



Chapter 8 Pelagic Mollusca

"brighter than glass, and yet, as glass is, brittle"

Department of Oceanography

廈門大學

Xiamen University

References

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- **张福绥, 1964. 中国近海的浮游软体动物 I. 翼足类、异足类及海蜗牛类的分类研究. 海洋科学集刊, 5: 125 - 226**

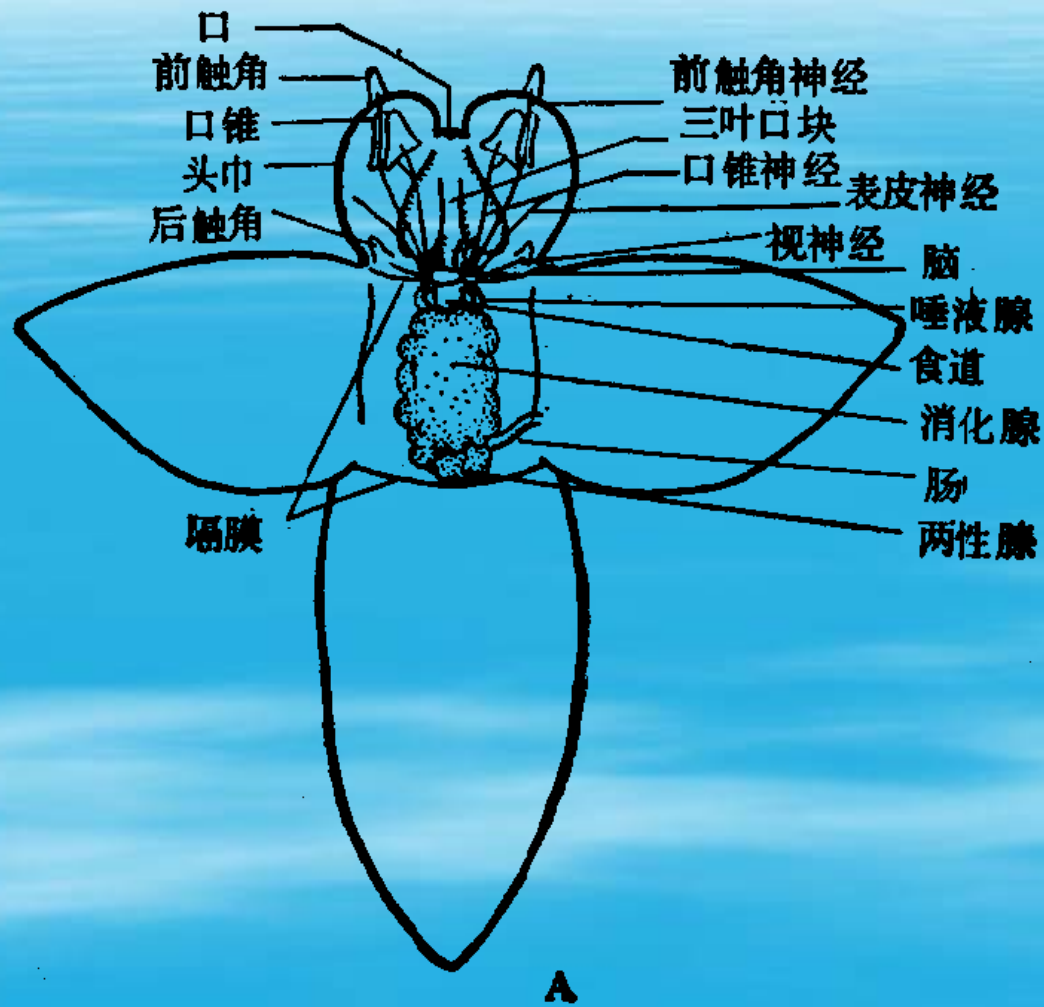
Introduction

In the molluscan phylum the holoplanktonic species do not form a group on their own, but representatives of various taxonomic groups independently developed a holoplanktonic way of life. The most important among them are the so-called 'Pteropoda', an obsolete, but quite practical name for what is officially indicated as Mollusca, Thecosomata. Also the many species of the Heteropoda are holoplanktonic. Finally, a restricted number of species within the large group of the Nudibranchia have the same way of life.

