

CHAETOGNATHS (Revisited)

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Some years ago, in fact at the end of the past century (yes, it was the year 1999!) I wrote my first article in [Micscape](#) about a strange marine creature called a chaetognath. Speaking about its development, it seems chaetognaths have existed without major changes in their morphology for around 500 000 000 years and today specimens are similar to some fossils found in Cambrian deposits.

At this time, (not Cambrian but 1999!) I owned only a little black and white analogue camera fitted onto an old Wild M20. Eighteen years ago, I made new pictures of these creatures with a small color analogue camera, and more recently using a 12 Mpixel digital camera.

The field of view of a small sensor camera is often too narrow to capture the whole specimen. So many pictures (between 5 to 8) are taken and then stitched manually.

It's a little difficult is to capture the specimen in a sample jar because :

- it is very transparent (an another nickname is *glass worm*)
- it is often glued onto the wall or the bottom of the jar
- its length is larger than the hole of the eye dropper I use! (This last point may be fixed by mounting the tube of an eye dropper in reverse: ie the thin tip inside the rubber bulb.)

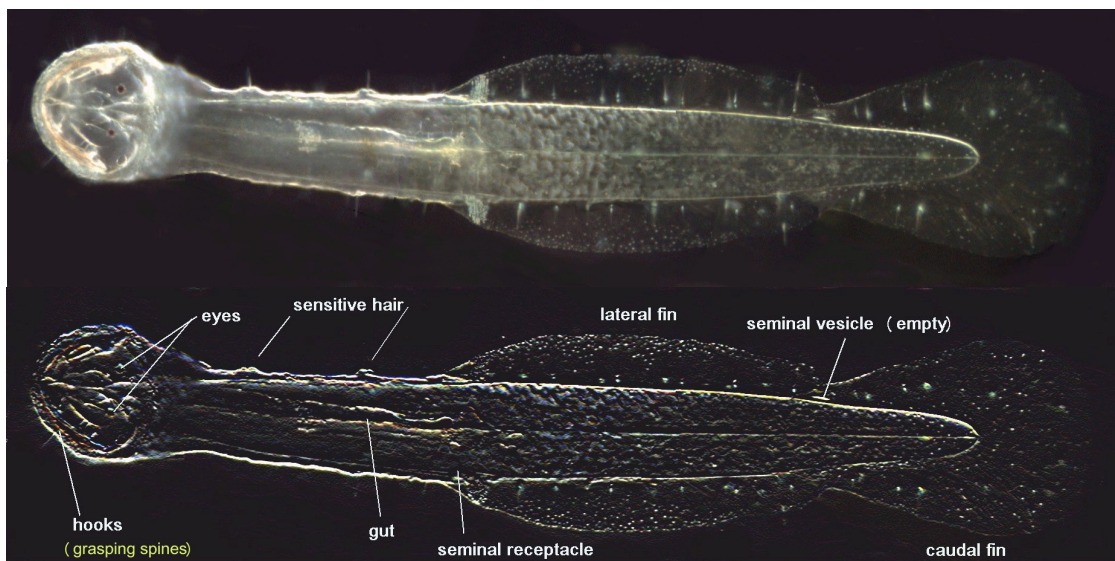
In the Mediterranean Sea, I have found 2 species of chaetognaths: *Spadella* and *Sagitta*. All pictures taken on living specimens and without coverslip.

The shape of the bodies explains the term of *arrow worm* often used familiarly. An advantage of their transparency is to make it easier to see internal structure, but if the specimen body is parallel to the slide, the head makes an angular position with it, in their hunting attitude and can't be clearly seen at the same focus level as the body.

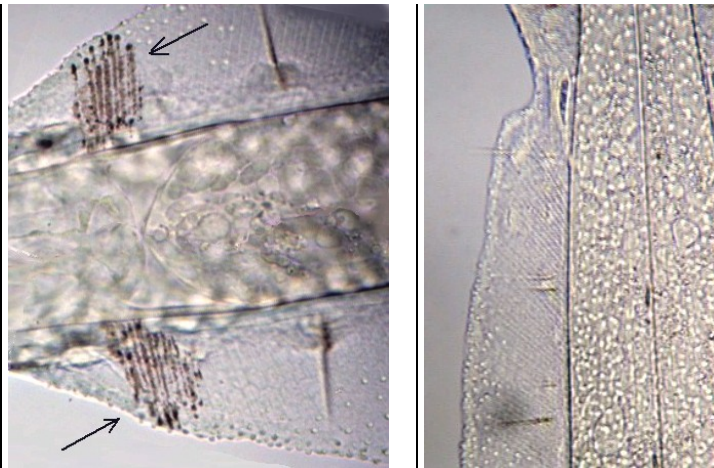
The same species I found in 1999: *Spadella*



