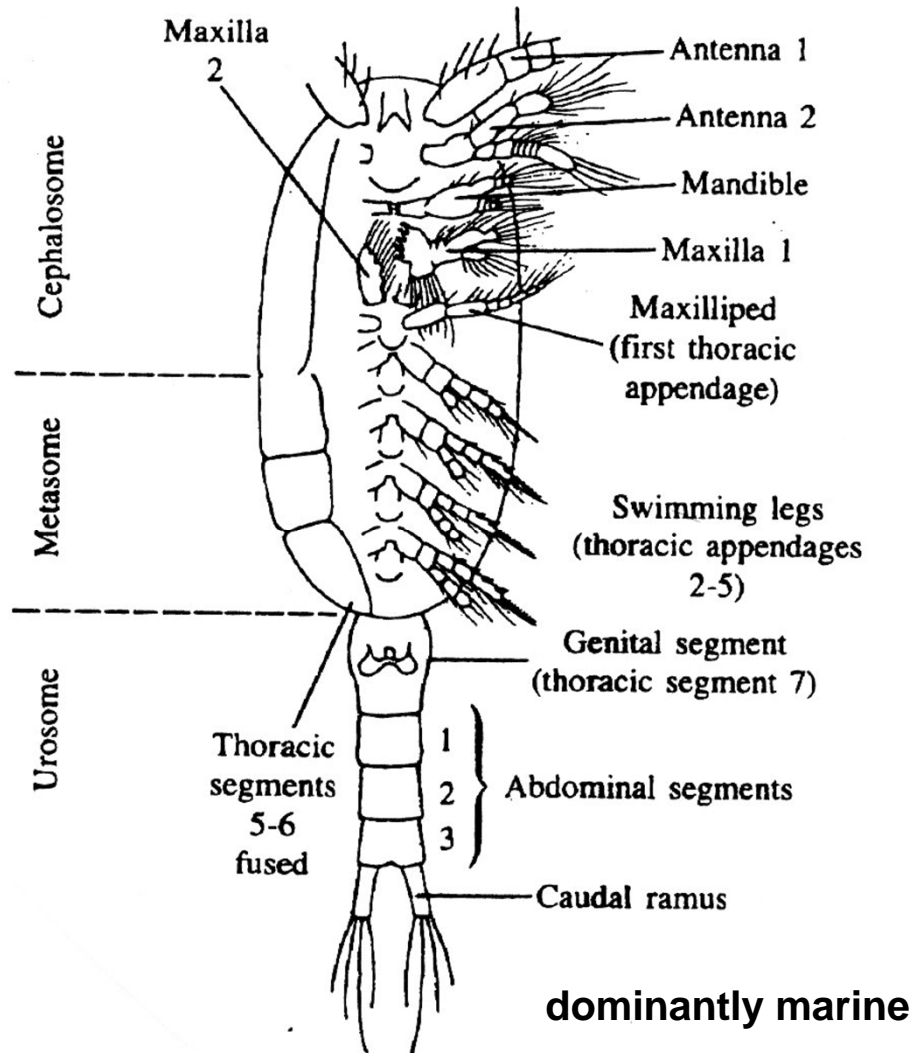
Ph. Arthropoda

Subph. Crustacea

Cl. Maxillopoda



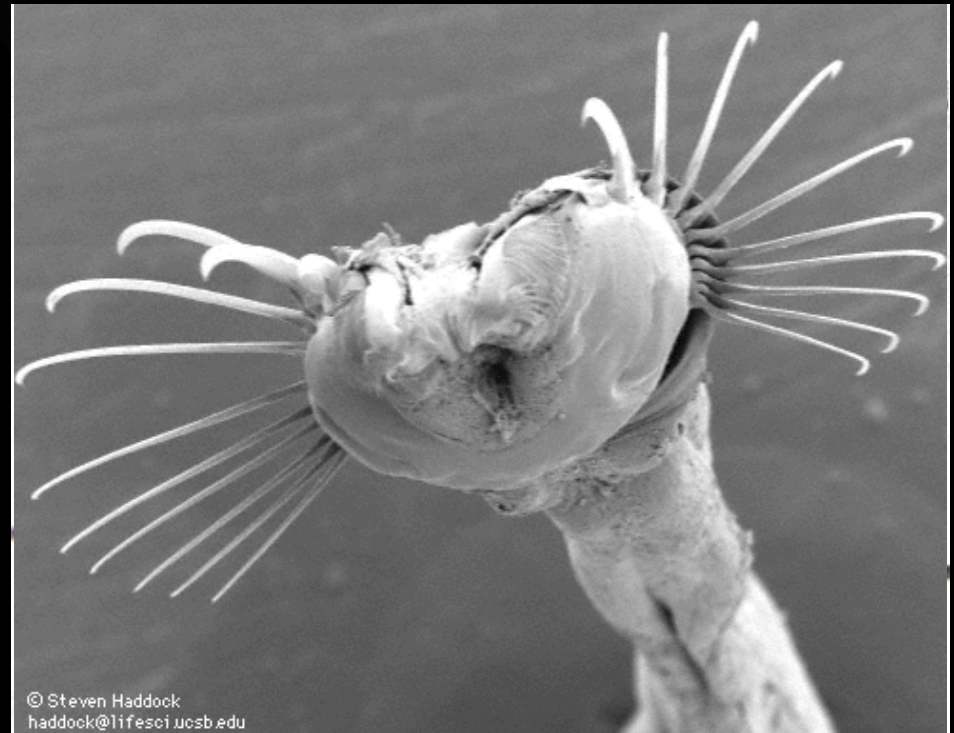
