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Infraorder Achelata

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# PART R, REVISED, VOLUME 1, CHAPTER 8H: SYSTEMATIC DESCRIPTIONS: INFRAORDER ACHELATA

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## Infraorder ACHELATA Scholtz & Richter, 1995

[Achelata SCHOLTZ & RICHTER, 1995, p. 293]

Carapace subcylindrical, rostrum indistinct or small and bifid; epistome in broad contact with carapace. Pleon with well-developed pleura; telson and uropods calcified proximally, distally flexible. Sternum broad, triangular. Scaphocerite absent; antennular plate present; maxilliped 3 dactylus blunt; pereopods 1–4 achelate; pereopod 5 sometimes pseudochelate in females; pereopod 1 very rarely pseudochelate (KARASAWA, SCHWEITZER, & FELDMANN, 2013, p. 99). *Middle Triassic (Anisian)–Holocene*.

### Family CANCRINIDAE Beurlen, 1930

[Cancrinidae BEURLEN, 1930a, p. 342]

Carapace subcylindrical to subrectangular; rostrum indistinct or small and bifid; cervical groove short; epistome in broad contact with carapace. Pleon finely granulate with well-developed pleurae; subrectangular telson and uropods calcified proximally, distally flexible. Sternum broad. Antennae thick with short stalks and 13 to 19 rings, widest in middle part, triangular in cross section, with long setae on inner edge; scaphocerite absent; antennular plate present; maxilliped 3 dactylus blunt; pereopods 1–5 achelate; pereopod 1 shorter than others; pereopods 2–5 long and slender (KARASAWA, SCHWEITZER, & FELDMANN, 2013, p. 99). *?Lower Jurassic (Hettangian–Sinemurian), Upper Jurassic (Tithonian)–Upper Cretaceous (Cenomanian, Santonian)*.

*Cancrinus* MÜNSTER, 1839, p. 43 [\**C. claviger* MÜNSTER, 1839, p. 43, pl. 15, 1; SD GLAESSNER, 1929, p. 109; =*C. latipes* MÜNSTER, 1839, p. 44]. Characters as for family. *Upper Jurassic (Tithonian)–Upper Cretaceous (Santonian)*: Germany, *Tithonian*; Lebanon, *Cenomanian, Santonian*.—FIG. 1, 1. \**C. claviger*, BSP AS I 998, dorsal view of disarticulated specimen, *Tithonian*, Germany, scale bar, 1 cm (new).

?*Praeetya* WOODWARD, 1868, p. 45 [\**P. scabrosa*; M]. Carapace poorly calcified, granular, dorsally domed; rostrum short, blunt; deep excavation for orbits; weak hepatic crest; antennules long, slender; antennae with three large, rugose basal articles; pereopods stout, achelate, rugose, first and second largest, fifth much smaller than first four; pleurae of abdominal somites sharp, directed posteriorly. [The genus *Praeetya* is questionable within the family.] *Lower Jurassic (Hettangian–Sinemurian)*: UK (England).—FIG. 1, 2a–b. \**P. scabrosa*; a, syntype, left lateral view, (BMNH) In. 28392; b, left lateral view, (BMNH) In. 38418, scale bars, 1 cm (new).

### Family PALINURIDAE Latreille, 1802

[*nom. correct.* SAMOUELLE, 1819, p. 92, *pro* Palinurini LATREILLE, 1802 in 1802–1803, p. 31; ICZN Opinion 519, 1958b]

Carapace subcylindrical or semirectangular, rostrum indistinct or small and bifid; eyes protected by large supraocular spines (horns); epistome in broad contact with carapace; bearing spines or other carapace ornamentation. Pleon with well-developed pleura; telson rounded, subrectangular; telson and uropods calcified proximally, distally flexible. Sternum broad, triangular. Antennae very large, thick antennal bases usually with spines; scaphocerite absent; antennular plate present; maxilliped 3 dactylus blunt; pereopods 1–5 achelate; first pereopods almost always same length or only slightly longer than other pereopods,

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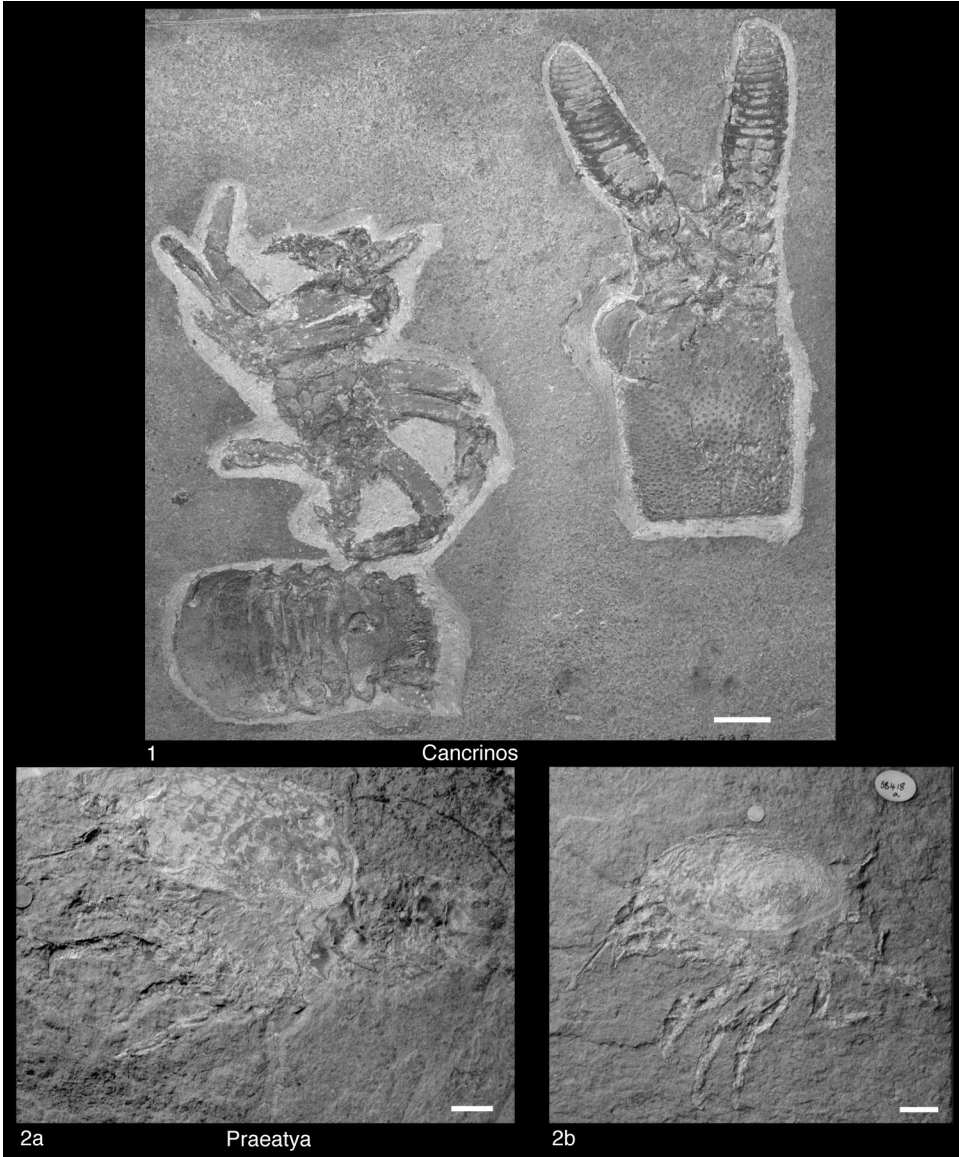


