



Chapter 7 Planktonic Crustacea

Part IV Amphipoda

Dr. Guo Dong-hui

Email: guodh@jingxian.xmu.edu.cn

海洋与环境学院

厦门大学

Xiamen University

References

- **Chen Q C, 1995. Zooplankton of China seas (2)**
- **陈清潮, 石长泰, 2002. 中国动物志 无脊椎动物 V28 节肢动物门 甲壳动物亚门 端足目 (虫戎) 亚目**



1 General morphology

Characteristic features

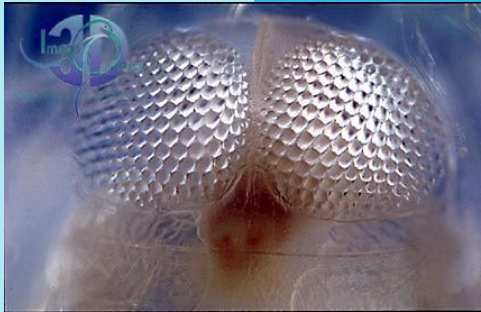
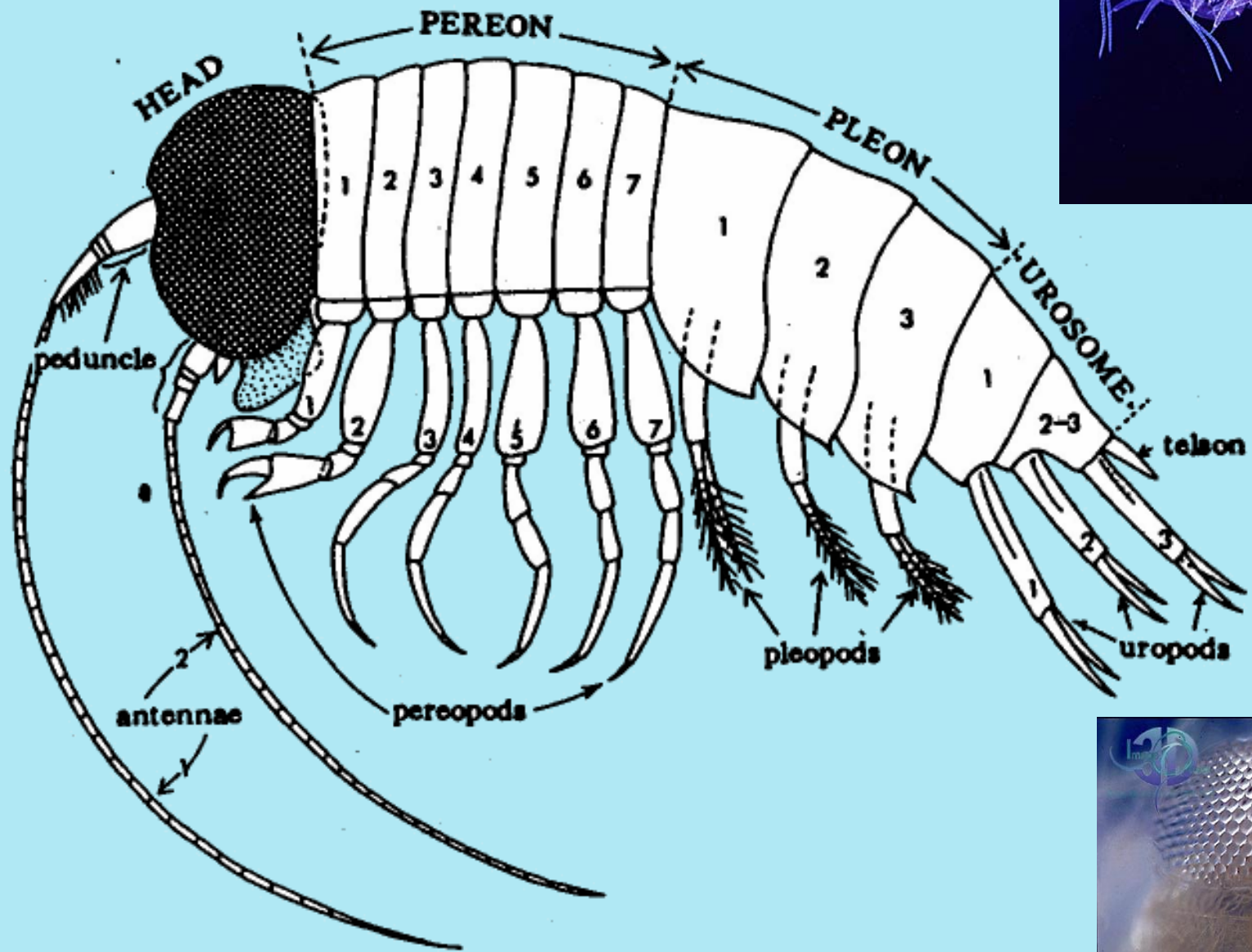
- 1. a segmented, laterally compressed body, without a distinct carapace
- 2. with sessile eyes
- 3. with appendages of different structure and function
- 4. abdomen robust, ♀ ♂ without sexual differences
- 5. direct development

1.1 Metamerism

- **head, usually globular, varied with species in shape**
- **pereon (thorax), composed of 7 pereonites, each pereonite bears a pair of pereopods**
- **abdomen, subdivided into pleon (metasome, 前腹部) and urosome (后腹部)**
- **telson (尾扇), small, varied with species in shape**