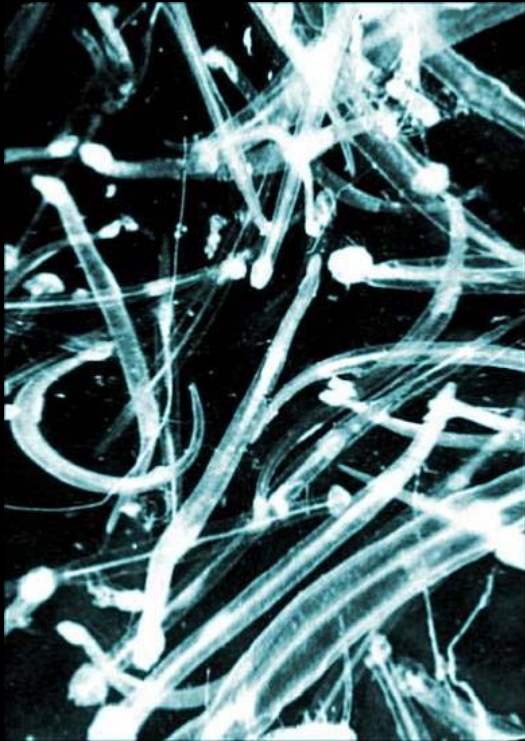
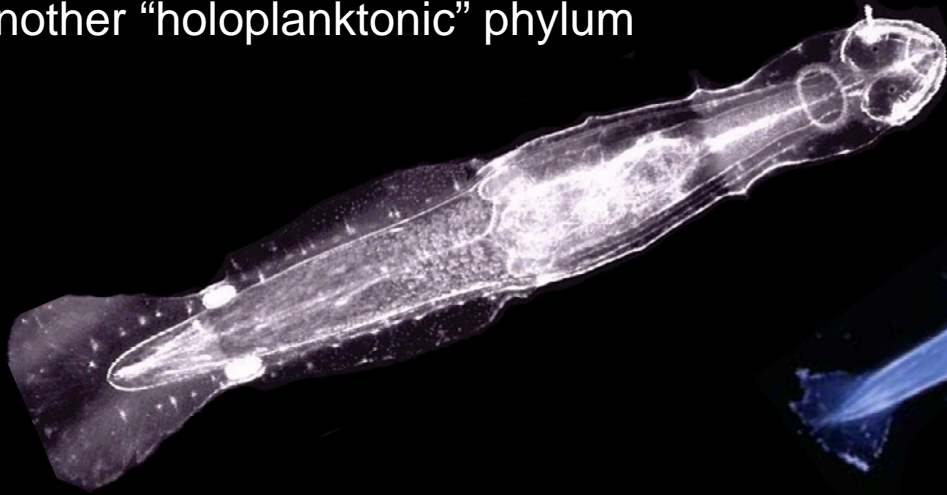
Subcl. Branchiopoda
"water fleas"
e.g. *Daphnia*



and introducing...

