



TREATISE ONLINE

Number 126

Part R, Revised, Volume 1, Chapter 8T7:
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2019

KU PALEONTOLOGICAL
INSTITUTE

The University of Kansas

Lawrence, Kansas, USA
ISSN 2153-4012
paleo.ku.edu/treatiseonline

PART R, REVISED, VOLUME 1, CHAPTER 8T7: SYSTEMATIC DESCRIPTIONS: SUPERFAMILY CANCROIDEA

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Superfamily CANCROIDEA Latreille, 1802

[*nom. transl.* DE HAAN, 1833 in 1833–1850, p. 1, *pro* Cancerides LATREILLE, 1802, p. 21]

Carapace elongate, ovate or pentagonal; frontal, orbital and lateral margins ornamented with spines, some of which may be compound; carapace regions ranging from indistinct to extremely well defined; carapace ornament ranging from smooth to coarsely granular to spinose; chelae typically with keels, spines, or granules on manus and fingers; sternum narrow, triangular; sternites 3–5 often fused in males. ?*Upper Cretaceous, Eocene (Ypresian)–Holocene.*

Family ATELECYCLIDAE Ortmann, 1893

[Atelacyclidae ORTMANN, 1893a, p. 27; ICZN Opinion 712, 1964b] [=Clorodinae DANA, 1851, p. 125; ICZN Opinion 2204, 2008]

Carapace ovate; frontal, orbital, and lateral margins ornamented with spines, some of which may be compound; front trifold; orbits directed forward or slightly anterolaterally; basal antennal article not projecting into orbital hiatus; female gonopore covered by pleon; male pleonites 3–5 fused; telson long with pointed tip; chelipeds equal; sternum very narrow, sternal sutures 4/5 through 7/8 complete; female gonopores situated at about midwidth of sternite 6. *Miocene–Holocene.*

Atelacyclus LEACH, 1814, p. 430 [**Cancer (Hippra) septemdentatus* MONTAGU, 1815, p. 1; M; =*Cancer rotundatus* OLIVI, 1792, p. 47, pl. 2,2; ICZN Opinion 712, 1964b] [=*Clorodius* DESMAREST, 1825, p. 104 (type, *Cancer undecimdentatus*, SD NG,

GUINOT, & DAVIE, 2008, p. 51); =*Fucicola* GISTEL, 1848, p. viii (unnecessary replacement name for *Clorodius*]. Carapace ovate, narrowing posteriorly, widest about half the distance posteriorly; front with three spines not including inner-orbital spines; orbit with intraorbital spine and outer-orbital spine, one or two weak orbital fissures; anterolateral margins long, with several spines; posterolateral margins short, concave; posterior margin narrow; carapace regions weakly defined, ornamented with short, transverse ridges; sternal sutures 4/5 through 7/8 complete. *Miocene–Holocene*: France, Italy, *Miocene*; Italy, *Pliocene (Zanclean)*; UK (England), *Pliocene*; eastern Atlantic Ocean, Mediterranean Sea, *Holocene*.—FIG. 1a–b. **A. undecimdentatus* (HERBST, 1783 in 1782–1804), USNM 121856, Holocene, Spain; dorsal (a) and ventral (b) views, scale bars, 1 cm (new).

Family CANCRIDAE Latreille, 1802

[*nom. correct.* MACLEAY, 1838, p. 59, *pro* Cancerides LATREILLE, 1802, p. 21] [=Trichoceridae DANA, 1852a, p. 120; =Lobocarcinidae BEURLIN, 1930, p. 353]

Carapace ovate, wider than long; anterior margin with 4 to 6 spines, with odd or even number usually diagnostic of subfamilies; orbits with two fissures; anterolateral margins with numerous spines, usually more than eight; posterolateral margin entire, rimmed or spined; carapace regions ranging from indistinct to extremely well defined; carapace ornament ranging from smooth to coarsely granular to spined; chelae typically with keels, spines or granules on manus and fingers; sternum narrow, triangular; sternites 3–5 often fused in males; antennules folded longitudinally or obliquely; antennae flagellate with internal orbital hiatus short. [RATHBUN, 1930a, p. 176; GLAESSNER, 1969, p. 408; SCHWEITZER & FELDMANN, 2000, p. 224.] ?*Upper Cretaceous, Eocene (Ypresian)–Holocene.*

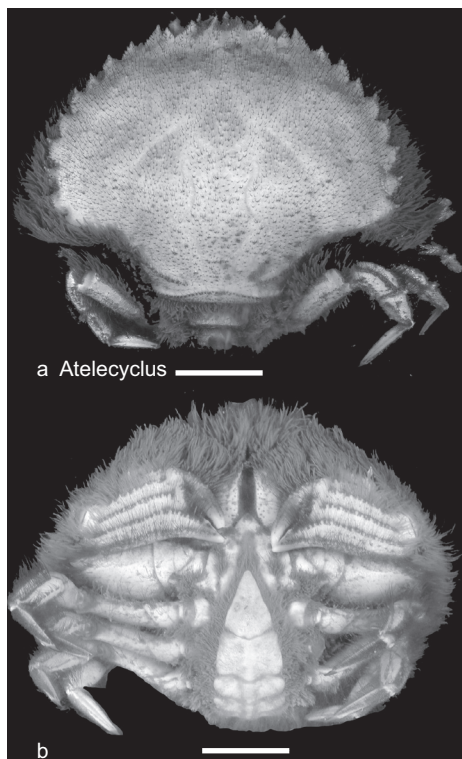


FIG. 1. Family Atelecyclidae (p. 1).

Subfamily CANCRINAE Latreille, 1802

[*nom. transl.* DANA, 1851, p. 124, *pro* Cancrides LATREILLE, 1802, p. 21]

Front with five spines, including inner orbital spines, axial spine may be at lower level than other spines; anterolateral margin with spines fissured or separated to bases; posterolateral margin entire, rimmed, or with one or two small spines; posterior margin entire or rimmed; carapace regions variable, may be distinct or indistinct, may be ornamented with granules or tubercles or may be smooth; chelae with several keels on mani, keels may be smooth, granular, or spined; mani and fingers of chelae ranging from short and high to long and slender. [SCHWEITZER & FELDMANN, 2000, p. 226.] ?*Upper Cretaceous, Eocene (Lutetian)–Holocene.*

Cancer LINNAEUS, 1758, p. 625 [**C. pagurus* LINNAEUS, 1758, p. 627; SD LATREILLE, 1810, p. 422; ICZN Opinion 104, 1941b] [= *Platycarcinus* H. MILNE EDWARDS, 1834 in 1834–1840, p. 412 (type, *C. pagurus*; SD RATHBUN, 1930a, p. 176)]. Front

weakly projecting beyond orbits; frontal region axially sulcate; fronto-orbital width about one-quarter maximum carapace width; orbits shallow, small, directed forward; anterolateral margin very tightly curved posteriorly; nine anterolateral spines separated by fissures and typically truncated distally but occasionally produced into sharp spines posteriorly, margins of spines entire, granular, or serrate; posterolateral margin weakly concave, rimmed, usually with one spine; regions indistinct and smooth or finely granular; chelae with distal margin extending at approximately 90 degree angle to upper margin. ?*Upper Cretaceous (Cenomanian–Turonian)–Holocene:* Czech Republic, *Cenomanian–Turonian;* USA (New Jersey), ?*Upper Cretaceous;* Belgium, ?*Lutetian–Priabonian;* Panama, USA (California), *Priabonian;* France, USA (California), *Eocene;* ?France, USA (Washington), *Oligocene;* Hungary, Japan, Poland, *Langbian;* Austria, *Tortonian;* Japan, The Netherlands, Peru, Slovenia, USA (California, Maryland, Massachusetts, Oregon, Virginia), *Miocene;* UK (England), Belgium, Italy, USA (California, Maryland, Massachusetts, Oregon, Virginia), *Pliocene;* Mexico (Baja California), The Netherlands, USA (California, Florida, Maine, Maryland, Massachusetts, New Jersey, Virginia), *Pleistocene;* Cosmopolitan, except equatorial, *Holocene.*—FIG. 2, 1a–b. **C. pagurus* LINNAEUS, 1758, USNM 283072, *Holocene,* France; dorsal (a) and ventral (b) views, scale bars, 1 cm (new).

Anatolikos SCHWEITZER & FELDMANN, 2000, p. 228 [**Cancer japonicus* ORTMANN, 1893b, p. 427, pl. 17, 5; OD]. Front produced beyond orbits, with five coalesced spines including inner orbital spines, spines separated by fissures; anterolateral margin with ten to twelve spines, spines separated by fissures, with third and fourth, fifth and sixth, seventh and eighth, and ninth and tenth spines paired; posterolateral margins rimmed or with one spine; regions moderately developed, inflated. [SCHWEITZER & FELDMANN, 2000, p. 228.] *Eocene–Pleistocene:* Mexico (Baja California Sur), *Eocene;* Japan, *Miocene–Pleistocene;* Taiwan, *Pleistocene;* Japan, Taiwan, *Holocene.*—FIG. 2.2. *A. itoigawai* (KARASAWA, 1990), cast KSU D 1961 of holotype MFM 9025, lower *Miocene,* Japan, dorsal view, scale bar, 1 cm (new).