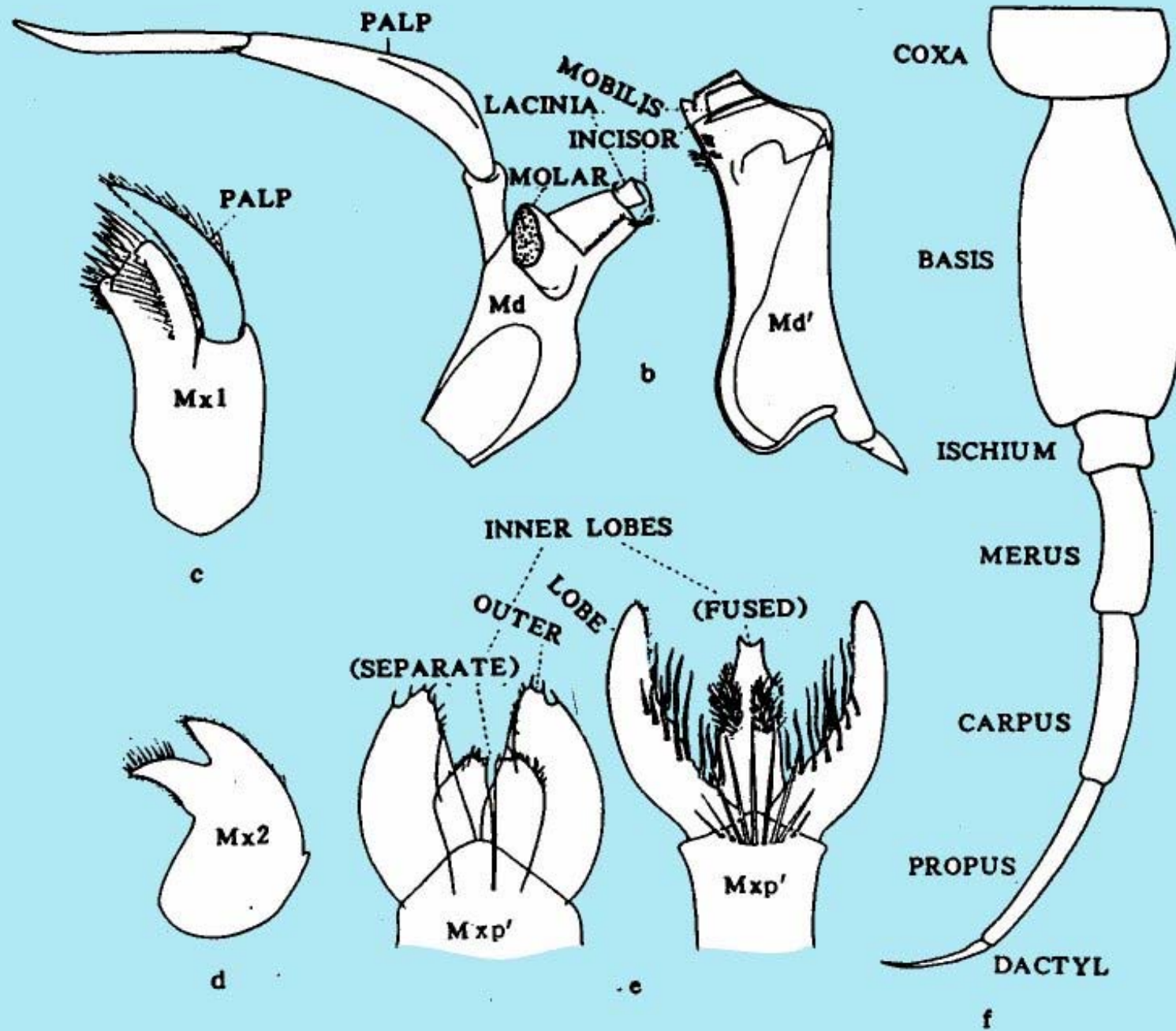
1.2 Compound eyes

- **Without eyestalk, pair, enormously developed ommatidia (单眼), frequently covering most of the surface of the head**



1.3 Appendages

- **A₁, A₂ sexual dimorphic**
- **M, M₁, M₂**
- **Mp (Maxillipeds, 颚足)**
- **Thoracic limbs**
 - Gp (Gnathopods, 腮足) : 2 pairs, sexual dimorphism, ♂ well developed**
- **P: 5 pairs, uniramous**
- **Abdominal limbs**
 - Pl₁₋₃, used for swimming**
 - Up₁₋₃, used for jumping**



2 Classification

Order Amphipoda

- **Suborder Hyperiidea (虫戎亚目): planktonic**
- **Suborder Gammaridea (钩虾亚目): benthic**
- **Suborder Caprellidea (麦杆虫亚目): benthic**
- **Suborder Ingolfiellidea (高英虫亚目): benthic**

Bases for identification of Hyperiidea

- Head
- A_1
- Eyes
- P
- Gp forming chela or not
- telson fused with urosome or not

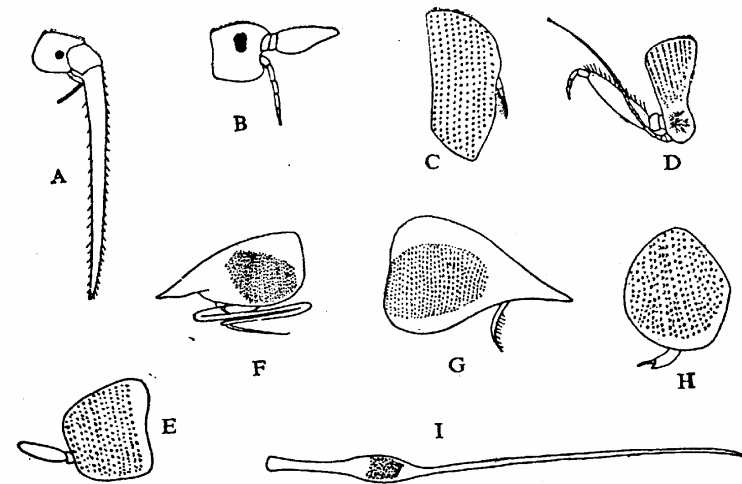


图 196 螺类的头部及触角

A. 锥螺 (*Scina*) ♀; B. 片螺 (*Vibia*) ♀; C. 蛮螺 (*Lestrigonus*) ♀;
D. 巧螺 (*Phronima*) ♂; E. 拟巧螺 (*Paraphronima*) ♂; F. 尖头螺 (*Oxycephalus*) ♂;
G. 盖头螺 (*Cranocephalus*) ♀; H. 丽螺 (*Lycaea*) ♂;
I. 棒头螺 (*Rhabdosoma*) ♀