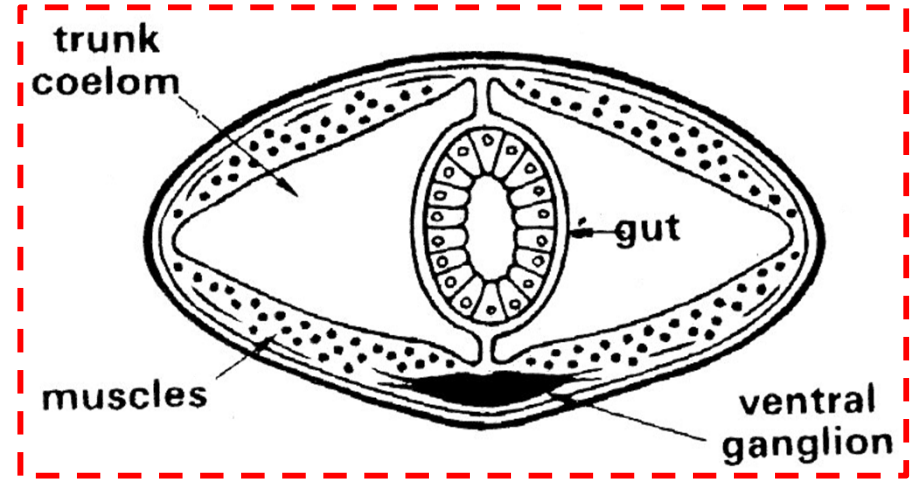
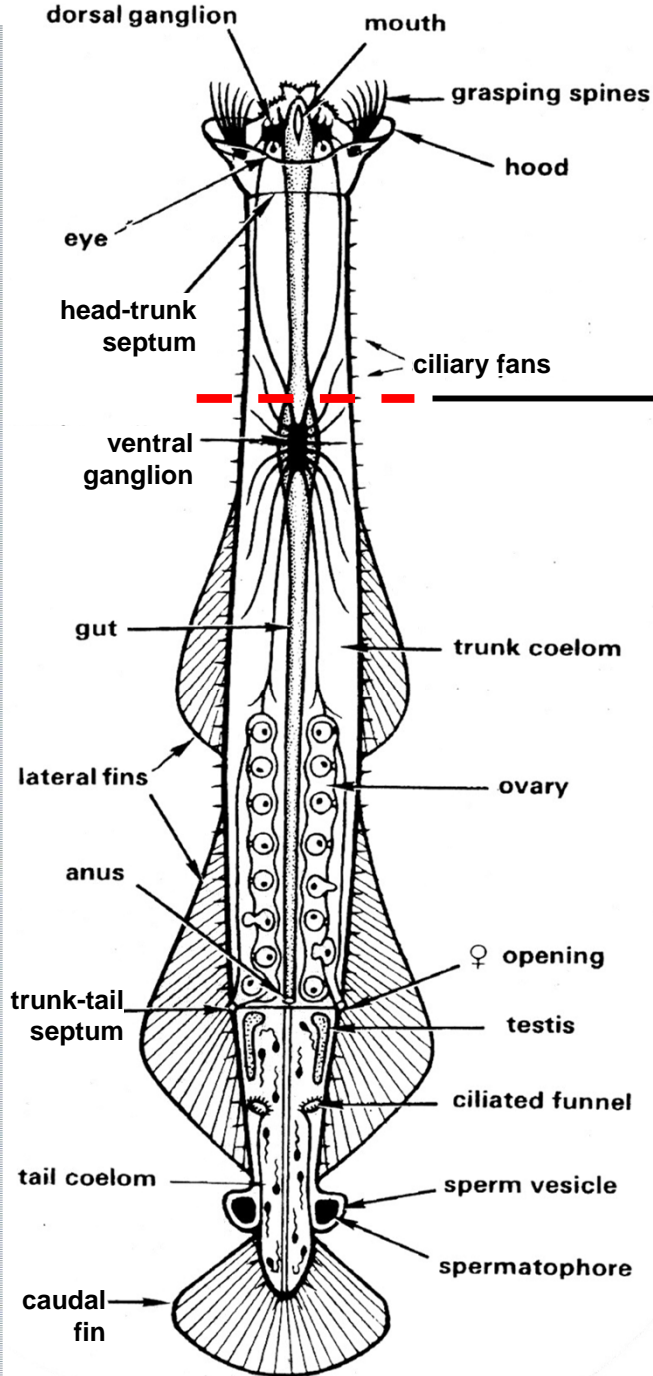
Ph. Chaetognatha

