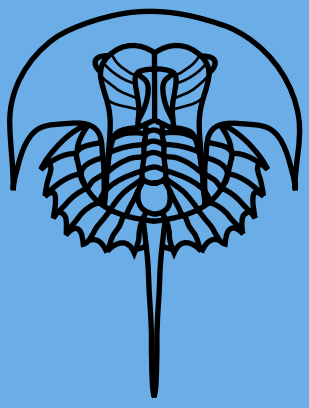

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Part R, Revised, Volume 1, Chapter 8T11: Systematic Descriptions: Superfamily Majoidea

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PART R, REVISED, VOLUME 1, CHAPTER 8T11: SYSTEMATIC DESCRIPTIONS: SUPERFAMILY MAJOIDEA

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For the classification and arrangement of superfamilies, families, subfamilies, and genera within the Majoidea, we follow Ng, Guinot, and Davie (2008), Guinot (2011, 2012), Windsor and Felder (2014) and Lee, Low, and Ng (2018). Definitions of morphology follow Poore (2004).

Superfamily HYMENOSOMATOIDEA MacLeay, 1838

[*nom. transl.* Guinot & Richer de Forges, 1997, p. 453, *ex* Hymenosomidae MacLeay, 1838, p. 68]

As for family.

Family HYMENOSOMATIDAE MacLeay, 1838

[*nom correct*. Stebbing, 1905, p. 49, *pro* Hymenosomidae MacLeay, 1838, p. 68] [=Hymenicinae Dana, 1851c, p. 290]

Carapace small (about 2 mm to 3 cm), poorly calcified, surface flattened, regions not well defined, branchiocardiac groove usually well marked; orbits not developed or not complete, eyes not retracted into orbits; chelipeds generally short; both male and female pleons with fusion of somites. [Emended from Davie, 2002, p. 241.] *Holocene.*

Subfamily HYMENOSOMATINAE MacLeay, 1838

[*nom. transl.* Guinot, 2011, p. 24, *ex* Hymenosomidae MacLeay, 1838; *nom correct.* Stebbing, 1905, p. 49, *pro* Hymenosomidae MacLeay, 1838, p. 68]

Carapace small (about 2 mm to 3 cm), poorly calcified, surface flattened, regions not well defined, branchiocardiac groove usually well marked; orbits not developed or not complete, eyes not retracted into orbits; chelipeds generally short; both male and female pleons with fusion of somites including somite 6 fused to telson and somites 3–4; 3–5; 5, 6, and telson. [Emended from Davie, 2002, p. 241]. *Holocene.*

Hymenosoma Desmarest, 1823, p. 275 [**H. orbiculaire,* p. 275; SD H. Milne Edwards, 1841 in 1836–1844, p. 91, pl. 35,*1*] [=*Leachium* MacLeay, 1838, p. 68 (type, *H. orbiculaire,* OD); =*Centridion* Gistl, 1848, p. viii, unnecessary replacement name for *Leachium;* =*Cyclohombronia* Melrose, 1975, p. 109 (type, *Hymenosoma depressa* Jacquinot & Lucas, 1846 in 1842–1853, p. 62, pl. 5,*34–39,* OD)]. Carapace circular to ovate, flattened; rostrum triangular, with concave lateral margins, generally shorter than eyes, axial regions generally well defined; sternum broad. *Holocene:* South Africa, South Australia, New Zealand.——Fig. 1,*1*. **H. orbiculaire,* Holocene, Indian Ocean (H. Milne Edwards, 1842 in 1836–1844, pl. 35,*1*).

Subfamily ODIOMARINAE Guinot, 2011

[Odiomarinae Guinot, 2011, p. 21]

Rostrum short, flattened; uropods present as platelets at base of fused pleonite 6 and telson, either free or fused; only pleonal somites 6 and telson fused in males; sternum very wide, pleonal cavity only extending to about sternite 6, deep. [Emended from Guinot, 2011, p. 21.] *Holocene.*

Odiomaris Ng & Richer de Forges, 1996, p. 271 [**Elamena pilosa* A. Milne-Edwards, 1873 in 1873–1880, p. 322, pl. 18,*6;* OD]. Grooves on carapace well defined for family; pereiopods short; male pleon with straight lateral margins, overall triangular. [Emended from Ng & Richer de Forges, 1996, p. 271.] *Holocene:* New Caledonia.——Fig. 1,*2a–b*. **O. pilosus* (A. Milne-Edwards), syntype USNM 20315, Holocene, New

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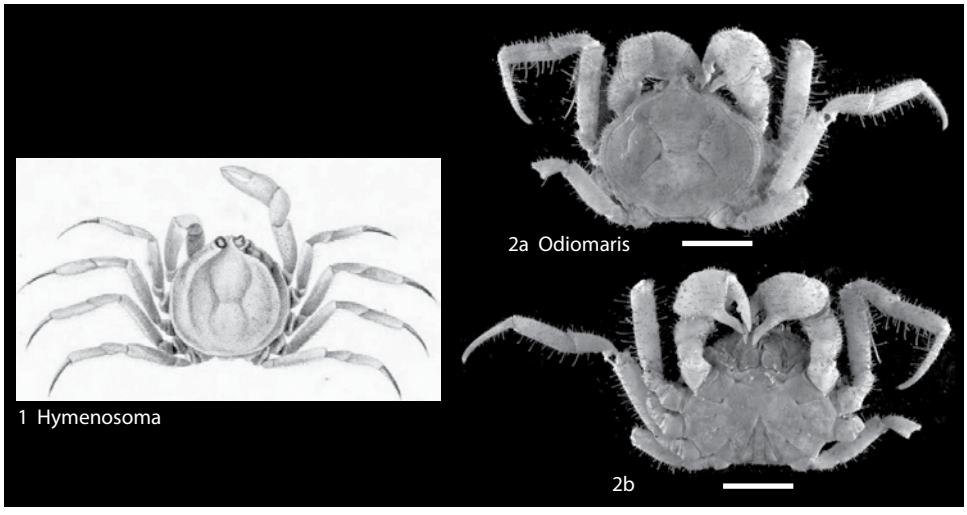

FIG 1. Hymenosomatidae (p. 1–2).

Caledonia, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Superfamily MAJOIDEA Samouelle, 1819

[*nom. correct.* TOZZETTI, 1877, p. 4, *pro* Maioidea SAMOUELLE, 1819 (*nom. correct.,* and *nom. transl.* DANA 1851b, p. 121, *pro et ex* Maïadae SAMOUELLE, 1819, p. 88)]

Carapace typically elongate, widest in branchial regions; typically with long rostrum which is often bifid; carapace may be spinose, flattened, or broadly inflated; anterolateral margins often spinose; chelipeds and walking legs slender, often long, chelipeds usually shorter than other pereiopods; eyes with varying degrees of protection which always has a supraorbital eave and which have some or none of the following: a preorbital spine and/or antorbital spine on the supraorbital eave; a postorbital spine behind the eyestalk that can be cupped to protect the eye; an intercalated spine, which is a spine situated between the supraorbital eave and the postorbital spine; a basal antennal article, which is situated under the supraorbital eave and completes orbit; pleon in males and females with all somites usually free, rarely fused; female genital openings sternal, male openings coxal. [Emended from POORE, 2004, p. 348.] *Upper Cretaceous (Cenomanian)–Holocene.*

Family EPIALTIDAE MacLeay, 1838

[Epialtidae MACLEAY, 1838, p. 56] [=Huenidae MACLEAY, 1838, p. 56; =Amathinae DANA, 1851b, p. 127; =Chorininae DANA, 1851b, p. 125; =Criocarcininae DANA, 1851b, p. 127; =Libininae DANA, 1851b, p. 125; =Menaethinae DANA, 1851b, p. 129; =Othoninae DANA, 1851b, p. 126; =Pisinae DANA, 1851b, p. 124; =Pyrinae DANA, 1851b, p. 126; =Tychinae DANA, 1851b, p. 127; =Acanthonychidae STIMPSON, 1871a, p. 127; =Picrocerinae NEUMANN, 1878, p. 12; =Lissoida ALCOCK, 1895, p. 161; =Blastidae STEBBING, 1902, p. 2; =Ophthalmiinae BALSS, 1929, p. 6; =Hyasteniinae BALSS, 1929, p. 14; =Pliosominae ŠTEVČIČ, 1994, p. 419; =Alcockiini ŠTEVČIČ, 2005, p. 98]

Carapace elongate, triangular or cuneate, sometimes with unusually projected anterolateral margins; rostrum bifid or singular, long or short; eyes without true orbits, supraorbital eave weak, without intercalated spine, eyestalks short or absent, eyes protected by very long rostrum or preorbital spine, sometimes a postorbital spine present but not cupped to protect eye; merus and ischium of maxilliped equally wide; pereiopods 3–5 often very short compared to 1 and 2. *Eocene (Ypresian)–Holocene.*

Subfamily EPIALTINAE MacLeay, 1838

[*nom. transl.* PETERS, 1851, p. 403, *ex* Epialtidae MACLEAY, 1838, p. 56] [=Huenidae MACLEAY, 1838, p. 56; =Menaethinae DANA, 1851b, p. 129; =Acanthonychidae STIMPSON, 1871a, p. 127; =Alcockiini ŠTEVČIČ, 2005, p. 98]

Carapace elongate, cuneate, sometimes with unusually projected anterolateral margins; rostrum bifid or singular, long or short; eyes without true orbits, supraorbital eave weak,

without intercalated spine, eyestalks short or absent, eyes protected by very long rostrum or preorbital spine, sometimes a postorbital spine present but not cupped to protect eye; merus and ischium of maxilliped equally wide; pereiopods 3–5 often very short compared to 1 and 2. *Eocene (Ypresian)–Holocene.*

Epialtus H. Milne Edwards, 1834 in 1834–1840, p. 344 [**E. bituberculatus,* p. 345, pl. 18,*11;* SD Miers, 1879, p. 650; =*Epialtus affinis* Stimpson, 1859, p. 49] [=*Carnifex* Gistl, 1848, p. ix, unnecessary emendation of *Epialtus*]. Carapace flattened, without tubercles or other ornament; rostrum long, blunt-tipped, eyes situated at base; margin concave and forward directed lateral to rostrum, then subparallel with some projections, then converging posteriorly; posterior margin very narrow, convex. *Pliocene–Holocene. Pliocene:* Fiji. *Holocene:* Atlantic Ocean, Caribbean Sea, Mexico (Gulf of California).——Fig. 2,*1*. **E. bituberculatus,* USNM 24849, Holocene, Florida, dorsal carapace, scale bar, 1 cm (new).

Bolcapisa Beschin, Busulini, Tessier, & Zorzin, 2016, p. 81 [**B. giulianae,* p. 81, pl. 10, OD]. Carapace longer than wide, widest in posterior one-fifth, strongly vaulted longitudinally; rostrum bilobed, flabellate, orbit situated at base of rostrum, directed laterally, with two open fissures, fissures bounding intraorbital spine; postorbital spine small, directed anterolaterally; regions moderately developed as large, bulbous inflations, ornamented by scattered large tubercles. *Eocene (Ypresian):* Italy.——Fig. 2,*2*. **B. giulianae,* holotype VR 94107, Eocene, Italy, scale bar, 5 mm (new; photo by R. Zorzin, Museo Civico di Storia Naturale di Verona, Italy).

Eoinachoides Van Straelen, 1933, p. 5 [**E. senni,* p. 5, fig. 3; M]. Carapace ovate, narrowed anteriorly and widened posteriorly, axial regions well defined, cardiac region with two tubercles; sternum ovate, sternite 4 long, sternite 5 directed anterolaterally, sternite 6 directed laterally, sternites 7 and 8 directed posterolaterally, sternite 8 small; sternites 4/5 through 7/8 interrupted. *Eocene (Priabonian)–Miocene. Eocene (Priabonian):* Venezuela. *Miocene:* Argentina, Peru, Venezuela.——Fig. 2,*3*. **E. senni,* KSU 1228, cast of BAR 2437-26, Miocene, Argentina, scale bar, 1 cm (new).

Nanomaja Müller & Collins, 1991, p. 68 [**N. simplex,* p. 68, pl. 4,*5–6;* OD]. Carapace longer than wide; protogastric regions and mesogastric regions inflated; orbit probably with supraorbital eave and postorbital spine; posterior margin rimmed. *Eocene (Priabonian):* Hungary.——Fig. 2,*4*. **N. simplex,* KSU 116, cast of holotype EK M HNHM 11, Eocene, Hungary, scale bar, 1 mm (new).

Panticarcinus Collins & Saward, 2006, p. 72 [**P. maylandiensis,* p. 72, pl. 1,*3–4;* OD]. Carapace longer than wide, triangular, maximum width just anterior to posterior margin, regions well defined as swellings, bearing blunt nodes; rostrum long, triangular, deeply sulcate, with elevated nodose margins; orbits below rostrum, directed laterally, rimmed, bounded anteriorly by inner-orbital spine, with one upper-orbital fissure; mesogastric region depressed below swollen, nodose, protogastric regions; epibranchial region with conical node projected dorsolaterally; grooves weak; urogastric and cardiac regions with nodes; branchial regions strongly inflated, nodose, with lateral spine projected as the broadest point on carapace. *Eocene (Ypresian):* UK (England).——Fig. 2,*5*. **P. maylandiensis,* holotype (BMNH) IC 455, Eocene, England, scale bar, 1 cm (new).

Pugettia Dana, 1851a, p. 268 [**P. gracilis,* p. 268; SD Miers, 1879, p. 650; =*Pugettia lordii* Spence Bate, 1864, p. 662]. Carapace obovate, rostrum bifid, deeply axially sulcate; orbits with supraorbital eave with preorbital spine and distinct postorbital spine; lateral margins with several short spines and lobes, mostly directed laterally; posterolateral margins convex; posterior margin narrow; carapace surface smooth axially regions weakly inflated, branchial regions sometimes differentiated. *Miocene (Langhian)–Holocene. Miocene (Langhian):* Hungary. *Pleistocene (Gelasian):* Japan. *Pleistocene:* Japan, USA (California). *Holocene:* Indo-Pacific Ocean.——Fig. 2,*6a–b*. **P. gracilis,* USNM 18140, Holocene, Indo-Pacific Ocean, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Subfamily PERIACANTHINAE Lőrenthey in Lőrenthey & Beurlen, 1929

[*nom. transl.* Števčič, 2013, p. 185, *ex* Periacanthidae Lőrenthey in Lőrenthey & Beurlen, 1929, p. 151]

As for genus. *Eocene.*

Periacanthus Bittner, 1875, p. 77 [**P. horridus,* p. 77, pl. 2,*1;* M]. Carapace longer than wide, ovate, with several very long, sharp spines; rostrum bifid, deeply axially sulcate; orbits with anterolaterally projected supraorbital eave with preorbital spine and antorbital spine and postorbital spine; lateral margins with long spines including a trifurcate spine on branchial region; posterolateral portion of margin with several spines decreasing in length posteriorly; posterior margin short; carapace regions well defined; ornamented with granules and tubercles of varying sizes. *Eocene (Ypresian–Bartonian). Eocene (Ypresian):* Spain. *Eocene (Lutetian):* Hungary, Italy, Spain, UK. *Eocene (Bartonian):* Hungary, Italy, Spain, UK (England). *Eocene (Priabonian):* Italy.——Fig. 2,*7*. **P. horridus,* KSU 142, Eocene, Hungary, scale bar, 1 cm (new).

