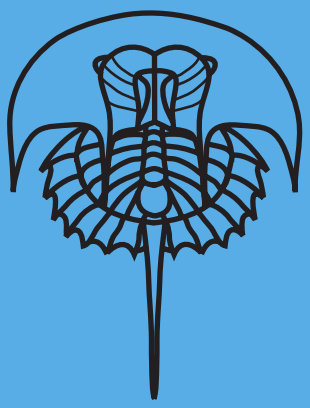

TREATISE ONLINE

Number 51

Part R, Revised, Volume 1, Chapter 8M:

Systematic Descriptions:
Infraorder Brachyura, Section Dromiacea

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2012

KU PALEONTOLOGICAL INSTITUTE
The University of Kansas

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

PART R, REVISED, VOLUME 1, CHAPTER 8M: SYSTEMATIC DESCRIPTIONS: INFRAORDER BRACHYURA, SECTION DROMIACEA

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Infraorder BRACHYURA Linnaeus, 1758

[*nom. transl.* Latreille, 1825, p. 267, *pro* Brachyuri Linnaeus, 1758, p. 625]

Carapace shortened and flattened compared to other Decapoda, fused to epistome; last thoracic sternite fused to anterior sternites; peduncles of antennules composed of three articles; peduncle of antenna composed of two articles; eyes usually in well-developed orbits or other protective structure; maxillae biramous; third maxilliped with well-defined ischium and merus, usually flattened, may be in two planes; first pereiopods always chelate; second and third pereiopods never chelate; fourth and fifth pereiopods may be pseudochelate or chelate, both or only fifth may be reduced in size; pleon reduced, usually held ventral to carapace but sometimes extending posteriorly from carapace; uropods usually absent but always reduced; telson reduced in size; male pleopods 1 and 2 modified as gonopods, uniramous, pleopods 3–5 usually absent; female pleopods 2–5 present; gonopores on coxae or sternum, sexes always separate; sternum narrow with deep depression to accommodate pleon or broader, with narrow cavity centrally to accommodate pleon (adapted from Ng, Guinot, & Davie, 2008; Karasawa, Schweitzer, & Feldmann, 2011). *Lower Jurassic (Pliensbachian)–Holocene*.

Section DROMIACEA De Haan, 1833

[Dromiacea De Haan, 1833 in 1833–1850, p. 102]

Carapace generally longer than wide but sometimes as long as wide or wider than long; orbits well developed, often with an augenrest situated distal to orbit, often ornamented with spines; cervical, branchiocardiac, and usually postcervical groove present; subhepatic region usually inflated, posterior portion of flanks often poorly calcified; renal opening of second antennal coxa with beaklike structure; pereiopods 4 and 5 usually subchelate, pereiopod 5 always subdorsal, reduced in size; pereiopod 4 sometimes subdorsal, reduced in size; male pleonites 3–5 with pleopods, uropodal plates sometimes visible in ventral view; gonopores coxal, spermatheca usually situated posteriorly but may be positioned well anteriorly (Dromiidae); sternum narrow, sternites 1–3 usually fused, positioned below level of other sternites, sloping anteriorly toward buccal cavity (adapted from Karasawa, Schweitzer, & Feldmann, 2011, p. 534). *Lower Jurassic (Pliensbachian)–Holocene*.

Superfamily HOMOLODROMIOIDEA Alcock, 1900

[*nom. transl.* Guinot, 1977, p. 1050, *pro* Homolodromidae Alcock, 1900, p. 127]

Carapace longer than wide or about as long as wide, ovate to hexagonal; with oblique, shallow augenrest, sometimes with septum about two-thirds distance distally, sometimes protected by spines; cardiac and branchiocardiac grooves well developed on dorsal carapace and continuing onto and joining one another on lateral flanks, lateral flanks often poorly calcified posteriorly; postcervical groove usually present; carapace regions usually moderately to well defined; antennar groove extending forward from junction of cervical and branchiocardiac grooves; subhepatic region generally

Schweitzer, Carrie E., Rodney M. Feldmann, & Hiroaki Karasawa. 2012. Part R, Revised, Volume 1, Chapter 8M: Systematic descriptions: Infraorder Brachyura, Section Dromiacea. Treatise Online 51:1–43, 24 fig.

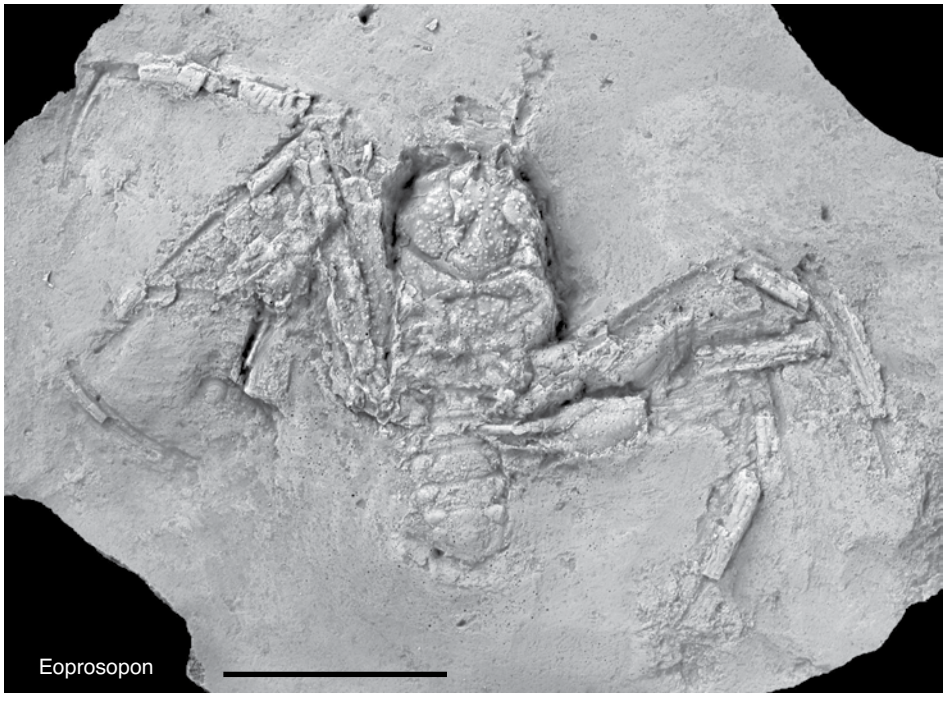

FIG. 1. Homolodromioidea (p. 2).

inflated; telson elongate in males; maxilliped 3 pediform, longer than wide (adapted from KARASAWA, SCHWEITZER, & FELDMANN, 2011, p. 535). *Lower Jurassic (Pliensbachian)–Holocene.*

Eoprosopon FÖRSTER, 1986, p. 26 [**E. klugi* FÖRSTER, 1986, p. 27, fig. 1–2; OD]. Carapace dorsoventrally compressed; well-developed regions and cervical and branchiocardiac grooves; long dactyls of pereiopods 2 and 3, reduced pereiopods 4 and 5, and a flattened pleon with epimeres. Discrete, obvious swellings in area of epimeres (Fig. 1), which are not present on any extant homolodromiid. Each individual pleonite 5–7 is rectangular and long, they fit closely together and maintain their length laterally. Pleonite 7 has clear articulating rings. Telson slightly longer than wide; possesses one pair of chelae; walking legs are long and achelate; last pair of pereiopods and possibly fourth pair also are reduced. Pleon extends posteriorly from carapace, and does have epimeres, both of which are atypical of brachyurans [Genus description is adapted from SCHWEITZER and FELDMANN (2010a). This genus is unplaced at the family level.] *Lower Jurassic (Pliensbachian)*: Germany.——FIG. 1. **E. klugi,* dorsal view showing pleon extending posteriorly, cast of holotype, BSP 1986 I 19, scale bar = 1 cm (Schweitzer & Feldmann, 2010a, fig. 1).

Family BUCCULENTIDAE Schweitzer & Feldmann, 2009

[Bucculentidae SCHWEITZER & FELDMANN, 2009a, p. 78]

Carapace longer than wide, overall rectangular in shape; rostrum projected well beyond frontal margin of carapace, may have numerous small spines or be three spined; orbits appearing to be placed under rostrum, augenrest on hepatic region of dorsal carapace or subdorsally on hepatic region, bounded by spines or ridges; frontal margin of carapace may bear spines; hepatic regions strongly inflated and marking widest point on carapace; cervical and branchiocardiac grooves deep; lateral sides of carapace short (adapted from KARASAWA, SCHWEITZER, & FELDMANN, 2011, p. 535). *Upper Jurassic (Oxfordian)–Upper Cretaceous (Cenomanian).*

Bucculentum SCHWEITZER & FELDMANN, 2009a, p. 78 [**Nodoprosopon bucculentum* WEHNER, 1988, p. 53, pl. 4,*1;* OD]. Rostrum projected well beyond frontal margin of carapace, with numerous small spines or three spined; orbits

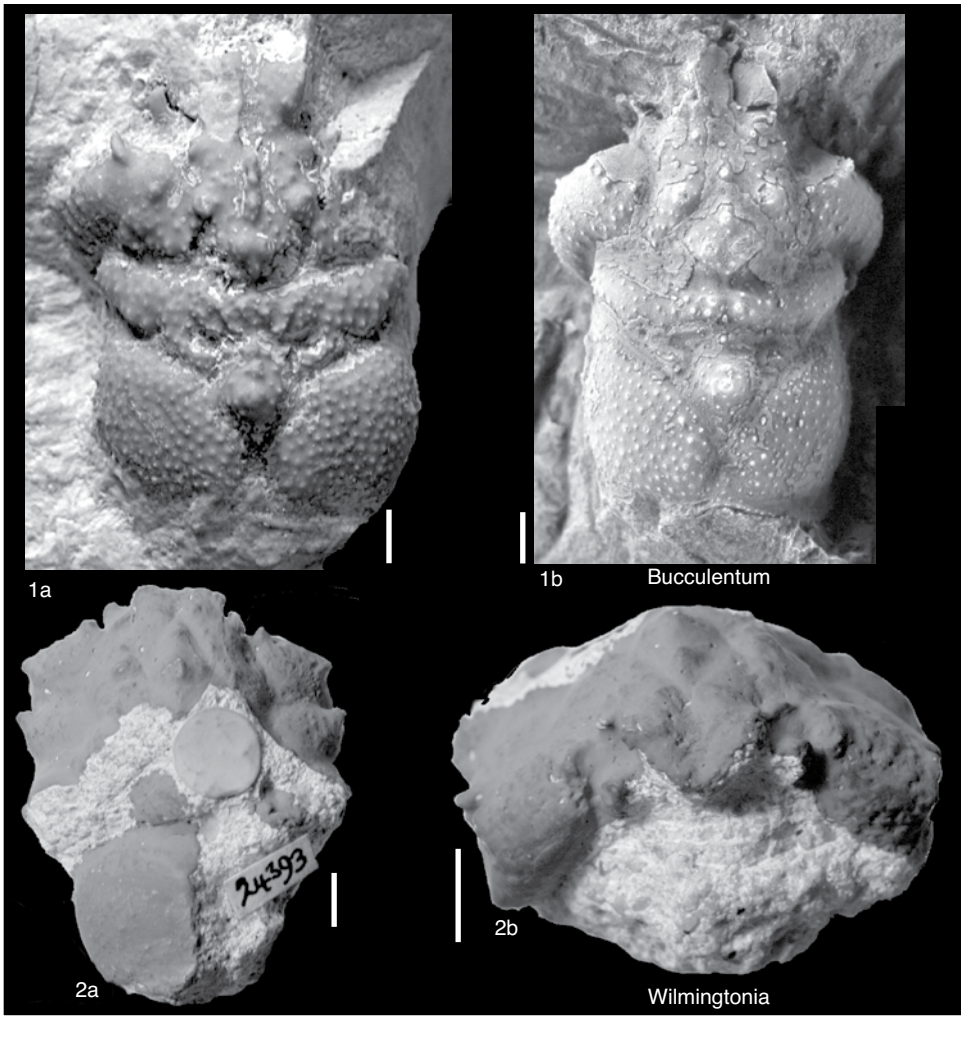

FIG. 2. Bucculentidae (p. 2–4).

appearing to be placed under rostrum, augenrest on hepatic region of dorsal carapace, bounded by spines or ridges; frontal margin of carapace may bear spines; hepatic regions strongly inflated and marking widest point on carapace; cervical and branchiocardiac grooves deep; lateral sides of carapace short. *Upper Jurassic (Oxfordian–Tithonian):* Germany, *Oxfordian;* Austria, Poland, *Tithonian.*——FIG. 2,*1a. *B. bucculentum* (WEHNER), dorsal view, Oxfordian, Germany, holotype, BSP 1980 XXX 1255, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 3.4).——FIG. 2,*1b. B. bachmayeri* SCHWEITZER & FELDMANN, dorsal view, Tithonian, Germany, holotype, NHMW 1990/0041/3376, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 3.1).

Wilmingtonia WRIGHT & COLLINS, 1972, p. 20 [**W. satyrica*; OD]. Carapace longer than wide, parallel sided, widest at hepatic region; moderately vaulted transversely, flattened longitudinally; rostrum downturned, sulcate; augenrest circular, subdorsal, bounded by three spinose processes; hepatic region transversely elongate, strongly inflated, rugose; cervical and branchiocardiac grooves strong, extending onto flanks, cervical groove strongly concave forward, branchiocardiac groove parallels cervical groove; epibranchial region strongly inflated, with lateral spine; mesogastric region with large swelling; metagastric region composed of two ovoid swellings; cardiac region ovoid, separated from posterior margin by long, narrow intestinal region. *Upper Cretaceous (Cenomanian)*: United

Kingdom.——Fig. 2,*2a–b. *W. satyrica,* holotype, BMNH In.60909; *a,* dorsal view, *b,* anterior view showing orbits and dorsally situated augenrests; scale bars = 1 mm (new, note specimen coated in gray paint by previous workers).

Family GONIODROMITIDAE Beurlen, 1932

[Goniodromitidae Beurlen, 1932, p. 62] [=Pithonotinae Glaessner, 1933, p. 180]

Carapace slightly longer than wide or about as long as wide; usually moderately vaulted transversely and longitudinally; rostrum simple, bilobed, axially sulcate, eyestalks appearing to arise from beneath rostrum; orbits and augenrest oblique to axis, directed anterolaterally, elongate, deep, occupying at least two-thirds maximum carapace width and often entire maximum width of carapace, suborbital margin may extend further anteriorly than upper-orbital margin; epigastric regions developed as small swellings; mesogastric region moderately developed, best developed at anterior tip and posteriorly along cervical groove; cervical groove always strong; postcervical groove weak when present; branchiocardiac groove usually well developed but may be interrupted axially; lateral margins usually with spines or rim, especially anteriorly; lateral flanks of carapace well developed, usually with inflated subhepatic region bounded ventrally by antennar groove, with extensions of cervical and branchiocardiac grooves that often merge. Chelae, where known, apparently isochelous, fingers gracile, movable finger longer than fixed finger (adapted from Karasawa, Schweitzer, & Feldmann, 2011, p. 535). *Upper Jurassic (Oxfordian)–Paleocene (Danian)*.

Goniodromites Reuss, 1858, p. 8 [**G. bidentatus* Reuss, 1858, p. 12; SD Glaessner, 1929, p. 327] [=*Iberihomola* Van Straelen, 1940, p. 3 (type, *I. laevis,* M)]. Carapace somewhat longer than wide, as long as wide, or wider than long, maximum width ranging from 85 percent to 105 percent maximum length, narrowing anteriorly and posteriorly, reaching maximum width at position anterior to intersection of cervical groove with lateral margin or at outer-orbital spine, about 30 percent distance posteriorly on carapace. Cephalic region, measured from front to cervical groove along midline, half or more than half total length. Front bilobed, often broadly so, frontal margins continuous with orbital margin; orbital and augenrest margin can be serrate, orbital and augenrest margin at about 52–57 degree angle to axis, outer-orbital angle a well-developed spine; lateral margin usually with spines; posterolateral margin intercepts long axis at an angle of about 20–24 degrees. Dorsal carapace typically ornamented with tubercles anteriorly and scabrous rows of tubercles or small spines posteriorly. Cervical groove strongly developed, continuous across axis, lateral segment at angle 80–85 degrees to axis. Branchiocardiac groove strongly developed laterally, less strongly developed axially, continuous across axis, lateral segments of branchiocardiac groove merging posterior to cardiac region and continuing to intersect with posterior margin. Epigastric regions spherical, small; mesogastric region best defined posteriorly, anterior process often only developed near epigastric regions; cardiac region inflated; epibranchial region defined by cervical and branchiocardiac grooves (adapted from Schweitzer & Feldmann, 2008a [imprint 2007]). *Upper Jurassic (Oxfordian)–Upper Cretaceous (Cenomanian)*: France, Romania, *Oxfordian;* Romania, *Kimmeridgian;* Austria, Czech Republic, Germany, Hungary, Romania, Japan, *Tithonian;* Romania, *Berriasian;* Britain, Spain, *Cenomanian*.——Fig. 3,*1a. *G. bidentatus,* cast of BSP 1988 I91, dorsal carapace, Tithonian, Czech Republic, scale bar = 1 cm (Schweitzer & Feldmann, 2008a, pl. 2A).——Fig. 3,*1b. G. polyodon* Reuss, 1858 [imprint 1857], cast of cotype, Geologische Landesansstalt Wien, Sammlung Reuss 2359, dorsal carapace, Tithonian, Czech Republic, scale bar = 1 cm (Schweitzer & Feldmann, 2008a, pl. 2C).

Cycloprosopon Lőrenthey in Lőrenthey & Beurlen, 1929, p. 89 [**Pithonoton (C.) typicum* Lőrenthey in Lőrenthey & Beurlen, 1929, p. 90; OD]. Carapace wider than long, octagonal in shape, maximum width at or posterior to position of intersection of cervical groove with anterolateral margin; carapace moderately vaulted longitudinally and transversely; variously described as smooth or with fine granules or punctae. Rostrum broad, bilobed, weakly concave or axially notched, may be downturned; augenrest moderately deep, directed weakly anterolaterally, weakly rimmed; anterolateral margin short, sometimes with spines; posterolateral margin longer; posterior margin narrow, concave. Mesogastric region poorly defined, best defined at anterior tip and posteriorly; epigastric regions developed as weak swellings or not at all; cardiac and urogastric regions sometimes weakly marked; otherwise, regions not defined. Cervical groove always better developed than branchiocardiac groove; postcervical groove weakly or well defined, interrupted axially; branchiocardiac groove often incomplete or entirely missing; lateral flanks angled under carapace, subhepatic region weakly or uninflated (adapted from Schweitzer & Feldmann, 2010c). *Upper Jurassic (Tithonian)*: Austria, Czech Republic, Italy, Poland, Romania.——Fig. 3,*2a.*

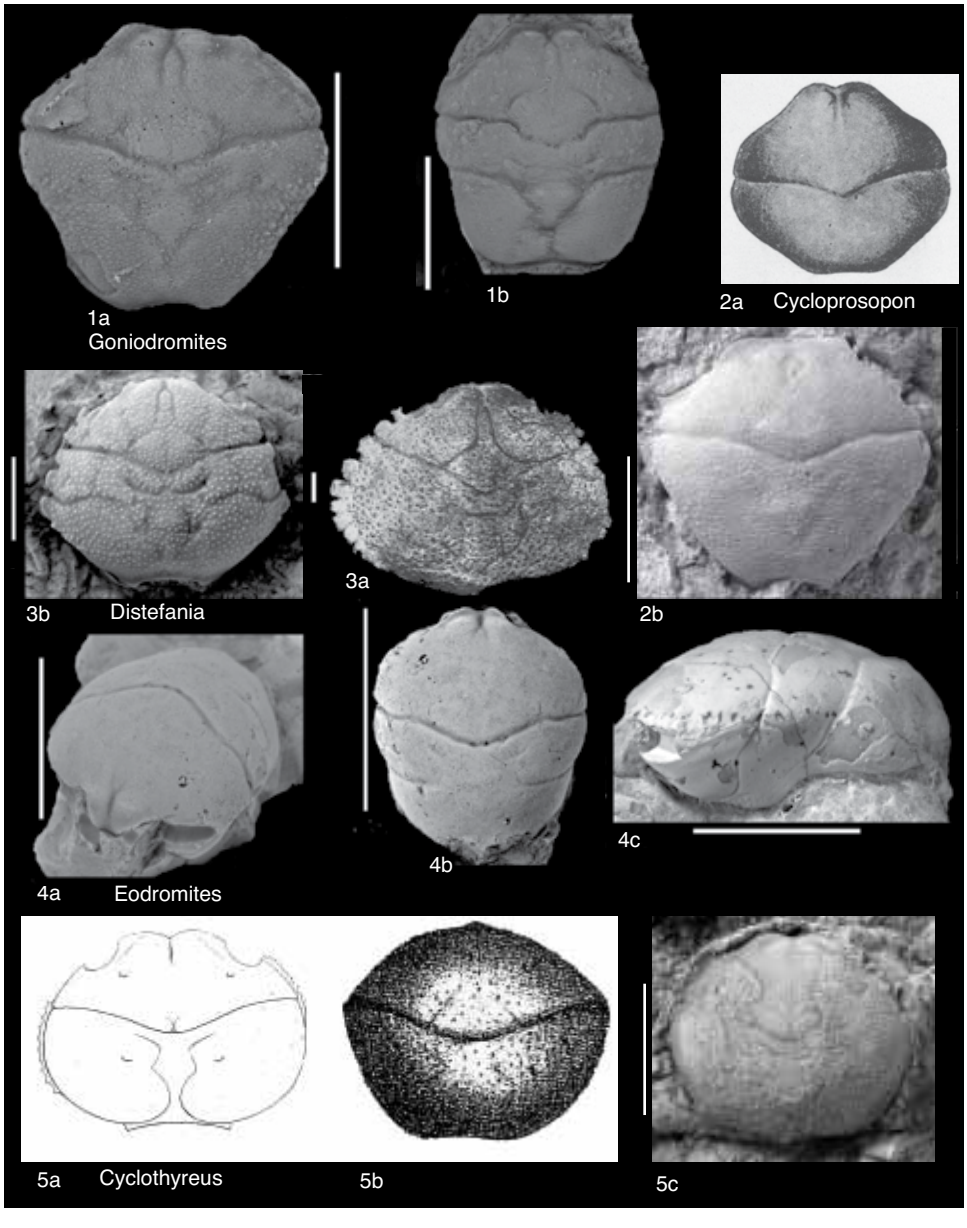

FIG. 3. Goniodromitidae (p. 4–6).

**C. typicum,* Romania, dorsal carapace, no scale provided (Lőrenthey in Lőrenthey & Beurlen, 1929, pl. 3,*12a*).——FIG. 3,*2b. C. conspicuum* SCHWEITZER & FELDMANN, 2010c, holotype, PL 2012, dorsal carapace, Czech Republic, scale bar = 0.5 cm (Schweitzer & Feldmann, 2010c, fig. 2.3).

