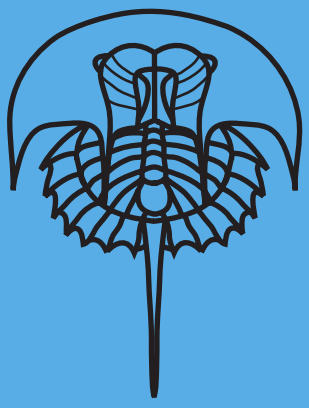

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## Part R, Revised, Volume 1, Chapter 8R: Systematic Descriptions: Section Cyclodorippoida

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# PART R, REVISED, VOLUME 1, CHAPTER 8R: SYSTEMATIC DESCRIPTIONS: SECTION CYCLODORIPPOIDA

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## Section CYCLODORIPPOIDA Ahyong & others, 2007

[Cyclodorippoida Ahyong & others, 2007, p. 584]

Description as for superfamily. *Lower Cretaceous (Albian)–Holocene.*

## Superfamily CYCLODORIPPOIDEA Ortmann, 1892

[*nom. transl.* Tavares, 1991, p. 626, *pro* Cyclodorippidae Ortmann, 1892, p. 552]

Carapace ovate to pentagonal; maxillipeds pediform, covering buccal cavity; pereiopods 2 and 3 long, slender; pereiopods 4 and 5 much shorter, subdorsal to dorsal; sternum wide, flattened, with short but very deep and clear sternopleonal cavity; genital openings coxal in males and females, pleon in males and females usually with some fusion of somites (adapted from Karasawa, Schweitzer, & Feldmann, 2011, p. 557). *Lower Cretaceous (Albian)–Holocene.*

### Family CYCLODORIPPIDAE Ortmann, 1892

[Cyclodorippidae Ortmann, 1892, p. 552] [=Tymolinae Alcock, 1896, p. 274]

Carapace ovate to pentagonal; orbits developed; maxillipeds pediform, covering buccal cavity; pereiopods 2 and 3 long, slender; pereiopods 4 and 5 much shorter, subdorsal to dorsal; sternum wide, with short but very deep and clear sternopleonal cavity; genital openings coxal in males and females, spermatheca at level of genital openings or anterior to them; pleon with some fusion of somites (adapted from Karasawa, Schweitzer, & Feldmann, 2011, p. 558). *Lower Cretaceous (Albian)–Holocene.*

### Subfamily CYCLODORIPPINAE Ortmann, 1892

[*nom. transl.* Tavares, 1992, p. 514, *pro* Cyclodorippidae Ortmann, 1892, p. 552]

Fronto-orbital width less than half the maximum carapace width; female pleon with 6 or 7 segments, very large in comparison to carapace; male pleon with 5 or 7 segments (adapted from Karasawa, Schweitzer, & Feldmann, 2011, p. 558). *Lower Cretaceous (Albian)–Holocene.*

**Hillius** Bishop, 1983, p. 46 [**H. youngi,* p. 46, pl. 1,*8–11;* OD]. Carapace slightly wider than long; front triangular, axially sulcate; orbits rimmed, directed anterolaterally; anterolateral margins and posterolateral margins well differentiated. *Lower Cretaceous (Albian):* USA (Texas)——Fig. 1,*1.* **H. youngi,* holotype, SDSNH 23643, scale bar, 1 cm (Schweitzer & Feldmann, 2011, p. 4, fig. 3).

**Miotymolus** Feldmann & others, 2011, p. 98 [**M. quadratus,* p. 99, fig. 7; OD]. Carapace quadrate, longer than wide, widest at position of branchial region; rostrum with central spine and lateral rostral spines; orbits with inner orbital, outer orbital, and lower orbital spines; anterolateral margins with some small spines; regions moderately well defined. *Middle Miocene:* Argentina (Tierra del Fuego).——Fig. 1,*2.* **M. quadratus,* holotype, CADIC PI 109, scale bar, 1 cm (Feldmann & others, 2011, p. 100, fig. 7A).