Subfamily PISINAE Dana, 1851

[Pisinae Dana, 1851b, p. 124] [=Amathinae Dana, 1851b, p. 127; =Chorininae Dana, 1851b, p. 125; =Libininae Dana, 1851b, p. 125; =Pyrinae Dana, 1851b, p. 126; =Lissoida Alcock, 1895, p. 161; =Blastidae Stebbing, 1902, p. 2; =Hyasteniinae Balss, 1929, p. 14]

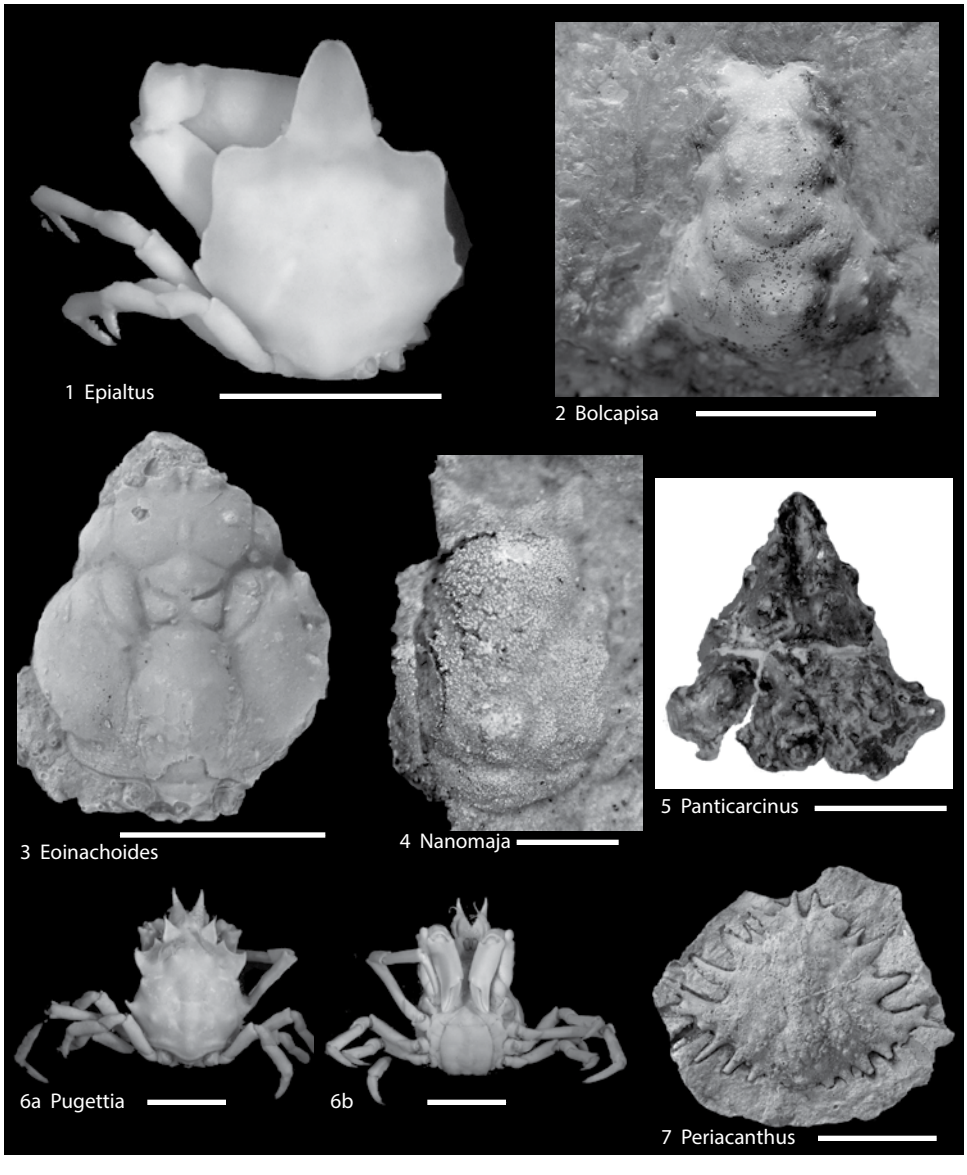

FIG 2. Epialtidae (p. 3).

Rostrum bifid, long or short; orbit always with postorbital spine or lobe, usually cupped but never concealing eye in dorsal view, sometimes with preorbital spine; carapace triangular, often rounded posteriorly, sometimes with posterior spine. *Eocene (Lutetian)–Holocene.*

Pisa LEACH, 1814 in 1813–1814, p. 431 [**Cancer biaculeatus* MONTAGU, 1815, p. 2, pl. 1,*2;* M, ICZN Opinion 708, 1964a; =*Maia armata* LATREILLE, 1803, p. 98; =*Blastia tridens* LEACH in WHITE, 1847a, p. 5; =*Pisa gibbsii* LEACH, 1815 in 1815–1875, pl. 19; =*Inachus musivus* OTTO, 1828, p. 334] [=*Arctopsis* LAMARCK, 1801, p. 155 (type, *A. lanata,* p. 155, M); =*Blastus* LEACH, 1814 in 1813–1814, p. 431 (type, *Cancer tetraodon* PENNANT, 1777, p. 6, fig. 15, M)]. Carapace oblanceolate; rostrum bifid, deeply axially sulcate; supraoarbital eave with preorbital spine, very short intraorbital spine, and postorbital spine; lateral margin with anterior

spine and posterolateral spine; posterior margin with posteriorly directed spine; carapace regions moderately defined; pereiopods relatively short; tips of fingers spoon shaped. *Miocene (Langhian):* Hungary, Poland. *Miocene (Tortonian):* Austria. *Pliocene (Zanclean)–Pleistocene:* Italy. *Holocene:* east Atlantic Ocean, Mediterranean Sea.——Fig. 3,*1a–b*. *Pisa tetraodon* Pennant, 1777, USNM 6549, Holocene, Mediterranean Sea, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Chorilia Dana, 1851a, p. 269 [**C. longipes;* M]. Carapace oblanceolate; rostrum long, bifid, deeply axially sulcate; supraorbital eave with preorbital spine, postorbital spine short; lateral margins constricted at base of hepatic region, with spine in branchial region; posterolateral margins converging posteriorly to very narrow posterior margin; carapace regions moderately well defined, ornamented with central large nodes. *Miocene–Holocene. Miocene:* Taiwan. *Pliocene:* Japan, Taiwan. *Holocene:* North Pacific Ocean.——Fig. 3,*2a–b*. **C. longipes,* USNM 46534, Holocene, California, USA, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Grolamaia Beschin, De Angeli, Cecchi, & Zarantonello, 2012, p. 50 [**G. vicariottoi,* p. 51, pl. 6,*5;* OD]. Carapace longer than wide, widening posteriorly; rostrum broadly bifid, two branches separated by broad notch; orbits rimmed, directed anterolaterally; orbital margins with two fissures, fissures border intraorbital spine, orbit bordered posteriorly by blunt spine; regions well defined, ornamented on axial regions with large broadly spaced tubercles and on lateral regions with smaller, more closely spaced tubercles. *Eocene (Lutetian):* Italy.——Fig. 3,*3*. **G. vicariottoi,* holotype MCZ 3699, Holocene, Italy, scale bar, 5 mm (new; photo by A. De Angeli, Associazione Amici del Museo Zannato, Montecchio Maggiore, Vicenza, Italy).

Herbstia H. Milne Edwards, 1834 in 1834–1840, p. 301 [**Cancer condyliatus* Fabricius, 1787, p. 324; M, ICZN Opinion 712, 1964b; =*Mithrax herbsti* Risso, 1827, p. 25; =*Mithrax scaber* Costa & Costa, 1840 in 1838–1871, p. 2] [=*Rhodia* Bell, 1835, p. 169 (type, *R. pyriformis,* p. 170, M); =*Herbstiella* Stimpson, 1871b, p. 93 (type, *Herbstia depressa* Stimpson, 1860a, p. 185; OD); =*Fisheria* Lockington, 1877b, p. 72 (type, *F. depressa,* p. 72, *non Herbstia depressa* Stimpson, 1859; M)]. Carapace much longer than wide, elongate-pyriform, widest in branchial region at level of cardiac region, moderately vaulted transversely and flattened longitudinally; rostrum axially sulcate, bifid, two spines short, stout, only slightly diverging; orbits well developed, directed anterolaterally; orbital eave with small anterior spine, separated from postorbital rim which has postorbital spine and continues anteroventrally where it terminates against basal article of antenna; eyestalk slender; anterolateral margin with one small spine excluding outer-orbital spine; posterolateral margin with four spines extending to posterolateral corner, nearly straight and diverging posteriorly to level of cardiac region, then curving axially; posterior margin with concave reentrants on either side of posteriorly directed axial projection; regions poorly defined, cervical groove well defined, extending to flanks; very subtle protogastric swellings; cardiac region weakly inflated, bearing prominent node at posterior termination; branchial regions undifferentiated, weakly inflated. *Miocene (Messinian)–Holocene. Miocene (Messinian):* Malta. *Pliocene–Pleistocene:* Barbados. *Holocene:* Mediterranean Sea, Atlantic Ocean, east Pacific Ocean, Galapagos Islands, east Australia.——Fig. 3,*4a–b*. *a*, **H. condyliata* (Fabricius), USNM 14509, Holocene, Mediterranean Sea, scale bar, 1 cm (new); *b*, *H. exserta,* (BMNH) In.61199, Pleistocene, Barbados, scale bar, 5 mm (new).

Hyastenus White, 1847b, p. 56 [**H. sebae,* p. 57; M; =*Hyastenus oryx* A. Milne-Edwards, 1872, p. 250, pl. 14,*4*]. Carapace pyriform, much longer than wide; rostral spines long, divergent, without accessory spinules; intercalated spine absent; supraorbital eave prominent, separated from postorbital tooth by narrow, often half-closed or keyhole-shaped slit; dorsal surface smooth, or covered with tubercles of various sizes; pleon with seven somites; chelipeds of male stout; pereiopods 2 longest. *Eocene (Priabonian)–Holocene. Eocene (Priabonian):* Italy. *Oligocene (Rupelian):* Italy. *Miocene (Langhian):* Austria. *Miocene:* Japan, Sabah. *Pleistocene:* Japan. *Holocene:* Indo-West Pacific Ocean.——Fig. 4,*1a–b*. **H. sebae,* USNM 49886, Holocene, Philippines, dorsal (*a*) and ventral (*b*) views, scale bars 5 mm (new).

Lessiniamathia Ceccon & De Angeli, 2018, p. 148 [**L. bolcense,* p. 149, fig. 3; OD]. Carapace longer than wide, widest in posterior one-quarter, rostrum apparently bifid; lateral margins with very stout, sharp spines; dorsal carapace regions moderately defined, ornamented with very stout, apparently sharp spines. *Eocene (Ypresian):* Italy.——Fig. 4,*2*. **L. bolcense,* MCV 17/09, Eocene, Italy, scale bar, 5 mm (new; photo by A. De Angeli, Associazione Amici del Museo Zannato, Montecchio Maggiore, Vicenza, Italy).

Libinia Leach, 1815 in 1814–1817, p. 129 [**L. emarginata,* p. 130, pl. 58; M; =*Libinia canaliculata* Say, 1817 in 1817–1818, p. 77, pl. 4,*1*]. Carapace cordate, as wide as long; rostrum short, singular or with bifid tip; orbits small, supraorbital eave short, postorbital spine short; lateral margins regularly convex, with small spines; axial regions well defined, carapace surface ornamented with widely spaced tubercles. *Miocene–Holocene. Miocene:* USA (North Carolina, Virginia). *Pliocene:* Fiji, Peru. *Pleistocene:* Jamaica, USA (California, New Jersey, Texas). *Holocene:* Atlantic Ocean, eastern Pacific Ocean.——Fig. 4,*3a–b*. **L. emarginata,* KSU D 2751, Holocene, Atlantic Ocean, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Loxorhynchus Stimpson, 1857, p. 451 [**L. grandis,* p. 452; SD Miers, 1879, p. 652]. Carapace cordate; rostrum bifid, short; supraorbital eave with preorbital spine and weak antorbital spine, postorbital spine short; lateral margins with several spines; dorsal carapace uniformly ornamented with large

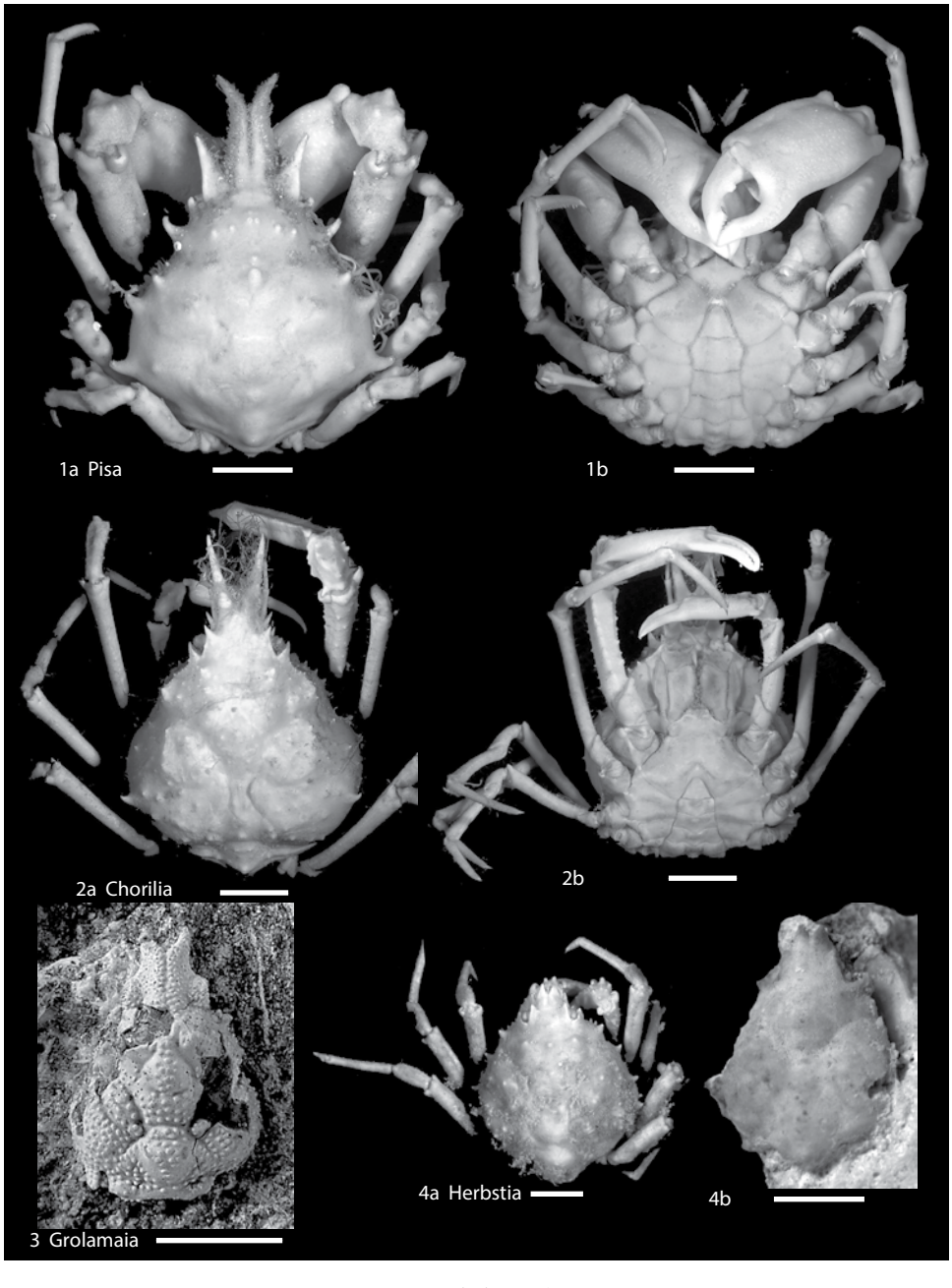

FIG 3. Epialtidae (p. 4–5).

sharp tubercles; pereiopods short. *Pliocene–Holocene. Pliocene–Pleistocene:* USA (California). *Holocene:* Northeast Pacific Ocean.——FIG. 4,*4a–b*. **L. grandis,* USNM PAL 165476, Pliocene, California, USA, dorsal carapace (*a*) and ventral surface (*b*); scale bars, 1 cm (new).