another “holoplanktonic” phylum

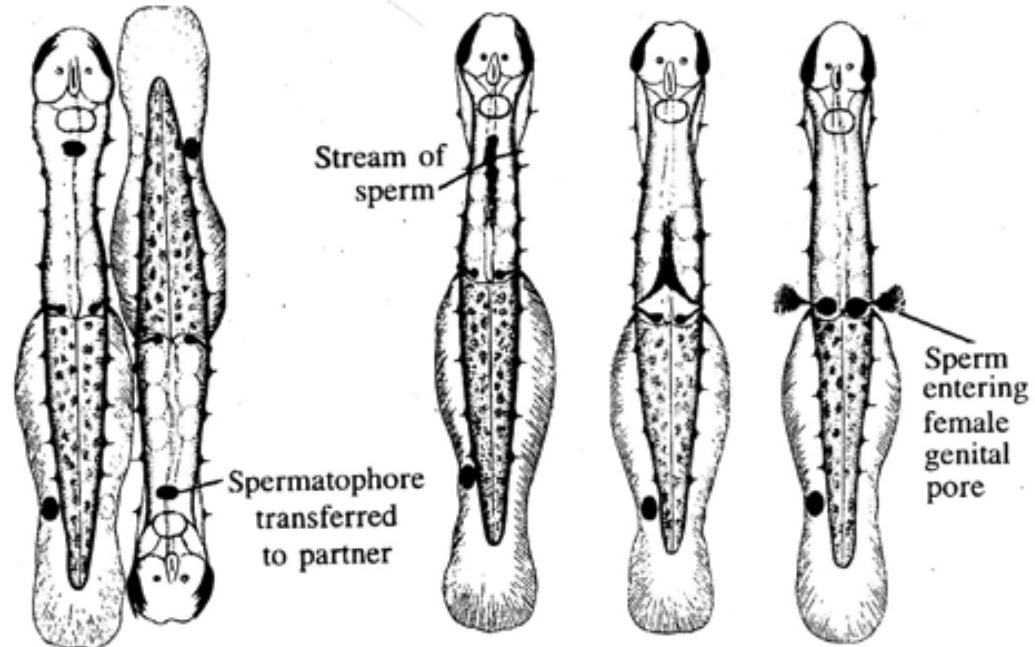


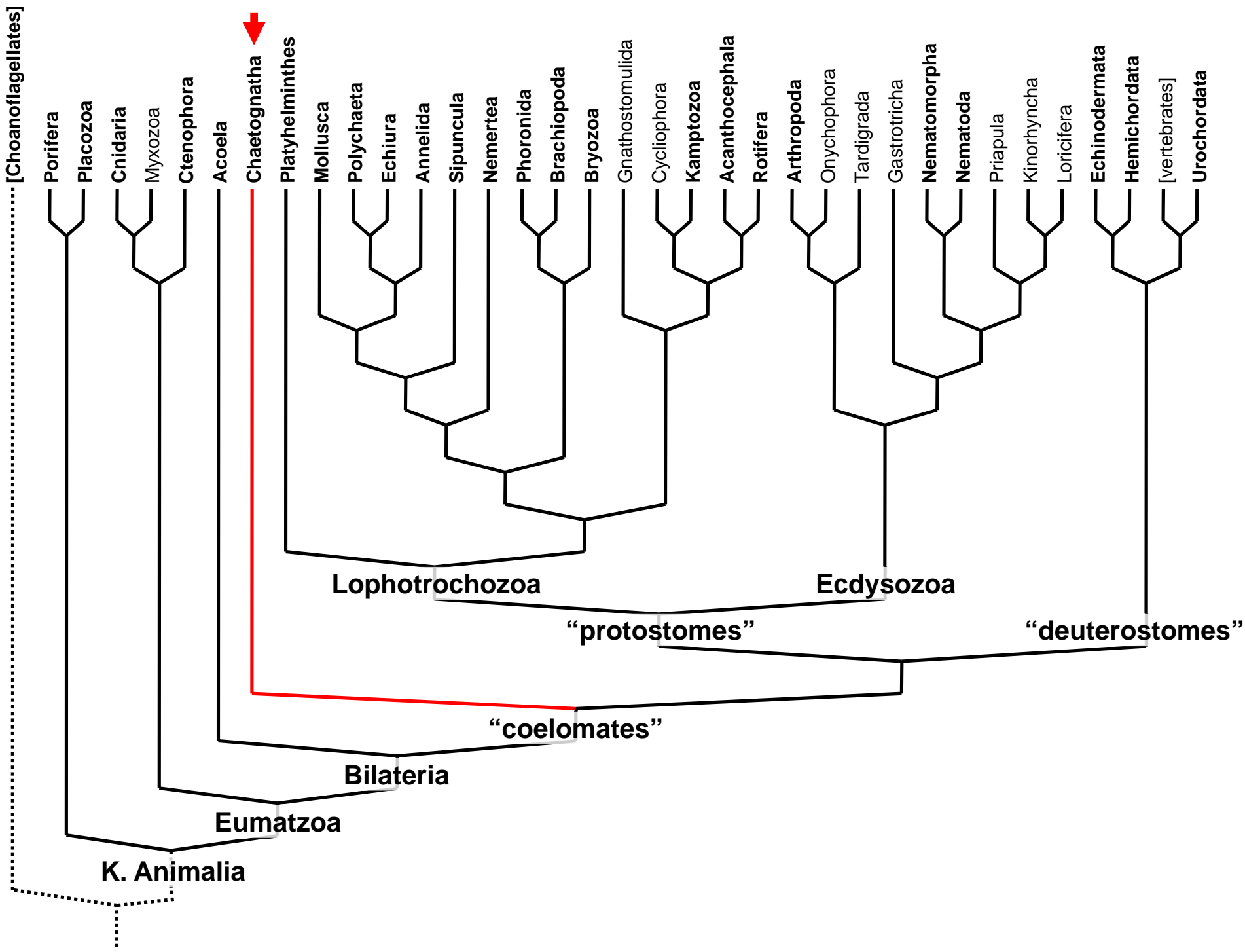
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Ph. Chaetognatha

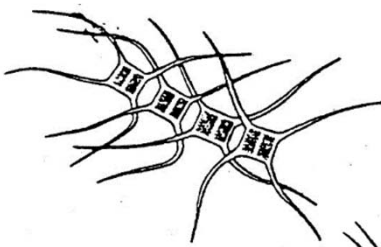


reciprocal sperm transfer in benthic *Spadella*

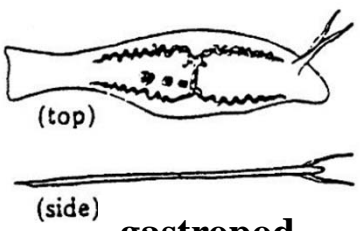
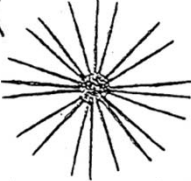