FIG. 1. Cancrinidae (p. 1).

very rarely pseudochelate; pereopod 5 sometimes pseudochelate in females (KARASAWA, SCHWEITZER, & FELDMANN, 2013, p. 99). *Middle Triassic (Anisian)–Holocene.*

*Archaeocarabus* M'COY, 1849, p. 173 [*A. bowerbanki* M'COY, 1849, p. 174; M]. Subcylindrical carapace with rostrum of moderate size, flanked by two processes of ophthalmic somite; rostrum separated from supraorbital spines by straight front bearing

spines; supraorbital spines large, well developed, directed anterodorsally, widely separated; supraorbital carina extends from supraorbital spines to cervical groove; well-marked cervical groove; a postorbital carina extends posteriorly to the cervical groove, bearing spiny tubercles; below and parallel to the postorbital carina is a postantennal carina, more prominent and bearing a few spiny tubercles; dorsal surface of the cephalic region with two longitudinal rows of spines, surface granular to smooth; carapace posterior to cervical groove bearing spines

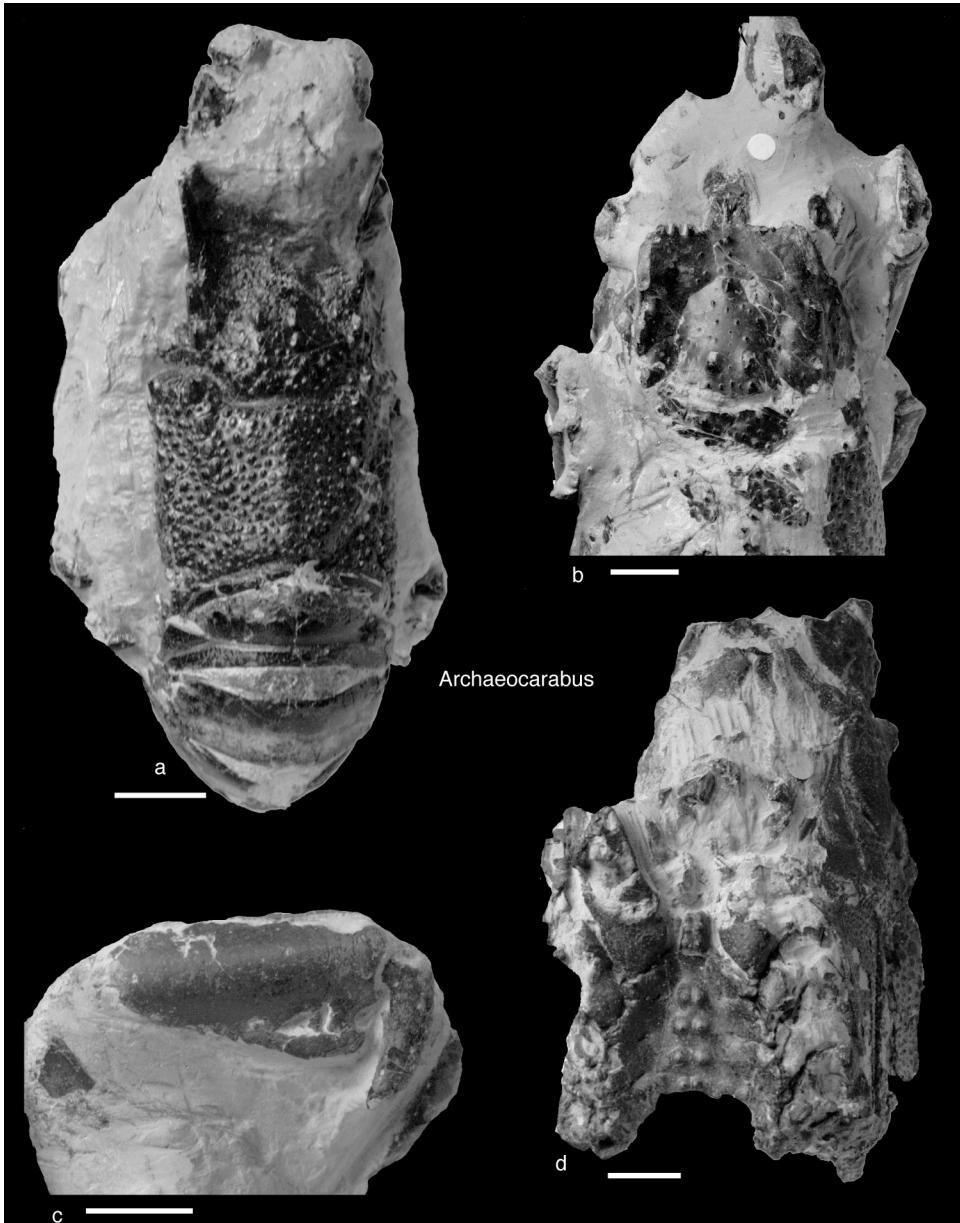


FIG. 2. Palinuridae (p. 2–4).

at level of supraorbital carina just posterior to cervical groove; remainder granular or scabrous. Pleonal somites smooth; pleuron of somite 2 largest, terminating in at least two ventrally directed spines; somites 3 and 4 with pleura with single posteroventrally directed spine; somite 5 with acuminate termination; uropods narrow. Sternites 1–3 fused, parallel sided, bearing three pairs of tubercles; suture 3/4

complete; sternal plate with four pairs of tubercles along midline; sternites 4–7 broaden posteriorly, episternal processes with granular margins, sutures incomplete. Pereiopod 1 stout; propodus elongate, smooth, becoming higher distally; lower margin compressed in cross section and produced into very short, fixed finger; dactylus weakly arcuate, longer than propodus is high, directed at right angles to