Pisoides H. MILNE EDWARDS & LUCAS, 1843, p. 10 [*P. tuberculosus* H. MILNE EDWARDS & LUCAS, 1843, p. 11; M; =*Hyas edwardsi* BELL, 1835, p. 171]. Carapace rounded pyriform, longer than wide; rostrum flattened with two short spines; intercalated spine absent; supraorbital eave prominent, separated from

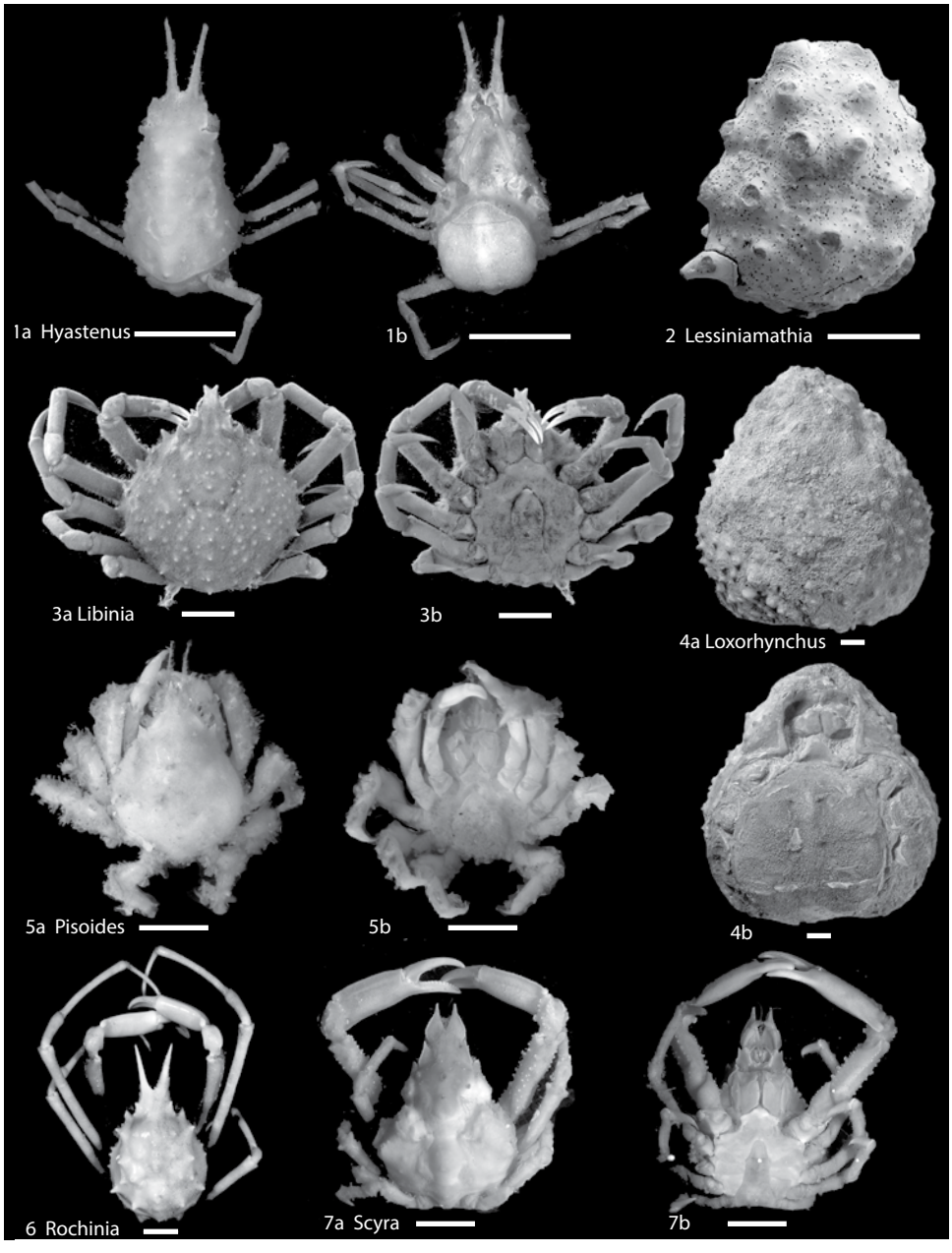

FIG 4. Epialtidae (p. 5–8).

sharp post orbital spine by narrow, deep notch; dorsal surface with tubercles; male pleon seven-segmented; chelipeds stout; pereiopods 2 longest. *Miocene–Holocene. Miocene:* Japan. *Pleistocene:* Japan, Sarawak. *Holocene:* Pacific Ocean.——FIG. 4,*5a–b*. **P. edwardsii* (BELL), USNM 98309, Holocene, Chile, dorsal (*a*) and ventral (*b*) views, scale bars, 5 mm (new).

Rochinia A. MILNE-EDWARDS, 1875 in 1873–1880, p. 86 [**R. gracilipes,* p. 86, pl. 18,*1;* M; ICZN Opinion 712, 1964b]. Carapace deltoid; rostrum bifid; supraorbital eave with preorbital spine,

postorbital spine developed; lateral margins and carapace surface with short and long spines, laterally especially long spines on hepatic and branchial region as well as posterior margin; carapace regions with globular swellings; male thoracic sternites without transverse ridges; chelipeds massive. [Emended from Tavares & Santana, 2018, p. 205.] *Pliocene–Holocene. Pliocene:* Jamaica. *Holocene:* Cosmopolitan.——Fig. 4,*6. R. boucheti* Richer de Forges & Ng, 2013, holotype MNHN-IU-2011-5988, scale bar, 5 mm (MNHN, E-Recolnat; photo by L. Flamme).

Scyra Dana, 1851a, p. 269 [**S. acutifrons;* M]. Carapace deltoid; rostrum bifid, lateral margins of forks convex so that each is ovate at base; supraorbital eave small, not projecting much beyond orbit, with short preorbital spine; postorbital spine small; lateral margins sinuous, rounding into short posterior margin, strong, short spine in branchial region; carapace regions defined as broad swellings. *Pleistocene–Holocene. Pleistocene:* USA (California). *Holocene:* North Pacific Ocean.——Fig. 4,*7a–b*. **S. acutifrons*, USNM 31547, Holocene, Washington, USA, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Scyramathia A. Milne-Edwards, 1880, p. 355 [**Amathia carpenteri* Norman in Thomson, 1873, p. 176, fig. 35; SD Rathbun, 1925, p. 204]. Carapace pyriform, longer than wide; with supraorbital, hepatic, mesogastric, epibranchial, mesobranchial, metabranchial, cardiac, intestinal swellings that are flat topped in adults, more rounded in juveniles; postorbital region greatly inflated laterally, forming a flattened, leaflike structure in adults; male sternites with transverse ridges; chelae slender. [Emended from Tavares & Santana, 2018, p. 205.] *Miocene–Holocene. Miocene:* Argentina. *Holocene:* Atlantic Ocean, Mediterranean Sea.——Fig. 5,*1. S. boschii* (Casadío & others, 2005), holotype MPEF-PI 536, Miocene, Argentina, scale bar, 1 cm (new).

Tylocarcinus Miers, 1879, p. 664 [**Cancer styx* Herbst, 1803 in 1782–1804, p. 53; OD]. Carapace pyriform, much longer than wide; rostral spines fused in posterior two-thirds, divided by V-shaped sinus; supraorbital eave well developed with prominent preorbital spine; intercalated spine small in close contact with supraorbital eave and postorbital tooth; dorsal surface with rounded tubercles; pleon with seven somites; chelipeds stout; pereiopods relatively short, stout. *Pleistocene:* Japan. *Holocene:* Indo-West Pacific Ocean, Central Pacific Ocean.——Fig. 5,*2a–b*. **T. styx* (Herbst), USNM 41419, Holocene, west Indian Ocean, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Subfamily PLIOSOMATINAE Števčič, 1994

[*nom. correct.* Ng, Guinot, & Davie, 2008, p. 106; *pro* Pliosominae Števčič, 1994, p. 419]

Carapace longer than wide, ovate, widest about half the distance posteriorly; rostrum short, orbits directed forward, upper orbital margin with one fissure, outer-orbital spine triangular; regions poorly defined, axial regions outlined by lateral grooves; anterolateral margins with a few spines; sternum very wide, especially anteriorly, narrowing posteriorly; male pleon composed of all free somites, somite 6 wider than 5 and telson; chelae long, manus long. *Holocene.*

Pliosoma. Stimpson, 1860a [**P. parvifrons,* p. 228, pl. 5,*6;* M]. As for subfamily. *Holocene:* Mexico (Baja California).——Fig. 5,*3a–b*. **P. parvifrons*, USNM 77851, Holocene, western Mexico, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Subfamily TYCHINAE Dana, 1851

[Tychinae Dana, 1851b, p. 127] [=Criocarcininae Dana, 1851b, p. 127; =Othoninae Dana, 1851b, p. 126; =Picrocerinae Neumann, 1878, p. 12; =Ophthalmiinae Balss, 1929, p. 6]

Carapace longer than wide, often with a posterior central spine; orbits with upper orbital rim wide, often ornamented with long supraorbital spine; postorbital spine absent or at some distance from eye; intercalated spine absent. *Pleistocene–Holocene.*

Tyche Bell, 1835, p. 172 [**T. lamellifrons,* p. 173; M; =*T. brevipostris* Lockington, 1877b, p. 74] [=*Platyrinchus* Desbonne in Desbonne & Schramm, 1867, p. 3 (type, *P. trituberculatus,* p. 3, pl. 3,*7–8,* M)]. Carapace ovate, width constricted at about midlength; rostrum bifid, long; orbits with very long supraorbital spine and moderately sized postorbital spine; hepatic regions and posterior margin with flattened, winglike extensions. *Holocene:* Atlantic and Pacific coastal North America and Central America——Fig. 5,*4*. **T. lamellifrons,* USNM 21905, Holocene, western Mexico, scale bar, 5 mm (new).

Pitho Bell, 1835, p. 172 [**P. sexdentata;* SD Miers, 1879, p. 665] [=*Othonia* Bell, 1841, p. 55 (type, *Pitho sexdentata* Bell, 1835, p. 172, SD Miers, 1879, p. 665); =*Piloronus* Gistl, 1848, p. x, unnecessary replacement name for *Pitho* Bell, 1835; *Engyzomaria* Gistl, 1848, p. x, unnecessary replacement name for *Othonia* Bell, 1841; =*Microrynchus* Desbonne in Desbonne & Schramm, 1867, p. 20 (type, *M. lherminieri,* M)]. Carapace ovate; anterior margin of carapace wide, containing rostrum and orbits; rostrum short, triangular; orbits with supraorbital eave with antorbital spine and postorbital spine, eave directed anteriorly, postorbital spine directed anterolaterally; lateral margins weakly convex, anterolaterally with four or five spines, posterolaterally entire, rounding into convex posterior margin; cervical groove well marked; regions poorly defined; carapace surface granular or smooth; chelae stout. *Pliocene–Holocene. Pliocene–Pleistocene:*

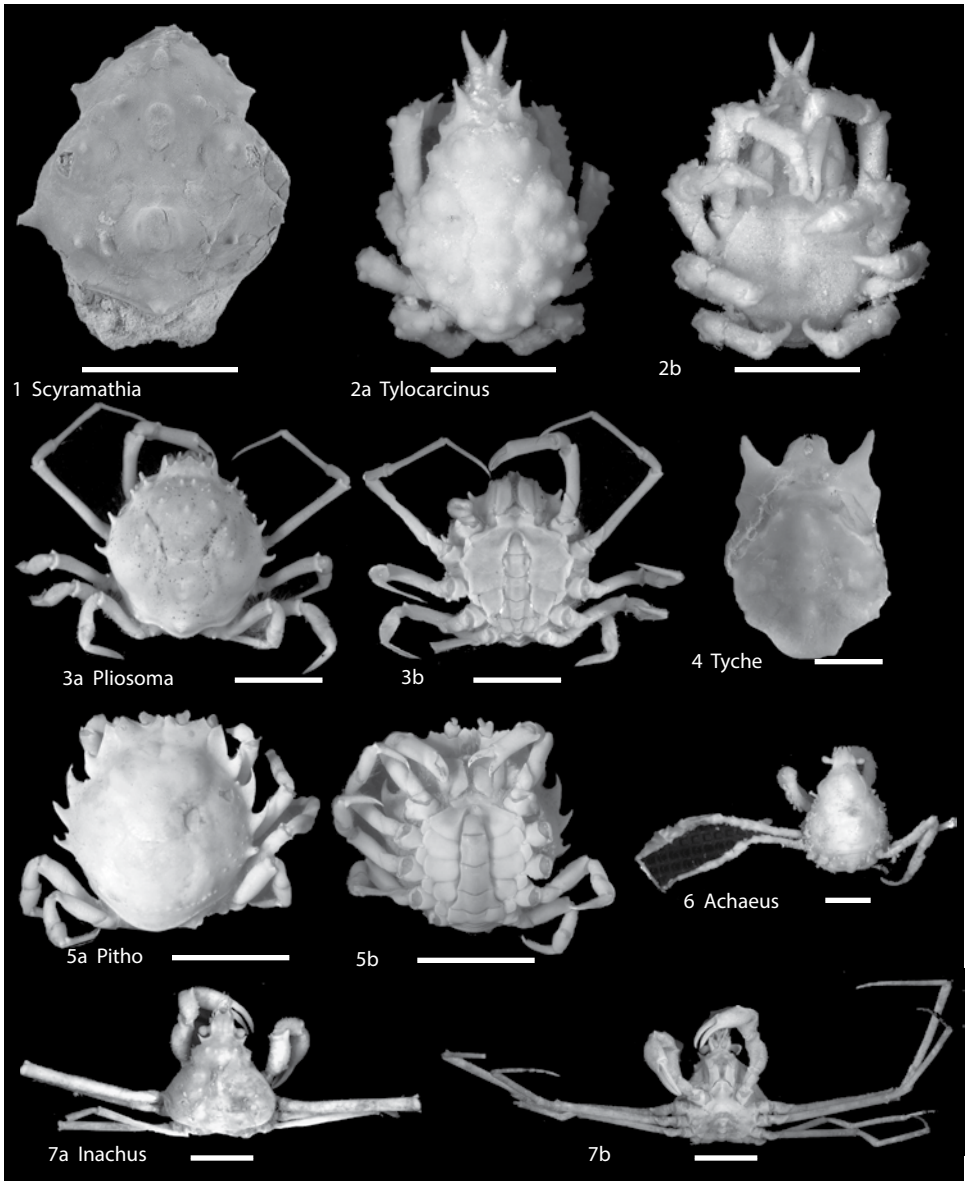

FIG 5. Epialtidae, Inachidae (p. 8–10).

Jamaica. *Pliocene:* Panama. *Holocene*: Atlantic Ocean, west coastal North America.——FIG. 5,*5a–b. Pitho quadridentata* (MIERS, 1879), USNM 17204, Holocene, Central America, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Family INACHIDAE MacLeay, 1838

[Inachidae MACLEAY, 1838, p. 56] [=Macropodiadae SAMOUELLE, 1819, p. 90; =Eurypodidae MACLEAY, 1838, p. 56; =Leptopodiadae BELL, 1844 in 1844–1852, p. 1; =Achaeinae DANA, 1851b, p. 128; =Camposcinae DANA, 1851b, p. 127; =Macrocheirinae DANA, 1851b, p. 123; =Stenorynchinae DANA, 1851b, p. 128; =Oncininea DANA, 1852, p. 77; =Oncinopidae STIMPSON, 1858, p. 222; =Anomalopinae STIMPSON, 1871a, p. 124; =Podochelinae NEUMANN, 1878, p. 13; =Microrhynchinae MIERS, 1879, p. 651; =Chorinachini ŠTEVČIČ, 2005, p. 97; =Encephaloidini ŠTEVČIČ, 2005, p. 98; =Ephippiini ŠTEVČIČ, 2005, p. 96; =Eucinetopini ŠTEVČIČ, 2005, p. 98; =Grypachaeini ŠTEVČIČ, 2005, p. 97; =Pleistacanthini ŠTEVČIČ, 2005, p. 95; =Sunipeini ŠTEVČIČ 2005, p. 97; =Trichoplatini ŠTEVČIČ, 2005, p. 97]

Eyes lacking an orbit; eyestalks long, retracting against side of carapace, against sharp postocular spine, or not retractable; carapace shape variable; lateral margins of sternites 5–8 extending short distance laterally; pleonal somite 1 not extending posteriorly so as to appear as part of the carapace; male pleon with triangular telson subtriangular and not deeply enclosed by somite 6. [Emended from DAVIE, 2002, p. 290.] *Eocene (Priabonian)–Holocene.*

Inachus WEBER, 1795, p. 93 [**Cancer scorpio* FABRICIUS, 1793, p. 462; SD H. MILNE EDWARDS, 1837 in 1836–1844, pl. 34,*2,* ICZN Opinion 763, 1966; =*Cancer dorsettensis* PENNANT, 1777, p. 7; =*Macropus parvirostris* RISSO, 1816, p. 39; =?*Doclea fabriciana* RISSO, 1827, p. 28] [=*Macropus* LATREILLE, 1802, p. 27 (type, *Cancer phalangium* FABRICIUS, 1775, p. 408, M); =*Leptopodia* LEACH 1814 in 1813–1814, p. 431 (type, *Cancer phalangium* FABRICIUS, 1775, p. 408, M); =*Pseudocollodes* RATHBUN, 1911, p. 247 (type, *P. complectens,* p. 248, pl. 20,*4,* M)]. Carapace obovate, rounded posteriorly; rostrum short, bifid; orbit with short supraocular eave and long, sharp postocular spine; lateral margin broadly rimmed from branchial regions through posterior margin; chelipeds short, remainder of pereiopods long. *Eocene (Priabonian)–Holocene. Eocene (Priabonian):* Italy. ?*Oligocene*, Republic of Georgia. *Pliocene:* UK (England). *Holocene:* northeastern Atlantic Ocean, Mediterranean Sea, east Africa.——FIG. 5,*7a–b. I. dorsettensis* (PENNANT), USNM 121902, Holocene, Spain, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Achaeus LEACH, 1817 in 1815–1875, pl. 22C [**A. cranchii;* M]. Carapace cordate, carapace ornamented with setae decorated in life; rostrum wide, bifid; orbit with supraorbital eave and possibly small postorbital spine, eyestalks nonretractile; carapace narrow posterior to orbit, then widening; lateral margins with spine in hepatic region, then convex branchial regions; posterior margin wide, with granules or spines on dorsal carapace; chelipeds stout in males; pleon with six somites in males and females. *Oligocene–Holocene. Oligocene:* Italy. *Miocene (Langhian):* Hungary. *Miocene:* Japan. *Pleistocene:* Japan. *Holocene:* Indo-West Pacific, central Pacific Ocean, eastern Atlantic Ocean, Mediterranean Sea.——FIG. 5,*6. A. japonicus* (DE HAAN, 1839 in 1833–1850), USNM 49081, Holocene, Japan, scale bar, 5 mm (new).