Cyclothyreus REMEŠ, 1895, p. 202 [**C. strambergensis;* M]. Carapace ovate, wider than long, length about 80 percent maximum width, ranging from 70 percent to 90 percent; front triangular but ranges from very narrow to broad and flared; orbits directed forward, no augenrest, fronto-orbital width ranging from 48 percent to 70 percent maximum carapace width, either about half or about two-thirds in individual species; lateral margins with tiny spines where preservation of cuticle is good;

cervical groove well defined; postcervical groove usually present; branchiocardiac groove usually absent, never well defined; carapace widest posterior to intersection of cervical groove with lateral margin, rarely at level of intersection of cervical groove with lateral margin, usually about half the distance posteriorly on carapace but may be only about 42 percent distance posteriorly; posterior margin short, concave; suborbital swelling present; carapace with fine granular ornamentation where cuticle is preserved. Pterygostomial region small, simple, weak suborbital swelling (adapted from SCHWEITZER & FELDMANN, 2009d). *Upper Jurassic (Tithonian)*: Austria, Czech Republic, Italy, Romania.——FIG. 3,*5a. *C. strambergensis*, line drawing (Remeš, 1895, pl. 2,*8a*).——FIG. 3,*5b. C. latus* (MOERICKE, 1889), line drawing, Czech Republic (Moericke, 1889, pl. 6,*20*).——FIG. 3,*5c. C. divaricatus* SCHWEITZER & FELDMANN, 2009d, dorsal carapace, holotype, NHMW 2007z0149/0031, Austria, scale bar = 1 cm (Schweitzer & Feldmann, 2009d, fig. 3.3).

Distefania CHECCHIA-RISPOLI, 1917, p. 174 [**D. himeraensis* CHECCHIA-RISPOLI, 1917, p. 177; OD] [=*Cyphonotus* BELL, 1863, p. 8 (type, *C. incertus* BELL, 1863, p. 8, pl. 1,*17–19,* M), *non* FISCHER, 1823, p. 212, melolonthid, *nec* GUERIN-MENEVILLE, 1838, p. 102, tenebrionid]. Front broadly triangular, anterior end straight, steeply downturned; orbits and small augenrest shallow or moderately deep, forward directed; fronto-orbital width about 55 percent to 65 percent maximum carapace width; cervical groove deep; well-defined mesogastric region; markedly spined anterolateral margins, with spines sometimes quadrate in shape; carapace ovate, widest at about 60 percent distance posteriorly; arcuate swellings lateral to cardiac region; posterolateral rim; postcervical groove and usually weaker branchiocardiac groove present (adapted from SCHWEITZER & FELDMANN, 2010b). *Upper Jurassic (Tithonian)–Upper Cretaceous (Cenomanian):* Austria, Czech Republic, Italy, Romania, *Tithonian;* France, *Aptian;* United Kingdom, *Albian;* Belgium, Italy, Spain, United Kingdom, *Cenomanian*.——FIG. 3,*3a. *D. himeraensis,* dorsal carapace, Cenomanian, Sicily, scale bar = 0.5 cm (Checchia-Rispoli, 1917, pl. 1,*3*).——FIG. 3,*3b. D. oxythyreiformis* (GEMMELLARO, 1869), dorsal carapace, NHMW 416, Tithonian, Czech Republic, scale bar = 0.5 cm (Schweitzer & Feldmann, 2010b, fig. 4.3).

Eodromites PATRULIUS, 1959, p. 254 [**Prosopon grande* VON MEYER, 1857, p. 556; OD]. Carapace longer than wide or about as wide in larger specimens, widest just posterior to intersection of cervical groove with lateral margin; orbits and augenrest oblique, at moderate angle to axis, suborbital margin may extend farther anteriorly than upper-orbital margin; rostrum triangular, axially sulcate; lateral margins characteristically convex, especially between intersection of cervical and branchiocardiac grooves with margin, and then narrowing considerably posteriorly; orbits elongate and oblique to axis; cervical groove deep and continuous; branchiocardiac groove deep and discontinuous; mesogastric region with ovate patches of scabrous ornamentation; subhepatic swelling marked, antennar groove deep, hepatic groove weak (adapted from SCHWEITZER & FELDMANN, 2008a). *Upper Jurassic (Oxfordian)–Upper Cretaceous (Valanginian):* Romania, *Oxfordian;* Germany, *Kimmeridgian;* Austria, Czech Republic, Italy, Romania, Poland, *Tithonian;* France, *Valanginian.*——FIG. 3,*4a–c. *E. grandis* (VON MEYER); *a,* oblique anterior view of rostrum and augenrest; *b,* dorsal carapace, cast of neotype, BSP 1881 IX 678, Kimmeridgian, Germany; scale bars = 1 cm (Schweitzer & Feldmann, 2008a, pl. 4D, 4F); *c,* lateral view, NHMW 2007/0149/0001a, Tithonian, Austria, scale bar = 1 cm (Schweitzer & Feldmann, 2008a, pl. 4B).

Maurimia MARTINS-NETO, 2001, p. 241 [**Cyclothyreus* (?) *sergipensis* BEURLEN, 1965, p. 270; OD]. Carapace about as long as wide; front broadly bilobate; orbital margin broad; cervical groove deep; lateral margin with two spines anterior to intersection with cervical groove and two posterior to intersection with branchiocardiac groove. *Lower Cretaceous (Albian)*: Brazil.——FIG. 4,*1. *M. sergipensis* (BEURLEN), line drawing, scale bar = 1 cm (Beurlen, 1965, p. 267, fig. 1.3).

Microcorystes FRITSCH, 1893, p. 105 [**M. parvulus* FRITSCH, 1893, p. 105, fig. 134; M]. Carapace tiny, longer than wide; orbits apparently broad; two spines on lateral margin anterior to intersection with cervical groove; one spine just posterior to intersection with cervical groove; cervical groove and branchiocardiac grooves well defined; mesogastric region with bilobed swelling posteriorly; postcervical groove present. *Upper Cretaceous (Coniacian):* Czech Republic.——FIG. 4,*2. *M. parvulus,* dorsal carapace, NM CL 6980, scale bar = 1 mm (new).

Navarradromites KLOMPMAKER, FELDMANN, & SCHWEITZER, 2012, p. 796 [**N. pedroartali* KLOMPMAKER, FELDMANN, & SCHWEITZER, 2012, p. 798, fig. 8; OD]. Carapace longer than wide, widest at position of epibranchial region posterior to intersection of cervical groove and lateral margin; rostrum bifid, with deep triangular axial notch, with two small spines set below level of rostrum; orbital and augenrest margins straight, with outer augenrest spine separated from orbital margin by small indentation; mesogastric region very wide posteriorly; branchial regions short; subhepatic region markedly inflated. *Lower Cretaceous (Albian)–Upper Cretaceous (Cenomanian):* Spain.——FIG. 5,*3a–c. *N. pedroartali; a,* holotype, dorsal carapace, MGSB77711; *b,* anterior view, MAB k2956; *c,* left lateral view, MAB k3018; scale bars = 1 mm (Klompmaker, Feldmann, & Schweitzer, 2012, fig. 8D, I, H).

Palaeodromites A. MILNE-EDWARDS, 1865, p. 346 [**P. octodentatus;* OD]. Anterolateral margins thin, divided into four small spines (excluding the outer-orbital angle), separated by broad reentrants; posterolateral margins thick and rounded; orbits

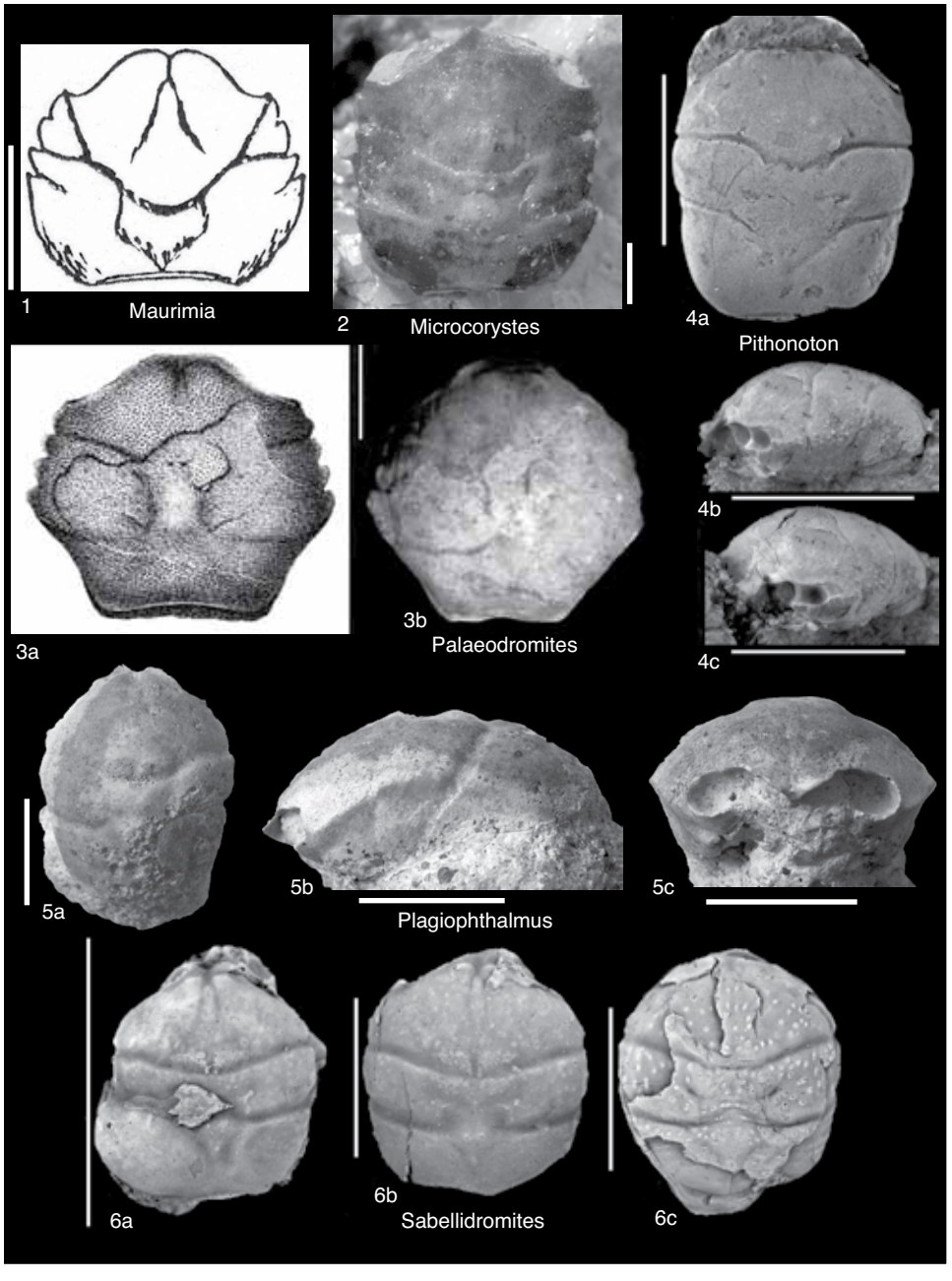

FIG. 4. Goniodromitidae (p. 6–9).

appearing to have been wide, directed obliquely; cervical groove well developed; branchiocardiac groove not visible; posterolateral margins well developed, shorter than anterolateral margins but still quite long; posterior margin weakly concave (adapted from SCHWEITZER & FELDMANN, 2010b). *Lower Cretaceous:* France.——FIG. 4,*3a–b. *P. octodentatus; a,* line drawing, scale unknown (A. Milne-Edwards, 1865, pl. 5,*2a*); *b,* holotype, 81-251, Muséum Auxerre, sclae bar = 0.5 cm, photograph

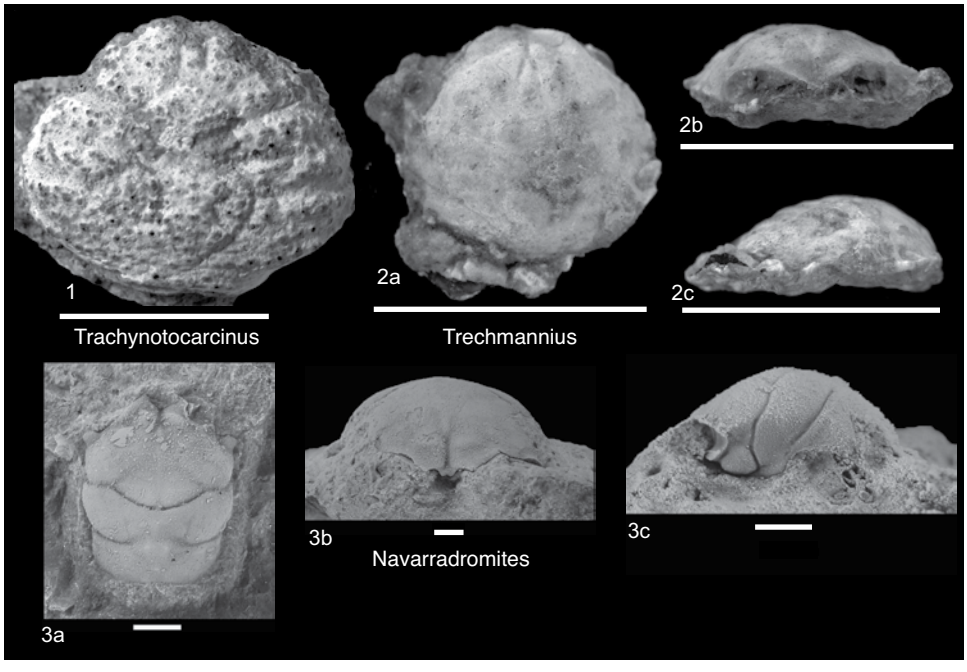

FIG. 5. Goniodromitidae (p. 6–9).

by Josette Laliaux, Ville d'Auxerre (Schweitzer & Feldmann, 2010b, fig. 2).

Pithonoton VON MEYER, 1842, p. 71 [**Prosopon marginatum* VON MEYER, 1842, p. 72, pl. 15,*3a–c;* SD GLAESSNER, 1929, p. 318]. Carapace longer than wide, widest just posterior to intersection of cervical groove and lateral margin, narrowed noticeably posterior to intersection of branchiocardiac groove with lateral margin; carapace strongly vaulted longitudinally and transversely. Rostrum long, rounded-triangular. Orbits and augenrest elongate, oblique to axis, terminating in very small outer-orbital projections. Epigastric regions weakly inflated. Cervical groove strong; branchiocardiac groove nearly as strong, weakening slightly as it curves posteriorly to bound posterior margins of cardiac region, merging posteriorly to form weak groove dividing branchial region into halves. Lateral sides short; cervical groove extending onto side, almost perpendicular to lateral margin; branchiocardiac groove extending onto lateral side, directed slightly anteriorly, grooves appear to be joined ventrally by weak hepatic groove. No evidence of postorbital ridge or subhepatic swelling in specimens examined (adapted from SCHWEITZER & FELDMANN, 2008a). *Upper Jurassic (Oxfordian–Tithonian):* Germany, *Oxfordian–Kimmeridgian;* Austria, Czech Republic, Italy, Japan, Romania, *Tithonian.*——FIG. 4,*4a–c.* **P. marginatum* (VON MEYER); *a,* cast of neotype, BSP 1881 IX 681, dorsal carapace; *b–c,* SMF X/m 190; *b,* lateral margin and augenrest, *c,* oblique anterior view of orbit and augenrest; scale bars = 1 cm (Schweitzer & Feldmann, 2008a, pl. 3A, 3C–3D).

Plagiophthalmus BELL, 1863, p. 9 [**P. oviformis* BELL, 1863, p. 9, pl. 2,*1–3;* M]. Carapace longer than wide, W/L about 0.80, widest just posterior to intersection of cervical groove with lateral margin, about 40 percent the distance posteriorly, narrowing distally; carapace strongly vaulted longitudinally and transversely. Rostrum bifid. Orbits deep, augenrest reduced, suborbital margin extending well beyond upper-orbital margin, fronto-orbital width about 70 percent maximum carapace width. Lateral margins with thick rim. Cervical and branchiocardiac grooves about equally well developed. Lateral flanks of carapace well developed, with inflated subhepatic region bounded ventrally by antennar groove, with extensions of cervical and branchiocardiac grooves extending obliquely anteriorly, merging. *Lower Cretaceous (Albian)–Upper Cretaceous (Campanian):* Britain, *Albian–Cenomanian;* Antarctica (Peninsula), *Campanian.*——FIG. 4,*5a–c.* **P. oviformis,* BMNH In. 60921, Cenomanian, Britain; *a,* dorsal carapace; *b,* lateral view; *c,* anterior view; scale bars = 1 cm (new).

Sabellidromites SCHWEITZER & FELDMANN, 2008a, p. 136 [**Goniodromites scarabaeus* WRIGHT & WRIGHT, 1950, p. 17, pl. 1,*3–6;* OD]. Carapace slightly longer than wide, W/L about 0.90, widest just posterior to intersection of cervical groove with lateral margin, about half distance posteriorly

on carapace; carapace weakly vaulted or flattened transversely and moderately vaulted longitudinally. Rostrum triangular, downturned, axially sulcate, rimmed. Orbits oblique, ovate, fronto-orbital width two-thirds to three-quarters maximum carapace width; outer-orbital angle a blunt tooth. Lateral margins with small spines, anteriorly keeled, incised where intersected by grooves; cervical groove well marked, extending in two relatively straight segments to intersect at axis; branchiocardiac groove deepest laterally, weakened at edge of cardiac region. Epigastric regions small, weakly inflated; mesogastric region poorly marked, with ovate scabrous patches posteriorly; cardiac region small, triangular, with tubercles at each corner; remainder of carapace regions poorly differentiated, ornamented with scattered large tubercles. Lateral flanks short, at about 70 degree angle to dorsal surface of carapace, subhepatic region weakly inflated, bounded on ventral surface by antennar groove; cervical and branchiocardiac grooves extending onto lateral sides, directed anteriorly and merging just posterior to subhepatic region, region between two grooves weakly inflated (adapted from Schweitzer & Feldmann, 2008a). *Lower Cretaceous (Albian)–Upper Cretaceous (Campanian):* Britain, *Albian;* Japan, *Turonian–Campanian.*——Fig. 4,*6a–c. *S. scarabaea* (Wright & Wright), Albian, Britain; *a,* dorsal carapace with bopyrid, KSU D 748; *b,* cast of paratype, dorsal carapace, BMNH, In.60911; *c,* cast of AD86-2/IG 9229, dorsal carapace; scale bars = 1 cm (Schweitzer & Feldmann, 2008a, pl. 5).

Trachynotocarcinus Wright & Collins, 1972, p. 52 [**Trachynotus sulcatus* Bell, 1863, p. 2, pl. 1,*1;* M] [=*Trachynotus* Bell, 1863, p. 2 (type, *T. sulcatus,* OD), *non* Latreille, 1829, p. 14, Coleoptera, *nec* Gravenhorst, 1829, p. 713, Hymenoptera]. Carapace wider than long, ovoid, widest about 75 percent distance posteriorly; weakly vaulted; rostrum downturned, sulcate; anterolateral margin well defined, spinose; orbits oblique, elongate, augenrest small; upper-orbital margin with node marking inner angle of augenrest; cervical groove sinuous, deep; epibranchial region subdivided by postcervical groove into transverse swellings; postcervical groove long, extending to lateral margins; branchiocardiac groove well defined laterally; anterior regions coarsely granular, posterior regions with granules arranged into rows; posterior margin narrow, rimmed. *Lower Cretaceous (Albian)–Upper Cretaceous (Cenomanian)*: United States (Texas), *Albian;* Britain, *Cenomanian.*——Fig. 5,*1. *T. sulcatus* (Bell), lectotype, BMNH, In. 60138, dorsal carapace, scale bar = 1 cm (new).

Trechmannius Collins & Donovan, 2006, p. 61 [**T. circularis* Collins & Donovan, 2006, p. 61, fig. 2.4–2.6; OD]. Carapace circular, about as wide as long; front triangular, with upturned rim; epigastric regions weakly inflated; orbits situated beneath rostrum, augenrest small, shallow, entire orbit and augenrest margin occupying about two-thirds maximum carapace width; cervical groove weak; postcervical and branchiocardiac grooves even weaker, barely visible; mesogastric region defined anteriorly as triangular tip anterolateral margins with 5 or so tubercles. *Paleocene (Danian)*: Jamaica.——Fig. 5,*2a–c. *T. circularis*, holotype, BMNH, IC 452; *a,* dorsal carapace; *b,* anterior view; *c,* lateral view; scale bars = 0.5 cm (Collins & Donovan, 2006, fig. 2.4–2.6; images courtesy S. Donovan).

Family HOMOLODROMIIDAE Alcock, 1900

[*nom. correct.* Borradaile, 1903a, p. 575, *pro* Homolodromidae Alcock, 1900, p. 127]

Carapace longer than wide; lacking well-defined orbits; eyes resting in concavity formed by orbital spines or by subhepatic region (augenrest); two forward-directed lateral rostral spines positioned at base of central rostral spine, if present, sometimes fused into a single bifid structure, lateral rostral spines appear to originate on dorsal carapace; central rostral spine variable, may be absent, tiny, downturned, or attenuated; subhepatic region inflated, sometimes markedly so; other subdorsal areas may be well developed; cervical and branchiocardiac grooves moderately well defined, parallel to one another; regions indistinct in extant forms and well developed in most fossil forms; appendages typically slender, sometimes long, pereiopod 5 usually carried dorsally, both pereiopods 4 and 5 reduced in size; pleonites with triangular, long epimeres; uropods not visible, telson longer than wide; spermatheca placed posteriorly (adapted from Karasawa, Schweitzer, & Feldmann, 2011, p. 536). *Middle Jurassic (Bathonian)–Holocene.*

Homolodromia A. Milne-Edwards, 1880, p. 32 [**H. paradoxa* A. Milne-Edwards, 1880, p. 33; M]. Carapace weakly calcified, especially on posterior flanks; longer than wide, widest posteriorly; two lateral rostral spines, no central rostral spine; eyes resting in augenrest formed by outer-augenrest spine and subhepatic region; cervical groove weak, branchiocardiac groove stronger. *Holocene*: Caribbean, Mozambique, Tanzania, South Africa, Peru, Chile, Indonesia, Melanesia, France, Sudan, Azores, Antilles, Brazil, United States (South Carolina).——Fig. 6,*1a–b. *H. paradoxa,* USNM 285378, female; *a,* dorsal carapace; *b,* ventral surface; scale bars = 1 cm (new).——Fig. 6,*1c. H. robertsi* Garth, LACM CR 1980-158.6, lateral

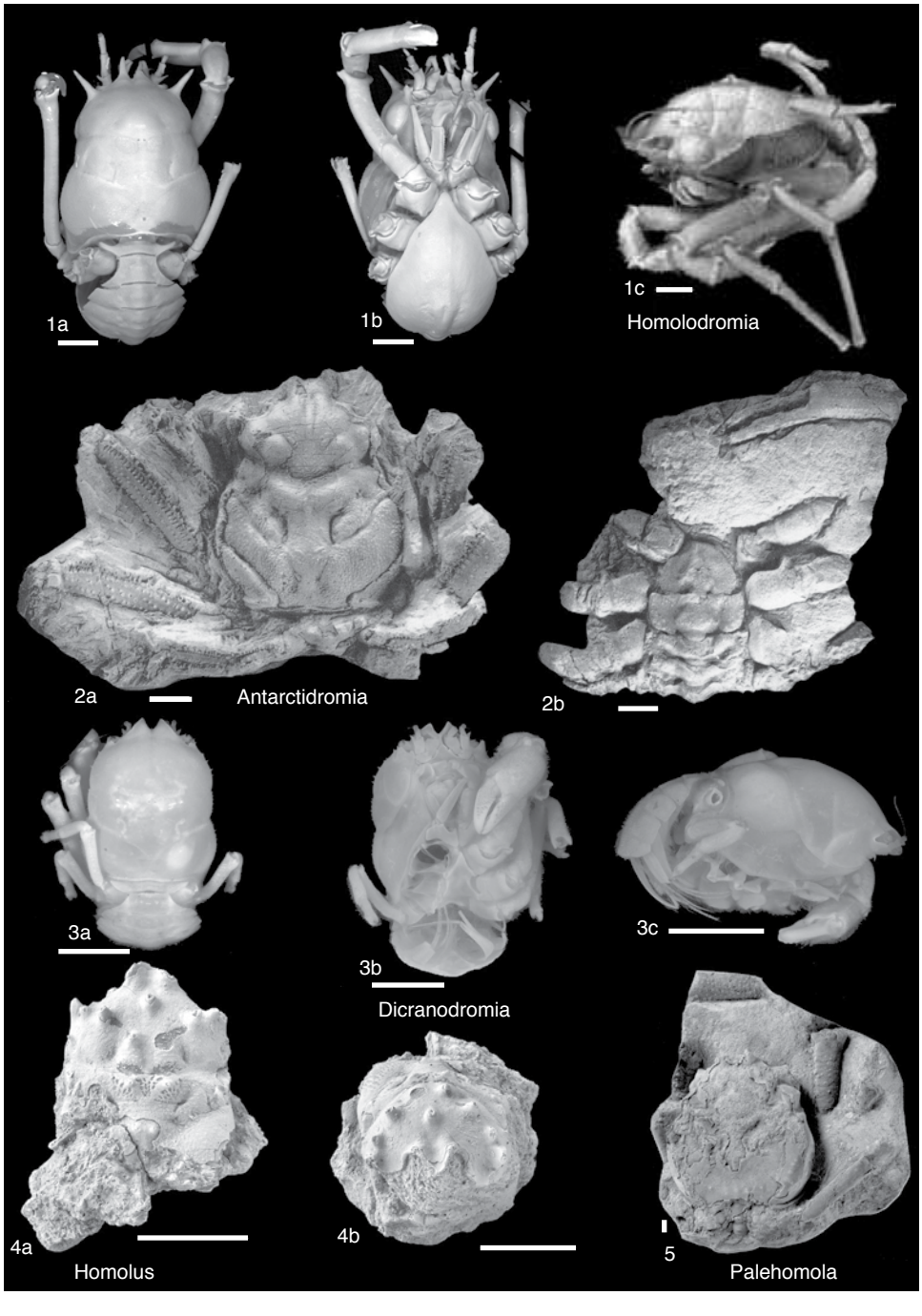

FIG. 6. Homolodromiidae (p. 9–11).

view, scale bar = 1 cm (Schweitzer & Feldmann, 2008a, pl. 1A).