- **Eyes small or absent. M_1 with inner lobes. M_p with inner lobes usually separate, sometimes partially fused, and rarely completely fused. P_1 always simple, rarely prehensile. P_2 simple.**

.....**Physosomata** 体箱虫戎次目

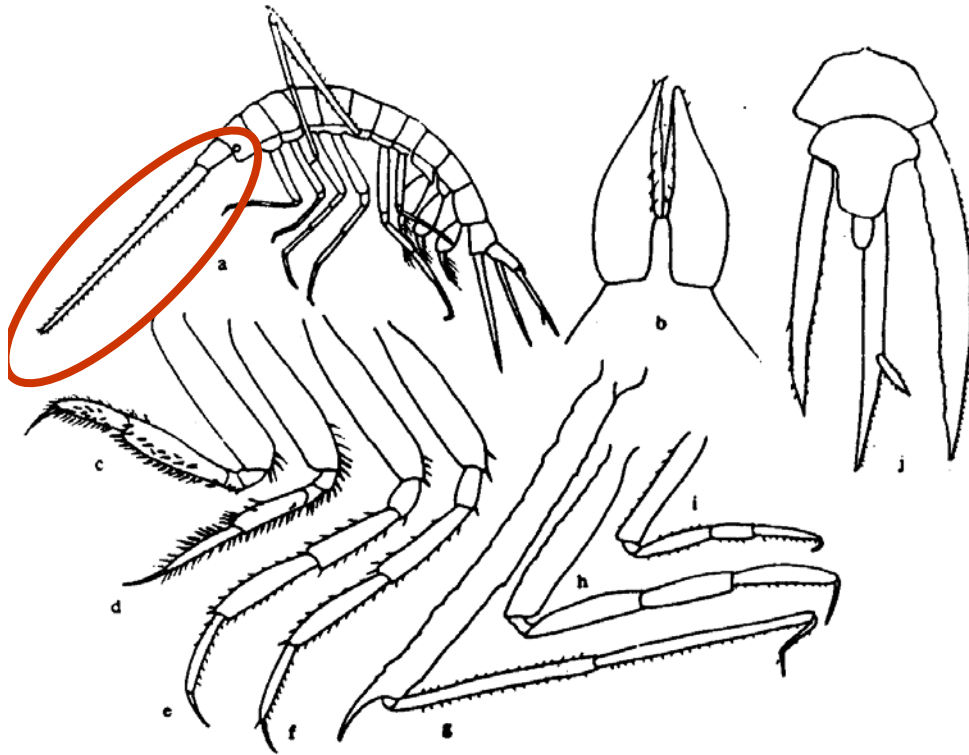
- **Eyes large, always occupying most of head surface (small to moderate in *Vidilia* and *Bougisia*). M_1 without inner lobes. M_p with inner lobes always fused. P_{1-2} usually prehensile, less commonly simple.**

.....**Physocephalata** 头箱虫戎次目

2.1 Scinidae 锥（虫戎）科

Scina crassicornis 粗角锥（虫戎）

- **A₁ sword-like**
- **eyes small, sometimes absent**



1 A_1 inserted on ventral surface of head; P_{5-6} with basis excessively expanded

Platycecloidea 宽腿（虫戎）总科

A_1 inserted on anterior surface of head; P_{5-6} usually not excessively expanded 2

2 A_1 inserted in groove of head; gills on pereonites $_{5-6}$

Lycaeopsoidea 拟狼（虫戎）总科

A_1 not inserted in groove of head; gills on pereonites $_{2-6}$ 3

3 A_2 similar in both sexes; flagellum with large straight first segment

Vibilioidea 路（虫戎）总科

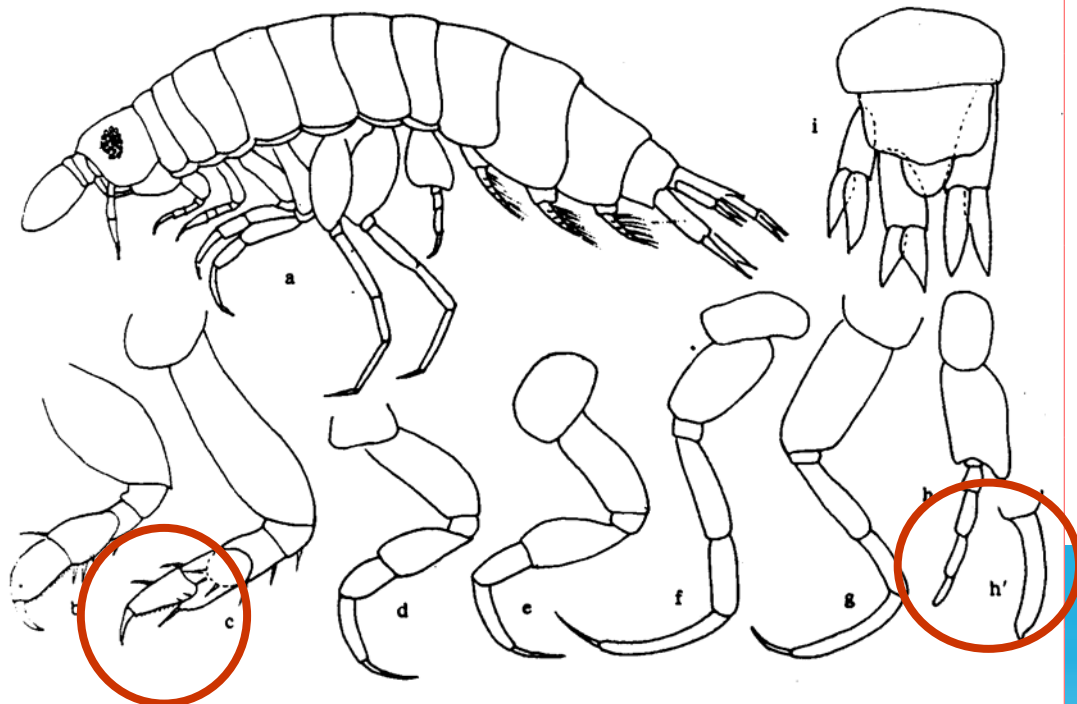
A_2 flagellum multisegmented in ♂, 1 segment in ♀