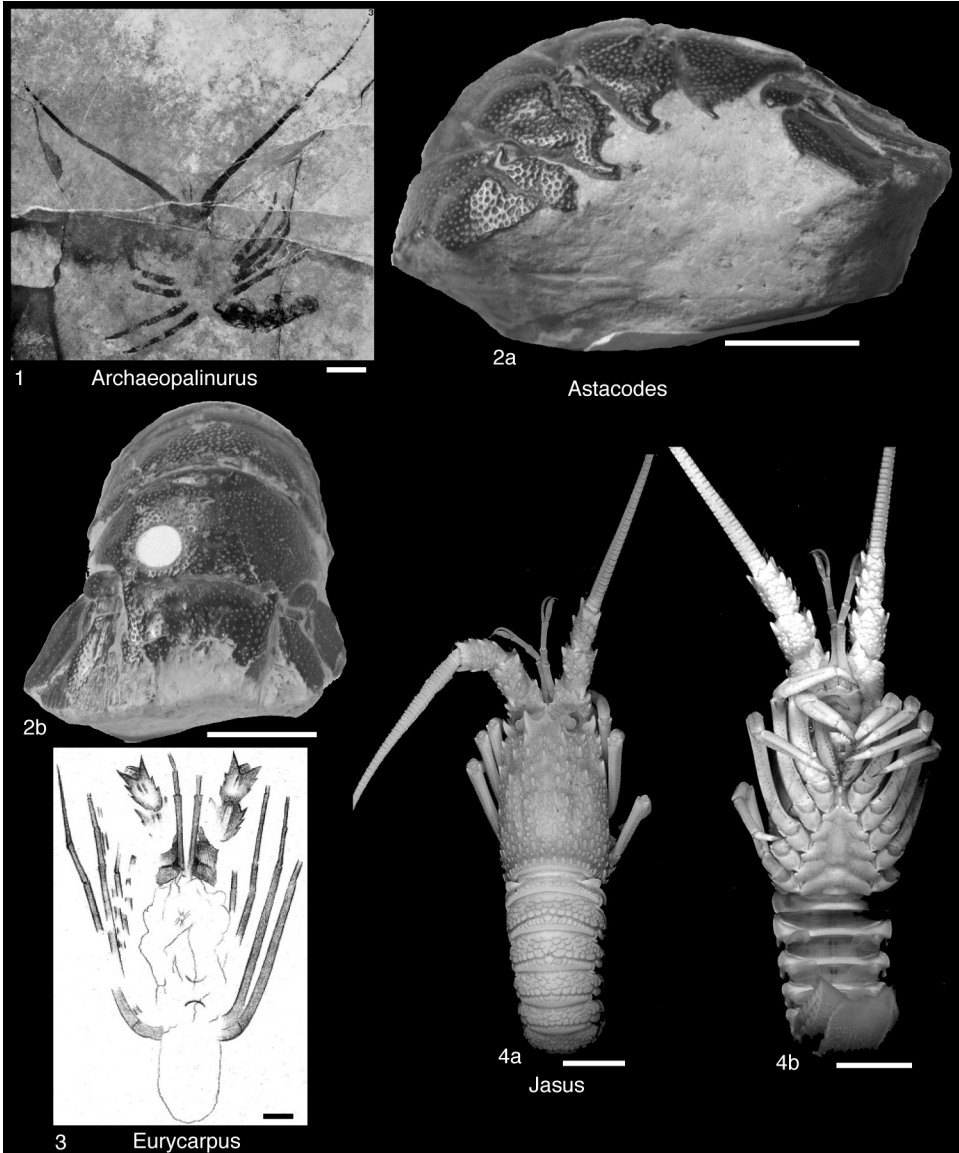


FIG. 3. Palynuridae (p. 4–5).

long axis of propodus; pereopods 2–5 long and slender. *Upper Cretaceous–Miocene*: USA (New Jersey), *Upper Cretaceous*; UK (England), *Lutetian*; USA (Alabama), *Eocene*; Fiji, *Miocene*.—FIG. 2*a–d*. \**A. bowerbanki*, *Lutetian*, UK (England); *a*, dorsal carapace and part of pleon, (BMNH) I.63380; *b*, anterior carapace, (BMNH) I.38388; *c*, right chela, (BMNH) I.46358; *d*, sternum and pereopod elements, (BMNH) I.24621, scale bars, 1 cm (new).

*Archaeopalpinurus* PINNA, 1975 [1974], p. 29 [\**A. levis* PINNA, 1975 [1974], p. 29, pl. 14, *I*, pl. 15, 3, pl. 16, 4–5; M]. Subrectangular granulate carapace; somite 1 shorter than the others; rectangular somites 2–5; subtrapezoidal telson with lateral margins bearing two lateral teeth; dorsal surface of telson with two rows of small central and distally converging spines; other longitudinal rows of smaller spines cover the surface of the telson; endopodite of uropod with a spiny middle longi-