Antarctidromia Förster, Gaździcki, & Wrona, 1985, p. 342 [**A. inflata* Förster, Gaździcki, & Wrona, 1985, p. 342, fig. 2–3; OD]. Carapace longer than wide, obovate, widest in branchial regions; rostrum long, projected well beyond orbits, axially sulcate; augenrest area with intra-augenrest protuberance and long outer-augenrest spine, spine directed anterolaterally; hepatic regions very strongly inflated, bearing outer-augenrest spine; cervical groove and branchiocardiac grooves very deep; mesogastric region bilobed, strongly inflated; posterior margin sinuous; abdomen narrow, with longitudinal keel; telson broadly triangular, no evidence of uropods visible in ventral view. *Miocene*: Antarctica.——Fig. 6,*2a–b. *A. inflata; a,* dorsal carapace and pereiopods, ZPAL Cr. I/44, scale bar = 1 cm (Förster, Gaździcki, & Wrona, 1985, pl. 39,*4*); *b,* male abdomen, ZPAL Cr. I/24, scale bar = 1 cm (Förster, Gaździcki, & Wrona, 1985, pl. 41,*6*).

Dicranodromia A. Milne-Edwards, 1880, p. 31 [**D. ovata* A. Milne-Edwards, 1880, p. 32; M]. Carapace weakly calcified, especially on posterior flanks; longer than wide, widest posteriorly; two widely triangular lateral rostral spines, with small central rostral spine; cervical and branchiocardiac grooves weak. *Miocene–Holocene*: Japan, *Miocene;* Japan, India, Indonesia, Melanesia, Philippines, Madagascar, *Holocene.*——Fig. 6,*3a–c. *D. ovata*; Holocene, North Atlantic; *a,* dorsal view; *b,* ventral view of female; *c,* right lateral view, USNM 1086168; scale bars = 1 cm (new).

Homolus Eudes-Deslongschamps, 1835, p. 39 [**H. auduini* Eudes-Deslongschamps, 1835, p. 39, pl. 1,*4–6;* M] [=*Protocarcinus* Salter & Woodward, 1865, fig. 15 (type, *P. longipes,* M); =*Palaeoinachus* Woodward, 1866, p. 494 (type, *P. longipes,* M); for the history of the specimens, nomenclature, and diagnosis, see Schweitzer and Feldmann, 2010a]. Carapace longer than wide, widest about 70 percent distance posteriorly in branchial region; rostrum with long lateral rostral spines and downturned central rostral spine; augenrests large, directed forward, protected by three spines; dorsal carapace ornamented by long spines; cervical groove deep, nearly straight; mesogastric region well ornamented by spines and muscle scars. *Middle Jurassic (Bathonian):* France, United Kingdom.——Fig. 6,*4a–b. *H. auduini*, BMNH In.57979, lectotype; *a,* dorsal carapace; *b,* anterior view showing orbits and augenrests; scale bars = 1 cm (Schweitzer & Feldmann, 2010a, fig. 2b–c; images taken by P. Crabbe, Natural History Museum, London, United Kingdom).

Notiodromia Schweitzer & Feldmann, 2011, p. 248 [**Torynomma (Torynomma) australis* Feldmann, Tshudy, & Thomson, 1993, p. 34, fig. 27; OD]. Carapace longer than wide, widening distally, granular overall; rostrum with two sharp lateral rostral spines; augenrest wide, concave, with sharp outer-augenrest spine, directed forward or weakly anterolaterally; mesogastric region and metagastric regions well marked; urogastric and cardiac regions confluent; cervical, postcervical, and branchiocardiac grooves deep, extending onto flank of carapace; posterior margin biconcave; subhepatic region inflated; sternum narrow, sternites 4 and 5 long; first pereiopod short, chela long, slender (adapted from Schweitzer & Feldmann, 2011). *Upper Cretaceous (Campanian–Maastrichtian):* Antarctica, *Campanian;* Antarctica, New Zealand, *Maastrichtian*.——Fig. 7,*1a–c. *N. australis* (Feldmann, Tshudy, & Thomson), holotype, BAS.IN.2422, Maastrichtian, Antarctica; *a,* dorsal carapace; *b,* lateral view; *c,* ventral view; scale bars = 1 cm (Feldmann, Tshudy, & Thomson, 1993, fig. 27.1, 27.3, 27.4).

Palehomola Rathbun, 1926, p. 86 [**P. gorrelli* Rathbun, 1926, p. 86, pl. 21,*1–2;* OD]. Carapace slightly longer than wide, W/L about 0.90, ovate; branchial regions bulbous and convex; lateral sides steep, rounded; central rostral spine downturned, sulcate, triangular; lateral rostral spines stout, directed forward; subhepatic region large, inflated, with large triangular spine; subepibranchial region inflated, with large tubercle; cervical groove moderately developed; branchiocardiac groove weakly developed; appendages long, slender, granular; male pleonal somites with pleurae (adapted from Schweitzer & others, 2004). *Oligocene:* United States (Oregon).——Fig. 6,*5. *P. gorrelli,* holotype, USNM 352912, dorsal carapace, scale bar = 1 cm (Schweitzer & others, 2004, fig. 7.1).

Preclarocarcinus Schweitzer & others, 2009, p. 415 [**P. parvus* Schweitzer & others, 2009, p. 416, fig. 6A–B; OD]. Carapace longer than wide, rostrum downturned; outer-augenrest spine long, reaching at least to end of rostrum; cervical groove moderately deep; branchiocardiac groove deep; chelipeds stout; pereiopod 5 subdorsal (adapted from Schweitzer & others, 2009). *Upper Cretaceous (Campanian)*: British Columbia, Canada.——Fig. 7,*3a–b. *P. parvus*, holotype, GSC 27176; *a,* dorsal carapace and appendages; *b,* oblique left lateral view; scale bars = 1 cm (Schweitzer & others, 2009, fig. 6A–B).

Rhinodromia Schweitzer & others, 2004, p. 145 [**Homolopsis richardsoni* Woodward, 1896, p. 224; OD]. Carapace triangular, widening distally, coarsely granular, widest about 80 percent distance posteriorly on carapace; central rostral spine absent; lateral rostral spines fused basally and diverging distally into bifid tip; suborbital spine acicular, forming receptacle in which eye might rest; cervical groove deep; branchiocardiac groove moderately deep; subhepatic region weakly developed, with one spine; hepatic region with lateral spine; first pereiopod stout (adapted from Schweitzer &

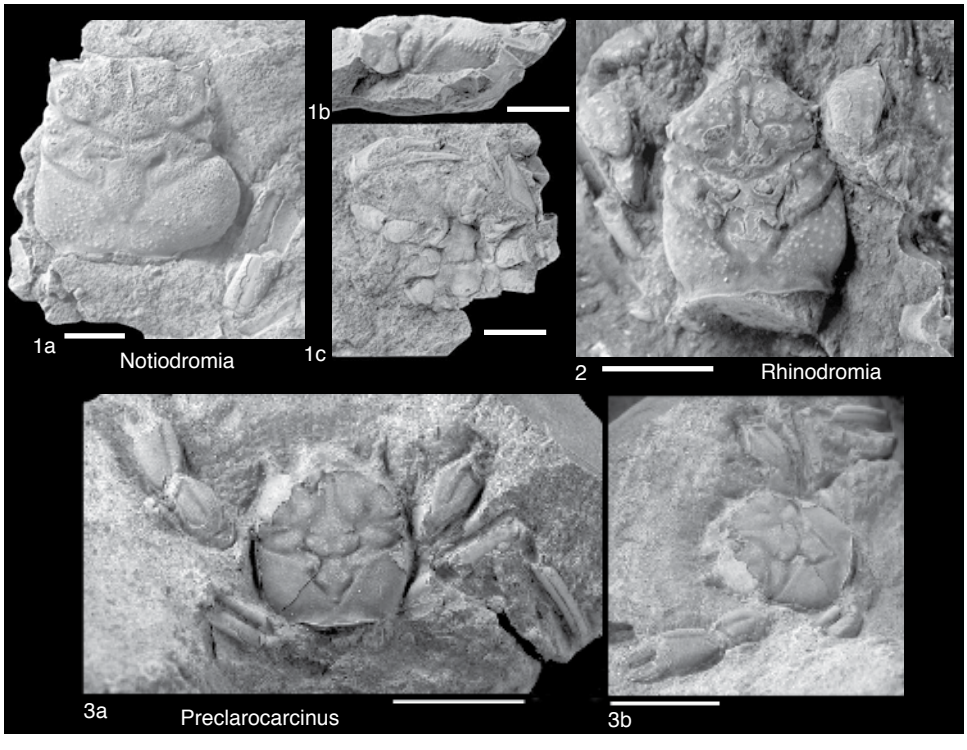

FIG. 7. Homolodromiidae (p. 11–12).

others, 2009). *Upper Cretaceous*: British Columbia, Canada.——FIG. 7,*2*. **R. richardsoni* (WOODWARD), holotype, GSC 5995, dorsal carapace, scale bar = 1 cm (Schweitzer & others, 2004, fig. 3.1).

Family LONGODROMITIDAE Schweitzer & Feldmann, 2009

[Longodromitidae SCHWEITZER & FELDMANN, 2009a, p. 100]

Carapace longer than wide, widest at position of epibranchial or anteriormost branchial region, dorsoventrally compressed; rostrum projected well beyond orbits, axially sulcate, markedly downturned distally; orbits shallow or deep, forward directed, with intra- and outer-orbital spines as well as suborbital spines; protogastric and hepatic regions poorly differentiated; cervical groove deep, originating well posterior to outer-orbital spine; area between cervical and branchiocardiac grooves narrow; postcervical groove present, discontinuous, and extending laterally about half distance to lateral margins or composed of two discrete segments that meet axially and extend laterally; cardiac region rounded triangular; epibranchial region with rounded or finger-like projection directed toward cardiac region; subhepatic swelling positioned below orbit, bounded by ventral extension of cervical groove and antennar groove; ventral extensions of cervical and branchiocardiac grooves meeting to form triangular subdorsal extension of epibranchial region; lateral sides short posteriorly as if they may have been poorly calcified; pleural suture distinct, pterygostome sometimes well calcified; male and female pleonites free, becoming progressively longer and wider toward telson; each somite with three swellings, axial and lateral; telson very long, twice as long as somite 6, extending well beyond coxae of pereiopod 1; pereiopod 5 subdorsal, small; pereiopod 4 ventral, not particularly reduced in size (adapted from KARASAWA, SCHWEITZER, &

Feldmann, 2011, p. 536). *Middle Jurassic (Bajocian)–Eocene.*

Longodromites Patrulius, 1959, p. 254 [**Pithonoton angustus* Reuss, 1858 [imprint 1857], p. 11; OD]. Carapace with parallel or convex lateral margins, longer than wide, widest at position of epibranchial or anteriormost branchial region; regions not well differentiated; ornamentation granular, if present; augenrests large, deep, forward directed, with intra-, outer-, and subaugenrest spines; rostrum projected well beyond augenrests, axially sulcate, tip markedly downturned; cervical groove deep; branchiocardiac groove shallow; area between cervical and branchiocardiac grooves narrow; postcervical groove present, variable in development; distinct subhepatic swelling bounded by cervical and antennar grooves (adapted from Schweitzer & Feldmann, 2009a). *Upper Jurassic (Oxfordian–Tithonian):* Romania, *Oxfordian;* Germany, Romania, *Kimmeridgian;* Austria, Czech Republic, Romania, *Tithonian*.——Fig. 8,*1a–b.* **L. angustus* (Reuss), Tithonian; *a,* dorsal carapace, NHMW 1990/0041/3190, Austria (Schweitzer & Feldmann, 2009a, fig. 7.6); *b,* frontal view showing orbits, NHMW 2007z0162/0001, Czech Republic; scale bars = 1 mm (Schweitzer & Feldmann, 2009a, fig. 7.5).——Fig. 8,*1c–d. L. ovalis* (Moericke), NHMW 1990/0041/230, Tithonian, Austria; *c,* lateral view; *d,* dorsal carapace; scale bars = 1 mm (Schweitzer & Feldmann, 2009a, fig. 7.8–7.9).

Abyssophthalmus Schweitzer & Feldmann, 2009a, p. 108 [**Prosopon spinosum* Von Meyer, 1842, p. 71, fig. 1–2; OD]. Rostrum long, straight sided, extending well beyond orbits; augenrests deep, directed forward, bounded by intra-augenrest, outer-augenrest, and subaugenrest spines; outer-augenrest spine long, prominent, directed forward; cervical and branchiocardiac grooves well developed; postcervical groove composed of two discrete segments, nearly continuous, extending laterally and crossing axis to bound anterior margin of cardiac region; lateral margins parallel sided, maximum width at midlength; subhepatic region well developed, situated below orbit (adapted from Schweitzer & Feldmann, 2009a). *Upper Jurassic (Oxfordian–Tithonian):* Germany, *Oxfordian;* Austria, Czech Republic, *Tithonian*.——Fig. 9,*1.* **A. spinosus* (Von Meyer), neotype, BSP 1980 XXX 528, Oxfordian, Biburg, Germany, dorsal carapace, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 8.5).

Antarctiprosopon Schweitzer & Feldmann, 2011, p. 246 [**Homolodromia chaneyi* Feldmann & Wilson, 1988, p. 473, fig. 6; OD]. Carapace rectangular, longer than wide, granular overall; cervical, postcervical, and branchiocardiac grooves deep; protogastric, metagastric, and cardiac regions ornamented with large swellings; lateral margins with granular rim (adapted from Schweitzer & Feldmann, 2011). *Eocene*: Antarctica (Peninsular).——Fig. 9,*3a–d.* **A. chaneyi* (Feldmann & Wilson); *a–b,* paratype, USNM 404872, dorsal carapace and lateral view; *c,* holotype, USNM 404870, sternum; *d,* paratype, USNM 404871, lateral views; scale bars = 1 cm (Feldmann & Wilson, 1988, fig. 6.1, 6.3, 6.4, 6.10).

Coelopus Étallon, 1861, p. 148 [**C. jolyi;* M]. Carapace about as long as wide or longer than wide, ovate, widest in branchial regions; rostrum triangular, may be produced well beyond outer-augenrest spines or very short; outer-augenrest spines triangular, directed forward; augenrests small, circular, deep; regions poorly defined, cervical and branchiocardiac grooves usually nearly parallel, closely spaced, cervical groove somewhat deeper; segments of postcervical groove short, shallow; branchial regions long; cardiac region may be short or long; protogastric and hepatic regions confluent; subhepatic region moderately to highly inflated; ornamentation of carapace consisting of dense granules overall (adapted from Schweitzer & Feldmann, 2010e). [Type species is not illustrated, because it is known only from a drawing; the whereabouts of the type material are unknown.] *Middle Jurassic (Bathonian)–Upper Jurassic (Tithonian):* France, *Bathonian, Oxfordian;* Austria, Czech Republic, France, Romania, United Kingdom, *Tithonian.*——Fig. 9,*2a–b. C. convexus* Schweitzer & Feldmann, 2010e, holotype, LPBIIIart-068, Tithonian, Purcăreni, Romania; *a,* dorsal carapace; *b,* oblique lateral view; scale bars = 1 cm (Schweitzer & Feldmann, 2010e, fig. 1.11–1.12).

Dioratiopus Woods, 1953, p. 52 [**D. salebrosus* Woods, 1953, p. 53, pl. 2,*4–5;* OD]. Carapace rectangular, maintaining width from outer-orbital spine to posterior corner; rostrum narrow, projecting well beyond orbits; augenrests broad, with intra-augenrest spine and probably anterolaterally directed outer-augenrest spine, fronto-orbital width including augenrest about 95 percent maximum carapace width; lateral margins straight, parallel; constricted where intersected by cervical, postcervical, and branchiocardiac grooves; cardiac region long, obovate, tapering distally, terminating well before posterior margin; intestinal region moderately long, poorly defined. Cervical groove broadly V-shaped; postcervical groove composed of a continuous segment across axis and then discontinuous short segments that intersect lateral margin; branchiocardiac groove parallel to cervical groove. Flank vertical; cervical groove extending onto flank in convex forward arc, then arcing around small, weakly inflated subhepatic region; branchiocardiac groove extending onto flank in obliquely anteriorly directed path, intersecting cervical groove just posterior to subhepatic region; postcervical groove extending onto flank for short distance in convex forward arc; pleural suture clear, pterygostome well calcified, pleural suture inscribing path similar to that seen in Homolodromiidae (adapted from Schweitzer & Feldmann, 2011). *Lower Cretaceous (Albian)*: Australia (Queensland).——Fig. 9,*5a–b.* **D. salebrosus,* holotype, F 12497; *a,* dorsal carapace; *b,* lateral view; scale bars = 1

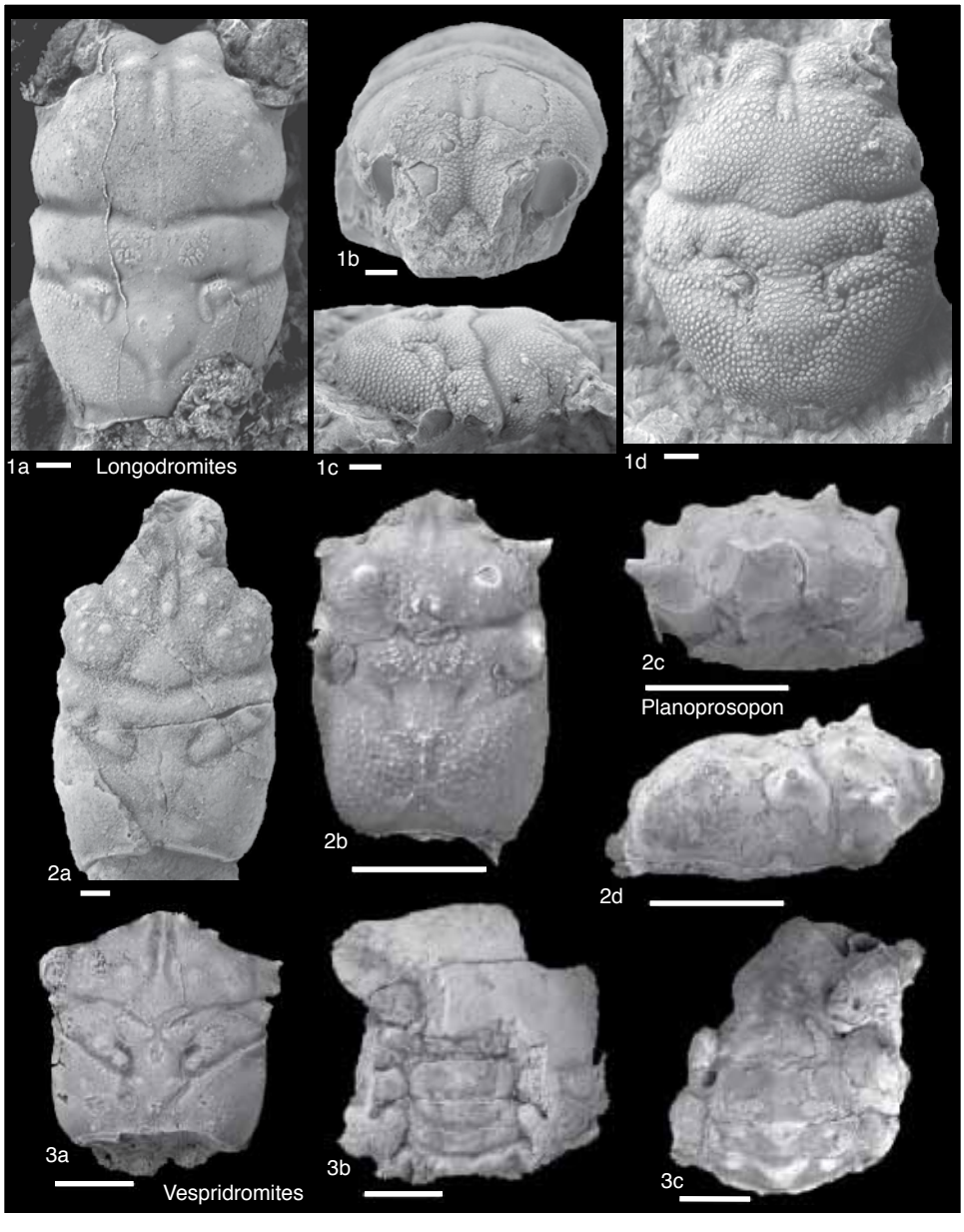

FIG. 8. Longodromitidae (p. 13–15).

cm (Schweitzer & Feldmann, 2011, photos by A. Cook, Queensland Museum, Australia).