Phronimoidea 慎（虫戎）总科

2.2 Vibiliidae 路（虫戎）科

Vibilia gibbosa 隆背路（虫戎）

- **A₁ with spatuliform or conical flagellum**



P₂ chelate

**P₇ with distal segments
reduced in size**

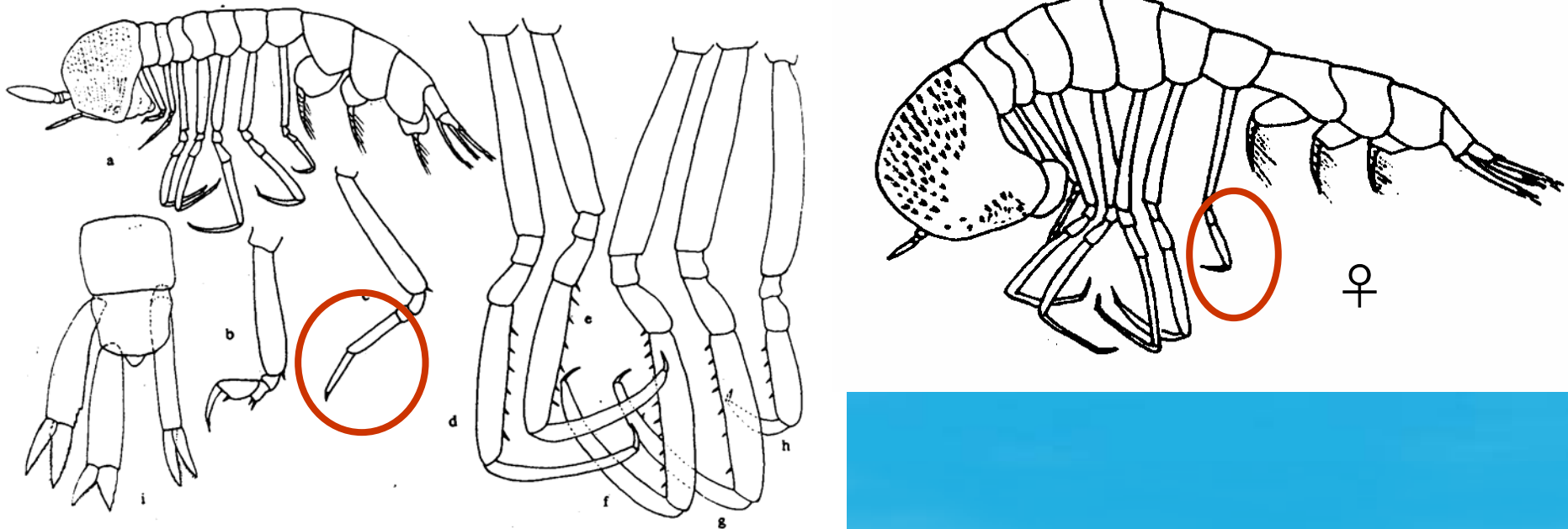
2.3 Paraphronimidae 近慎（虫戎）科

Paraphronima gracilis 优细近慎（虫戎）

- **A₁ first segment of flagellum enlarged**

P₂ simple

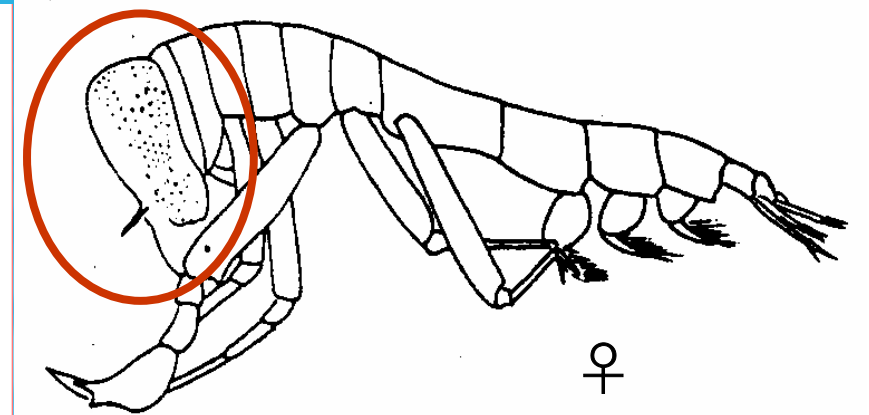
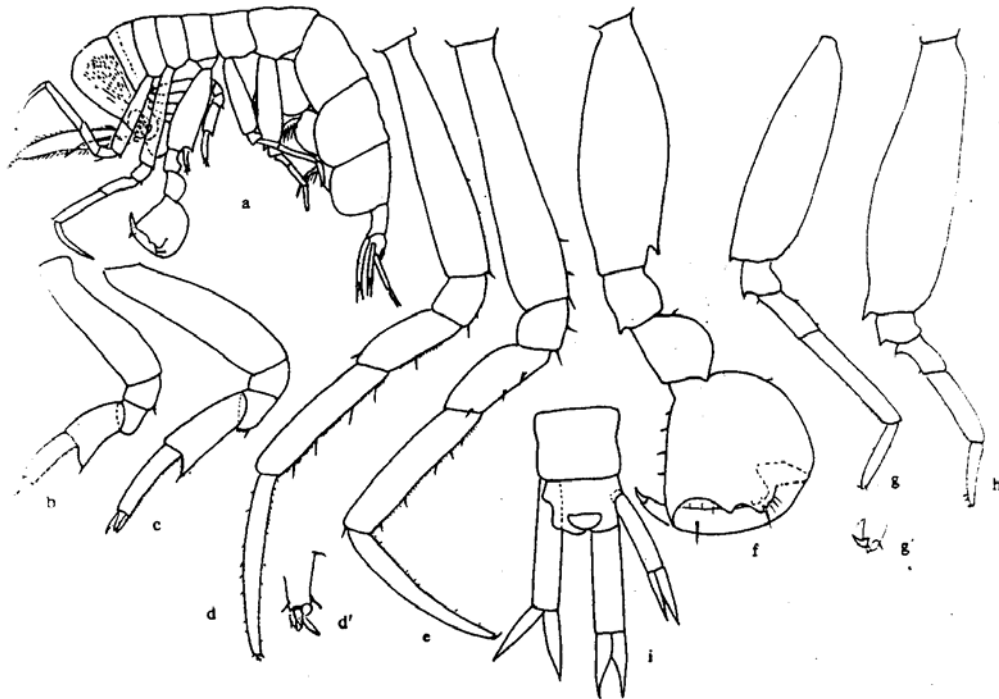
P₇ with normal distal segments