Anisospinos SCHWEITZER & FELDMANN, 2000, p. 229 [**Cancer (Romaleon) wabkiakumensis* BERGLUND & GOEDERT, 1992, p. 4, fig. 2–16; OD]. Frontal spines evenly spaced; orbits broad, deeply excavated, orbital rim well developed; anterolateral margin with eight spines including outer orbital spine, spines separated into bases; third and fourth, fifth and sixth, and seventh and eighth anterolateral spines paired; each anterolateral spine of different size and shape than any other; posterolateral margin entire, rim weak if present; carapace regions distinct, granular or ornamented with tubercles; manus of chela with two to four keels on outer surface and sharp spines on upper margin of manus and movable finger. [Emended from SCHWEITZER

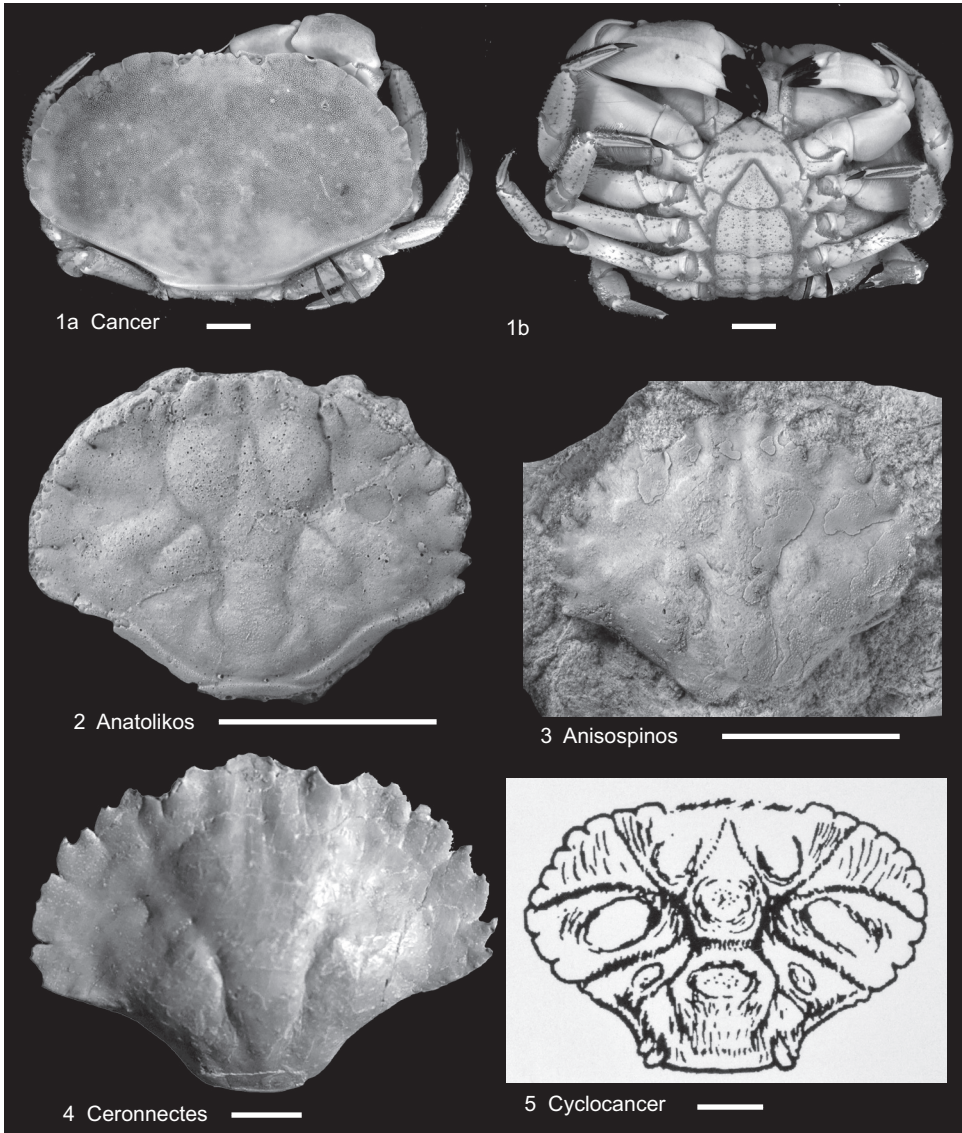


FIG. 2. Family Cancrinae (p. 2–4).

& FELDMANN, 2000, p. 229.] *Eocene* (Priabonian)–*Miocene*: USA (Washington), *Priabonian*; Japan, *Miocene*.—FIG. 2,3. *A. berglundi* (SCHWEITZER & FELDMANN, 2000), cast KSU D 283 of paratype USNM 507769, Priabonian, Washington, scale bar, 1 cm (new).

Ceronnectes DE ANGELI & BESCHIN, 1998, p. 89 [**Cancer boeckhii* LÖRENTHEY, 1897, p. 156; OD]. Carapace ovate, longer than wide, inflated in the central regions, flattened in the lateral ones; front with three lobes; orbits with two fissures; anterolateral margins convex with four pairs of spines;

posterolateral margins concave, longer than anterolateral margins; posterior margin short; carapace regions not well defined; branchiocardiac grooves strong. *Eocene* (Ypresian–Priabonian): France, *Ypresian*; Italy, *Lutetian*; USA (North Carolina), *Priabonian*.—FIG. 2,4. **C. boeckhii* (LÖRENTHEY), MCZ 1563, Lutetian, Italy, scale bar, 1 cm (new, photo by A. De Angeli, Associazione Amici del Museo Zannato, Montebelluna Maggiore, Vicenza, Italy).

Cyclocancer BEURLEN, 1958, p. 15, pl. 1,6, 3,5 [**C. tuberculatus*; OD]. Carapace ovate, narrowing