- tudinal carina; exopodite with diaeresis delimited by a middle transverse carina ending with a spine on the external margin; pereopods 1–5 thin, elongated; pereopods 1–2 longest. *Upper Triassic (Norian)*: Italy.—FIG. 3, *I*. \**A. levis*, holotype, Museo Civico di Scienze Naturali di Bergamo, 3100, scale bar, 1 cm (Pinna, 1975, pl. 15,3).
- Astacodes** BELL, 1863, p. 30 [\**A. falcifer* BELL, 1863, p. 30, pl. 9, *I*–2; M]. Subcylindrical carapace with supraorbital spines large, widely separated and laterally compressed; short rostrum; well-marked cervical groove; a postantennal carina bearing spines extends posteriorly to cervical groove; pleonal pleura without transverse grooves, strongly punctate; pleura of somites 4–6 with posterovertrally directed, curved spine on anterior margin and small spines on posteroventral surface; uropods lanceolate; telson narrowing posteriorly, ornamented with pits, with a few small spines axially. *Upper Jurassic (Tithonian)–Upper Cretaceous (Santonian)*: Czech Republic, *Tithonian*; Switzerland, UK (England), *Hauterivian*; Australia, ?*Albian*; Czech Republic, USA (Texas), *Turonian*; USA (Texas), *Santonian*.—FIG. 3, *2a–b*. \**A. falcifer*, holotype; *a*, left lateral and *b*, posterior views, (BMNH) 42238, scale bars, 1 cm (new).
- Eurycarpus** SCHLÜTER in VON DER MARCK & SCHLÜTER, 1868, p. 300 [\**E. nanodactylus* SCHLÜTER in VON DER MARCK & SCHLÜTER, 1868, p. 300, pl. 44, *I*; M]. Based on single, badly preserved specimen. Carapace unknown; antennular stalks long; antennal stalks strong and spiny; pereopods 1–5 long, slender. *Upper Cretaceous (Coniacian–Maastrichtian)*: Germany.—FIG. 3, *3*. \**E. nanodactylus*, holotype, specimen missing, scale bar, 1 cm (von der Marck & Schlüter, 1868, pl. 44, *I*).
- Jasus** PARKER, 1883, p. 190 [\**Palinurus lalandii* H. MILNE EDWARDS, 1837 in 1834–1840, p. 293; SD HOLTHUIS, 1960a, p. 193] [= *Palinosyrtus* BATE, 1888, p. 937 (type, *P. lalandii*, SD HOLTHUIS, 1960a, p. 193); = *Palinostus* BATE, 1888, p. 85, apparently an incorrect or alternative spelling of *Palinosyrtus*]. Subcylindrical carapace with rostrum clasped by two processes of ophthalmic somite and projecting almost as far as supraorbital spines; well-marked cervical groove; squamiform sculpture on pleonal somites; pereopod 1 stout; pereopods 2–5 long, slender; subrectangular telson. *Miocene–Holocene*: New Zealand, *Miocene*; Southern Ocean, South Atlantic Ocean, South Pacific Ocean, Indian Ocean, South Africa, Australia, New Zealand, *Holocene*.—FIG. 3, *4a–b*. \**J. lalandii* (H. MILNE EDWARDS), dorsal (*a*) and ventral (*b*) views, USNM 3242, scale bars, 1 cm (new).
- Justitia** HOLTHUIS, 1946, p. 115 [\**Palinurus longimanus* H. MILNE EDWARDS, 1837 in 1834–1840, p. 294; OD]. Subcylindrical carapace with two well-developed denticulate supraorbital spines; short rostrum; well-marked cervical groove; squamiform sculpture of carapace; transverse grooves on the second to fifth pleonal somites; pereopod 1 with terminal dactylus or subchelate; subrectangular telson. *Eocene (Lutetian)–Holocene*: Italy, *Lutetian*; Indian Ocean, Pacific Ocean, western Atlantic Ocean, *Holocene*.—FIG. 4, *1a–b*. \**J. longimana* (H. MILNE EDWARDS), dorsal and ventral view, USNM 143986, scale bars, 1 cm (new).
- Linuparus** WHITE, 1847, p. 70 [\**Palinurus trigonus* VON SIEBOLD, 1824, p. 15; M; ICZN Opinion 519, 1958b] [= *Podocratus* GEINITZ, 1849 in 1849–1850, p. 96 (type, *P. duelmense* GEINITZ, 1849 in 1849–1850, p. 96, pl. 2,6, M); = *Thenops* BELL, 1858, p. 33 (type, *T. scyllariformis* BELL, 1858, p. 33, pl. 7, *I*–8, M); = *Avus* ORTMANN, 1891, p. 21 (type, *Palinurus trigonus* VON SIEBOLD, 1824, p. 15, M); = *Eolinuparus* MERTIN, 1941, p. 215 (type, *Thenops carteri* REED, 1911, p. 116, pl. 7, OD)]. Subrectangular carapace with three longitudinal keels; rostrum absent; supraorbital spines close to median line, fused to form plate or separated by indentation; well-marked cervical groove; a longitudinal median carina extends from the posterior margin to the cervical groove; prominent ridges swelling on flank just posterior to cervical groove. Pleon with variously spinose margins on pleura and keeled terga. Pereopod 1 stout; pereopods 2–5 long and slender; subrectangular telson. *Lower Cretaceous (Aptian)–Holocene*: UK (England), *Aptian*; USA (Oklahoma, Texas), *Albian*; Japan, USA (New York), *Upper Cretaceous*; Belgium, Germany, Japan, *Cenomanian*; Canada (British Columbia), France, USA (South Dakota, Texas), Uzbekistan, Japan, *Turonian*; Belgium, Germany, Japan, *Coniacian–Maastrichtian*; Cameroon, *Coniacian–Santonian*; USA (New Jersey), *Santonian*; Madagascar, *Santonian–Campanian*; Antarctica (Antarctic Peninsula), Canada (British Columbia), Greenland, USA (Montana, New York), *Campanian*; Czech Republic, Slovenia, *Campanian–Maastrichtian*; USA (Illinois, Tennessee), *Maastrichtian*; Antarctica (Antarctic Peninsula), USA (Texas), *Danian*; USA (Alabama), *Thanetian*; New Zealand, USA (Texas), *Eocene*; (England), *Ypresian*; Germany, *Priabonian–Rupelian*; Japan, *Miocene*; South China Sea, northwest Australia, Indian Ocean, western Pacific Ocean, Mozambique Channel, *Holocene*.—FIG. 4, *2a–b*. *L. grimmeri* STENZEL; *a*, dorsal surface, USNM acc. 259571, scale bar, 1 cm (Karasawa, Schweitzer, & Feldmann, 2013, fig. 8A); *b*, syntype, UT 210676, scale bar, 1 cm (new).—FIG. 4, *2c–d*. *L. somniosus* BERRY & GEORGE, dorsal and ventral views, ZRC 1999–0001, scale bars, 1 cm (new).
- Palaeopalinurus** BACHMAYER, 1954, p. 148 [\**P. glaessneri* BACHMAYER, 1954, p. 149, pl. 8; OD]. Originally based on single, badly preserved specimen. Subcylindrical carapace with a well-marked cervical groove; rostrum absent; anterior part of carapace with large supraorbital and other spines; posterior part of carapace transversely grooved and ridged. *Upper Jurassic (Tithonian)*: Austria, Czech Republic.—FIG. 5, *I*. \**P. glaessneri*, syntype, KSU 493, cast of NHMW 1912 VI 723, scale bar, 1 cm (new).
- Palinurus** WEBER, 1795, p. 94 [\**Astacus elephas* FABRICIUS, 1787, p. 331; M; = *Palinurus vulgaris* LATREILLE,