2.4 Phronimidae 慎（虫戎）科

Phronima atlantica 大西洋慎（虫戎）

head subconical
gills on pereonites 4-6



2.5 Hyperiidae 泉（虫戎）科

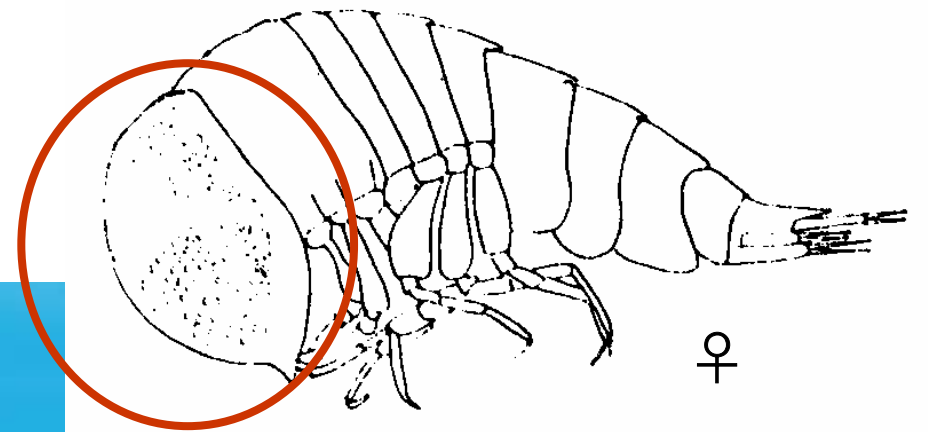
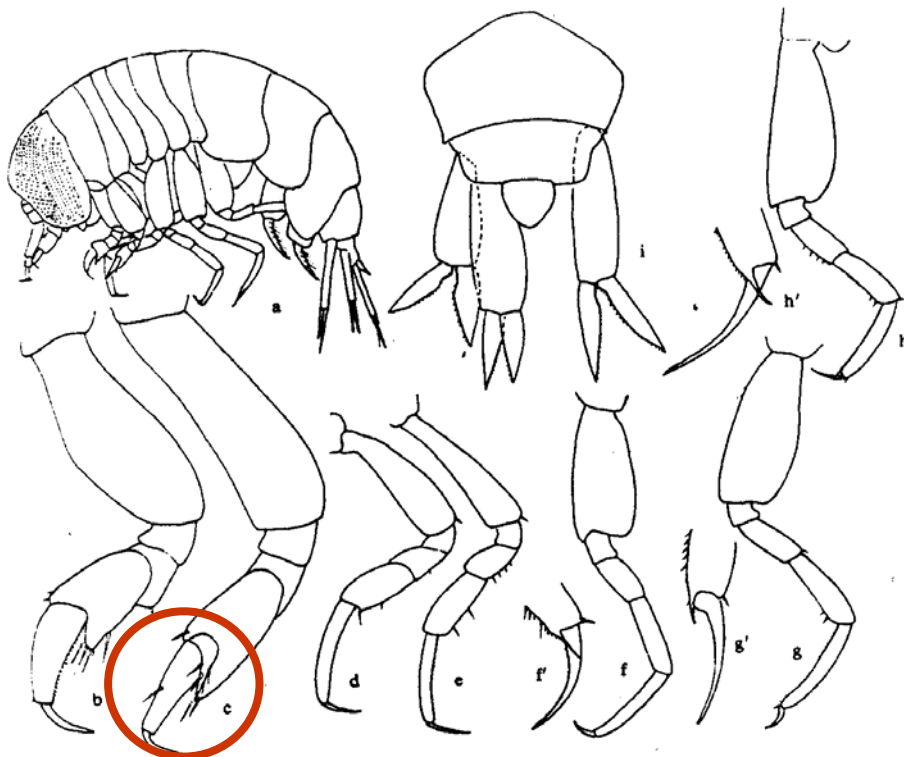
Lestrigonus schizogeneios 裂颚蛮（虫戎）