Macrocheira DE HAAN, 1839 in 1833–1850, p. 88 [**Maja kaempferi* TEMMINCK, 1836, p. 26; M] [=*Kaempferia* MIERS, 1886, p. 33 (type, *Maja kaempferi,* M); =*Tiyocarcinus* SAKAI & SHIKAMA, 1951, p. 37 (type, *T. bifidus,* M, invalid name, IMAIZUMI, 1957)]. Carapace obovate; rostrum short or long, bifid; supraocular eave narrow with long antorbital spine, short intraorbital spine, and long postorbital spine; regions well defined, ornamented with tubercles of varying sized; hepatic spine well developed. *Eocene (Priabonian)–Holocene. Eocene (Priabonian):* Oregon, USA. *Eocene–Oligocene:* Canada (British Columbia), Japan. *Eocene* (*Priabonian)–Miocene:* USA (Washington). *Miocene–Pleistocene:* Japan. *Holocene:* Japan, Taiwan——FIG. 6,*1a–b. M. longirostra* SCHWEITZER & FELDMANN, 1999, Eocene, Washington, USA; *a*, holotype CM 39683, dorsal carapace; *b*, paratype CM 39685, anterior carapace; scale bars, 1 cm (new).

Macropodia LEACH, 1814 in 1813–1814, p. 395 [**Cancer longirostris* FABRICIUS, 1775, p. 408; M, ICZN Opinion 763, 1966; =*Stenorhynchus egyptius* H. MILNE EDWARDS, 1834 in 1834–1840, p. 280] [=*Peridromus* GISTL, 1848, p. ix, unnecessary replacement name for *Macropodia*]. Carapace triangular, longer than wide, widest at posterior margin; rostrum bifid, two spines close together, orbits directed laterally, little ornamentation on orbital rim; walking legs very long. *Pliocene–Holocene. Pliocene (Zanclean):* Italy. *Pleistocene:* UK (England). *Holocene:* Atlantic Ocean, Indian Ocean, Mediterranean Sea, Australia.——FIG. 6,*2. *M. longirostris* (FABRICIUS), USNM 20291, Holocene, northeastern Atlantic Ocean, scale bar, 1 cm (new).

Family INACHOIDIDAE Dana, 1851

[*nom. transl.* DRACH & GUINOT, 1983, p. 41, *ex* Inachoidinae DANA, 1851b, p. 128] [=Salacinae DANA, 1851b, p. 126; =Collodinae STIMPSON, 1871a, p. 119]

Eyes without well-defined orbits; orbit composed of narrow supraorbital eave and postocular spine; eyes retractile or nonretractile; carapace usually with deep grooves and heavy ornamentation; rostrum usually short; lateral parts of sternal plates 5–8 extending laterally beyond carapace, ornamented similarly to the carapace and therefore appearing like extensions of the carapace; pleonal somite 1 visible in dorsal view, appearing as a posterior extension of the carapace; sternum wide, sutures 4/5–7/8 interrupted; male pleon with somite 6 and telson fused. [Emended from GUINOT, 2012.] *Eocene (Ypresian)–Holocene.*

Subfamily INACHOIDINAE Dana, 1851

[Inachoidinae DANA, 1851b, p. 128]

Eyes without well-defined orbits; orbit composed of narrow supraorbital eave and postocular spine; eyes retractile or nonretractile; carapace with deep grooves and heavy ornamentation; rostrum usually short; lateral

parts of sternal plates 5–8 extending laterally beyond carapace, ornamented similarly to carapace and therefore appearing like extensions of carapace; pleonal somite 1 visible in dorsal view, appearing as posterior extension of carapace; sternum wide, sutures 4/5–7/8 interrupted; male pleon with somite 6 and telson fused. [Emended from GUINOT, 2012.] *Eocene (Ypresian)–Holocene.*

Inachoides H. MILNE EDWARDS & LUCAS, 1843, p. 4 [**Inachus microrynchus,* p. 5, pl. 4,*4,* M; =*Inachus (Microrhynchus) lambriformis* DE HAAN, 1839 in 1833–1850, pl. H; =*Inachoides inornatus* A. MILNE-EDWARDS, 1873 in 1873–1880, p. 253] [=*Cyrnus* DE HAAN, 1839 in 1833–1850, p. 86 (type, *Inachus (Microrhynchus) lambriformi,* M)]. Carapace longer than wide, triangular, bulbous in posterior one-third; rostrum short, triangular; orbits with postorbital spine, preorbital spine present or absent; axial and branchial regions well defined. *Holocene:* West Atlantic Ocean, Caribbean Sea, East Pacific Ocean.——FIG. 6,*3.* **I. lambriformis* (DE HAAN), USNM 40463, Holocene, Chile, dorsal carapace, scale bar, 1 cm (new).

Euprognatha STIMPSON, 1871a, p. 122 [**E. rastellifera,* p. 123; M; =*Euprognatha inermis* A. MILNE-EDWARDS, 1879 in 1873–1880, p. 183; =*E. rastellifera spinosa* RATHBUN, 1894, p. 55; = ?*Inachus cardenensis* GUNDLACH & TORRALBAS, 1900, p. 299]. Carapace deltoid; rostrum various, may be bifid, with four spines, or with median spine that is an interantennular spine and set at lower level than outer two spines; orbits set at base of rostrum and directed laterally, composed of narrow supraorbital eave and long postorbital spine with broad base and very narrow, attenuated tip; hepatic region with lateral spine parallel to postorbital spine; branchial regions with convex lateral margins rounding into broad posterior margin; cardiac region broadly inflated; carapace with long spines on surface of mesogastric, cardiac, and branchial regions; chelipeds stout, other pereiopods long, slender. *Pliocene–Holocene. Pliocene:* USA (Virginia). *Holocene:* eastern Atlantic Ocean, Caribbean Sea, west coastal Central America and Mexico.——FIG. 6,*4. E. ricei* BLOW, 2003, paratype USNM PAL 520719, Pliocene, Virginia, USA, scale bar, 1 cm (new).

Leurocyclus RATHBUN, 1897, p. 164 [**Salacia tuberculosa* H. MILNE EDWARDS & LUCAS, 1843, p. 13; M] [=*Salacia* H. MILNE EDWARDS & LUCAS, 1843, p. 12 (type, *S. tuberculosa,* M, *non Salacia* LAMOUROUX, 1816, p. 212 [Coelenterata])]. Carapace ovate, wider than long; rostrum short, trifid; orbits poorly defined, composed of narrow supraorbital eave and stout, short postorbital spine; hepatic region bulbous; branchial regions with very convex lateral margins; regions moderately well defined, ornamented with granules; chelipeds short, other pereiopods much longer. *Oligocene (Chattian)–Holocene. Oligocene (Chattian)–Miocene (Aquitanian–Burdigalian):* Argentina. *Holocene:* southwestern Atlantic Ocean.——FIG. 6,*5a–b.* **L. tuberculosus,* USNM 256110, Holocene, South Atlantic Ocean; dorsal carapace (*a*) and ventral view (*b*), scale bars, 1 cm (new).

Pyromaia STIMPSON, 1871a, p. 109. [**P. cuspidata,* p. 110; M; =?*Inachoides brevirostrum* LOCKINGTON, 1877b, p.13; =*Inachoides magdalenensis* RATHBUN, 1893, p. 228] [=*Apiomaia* VON MARTENS, 1873, p. 182, unnecessary replacement name for *Pyromaia*]. Carapace longer than wide, pyriform, widest at about mid-length in branchial regions, strongly vaulted longitudinally and transversely; rostrum, trifid, axial spine longer and lateral spines shorter; orbits directed forward; anterolateral margin short, convex; posterolateral margin convex, at least three posterolateral spines; posterior margin sinuous, rimmed; regions moderately defined as swellings, most of which bear a central node; mesogastric region lacking anterior process, transversely ovoid; protogastric regions inflated, nodose; cervical groove weak, extending onto flanks; metagastric region long, narrow; urogastric region transversely ovoid; cardiac region circular, highest point on carapace, with single axial node; intestinal region poorly defined; epibranchial regions circular, with central swelling; mesobranchial region ovate, directed anterolaterally, with two swellings; metabranchial region large, inflated, large central swelling and smaller one anterior to large one; sternum broad, maximum width at sternite 6; sternites 1–3 fused; sternal suture 3/4 complete; sternal sutures 4/5 and 5/6 incomplete; sternite 5 with tubercle at mid-width along posterior margin; sternal sutures 6/7 and 7/8 complete. *Eocene (Ypresian)–Holocene. Eocene (Ypresian):* Pakistan. *Pleistocene:* USA (California). *Holocene:* western Atlantic Ocean, Pacific Ocean.——FIG. 6,*6a–b.* **P. cuspidata,* USNM 114633, Holocene, Belize, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Vicetiulita DE ANGELI & CECCON, 2015, p. 2 [**V. granulata,* p. 2,*2;* OD]. Carapace triangular, widest in posterior one-third; rostrum and orbits unknown; carapace regions composed of elongate, ovate swellings, unusual deep grove bounding posterior margin of mesogastric region and continuing laterally to bound posterior margin of epibranchial region; surface granular where cuticle is preserved. *Eocene (Ypresian):* Italy.——FIG. 7,*1.* **V. granulata,* holotype MCV 14/10, Eocene, Italy, scale bar, 5 mm (new, photo by A. De Angeli, Associazione Amici del Museo Zannato, Montecchio Maggiore, Vicenza, Italy).

Subfamily STENORHYNCHINAE Dana, 1851

[Stenorhynchinae DANA, 1851b, p. 128]

Carapace smooth, lacking regions and grooves; rostrum extremely long, longer than carapace, with tiny marginal spines;

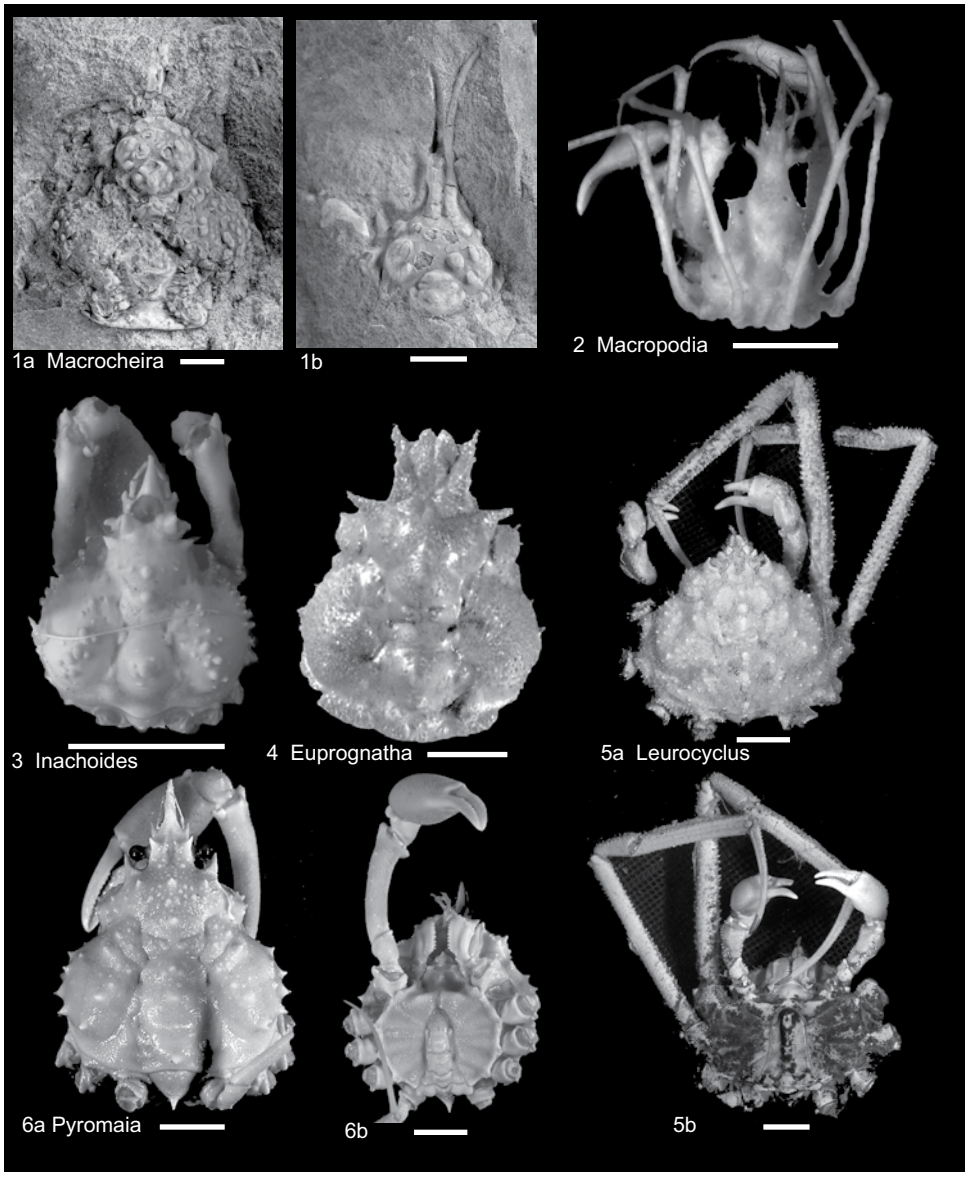

FIG 6. Inachidae, Inachoididae (p. 10–11).

eyes unprotected except by tiny postorbital spine; lateral extension of sternites 5–8 small; first and second pleonal somites in males and pleonites 1–4 in females visible in dorsal view so as to appear as extensions of carapace; chelipeds much shorter than other pereiopods. [Emended from GUINOT, 2012, p. 33.] ?*Oligocene, Holocene.*

Stenorhynchus LAMARCK, 1818, p. 236 [**Cancer seticornis* HERBST, 1788 in 1782–1804, p. 229; ICZN Opinion 763, 1966; =*Cancer sagittarius* FABRICIUS, 1793, p. 442] [=*Pactolus* LEACH, 1815 in 1814–1817, p. 19 (type, *Pactolus boscii* LEACH, 1815 in 1814–1817, p. 20, pl. 68, M)]. Carapace triangular, rostrum long, sharp, with setal hairs; pereiopods very long; manus of cheliped very long; pereiopod 5 held dorsally. ?*Oligocene*: Republic of Georgia. *Holocene:* Atlantic Ocean, Caribbean

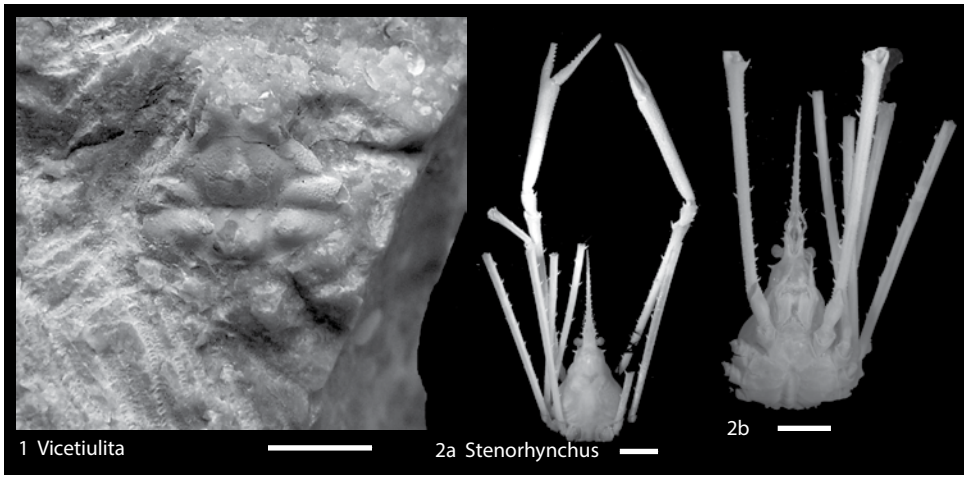

FIG 7. Inachoididae (p. 11–13).