Glaessnerella WRIGHT & COLLINS, 1975, p. 441 [**Homolopsis spinosa* VAN STRAELEN, 1936, p. 33, pl. 4,*5;* OD] [=*Glaessneria* WRIGHT & COLLINS, 1972, p. 34 (type, *H. spinosa,* OD), *non* TAKEDA & MIYAKE, 1969, p. 175, Crustacea]. Carapace longer than wide, widening slightly posteriorly, widest in midbranchial regions; flanks steep, perpendicular to dorsal surface. Rostrum long, directed anteriorly and dorsally, with tip downturned perpendicular to remainder of rostral surface; augenrest large, oblique, with inner and outer supra-augenrest spines, small lower inner augenrest spine. Lateral margins straight overall; cervical groove incising margin a short distance from outer-orbital spine;

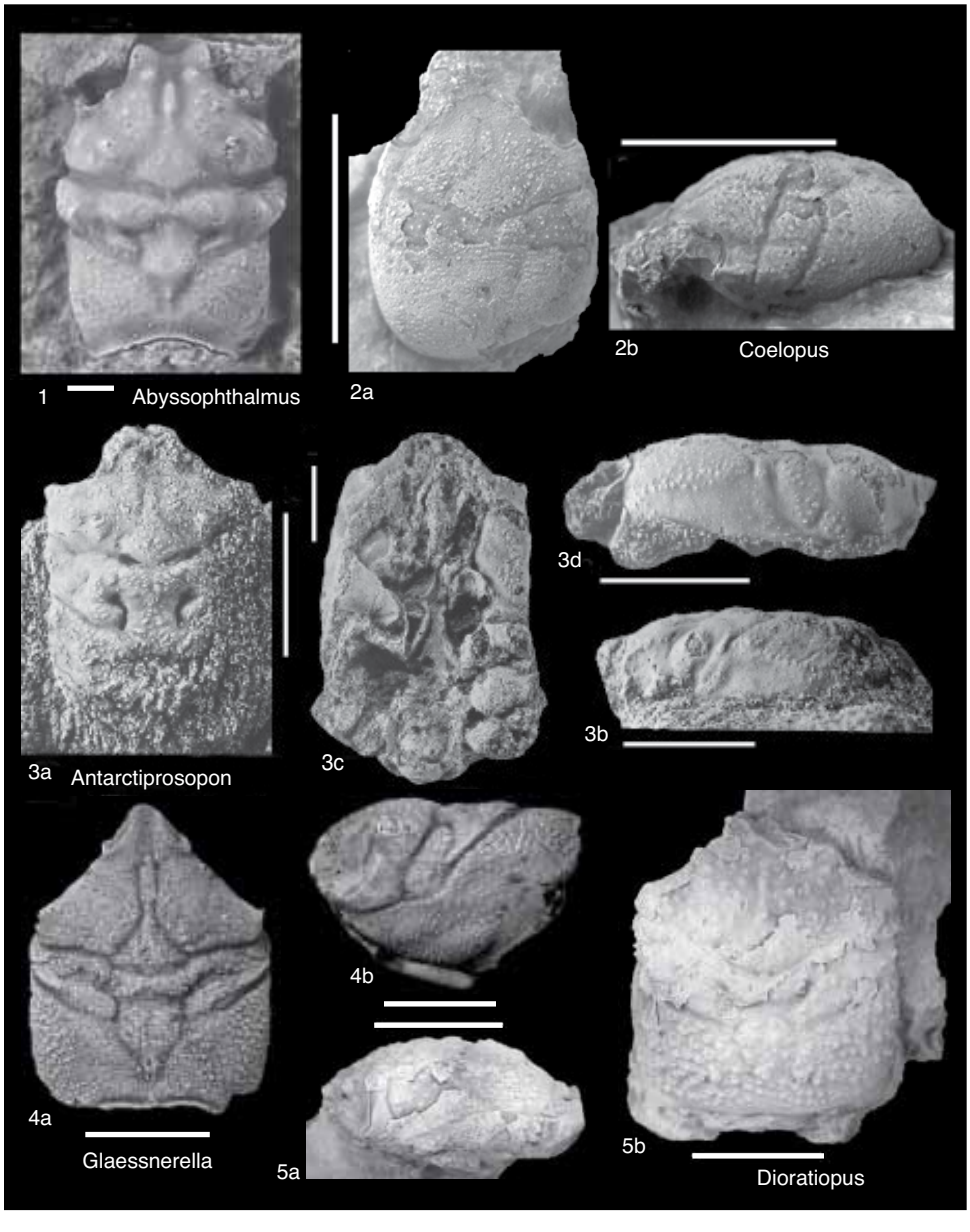

FIG. 9. Longodromitidae (p. 13–15).

weak incision from discontinuous postcervical groove midway between cervical and weak branchiocardiac incision; margin posterior to branchiocardiac incision very long, rounding into posterior margin. Cardiac region triangular, apex directed posteriorly. Intestinal region poorly defined. Postcervical groove discontinuous, composed of deep segment across axis and weak arcuate convex forward segments on lateral margins connected to axial segment by discontinuous arclike pits. Epibranchial region overall linear, directed at axial regions, with distinctive arcuate regions defined by postcervical groove. Subhepatic swelling small, lying below and along posterior edge of orbit. Lateral extension of cervical groove deep, bounding posterior margin of subhepatic swelling, antennar

groove extending ventral to subhepatic swelling. Branchiocardiac groove extending onto flank nearly parallel to cervical groove, curving forward to intersect cervical groove, swelling just posterior of intersection of two grooves (omega?); postcervical groove extending onto flank and intersecting branchiocardiac groove at about midheight. Pleural suture well defined, pterygostome well calcified, with two oblique swellings, rimmed (adapted from SCHWEITZER & FELDMANN, 2011). *Lower Cretaceous (Aptian)–Upper Cretaceous (Cenomanian):* United Kingdom.——FIG. 9,*4a–b. *G. spinosa* (VAN STRAELEN), cast of BMNH In. 60991, Albian, Kent; *a,* dorsal carapace; *b,* lateral view; scale bars = 1 cm (Schweitzer & Feldmann, 2011, fig. 1.6–1.7).

Planoprosopon SCHWEITZER, FELDMANN, & LAZĂR, 2007, p. 104 [**Prosopon heydeni* VON MEYER, 1857, p. 556; OD]. Carapace longer than wide, widest at position of epibranchial region, highly dorsoventrally compressed; rostrum axially sulcate, extending well beyond orbits; augenrests shallow, forward directed, bounded by at least a subaugenrest spine; protogastric and hepatic regions moderately defined; region between cervical and branchiocardiac grooves narrow; cervical groove deep; branchiocardiac groove moderately deep; postcervical groove moderately deep, discontinuous; carapace ornamented with large granules; subhepatic swelling weak; ventral extension of cervical and branchiocardiac grooves meeting to form triangular sub-epibranchial swelling (adapted from SCHWEITZER & FELDMANN, 2009a). *Middle Jurassic (Bajocian)–Upper Jurassic (Tithonian):* France, *Bajocian;* Germany, *Callovian;* Germany, Japan, Romania, *Oxfordian;* Germany, Japan, *Kimmeridgian;* Austria, Germany, Romania, *Tithonian.*——FIG. 8,*2a. *P. heydeni* (VON MEYER), cast of neotype, Museum Tubingen (museum no. Quenstedt, Jura, 1857, pl. 95,*36*), Upper Jurassic, Germany, dorsal carapace, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 9.3).——FIG. 8,*2b–c. P. schweigerti* SCHWEITZER & FELDMANN, holotype NHMW 1990/0041/3477, Tithonian, Austria; *b,* dorsal carapace; *c,* anterior view; *d,* lateral view; scale bars = 0.5 cm (Schweitzer & Feldmann, 2009c, fig. 3.5–3.7).

Vespridromites SCHWEITZER & FELDMANN, 2011, p. 244 [**Dioratiopus hearttailensis* BISHOP, 1985a, p. 616; OD]. Carapace quadrate, slightly longer than wide or equant, widest in position of hepatic region just posterior to orbits. Augenrests very broad, shallow, directed forward; with inner, outer, and subaugenrest spines; outer-augenrest spine directed anterolaterally. Female pleonal somites free, becoming progressively longer and wider toward telson; each somite with three swellings, axial and lateral; telson very long, twice as long as somite 6, extending well beyond coxae of pereiopod 1; pereiopod 5 subdorsal, small (SCHWEITZER & FELDMANN, 2011). *Lower Cretaceous (Albian)–Upper Cretaceous (Maastrichtian):* United States (Texas), *Albian;* United States (South Dakota), *Campanian;* United States (Montana), *Maastrichtian*.——FIG. 8,*3a–c. *V. hearttailensis* (BISHOP), Campanian, South Dakota; *a,* holotype SDSMT 10030, dorsal carapace, and *c,* female pleon; *b,* SDSMT I3999, male pleon; scale bars = 0.5 cm (Schweitzer & Feldmann, 2011, fig. 4.2–4.3, 4.5).

Family PROSOPIDAE Von Meyer, 1860

[*nom. correct.* GLAESSNER, 1969, p. 484, *pro* Prosoponiden VON MEYER, 1860, p. 183]

Carapace longer than wide, narrowing anteriorly, widest at branchial regions; regions well defined by grooves; cervical and branchiocardiac groove well developed; postcervical groove usually present; rostrum extending well beyond orbits; augenrest directed anterolaterally, bounded by inflated subhepatic region on suborbital rim and inner- and outer-orbital spine on upper-orbital margin; orbit may be situated at base of rostrum as shallow reentrant; lateral margins well defined but not high; grooves deep and well marked; posterior margin biconvex, apparently to accommodate fifth pereiopods (adapted from SCHWEITZER & FELDMANN, 2009a). *Middle Jurassic (Bathonian)–Lower Cretaceous (Barremian).*

Prosopon VON MEYER, 1835, p. 329 [**P. tuberosum* VON MEYER, 1840, p. 21, pl. 4,*31*; SD GLAESSNER, 1929, p. 341]. Carapace longer than wide, widest at about midbranchial region; regions well defined by grooves and composed of greatly inflated swellings; cervical groove concave forward; branchiocardiac groove sinuous; postcervical groove deep, where present; mesogastric region overall triangular, composed of three large swellings arranged in a triangular shape; intestinal region long, narrow, distinct; subbranchial region well developed when present; posterior margin biconcave, widely rimmed (adapted from SCHWEITZER & FELDMANN, 2009a). [Type species is not illustrated because it is known only from drawings; the specimens have apparently been lost (SCHWEITZER & FELDMANN, 2009a, p. 67).] *Middle Jurassic (Bathonian)–Lower Cretaceous (Hauterivian):* Britain, *Bathonian;* Germany, Switzerland, *Kimmeridgian;* Austria, Czech Republic, Romania, *Tithonian;* France, *Hauterivian.*——FIG. 10,*1a–b. P. abbreviatum* SCHWEITZER & FELDMANN, Tithonian, Austria; *a,* holotype, dorsal carapace, NHMW 1990/0041/2487; *b,* paratype, oblique anterior view, NHMW 2007/0149/0006; scale bars = 1 mm (Schweitzer & Feldmann, 2009a, fig. 2.3, 2.5).——FIG. 10,*1c. P. verrucosum* REUSS; dorsal carapace, NHMW 2007/0149/0005, Tithonian, Austria, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 2.11).

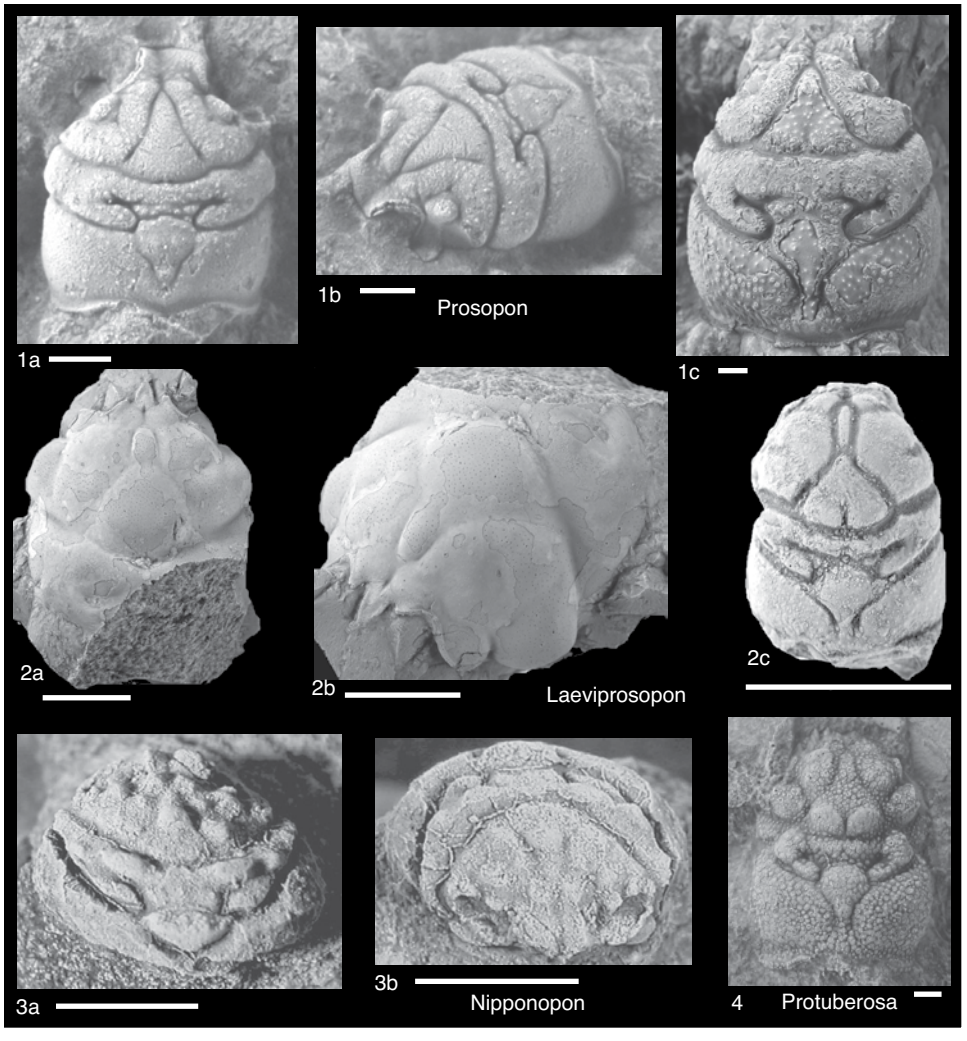

FIG. 10. Prosopidae (p. 15–18).

Laeviprosopon GLAESSNER, 1933, p. 180 [**Prosopon laeve* VON MEYER, 1857, p. 556; OD]. Carapace rectangular, longer than wide, often narrowing slightly anteriorly; regions well defined by deep grooves; rostrum trifid or broadly convex, projected well beyond orbits; orbits shallow, rimmed, directed forward, located at base of rostrum; augenrest poorly formed to nearly absent; subhepatic region inflated, sometimes greatly; epigastric, protogastric, and hepatic regions separated by transverse grooves into three anteriorly to posteriorly successive regions; cervical groove deep, strongly concave forward; branchiocardiac groove shallower than cervical groove; postcervical groove short, interrupted axially; posterolateral portions of carapace often broken as if less calcified than other portions of carapace (adapted from SCHWEITZER & FELDMANN, 2008b). *Upper Jurassic (Oxfordian)–Lower Cretaceous (Hauterivian):* Poland, Romania, *Oxfordian;* Germany, Romania, *Kimmeridgian;* Austria, Czech Republic, Poland, *Tithonian;* France, *Hauterivian.*——FIG. 10,*2a–b. *L. laeve* (VON MEYER), NHMW 2007/0149/0022; *a,* dorsal carapace; *b,* oblique anterior view, Tithonian, Austria; scale bars = 1 cm (Schweitzer & Feldmann, 2008b, fig. 1.1, 1.4).——FIG. 10,*2c. L. punctatum* (VON MEYER), cast of neotype, BSP AS III 307, dorsal carapace, Tithonian, Czech Republic, scale bar = 1 cm (Schweitzer & Feldmann, 2008b, fig. 1.7).

Nipponopon KARASAWA, KATO, & TERABE, 2006, p. 345 [**N. hasegawai* KARASAWA, KATO, & TERABE, 2006, p. 345, fig. 1a–c, 2a–c; M]. Carapace ovate;

rostrum axially sulcate and notched; augenrest deep; cervical groove deep, concave forward; branchiocardiac groove deep; protogastric region with two large swellings; metagastric region very wide, wider than base of mesogastric region. *Lower Cretaceous (Barremian):* Japan.——Fig. 10,*3a–b.* **N. hasegawai,* holotype GMNH-PI-1701; *a,* dorsal carapace; *b,* anterior view; scale bars = 0.5 cm (Karasawa, Kato, & Terabe, 2006, fig. 1a–b, reproduced by permission of Editor in Chief of the *Boletin de la Sociedad Geológica Mexicana*).

Protuberosa Schweitzer & Feldmann, 2009a, p. 76 [**Prosopon protuberosa* Wehner, 1988, p. 20, pl. 1,*3–4;* OD]. Frontal region broad; mesogastric region narrow; large, bulbous hepatic region; urogastric region poorly defined; lateral margins sinuous, with spinelike projections. *Upper Jurassic (Kimmeridgian):* Germany.——Fig. 10,*4.* **P. protuberosa* (Wehner, 1988), cast of holotype, BSP SYL-1, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 2.9).

Family TANIDROMITIDAE Schweitzer & Feldmann, 2008

[Tanidromitidae Schweitzer & Feldmann, 2008a, p. 137]

Carapace longer than wide, width 70 percent to 85 percent maximum length; flanks of carapace strongly developed; regions well defined, generally smooth, protogastric and hepatic regions confluent; rostrum downturned, blunt-triangular, axially sulcate; orbit small, directed forward, situated at base of rostrum, rimmed; augenrest usually rimmed, may have small spines or protuberances; fronto-orbital width 50 percent to 60 percent maximum carapace width; lateral margins parallel, subparallel to one another, or diverging slightly posteriorly; subhepatic region may be markedly inflated; large portion of ventral side lies below ventral extension of branchiocardiac groove; ventral extension of cervical groove deep; ventral extension of branchiocardiac groove diminishing ventrally (adapted from Schweitzer & Feldmann, 2011). *Middle Jurassic (Bajocian)–Lower Cretaceous (Hauterivian).*

Tanidromites Schweitzer & Feldmann, 2008a, p. 137 [**Prosopon insigne* Von Meyer, 1857, p. 556; OD]. Carapace longer than wide, width about 70 percent carapace length, carapace strongly vaulted transversely and longitudinally; flanks very strongly developed; regions well defined, mostly smooth. Rostrum downturned, triangular or possibly truncated at tip, rimmed, axially sulcate, merging into orbital socket; orbital socket directed forward, rimmed; remainder of augenrest weakly concave, oblique, just distal to orbital socket; weak short lateral ridge extending posteriorly from outer angle of concavity, fronto-orbital width excluding concavity about 60 percent maximum carapace width. Lateral margins nearly parallel with one another or converging slightly posteriorly; flanks steep, well defined; subhepatic region inflated, bounded ventrally by deep antennar groove, placed well above ventral edge of lateral flank; cervical groove extending onto flanks, merging with united antennar and hepatic grooves. Epigastric, mesogastric, and cardiac regions well defined; protogastric and hepatic regions not differentiated; cervical and branchiocardiac grooves deep. *Middle Jurassic (Bajocian)–Upper Jurassic (Tithonian):* Britain, Germany, *Bajocian;* Lithuania, *Callovian;* Germany, Poland, Romania, Switzerland, *Oxfordian;* Germany, *Kimmeridgian;* Austria, Czech Republic, Germany, *Tithonian.*——Fig. 11,*1a–b.* **T. insignis* (Von Meyer); *a,* dorsal carapace, SMNS 66681, Upper Jurassic, Germany; *b*, cast of SMNS 61640, oblique anterior view, Kimmeridgian, Germany; scale bars = 1 cm (Schweitzer & Feldmann, 2008a, pl. 6E, 6D).——Fig. 11,*1c. T. richardsoni* (Woodward, 1907), cast of holotype, BMNH In. 17026, dorsal carapace, Bajocian, Britain, scale bar = 1 cm (Schweitzer & Feldmann, 2008a, pl. 6K).

Gabriella Collins & others, 2006, p. 125 [**Foersteria biburgensis* Wehner, 1988, p. 31, pl. 2,*7–9,* fig. 9; OD *non* Szépligeti, 1896, p. 148, Hymenoptera)]. Carapace longer than wide, width about 80 percent to 85 percent maximum length, widest at position of branchial region, about 85 percent to 90 percent the distance posteriorly; rostrum blunt triangular, axially sulcate; orbits small, forward directed; augenrest bounded by rim, groove, and/or spines or projections; lateral margins parallel, slightly sinuous, or diverging posteriorly; protogastric and hepatic regions confluent; epibranchial regions with pits; pits, postcervical groove, and branchiocardiac groove inscribing ovate or finger-like epibranchial projection directed at cardiac region; subhepatic region not highly inflated; ventral extension of cervical groove strong; ventral extension of branchiocardiac groove diminishing ventrally (adapted from Schweitzer & Feldmann, 2009c). *Middle Jurassic (Bajocian)–Lower Cretaceous (Hauterivian):* Tanzania, *Bajocian–Bathonian;* Germany, *Oxfordian–Kimmeridigian;* Austria, *Tithonian;* France, *Hauterivian.*——Fig. 11,*2a.* **G. biburgensis* (Wehner), cast of holotype, BSP 1980 XXX 514, dorsal carapace, Oxfordian, Germany, scale bar = 0.5 cm (Schweitzer & Feldmann 2009c, fig. 1.1).——Fig. 11,*2b–c. G. patula* Schweitzer & Feldmann, holotype NHMW 2007z0149/2006; *b*, oblique lateral view; *c*, dorsal carapace, Tithonian, Austria; scale bars = 0.5 cm (Schweitzer & Feldmann 2009c, fig. 1.3, 1.10).——Fig. 11,*2d. G. anfracta* Schweitzer & Feldmann, holotype, NHMW 2007z0149/0025,

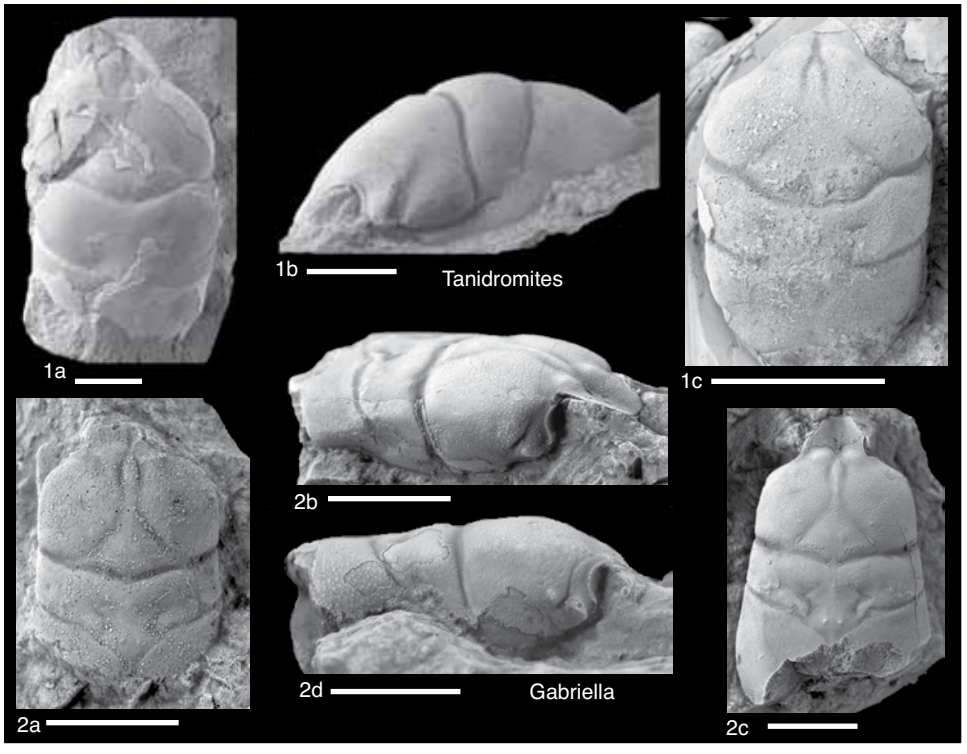

FIG. 11. Tanidromitidae (p. 18).

lateral view, Tithonian, Austria, scale bar = 0.5 cm (Schweitzer & Feldmann 2009c, fig. 1.9).