- **Gastropoda**（腹足纲）
- **Opisthobranchia**（后鳃亚纲）
- **Pteropoda**（翼足目） **Gastropeteridae**（腹翼螺科） **Phyllirrhoidae**（波叶海牛科） **Glaudidae**（海神鳃科）
- **Prosobranchia**（前鳃亚纲）
- **Heteropoda**（异足亚目） **Janthiniidae**（海蜗牛科）

Pteropoda 翼足类

- **a pair of parapodium is modified as a swimming organ (fin)**
- **visceral mass are anisomeric**
- **the nerves are not twisted (detorsion)**
- **hermaphrodite**
- **larval stage**



Classification

with shell, head indistinct, one pair tentacles

..... **Suborder Thecosomata** 被壳亚目

with one left-handed spiral or straight calcified shell

..... **Euthecosomata** 真壳部

left handed spiral shell.....Limacinidae 蛞蝓科

straight or some what backward bending shell

..... **Cavoliniidae** 龟螺科

typical form with one cartilaginous inner shell

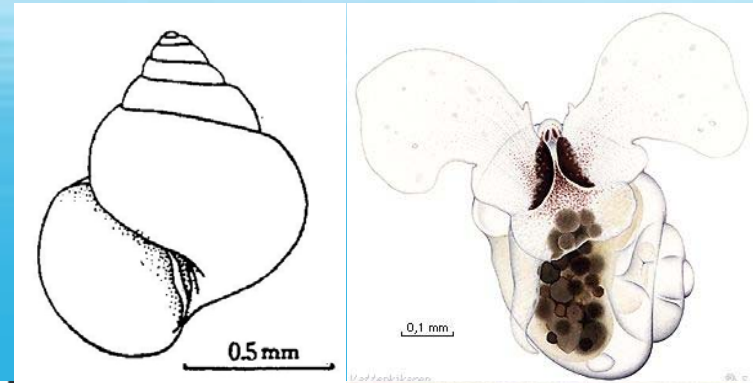
..... **Pseudothecosomata** 假壳部

without shell, head distinct, two pairs tentacles

..... **Suborder Gymnosomata** 裸体亚目

Limacinidae 蛭螺科

- small, thin, fragile left-handed spiral shell
- mantle cavity on dorsal side
- single lobed fin
- *Limacina*



Cavoliniidae 龟螺科

Shells are straight or slightly curved.

transverse section circular

smooth shell surface.....*Creseis* 笔帽螺属

transverse section flat

aperture oval, shell with ring-like constriction

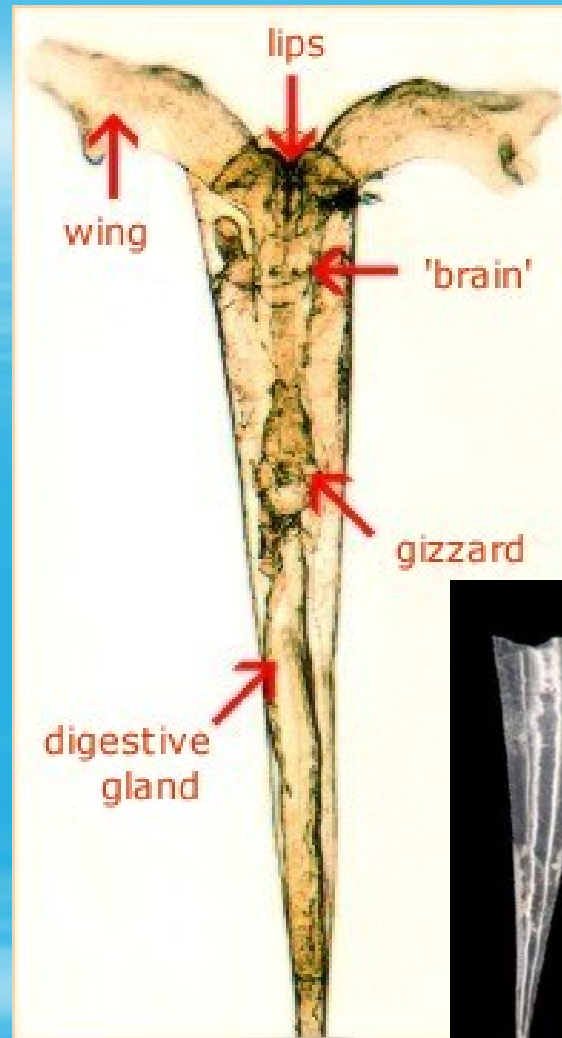
.....*Hyalocylix* 玻杯螺属

aperture constricted

**elongated aperture without thickened margin, small
posterior foot lobe..... *Cavolinia* 龟螺属**

Creseis 笔帽螺属

Creseis has a needle-shaped, lightly calcified external shell, and a pair of wing-like flaps which are used in swimming. It feeds by trapping other plankton in a transparent mucous web which it suspends above it in the water.