Sea, southeastern Pacific Ocean.——FIG. 7,*2a–b*. **S. seticornis* (HERBST), USNM 73396, Holocene, Florida, USA, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Family MAJIDAE Samouelle, 1819

[*nom correct*. PETERS, 1851, p. 401, *pro* Maïadae SAMOUELLE, 1819, p. 88] [=Mithracidae MACLEAY, 1838, p. 56; =Cyclacinae DANA, 1851b, p. 127; =Micippinae DANA, 1851b, p. 125; =Paramicippinae DANA, 1851b, p. 128; =Pericerinae DANA, 1851b, p. 128; =Prionorhynchinae DANA, 1851b, p. 125; =Stenocionopinae DANA, 1851b, p. 129; =Leptopinae STIMPSON, 1871a, p. 109; =Naxiinae STIMPSON, 1871a, p. 114; =Cyphocarcininae NEUMANN, 1878, p. 15; =Eurynominae NEUMANN, 1878, p. 17; =Ixioninae NEUMANN, 1878, p. 10; =Schizophrysinae MIERS, 1879, p. 659; =Mamaiidae STEBBING, 1905, p. 22; =Macrocoelominae BALSS, 1929, p. 20; =Eurynolambrinae ŠTEVČIČ, 1994, p. 419; =Planoterginae ŠTEVČIČ, 1991, p. 124; =Thoini ŠTEVČIČ, 1994, p. 419; =Coelocerini ŠTEVČIČ, 2005, p. 92; =Thersandrini ŠTEVČIČ, 2005, p. 93]

Carapace generally ovate, usually narrowing anteriorly and rounded posteriorly, usually ornamented with tubercles or spines; orbit complete or nearly complete, with supraorbital eave, postorbital spine, and often with intercalated spine; basal antennal article broad, may or may not form floor of orbit; male gonopod straight or curved, aperture terminal or subterminal. *Upper Cretaceous (Maastrichtian)–Holocene.*

Subfamily ACTINOTOCARCININAE Jenkins, 1974

[Actinotocarcininae JENKINS, 1974, p. 872]

As for genus. *Miocene (Serravallian).*

Actinotocarcinus JENKINS, 1974, p. 872 [**A. chidgeyi,* p. 872, pl. 117,*1–4;* OD]. Carapace ovate, short, slightly longer than wide excluding rostrum, narrowing dramatically just anterior to first lateral spine; rostrum very long, singular, extending well beyond orbits; orbits with supraorbital eave with moderately long antorbital spine, intraorbital spine, and very long postorbital spine with triangular extension at base, postorbital spine cupped to receive eye; axial regions moderately defined; lateral margins with two very long spines, anterior-most directed laterally, posterior-most directed posterolaterally. *Miocene (Serravallian):* New Zealand.—— Fig. 8,*1*. **A. chidgeyi,* KSU 691, Miocene, New Zealand, scale bar, 1 cm (new).

Subfamily EURYNOLAMBRINAE Ševčič, 1994

[Eurynolambrinae ŠTEVČIČ, 1994, p. 419]

Carapace broadly triangular, widest in posterior one-third, lateral margins greatly expanded to cover proximal elements of pereiopods; fronto-orbital margin narrow, rostrum bilobed, weakly projected; orbits tiny; anterolateral margin very long, with some small spines; posterolateral margin very convex, arcing posteriorly into sinuous, long posterior margin, carapace surface with poorly defined regions. *Holocene.*

Eurynolambrus H. MILNE EDWARDS & LUCAS, 1841, p. 479 [**E. australis,* p. 481, pl. 28,*14–15;* M]. As for subfamily. *Holocene:* Australia, New Zealand.—— Fig. 8,*2*. **E. australis,* Holocene, Australia, scale bar, 1 cm (new; photo by S. Ahyong, Australian Museum, Sydney, Australia).

Subfamily MAJINAE Samouelle, 1819

[*nom. transl.* Peters, 1851, p. 402, *ex* Maïadae Samouelle, 1819, p. 88] [=Cyclacinae Dana, 1851b, p. 127; =Prionorhynchinae Dana, 1851b, p. 125; =Naxiinae Stimpson, 1871a, p. 114; =Eurynominae Neumann, 1878, p. 17; =Schizophrysinae Miers, 1879, p. 659; =Mamaiidae Stebbing, 1905, p. 22; =Thersandrini Števčič, 2005, p. 93]

Eyes with complete or nearly complete orbit composed of a supraorbital eave which may be ornamented with an antorbital spine, a postorbital spine, and often an intercalated spine; basal antennal article broad but not forming floor of orbit; male gonopod slender, curved, aperture usually subterminal. *Upper Cretaceous (Maastrichtian)–Holocene.*

Maja Lamarck, 1801, p. 154 [**Cancer squinado* Herbst, 1788 in 1782–1804, p. 214; ICZN Opinion 511, 1958] [=*Maia* Lamarck, 1801, p. 154 incorrect spelling, ICZN Opinion 511, 1958; =*Paramaÿa* de Haan, 1837 in 1833–1850, pl. 24,*4* (type, *Pisa (Paramaÿa) spinigera* de Haan, 1837 in 1833–1850, pl. 24,*4,* M); *Mamaia* Stebbing, 1905, p. 23, unnecessary replacement name for *Maja*]. Carapace cordate; rostrum bifid; orbit composed of supraorbital eave with preorbital and antorbital spines, sharp intercalated spine and sharp outer-orbital spine, spines widely spaced; lateral margins spinose anteriorly, becoming less so posteriorly; posterior margin convex; carapace surface ornamented with small spines. [Ng & Richer de Forges (2015) revised the present genus and moved the previously assigned species of *Maja* to other genera. However, it is difficult to adapt their revision to the fossil species.] *Miocene (Burdigalian)–Holocene. Miocene (Burdigalian):* South Australia. *Miocene (Langhian):* Hungary, Japan, Poland, Spain. *Miocene (Tortonian):* Austria, Hungary, Japan, Poland. (*Miocene) Messinian:* Malta. *Miocene:* France, Malta, Taiwan. *Pliocene (Zanclean):* Italy, UK (England). *Pliocene (Piacenzian):* Belgium. *Pliocene:* Algeria, Fiji. *Pleistocene:* Italy. *Holocene:* eastern Atlantic Ocean, Indo-Pacific Ocean.——Fig. 8,*3*. **M. squinado* (Herbst), USNM 122017, Holocene, Spain, scale bar, 1 cm (new).

Chondromaia Feldmann, Schweitzer, Baltzly, Bennett, Jones, Mathias, Weaver, & Yost, 2013, p. 32 [**C. antiqua,* p. 32, pl. 15; OD]. Carapace pyriform, slightly wider than long; regions well defined, most bearing strong central spine surrounded by a circlet of granules; frontal area sulcate, downturned; supraorbital eave does not extend far over orbit and bears small spine on posterior corner, intercalated spine short, blunt; postorbital lobe with granular rim. [Feldmann & others, 2013, p. 32.] *Upper Cretaceous (Maastrichtian):* USA (New Jersey).——Fig. 8,*4*. **C. antiqua,* holotype NJSM 23340, Maastrichtian, New Jersey, USA, scale bar, 1 cm (new).

Eurynome Leach, 1814 in 1813–1814, p. 431 [**Cancer aspera* Pennant, 1777, p. 7; M, ICZN Opinion 712, 1964b; =*E. scutellata* Risso, 1827, p. 21; =*E. boletifera* Costa & Costa 1838 in 1838-1871, p. 2; =*E. longimana* Stimpson, 1858, p. 220]. Carapace overall triangular, ornamented with spines and fungiform tubercles; anterolateral margin with large spines; rostrum bifid, orbits with eave and postorbital spine. [Emended from Hartnoll, 1961.] *Pleistocene–Holocene. Pleistocene:* Italy. *Holocene:* eastern Atlantic Ocean, Mediterranean Sea.——Fig. 8,*5a–b*. **E. aspera* (Pennant), USNM 121885, Holocene, Spain, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Jacquinotia Rathbun, 1915, p. 142 [**Prionorhynchus edwardsii* Jacquinot in Jacquinot & Lucas, 1853 in 1842–1853, p. 5; M; =*Campbellia kohli* Balss, 1930, p. 200, fig. 1–4] [=*Prionorhynchus* Jacquinot in Jacquinot & Lucas, 1853 in 1842–1853, *non Prionorhynchus* Leach, 1830, p. 170 (type, *Prionorhynchus edwardsii,* M); =*Campbellia* Balss, 1930, p. 200 (type, *C. kohli,* M)]. Carapace pyriform; orbit composed of closely spaced supraorbital eave, intercalated spine, and postorbital spine; orbit short, bifid, downturned; lateral margins ornamented with short, triangular spines; dorsal surface ornamented with large tubercles. *Pliocene–Holocene:* New Zealand.——Fig. 9,*1*. **J. edwardsii* (Jacquinot in Jacquinot & Lucas), USNM 16297, Holocene, New Zealand, scale bar, 1 cm (new).

Leptomithrax Miers, 1876, p. 220 [**Paramithrax (Leptomithrax) longimanus;* SD Miers, 1879, p. 655; =*Paramithrax (Leptomithrax) affinis* Borradaile, 1916, p. 104, fig. 14] [=*Leptomithrax (Austromithrax)* Bennett, 1964, p. 51 (type, *L. (A.) mortenseni* Bennett, 1964, p. 52, fig. 36, 46–48, 119–120, OD); =*Leptomithroax (Zemithrax)* Bennett, 1964, p. 53 (type, *Paramithrax longipes* Thomson, 1902, p. 362, pl. 7–8, OD)]. Carapace cordate, narrowing anteriorly, ornamented with tubercles and spines; rostrum bifid, two spines diverging weakly distally; supraorbital eave without preorbital and with antorbital spine; intercalated spine and postorbital spine present; intercalated spine interacts with tubercle or lobe on postorbital spine; posterior margin with two spines; chelipeds shorter than pereiopods 2 and 3. *Eocene (Bartonian)–Holocene. Eocene (Bartonian–Priabonian):* New Zealand. *Oligocene (Rupelian):* South Australia. *Miocene (Burdigalian):* South Australia. *Miocene (Tortonian–Messinian):* New Zealand. *Pliocene–Holocene:* New Zealand. *Pleistocene:* Japan. *Holocene:* western Pacific Ocean, Australia, New Zealand.——Fig. 9,*2a–b*. *L. garricki* Griffin, 1966, KSU D 2802, Holocene, New Zealand, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Notomithrax Griffin, 1963, p. 231 [**Paramithrax peronii* H. Milne Edwards, 1834 in 1834–1840, p. 324; OD]. Carapace cordate, narrowing anteriorly, with tubercles; supraorbital eave usually without preorbital and with large antorbital spines;

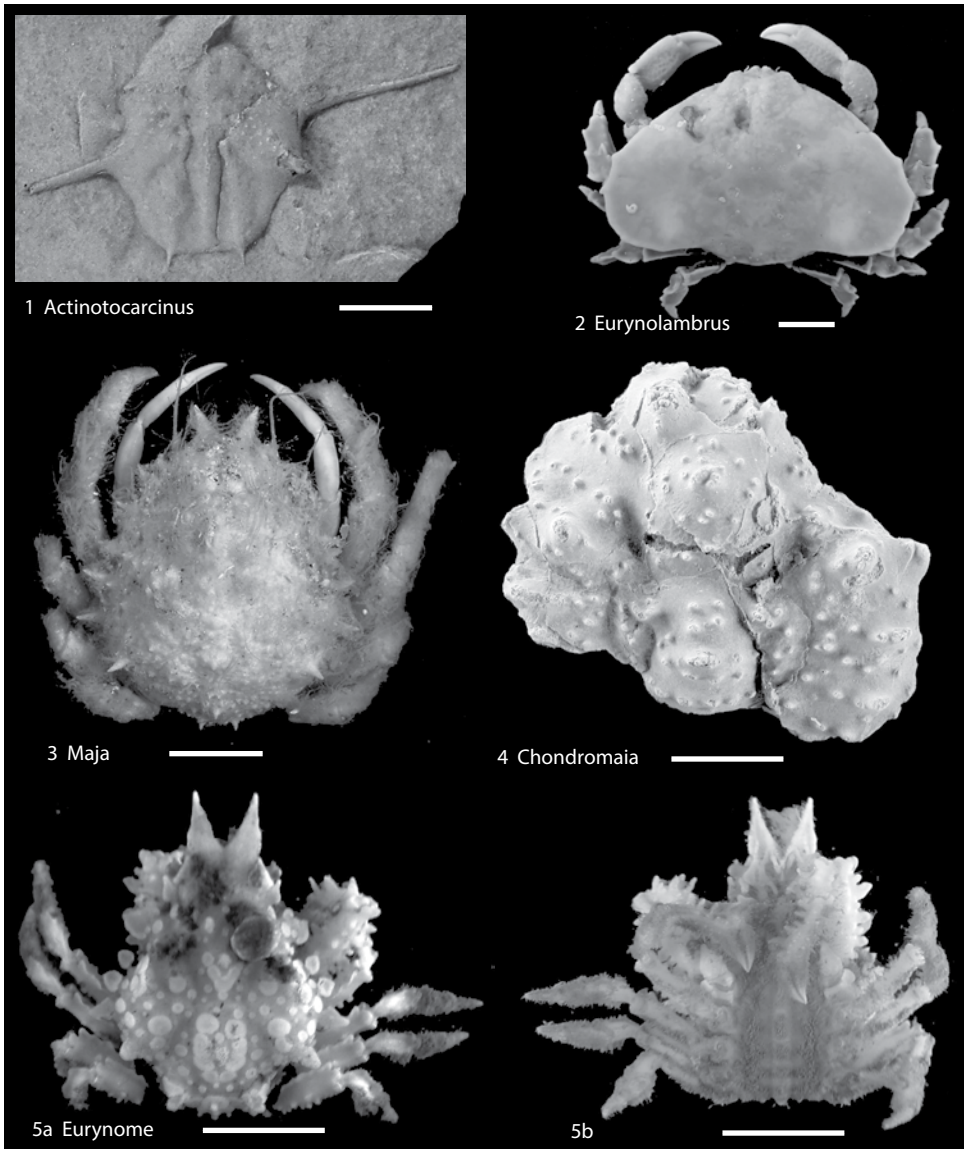

FIG 8. Majidae (p. 13–14).

intercalated spine present, well separated from eave and postorbital spine; postorbital spine distant from eye and not affording protection for it; basal antennal article broad, with two spines; rostrum bifid, spines diverging weakly; lateral margins spinose. *Eocene (Bartonian)–Holocene. Eocene (Bartonian–Priabonian):* New Zealand. *Miocene (Burdigalian):* Australia. *Pleistocene–Holocene:* Australia, New Zealand.——FIG. 9,*3a–b. N. ursus* (HERBST, 1788 in 1782–1804), KSU D 2608, Holocene, New Zealand, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Planobranchia SCHWEITZER & FELDMANN, 2010, p. 407 [**Micromaja laevis* LÖRENTHEY, 1907, p. 208, pl. 1,*2;* OD]. Carapace pyriform, widest at mid-length of branchial region; moderately vaulted transversely and longitudinally; gastric regions only weakly differentiated; defined laterally by prominent V-shaped groove converging from anterior margin of orbits to urogastric region, narrowest part of axial regions; cardiac region nearly as wide as widest part of gastric regions, hexagonal to ovoid in outline; bearing two nodes on medial transverse ridge; intestinal region well

defined, long, approximately as wide as urogastric region. Epibranchial and mesobranchial regions strongly inflated, separated from one another by subtle arcuate attachment scar expressed on mold of interior of the carapace; widest part of these regions converge as angular projections toward urogastric region; metabranchial region extends from widest part of cardiac region posterolaterally around posterior margin of metabranchial region and clearly defined axially by posterior margin of cardiac region and intestinal region; depressed below other regions; surface of carapace weakly ornamented by fine granules or pits; lacking strong tubercles. [Emended from SCHWEITZER & FELDMANN, 2010.] *Eocene (Lutetian–Priabonian). Eocene (Lutetian):* Senegal, Spain. *Eocene (Lutetian–Priabonian):* Egypt.——FIG. 9,*4. P. simplex* (REMY in GORODISKI & REMY, 1959), KSU D 1097, cast of holotype MNHN.F R03839, Lutetian, Senegal, scale bar, 1 cm (new).