**Tymolus** Stimpson, 1858, p. 61 [**T. japonicus;* M]. Carapace rectangular, granular; front with four spines, outer two serving as inner-orbital spines; separated from outer-orbital spine by open notch or fissure; outer-orbital spine wrapping around orbit on external margin; entire frontal margin narrow; carapace regions moderately defined. *Lower Miocene–Holocene:* Japan, *lower Miocene–lower*



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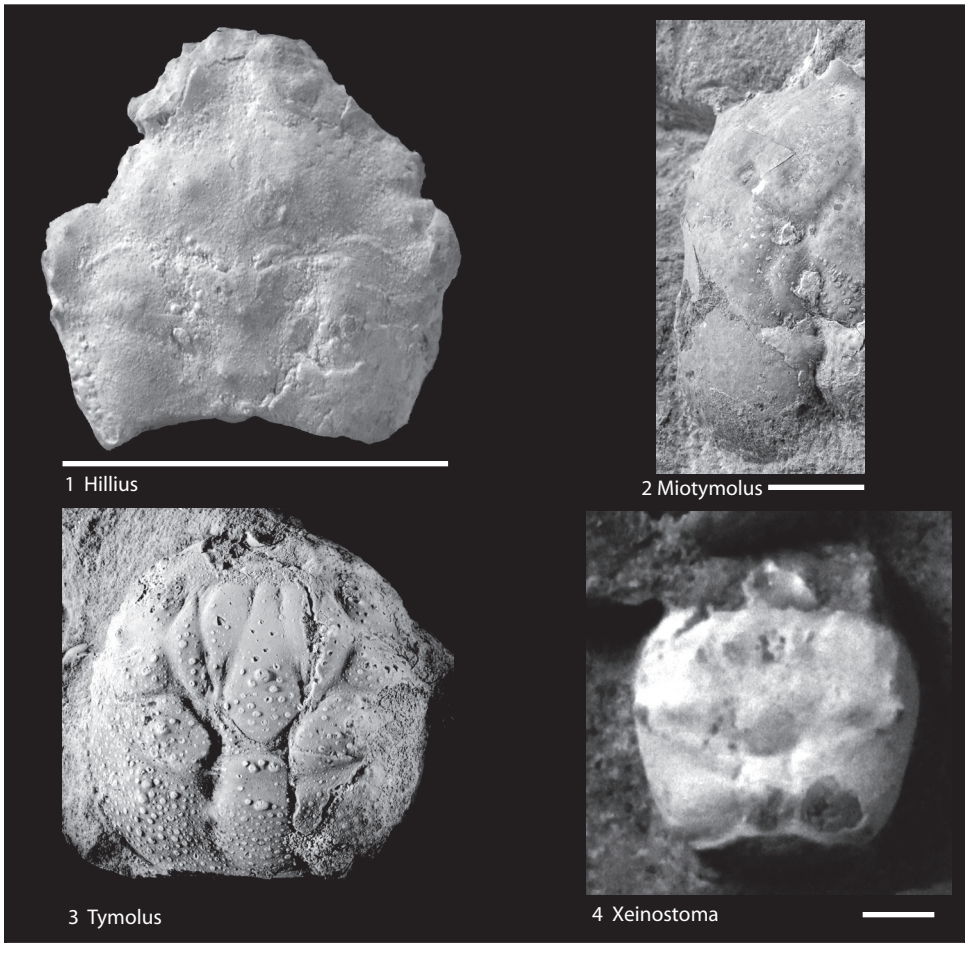


FIG. 1. Cyclodorippidae (p. 1–2).

*Pleistocene;* USA (Alaska), *lower Miocene;* Russia (Makarov), *middle Miocene;* Indo-West Pacific, *Holocene.*——FIG. 1,*3. T. ingens* TAKEDA & TOMIDA, 1984, holotype, MFM 9001, lower Miocene, Japan, scale bar, 1 cm (new).

## Subfamily XEINOSTOMINAE Tavares, 1992

[Xeinostominae TAVARES, 1992, p. 514]

Fronto-orbital width greater than half the maximum carapace width; female pleon with 6 or 7 somites, very narrow; male pleon with 5 somites. *Eocene (Priabonian)–Holocene.*

**Xeinostoma** STEBBING, 1920, p. 243 [**X. eucheir;* SM]. Carapace pentagonal, flattened; front triangular with sulcate tip; small outer-orbital spine; anterolateral margin granular; posterior margin wide, concave; female pleon with 6 segments, pleopods 1 vestigial; male pleon with 5 segments. *Eocene (Priabonian)–Holocene:* USA (Washington), *Eocene (Priabonian);* Pacific, Atlantic oceans, *Holocene.*——FIG. 1,*4. X. antiqua* SCHWEITZER, 2001, holotype, USNM 508589, Eocene (Priabonian), USA (Washington), scale bar, 1 mm (new).