- distally; anterolateral margins tightly convex, cripate, with spines separated by fissures; posterolateral margin concave, with a few spines separated by fissures; posterior margin straight, with spines at corners; carapace regions well defined, apparently with well-defined epibranchial region. *Miocene*: Brazil.—FIG. 2,5. **C. tuberculatus*, Museu Nacional da Universidade Federal do Rio De Janeiro No. 4-617-I, scale bar, 1 cm (BEURLEN, 1958, pl. 3,5).
- Glebocarcinus** NATIONS, 1975, p. 22 [**Trichocera oregonensis* DANA, 1852b, p. 86; OD; =*Platycarcinus recurvidens* SPENCE BATE, 1864, p. 663; =*Trichocarcinus walker* HOLMES, 1900, p. 53; =*Lophopanopeus somaterianus* RATHBUN, 1930a, p. 332, pl. 153,3–4]. Carapace about three-quarters as long as wide; front not produced beyond orbits; frontal regions axially sulcate; fronto-orbital width nearly half of maximum carapace width; orbits directed weakly anterolaterally; anterolateral margin with nine spines, separated to bases, directed forward, sharp, with granules or spinelets; spines 2/3 and 4/5 may be paired; posterolateral margin nearly straight or weakly concave, rimmed, with two small spines; regions inflated, densely granular, defined by broad grooves; mani of first pereopods short, with five rows of tubercles on outer surface, upper margin with four granular projections; fixed finger short, narrow at tip; movable finger with hooked tip, narrowed distally, with two rows of granules. *Miocene* (*Burdigalian*)–*Holocene*: Switzerland, *Burdigalian*; Japan, *Pliocene*; USA (California), *Pleistocene*; North Pacific Ocean, *Holocene*.—FIG. 3,1a–b. *G. amphioetus* (RATHBUN, 1898b), USNM 2010, *Holocene*, North Pacific Ocean; dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).
- Metacarcinus** A. MILNE EDWARDS, 1862, p. 33 [**Cancer magister* DANA, 1852b, p. 73; OD]. Carapace about two-thirds wider than long; front not usually produced beyond orbits; fronto-orbital width about one-quarter to one-third maximum carapace width; orbits shallow, directed forward; anterolateral margins with nine or ten spines; spines variable in form, either small, sharp, and separated to bases or small, sharp, and fissured; spine margins simple, serrate, or granular; posterolateral margins rimmed, sometimes with one spine; carapace regions poorly developed and smooth or ornamented with granules; mani of chelipeds long, usually with four keels on outer surface, keels granular or smooth; distal margin of mani extending at approximately 120° angle to upper margin; fixed finger with two keels; movable finger with sharp spines, granules, or smooth keel on upper surface. *Oligocene*–*Holocene*: USA (Alaska), *Oligocene*; Japan, *Langhian*; USA (California, Washington), *Miocene*; Belgium, *Piacenzian*; New Zealand, *Gelasian*; Belgium, Japan, USA (California, USA), *Pliocene*; New Zealand, USA (California), *Pleistocene*; antitropical Pacific Ocean, North & South America, *Holocene*.—FIG. 3,2a–b. **M. magister* (DANA), KSU 2535, *Holocene*, Alaska; dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).
- Microdium** REUSS, 1867, p. 173, pl. 8,7–8 [**M. nodulosum*; M]. Carapace wider than long, length about 77 percent maximum carapace width, widest in posterior one-third, weakly vaulted transversely and longitudinally; highest point on carapace in cardiac region; front unknown; orbital margins upturned, with two deep fissures, outer-orbital spine small, fronto-orbital width about 55 percent maximum carapace width; anterolateral margins weakly convex, five upturned spines excluding outer-orbital spine; posterolateral margin shorter than anterolateral margin, straight, with three spines. Regions defined by swellings, grooves indistinct; mesogastric region with long, narrow anterior process; posterior bulbous and ovoid, extending far posteriorly, with central elevation; cardiac region circular. Protogastric regions with two granular tubercles, anteriormost pair close to midline; hepatic regions large, with large granular tubercle; branchial regions undifferentiated, with two tubercles arrayed transverse to long axis, outer larger than inner. *Miocene* (*Langhian*): Hungary, Poland.—FIG. 3,3. **M. nodulosum*, NHMW 1867.VII.93, *Miocene*, Poland, scale bar, 1 cm (new).
- Notocarcinus** SCHWEITZER & FELDMANN, 2000, p. 239–240, fig. 7 [**N. sulcatus*; OD]. Carapace small, diamond-shaped, about three-quarters as long as wide; front projecting beyond orbits, five frontal projections separated by fissures; fronto-orbital width nearly half maximum carapace width; orbits shallow, broad, anterolaterally directed; anterolateral margin with eight spines including outer orbital spine, spines separated by fissures and truncated at tips, margins granular; posterolateral margin weakly concave, rimmed; carapace surface undulose; hepatic, frontal and epigastric regions depressed, separated by broad protogastric areas. *Oligocene*–*Miocene*: Patagonia, Argentina.—FIG. 3,4. **N. sulcatus*, cast KSU D 1249 of holotype UNP 4343, *Miocene*, Argentina, scale bar, 1 cm (new).
- Platepistoma** RATHBUN, 1906, p. 876, fig. 33 [**P. macrophthalmus*; M]. Carapace hexagonal, about three-quarters as long as wide; front projected slightly beyond orbits; five frontal spines poorly developed; fronto-orbital width 38 to 44 percent maximum carapace width; orbits shallow, directed forward; anterolateral margin with eight or nine spines, spines separated to bases, simple, reduced; posterolateral margin nearly straight, entire or with one spine, rimmed; regions well defined, ornamented with densely spaced tubercles; carapace grooves deeply excavated, smooth. Manus of cheliped short, outer surface with four or five rows of granules, upper margin with several short spines or granular. *Miocene* (*Langhian*)–*Holocene*: Japan, *Langhian*; Japan, *Miocene*: Indo-West Pacific region, *Holocene*.—FIG. 4,1a–b. *P. balssi* (ZARENKOV, 1990), USNM 256534, *Holocene*, Austral Islands, South Pacific Ocean, dorsal (*a*) and ventral (*b*) regions, scale bars, 1 cm (new).
- Romaleon** GISTEL, 1848, p. xi [**Corystes* (*Trichocera*) *gibbosula* DE HAAN, 1833 in 1833–1850, p.16;

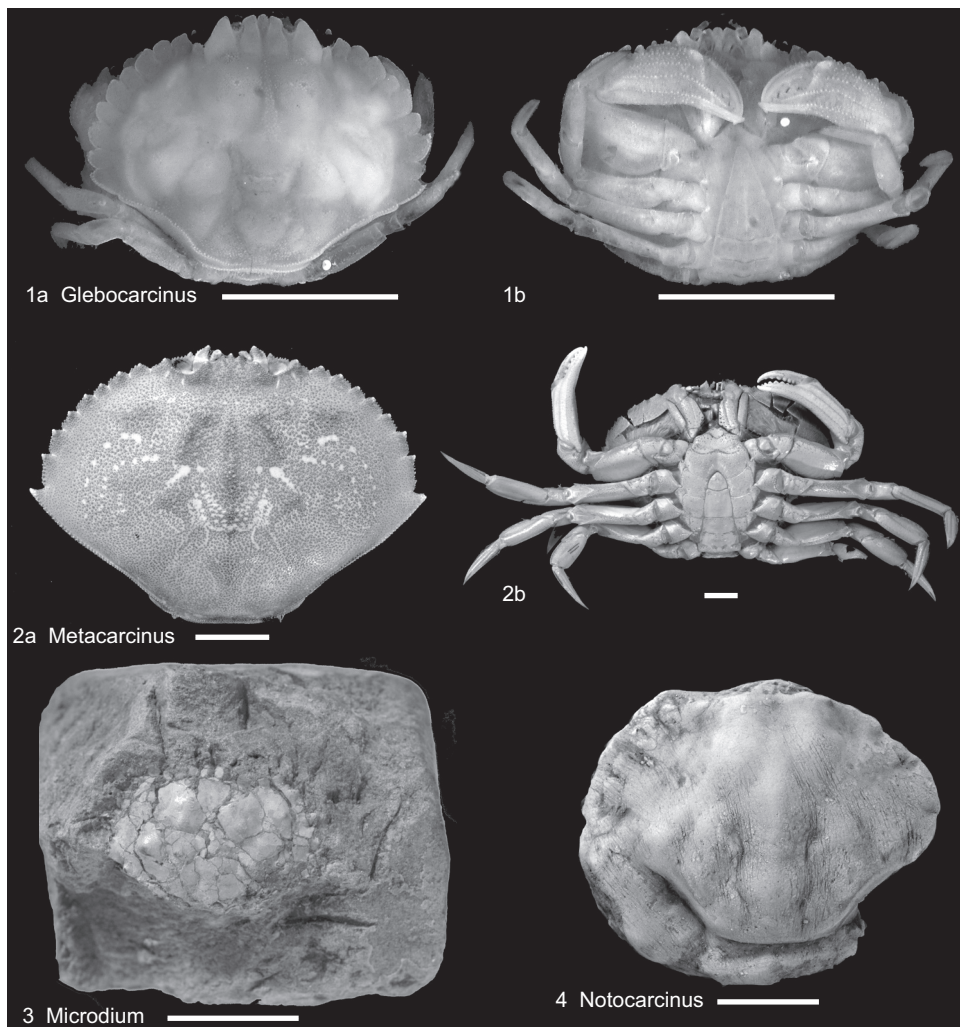


FIG. 3. Family Cancrinae (p. 4).

M] [= *Corystes (Trichocera)* DE HAAN, 1833 in 1833–1850, p. 16 (type, *C. (T.) gibbosula*, M); = *Trichocarcinus* MIERS, 1879, p. 34 (type, *C. (T.) gibbosula*, M), non *Trichocera* MEIGEN, 1803, p. 262]. Carapace 60 to 75 percent as long as wide; fronto-orbital width from 29 to 44 percent maximum carapace width; orbits shallow, directed forward; anterolateral margin with nine spines, spines curving forward, separated to bases; posterolateral margins concave, sometimes with one spine; carapace regions moderately defined, sometimes with granules or transverse ridges; manus of cheliped elongate, outer surface with four to six keels, upper margin with numerous sharp, distally directed spines. *Miocene (Langhian)*–*Holocene*: Japan, *Langhian*; Argentina, Japan, USA (California), *Miocene*;

Mexico (Baja California), USA (California), *Pliocene*; Chile, Japan, USA (California), *Pleistocene*; North Pacific Ocean, *Holocene*.—FIG. 4, 2a–b. *R. antennarium* (STIMPSON, 1856), USNM 1454988, *Holocene*, North Pacific; dorsal (a) and ventral (b) views, scale bars, 1 cm (new).

Santecarcinus BLOW & MANNING, 1996, p. 16–18, pl. 4, 1 [**S. harmatuki*; OD]. Carpus with very large spine on upper margin. Manus with ridge on upper surface bearing two spines. Surface of both elements strongly granular. *Eocene (Priabonian)*: USA (North Carolina).—FIG. 4, 3. **S. harmatuki*, holotype USNM 488558, scale bar, 1 cm (Blow & Manning, 1996, pl. 4, 1).