Creseis acicula

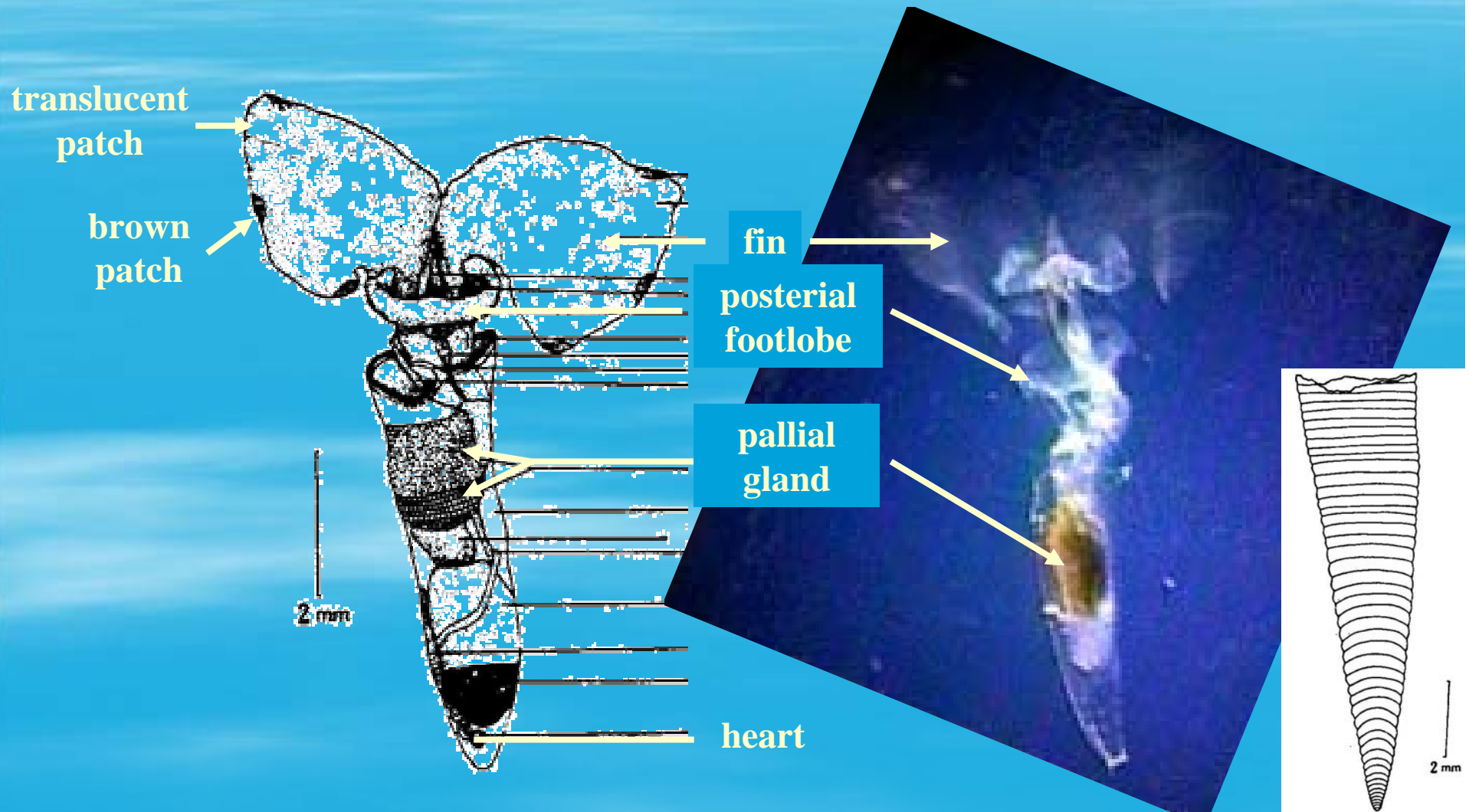


Creseis virgula conica

Photo: Daniel L. Geiger

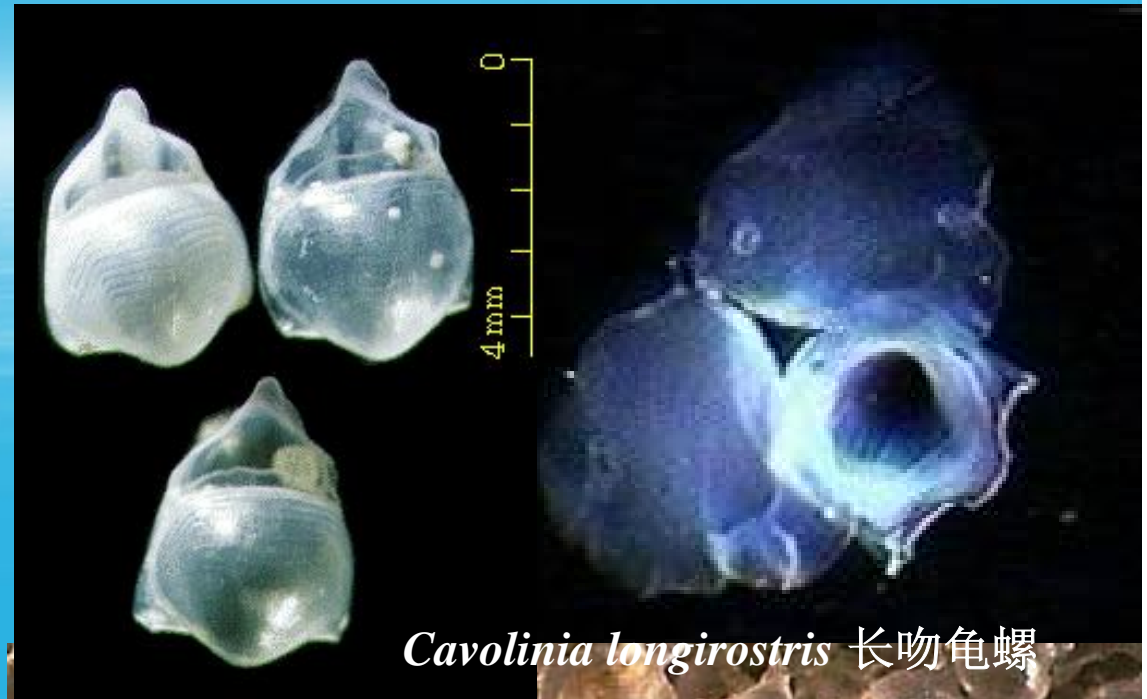
■ *Hyalocylix striata* 玻杯螺

The shell is cone-shaped, slightly curved dorsally and completely transparent. The opening is oval in transverse section. The surface of the shell has transverse thickened bands that progressively get wider apart near the aperture. The animal is easily recognised by the very large fins.



- *Cavolinia* 龟螺属

A very distinctive shape of shell with a marked bulge on the ventral plate. The species are protandric hermaphrodites.