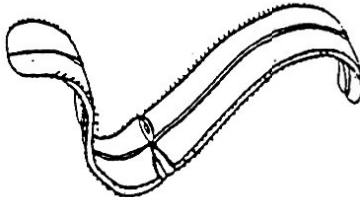
Sinking: a major challenge to planktonic communities



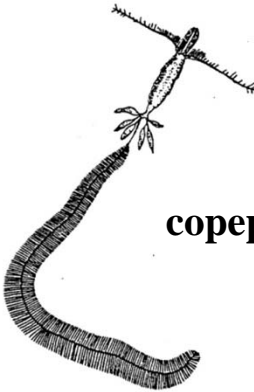
phytoplankton



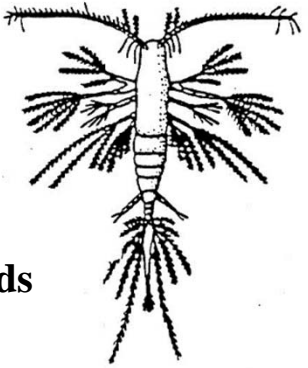
gastropod



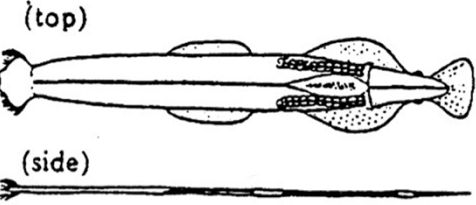
ctenophore



copepods

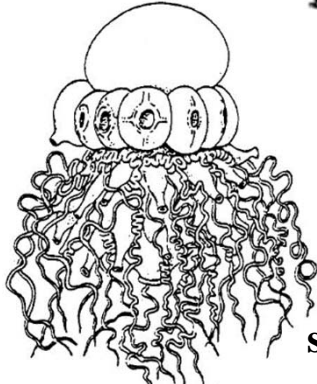
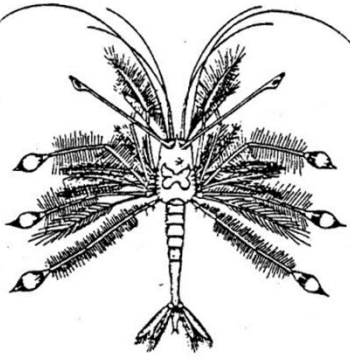
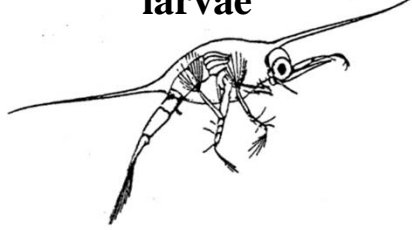