Sarahcarcinus BLOW & MANNING, 1996, p. 18, pl. 4, 2 [**S. campbellorum*; OD]. Orbits very broad, with two fissures; fronto-orbital width very broad, about

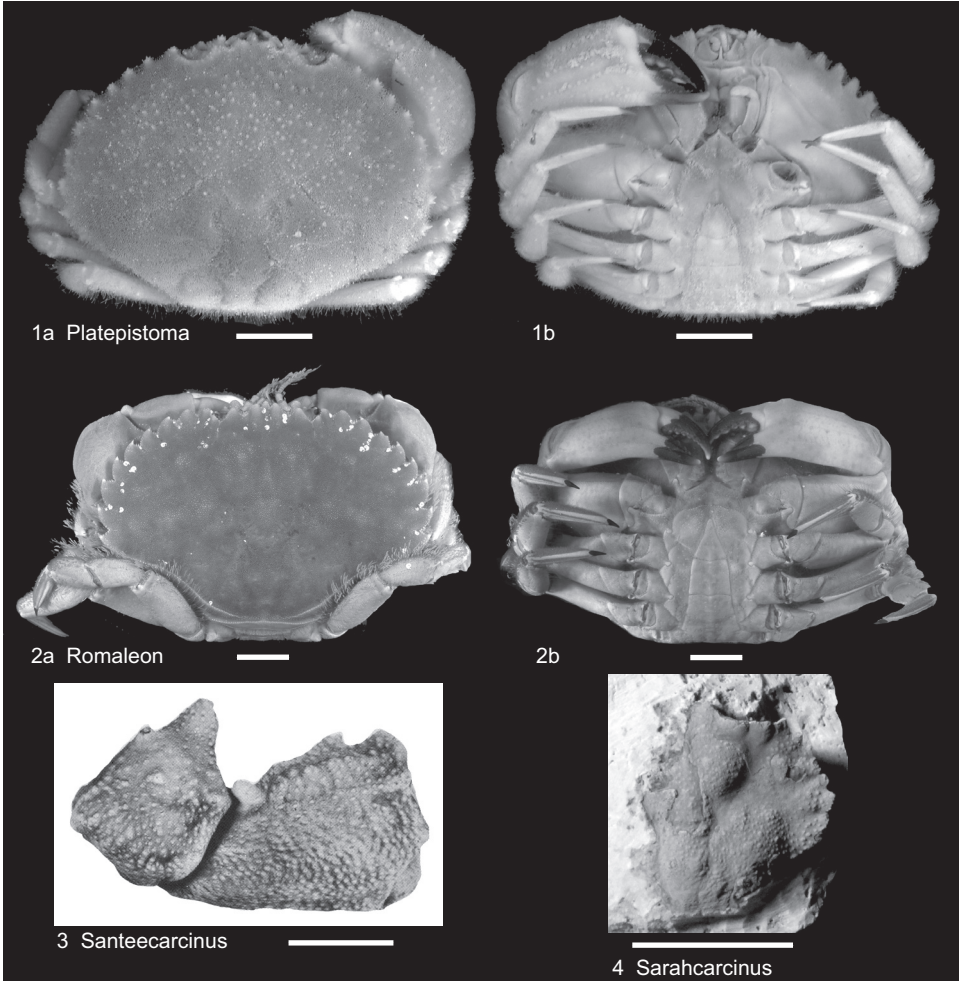


FIG. 4. Family Cancrinae (p. 4–6).

two-thirds maximum carapace width; anterolateral margin with eight spines including outer-orbital spines, posterior six in pairs; protogastric region well-defined and inflated; posterolateral margin initially weakly directed posteriorly, then strongly concave; posterior margin narrow. *Eocene* (Lutetian–Bartonian): USA (South Carolina).—FIG. 4,4. **S. campbellorum*, holotype, USNM 488559, scale bar, 1 cm (new).

Subfamily LOBOCARCININAE Beurlen, 1930

[*nom. transl.* GLAESSNER, 1969, p. 509, *pro* Lobocarcinidae BEURLEN, 1930, p. 353]

Carapace wider than long; front usually with even number of spines, ranging from four to six and, if odd number, with small

central spine at lower level than other spines; anterolateral margin typically with several spines; anterolateral spines well developed, separated to bases, often bifurcate or trifurcate; posterolateral margin typically coarsely granular or with well-developed spines; posterior margin nearly straight, granular or spined; carapace regions typically moderately developed, ornamented with dense granules or with discrete, large spines. *Eocene* (Ypresian)–Pliocene.

Lobocarcinus REUSS, 1857, p. 163 [**Cancer paulinowuerttembergensis* VON MEYER, 1847, p. 91, pl. XI; OD]. Carapace much wider than long; front projected

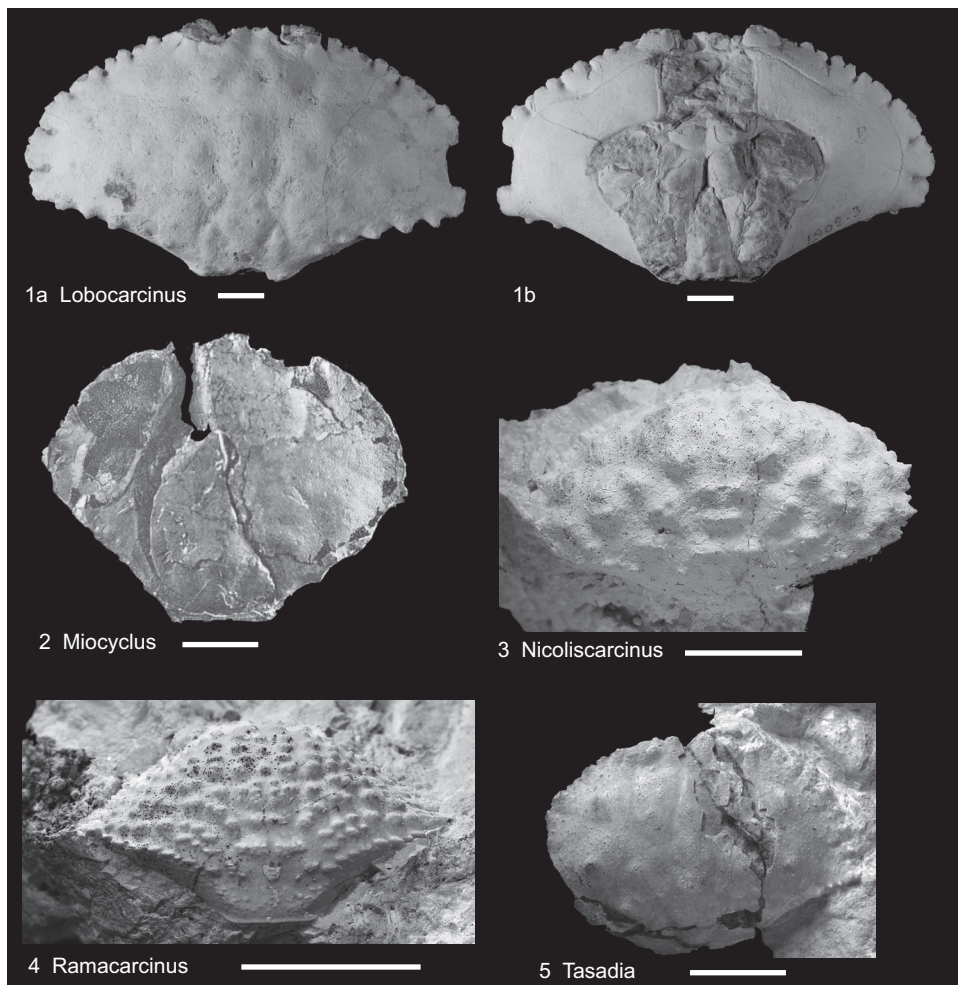


FIG. 5. Family Cancrinae (p. 6–8).