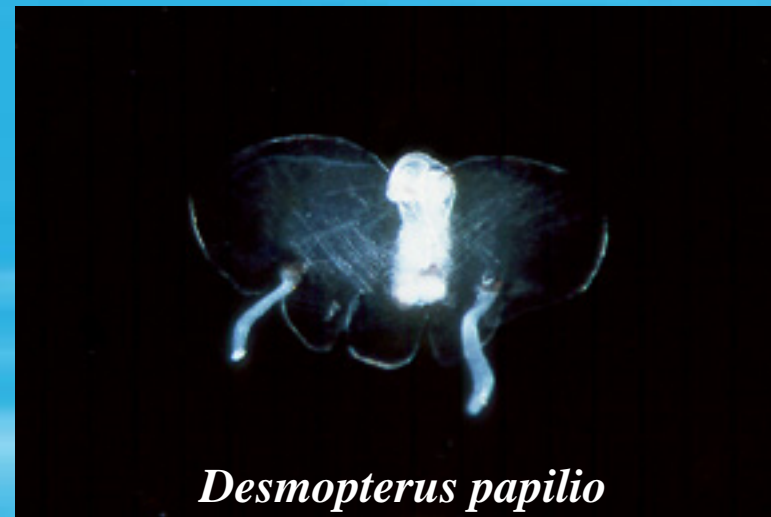


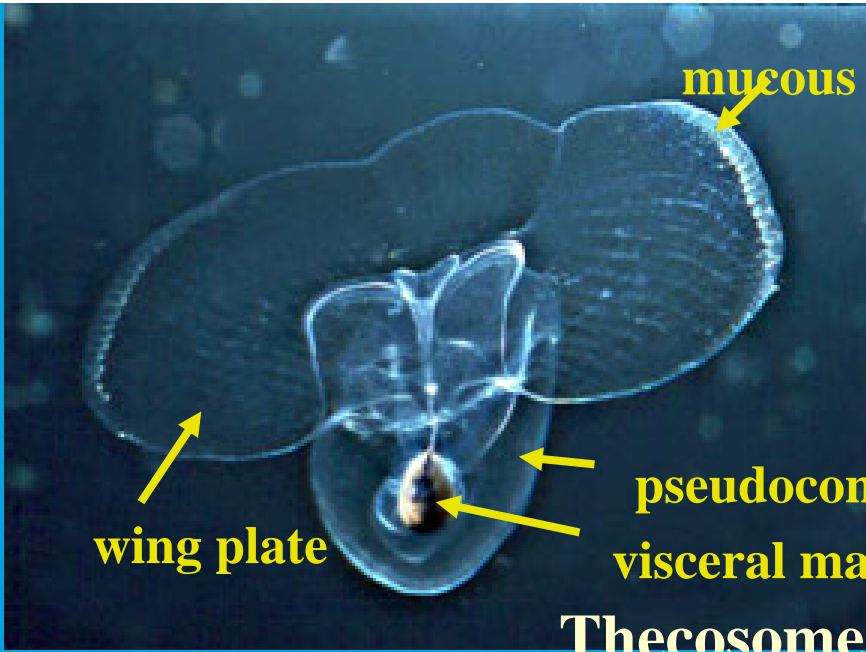
Cavolinia longirostris 长吻龟螺



- *Desmopterus papilio* 蝴蝶螺

There is no shell. The animal has wings that are disc-shaped and transparent. There are two long tentacles off the lateral wings. The body is large and situated centrally between the lateral wings.