Schizophroida SAKAI, 1933, p. 137 [**Schizophrys hilensis* RATHBUN, 1906, p. 882, fig. 38; SD GRIFFIN & TRANTER, 1986, p. 238]. Carapace ovate, narrowing anteriorly, with weak tubercles; rostrum bifid, spines subparallel; supraorbital eave with blunt preorbital spine and short, blunt antorbital spine; intercalated spine present; postorbital spine cupped to receive eyestalk; basal antennal article with two slender spines, extending well beyond dorsal surface and visible in dorsal view; lateral margins with a few spines; posterior margin with tiny spines. *Miocene (Burdigalian)–Holocene. Miocene (Burdigalian):* Australia. *Holocene:* western and central Pacific Ocean, Indian Ocean.——FIG. 10,*1a–b. S. simodaensis* SAKAI, 1933, USNM 134345, Holocene, Hawaii, USA, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Schizophrys WHITE, 1848, p. 222 [**Mithrax asper* H. MILNE EDWARDS, 1831, p. 10; SD MIERS, 1879, p. 660; =*Mithrax quadridentatus* MACLEAY, 1838, p. 58; =*Maja (Dione) affinis* DE HAAN, 1839 in 1833–1850, p. 94; =*Schizophrys serratus* WHITE, 1848, p. 223; =*Mithrax spinifrons* A. MILNE-EDWARDS, 1867, p. 263; =*Mithrax affinis* BRITO CAPELLO, 1871, p. 264, pl. 3,*4;* =*Mithrax triangularis* KOSSMANN, 1877, p. 13; =*Inachus bifidus* DE PROCÉ, 1822, p. 134] [=*Maja (Dione)* DE HAAN, 1839 in 1833–1850, p. 82 (type, *M. (D.) affinis,* M)]. Carapace cordate, narrowing anteriorly, with weak tubercles on dorsal surface; rostrum bifid, spines subparallel, ornamented with one or two small lateral spines; supraorbital eave with short antorbital spine; intercalated spine present; postorbital spine with anterior short spine, cupped to accommodate eyestalk; antennal article with two spines. *Miocene–Holocene. Miocene (Burdigalian–Serravallian):* Spain. *Miocene (Langhian):* Hungary. *Holocene:* cosmopolitan, tropical and subtropical.——FIG. 10,*2a–b.* **S. aspera,* USNM 48510, Holocene, Philippines, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Tumidomaia FELDMANN, SCHWEITZER, BENNETT, FRANȚESCU, RESAR, & TRUDEAU, 2011, p. 330 [**Micromaia batalleri* VÍA, 1959, p. 43, fig. 12; OD]. Carapace pyriform; rostrum axially sulcate with divergent rostral spines; orbits with prominent supraorbital eaves; prominent spine on anterolateral margin arising from hepatic region; carapace regions well defined with metagastric and urogastric regions narrower than mesogastric and cardiac regions; intestinal region relatively long; epibranchial region bilobed; metabranchial region with anteriorly directed extension separating mesobranchial region from cardiac region. *Eocene. Eocene (Lutetian–Priabonian):* Egypt, Hungary, Spain. *Eocene (Bartonian–Priabonian):* Italy.——FIG. 10,*3.* **T. batalleri* (VÍA), KSU D 213, cast of MGSB 23413, Eocene, Egypt, scale bar, 1 cm (new).

Wilsonimaia BLOW & MANNING, 1996, p. 15 [**W. ethelae,* p. 15, pl. 3,*5;* OD]. Carapace subrectangular, extremely elongate, ornamented with large, sharp tubercles overall; rostrum bifid; eyes directed laterally, orbits tubular; orbit composed of semi-tubular supraorbital eave, intercalated spine, and bifid postorbital spine, all closely spaced and separated by fissures; basal antennal article broad, closing orbit; axial regions well defined. *Eocene (Priabonian):* USA (North Carolina).——FIG. 10,*4.* **W. ethelae,* holotype USNM PAL 484561, scale bar, 1 cm (new).

Subfamily MICROMAIINAE Beurlen, 1930

[Micromaiinae BEURLEN, 1930, p. 349]

Carapace short, ovate, broad posteriorly; axial regions well defined and separated from remainder of carapace regions. *Eocene (Ypresian)–Oligocene (Rupelian).*

Micromaia BITTNER, 1875, p. 76 [**M. tuberculata,* p. 76, pl. 2,*2;* M]. Carapace ovate, convex and rounded posteriorly; rostrum bifid, short; orbit composed of supraorbital eave, short intercalated spine, and long, stout postorbital spine; hepatic spine short, remainder of lateral margins granular, convex; posterior margin with two short spines; carapace surface ornamented with densely spaced large tubercles; axial regions separated from remainder of carapace by moderately deep grooves. *Eocene–Oligocene. Eocene (Lutetian):* Italy, Senegal. *Eocene (Bartonian):* Italy. *Eocene (Priabonian):* Austria, Hungary, Italy, Egypt. *Eocene:* Hungary, Italy, Spain. *Oligocene (Rupelian):* Russia.——FIG. 11,*1.* **M. tuberculata,* KSU D 864, cast of paralectotype GBA 1875/005/0009/03, Eocene, Italy, scale bar, 1 cm (new).

Cromimaia BESCHIN, DE ANGELI, CHECCHI, & ZARANTONELLO, 2012, p. 46 [**Micromaia meneguzzoi* BESCHIN & others, 1985, p. 107, pl. 4,*1;* OD] Carapace longer than wide, obovate, widest in posterior one-third; rostrum composed of two short spines separated by deep, concave reentrant; orbital margins granular, with two fissures; postorbital spine moderately developed; regions composed of broad swellings, ornamented with large, spherical

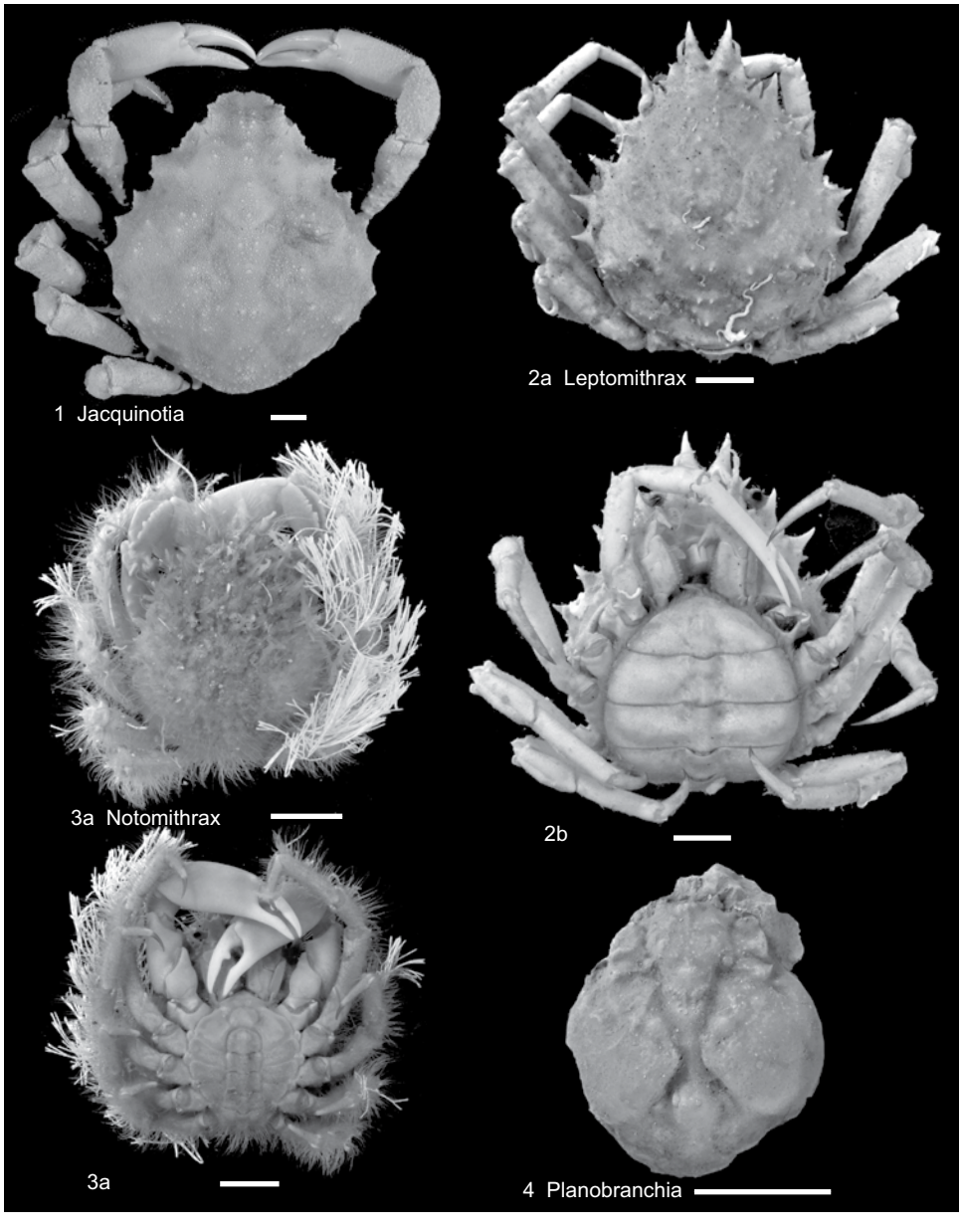

FIG 9. Majidae (p. 14–16).

tubercles. *Eocene (Lutetian):* Italy.——FIG. 11,*2*. **C. meneguzzoi* (BESCHIN & others), MCZ 2720, scale bar, 1 cm (new; photo by A. De Angeli, Associazione Amici del Museo Zannato, Montecchio Maggiore, Vicenza, Italy).

Mithracia BELL, 1858, p. 9 [**M. libinioides,* p. 9, pl. 5,*10–12;* M]. Carapace pyriform, about equidimensional, maximum width at mid-length located in branchial region, longitudinally and transversely weakly vaulted, carapace swellings densely punctuate; rostrum sulcate, weakly downturned; antennal fossae under rostrum; orbits biconcave, directed forward, orbital rim merging with rostrum; supraorbital eave present, intercalated spine bounded by rectangular reentrants; postorbital spine cup shaped; subhepatic swelling present; anterolateral margin inflated, clear broad reentrant where cervical groove intersects it; posterolateral

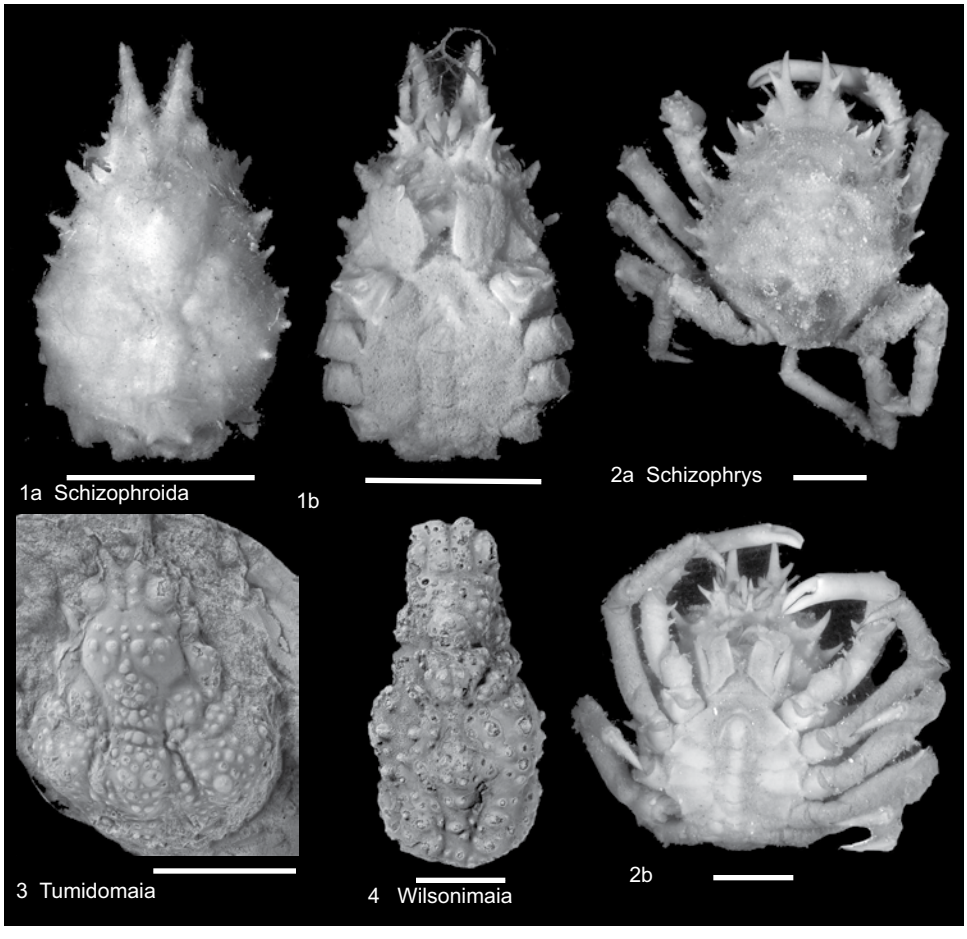

FIG 10. Majidae (p. 16).

margin convex, merging smoothly with posterior margin; regions well defined as granular swellings; anterior process of mesogastric region poorly defined or absent, posterior portion of mesogastric region with two large nodes; protogastric and hepatic regions undifferentiated; metagastric region lunate; cardiac region highest point on carapace, with pair of large tubercles, intestinal region short, poorly defined; epibranchial regions ovoid, long axis directed anterolaterally, surrounded by smooth grooves; mesobranchial region ovoid, parallel to epibranchial region; metabranchial region uniformly nodose, large, inflated; female sternum slightly longer than wide, ovate, sternites 1–3 triangular fused, separated from sternite 4 by ridge and lateral notches; sternal sutures 4/5 and 5/6 incomplete, sutures 6/7 and 7/8 complete; at mid-length on sternite four transverse row of tubercles, small circular gonopores on anterior margin of somite 6; all female abdominal somites free, telson extending to base of sternite 3; male sternum with sternites 1–3 fused, overall narrow; buccal cavity rectangular, third maxillipeds, long, slender, almost filling buccal cavity. *Eocene (Ypresian)–Oligocene. Eocene (Ypresian):* Italy, UK (England). *Eocene (Lutetian):* Italy. *Eocene (Bartonian):* Italy. *Eocene (Priabonian):* Germany. *Oligocene (Rupelian):* Germany.——FIG. 11,*3*. **M. libinoides,* NHMUK 30613, Eocene, England, scale bar, 1 cm (new).

Ommaciria BESCHIN & others, 2012, p. 45 [**Micromaia mainensis* BESCHIN & others, 1985, p. 104, pl. 3,*1–3;* OD]. Carapace longer than wide, obovate, widest about two-thirds the distance posteriorly; rostrum composed of two convex, spatulate arcs with axial notch; orbits long, directed laterally, with long postorbital spine, upper orbital margin with two open fissures; anterolateral margins with small, blunt, triangular spines of varying sizes; anterior end of rostrum flattened, remainder of carapace ornamented with large, spherical tubercles. *Eocene (Lutetian):* Italy.——FIG. 11,*4*. **O. mainensis*

(Beschin & others), KSU D 8, cast of MCZ 1165, scale bar, 1 cm (new).

Pisomaia Lőrenthey in Lőrenthey & Beurlen, 1929, p. 146 [**P. tuberculata,* p. 146, pl. 8,*1;* M]. Rostrum long, bifid, two main spines arcing convex outward, with smaller spines on outer margin; supraorbital eave extending laterally, intercalated spine triangular; postorbital spine with two smaller spines on lower margin; three spines on lateral margin of hepatic region; remainder of lateral margins granular; carapace surface evenly ornamented with granules. *Eocene (Priabonian):* Hungary.——Fig. 11,*5*. **P. tuberculata,* KSU D 1554, scale bar, 1 cm (new).

Spinirostrimaia Beschin, De Angeli, Checchi, & Zarantonello, 2012, p. 48 [**Micromaja margaritata* Fabiani, 1910, p. 38, pl. 2, OD]. Carapace much longer than wide, obovate; rostrum very long, composed of two convex laterally spines which have tiny spines on outer margin; orbits long, with one small and one widely open fissure, postorbital spines long, directed forward; axial regions elevate above other regions, all regions ornamented with large, spherical tubercles. *Eocene (Lutetian–Bartonian):* Italy, Spain.——Fig. 11,*6*. **S. margaritata* (Fabiani), MCZ 3704-I.G. 361559, scale bar, 1 cm (new; photo by A. De Angeli, Associazione Amici del Museo Zannato, Montecchio Maggiore, Vicenza, Italy).