## Family CYMONOMIDAE Bouvier, 1897

[*nom. correct.* GLAESSNER, 1969, p. 627, *pro* Cymonomae BOUVIER, 1897, p. 59]

Carapace subquadrate; orbits undefined; usually with a rostrum projected beyond frontal margin and often with outer-ocular spines; third maxillipeds long, covering buccal cavity; pereiopods 2 and 3 long; pereiopods 4 and 5 reduced, subdorsal; genital openings coxal (adapted from KARASAWA,

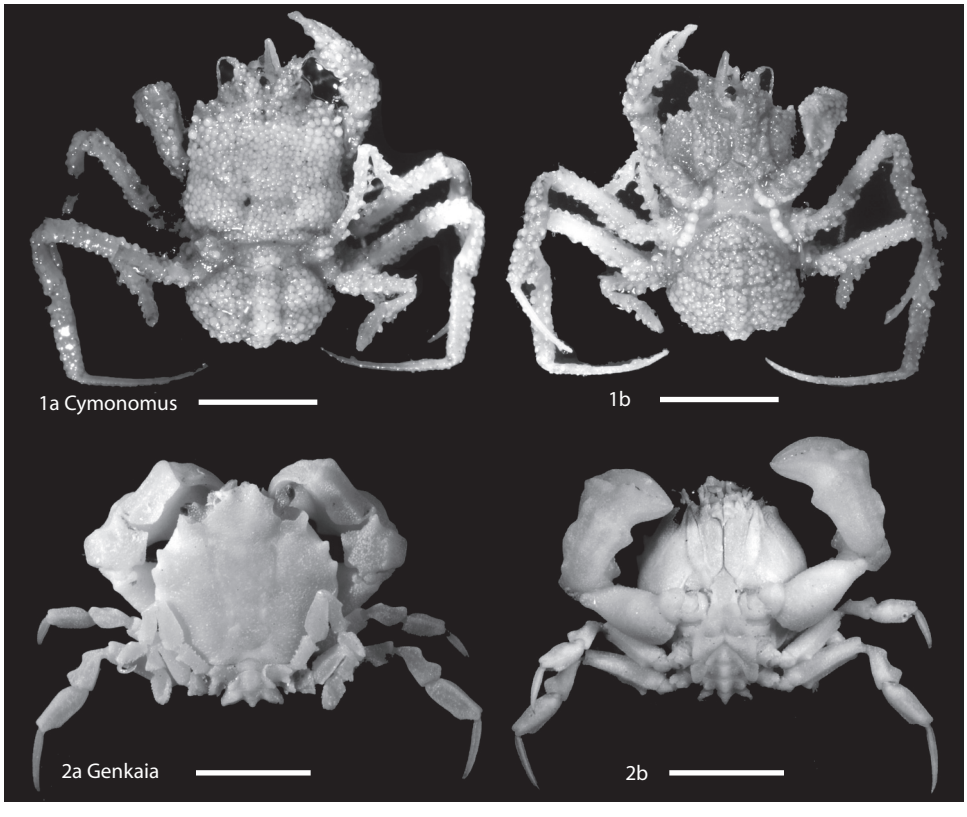


Fig. 2. Cymonomidae (p. 2–3).

Schweitzer, & Feldmann, 2011, p. 558). *Eocene (Priabonian)–Holocene.*

**Cymonomus** A. Milne-Edwards, 1880, p. 26 [**C. quadratus;* M]. Carapace squarish, broadens slightly posteriorly; front with triangular rostrum and defined fronto-orbital margin, but without well-defined orbits, eyestalk well calcified, immobile; regions weakly defined, except cardiac and posterior part of gastric regions; pleon with 6 segments free. *Eocene (Priabonian)–Holocene:* Hungary, *Eocene (Priabonian);* Caribbean, eastern North Atlantic, western Pacific, Indian oceans, *Holocene.*——Fig. 2,*1a–b*. *C. curvirostris* Sakai, 1963, CBM ZC 10389, female, Holocene, Sagami Bay, Japan, *a,* dorsal view; *b,* ventral view, scale bars, 3 mm (new, photos by H. Kato, Natural History Museum & Institute, Chiba, Japan).