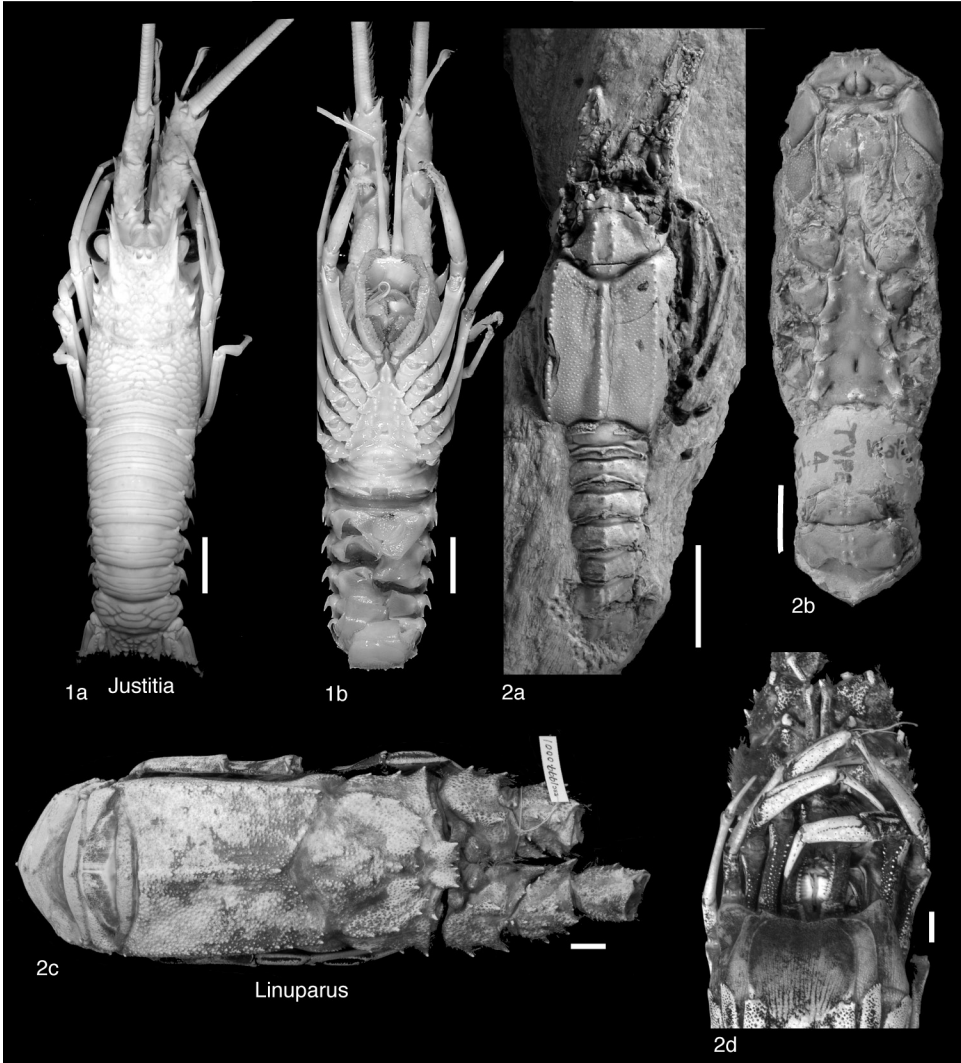


FIG. 4. Palinuridae (p. 5).

1804, p. 391]. Subcylindrical carapace with well-marked cervical groove; very short rostrum; supra-orbital spines large and obliquely flattened; median portion of antennular base projecting strongly between segments 2–3 of antennal stalks, their bases fused medially in front of epistome; pereiopod 1 shorter than others; pereiopods 2–5 long and slender; subrectangular telson. *Lower Cretaceous* (?Barremian–Albian), *Upper Cretaceous* (Cenomanian)–*Holocene*: Italy, ?Barremian–?Albian; USA (Texas), *Albian*, ?*Turonian*; Germany, ?*Coniacian*–?Maastrichtian; Indian Ocean, Mediterranean Sea, North Atlantic Ocean, southeastern African coast, *Holocene*.—FIG. 5,3a–b. \**P. elephas* (FABRICIUS),

dorsal and ventral views, USNM 14473, scale bars, 1 cm (new).

*Palinurina* MÜNSTER, 1839, p. 36 [\**P. longipes* MÜNSTER, 1839, p. 37, pl. 14,8; SD OPEL, 1862, p. 86; =*P. pygmaea* MÜNSTER, 1839, p. 38, pl. 14,11]. Subcylindrical carapace with a well-marked cervical groove; short rostrum; strong supraorbital spines widely separated; weak branchiocardiac groove; weak median longitudinal carina; antennae with strong articles; pereiopod 1 shorter than others; pereiopods 2–5 long and slender, bearing rows of large spines; subrectangular telson. *Lower Jurassic* (Hettangian)–*Upper Jurassic* (Tithonian): UK (England), *Hettangian*; Germany, *Tithonian*.—



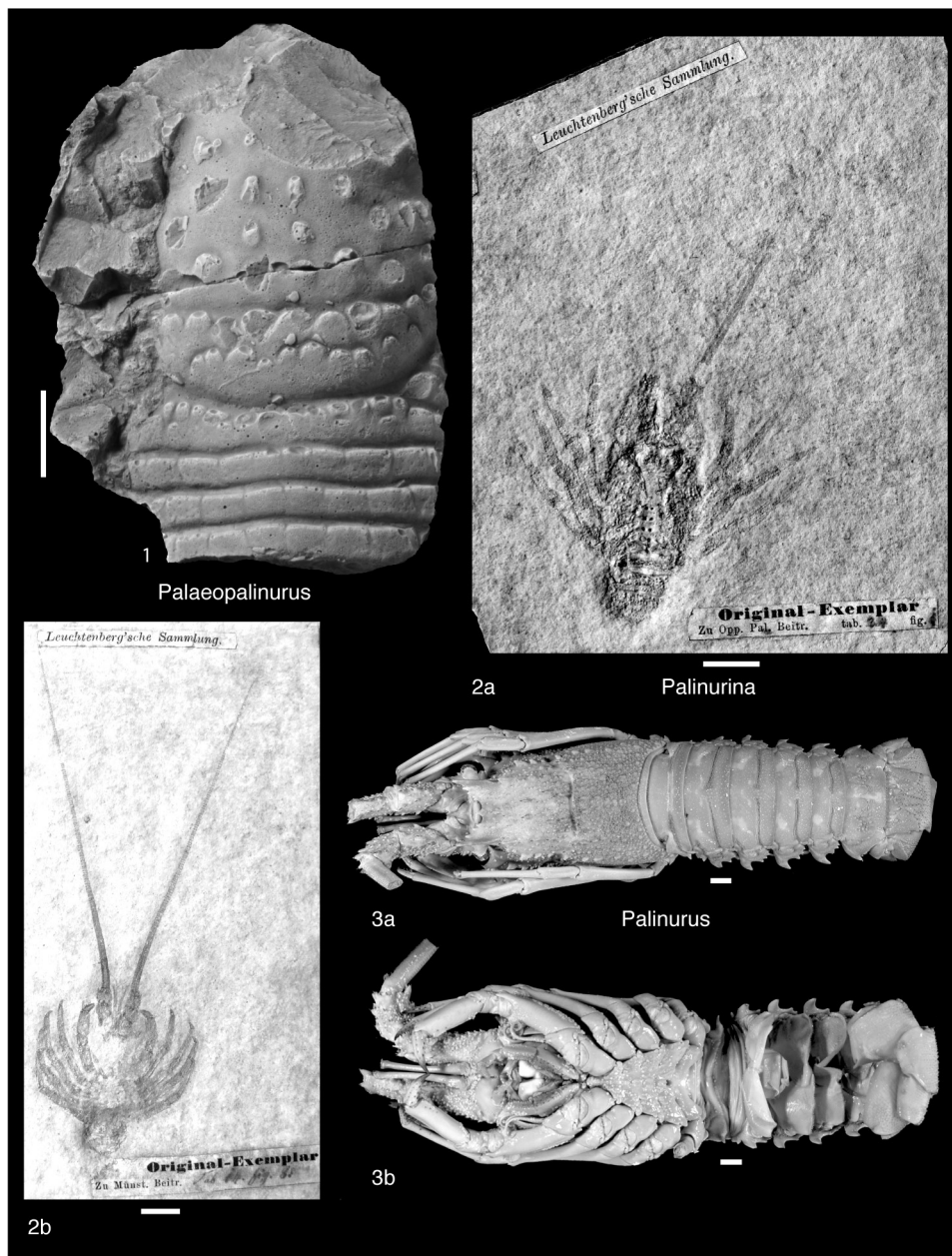


FIG. 5. Palinuridae (p. 5–6).