spirula



chaetognath

crustacean larvae

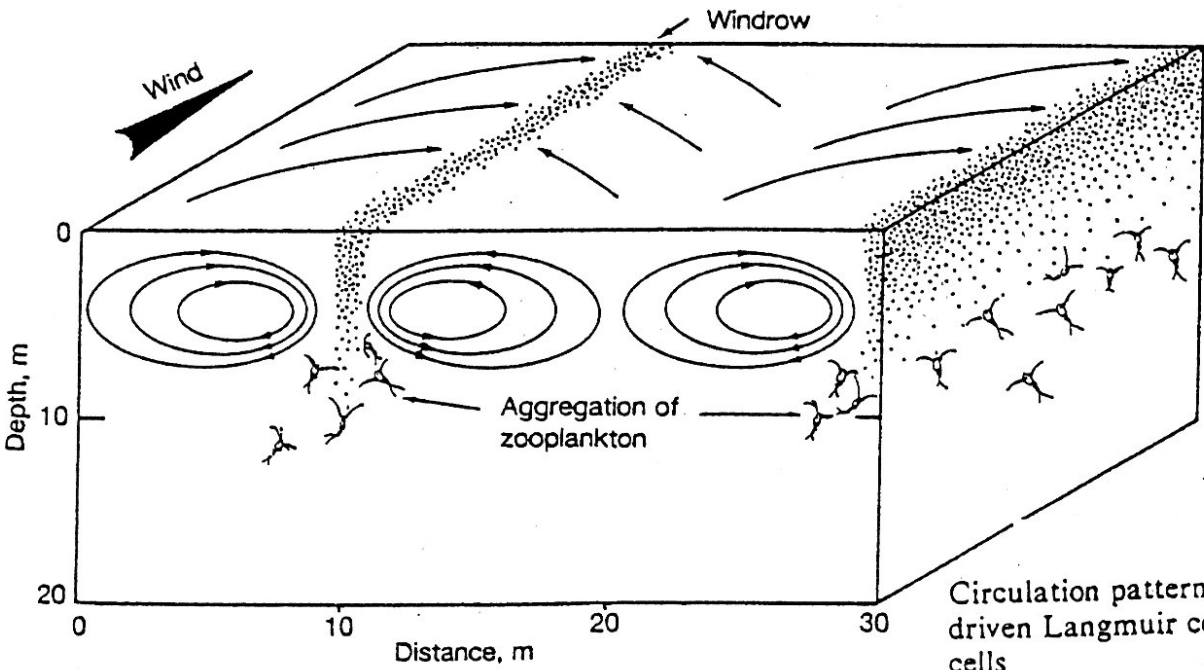


siphonophore

Swimming
High drag coefficient

- small size
- high surface area structures
- body flattening

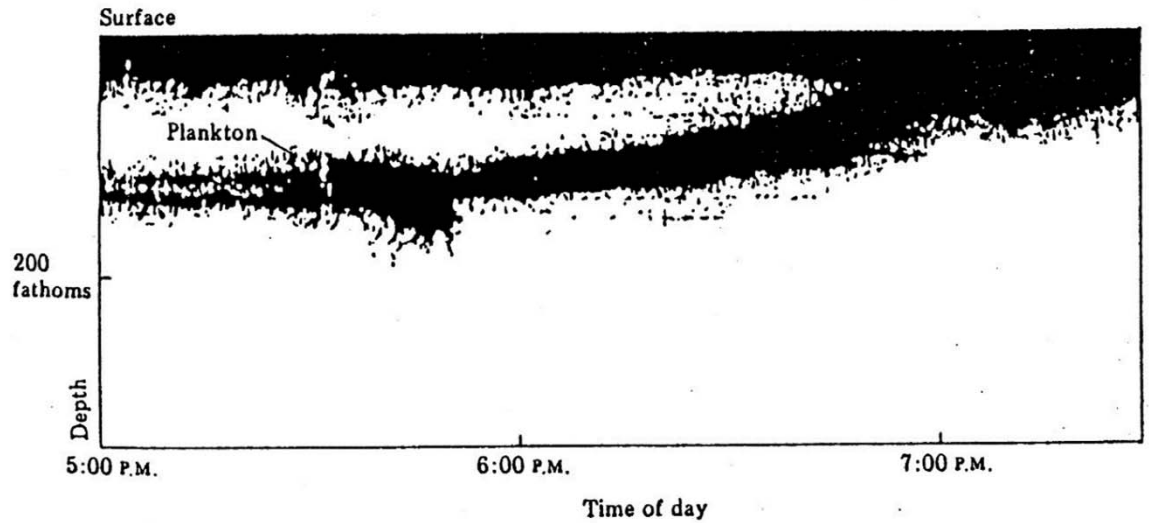
Buoyancy
Recirculation patterns



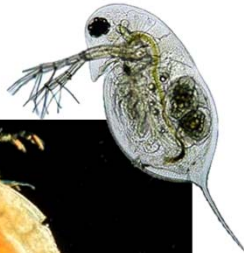
Circulation patterns of wind-driven Langmuir convection cells

Patterns of diel vertical migration

Figure 2.26 Sonogram record of movement of vertical migrating plankton.



Who is migrating?



→ 15-50% of zooplankton biomass

Why? Stich & Lampert (1981): costs and benefits of different migration strategies of two copepod species

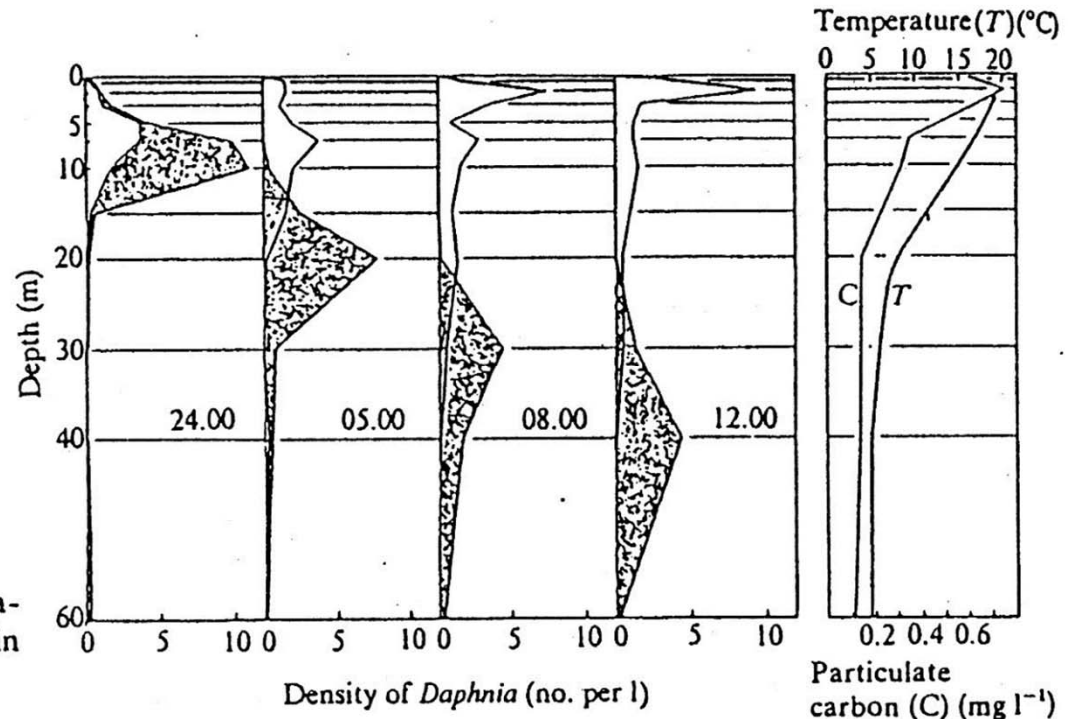


Fig. 1 Typical examples of the different diurnal vertical migrations of *D. galeata* (open area) and *D. hyalina* (shaded area) in Lake Constance, July 1977,