weakly beyond orbits; four to six frontal spines including inner orbital spines; fronto-orbital width from 30 to 40 percent maximum carapace width; orbits round, rimmed, directed forward; anterolateral margin usually with seven lobes, lobes typically sharply bifurcate or trifurcate; posterolateral margin nearly straight, with several spines of varying size; posterior margin nearly straight, sometimes with spines; regions moderately developed, often ornamented with several large nodes; chelipeds slender and equal. *Eocene* (*Lutetian*)–*Pliocene* (*Zanclean*): Spain, *Lutetian*; Pakistan, *Lutetian*–*Bartonian*; Egypt, *Bartonian*–*Priabonian*; Egypt, Hungary, India, Indonesia, Pakistan, *Eocene*; Hungary, Spain, *Langhian*; New Zealand, *Burdigalian*; Austria, *Tortonian*; Algeria, *Messinian*; Italy, *Zanclean*.—FIG. 5, 1a–b. **L. paulinowurtembergensis* (VON MEYER), MNHN.FA24542, Eocene, Egypt; dorsal (a) and ventral (b) views, scale bars, 1 cm (new;

photo by J. Falconnet, Muséum National d'Histoire Naturelle, Collection: Paleontology (F), Paris, France). *Miocyclus* MÜLLER, 1979, p. 5, pl. 2, 1–3, 3, 1 [**M. bulgaricus*; OD]. Carapace flattened, ornamented with small, dense granules; front with six spines including inner orbital spines; anterolateral margin crispate with nine spines, the first eight fissured with blunt margins and last spine sharp and produced; posterolateral margins entire, nearly straight, posterior margin entire; claw not known. *Miocene* (*Langhian*): Bulgaria, Hungary.—FIG. 5, 2. **M. bulgaricus*, holotype, Sofia University Nt 533/a, Langhian, Bulgaria, scale bar, 1 cm (Müller, 1984, pl. 58, 5). *Nicoliscarcinus* BESCHIN & others, 2016, p. 85, pl. 10, 6 [**N. rotundatus*, OD]. Carapace wider than long, ovate; front apparently with four lobes; anterolateral margins with numerous small spines

and blunt projections; posterolateral margin with a few spines anteriorly, then arcing slightly convexly to posterior margin; all carapace regions ornamented with large swellings. *Eocene* (*Ypresian*): Italy.—FIG. 5.3. **N. rotundatus*, holotype, VR 94123, scale bar, 1 cm (new; photo by I. Rocchetti, Museo di Storia natural di Verona, Italy).

Ramacarcinus DE ANGELI & CECCON, 2017, p. 23 [**Rama lineatuberculata* BESCHIN & others, 2016, p. 86, pl. 11, 1; OD] [= *Rama* BESCHIN & others, 2016, p. 86, non *Rama* BLEEKER, 1858, p. 201 (fish)]. Carapace wider than long, transversely widened into sharp anterolateral corners; linear array of transverse tubercles extending from anterolateral corner subparallel to posterolateral margin, terminating adjacent to intestinal region; carapace anterior to the linear tubercle array ornamented with transversely oblong tubercles roughly arranged into transverse rows; orbits apparently wide, directed anterolaterally. *Eocene* (*Ypresian*): Italy.—FIG. 5.4. **R. lineatuberculata* (BESCHIN & others), holotype VR 94124, scale bar, 1 cm (new; photo by I. Rocchetti, Museo di Storia natural di Verona, Italy).

Tasadia MÜLLER in JANSSEN & MÜLLER, 1984, p. 20 [**Cancer carniolicus* BITTNER, 1884, p. 27, pl. 1, 8–9; OD; = *Cancer szontaghii* LÖRENTHEY, 1898, p. 94, pl. 8, 4; = *Cancer bittneri* TOULA, 1904, p. 161, fig. 1–5]. Carapace slightly wider than long; front not projected beyond orbits, with four or five frontal spines; fronto-orbital width about 30 percent maximum carapace width; orbits small, shallow, directed forward; anterolateral margins convex, with eight or nine triangular spines, each with spinelets or granules and separated to bases; posterolateral margin nearly straight, granular, with several small spines; regions well defined, ornamented with densely spaced granules, separated by deep, smooth grooves; manus of chela with at least four granular keels, upper margin with sharp spines. *Miocene* (*Langhian*): Denmark, Hungary.—FIG. 5.5. **T. carniolica* (BITTNER), holotype of *T. bittneri* (TOULA), NHMW 2019/0057/0001, Langhian, Hungary, scale bar, 1 cm (new).

Family MONTEZUMELLIDAE Ossó & Domínguez, 2013

[Montezumellidae OSSÓ & DOMÍNGUEZ, 2013, p. 286]

Carapace ovate, about as wide as long or longer than wide, flattened transversely and longitudinally; front with four lobes or spines; orbits with two fissures, ornamented with inner-, intra-, and outer-orbital spines; anterolateral margins spinose, with at least four spines excluding outer-orbital spine; posterolateral margins sinuous; carapace regions well defined, surface of regions generally granular; male sternum narrow, sternites 2/3 and 4/5 through 7/8 complete, male pleon with all somites free; female

sternum wider than male sternum, gonopores obscured by pleon; chelipeds weakly heterochelous. [Emended from OSSÓ & DOMÍNGUEZ, 2013.] *Eocene–Pliocene*.

Montezumella RATHBUN, 1930b, p. 4, pl. 2 [**M. tubulata*; SD GLAESSNER, 1969, p. 508]. Carapace ovate, longer than wide; front quadrilobed, lobes with tiny spines or serrations; anterolateral margin with four spines; posterolateral margin entire; carapace regions moderately well developed, flattened, ornamented with granules or scabrous rows of granules; axial regions particularly well-marked; epibranchial region composed of two or three segments arranged in an arc. *Eocene* (*Lutetian*): Italy, Spain, UK (England). *Eocene* (*Priabonian*)–*Pliocene*: Bonaire, Hungary, Italy, Mexico (Baja California Sur), UK (England), USA (Florida, Washington), *Priabonian*; Egypt, Italy, *Eocene*; Panama, *upper Oligocene–Miocene*; Fiji, *Pliocene*.—FIG. 6.3. *M. elegans* (LÖRENTHEY in LÖRENTHEY & BEURLEN, 1929), KSU D 146, cast of holotype, E292, *Priabonian*, Hungary, scale bar, 1 cm (new).

Karasawaia VEGA & others, 2008, p. 56 [**Plagiolophus markgrafi* LÖRENTHEY, 1907, p. 225, pl. 1, 5; OD]. Carapace ovate, about as wide as long; anterolateral margin with at least three spines excluding outer-orbital spine; posterior margin wide, entire, rimmed; protogastric regions wide, with arcuate ridge posteriorly; hepatic region bilobate, composed of two triangular elements; mesogastric region, metogastric region, urogastric region, and cardiac regions well defined; cardiac region with transverse ridge; epibranchial region arcuate, composed of at least two segments; mesobranchial region inflated; metabranchial region flattened, continuous with intestinal region. *Eocene* (*Ypresian*): Egypt, ?Mexico (Chiapas).—FIG. 6.1. **K. markgrafi* (LÖRENTHEY), KSU 401, cast of holotype SMNS 67892, *Ypresian*, Egypt, scale bar, 1 cm (new).

Moianella OSSÓ & DOMÍNGUEZ, 2013, p. 293, fig. 6 [**M. cervantesi*; OD]. Carapace slightly longer than wide; front with four well-developed spines; orbital margin with large tubercles yielding serrated appearance; anterolateral spines long, curving anterolaterally; chelae strong, manus ovate. *Eocene* (*Priabonian*): Spain.—FIG. 6.2. **M. cervantesi*, paratype, MGB 59625, *Priabonian*, Spain, scale bar, 1 cm (new; photo by Á. Ossó, Tarragona, Spain).

Pirulella FELDMANN, SCHWEITZER, & ENCINAS, 2010, p. 346, fig. 7 [**P. antipodea*; OD]. Carapace hexagonal, about as wide as long, flattened longitudinally and transversely, ornamented with coarse granules; orbits shallow, with triangular outer-orbital spine, fronto-orbital width about half maximum carapace width; cardiac region with arcuate, reniform swellings parallel to lateral margins. *Pliocene*: Chile.—FIG. 6.4. **P. antipodea*, holotype, SGO.PI.6565, scale bar, 1 cm (new).

Stintonius COLLINS, 2002, p. 86 [**Portunites subovata* QUAYLE & COLLINS, 1981, p. 749,