- eyes large, occupying most of the head

head globular

gills on pereonite 2-6

P₂ subchelate, P₃₋₅ simple



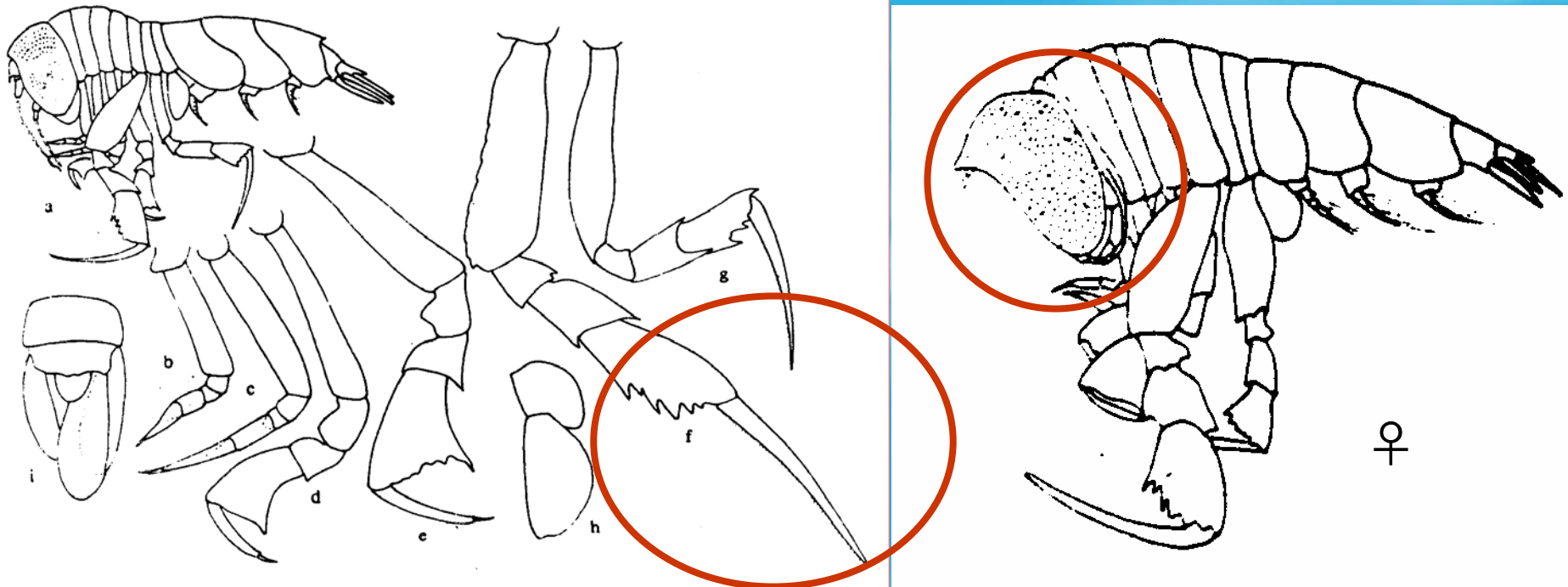
2.6 Phrosinidae 喜（虫戎）科

Phrosina semilunata 半月喜（虫戎）

head globular

gills on pereonite 2-6

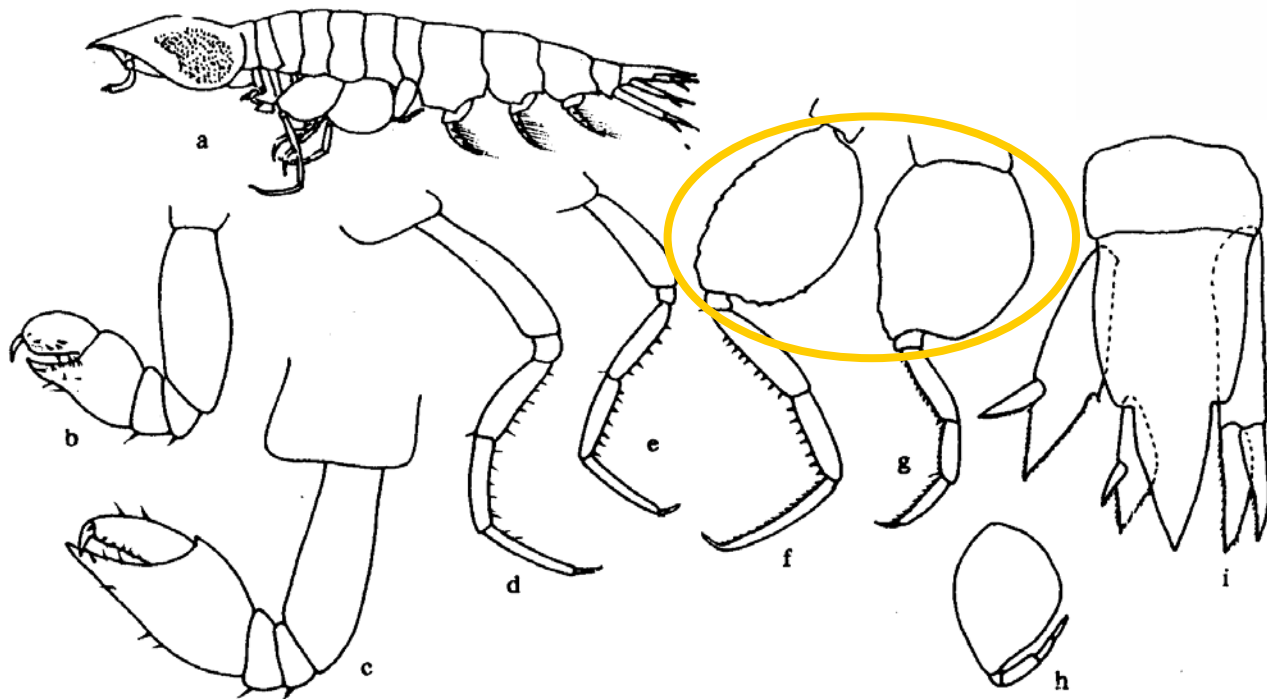
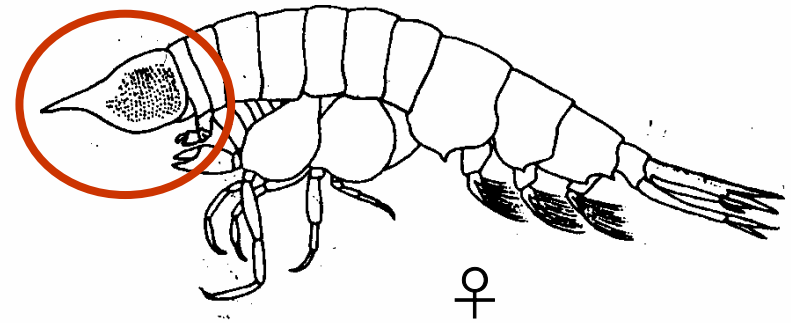
P_5 , sometime P_{3-4} subchela