FIG. 5,2a–b. \**P. longipes*; a, lectotype, BSPG AS V 46, scale bar, 1 cm (new, photo from G. Schweigert); b, syntype, BSPG AS V 520, scale bar, 1 cm (new, photo from G. Schweigert).

*Panulirus* WHITE, 1847, p. 69 [\**Palinurus japonicus* VON SIEBOLD, 1824, p. 15; SD HOLTHUIS, 1956,

p. 55; ICZN, 1958a, Opinion 507] [= *Phyllosoma* LEACH, 1818, p. 306 (type, *P. commune* LEACH, 1818, p. 307, SD HOLTHUIS, 1956, p. 55; name suppressed by ICZN Opinion 507, 1958a); = *Senex* PFEFFER, 1881, p. 30, as a replacement name for *Panulirus* (type, *P. japonicus*, SD ICZN, 1958a,

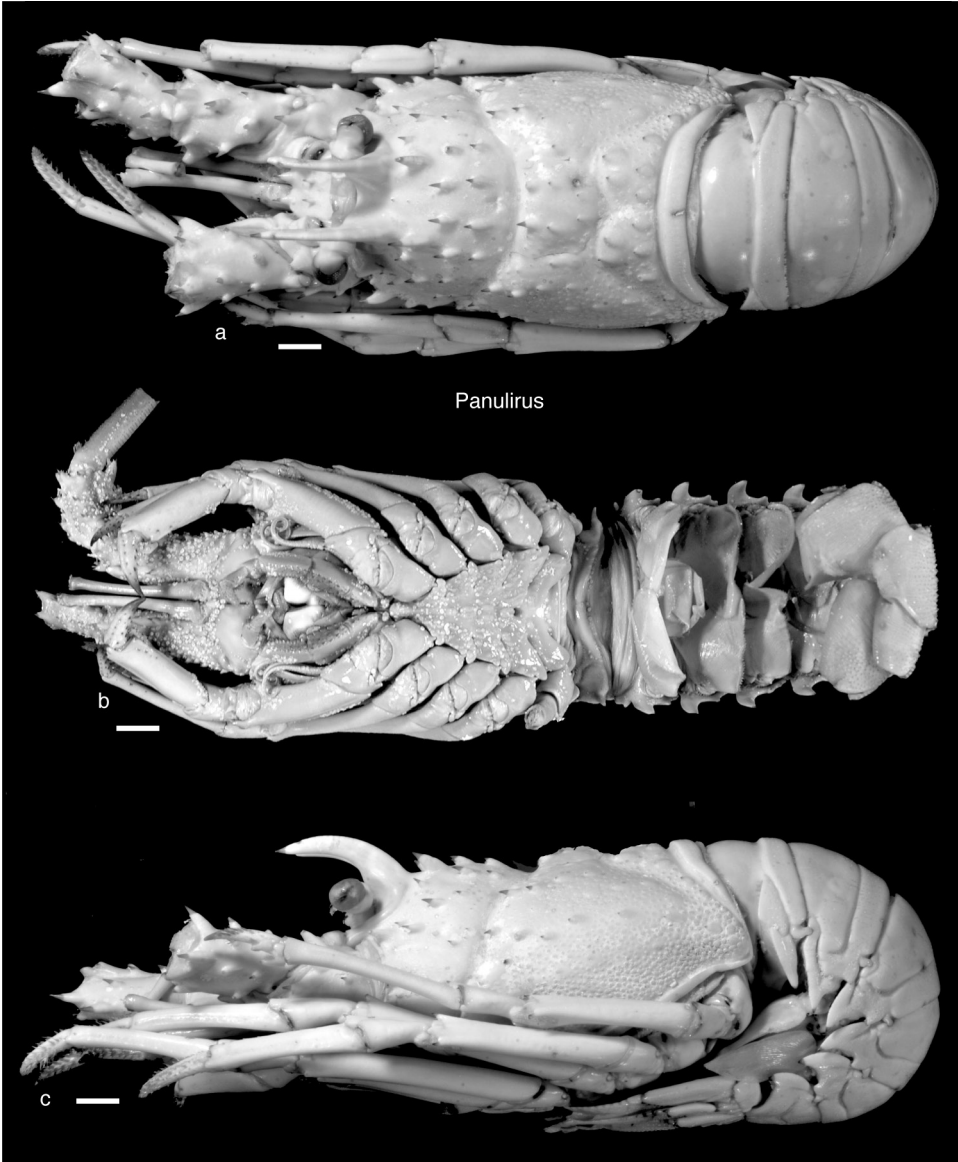


FIG. 6. Palinuridae (p. 7–8).

Opinion 507]). Carapace lacking axial keel; supra-orbital spines long, sharp. Pleon smooth, with transverse groove on tergum, pleura terminating in a single spine. Pereiopods smooth, pereopod 1 not enlarged. *Lower Cretaceous (Albian)–Holocene*: France, *Albian*; Pacific Ocean, Indian Ocean, western Atlantic Ocean, *Holocene*.—FIG. 6*a–c*. *P. argus* (LATREILLE), dorsal, ventral, and left lateral views, KSU 2158, scale bars, 1 cm (new).

*Phalangites* MÜNSTER, 1836, p. 583 [*\*P. priscus*; M]. Now interpreted as a phyllosoma stage larva of a palinurid lobster, possibly *Palinurina*; pereopods extremely long. *Upper Jurassic*: Germany.—FIG. 7*a–c*. *\*P. priscus*; *a*, CM 33118; *b*, CM 3861; *c*, CM 3863, scale bars, 1 cm (new).—FIG. 7*d*. Modern phyllosoma larva of indeterminate palinurid for comparison, USNM 140863 (new, photo by K. Reed).