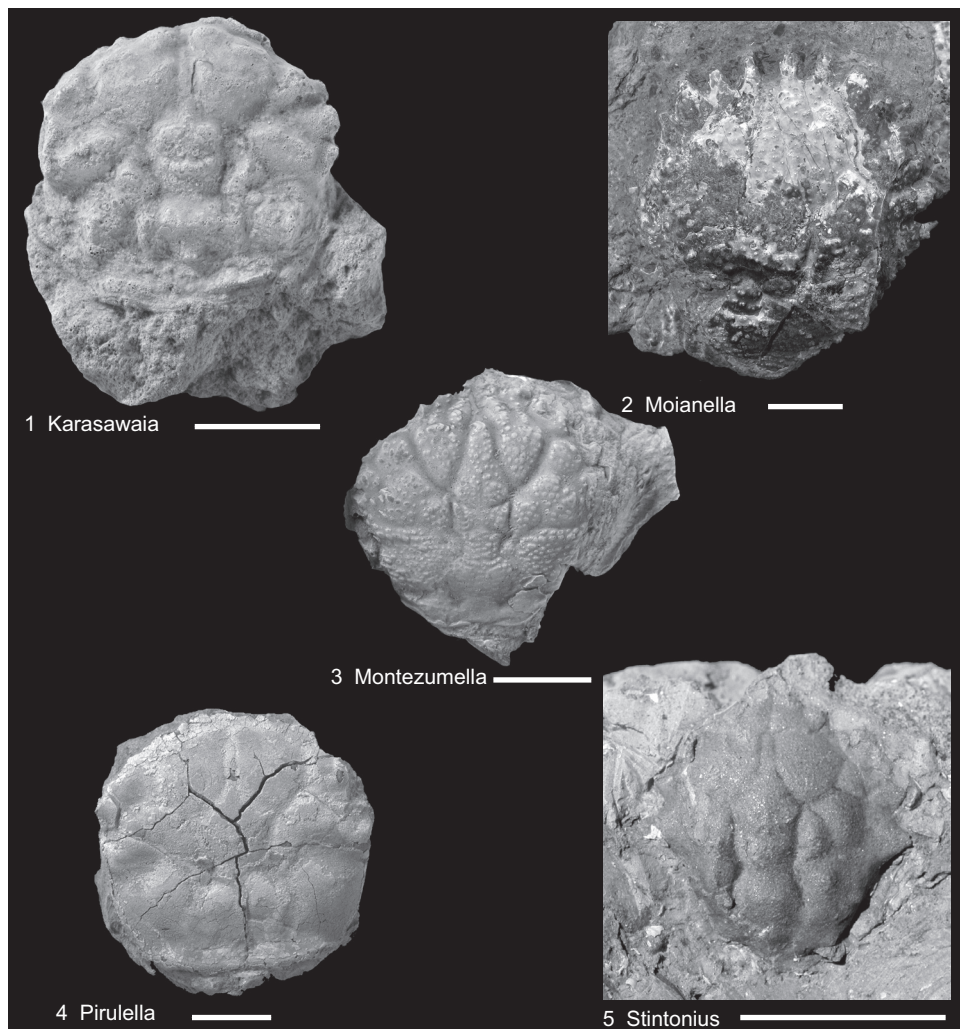


FIG. 6. Family Montezumellidae (p. 8–9).

pl. 105,2; OD]. Carapace longer than wide; orbits directed anterolaterally; anterolateral margin with four spines that become larger posteriorly; carapace regions well defined by narrow grooves; protogastric region long; axial regions long, especially urogastric region; hepatic region reduced; subhepatic region very small; epibranchial region arcuate, comprised of three segments, innermost and outermost segments small and triangular, medial ovate; remainder of branchial region undifferentiated; carapace surface appearing to be densely granulate. *Eocene (Lutetian)*: UK (England).—FIG. 6,5. **S. subovata* (QUAYLE & COLLINS), holotype (BMNH) In. 61714, Lutetian, UK (England), scale bar, 1 cm (new).

Superfamily CHEIRAGONOIDEA Ortmann, 1893

[*nom. transl.* NG, GUINOT, & DAVIE, 2008, p. 55, ex Cheiragonidae ORTMANN, 1893b, p. 419]

As for family. *Holocene*.

Family CHEIRAGONIDAE Ortmann, 1893

[Cheiragonidae ORTMANN, 1893b, p. 419] [=Telmessidae GUINOT, 1977, p. 454]

Carapace ovoid, often as long as or longer than wide; front bilobed or quadrilobed with axial notch; orbits with inner and outer

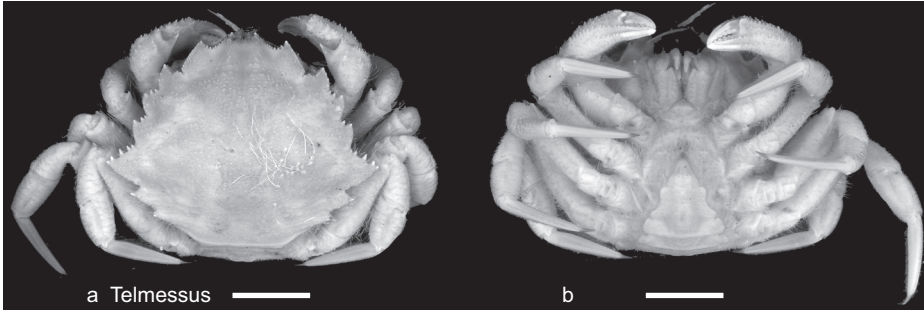


FIG. 7. Family Cheiragonoidea (p. 10).

orbital spines and medial fissure or notch; lateral margins with four to seven lateral spines; posterior quarter of carapace rectangular; basal antennal article with triangular projection extending into orbital hiatus; sutures between sternites 1 and 2 and 2 and 3 interrupted; female genital opening not covered by the abdomen; first pereopods isochelous. [ŠTEVČIĆ, 1988; SCHWEITZER & SALVA, 2000.] *Holocene*.

Telmessus WHITE, 1846, p. 497 [**T. serratus*; M, ICZN Opinion 73, 1941a; =*Cancer cheiragonus* TILESIIUS, 1815 (ICZN Direction 36, 1956); =*Platycorystes ambiguus* BRANDT, 1848, p. 179; =*Cheiragonus hippocarcinoides* BRANDT, 1851, p. 147] [=*Cheiragonus* BRANDT, 1851, p. 147 (type, *C. hippocarcinoides*, M); =*Platycorystes* BRANDT, 1848, p. 179 (type, *P. ambiguus*, M)]. Carapace wider than long, widest at position of third anterolateral spine positioned two-thirds the distance posteriorly on carapace; front quadrilobed; lateral margins with five spines; carapace regions moderately delineated, ornamented with numerous tubercles. *Holocene*: North Pacific Ocean.—FIG. 7. **T. cheiragonus* (TILESIIUS), USNM 16001, *Holocene*, North Pacific, *a*, dorsal; *b*, ventral, scale bars, 1 cm (new).

Superfamily CORYSTOIDEA Samouelle, 1819

[*nom. transl.* DANA, 1852a, p. 119, ex *Corystidae* SAMOUELLE, 1819, p. 82]

As for family.

Family CORYSTIDAE Samouelle, 1819

[*Corystidae* SAMOUELLE, 1819, p. 82] [=*Euryalidae* RATHBUN, 1930a, p. 10; ICZN Opinion 689, 1964a]

Carapace longer than wide, ovate; rostrum projected beyond orbits, with four spines including inner-orbital spines; upper orbital

margin with two fissures; outer-orbital spine short, sharp; anterolateral margin with spines; posterolateral margins long; posterior margin about as wide as fronto-orbital margin; carapace regions poorly to moderately defined; chelipeds long, chela long; sterno-abdominal cavity weakly excavated; abdomen short; sternum narrow, sternal sutures 4/5 through 7/8 interrupted, with longitudinal axial sternal fissure. *Eocene* (*Ypresian*)–*Holocene*.

Corystes LATREILLE, 1802, p. 27 [**Hippa dentata* FABRICIUS, 1793, p. 475; M; =*Cancer cassivelaunus* PENNANT, 1777, p. 5, pl. 7] [=*Euryala* WEBER, 1795, p. 94 (type, *Hippa dentata*, M, suppressed by ICZN Opinion 689, 1964a)]. Carapace longer than wide, ovate; rostrum not well projected beyond orbits, with four spines including inner-orbital spines; upper orbital margin with two fissures; outer-orbital spine short, sharp; anterolateral margin with two spines; posterolateral margins long, with one blunt projection; posterior margin about as wide as fronto-orbital margin; carapace regions poorly defined; chelipeds long, chela long; sterno-abdominal cavity weakly excavated; abdomen short; sternum narrow, sternal sutures 4/5 through 7/8 interrupted, with longitudinal axial sternal fissure. *Eocene* (*Ypresian*–*Lutetian*)–*Holocene*: New Zealand, *Ypresian*–*Lutetian*; Antarctic Peninsula, *Eocene*; Belgium, *Pliocene*; North Atlantic Ocean, *Holocene*.—FIG. 8, 1a–b. **C. cassivelaunus* (PENNANT), USNM 152223, *Holocene*, Mediterranean; dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Corystites MÜLLER, 1984, p. 75 [**Microcorystes latifrons* LÖRENTHEY in LÖRENTHEY & BEURLEN, 1929, p. 137, pl. 8, 4; M (type specimen is lost)] [=*Microcorystes* LÖRENTHEY in LÖRENTHEY & BEURLEN, 1929, p. 137 (obj.), *non Microcorystes* FRITSCH, 1893, p. 105 (type, *M. parvulus* FRITSCH, 1893)]. Carapace ovate, longer than wide; front with four lobes including inner-orbital spines; orbit with two fissures; outer-orbital spine triangular; antero-