2.7 Oxycephalidae 尖头（虫戎）科

Oxycephalus clausi 克氏尖头（虫戎）

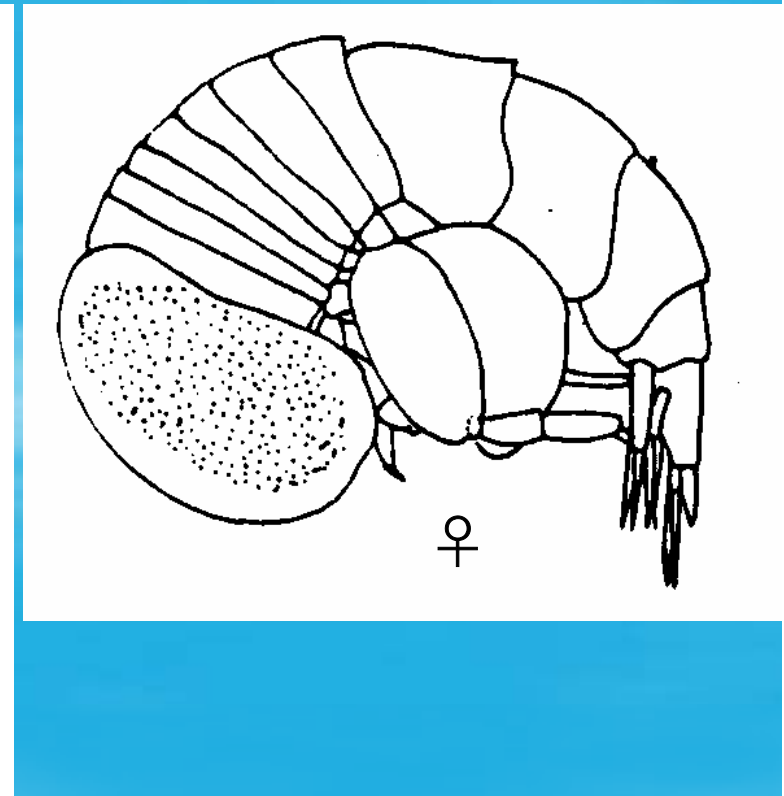
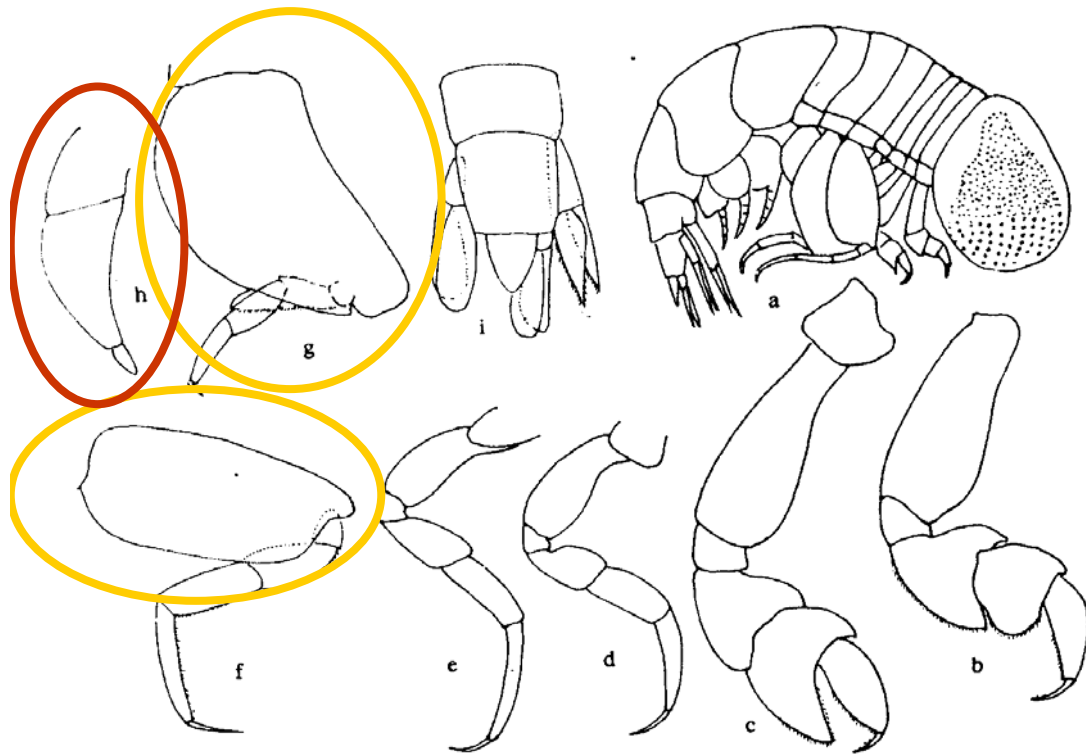
head produced anteriorly into distinct rostrum anterior to eyes