## Family PHYLLOTYMOLINIDAE Tavares, 1998

[Phyllotymolinidae Tavares, 1998, p. 110]

Carapace subcircular; buccal cavity rectangular anteriorly, not protruding beyond epistome; third maxillipeds long, covering buccal cavity, merus subrectangular, flagellum present; pereiopods 2 and 3 long; pereiopods 4 and 5 reduced, subdorsal; genital openings coxal in males and females, spermatheca at level of genital openings; pleon with all free somites. *Holocene* (no fossil occurrences).

**Genkaia** Miyake & Takeda, 1970, p. 20 [**G. gordonae,* p. 20, fig. 1–2; OD]. Orbits and rostrum well defined; upper orbital margin with fissure; carapace regions moderately defined; anterolateral margins with rounded spines. *Holocene:* West and South Pacific.——Fig. 2,*2a–b*. *G. gordonae,* CBM-ZC 5452, Holocene, male, Tokara Islands, Okinawa, Japan, *a,* dorsal view; *b,* ventral view, scale bars, 3 m (new, photos by H. Kato, Natural History Museum & Institute, Chiba, Japan).

## Family QUADRATOPLANIDAE Frațescu, 2014

[Quadratoplanidae Frațescu, 2014, p. 234]

Description as for genus. *Lower Cretaceous (Albian):* USA (Texas).

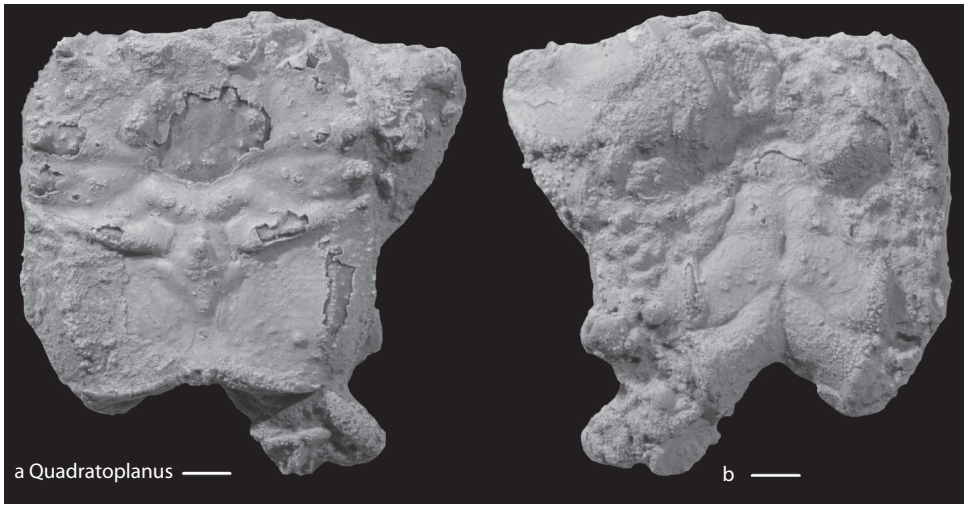


FIG. 3. Quadratoplanidae (p. 3–4).

**Quadratoplanus** FRANȚESCU, 2014, p. 234 [*Q. primitivus*, p. 234, fig. 9; OD]. Carapace rectangular, flattened; regions moderately developed by grooves; orbits well developed, with upper and lower orbital spines, fronto-orbital width about 75% maximum carapace width, about as wide as posterior margin; cervical, post-cervical, and branchiocardiac grooves well defined; sterno-pleonal cavity developed on sternites 6–8. *Lower Cretaceous (Albian):* USA (Texas).——FIG. 3*a–b.* **Q. primitivus,* USNM 558970, holotype; *a,* dorsal carapace; *b,* ventral view of sternum, scale bars, 1 mm (photos by O. Frantescu, adapted from Frantescu, 2014, fig. 9A–B).

## Family UNCERTAIN

*Albenizus* was originally placed within Torynommidae GLAESSNER, 1980. Herein we place it within Cyclodorippoidea because of its small size, rectangular carapace, and regions that in general accord with those seen in fossil cyclodorippods. The genus has a very wide mesogastric region and a well-developed post-cervical groove, not seen in torynommids.