Superfamily KONIDROMITOIDEA Schweitzer & Feldmann, 2010

[*nom. transl.* KARASAWA, SCHWEITZER, & FELDMANN, 2011, p. 537, *pro* Konidromitidae SCHWEITZER & FELDMANN, 2010b, p. 364]

Carapace ovate, longer than wide, widest at position of bifid third lateral spine, about 60 percent the distance posteriorly on carapace; widening posteriorly, strongly vaulted longitudinally and transversely; rostrum blunt triangular, axially sulcate, with tiny spines on margins, strongly downturned at tip to be oriented almost perpendicular to dorsal carapace; outer suborbital spine extending posteriorly in large, laterally inflated flange; subhepatic region strongly inflated, ornamented with granules arrayed in longitudinal row; lateral margin with five spines; cervical groove sinuous, beginning posterior to outer suborbital spine, deep; branchiocardiac groove much weaker; postcervical groove very short, oblique segments merging with groove defining lateral sides of urogastric region; lateral flanks steep, at right angles to dorsal carapace, posterior to subhepatic region, surface of flank concave, perhaps to accommodate merus of first pereiopod; posterior to this concavity, surface is corrugated with three parallel oblique concavities to perhaps accommodate meri of pereiopods 2–4 (adapted from KARASAWA, SCHWEITZER, & FELDMANN, 2011). *Upper Jurassic (Oxfordian)–Upper Cretaceous (Campanian).*

FAMILY KONIDROMITIDAE Schweitzer & Feldmann, 2010

[Konidromitidae SCHWEITZER & FELDMANN, 2010b, p. 364]

Description as for superfamily. *Upper Jurassic (Oxfordian)–Upper Cretaceous (Campanian).*

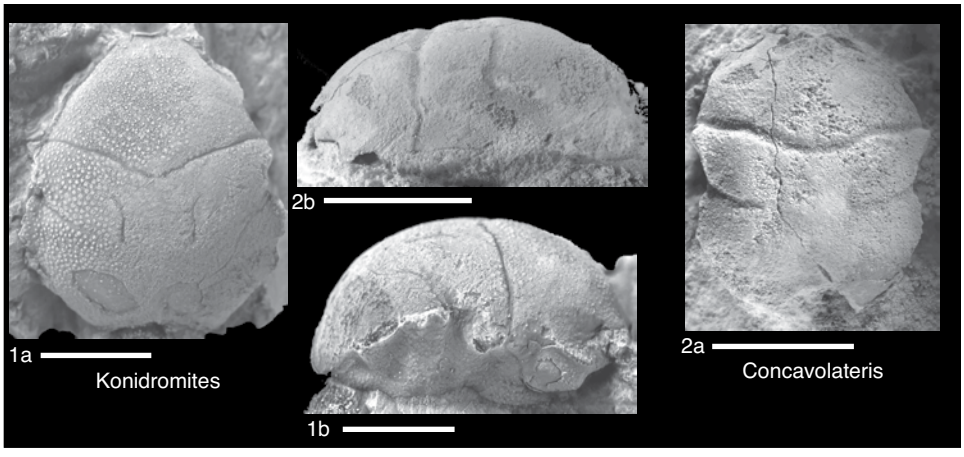

FIG. 12. Konidromitidae (p. 19–20).

Konidromites SCHWEITZER & FELDMANN, 2010b, p. 365 [**Oxythyreus gibbus* REUSS, 1858, p. 12; OD] [=*Oxythyreus* REUSS, 1858, p. 9 (type, *O. gibbus,* M)]. Carapace ovate, longer than wide, widest at position of bifid third lateral spine, about 60 percent the distance posteriorly on carapace; widening posteriorly, strongly vaulted longitudinally and transversely; rostrum blunt triangular, axially sulcate, with tiny spines on margins, strongly downturned at tip to be oriented almost perpendicular to dorsal carapace; outer suborbital spine extending posteriorly in large, laterally inflated flange; subhepatic region strongly inflated, ornamented with granules arrayed in longitudinal row; lateral margin with five spines; cervical groove sinuous, beginning posterior to outer suborbital spine, deep; branchiocardiac groove much weaker; postcervical groove very short, oblique segments merging with groove defining lateral sides of urogastric region; flanks steep, at right angles to dorsal carapace, posterior to subhepatic region surface of flank concave, perhaps to accommodate merus of first pereiopod, posterior to this concavity, surface is corrugated with three parallel oblique concavities to perhaps accommodate meri of pereiopods 2–4 (adapted from SCHWEITZER & FELDMANN, 2010b). *Upper Jurassic (Tithonian)–Upper Cretaceous (Campanian):* Austria, Czech Republic, Romania, *Tithonian;* Switzerland, *Hauterivian;* United States (Colorado, South Dakota), *Campanian.*——FIG. 12,*1a–b*. **K. gibbus* (REUSS), NHMW 1990/0041/5127, Tithonian, Austria; *a,* dorsal carapace; *b,* lateral view; scale bars = 0.5 cm (Schweitzer & Feldmann, 2010b, fig. 1.1–1.2).

Concavolateris FRANȚESCU, 2011, p. 285 [**C. barbulescuae* FRANȚESCU, 2011, p. 286, fig. 11; OD]. Carapace longitudinally ovate, tall steep flanks; lateral margin concave between cervical and branchiocardiac groove, forming distinctive outline, short spine just posterior to cervical groove, up to five spines posterior to branchial groove; cervical groove deep, continuous; branchiocardiac groove deep laterally and becoming shallow axially. *Upper Jurassic (Oxfordian–Kimmeridgian):* Romania.——FIG. 12,*2a–b*. **C. barbulescuae,* holotype LPB IIIart-158; *a*, dorsal carapace; *b*, lateral view; scale bars = 0.5 cm (Franțescu, 2011, fig. 11.1–11.2).

Superfamily GLAESSNEROPSOIDEA Patrulius, 1959

[*nom. transl.* SCHWEITZER & FELDMANN, 2009a, p. 82, *pro* Glaessneropsinae PATRULIUS, 1959, p. 254]

Carapace longer than wide or wider than long, regions generally well defined by grooves; carapace ornament often well developed, may be composed of tubercles, small spines, large spines, or large swellings; rostrum projecting well beyond orbits, axially sulcate, inflated, or trilobed; orbits well developed; orbit usually ornamented with supra- and suborbital spines, fronto-orbital width always occupying entire frontal margin of carapace; augenrest absent; cervical and branchiocardiac grooves usually equally developed, postcervical groove usually present; subhepatic swelling usually present; branchial regions often very short in lateral view; cardiac region always well marked, variable in size (adapted from SCHWEITZER & FELDMANN, 2009a, p. 82). *Upper Jurassic (Oxfordian)–Upper Cretaceous (Maastrichtian).*

Family GLAESSNEROPSIDAE Patrulius, 1959

[*nom. transl.* Schweitzer & Feldmann, 2009a, p. 83, *pro* Glaessneropsinae Patrulius, 1959, p. 254]

Carapace longer than wide, widest at position of epibranchial or branchial region, about half to three-quarters the distance posteriorly on carapace; carapace regions flattened or bulbous, may be ornamented with large granules, especially large on branchial regions. Rostrum projected well in advance of orbits, spatulate, downturned, with longitudinal swellings and sometimes axial sulcus, tip of rostrum may have spines, rostral width usually about half maximum carapace width but rarely as narrow as one-third carapace width. Eyestalk arising beneath rostrum. Orbit bounded on inner angle by rostrum; upper-orbital margin with intra-orbital spine that may be rectangular or triangular in shape; intra-orbital spine may be bounded by deep fissures; fissures and spine directed forward or anterolaterally; outer-orbital angle formed of long, triangular, forward-directed spine that wraps around laterally into cup-shaped structure; orbit directed forward; fronto-orbital width 75 percent to 95 percent maximum carapace width. Metagastric region bilobed when well marked. Cervical and branchiocardiac grooves usually well developed but rarely may be shallow and discontinuous; cervical groove originating at lateral margin just posterior to position of outer-orbital spine; postcervical groove usually present, when present, continuous and crossing axis to bound anterior edge of cardiac region. Cardiac region usually small, positioned well anterior of posterior margin but rarely extending toward posterior margin. Subhepatic region markedly inflated, bounded posteriorly by ventral extension of cervical groove, ventrally by antennar groove; anterior margin forms orbital margin. Epibranchial region extending onto lateral side, bounded by ventral extensions of cervical and branchiocardiac grooves (adapted from Schweitzer & Feldmann, 2009a, p. 83).

Upper Jurassic (Oxfordian)–Upper Cretaceous (Maastrichtian).

Glaessneropsis Patrulius, 1959, p. 254 [**Prosopon heraldicum* Moericke, 1889, p. 58, pl. 6,*13;* OD]. Carapace longer than wide; lateral sides short, weak crest and granules separating dorsal and lateral sides of carapace; rostrum extending well beyond orbits, spatulate, downturned distally, widened at base; axially sulcate, with keels parallel to sulcus; orbits directed forward, with intra-orbital, outer-orbital, and suborbital spines, orbital spines directed forward; cervical and branchiocardiac always present, postcervical groove usually present; cervical groove originating just posterior of orbits, extending axially; regions generally poorly to moderately developed; cardiac region spherical or elongate; subhepatic region inflated (adapted from Schweitzer & Feldmann, 2009a). *Upper Jurassic (Tithonian):* Austria, Czech Republic, Romania.——Fig. 13,*1a.* **G. heraldica* (Moericke), cast of holotype, BSP AS III 306, Czech Republic, dorsal carapace, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 4.1).——Fig. 13,*1b. G. tribulosa* Schweitzer & Feldmann, holotype, NHMW 1990/0041/272, dorsal carapace, Austria, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 4.5).——Fig. 13,*1c. G. myrmekia* Schweitzer & Feldmann, holotype, NHMW 2007z0162/0003, dorsal carapace, Czech Republic, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 4.4).

Ekalakia Bishop, 1976, p. 399 [**E. lamberti* Bishop, 1976, p. 400, pl. 1; OD]. Small crab, outline pentagonal to ovoid, longer than wide; with downturned, axially sulcate rostrum; prominent orbital rim surrounding inner and posterior margin of orbits; rim separated from remainder of carapace by deep groove; lower-orbital margin extending laterally into spine or lobose projection extending beyond lateral margin of carapace; eyes large; regions well defined; mesogastric region triangular, separated into two subregions; metagastric region bilobate; cardiac region ovoid, strongly elevated, metabranchial region depressed below level of remainder of carapace; cervical and branchiocardiac grooves prominent, subparallel (adapted from Feldmann, Schweitzer, & Wahl, 2008). *Upper Cretaceous (Campanian–Maastrichtian):* United States (Montana, Wyoming).——Fig. 13,*2a.* **E. lamberti,* holotype, C.C.M. 5590, dorsal carapace, Montana, scale bar = 0.5 cm (Feldmann, Schweitzer, & Wahl, 2008, fig. 1.1).——Fig. 13,*2b–c. E. exophthalmops* Feldmann, Schweitzer, & Wahl, holotype, USNM 536328; *b,* dorsal carapace; *c,* lateral view, Maastrichtian, Wyoming; scale bars = 1 mm (Feldmann, Schweitzer, & Wahl, 2008, fig. 2.1).

Rathbunopon Stenzel, 1945, p. 450 [**R. polyakron* Stenzel, 1945, p. 450, pl. 41,*18–21,* fig. 16; OD]. Carapace slightly longer than wide, ovoid; fronto-orbital width about 75 percent maximum carapace width; front wide, projecting moderately beyond

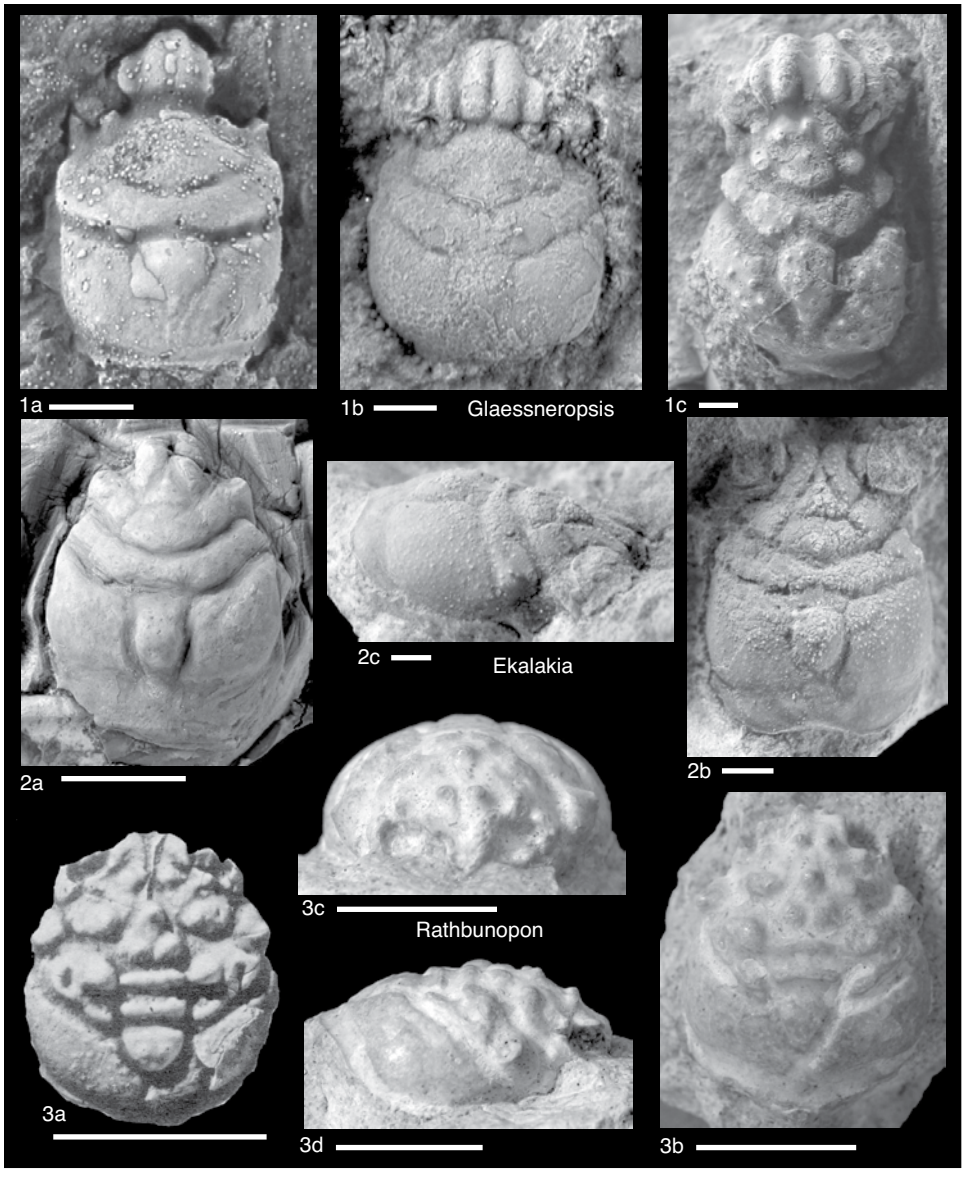

FIG. 13. Glaessneropsidae (p. 21–22).

orbits; orbits with two notches on upper-orbital margin, suborbital margin with spine; outer-orbital angle formed of short, forward-directed spine that wraps around laterally into cup-shaped structure; regions well defined; metagastric and urogastric regions parallel and linear; posterior margin convex. *Lower Cretaceous (Albian)–Upper Cretaceous (Cenomanian):* United Kingdom, *Albian;* Spain, United Kingdom, United States (Texas), *Cenomanian.*——FIG. 13,*3a. *R. polyakron,* holotype, UT BEG 21097, dorsal carapace, Cenomanian, Texas, scale bar = 0.5 cm (Stenzel, 1945, pl. 41,*18*).——FIG. 13,*3b–d. R. woodsi* WITHERS, holotype B 50779, Cenomanian, United Kingdom; *b,* dorsal carapace; *c,* anterior view; *d,* lateral view; scale bars = 0.5 cm (new).

Vectis WITHERS, 1946, p. 559 [**V. wrighti* WITHERS, 1946, p. 559, pl. 2,*8–10,* fig. 1–3; OD]. Carapace tiny, longer than wide, width about three-quarters length, widest in branchial region about

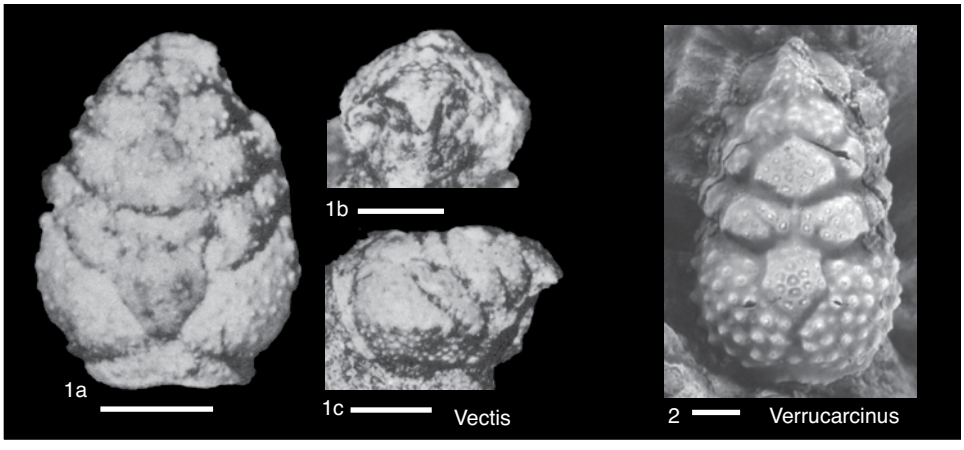

FIG. 14. Glaessneropsidae (p. 22–23).

three-quarters the distance posteriorly; granular ornamentation overall; rostrum downturned, axially sulcate; orbits elongate, directed anterolaterally, upper-orbital margin with thick rim, outer-orbital spine present, fronto-orbital width about 84 percent maximum carapace width; cervical, postcervical, and branchiocardiac grooves well defined, cervical and branchiocardiac grooves extending onto flanks; flanks defined on branchial regions by row of small spines; regions well defined; mesobranchial region separated into two subregions; cardiac region well defined, separated from posterior margin by moderately long intestinal region. *Lower Cretaceous (Aptian–Albian):* United Kingdom.——FIG. 14,*1a–c.* **V. wrighti*, holotype, Aptian; *a,* dorsal carapace; *b,* anterior view; *c,* lateral view; scale bars = 1 mm (Wright & Collins, 1972, pl. 1a–c).

Verrucarcinus SCHWEITZER & FELDMANN, 2009a, p. 89 [**Prosopon torosum* VON MEYER, 1857, p. 556; OD]. Carapace longer than wide, widest at position of branchial regions, about three-quarters the distance posteriorly on carapace; carapace regions bulbous, ornamented with large granules, especially large on branchial regions. Rostrum projected well in advance of orbits, spatulate, downturned, with triangular axial swelling, flattened on either side of swelling, tip of rostrum with spines, rostral width about half maximum carapace width. Eyestalk appearing to have arisen beneath rostrum. Orbit bounded on inner angle by rostrum; upper-orbital margin formed of rectangular intra-orbital spine bounded by deep, open fissures; fissures and spine directed anterolaterally; outer-orbital angle formed of spine with long, triangular, forward-directed spine that wraps around laterally into cup-shaped structure; orbit directed forward; fronto-orbital width about 75 percent maximum carapace width. Metagastric region bilobed; cervical and branchiocardiac grooves well developed; postcervical groove absent. Cardiac region small, circular, positioned well anterior of posterior margin (adapted from SCHWEITZER & FELDMANN, 2009a). *Upper Jurassic (Oxfordian–Tithonian):* Poland, Romania, *Oxfordian;* Germany, Romania, *Kimmeridgian;* Austria, *Tithonian.*——FIG. 14,*2.* **V. torosus* (VON MEYER), NHMW 1990/0041/3476, Tithonian, Austria, scale bar = 1 mm (Schweitzer & Feldmann, 2009a, fig. 5.2).

Family LECYTHOCARIDAE Schweitzer & Feldmann, 2009

[Lecythocaridae SCHWEITZER & FELDMANN, 2009a, p. 94]

Generally small crabs, triangular in outline, with widest part in metabranchial region, which is extremely large and bears a prominent node or swelling on anterolateral corner; regions strongly inflated and separated by distinct, deep grooves; grooves not necessarily identifiable as cervical, branchiocardiac, and postcervical. Rostrum broad, spatulate, axially sulcate, and strongly downturned. Orbits circular, rimmed, separated from rostrum by prominent, open notch; with inner suborbital spine. Mesogastric region narrow. Cardiac region very large, extending nearly to posterior border and completely separating metabranchial regions. Hepatic and epibranchial regions developed as globose swellings (adapted from SCHWEITZER & FELDMANN, 2009a, p. 94). *Upper Jurassic (Oxfordian–Tithonian).*

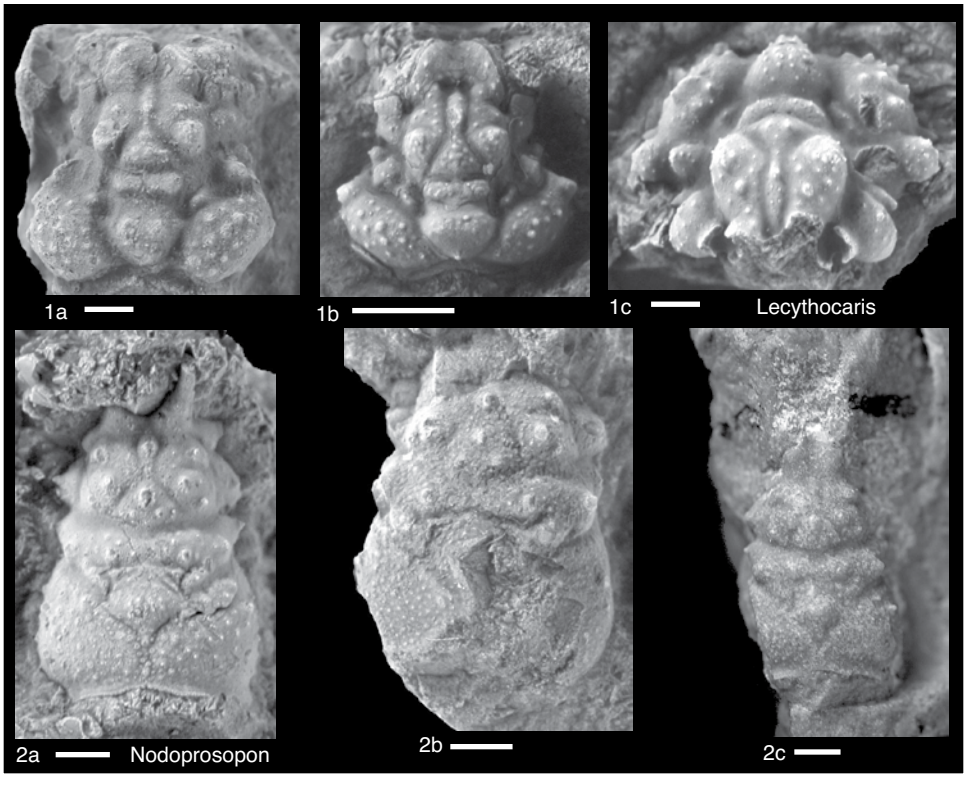

FIG. 15. Lecythocaridae and Nodoprosopidae (p. 23–25).