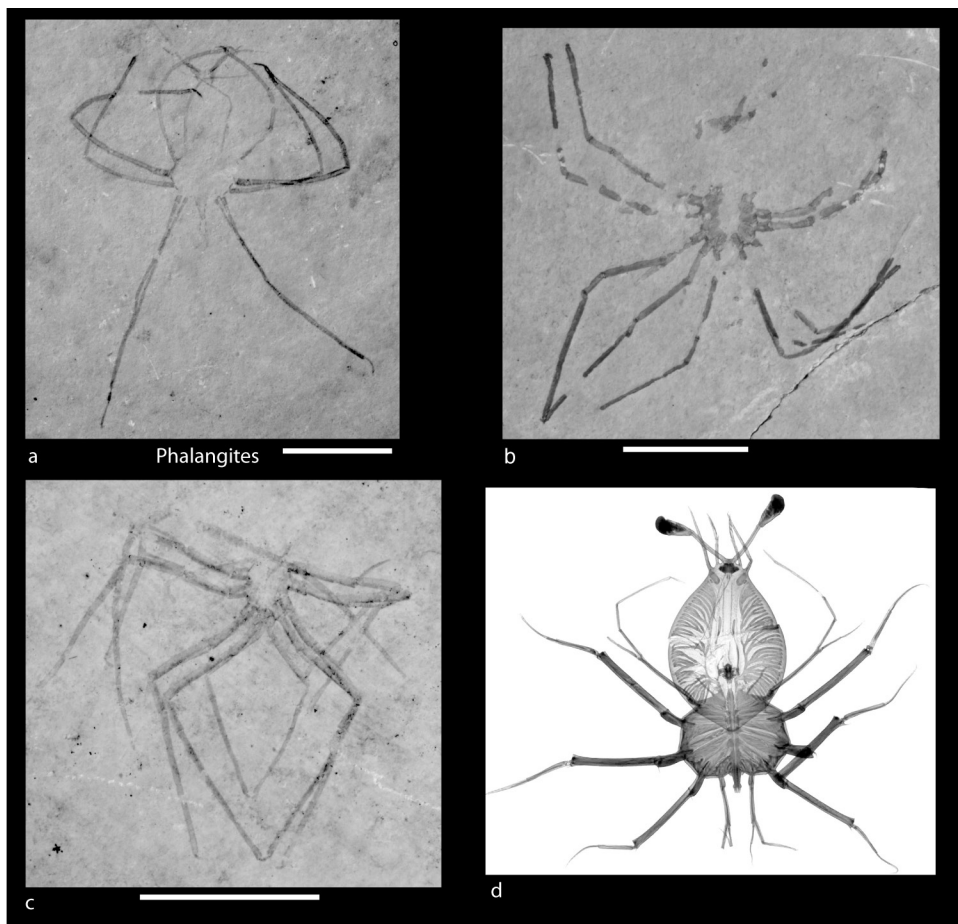


FIG. 7. Palinuridae (p. 8–9).

**Parallelogastrus** FRANTĚSCU, 2013, p. 345 [*P. gabii*, p. 346, fig. 3; OD]. Carapace rectangular in cross-section, cervical groove well defined; two parallel sub-median ridges, well-defined frontal horns; two post-cervical ridges, one inserted between them posteriorly; two additional ridges laterally; flattened, sub-triangular antennal plate; stridulating structure present; sternum triangular, broad. *Lower Cretaceous (Albian)*: USA (Texas).—Fig. 8*a–c*. \**P. gabii*; *a–b*, holotype, USNM 553406, dorsal (*a*) and ventral (*b*) views; *c*, paratype, USNM 553407, left lateral view, scale bars = 1 cm (FRANTĚSCU, 2013, fig. 3.1,2,4).

**Rugafarius** BISHOP, 1985, p. 614 [\**R. fredrichi* BISHOP, 1985, p. 615, fig. 3.4,7; OD]. Carapace longer than wide, with antennal spine; cervical and postcervical grooves closely spaced, parallel; granular axial keel in thoracic region; carapace covered with closely spaced, scabrous, anteriorly directed scales. *Upper*

*Cretaceous (Campanian)*: USA (South Dakota).—FIG. 9,1. \**R. fredrichi*, holotype, SDSM 10029, scale bar, 1 cm (new).

**Yunnanopalinura** FELDMANN & others, 2012, p. 437 [\**Y. schrami* FELDMANN & others, 2012, p. 438, fig. 7–8; OD]. Carapace granular, without distinct grooves or ridges; antennules with long, whiplike flagellae; antennae with stout, spinose basal articles, long; pereopods 1–5 achelate, first pereopod stout, granular, stouter than other pereopods; exopod of uropod well calcified anteriorly, with well-calcified portion terminating in convex forward arc, soft and ridged posteriorly; endopod of uropod soft and ridged posteriorly; telson well calcified anteriorly. *Middle Triassic (Anisian)*: China (Yunnan Province).—FIG. 9,2. \**Y. schrami*, holotype, LPI-40169, scale bar, 1 cm (Feldmann & others, 2012, fig. 7.1).



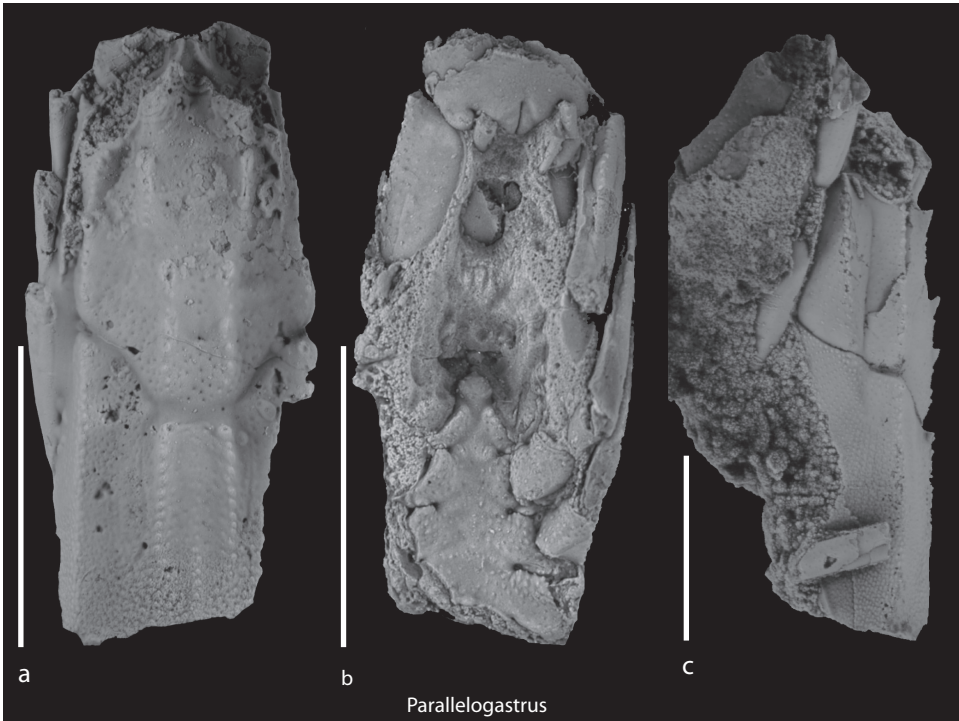


FIG. 8. Palinuridae (p. 9).

### Family SCYLLARIDAE Latreille, 1825

[*nom. correct.* WHITE, 1847, *pro* Scyllarides LATREILLE, 1825, p. 278; ICZN Opinion 519, 1958b]

Carapace subcylindrical to subrectangular, dorsoventrally more or less flattened, with sharp lateral margins; rostrum indistinct or small and bifid; orbits in anterior margin; supraorbital spines absent; epistome in broad contact with carapace. Pleon wide, well developed, with well-developed pleura; telson and uropods calcified proximally, distally flexible. Sternum broad, triangular. Antennae short, wide, flattened into plates with dentate or lobulate margins; scaphocerite absent; antennular plate present; maxilliped 3 dactylus blunt; pereiopods 1–5 achelate, 5 sometimes pseudochelate in females (KARASAWA, SCHWEITZER, & FELDMANN, 2013, p. 101). *Lower Cretaceous (Albian)*–*Recent*.