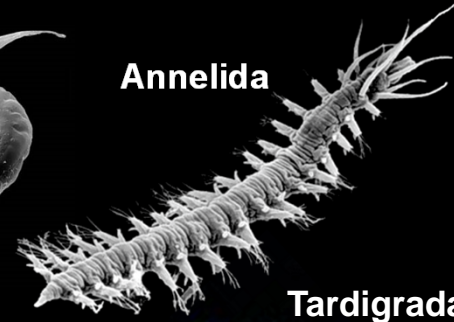
Meiofaunal communities

- *small size*
- *elongate shape*
- *attachment to particles*
- *vertical migration*

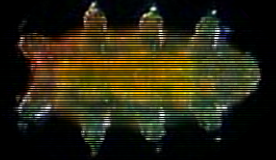
Nematoda



Annelida



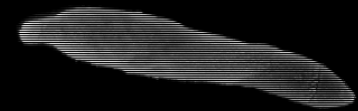
Tardigrada



Crustacea
(Isopoda)



Platyhelminthes



Gastrotricha



Kinorhyncha



Rotifera



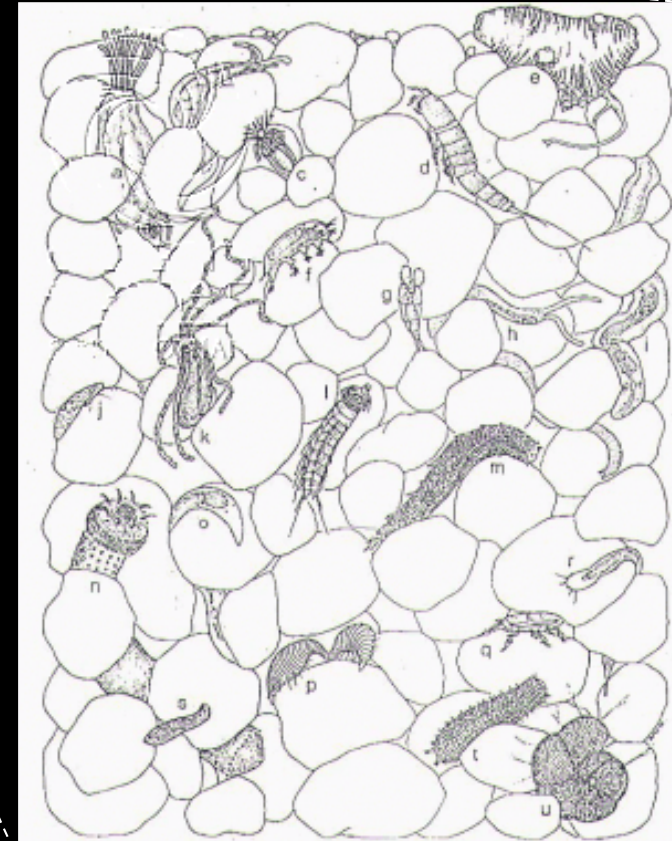
Gnathostomulida

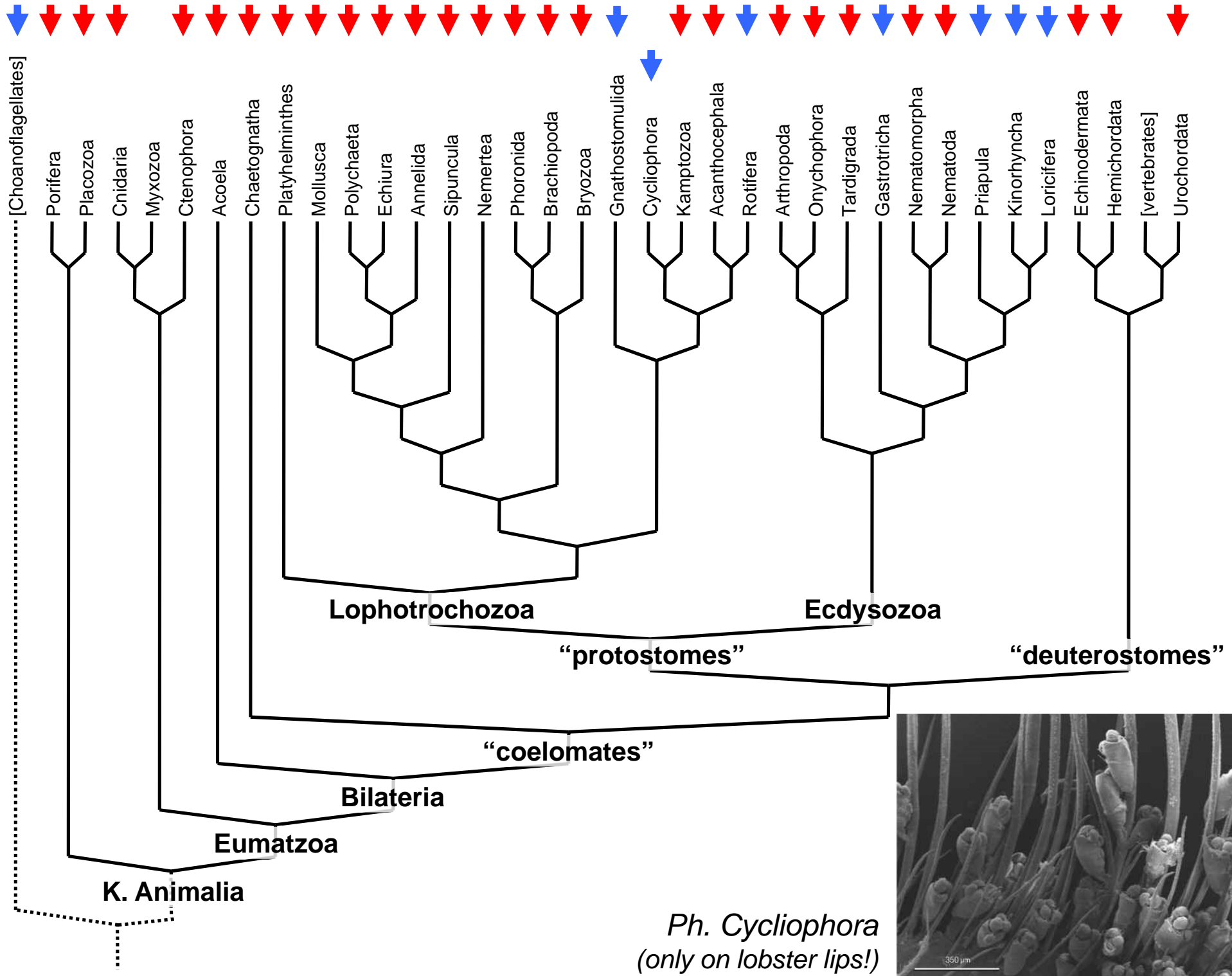