Lecythocaris VON MEYER, 1860, p. 216 [**Prosopon paradoxum* VON MEYER, 1858, p. 61; M]. Description as for family. *Upper Jurassic (Oxfordian–Tithonian):* Romania, *Oxfordian;* Germany, Romania, *Kimmeridgian;* Austria, Czech Republic, Poland, *Tithonian.*——FIG. 15,*1a–b.* **L. paradoxa* (VON MEYER); *a,* dorsal carapace, neotype, Museum Tübingen (museum no. Quenstedt, 1867, Hdb. II-III), Kimmeridgian, Germany; *b,* dorsal carapace, NHMW 1990/0041/4579, Tithonian, Austria; scale bars = 1 mm (Schweitzer & Feldmann, 2009a, fig. 6.1, 6.7).——FIG. 15,*1c. L. obesa* SCHWEITZER & FELDMANN, 2009a, paratype NHMW 1990/0041/1130, anterior view, Tithonian, Austria (Schweitzer & Feldmann, 2009a, fig. 6.3).

Family NODOPROSOPIDAE Schweitzer & Feldmann, 2009

[Nodoprosopidae SCHWEITZER & FELDMANN, 2009a, p. 116]

Carapace longer than wide, markedly vaulted transversely, moderately so longitudinally; widest at position of midbranchial region, about 75 percent the distance posteriorly, narrowing markedly anteriorly; rostrum trifid, with medial spine and two lateral spines that are directed upward; eyestalk apparently arising from under rostrum; orbits or augenrest not developed; lateral margins spinose; protogastric and hepatic region differentiated; carapace regions ornamented with large tubercles; cervical groove deep; postcervical groove deep, continuous across axis, extending a short distance laterally; branchiocardiac groove oriented obliquely posteriorly, deep; cardiac region small; posterior margin rimmed, broadly concave; carapace apparently with inflated subhepatic region (adapted from SCHWEITZER & FELDMANN, 2009a, p. 116). *Upper Jurassic (Kimmeridgian–Tithonian).*

Nodoprosopon BEURLEN, 1928, p. 147 [**Prosopon ornatum* VON MEYER, 1860, p. 212, pl. 23,*25–26*; OD; =*Prosopon ornatum* VON MEYER, 1857, p.

556, *nom. nud.* (mistyped on the page as 555), simply listed in a table]. Description as for family. *Upper Jurassic (Kimmeridgian–Tithonian):* Germany, *Kimmeridgian;* Austria, Czech Republic, *Tithonian.*——Fig. 15,*2a–c*. **N. ornatum* (Von Meyer), Tithonian; *a,* dorsal carapace, NHMW 1990/0041/2482, Austria; *b,* dorsal carapace, NHMW 2007/0149/0010, Austria; *c,* original specimen of Moericke (1889), BSP AS III 317, Czech Republic; scale bars = 1 mm (Schweitzer & Feldmann, 2009a, fig. 10).

Family VIAIIDAE Artal & others, 2012

[Viaiidae Artal & others, 2012, p. 399]

Carapace cordate to pyriform, longer than wide; maximum width 66 to 75 percent posteriorly on carapace; rostrum triangular, projected well beyond orbits, can be extensively so; orbits positioned at base of rostrum, directed anterolaterally, apparently bounded by quadrate suborbital, lateral-orbital, and one or two supraorbital spines, all separated by open or closed fissures; anterolateral margins diverging posteriorly, with deep concavity rimmed by ridges, concavity of unknown function but unknown in other brachyurans; posterolateral margins convex or slightly diverging posteriorly; posterior margin sinuous or concave; dorsal carapace regions in anterior portion of carapace weakly differentiated, mesogastric region well defined posteriorly; mesogastric region wide, widened laterally and narrow axially; urogastric region short, narrow; cardiac region triangular; epibranchial regions arcuate, inclined toward cardiac region; posterior branchial regions undifferentiated; cervical groove well marked axially, diminishing laterally; branchiocardiac grooves sinuous, long, reaching anterior portions of cardiac region; postcervical groove forming an angular groove defining lateral margin of urogastric region and anterior margin of epibranchial region. *Lower Cretaceous (Albian)–Upper Cretaceous (Cenomanian)*.

Viaia Artal & others, 2012, p. 400 [**V. robusta* Artal & others, 2012, p. 400, fig. 1–2; OD]. Carapace cordate, longer than wide; maximum width 66 percent posteriorly on carapace; rostrum triangular, projected well beyond orbits; orbits positioned at base of rostrum, directed anterolaterally, bounded by quadrate suborbital, lateral-orbital, and one or two supraorbital spines, all separated by open fissures; anterolateral margins diverging posteriorly, with deep concavity rimmed by ridges, concavity of unknown function but unknown in other brachyurans; posterolateral margins convex; posterior margin broadly concave; dorsal carapace regions in anterior portion of carapace weakly differentiated, mesogastric region well defined posteriorly; mesogastric region wide, widened laterally and narrow axially; urogastric region short, narrow; cardiac region triangular; epibranchial regions arcuate, inclined toward cardiac region; posterior branchial regions undifferentiated; cervical groove well marked axially, diminishing laterally; branchiocardiac grooves sinuous, long, reaching anterior portions of cardiac region; postcervical groove forming an angular groove defining lateral margin of urogastric region and anterior margin of epibranchial region. *Lower Cretaceous (Albian)–Upper Cretaceous (Cenomanian)*: Spain.——Fig. 16,*1a–b*. **V. robusta*; *a*, paratype, MAB k3200, dorsal carapace; *b*, paratype, MAB k3201; scale bars = 0.5 cm (Artal & others, 2012, fig. 2.3, 2.5; reproduced by permission of Editor in Chief of the Revista Mexicana de Ciencias Geológicas).

Heeia Wright & Collins, 1972, p. 31 [**Prosopon villersensis* Hée, 1924, p. 143, pl. 5,*1a–b;* OD; =*Calappa cranium* Wright & Wright, 1945, p. 128, pl. 5,*5a–c*]. Carapace longer than wide, narrowing anteriorly, flattened longitudinally and transversely; apparently with very long rostrum; orbit apparently shallow, directed anterolaterally, at level of posteriormost mesogastric region; cervical and branchiocardiac grooves well developed; postcervical groove present; metagastric region very long and wide; regions well defined, grooves broad. *Upper Cretaceous (Cenomanian):* France, Britain.——Fig. 16,*2a–b*. **H. villersensis* (Hée); *a*, cast of JSHC 2035, J. S. H. Collins private collection, dorsal carapace; *b*, specimen from private collection of G. Breton, right lateral view; scale bars = 0.5 cm (Artal & others, 2012, fig. 2.1, 2.4; reproduced by permission of Editor in Chief of the Revista Mexicana de Ciencias Geológicas).

Superfamily DROMIOIDEA De Haan, 1833

[*nom. correct.* Glaessner, 1969, p. 484, p. 1050, *pro* Dromiidea Alcock, 1900, p. 125, *nom. transl. ex* Dromiacea De Haan, 1833 in 1833–1850, p. 102]

Carapace longer than wide or as long as wide, anterolateral and posterolateral margins usually well differentiated, anterolateral margins generally with spines or lobes; rostrum typically bilobed or trilobed; orbits without augenrest, deep, circular; orbital margin often with protuberance or rim, outer suborbital spine and sometimes entire suborbital margin visible in dorsal view; cervical groove, postcervical

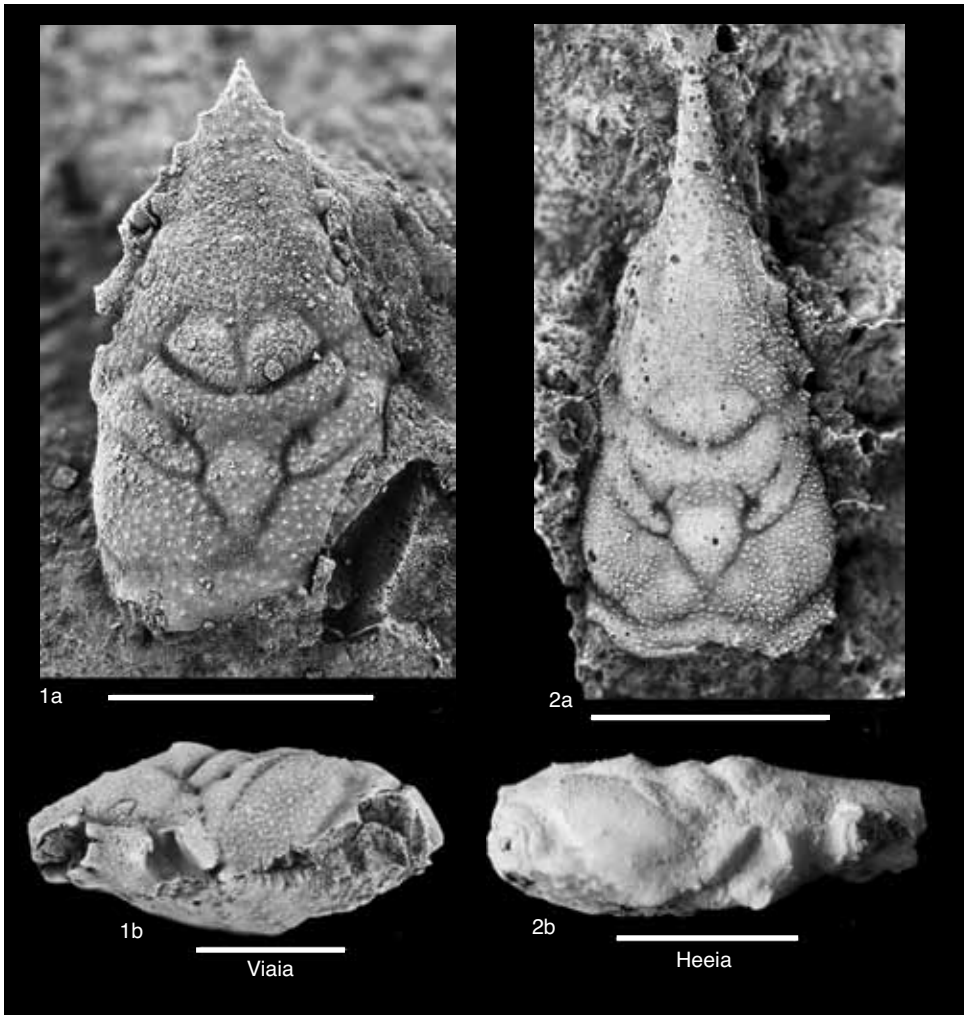

FIG. 16. Viaiidae (p. 25).

groove, and branchiocardiac grooves variously developed; intestinal region wide; subhepatic swelling marked; sternum narrow, with strong episternal projections, pleonite 6 usually with triangular epimeres, other pleonites always without triangular epimeres; spermatheca posteriorly placed, except in most Dromiidae; uropodal plate usually visible in ventral view but may be concealed or absent; both pereiopods 4 and 5 reduced, only pereiopod 5 reduced in size, or all pereiopods more or less similar in size; pereiopod 5 may be subdorsal or dorsal (adapted from KARASAWA, SCHWEITZER, & FELDMANN, 2011, p. 539). [ALCOCK (1900) first used Dromiidea in the sense of a superfamily, but he and many others subsequent to him spelled it without the "o".] *Lower Cretaceous (Aptian)–Holocene.*

Family BASINOTOPIDAE Karasawa, Schweitzer, & Feldmann, 2011

[Basinotopidae KARASAWA, SCHWEITZER, & FELDMANN, 2011, p. 539]

Carapace slightly longer than wide, broadly triangular; rostrum broadly triangular,

axially sulcate, with well-developed median rostral spine; orbits deep, oblique, directed anterolaterally, suborbital margin with large spine; short segment between outer-orbital angle and first anterolateral spine, placing them at same level; lateral margin with three spines anterior to intersection of cervical groove and one very long, posterolaterally directed spine posterior to intersection of cervical groove; cervical, postcervical, and branchiocardiac grooves deep, cervical and branchiocardiac grooves intersecting carapace margin and extending onto flank; carapace with large nodes on regions; sternite 3 at lower level than sternite 4; sternite 4 with long anterior process, pereiopod 1 articulating with long, vertically directed episternal projections; sternite 5 long, pereiopod 2 articulating with long, vertically directed episternal projections; female spermatheca situated posteriorly; female gonopore on coxa 3; male pleon very narrow, with triangular epimeres on pleomere 6 and short epimeres on other pleomeres, uropodal plates visible; female pleon much wider, with triangular epimeres on pleomere 6 and long, rectangular epimeres on pleonites 2–5, bilobed axial swellings on pleonites 2–5, uropodal plates clearly visible, telson very long, much longer than wide; pereiopod 5 reduced in size, carried dorsally, pereiopod 4 possibly reduced in size (adapted from Karasawa, Schweitzer, & Feldmann, 2011, p. 539). *Eocene (Ypresian)–Miocene (Serravallian).*

Basinotopus M'Coy, 1849, p. 167 [**Inachus lamarckii* Desmarest, 1822, p. 116, pl. 9,*14–15;* M]. Carapace about as wide as long, broadly triangular; rostrum broadly triangular, axially sulcate; orbits deep, oblique, directed anterolaterally, suborbital margin with large spine; short segment between outer-orbital angle and first anterolateral spine, placing them at same level; lateral margin with three spines anterior to intersection of cervical groove and one very long, posterolaterally directed spine posterior to intersection of cervical groove; cervical, postcervical, and branchiocardiac grooves deep, cervical and branchiocardiac intersecting carapace margin and extending onto flank; carapace with large nodes on regions; sternite 4 with long anterior process, pereiopod 1 articulating with long, vertically directed episternal projections; sternite 5 long, pereiopod 2 articulating with long, vertically directed episternal projections; female spermatheca situated posteriorly; female gonopore on coxa 3; male pleon very narrow, with triangular epimeres on pleomere 6 and short epimeres on other pleomeres, uropods visible; female pleon much wider, with triangular epimeres on pleomere 6 and long, rectangular epimeres on pleonites 2–5, bilobed axial swellings on pleonites 2–5, uropods clearly visible, telson very long, much longer than wide; pereiopod 5 carried dorsally, pereiopod 4 possibly reduced in size. *Eocene (Ypresian–Lutetian):* Denmark, United Kingdom, *Ypresian;* Denmark, *Lutetian.*——Fig. 17,*1a–c.* **B. lamarckii* (Desmarest), Ypresian, London Clay, United Kingdom; *a,* dorsal carapace, BMNH In. 48932; *b,* oblique posterior view showing female pleon; *c,* sternum, BMNH In. 49849; scale bars = 1 cm (Karasawa, Schweitzer, & Feldmann, 2011, fig. 4A–4B, 4D).

Lucanthonisia Van Bakel & others, 2008, p. 47 [**L. praemia* Van Bakel & others, 2008, p. 48; OD]. Carapace ovate, widest in position of branchial region; rostrum wide, trifid, central spine at lower level than outer two spines; orbit rimmed, directed anterolaterally, suborbital spine visible in dorsal view; lateral margins with three spines anterior to intersection of branchiocardiac groove and one posterior to branchiocardiac groove; posterior margin broad, rimmed; cervical groove moderately deep, branchiocardiac groove and postcervical groove deep; mesogastric region wide; sternum with narrow sterno-pleonal depression. [Illustrations for the figured species are easier to access than those for the type species.] *Oligocene (Rupelian)–Miocene (Serravallian):* Belgium, *Rupelian;* Hungary, *Serravallian.*——Fig. 17,*2a–b. L. eotvoesi* (Müller), Serravallian, Hungary, cast, KSU D 1651 of specimen MGY, Pál Müller collection; *a,* dorsal carapace; *b,* anterior view; scale bars = 1 cm (new).

Noetlingocarcinus Karasawa, Schweitzer, & Feldmann, 2011, p. 539 [**Dromia claudiopolitana* Bittner, 1893, p. 21; OD] [=*Noetlingia* Beurlen, 1928, p. 164 (type, *D. claudiopolitana,* OD), *non* Hall & Clarke, 1894, p. 229]. Carapace much longer than wide; rostrum triangular; orbits with inner, outer, and suborbital spines; lateral margins with six or so spines; branchiocardiac groove well developed; cervical and postcervical grooves weakly developed. *Eocene (Priabonian)–Oligocene (Rupelian):* Hungary, Italy, *Priabonian;* Germany, *Rupelian.*——Fig. 17,*3.* **N. claudiopolitana* (Bittner), Priabonian, Italy, dorsal carapace, scale bar = 1 cm (Bittner, 1893, pl. 2,*5*).

Family DIAULACIDAE Wright & Collins, 1972

[Diaulacidae Wright & Collins, 1972, p. 55]

Orbit deep, directed forward, outer-orbital corner visible in dorsal view. Cervical groove may or may not intersect lateral

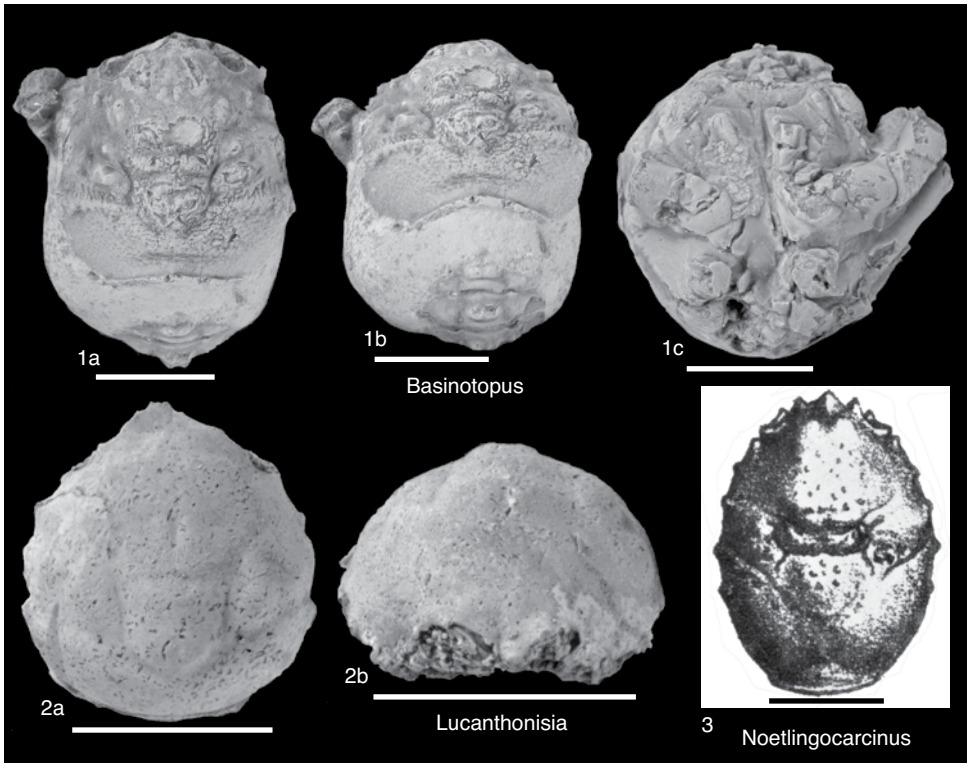

FIG. 17. Basinotopidae (p. 27).

margin of carapace; postcervical groove present; branchiocardiac groove intersecting lateral margin of carapace; grooves not extending or only weakly extending onto flanks; flanks smooth, without swellings. P5 subdorsal. Somites 1–6 free of pleon of unknown gender, none with triangular epimeres, somites 6 and telson long, uropods not visible ventrally. Sternites 1–3 fused, triangular in shape, situated well below level of other sternites; suture 3/4 complete; sutures 5/6 and 6/7 complete; spermatheca situated posteriorly, large, ovate; episternites long, narrow; sternum narrow, shallow (adapted from KARASAWA, SCHWEITZER, & FELDMANN, 2011, p. 541). *Lower Cretaceous (Albian)–Eocene.*

Diaulax BELL, 1863, p. 6 [**D. carteriana* BELL, 1863, p. 6, pl. 1,*14–16;* M]. Description as for family. *Lower Cretaceous (Albian)–Eocene:* United Kingdom, United States (Texas), *Albian;* United Kingdom, *Coniacian–Maastrichtian;* Japan, *Santonian;* Italy, *Eocene.*——FIG. 18*a–c*. **D. carteriana,* Coniacian–Campanian, United Kingdom; *a,* dorsal carapace, SM B 22799; *b,* female sternum showing large spermatheca; scale bars = 1 cm; *c,* pleon and proximal elements of pereiopods, SM B 22784, scale bar = 0.5 cm (Karasawa, Schweitzer, & Feldmann, 2011, fig. 5A–5B, 5D).

Family DROMIIDAE De Haan, 1833

[*nom. correct.* ICZN Opinion 688, 1964, *pro* Dromiacea DE HAAN, 1833 in 1833–1850, p. 102; on ICZN Official List, name no. 356; ICZN Opinion 688, 1964]

Carapace longer than wide or as long as wide; rostrum typically bilobed; orbits without augenrest, deep, circular; orbital margin often with protuberance or rim, subouter-orbital spine visible in dorsal view; cervical groove weak; postcervical groove sometimes present; branchiocardiac groove present; sternum with anteriorly displaced spermatheca in most taxa; pleon without long epimeres on pleonites, somite 6 without triangular epimeres, telson rarely longer than

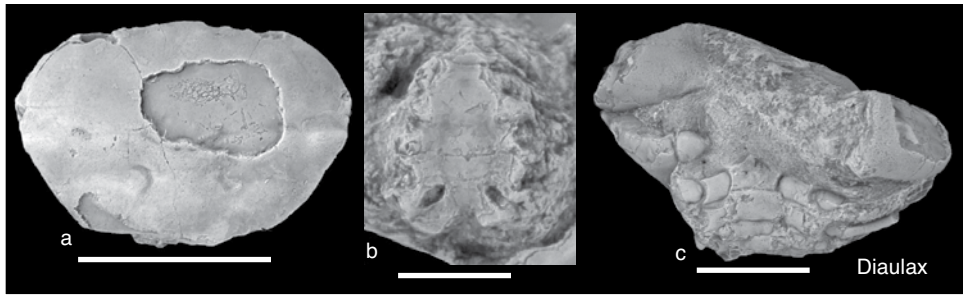

FIG. 18. Diaulacidae (p. 28).

wide, uropods sometimes visible in ventral view; both pereiopods 4 and 5 reduced in size; pereiopod 5 usually carried dorsally; penial tube on coxa of pereiopod 5 (adapted from KARASAWA, SCHWEITZER, & FELDMANN, 2011, p. 541). *Lower Cretaceous (Aptian)–Holocene.*

Dromia WEBER, 1795, p. 92 [**Cancer personatus* LINNAEUS, 1758, p. 628; designated by ICZN under the plenary powers, Opinion 688, 1964]. Carapace wider than long, octagonal or hexagonal in shape, may be smooth or with defined regions; rostrum bilobed and with a third central lobe at lower level; anterolateral margin with lobes or spines; carapace grooves moderately developed; uropods visible in ventral view. *Lower Cretaceous (?Albian), Eocene (Lutetian)–Holocene:* United States (Texas), *?Albian;* Romania, *Lutetian;* Hungary, *Lutetian, Priabonian;* Italy, *Oligocene;* Hungary, Malta, The Netherlands, *Miocene;* The Netherlands, *Pliocene;* East Africa, Red Sea, Indian Ocean, China, Japan, Hawaii, Melanesia, Philippines, Australia, New Zealand, *Holocene*.——FIG. 19,*1a–c*. **D. personatus* (LINNAEUS), USNM 258148, Holocene; *a,* dorsal carapace with dorsal fifth pereiopods; *b,* oblique anterior view; *c,* ventral view; scale bars = 1 cm (new).