Subfamily MITHRACINAE MacLeay, 1838

[*nom. transl.* Peters, 1851, p. 402, *ex* Mithracidae MacLeay, 1838, p. 56] [=Micippinae Dana, 1851b, p. 125; =Paramicippine Dana, 1851b, p. 128; =Periceridae Dana, 1851b, p. 128; =Stenocionopinae Dana, 1851b, p. 129; =Leptopinae Stimpson, 1871a, p. 109; =Cyphocarcininae Neumann, 1878, p. 15; =Ixioninae Neumann, 1878, p. 10; =Macrocoelominae Balss, 1929, p. 16; =Thoini Števčič, 1994, p. 419; =Coelocerini Števčič, 2005, p. 92]

Carapace broad anteriorly; orbits complete or nearly complete, often tubular; basal antennal article forming floor of orbit; supraorbital eave arched or semi-tubular; postorbital spine hollowed, intercalated spine sometimes present; rostrum may be deflexed; male gonopod slender, straight or only weakly curved, aperture terminal. *Eocene (Priabonian)–Holocene.*

Mithrax Latreille, 1817, p. 23 [**Cancer aculeatus* Herbst, 1790 in 1782–1804, p. 248; SD H. Milne Edwards, 1838 in 1836–1844, pl. 27; =*Cancer aculeatus* Fabricius, 1793, p. 464; =*Mithrax pilosus* Rathbun, 1892, p. 262, pl. 39]. Carapace obovate, nearly diamond shaped, widest in mid-branchial regions, lateral margins convex, surface ornamented with tubercles, sometimes densely; rostrum short, bifid; supraorbital eave thick, with triangular antorbital projection; intercalated spine reduced; postorbital spine short; hepatic region and branchial region with stout lateral spines; cervical groove deep; chelipeds stout, other pereiopods short. *Miocene–Holocene. Miocene–Pleistocene:* Jamaica. *Pliocene–Pleistocene:* Barbados, Cuba. *Holocene:* Caribbean Sea, western Mexico and Central America, southwestern Atlantic Ocean.——Fig. 12,*1a–b*. *Mithrax hispidus* (Herbst, 1790 in 1782–1804), USNM 21605, Holocene, Bermuda, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Damithrax Windsor & Felder, 2014, p. 160 [**Mithrax pleuracanthus* Stimpson, 1871a, p. 116; OD] [=*Trachonites* Desmarest, 1823, p. 263 (type, *Cancer hispidus* Herbst, 1790 in 1782–1804, p. 247, SD Rathbun, 1925, p. 379, unavailable name)]. Carapace wider than long, pyriform; dorsal surface smooth to tuberculate, not obviously setose; with four lateral spines, first two commonly with accessory spine; posterolateral angle bearing single spine; posterior margin tuberculate; rostral composed of two blunt, spines, tips not converging, not reaching beyond first movable article of antenna; antenna basal article fused, very broad, forming floor of orbit, bearing two or three blunt marginal spines or teeth, anterior-most the largest, decreasing posteriorly (third often very low, or not developed), anterior two visible in dorsal view; orbit complete, dorsal margin weakly armed behind strong preocular tooth, eyestalk protected above by single blunt dorsal tooth or tubercle separated by closed fissure from two or three blunt postocular teeth or tubercles; cheliped greater than or equal to carapace length; merus dorsal surface spinous, spines not laminar; carpus varied from smooth to rough; dactylus with enlarged proximal tooth in mature, opposed margins of fingers otherwise crenulate; pereiopods 2–5 decreasing in size posteriorly. [Emended from Windsor & Felder, 2014, p. 160.] *Miocene–Holocene. Miocene:* Jamaica. *Pliocene–Pleistocene:* USA (Florida). *Holocene:* western tropical and subtropical Atlantic Ocean.——Fig. 12,*2*. **D. pleuracanthus* (Stimpson), USNM 11207, Holocene, western Atlantic Ocean, scale bar, 1 cm (new).

Maguimithrax Klompmaker, Portell, Klier, Prueter, & Tucker, 2015, p. 8 [**Maia spinosissima* Lamarck, 1818, p. 241; OD]. Carapace ranging from about as wide as long in large specimens to slightly longer than wide in smaller specimens, ovate; grooves bounding protogastric regions and cardiac regions deep; rostrum composed of two short, blunt spines; orbital margins with short preorbital and postorbital spines, intraorbital margin spinose; anterolateral margins with several spines of varying sizes; chelae very large in larger males. [Emended from Klompmaker & others, 2015.] *Pliocene–Holocene. Pliocene:* Curaçao. *Pliocene–Pleistocene:* Barbados. *Holocene:* southeastern USA, Caribbean Sea.——Fig. 12,*3a–b*. *M. spinosissimus* (Lamarck), UF 11447, Holocene, Florida, USA, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new; photo by A. Klompmaker, University of Alabama, Tuscaloosa, Alabama, USA).

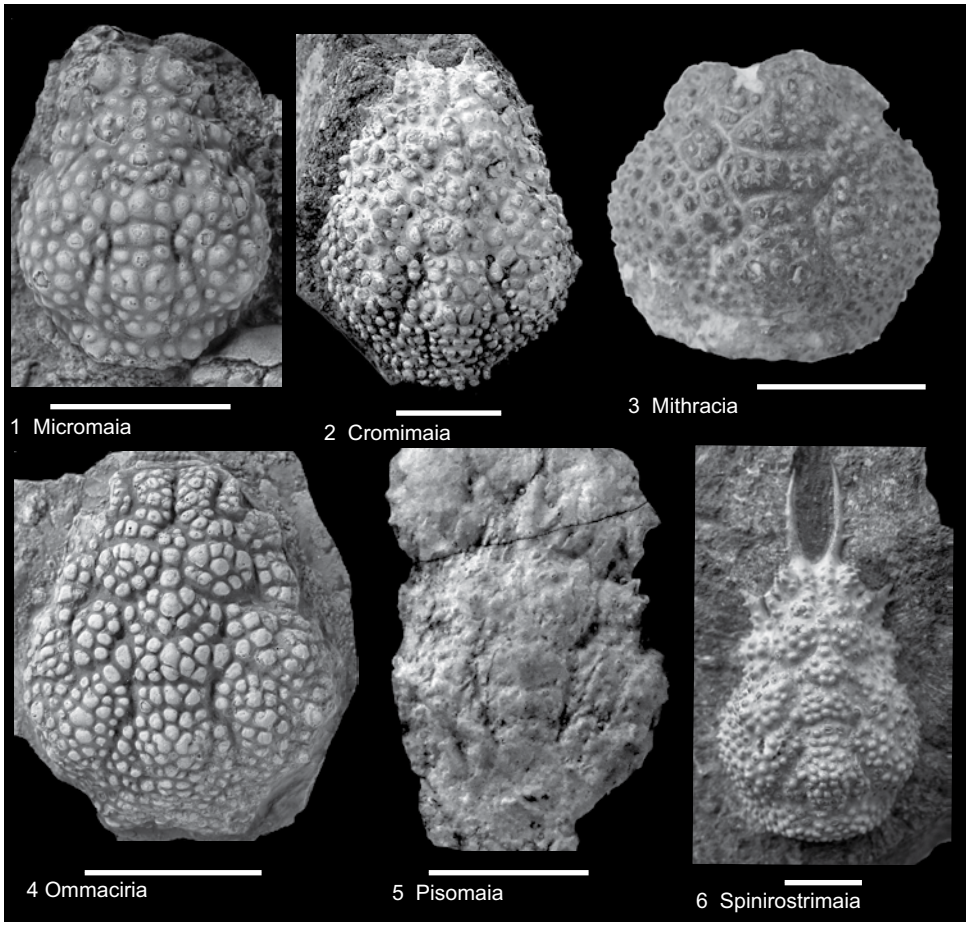

FIG 11. Majidae (p. 16–19).

Micippa LEACH, 1817 in 1814–1817, p. 15 [**Cancer cristatus* LINNAEUS, 1758, p. 629; SD MIERS, 1879, p. 661; =*Cancer bilobus* HERBST, 1790 in 1782–1804, p. 245, pl. 17,*98*] [=*Paramicippa* H. MILNE EDWARDS, 1834 in 1834–1840, p. 332 (type, *Micippe platipes* RÜPPELL, 1830, p. 8, pl. 1,*4,* SD DESMAREST, 1858, p. 14); =*Lophomicippa* RATHBUN, 1907, p. 65 (type, *L. limbata* RATHBUN, 1907, p. 65, pl. 5,*3,* pl. 6,*1,* M)]. Carapace subrectangular, narrowing slightly anteriorly, densely ornamented with tubercles of varying sizes; anterior margin broad, rostrum triangular or rectangular with bifid tip, long, downturned so as to be almost perpendicular to dorsal carapace; orbit with supraorbital eave and intercalated spine sometimes fused to postorbital spine. *Oligocene (Rupelian)–Holocene. Oligocene (Rupelian):* Italy. *Miocene (Langhian):* Hungary, Poland. *Miocene (Messinian):* Malta. *Pleistocene:* Japan. *Holocene:* Indo-West Pacific Ocean, central Pacific Ocean, Indian Ocean, Red Sea.——FIG. 12,*4a–b*. **M. cristata* (LINNAEUS), USNM 82156, Holocene, Netherlands New Guinea, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Microphrys H. MILNE EDWARDS, 1851, p. 251 [**M. weddelli,* p. 291, pl. 10,*1–2;* OD] [=*Milnia* STIMPSON, 1860a, p. 179 (type, *Pisa bicornuta* LATREILLE, 1825, p. 141, OD); =*Omalacantha* STREETS, 1871, p. 238 (type, *O. hirsuta* STREETS, 1871, p. 238, M); =*Eumilnia* KINGSLEY, 1879, p. 145 (type, *M. error* KINGSLEY, 1879, p. 145, M)]. Carapace longer than wide, overall shape pyriform; dorsal surface bearing patches of hooked setae; branchial region strongly inflated, uneven; single row of evenly sized tubercles following curve of posterior margin, none set above others; lateral margin bearing typically four teeth or spines, one or two enlarged spines at posterolateral angle; rostrum of two strong, deflexed horns bearing double row of hooked setae, tips not reaching beyond second movable article of antenna; antenna fused basal article very broad, forming floor of orbit, bearing at least one large anterior spine

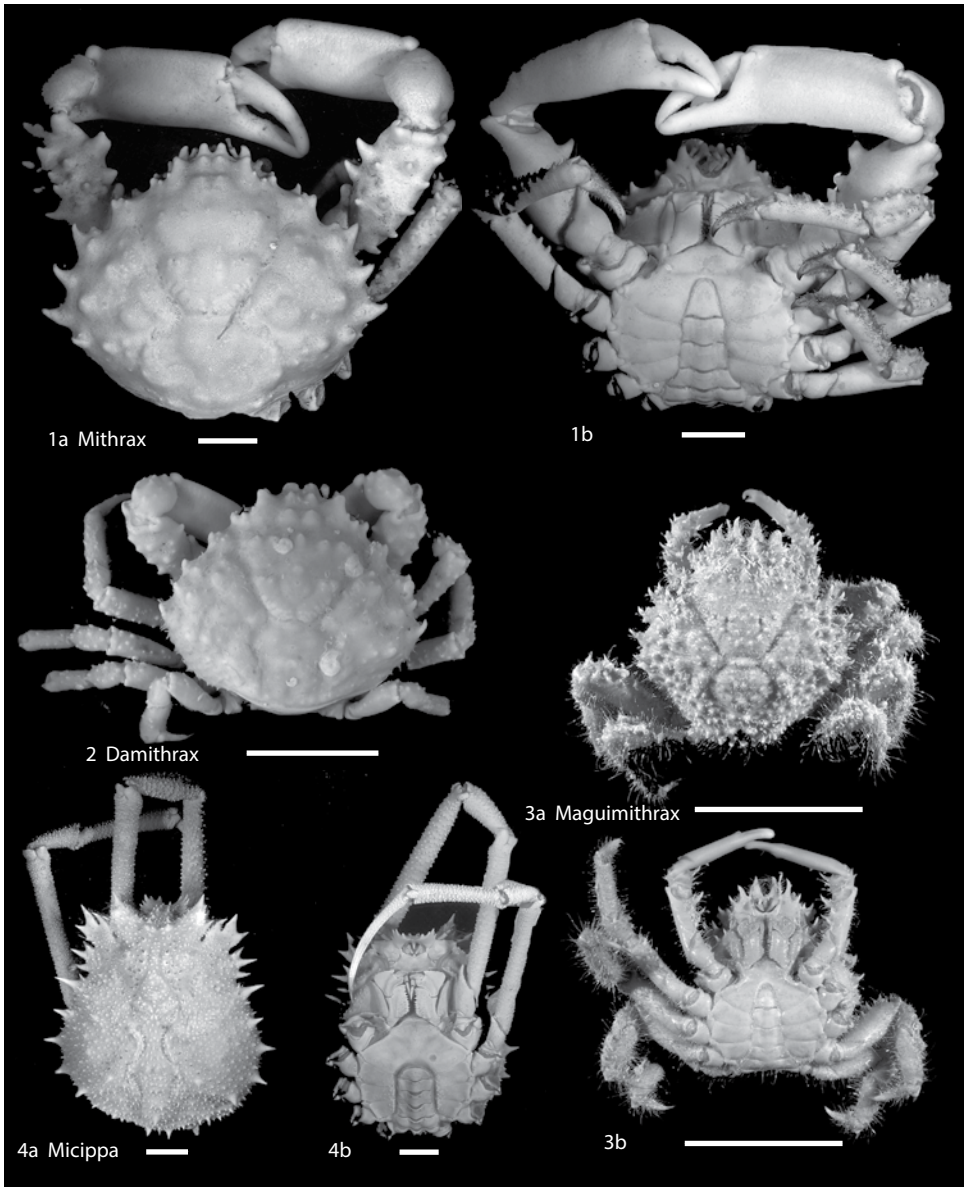

FIG 12. Majidae (p. 19–20).

visible in dorsal view, often with smaller tooth near first movable article, with or without anterolateral tooth arming suborbital margin, sometimes visible in dorsal view; orbit complete, retracted eyestalk fully or partially concealed in dorsal and ventral view; preocular spine or tooth small, it and supraocular eave weakly produced, postocular spine shielding eyestalk posteriorly; cheliped length less than carapace length; merus bearing small dorsal tubercles, ventral surface with two longitudinal rows of spines; carpus uneven with low granules, sometimes with low carina; propodus unarmed, fixed finger proximal tooth enlarged, rectangular in mature male, opposed edges of fingers crenulate. [Emended from WINDSOR & FELDER, 2014, p. 161.] *Pliocene–Holocene. Pliocene:* Colombia. *Holocene:* western Atlantic Ocean, Caribbean Sea, eastern Pacific Ocean.——FIG. 13,*1a–b*. *M. bicornutus* (LATREILLE), MNHN-IU-2013-4818, Holocene, Caribbean Sea, dorsal (*a*) and ventral (*b*) views,

scale bars, 1 cm (new; photo by Corbari & Leprieur, copyright MNHN).

Mithraculus White, 1847a, p. 7 [**Maia sculpta* Lamarck, 1818, p. 242; SD Miers, 1879, p. 667; =*Mithraculus coronatus* White, 1847a, p. 7; =*Mithrax minutus* Saussure, 1858, p. 425, fig. 1]. Carapace obovate, nearly diamond shaped, widest in mid-branchial regions, lateral margins convex; rostrum short, bilobed; supraorbital eave thick, with triangular antorbital projection; intercalated spine absent; postorbital spine short, broadly triangular; lateral margins with short spines, sometimes stout; carapace surface ornamented with broad, large or small swellings, swellings may be smooth or granular; chelae large, smooth, other pereiopods short. *Pleistocene–Holocene. Pleistocene:* Jamaica. *Holocene:* western tropical and subtropical Atlantic Ocean, East Pacific Ocean, Madagascar.——Fig. 13,*2a–b*. **M. sculptus* (Lamarck), USNM 1153908, Holocene, Belize, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Nemausa A. Milne-Edwards, 1875 in 1873–1880, p. 80 [**Pisa spinipes* Bell, 1841, p. 50, pl. 9,*6;* SD Miers, 1879, p. 666; =*Mithrax (Mithrax) mexicanus* Glassell, 1936, p. 213]. Carapace obovate, rounded posteriorly; rostrum long, bifid, spines subparallel or diverging distally; suparorbital eave with strong preorbital spine and short antorbital spine; intercalated spine present, short, triangular; postorbital spine long, cup shaped; antennal plate with very long spine that can be seen in dorsal view; lateral margins spinose, spines of varying sizes; carapace surface ornamented with sharp tubercles of varying sizes. *Miocene–Holocene. Miocene–Pleistocene:* Jamaica. *Holocene:* western tropical and subtropical Atlantic Ocean, Mexico (Gulf of California).——Fig. 13,*3a–b*. *N. cornuta* (Saussure, 1857), USNM 1154487, Holocene, Belize, dorsal (*a*) and ventral (*b*) views, scale bars 1 cm (new).