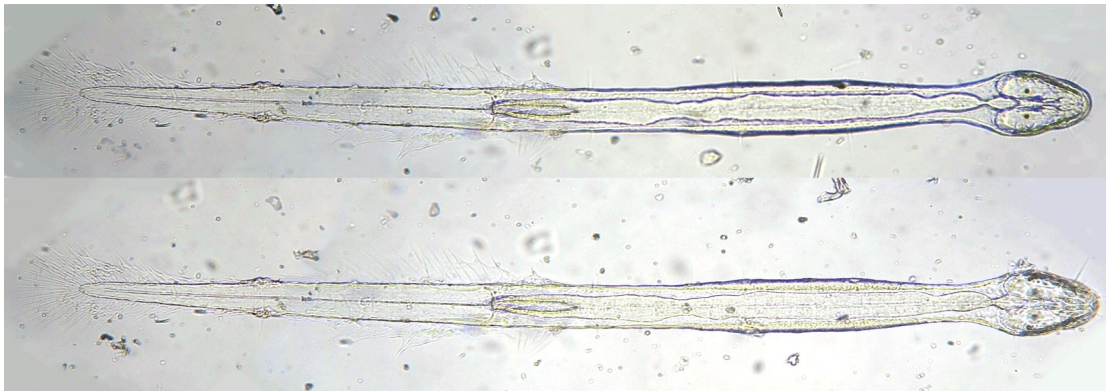
Same specimen in darkfield and below it is a simple schematic of the main organs :



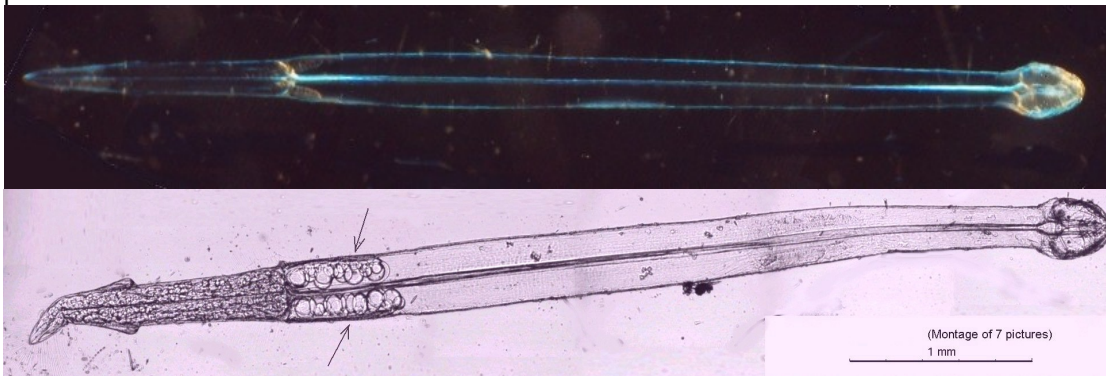
A zoom (from the first picture) of structures I can't identify: *arrows*. May be its related to the seminal receptacle? The righthand picture shows detail of a seminal vesicle. Chaetognaths are hermaphrodites i.e.: the same individual is both male and female. Young do not have a larval stage.



Another species: *Sagitta* – The same very transparent specimen is shown at two levels of focus:



Not the same specimen but in darkfield! On the 2nd picture (old B&W picture) embryos are present.

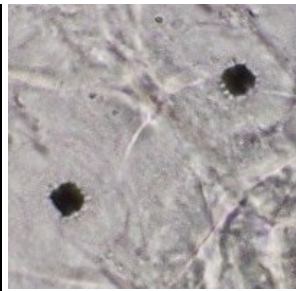


On a *Sagitta* specimen, a little flattened by the cover slip!, it's possible to observe details of the head: mainly the grasping spines (H) and the teeth (T). Eyes are clearly visible.



Each eye is made of five ophthalmic cells probably surrounded by hairs (sorry I don't have a picture with higher magnification but cells were clearly seen in the eyepieces.)

Detail from head picture above (scale 1/1)



Eyes are not useful to capture prey! In fact, movements of copepods for example, are detected by sensitive bristles or hairs covering the body.

If chaetognaths are great predators for copepods and even fish larvae, they too have their predators! The picture below shows an unidentified (for me!) organism sucking up a whole specimen, only the chaetognath head protruding at the right side of the organism is visible!

Note : it's NOT the hatching of a young chaetognath and the unknown organism is NOT an egg!



****Addendum:** Not a very good picture, but it illustrates the hunting position of the head: (taken without a coverslip of course)



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and copy to an email program.)

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