Cryptodromia STIMPSON, 1858, p. 225 [**C. coronata* STIMPSON, 1858, p. 239; OD] [=*Dromides* BORRADAILE, 1903b, p. 299 (type, *Cryptodromia hilgendorfi* DE MAN, 1888, p. 404, M)]. Carapace as wide or wider than long; supraorbital tooth small, blunt; postorbital tooth usually small; suborbital tooth well developed; anterolateral margin bearing up to 3 teeth; subhepatic region bearing up to 2 small tubercles; surface of abdomen smooth, uropodal plates well developed, telson usually rounded; carpi and propodi of pereiopods 2 and 3 may be lobed, nodular or tubercular, inner margins of dactyli having up to 6 small spines; pereiopods 4 and 5 reduced, pereiopod 4 longer, dactyli opposed by single propodal spine with up to 2 spines on outer propodal margin (description adapted from MCLAY, 1993). [Illustrated species are those available to the authors for illustration purposes.] *Pliocene–Holocene:* Japan, *Pliocene, Pleistocene;* Indo-West Pacific, *Holocene.*——FIG. 19,*2a–b. C. tumida* STIMPSON, 1858, CBM-ZC 4192, Holocene; *a,* dorsal view; *b,* ventral view; scale bars = 1 cm (new).——FIG. 19,2c. *C. fukuii* (SAKAI, 1936), Holocene, CBM-ZC 5850, dorsal view, scale bar = 1 cm (photos courtesy of H. Kato, new).

Dromidia STIMPSON, 1858, p. 225 [**Dromia hirsutissima* LAMARCK, 1818, p. 264; OD]. Carapace wider than long, vaulted; anterolateral margin with three protuberances; with downturned axial rostral spine and bilobed rostral projection above it; orbits with supraorbital, suborbital, and outerorbital spines; uropodal plates barely visible in ventral view; female sternal suture 7/8 long, ending between chelipeds on a slight raised area. [Fossil species is illustrated in lieu of type species.] *Eocene–Holocene:* United States (South Carolina), *Eocene*; South Africa, *Holocene*.——FIG. 19,*3. D. bedetteae* BLOW & MANNING, Eocene, South Carolina, PI 18695, dorsal carapace, scale bar = 1 cm (new).

Dromiopsis REUSS, 1858 [1857], p. 10 [**Brachyurites rugosus* SCHLOTHEIM, 1820, p. 36; SD BEURLEN, 1928, p. 156]. Carapace circular, about as wide as long; rostrum triangular, rimmed; orbits directed forward, with large outer suborbital spine visible in dorsal view; lateral margins spinose, deeply incised where intersected by cervical and branchiocardiac grooves; regions moderately well defined; cervical, postcervical, and branchiocardiac grooves deep, cervical and branchiocardiac grooves extending onto flanks; subhepatic region inflated. *Lower Cretaceous (Aptian)–Paleocene:* Madagascar, *Aptian–Albian;* Belgium, *Cenomanian;* United States (South Dakota), *Campanian;* Belgium, Denmark, Greenland (West), The Netherlands, Sweden, *Maastrichtian;* Belgium, Denmark, Greenland (West), The Netherlands, Sweden, *Danian;* United States (New Jersey), *Paleocene*.——FIG. 19,*4a–c*. **D. rugosus* (SCHLOTHEIM), Danian, Denmark; *a,* dorsal carapace, KSU D 801a; *b,* anterior view, KSU D 801b; *c,* lateral view, KSU D 801b; scale bars = 1 cm (new).

Epigodromia MCLAY, 1993, p. 216 [**Epidromia granulata* KOSSMANN, 1878, p. 256; OD]. Carapace longer than wide or wider than long; rostrum tridentate, projecting, without postorbital teeth; anterolateral teeth usually broad, granulated lobes; dorsal

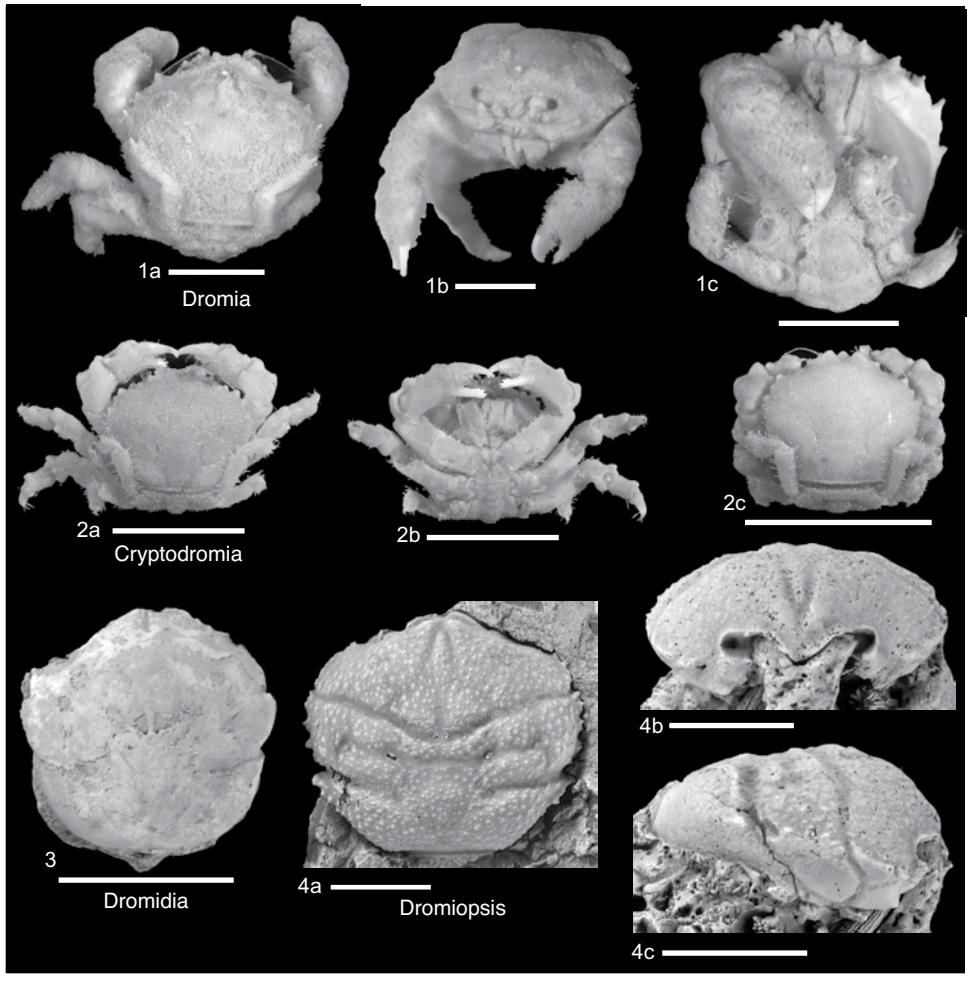

FIG. 19. Dromiidae (p. 29).

surface convex, granular, usually areolate; surface of abdomen usually sculptured, granular, uropodal plates well developed, tip of telson truncate or produced as 2 small lobes in male and rounded in female; pereiopods 2 and 3 tuberculate, granular, with inner margins of dactyli, which are armed with up to 7 small spines; pereiopods 4 and 5 reduced with dactyli, which are opposed by single propodal spine (description adapted from MCLAY, 1993). [In lieu of illustrating the type species, we illustrate here a species available in the USNM.] *Pliocene–Holocene*: Japan, *Pliocene*, *Pleistocene*; Indo-West Pacific, Australia, Indo-Pacific, *Holocene*.——FIG. 20,*1a–c. E. areolata* (IHLE), USNM 282756, Holocene; *a,* dorsal carapace; *b,* ventral surface and pereiopods; *c,* oblique anterior view; scale bars = 1 cm (new).

Kerepesia MÜLLER, 1976, p. 150 [**K. viai* MÜLLER, 1976, p. 150, pl. 2,*4,* pl. 3,*1–3;* OD]. Carapace angular, rostrum bifid and possibly with small axial projection; orbit rimmed, with weak inner-orbital and outer-orbital projections, suborbital spine visible in dorsal view; anterolateral margin with 3 spines. Based on incomplete specimens. *Miocene (Langhian–Serravallian):* Hungary.——FIG. 20,*2.* **K. viai,* holotype, partial carapace cast, M.86.420 numbered KSU D 100, scale bar = 1 cm (new).

Pseudodromilites BEURLEN, 1928, p. 167 [**Dromia hilarionis* BITTNER, 1883, p. 306; OD]. Carapace probably longer than wide, granular overall; broadly bifid rostrum with tiny subrostral spine axially; anterolateral margins with triangular spines; deep cervical and branchiocardiac grooves; subhepatic region inflated. [Illustrations of *P. pentagonalis* were easier to obtain than illustrations of the type species.] *Eocene:* Hungary, Italy.——FIG. 20,*3. P. pentagonalis* (BEURLEN), Hungary, partial dorsal

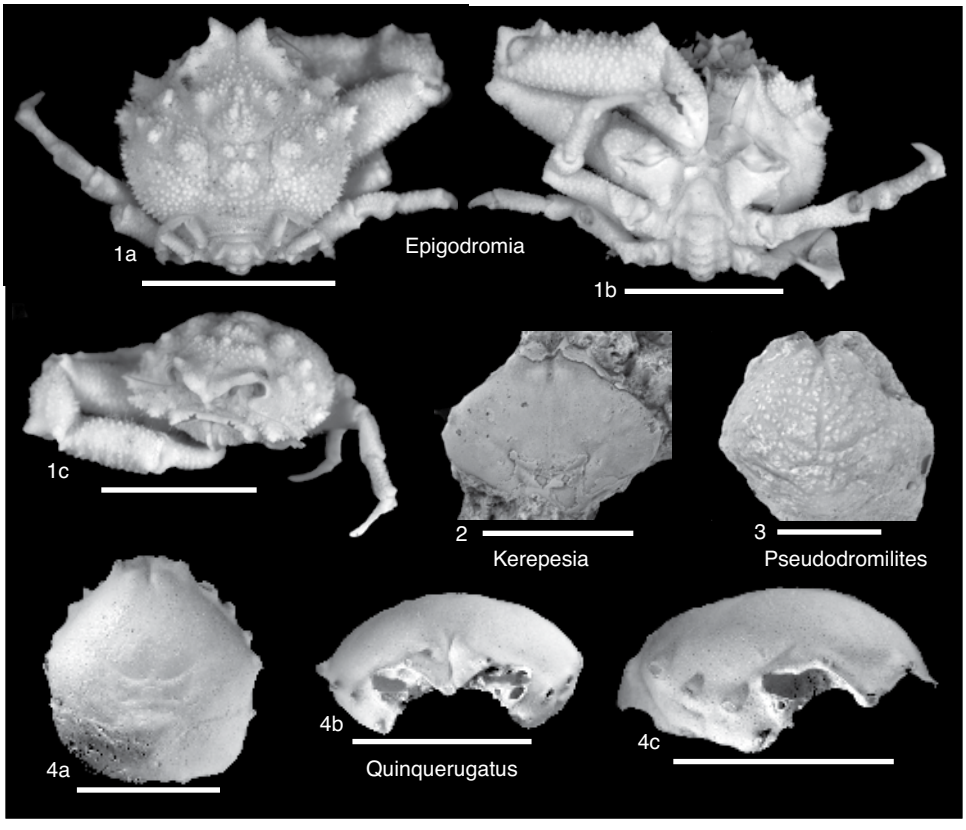

FIG. 20. Dromiidae (p. 29–31).

carapace, cast, KSU D 1636, scale bar = 1 cm (new).

Quinquerugatus FRANȚESCU, FELDMANN, & SCHWEITZER, 2010, p. 260 [**Q. holthuisi* FRANȚESCU, FELDMANN, & SCHWEITZER, 2010, p. 261, fig. 3; OD]. Carapace pentagonal, rostrum short, triangular, with three spines; cervical groove weak; branchiocardiac groove weak, strongest laterally; anterolateral margin with 4 spines, including outer-orbital spine and posterolateral margin with 1 spine; posterior margin very wide, wider than fronto-orbital width. *Eocene*: United States (South Carolina).——FIG. 20,*4a–c.* **Q. holthuisi,* holotype, PI 15222; *a,* dorsal carapace; *b,* anterior view; *c,* oblique lateral view; scale bars = 1 cm (Franțescu, Feldmann, & Schweitzer, 2010, fig. 3A, 3C–3D, copyright Brill).

Family DYNOMENIDAE Ortmann, 1892

[Dynomenidae ORTMANN, 1892, p. 541]

Carapace wider than long or longer than wide; surface covered in dense setae; lateral margins with spines or blunt protuberances; front broadly triangular, sulcate; entire suborbital margin visible in dorsal view; cervical and branchiocardiac grooves well defined, postcervical groove sometimes present; pleonites 1–5 without long epimeres, somite 6 with triangular epimeres, male telson not longer than wide, uropodal plates visible in ventral view; female spermatheca placed posteriorly on sternum; pereiopod 5 reduced in size (adapted from KARASAWA, SCHWEITZER, & FELDMANN, 2011, p. 542). *Lower Cretaceous (Albian)–Holocene.*

Dynomene DESMAREST, 1823, p. 249 [**Cancer hispida* LATREILLE, 1812, p. 274; SD H. MILNE-EDWARDS, 1837 in 1834–1840, p. 180; M]. Carapace wider than long, hexagonal, anterolateral margins with 5 or so spines; carapace regions generally well defined. *Oligocene–Holocene:* Italy, *Oligocene;* Fiji, Japan, *Miocene;* Austria, Bulgaria, Hungary, Poland, *Langhian–Serrivallian;* Japan,

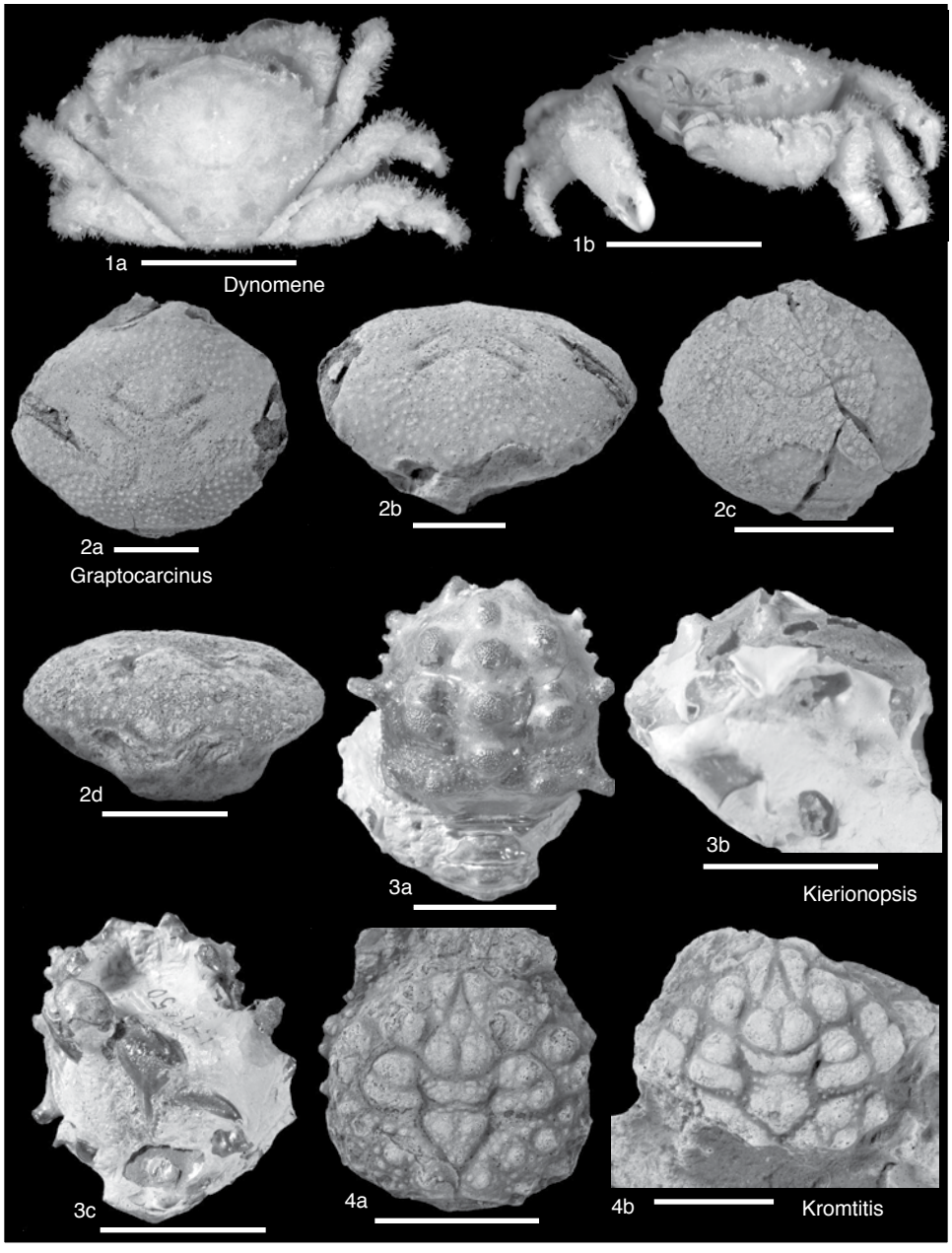

FIG. 21. Dynomenidae (p. 31–33).

Pliocene–Pleistocene; Indo-Pacific, *Holocene.*——FIG. 21,*1a–b.* **D. hispida* (LATREILLE), USNM 189454, Holocene; *a,* dorsal carapace and pereiopods; *b,* oblique anterior view; scale bars = 1 cm (new).

Graptocarcinus ROEMER, 1887, p. 173 [**G. texanus;* M]. Carapace about as wide as long, ovate; rostrum triangular, projected slightly beyond orbits; orbits closely spaced, rimmed, directed forward; anterolateral margins entire, slightly convex; posterolateral

margins slightly concave; posterior margin short, concave; posterior of mesogastric region marked by deep segment of cervical groove, remainder of groove unknown; lateral margins of urogastric region marked by deep grooves. *Lower Cretaceous (Albian)–Upper Cretaceous (Maastrichtian):* Mexico (San Luis Potosí), *Albian;* The Netherlands, United Kingdom, United States (Texas), *Cenomanian–Maastrichtian.*——Fig. 21,*2a–c.* **G. texanus,* Cenomanian, Texas; *a,* dorsal carapace; *b,* oblique anterior view, cast of MGSB 9609 numbered KSU D 1153; *c,* dorsal carapace, cast of MGSB 12489, numbered KSU D1155; scale bars = 1 cm (new).——Fig. 21,*2d. G. muiri* Stenzel, oblique anterior view, Albian, San Luis Potosí, Mexico, cast of holotype 21288 numbered KSU D 874; scale bar = 1 cm (new).

Kierionopsis Davidson, 1966, p. 211 [**K. nodosa* Davidson, 1966, p. 212, fig. 1–2; OD]. Carapace rectangular, longer than wide, widest at position of last anterolateral spine; strongly vaulted longitudinally and transversely; front triangular, projected slightly beyond orbits, with slightly concave tip, edges upturned, rimmed, merging into orbits; orbits oblique but directed forward, rimmed, outer suborbital spine long, triangular, well visible in dorsal view, but suborbital margin is not visible in dorsal view; short but obvious distance between outer-orbital spine and first lateral spine; lateral margin more or less straight, with 4 anterior spines and one very large spine almost to posterior corner; first anterior spine directed anterolaterally, second largest of anterior spines; second and third anterior spines small, directed laterally; fourth anterior spine directed laterally, large; posterior spine directed posterolaterally; posterior margin rimmed, weakly concave; protogastric regions smooth except for large longitudinally ovate swelling posterolaterally; hepatic regions smooth; mesogastric region with longitudinally ovate swelling on anterior process and spherical swelling posteriorly; metagastric region large, equant, with central spherical swelling; urogastric region small, depressed; cardiac region pentagonal, apex directed posteriorly, with central spherical swelling; intestinal region depressed, smooth; epibranchial region composed of a small swelling followed by a very large swelling posterior to small one; mesobranchial region with transverse ridge with central spherical swelling at same level as posterior spine; metabranchial region depressed, smooth. Pleonal somite 1 very short, wide, arcuate; somite 2 widening distally, somites 3–5 rectangular, with straight margins; somite 6 short, with triangular terminations, telson appearing to be very broad; uropods not visible but cannot determine if they are covered by sediment; chela with short, stout manus, upper surface flattened; fixed finger downturned, with finely toothed occlusal surface. *Paleocene:* United States (Texas).——Fig. 21,*3a–c.* **K. nodosa,* USNM 649150; *a,* dorsal carapace and pleon; *b,* lateral view; *c,* ventral view showing open chela; scale bars = 1 cm (new).

Kromtitis Müller, 1984, p. 63 [**Dromilites koberi* Bachmayer & Tollmann, 1953, p. 312, fig. 2; M]. Carapace about as wide as long, reniform; regions well defined and ornamented with large swellings that are themselves granular; anterolateral margin with large spines with rectangular bases, posterolateral margin with triangular spines; posterior portion of mesogastric and cardiac regions with axial groove; cervical and branchiocardiac grooves well defined. *Paleocene (Danian)–Miocene:* Denmark, *Danian;* Italy, *Ypresian;* Germany, Hungary, Italy, *Eocene;* Germany, *Oligocene;* Austria, Jamaica, *Miocene.*——Fig. 21,*4a–b.* **K. koberi* (Bachmayer & Tollmann), Miocene, Austria; *a,* dorsal carapace, cast of holotype NHMW 61/1953, numbered KSU D 510; *b,* dorsal carapace, cast of MNHN RO 3456, numbered KSU D 1308; scale bars = 1 cm (new).