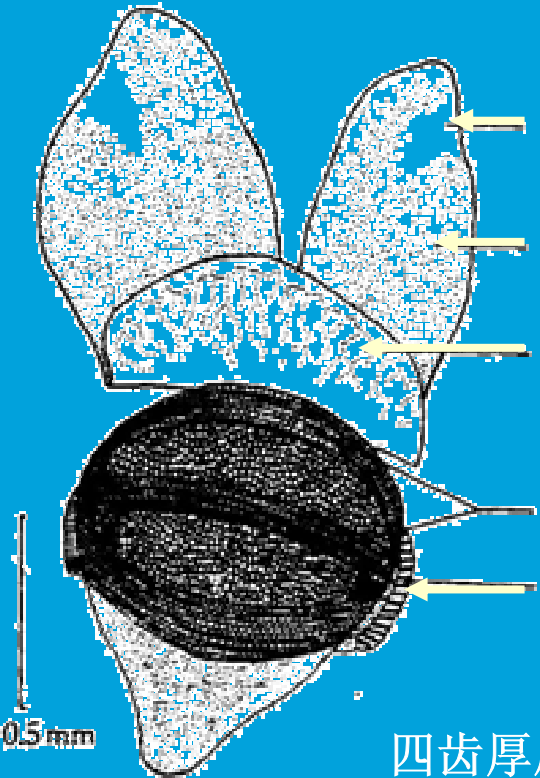
mucous glands

wing plate

pseudoconch

visceral mass

Thecosome Pteropod



translucent patch

fin

posterior footlobe

gill

0.5 mm

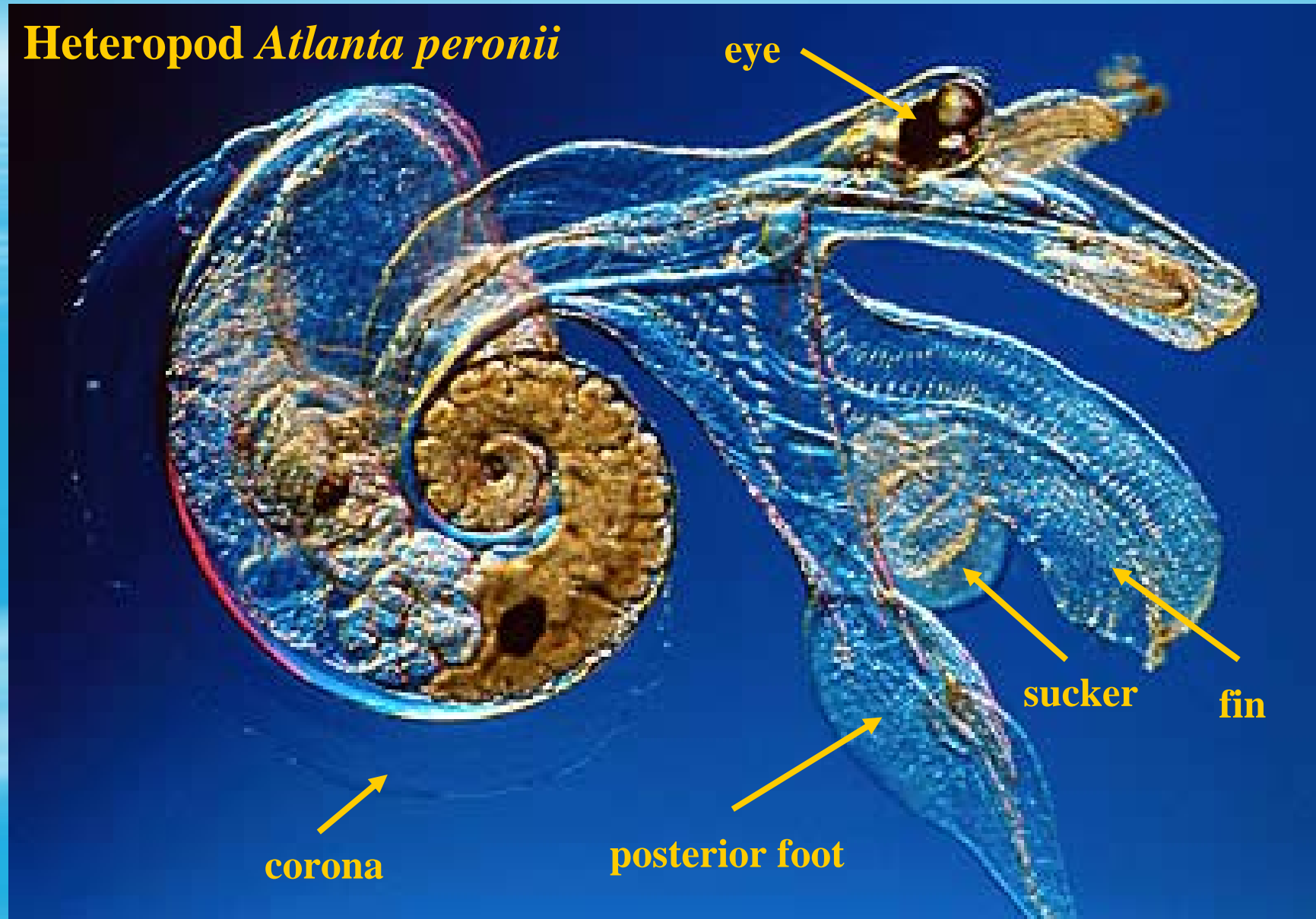
四齿厚唇螺

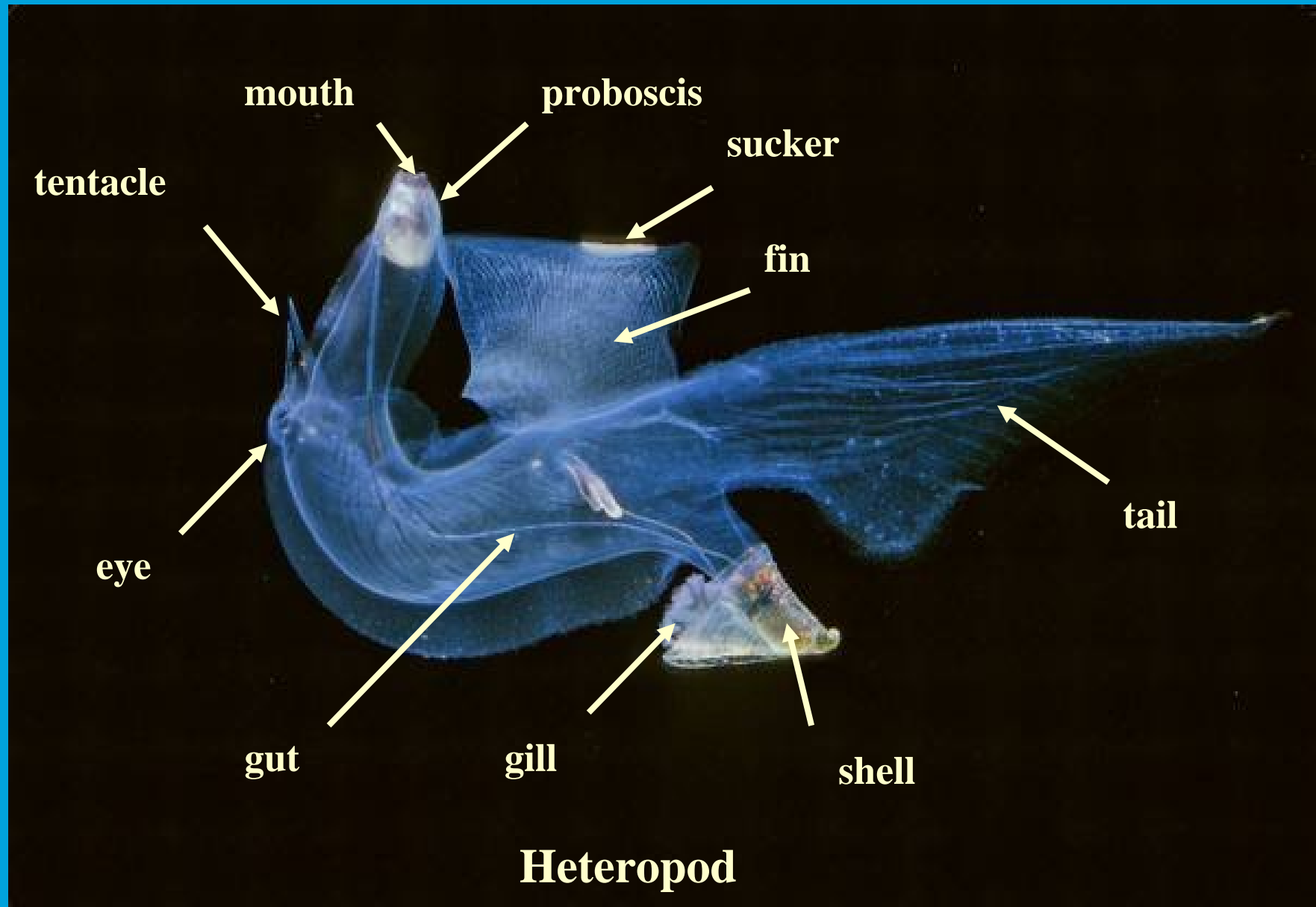
soft part in ventral view

Heteropoda 异足类

- **body transparent**
- **head well-developed, with tentacles and eyes**
- **foot modified, composed of anterior, median and posterior foot; the first two are fused to form the swimming fin bearing ventral suckers; the posterior foot extends posteriorly to form a caudal fin**
- **shell right-handed spiral**
- **dioecious**

Heteropod *Atlanta peronii*





Classification

- 1 with shell.....2
- without shell.....Pterotracheidae 翼管螺科
- 2 shell flat, the soft portion of the body is able to withdraw entirely into the shell.....Atlantidae 明螺科
- shell coiled, the soft portion of the body is unable to withdraw entirely into the shell
 Cartinariidae 龙骨螺科

Atlantidae 明螺科

- a generally flattened, coiled shell, with a keel extending around all or part of the outer edge of the shell
- the foot is laterally flattened, shaped like a fin with an operculum and a sucker
- *Atlanta*