*Caporiondolus* and *Spathonomus* were placed within Cymonomidae. Members of that family lack a broad fronto-orbital margin, extending across the entire frontal width of the carapace, which these two genera appear to possess. Thus, we place all three of these genera within Cyclodorippodea, unplaced at the family level.

**Albenizus** KLOMPMAKER, 2013, p. 173 [**A. minutus,* p. 174, fig. 14; OD]. Carapace slightly longer than wide, widest just posterior to frontal margin which is poorly preserved but appearing to bear augen-rests at outer angles; regions well defined by deep grooves, cervical, post-cervical, and branchiocardiac deep; metagastric region very wide, much wider than all other axial regions; protogastric region bilobed; cervical and branchiocardiac grooves extending onto flanks of carapace. *Lower Cretaceous (Albian):* Spain.——FIG. 4,*2.* **A. minutus,* MGSB 77708, holotype, scale bar, 1 mm (Klompmaker, 2013, fig. 14A).

**Caporiondolus** DE ANGELI, 2016, p. 28 [**C. bericus,* p. 28, pl. 1,*5–6;* OD]. Rostrum narrow, blunt-tipped; frontal margins sinuous, with scattered spines, apparently entire frontal margin equal to fronto-orbital margin; lateral margins with scattered spines; cervical groove weaker than branchiocardiac grieve, branchial region with arcuate ridge, concave forward, parallel to branchiocardiac groove; axial regions well defined; carapace surface with scattered granules. *Eocene (Priabonian):* Italy.——FIG. 4,*3.* **C. bericus,* holotype, MCZ.4016-I.G.355.091, scale bar, 5 mm (new, photo by A. De Angeli).

**Spathanomus** DE ANGELI, 2016, p. 28 [**S. felicianensis,* p. 28, pl. 1,*1–4;* OD]. Carapace quadrate; rostrum spatulate, lateral margins convex; frontal margins spinose, projected anteriorly at lateral corners into larger spines; fronto-orbital width apparently occupying entire frontal margin of carapace, nearly 90% maximum carapace width; lateral margins finely spinose to posterolateral corner; cervical and branchiocardiac grooves well developed; axial regions well defined; carapace surface finely granular. *Eocene (Priabonian):* Italy.——FIG. 4,*1.* **S. felicianensus,* MCZ.4010.I.G.335.085, holotype, scale bar, 5 mm (new, photo by A. De Angeli).

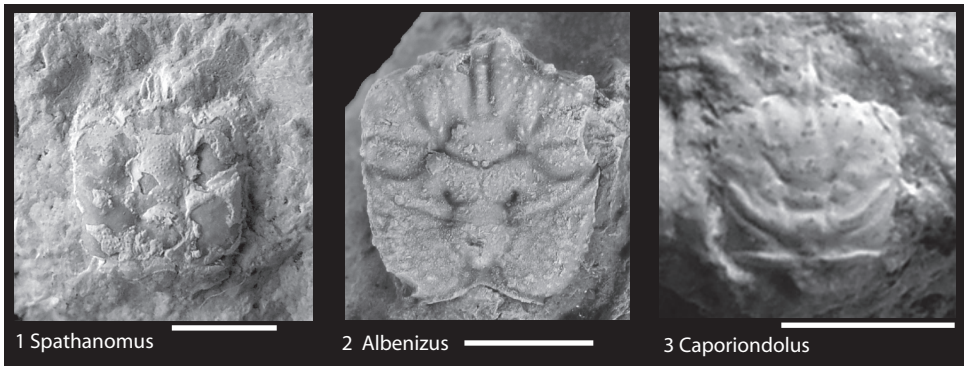


Fig. 4. Family Uncertain (p. 4).

## ABBREVIATIONS FOR MUSEUM REPOSITORIES

**CADIC:** Centro Austral de Investigaciones Científicas: Paleontología Invertebrados, Ushuaia, Tierra del Fuego, Argentina
**CBM:** Natural History Museum and Institute of Chiba, Chiba, Japan
**MCZ:** Museo Civico "G. Zannato" di Montecchio Maggiore (Vicenza), Italy
**MFM:** Mizunami Fossil Museum, Mizunami, Japan
**MGSB:** Museo Geológico del Seminario de Barcelona, Barcelona, Spain
**SDSNH:** San Diego Museum of Natural History, San Diego, California, USA
**USNM:** United States National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA

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