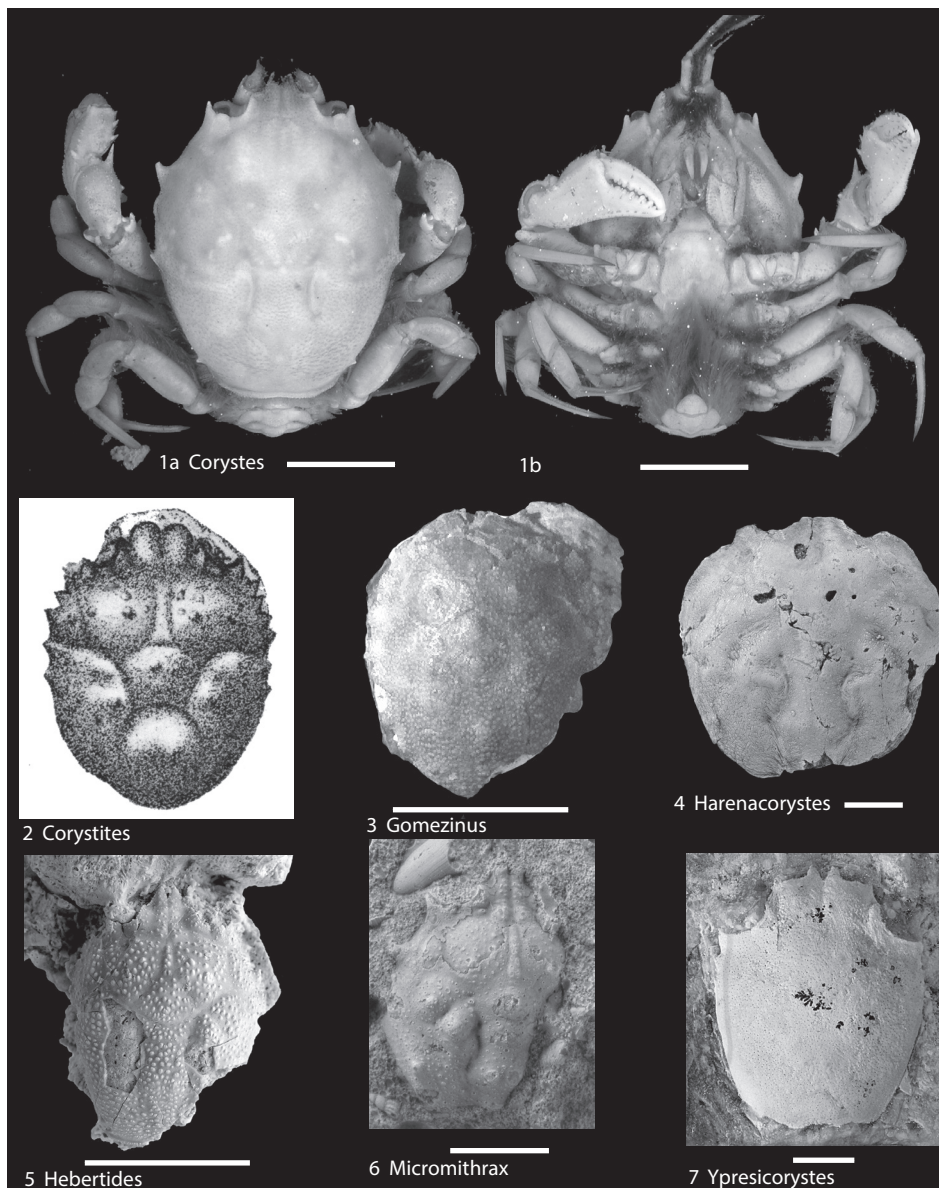


FIG. 8. Family Corystidae (p. 10–12).

lateral margin with several spines; posterolateral margin entire; posterior margin convex; mesogastric and cardiac regions well defined; protogastric region wide, hepatic region narrow, small; branchial regions long, undifferentiated; regions ornamented with scattered large tubercles. *Oligocene (Rupelian)–Miocene (Langhian)*: Italy, *Rupelian*; Hungary, *Langhian*.—FIG. 8,2. **C. latifrons* (LÖRENTHÉY), Miocene, Hungary, unnumbered, type apparently

lost (personal communication, P. MÜLLER, June, 2001) (Lörenthey in Lörenthey & Beurlen, 1929, pl. 8,4a).

Gomezinus COLLINS, LEE, & NOAD, 2003, p. 211, pl. 4,2 [**G. tuberculatus*; OD]. Carapace longer than wide, elongate-ovoid, moderately vaulted longitudinally and strongly vaulted transversely, widest at midlength; front and orbital margins broken; anterolateral and posterolateral margins

undifferentiated, bearing eight blunt spines decreasing in size posteriorly; posterior margin broken; regions poorly defined, mesogastric region triangular, ending before frontal margin, with large node posteriorly; cervical groove sinuous, concave forward, intersecting lateral margin between lateral spines 1 and 2; protogastric regions large, each with granular tubercle in posterior half; hepatic region undifferentiated; metagastric region wider than long, elevated axially; urogastric region poorly defined; cardiac region elongate, with granular axial tubercle; branchial regions not well differentiated, with weak epibranchial swelling and longitudinal row of about four swellings. *Miocene*: Borneo (Sarawak).—FIG. 8,3. **G. tuberculatus*, holotype, (BMNH) IC211, scale bar, 1 mm (new).

Harenacorystes VAN BAKEL & others, 2009, p. 80, fig. 2A–C [**H. johanjansseni*; OD]. Carapace about as wide as long; orbits circular, directed forward; anterolateral margins crispate, convex, merging smoothly with convex posterolateral margin; carapace regions weakly defined as raised areas; hepatic region with two convex-forward, broadly inflated arcs; epibranchial region composed of triangular swelling; urogastric and cardiac regions well defined laterally. *Pliocene (Zanclean–Piacenzian)*: Belgium.—FIG. 8,4. **H. johanjansseni*, KSU 1115, cast of holotype, MAB k.2540, scale bar, 1 cm (new).

Herbertides GUINOT, DE ANGELI, & GARASSINO, 2007, p. 246, fig. 1–3 [**H. jurassica*, OD]. Carapace elongate, longer than wide; front with two triangular spines and two, small inner-orbital projections; orbital margin with one and possibly two fissures; outer-orbital spine short, directed forward; anterolateral margin with at least three spines; posterolateral margin entire, long; posterior margin rimmed; carapace regions moderately defined, ornamented with forward-directed tubercles of varying sizes anteriorly and short, scabrous ridges posteriorly; epigastric regions long, rectangular; protogastric regions wide; hepatic regions narrow; mesogastric region with long anterior process; metagastric, urogastric, cardiac, and intestinal regions confluent; epibranchial regions apparently differentiated from remainder of branchial regions. *Miocene (Langhian–Serravallian)*: France.—FIG. 8,5. **H. jurassica*, holotype, MNHN A24530, scale bar, 1 cm (new, photo by A. De Angeli, Associazione Amici del Museo Zannato, Montecchio Maggiore, Vicenza, Italy).

Micromithrax NOETLING, 1881, p. 363, pl. 20,2 [**M. holsatica*; M]. Carapace ovate; rostrum bifid and with prominent inner-orbital spines; orbital margin with intraorbital and outer-orbital spines; anterolateral margins with at least two spines; posterolateral spines entire; carapace regions moderately defined and ornamented with granules and tubercles of varying sizes. *Miocene–Pliocene*: Belgium, Germany.—FIG. 8,6. **M. holsatica*, KSU 84, cast of holotype, MBA.643, Miocene, Germany, scale bar, 5 mm (new).

Ypresicorystes BESCHIN & others, 2016, p. 88, pl. 11,2 [**Y. expansus*; OD]. Carapace longer than wide, subrectangular, regions not defined; front wide, with two central spines and pair of small spines on either side of axial pair; orbits very large, circular, with wide rim axially, directed anterolaterally; lateral margins converge slightly posteriorly, with two spines anteriorly. *Eocene (Ypresian)*: Italy.—FIG. 8,7. **Y. expansus*, holotype, VR 94139, scale bar, 1 cm (new; photo by I. Rocchetti, Museo di Storia natural di Verona, Italy).

Superfamily TRICHOPELTARIOIDEA Tavares & Cleva, 2010

[Trichopeltarioidea TAVARES & CLEVA, 2010, p. 99]

As for family.

Family TRICHOPELTARIIDAE Tavares & Cleva, 2010

[Trichopeltariidae TAVARES & CLEVA, 2010, p. 99]

Carapace ovate, generally longer than wide; front with three spines; orbits directed anterolaterally, with inner-orbital, outer-orbital, and intraorbital spines; anterolateral margins spinose; carapace regions well defined, ornamented with coarse to fine tubercles and granules; sternum narrow, sterno-abdominal cavity deep, sternal sutures 4/5 and 5/6 incomplete and 6/7 and 7/8 complete; male pleon with all somites free; telson short, rounded; chelipeds heterochelous, often strongly so; female gonopores situated near axis of sternum. [Emended from TAVARES & CLEVA, 2010.] *Eocene (Ypresian)–Holocene*.