Priapulida

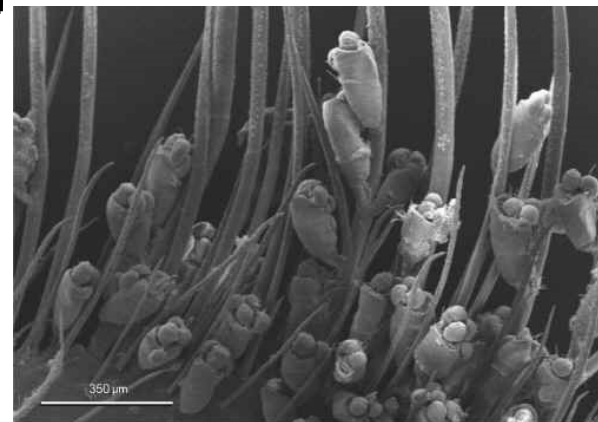


Loricifera





Ph. Cycliophora
(only on lobster lips!)

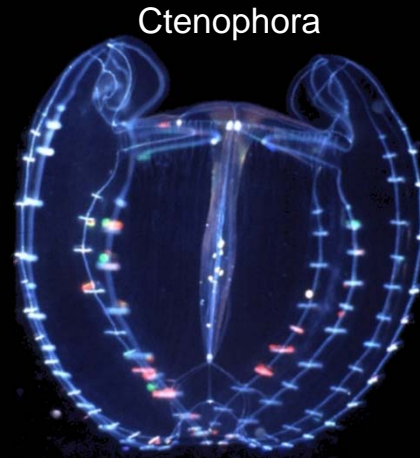




Nematoda
C. elegans



Chaetognatha



Ctenophora



Annelida



Brachiopoda

invertebrate diversity



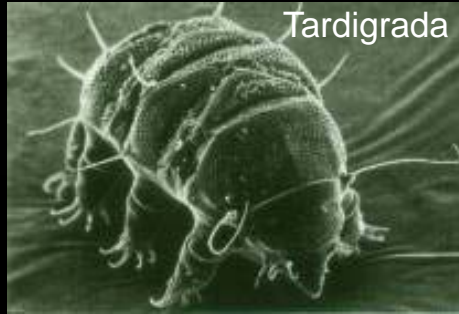
Hemichordata



pluteus



Nemertea



Tardigrada



Crustacea



Echinodermata



Porifera



Bryozoa



Priapulida



Cnidaria