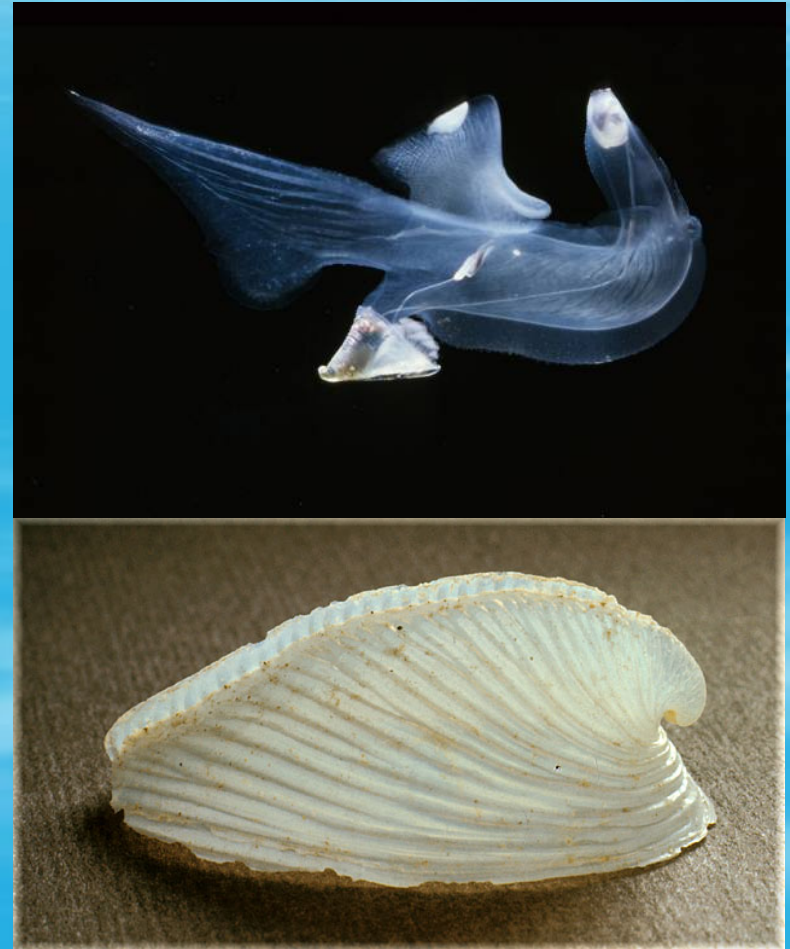


Atlanta rosea 玫瑰明螺



Carinariidae 龙骨螺科

- a reduced shell in which the soft parts don't fit
- *Carinaria*



Carinaria mediterranea

Pterotracheidae 翼管螺科

- adults have completely lost their shell
- body usually transparent
- the eye is conspicuous
- *Pterotrachea coronata*



Other Pelagic Molluscs

Janthinidae

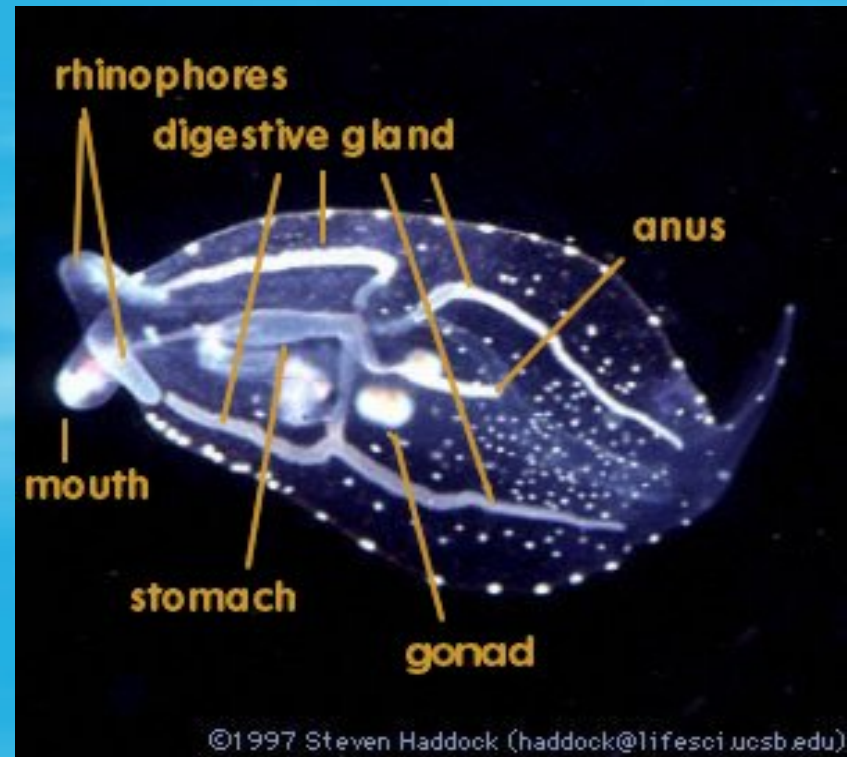
- a large float consisting of mucous-coated bubble of air
- float upside down
- shell spiral, vivid blue or violet colour, the part under the water is white
- without eyes



Phylliroidea 波叶海牛科

Phylliroe bucephalum 波叶海牛

- bioluminescence
- the two dorsal lobes of the digestive gland are modified into two dorsal tubular structures, and the posterior lobe becomes two ventral tubular lobes



Glaucidae 海神鳃科

Glaucus atlanticus 大西洋海神鳃

- **vivid blue-green colour dorsally and white ventrally**
- **benthic**



Biology and Significance

Biology

- **Distribution**
- **Feeding**
- **Reproduction**

Significance