Alberticarcinus BESCHIN & others, 2012, p. 60, pl. 9,1 [**A. eocaenus*; OD]. Carapace incompletely preserved; appearing to be about as wide as long; orbits apparently with two fissures; carapace regions well defined, mesogastric and epibranchial regions ornamented with large tubercles, remainder of surface granular; anterolateral margins with five blunt spines. *Eocene (Lutetian)*: Italy.—FIG. 9,1. **A. eocaenus*, holotype, MCZ 2836-I.G.336977, scale bar, 1 cm (new, photo by A. De Angeli, Associazione Amici del Museo Zannato, Montecchio Maggiore, Vicenza, Italy).

Levicyclus SCHWEITZER & others, 2002, p. 10, fig. 13–14 [**L. tepetate*; M]. Carapace wider than long, length about two-thirds maximum width, smooth; orbital rim thick, with open fissure and supraorbital spine, fronto-orbital width about 40 percent maximum carapace width; anterolateral spines short, rectangular at bases, with spinelets. *Eocene*: Mexico (Baja California Sur).—FIG. 9,2. **L.*

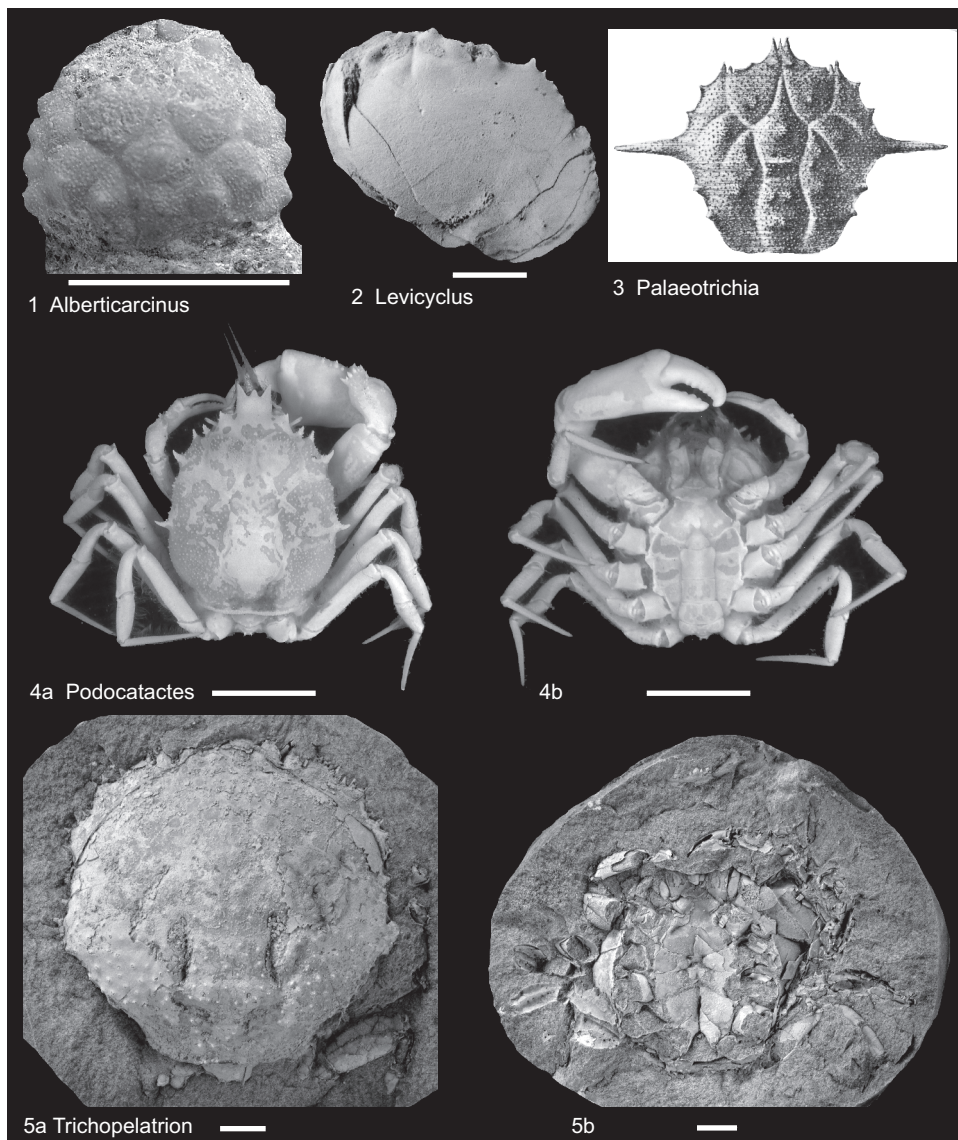


FIG. 9. Family Trichopeltariidae (p. 12–14).

repetate, holotype, MHN-UABCS/Te3/39-4-288, scale bar, 1 cm (Schweitzer & others, 2002, fig. 13).
Palaeotrichia GUINOT, 1976, p. 106 [**Psammocarcinus multispinatus* NOETLING, 1885, p. 138, pl. 3, 1–4; OD]. Carapace slightly longer than wide; front narrow, tridentate; anterolateral margin convex with spines; epibranchial spine long; dorsal surface convex; regions well defined; gastric, cardiac, branchial regions with distinct tubercles. *Oligocene* (*Rupelian*): Germany. — FIG. 9, 3. **P. multispinata* (NOETLING), specimens apparently destroyed (G.

SCHWEIGERT, 2018, personal communication) (Noetling, 1885, pl. 3, 4).
Podocatactes ORTMANN, 1893a, p. 29, pl. 3, 1 [**P. hamifer*; M]. Carapace suboval, much longer than wide; front narrow, tridentate; supraorbital angle large, triangular; upper orbital margin with two fissures; anterolateral margin with three spines; dorsal surface convex, granular, with well-defined regions; male abdomen narrow, elongate; chelipeds unequal; dactyli of pereiopods styliform. *Pliocene–Holocene*: Japan, *Pliocene*; East China Sea, Japan,

Holocene.—FIG. 9,4a–b. **P. hamifer*, USNM 72485; dorsal (a) and ventral (b) views, Holocene, Japan, scale bars, 1 cm (new).

Trichopeltarion A. MILNE EDWARDS, 1880, p. 19 [**T. nobile*; M; ICZN Opinion 73, 1941a; = *Trachycarcinus spinulifer* RATHBUN, 1898a, p. 278, pl. 6, l] [= *Trachycarcinus* FAXON, 1893, p. 156 (type *T. corallinus*, M); = *Krunopeltarion* ŠTEVČIĆ, 1993, p. 1097, fig. 1–2 (type, *K. timorensis*, OD)]. Carapace typically longer than wide; regions inflated and ornamented with granules and/or tubercles; anterolateral spines singular or compound; chelae heterochelous. *Oligocene* (*Chattian*)–*Recent*: USA (Washington), *Chattian*; Argentina, *Oligocene*; Chile, Japan, New Zealand, USA (Washington), *Miocene*; Chile, Fiji, *Pliocene*; Gulf of Mexico, Caribbean Sea, Indo-Pacific Oceans, Australia, New Zealand, southeastern Atlantic Ocean, *Recent*.—FIG. 9,5a–b. *T. greggi* DELL, 1969, *Miocene*, New Zealand; a, KSU D 2614, dorsal; b, KSU D 2615, ventral, scale bars, 1 cm (new).

ABBREVIATIONS FOR MUSEUM REPOSITORIES

BMNH: The Natural History Museum, London, UK
E: Hungarian Natural History Museum, Budapest, Hungary
KSU D: Decapod Comparative Collection, Department of Geology, Kent State University, Kent, Ohio, USA
MAB k: Oertijdmuseum Boxtel, The Netherlands
MBA: Humboldt-Universität zu Berlin Museum, Berlin, Germany
MCZ: Museo Civico “G. Zannato” di Montecchio Maggiore, Vicenza, Italy
MFM: Mizunami Fossil Museum, Mizunami, Gifu, Japan
MGB: Museu de Geologia de Barcelona, Spain
MHN-UABCS: Museo de Historia Natural, Universidad Autónoma de Baja California Sur, La Paz, Mexico
MNH.N.F.: Muséum National d’histoire naturelle, Paris, Collection de Paléontologie, France
NHMW: Naturhistorisches Museum Wien, Vienna, Austria
SGO.PI: Museo Nacional de Historia Natural, Sección Paleontología, Santiago, Chile
SMNS: Staatliches Museum für Naturkunde, Stuttgart, Germany
UNP: Universidad Nacional de La Plata, Argentina
USNM: United States National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA
VR: Museo di Storia natural di Verona, Italy

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