Family SPHAERODROMIIDAE Guinot & Tavares, 2003

[*nom. transl.* Schweitzer & Feldmann, 2010d, p. 417, *pro* Sphaerodromiinae Guinot & Tavares, 2003, p. 102]

Carapace longer than wide or about as long as wide; rostrum projecting beyond orbits; orbital area composed of two contiguous circular depressions, outer depression deeper, essentially continuous with orbit, poorly separated from orbit; lateral rim merging with or separated only by short distance from outer-orbital angle; subhepatic region inflated; cervical groove weak, postcervical and branchiocardiac grooves well defined; male vestigial pleopods on pleonal somites 3–5; female spermatheca positioned posteriorly on sternum, short female sutures 7/8; male P5 coxa extended into immobile structure; telson long, uropodal plates large and readily visible in ventral view, triangular epimeres on sixth somite, rectangular terminations on remaining pleomeres; long anterior process of sternite 4; pereiopods 4 and 5 reduced in size (Karasawa, Schweitzer, & Feldmann, 2011, p. 543). [See Guinot and Tavares (2003) for additional characters observed from extant specimens. This family is represented in the Holocene by two extant genera.] *Upper Cretaceous (Campanian)–Holocene.*

Dromilites H. Milne-Edwards, 1837 in 1834–1840, p. 494 [**Dromia bucklandi* H. Milne-Edwards, 1837 in 1834–1840, p. 178–179; SD Glaessner, 1929, p. 139]. Carapace ovate to rectangular, about as wide as long or longer than wide; rostrum bilobed; lateral margins crispate, notched at intersection of cervical and branchiocardiac grooves,

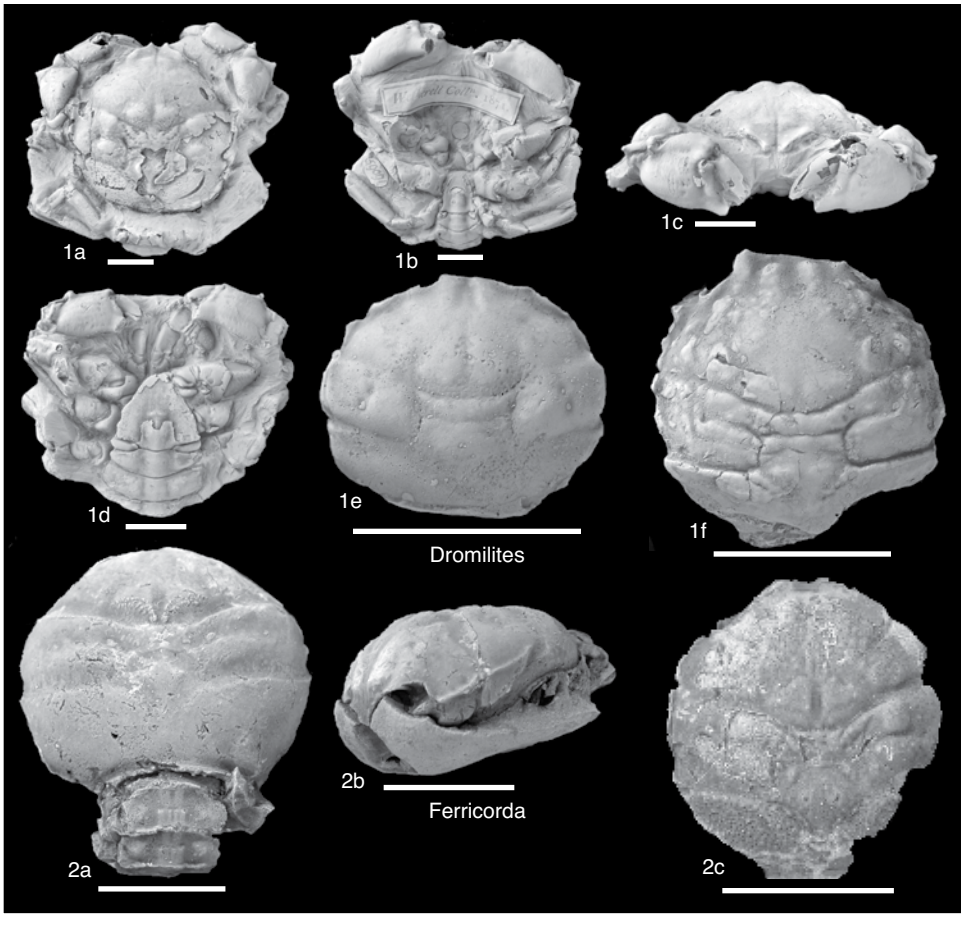

FIG. 22. Sphaerodromiidae (p. 33–35).

with spines; cervical, postcervical, and branchiocardiac grooves deep; carapace with distinct swellings on mesogastric and epibranchial regions; third maxillipeds pediform; first pereiopods short, with or without spine on upper margin of manus, fixed finger with scoop-shaped tip; male sternum narrow; female sternite 4 with long anterior process, short female sternal sutures 7/8, spermatheca situated posteriorly; male pleon narrow; pleonites 4 and 5 short, wide; pleonite 6 with triangular epimeres, uropods large, visible, nested between pleonite 6 and telson, telson much longer than wide, reaching base of coxae of chelipeds; female pleon moderately wide, pleonite 5 rectangular; pleonite 6 with triangular tips; uropods large, visible, nested between pleonite 6 and telson, telson longer than wide, reaching anterior end of coxae of chelipeds. [See SCHWEITZER and FELDMANN (2010d) for diagnosis and information about the rather mysterious origin of the name *Dromilites*.] *Eocene (Ypresian–Priabonian):* Germany, United Kingdom, *Ypresian;* Austria, Spain, *Lutetian;* Spain, *Priabonian*.——FIG. 22,*1a–d.* **D. bucklandi* (H. MILNE-EDWARDS); *a–c,* BMNH 59091, Ypresian, Eocene, United Kingdom; *a,* male dorsal carapace; *b,* male pleon; *c,* male anterior view; *d,* female pleon, BMNH 59089, Ypresian, Eocene, United Kingdom; scale bars = 1 cm (Schweitzer & Feldmann, 2010d, fig. 2B, D, F, C, photos copyright the Natural History Museum, London, United Kingdom, and photographed by Mr. P. Crabb).——FIG. 22,*1e. D. vicensis* BARNOLAS CORTINAS, Priabonian, Spain, dorsal carapace, cast of holotype MGSB 23888, numbered KSU D 188, scale bar = 1 cm (Schweitzer & Feldmann, 2010d, fig. 3A).——FIG. 22,*1f. D. pastoris* VÍA, Lutetian, Spain, dorsal carapace, cast of holotype MGSB 15955, numbered KSU D 187, scale bar = 1 cm (Schweitzer & Feldmann, 2010d, fig. 3B).

Ferricorda SCHWEITZER & FELDMANN, 2010d, p. 425 [**Dromiopsis kimberleyae* BISHOP, 1987, p. 35, fig.

1–2; OD]. Carapace ovate, narrowing anteriorly, flattened transversely, weakly vaulted longitudinally; rostrum triangular; orbits deep, lower margin extending beyond upper-orbital margin, visible in dorsal view; lateral margins rimmed, rim extending to outer-orbital corner; cervical, postcervical, and branchiocardiac grooves well developed; subhepatic and ?omega region inflated; female abdominal somites wide, rectangular (Schweitzer & Feldmann, 2010d). *Upper Cretaceous (Campanian):* United States (South Dakota).——Fig. 22,*2a–c.* **F. kimberleyae* (Bishop); *a–b,* holotype, SDSMT 10184; *a,* oblique dorsal view with abdomen; *b,* lateral view; *c,* dorsal carapace with cuticle, SDSMT I 3996; scale bars = 1 cm (Schweitzer & Feldmann, 2010d, fig. 6B, 6C–6D).

Family XANDAROCARCINIDAE Karasawa, Schweitzer, & Feldmann, 2011

[Xandarocarcinidae Karasawa, Schweitzer, & Feldmann, 2011, p. 543]

Carapace wider than long, hexagonal, anterolateral and posterolateral margins well differentiated, both with spines; posterior margin concave, rimmed. Rostrum extending beyond orbits, axially bifid, axial two spines flanked by second pair of spines posterior to them and separated from them by arcuate segment; orbital margin sinuous, first extending posteriorly in segment parallel to axis, then extending convex forward in short arc, then turning strongly concave posteriorly and arcing anteriorly to outer-orbital spine; outer-orbital spine triangular, directed forward; orbit deep, circular, directed forward; eyestalks short, arcuate, arcing concave forward, well calcified. Carapace regions weakly defined, protogastric, hepatic, and epibranchial with large swellings. Cervical groove moderately defined, extending from anterolateral margin just anterior to last anterolateral spine, arcing convex forward, terminating lateral to urogastric region. Branchiocardiac groove obscure laterally, deeper axially, parallel to cervical groove. Postcervical groove present only as weak separation between urogastric and cardiac regions. Sternites 1–3 apparently fused, longer than wide; sternite 4 longer than wide, flattened.

Male pleon moderately wide, with parallel sides, somites without triangular epimeres, uropodal plates not visible, telson reaching middle of sternite 4, all somites free. Female pleon wide, with convex lateral margins, somites without triangular epimeres, uropodal plates not visible, telson reaching well anterior to sternite 4, all somites free. Female gonopores coxal, ovate, positioned obliquely in distal position on coxae of third pereiopods.

Chelipeds strongly sexually dimorphic, much larger in males than in females; chelae ornamented with rows of tubercles on outer surface of manus and carpus; fingers edentulous except for small spine at tip of fixed finger interlocking with movable finger, finger tips black; pereiopods 2–5 similar in size, none subdorsal (Karasawa, Schweitzer, & Feldmann, 2011, p. 543). *Upper Cretaceous.*

Xandarocarcinus Karasawa, Schweitzer, & Feldmann, 2011, p. 543 [**Zanthopsis sternbergi* Rathbun, 1926, p. 54, pl. 39,*1–4;* OD] [=*Xandaros* Bishop, 1988, p. 252 (type, *Z. sternbergi,* OD), *non* Maciolek, 1981, p. 827]. Carapace wider than long; rostrum extended well beyond orbits, triangular, possibly axially bilobed; orbits oblique, rimmed, with long outer-orbital spine; anterolateral margin with three spines, not including outer-orbital spine; posterolateral margin nearly straight; posterior margin concave; carapace regions ornamented with large swellings; female pleon wide, somites with rectangular epimeres, uropods not visible; chelae with rows of tubercles on outer surfaces. *Upper Cretaceous:* Mexico (Baja California); United States (California), *Campanian–Maastrichtian.*——Fig. 23,*1a–c.* **X. sternbergi* (Rathbun), Campanian, California; *a,* dorsal carapace and chelipeds, SDSNH 26037; *b,* male abdomen and pereiopods, SDSNH 26036; *c,* female abdomen and pereiopods, SDSNH 26033; scale bars = 1 cm (Karasawa, Schweitzer, & Feldmann, 2011, fig. 6A, 6D–6E).

Acanthodiaulax Schweitzer & others, 2003, p. 21 [**A. mclayi* Schweitzer & others, 2003, p. 23, fig. 9; OD]. Carapace wider than long, widest at position of last anterolateral spine; rostrum broadly triangular, orbits directed forward, with very long outer-orbital spine; anterolateral margin with four spines, not including outer-orbital spine; gastric and epibranchial regions with large ovate swellings; cervical groove moderately developed, branchiocardiac groove weak. *Upper Cretaceous (Santonian):* British Columbia, Canada.——Fig. 23,*2.* **A. mclayi,* dorsal carapace, GSC 124804, scale bar = 1 cm (adapted from Schweitzer & others, 2003, fig. 9.2).

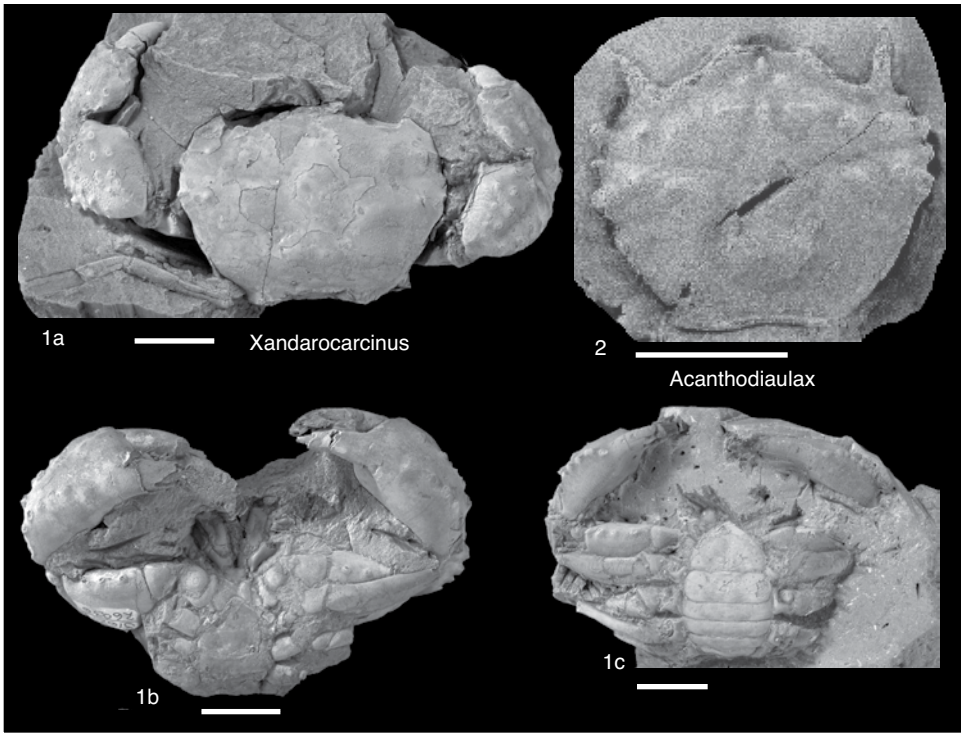

FIG. 23. Xandarocarcinidae (p. 35).

DROMIACEA INCERTAE SEDIS

Ameridromia BLOW & MANNING, 1996, p. 4 [**A. hyneorum* BLOW & MANNING, 1996, p. 6, pl. 1,*3;* OD]. Carapace small, orbits directed anterolaterally; anterolateral margin with several spines; mesogastric region axially keeled. Known only from a single broken specimen. *Eocene:* United States (South Carolina).——FIG. 24,*1*. **A. hyneorum*, partial dorsal carapace, holotype, USNM 484532, scale bar = 1 cm (new).

Cyamocarcinus BITTNER, 1883, p. 310 [**C. angustifrons* BITTNER, 1883, p. 310, pl. 1,*8;* M]. Carapace transversely ovate, much wider than long; rostrum triangular, axially sulcate, barely projected beyond orbits; orbits closely spaced, directed forward, rimmed; cervical groove and branchiocardiac grooves deep axially, poorly developed laterally, branchiocardiac developed laterally as a series of muscle scars; series of pits arrayed subparallel to anterior and anterolateral margin. *Eocene (Priabonian):* Italy, Hungary.——FIG. 24,*2a–c*. **C. angustifrons*, Hungary; *a*, *c*, cast of Földtani Intézet 31, Lőrenthey Collection, numbered KSU D 57; *a,* dorsal carapace; *b,* cast of specimen, dorsal carapace, numbered KSU D 1655; *c,* anterior view; scale bars = 1 cm (new).

Eotrachynotocarcinus BESCHIN & others, 2007, p. 24 [**E. airaghii* BESCHIN & others, 2007, p. 25, pl. 2,*7–9;* OD]. Carapace wider than long, reniform; rostrum broadly triangular, margins upturned; regions well defined and ornamented with large swellings that are themselves granular; posterior portion of mesogastric and cardiac regions with axial groove; cervical and branchiocardiac grooves well defined. *Eocene (Ypresian):* Italy.——FIG. 24,*3*. **E. airaghii,* holotype MCZ 1733, dorsal carapace, scale bar = 1 cm (new, photo courtesy A. De Angeli).

Gemmellarocarcinus CHECCHIA-RISPOLI, 1905, p. 315 [**G. loerentheyi* CHECCHIA-RISPOLI, 1905, p. 316, pl. 1,*1–2;* M]. Carapace much wider than long, ovate; rostrum triangular, downturned; carapace ornamented with distinctive pattern of broad ridges, three situated parallel to one another and arcing on hepatic and epibranchial regions; one transverse ridge on branchial regions; anterolateral margin thickly rimmed, smooth. *Eocene*: Hungary, Italy.——FIG. 24,*4a–b*. **G. loerentheyi,* cast of EK9, numbered KSU D 107; *a,* dorsal carapace; *b,* anterior view; scale bars = 1 cm (new).

Mesodromilites WOODWARD, 1900, p. 61 [**Necrocarcinus glaber* WOODWARD, 1898, p. 303; OD; =*M. birleyae* WOODWARD, 1900, p. 61]. Carapace longer than wide, width about 90 percent maximum

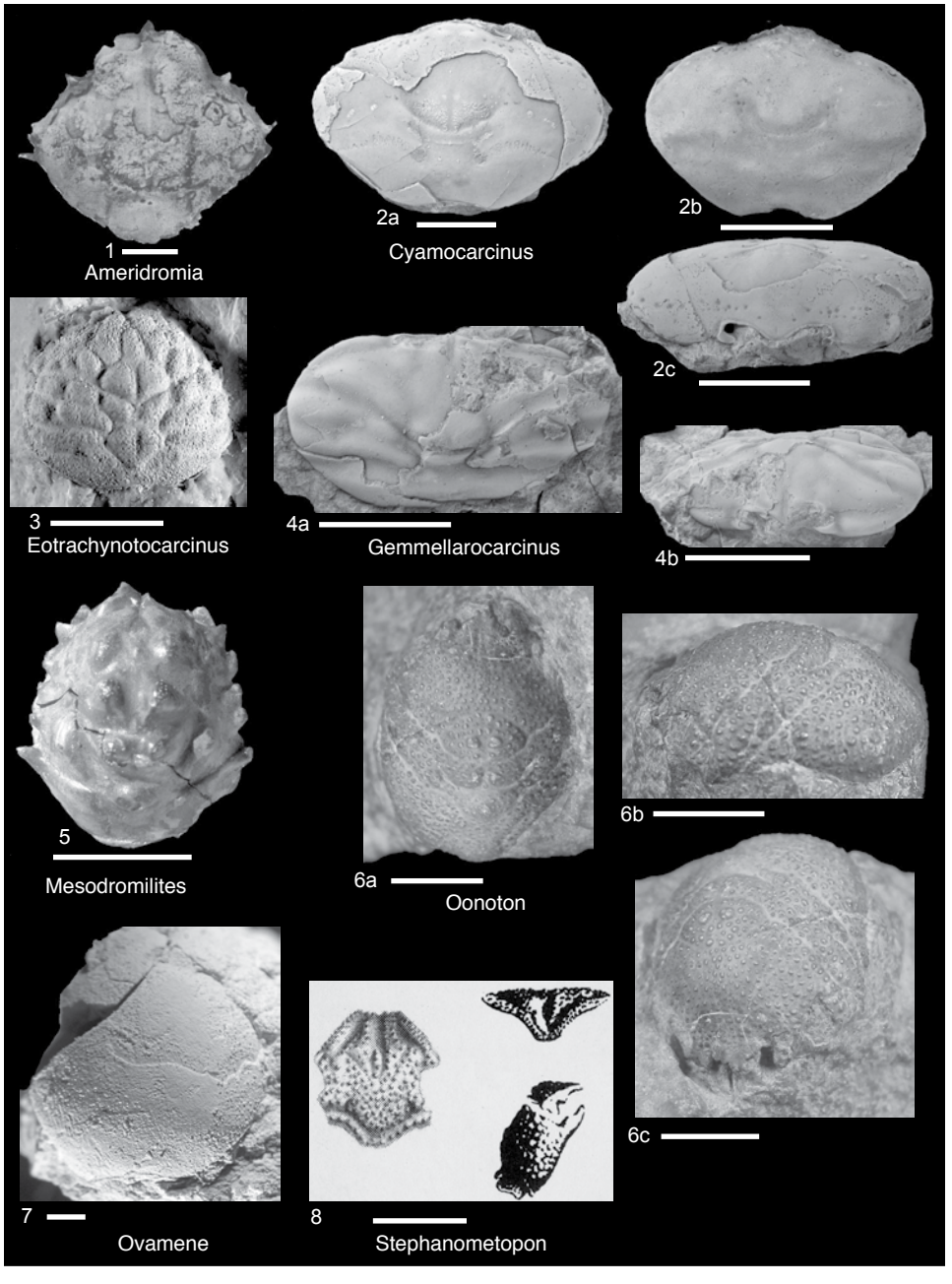

FIG. 24. Dromiacea uncertain placement (p. 35–38).

length, maximum width in posterior one-third, moderately vaulted longitudinally, strongly vaulted transversely; regions moderately defined; protogastric, metagastric, and mesogastric regions ornamented with very large swellings with pustulose tips, mesogastric swellings marking highest point on carapace, single swelling on cardiac region; rostrum appearing to have been trifid, axially sulcate, axial spine at lower level than lateral spines; supraorbital margin entire, with very subtle median

projection, suborbital margin with prominent bifid spine, extending beyond upper-orbital margin, separated from upper-orbital margin by notch, fronto-orbital width about three-quarters maximum carapace width; orbit circular, directed forward, separated from augenrest by weak ridge; one elongate lateral spine anterior to cervical groove; two lateral spines between intersection of cervical and branchiocardiac grooves, one hypertrophied lateral spine posterior to branchiocardiac groove; all lateral spines directed upward and laterally; cervical groove weak; postcervical groove present; branchiocardiac groove strong. *Lower Cretaceous (Albian):* United Kingdom.——Fig. 24,*5.* **M. glaber* (Woodward), holotype, BMNH I.7990, dorsal carapace, scale bar = 1 cm (new).

Oonoton Glaessner, 1980, p. 173 [**O. woodsi* Glaessner, 1980, p. 173, fig. 1; M]. Carapace longer than wide, ovate; rostrum short; orbits very closely spaced, small, circular, rimmed, forward directed; lateral margins apparently entire; cervical groove and branchiocardiac grooves deep, parallel; postcervical groove deep; two large tubercles on posterior of mesogastric region and on metagastric region; cardiac region triangular, directed posteriorly, with central tubercle; entire carapace surface covered with irregularly spaced granules. *Lower Cretaceous (Albian):* Australia (Queensland, South Australia).——Fig. 24,*6a–c*. **O. woodsi,* holotype, F 2876; *a,* dorsal carapace; *b,* left lateral view; *c,* oblique anterior view; scale bars = 1 cm (new, photos courtesy Pam Wilson, Queensland Museum).

Ovamene Müller & Collins, 1991, p. 66 [**O. franciae* Müller & Collins, 1991, p. 66, pl. 3,*7;* OD]. Carapace ovate, about as wide as long; rostrum triangular; anterolateral and posterolateral margins entire; cervical groove moderately defined; regions undefined. *Eocene (Priabonian)*: Hungary.——Fig. 24,*7.* **O. franciae,* holotype, EF-12.1 (M.91-143), dorsal carapace, scale bar = 1 mm (new, image courtesy Matúš Hyžný).

Stephanometopon Bosquet, 1854, p. 136 [126] [**S. granulatum* Bosquet, 1854, p. 137 [127], pl. 10,*12;* M]. Based upon a fragment of a carapace. Carapace pentagonal; front triangular, with granular rim, axially sulcate; carapace surface covered with tubercles. *Upper Cretaceous (Maastrichtian):* France.——Fig. 24,*8.* **S. granulatum,* digital image of original illustration, scale bar = 1 cm (Bosquet, 1854, pl. 10,*12*).

ABBREVIATIONS FOR MUSEUM REPOSITORIES

AD/IG: Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
AR: Institute of Paleobiology of the Polish Academy of Sciences, Warsaw
B, SM: Sedgwick Museum, Cambridge University, UK
BAS: British Antarctic Survey, Cambridge, UK
BMNH: The Natural History Museum, London, UK
BSP: Bayerische Staatsammlung für Paläontologie und historische Geologie, München (Munich), Germany
CBM: Natural History Museum and Institute, Chiba, Japan
C.C.M.: Carter County Museum, Ekalaka, Montana, USA
EK, M, HNHM: Hungarian Natural History Museum, Budapest, Hungary
F, QMF, uqf: Queensland Museum, Queensland, Australia
Földtani Intézet: Lőrenthey Collection at the Geological Survey, Budapest, Hungary
GLW: Geological Survey of Austria, Vienna, Austria, Reuss Collection
GMNH: Gunma Museum of Natural History, Tomioka, Gunma, Japan
GSC: Geological Survey of Canada, Eastern Paleontology Division, Ottawa, Ontario, Canada
KSU D: Kent State University Decapod Comparative Collection, Kent, Ohio, USA
LACM: Natural History Museum of Los Angeles County, California, USA
LPB: Laboratory of Paleontology, Department of Geology and Paleontology, University of Bucharest, Romania
MAB k: Oertijdmuseum De Groene Poort, Boxtel, The Netherlands
MCZ: Museo Civico "G. Zannato" di Montecchio Maggiore (Vicenza), Italy
MGSB: Museo Geológico del Seminario de Barcelona, Spain
MNHN: Museum National d'Histoire Naturelle, Paris, France
NHMW: Naturhistorisches Museum Wien (Natural History Museum of Vienna), Austria
NM: Národní Muzeum, Prague, Czech Republic
PI: Charleston Museum, Charleston, South Carolina, USA
PL: Paleontological collection of the Muzeum Novojičinska in Nový Jičin, Czech Republic
SDSMT: South Dakota School of Mines and Technology, Rapid City, South Dakota, USA
SDSNH: San Diego Museum of Natural History, San Diego, California, USA
SMF: Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt, Germany
USNM: United States National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA
UT: University of Texas at Austin, Texas, USA
ZPAL: Institute of Paleobiology of the Polish Academy of Sciences, Warsaw, Poland

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