Stenocionops Desmarest, 1823, p. 266 [**Maia taurus* Lamarck, 1818, p. 242; SD Ng, Guinot, & Davie, 2008, p. 120; =*Cancer furcatus* Olivier, 1791, p. 174; =*Cancer cornudo* Herbst, 1804 in 1782–1804, p. 6] [=*Pericera* Latreille, 1825, p. 699 (type, *Cancer furcatus* Olivier, 1791, p. 174, M); =*Chlorilibinia* Lockington, 1877b, p. 69 (type, *C. angusta,* M]. Carapace obovate, relatively smooth or with scattered tubercles; rostrum strongly bifid; supraorbital eave projected well beyond orbit, with strong preorbital spine; intercalated spine absent; postorbital spine small, sharp; lateral margins with several widely spaced sharp spines; posterior margin produced into a spine; chelae very long. *Eocene (Priabonian)–Holocene. Eocene (Priabonian):* USA (Florida). *Pliocene:* USA (Virginia). *Holocene:* western Atlantic Ocean, eastern Pacific Ocean.——Fig. 13,*4a–b*. *S. furcatus* (Olivier), USNM 238111, Holocene, Florida, USA, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Teleophrys Stimpson, 1860b, p. 133 [**T. cristulipes;* M; =*T. diana* Boone, 1927, p. 162]. Carapace ovate, almost diamond shaped; rostrum bifid, spines closely spaced, parallel; supraorbital eave wide; intercalated spine absent; postorbital spine cup shaped; lateral margins with one or two short spines; carapace regions broadly inflated, sparsely or densely ornamented with granules. *Miocene–Holocene. Miocene:* Jamaica. *Pleistocene:* Barbados. *Holocene:* Caribbean Sea, northwestern South America.——Fig. 13,*5a–b*. **T. cristulipes,* USNM 1155067, Holocene, Galapagos Islands, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Thoe Bell, 1841, p. 47 [**T. erosa,* p. 48, pl. 9,*4;* M] [=*Platypes* Lockington, 1877a, p. 41 (type, *P. edentata,* M)]. Carapace obovate; rostrum short, bifid; orbits forward directed, supraorbital eave and cup-shaped postorbital spine present; lateral margins granular; carapace regions moderately defined, ornamented with scattered large tubercles. *Miocene–Holocene. Miocene (Tortonian–Messinian)–Pleistocene:* Costa Rica, Panama. *Pliocene:* Fiji. *Holocene:* Caribbean Sea, western Mexico.——Fig. 13,*6a–b*. *T. puella* Stimpson, 1860a, USNM 72650, Holocene, Florida, USA, dorsal (*a*) and ventral (*b*) views, scale bars, 5 mm (new).

Subfamily PLANOTERGINAE Števčič, 1991

[Planoterginae Števčič, 1991, p. 124]

Carapace elongate, widest about half the distance posteriorly; rostrum widely projected beyond orbits, with blunt tip; orbits small, directed laterally, ornamentation reduced; lateral margins of carapace produced laterally to cover proximal elements of pereiopods; basal elements of pereiopods wide, flattened; telson small in males and females. *Holocene.*

Planotergum Balss, 1935, p. 36 [**P. mirabile,* p. 36, fig. 1–3; M] [=*Anomalopisa* Johnson, 1965, p. 174 (type, *A. incongruens,* p. 175, fig. 1, OD)]. As for subfamily. *Holocene:* Indo-Pacific Ocean, Australia.——Fig. 14,*1*. **P. mirabile,* AM P2494, female, Holocene, Australia (Great Barrier Reef, Queensland), scale bar, 1 cm (new; photo by S. Ahyong, Australian Museum, Sydney, Australia).

Family OREGONIIDAE Garth, 1958

[Oregoniinae Garth, 1958, p. 134] [=Macroregoniinae Števčič, 2005, p. 96]

Carapace pyriform, ovate, or lyrate; rostrum bifid, spines closely spaced, broadly spaced, or diverging; orbit directed laterally or anterolaterally, composed of supraorbital eave and long postorbital spine; lateral margins sinuous; carapace surface ornamented with scattered granules and tubercles of varying sizes. *Oligocene–Holocene.*

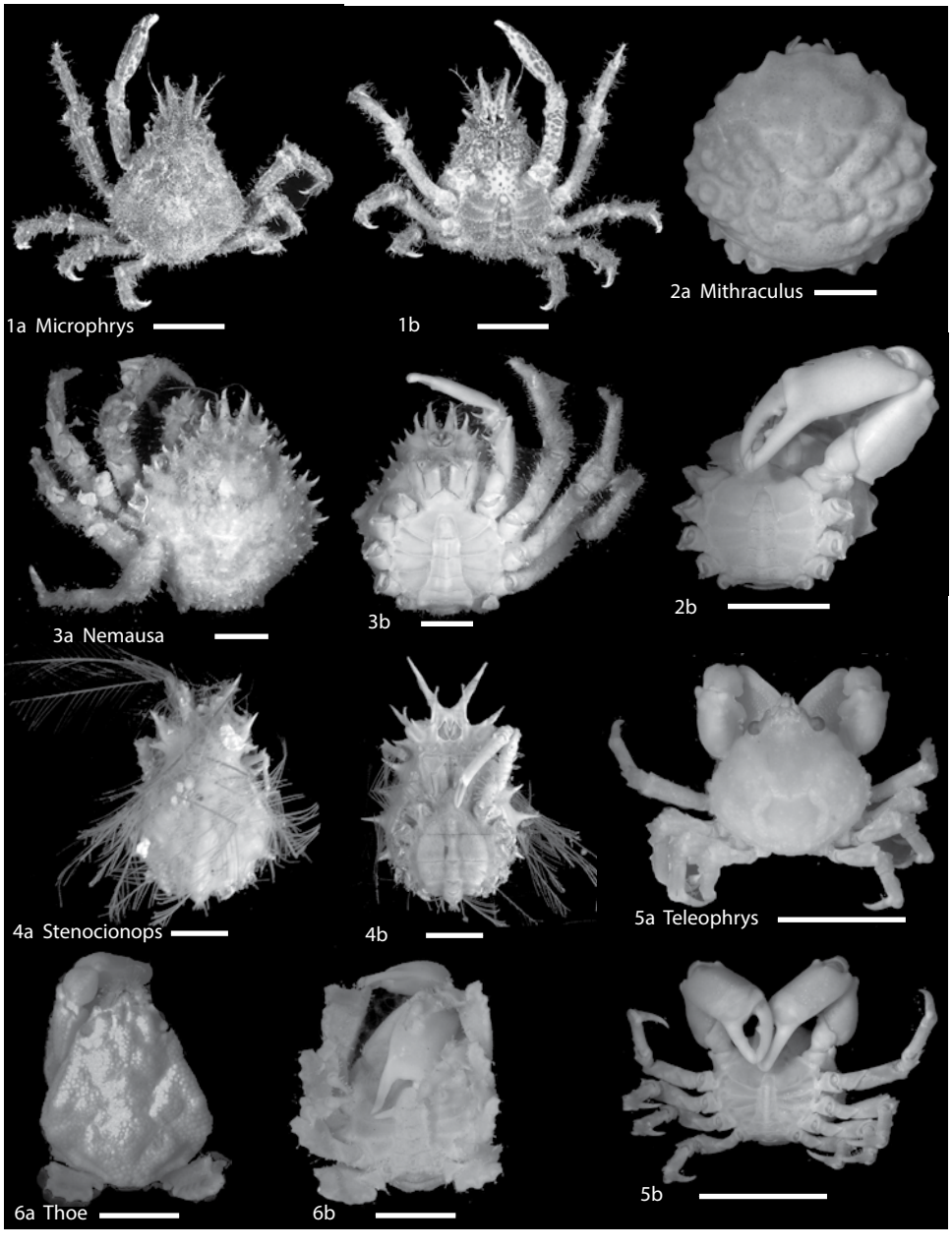

FIG 13. Majidae (p. 20–22).

Oregonia DANA, 1851a, p. 270 [**O. gracilis;* SD MIERS, 1879, p. 646; =*O. hirta* DANA, 1851a, p. 270; =*O. longimana* SPENCE BATE, 1864, p. 663; =*O. matsuensis* YOKOYA, 1928, p. 766, fig. 3]. Carapace pyriform; rostrum bifid, spine closely spaced or broadly spaced and diverging; orbit directed laterally, composed of wide supraorbital eave and long postorbital spine which is not cup shaped; lateral margins sinuous; carapace surface ornamented with scattered granules and tubercles of varying sizes. *Oligocene:* Mexico (Baja California Sur). *Holocene:* North Pacific Ocean.——FIG. 14,*2a–b*. **O. gracilis,* USNM 46647, Holocene, Japan, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Hyas LEACH, 1814 in 1813–1814, p. 431 [**Cancer araneus* LINNAEUS, 1758, p. 628; M; =*Cancer bufo*

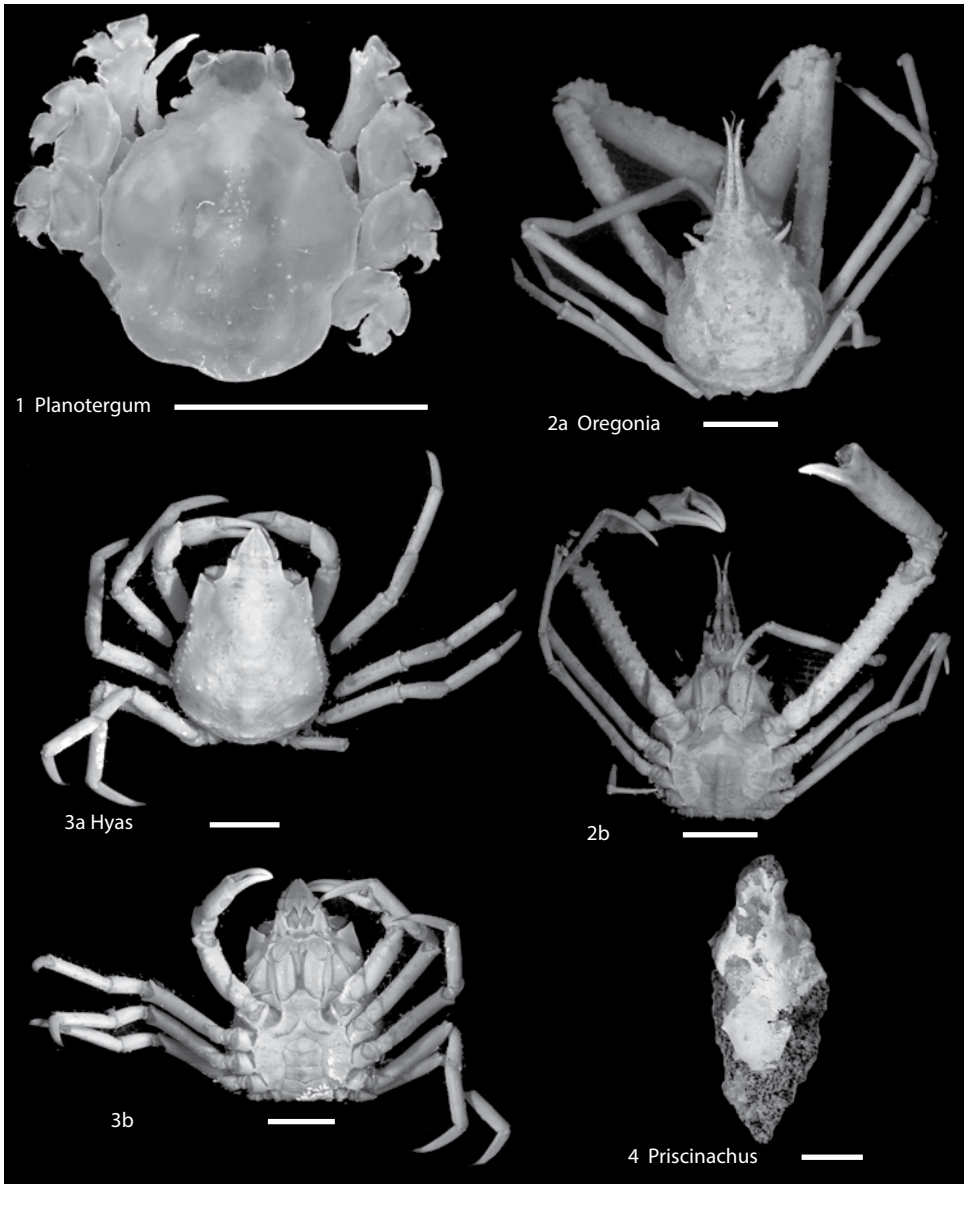

FIG 14. Majidae, Oregoniidae, Priscinachidae (p. 22–25).

HERBST, 1790 in 1782–1804, p. 242, pl. 17,*95*]. Carapace ovate to lyrate; rostrum bifid, spines touching or parallel with open space between; orbit directed anterolaterally, composed of supraorbital rim and narrowly cup-shaped postorbital spine; lateral margins sinuous; carapace surface ornamented with scattered granules and tubercles of varying sizes. *Miocene–Holocene. Miocene (Langhian–Serravallian):* Austria. *Miocene–Pliocene:* Algeria, Japan. *Pleistocene:* Norway, UK (England). *Holocene:* North Atlantic Ocean and Pacific Ocean.——FIG. 14,*3a–b*. **H. araneus* (LINNAEUS), USNM 11868, North Atlantic Ocean, dorsal (*a*) and ventral (*b*) views, scale bars, 1 cm (new).

Family PRISCINACHIDAE Breton, 2009

[Priscinachidae BRETON, 2009, p. 513]

Carapace elongate; rostrum bifid, spines diverging at base; tubular orbit at base of

rostrum, directed anterolaterally, composed of supraorbital eave that is not projected and separated from cup-shaped postorbital spine by closed fissure, small suborbital spine separated from postorbital spine by open fissure; hepatic region projected posterolaterally and ventrally; carapace regions broadly inflated, ornamented with scattered tubercles of varying sizes. *Upper Cretaceous (Cenomanian):* France, ?UK.

Priscinachus Breton, 2009, p. 514 [**P. elongatus,* p. 515, fig. 3–8; OD]. Carapace elongate; rostrum bifid, spines diverging at base; tubular orbit at base of rostrum, directed anterolaterally, composed of supraorbital eave that is not projected and separated from cup-shaped postorbital spine by closed fissure, small suborbital spine separated from postorbital spine by open fissure; hepatic region projected posterolaterally and ventrally; carapace regions broadly inflated, ornamented with scattered tubercles of varying sizes. *Upper Cretaceous (Cenomanian):* France.——Fig. 14,*4*. **P. elongatus,* holotype MNHN (Paleontology) A27207, scale bar, 5 mm (new).

ABBREVIATIONS

AM: Australian Museum, Sydney, Australia

BAR: Asociación Paleontóligica Bariloche, San Carlos de Bariloche, Argentina.

BMNH: The Natural History Museum, London, UK

CM: Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA

EK, M, HNHM: Hungarian Natural History Museum, Budapest, Hungary

KSU D: Decapod Comparative Collection, Department of Geology, Kent State University, Kent, Ohio, USA

MCV: Museo Civico "D. Dal Lago" di Valdagno, Vicenza, Italy

MCZ: Museo Civico "G. Zannato" di Montecchio Maggiore, Vicenza, Italy

MGSB: Museo Geológico del Seminario de Barcelona, Barcelona, Spain

MNHN.F, MNHN IU: Muséum National d'Histoire Naturelle, Paris, Collection de Invertébrés marins, France

MNHN: Muséum National d'histoire naturelle, Paris, Collection de Paleontology, France

MPEF: Museo Paleontologico Egidio Feruglio, Trelew, Chubut, Argentina

NJSM: New Jersey State Museum, Trenton, New Jersey, USA

UF: Florida Museum, University of Florida, Gainesville, Florida, USA

USNM: United States National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA

VR: Museo di Storia naturale di Verona, Italy

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