2.8 Pronoidea 海精（虫戎）科

- *Eupronoe minuta* 微小真海精（虫戎）

P₇ consisting only of basis and 1 or 2 rudimentary

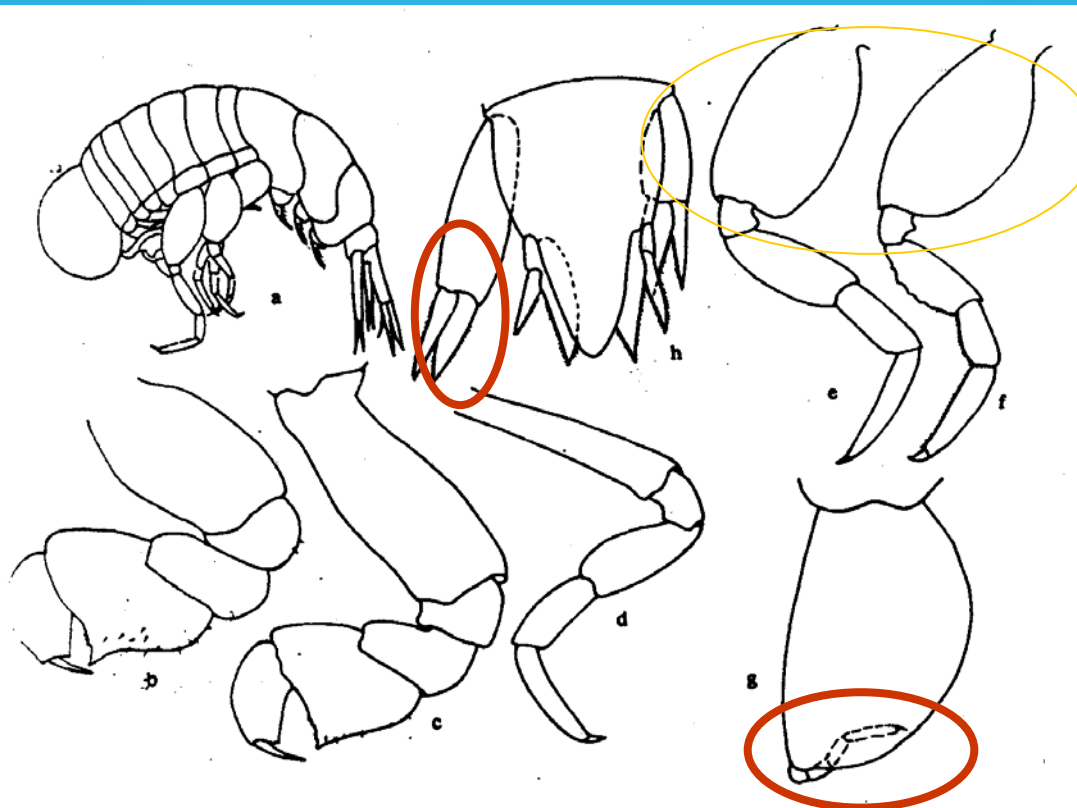


2.9 Lycaeidae 狼（虫戎）科

- *Lycaea pulex* 蚤狼（虫戎）

P₇ having all segments present

Up₂ with endopod separate from protopod

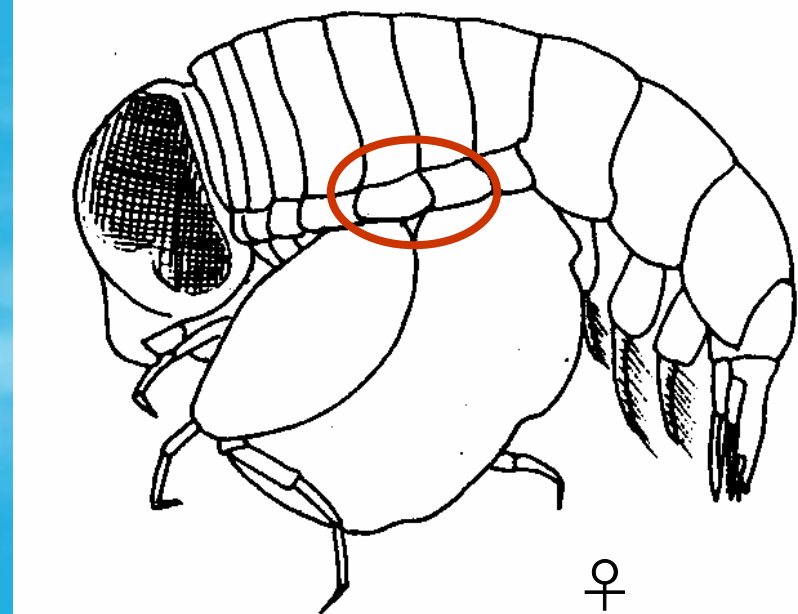
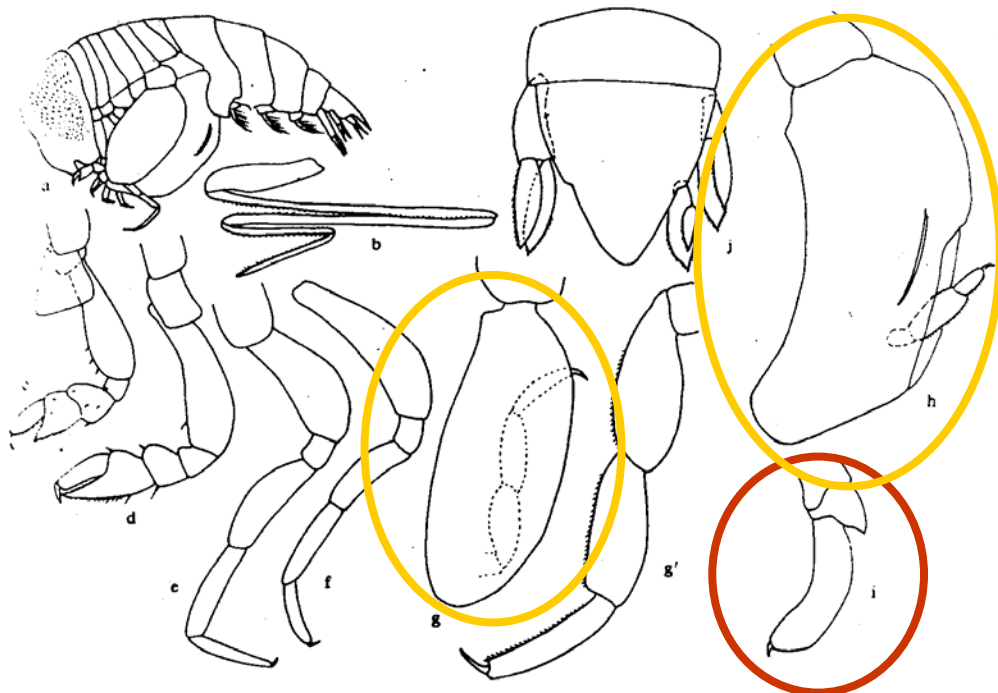


2.10 Platyscelidae 宽腿（虫戎）科

Platyscelus serratulus 小锯宽腿（虫戎）

P₅₋₆ basis transformed into broad operculum

P₇ consisting only basis and sometimes 1 or 2 rudimentary additional segments



Comparison with four families in Hyperiidea

	Scinidae	Vibilidae	Paraphronimidae	Hyperiidae
Head	small	small	almost cubical in shape	globular in shape
Eyes	small located in the middle portion of the head	small	large	large, occupying most of the head
A ₁	sword-like, with spinules on lateral margins	with spatuliform flagellum	peduncle three-segmented, first segment of flagellum enlarged	♀ short and small, ♂ with long filiform flagellum
rostrum	projecting	short	not projecting	not projecting

3 Biology and Significance

Biology

- **Distribution: cosmopolitan, association with gelatinous plankton**
- **Feeding: carnivorous**

Significance

- **important food for economic fishes**
- **good indicators of water masses**