*Acanthophoenicides* AUDIO & CHARBONNIER, 2012, p. 585 [\**A. peterpani* AUDIO & CHARBONNIER, 2012, p. 585, fig. 2A–C; M]. Carapace quadrate, with axial

row of nodes; orbits deep, rostrum tiny; cervical groove weak, cervical and branchiocardiac notches shallow; antennae short, broad, blunt; pleon short, pleura with sharp terminations; holotype a nisto (postlarval) stage. *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 10.1. \**A. peterpani*, holotype, MNHN.FA30766, Hadjoula Lagerstätte, scale bar, 1 cm (new; photo by C. Lemzaouda, provided by S. Charbonnier).

*Biartus* HOLTHUIS, 2002, p. 629 [\**Arctus sordidus* STIMPSON, 1860, p. 92; OD]. Two medial spines anterior to cervical groove; pleon lacking axial keel, with anastomizing pattern of narrow, deep grooves on terga of somites 2–5, pleura triangular, downturned. Pereiopod 2 with elongate propodus and dactyl. *Pleistocene–Holocene*: Fiji, *Pleistocene*; Indian Ocean, western Pacific Ocean, Red Sea, Persian Gulf, *Holocene*.—FIG. 10.2a–b. \**B. sordidus* (STIMPSON), USNM 104513; a, dorsal surface; b, ventral surface, scale bars, 1 cm (new).

*Palibacus* FÖRSTER, 1984, p. 58 [\**Ibacus praecursor* DAMES, 1886, p. 555, pl. 13,2; OD]. Subrectangular carapace much wider than long; orbits placed near axis; lateral margins converging posteriorly, with deep cervical incisions; smooth lateral margins; anterior and posterior branchial carinae on the surface of carapace; orbits nearer to median line than to anterolateral angles; pleon narrower than carapace, margins weakly convex, with granular

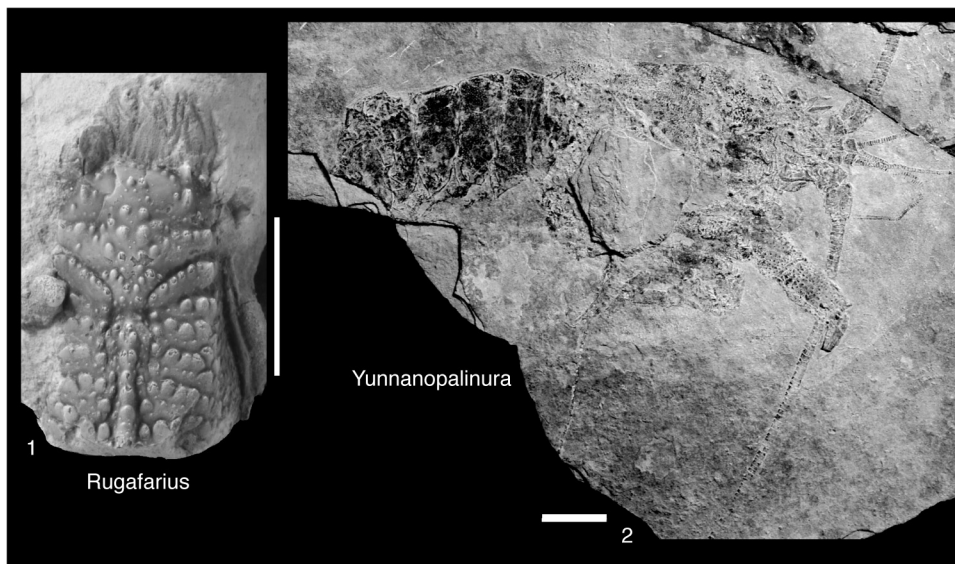


FIG. 9. Palinuridae (p. 9–10).

median longitudinal carina; subrectangular telson. *Upper Cretaceous (Santonian)*: Lebanon.—FIG. 10,3. \**P. praecursor* (DAMES), neotype, BSP 1966 XXV 4–7, scale bar, 1 cm (new).

**Parribacis** DANA, 1852, p. 14 [\**Scyllarus antarcticus* LUND, 1793, p. 22; SD WARD, 1942, p. 61]. Subrectangular, scabrous carapace with orbits located midway between median line and anterolateral angles; deep cervical incision, grooves poorly defined, lateral margins with 6–7 anterolaterally directed posterolateral spines; 6–7 spines on outer margin of 4th antennal segment; the two lateral teeth anterior to cervical incision are of equal or subequal size; pleonal somites with median longitudinal carina, pleura 2–5 with anterolaterally directed spines on terminations; subrectangular telson. *Eocene (Lutetian)–Holocene*: Italy, *Lutetian*; Taiwan, *Pleistocene*; eastern Atlantic Ocean, Pacific Ocean, Indian Ocean, Japan, Easter Island, Australia, *Holocene*.—FIG. 10,4. \**P. antarcticus* (LUND), dorsal view, USNM 100823, scale bar, 1 cm (new).

**Scyllarella** RATHBUN, 1935, p. 76 [\**S. gibbera* RATHBUN, 1935, p. 76, pl. 24,35–40; OD]. Carapace subrectangular, wider than long, length about 75 percent maximum width; rostrum not projecting beyond orbits, with axial and two lateral nodes; fronto-orbital width about 75 percent maximum carapace width, orbits circular, strongly rimmed on inner margins, intra-orbital node, rimmed, rim upturned; cervical groove deep, intersecting lateral margins just posterior to outer-orbital angle, initially convex forward, becoming deeply concave forward around the mesogastric region; mesogastric with axial crest and prominent node at midlength; cardiac region

quadrate, strongly elevated above remainder of carapace, with central node at anteriormost end of crest sloping ventrally across posteriormost part of cardiac region and onto broad intestinal region; axial regions separated from branchial regions by deep groove bearing 5 or 6 nodes within it; epibranchial region small, ovate; remainder of branchial region with broad nodose ridge extending posterolaterally about one third the distance laterally from the axis; lateral margin of branchial region convex, becoming more convex posteriorly, with several spines; posterior margin broad, concave, about 75 percent maximum carapace width; abdominal somites with median longitudinal carina; subrectangular telson. *Lower Cretaceous (Albian)–Paleocene*: UK (England), USA (Texas), *Albian*; USA (Alabama), *Paleocene*.—FIG. 11,1a–b. \**S. gibbera*, USNM 336005, dorsal view and ventral view, scale bars, 1 cm (new).—FIG. 11,1c. *S. gardneri* WOODS, holotype, dorsal carapace, (BMNH) In. 22414, *Albian*, England, scale bar, 1 cm (new).

**Scyllarides** GILL, 1898, p. 98 [\**Scyllarus aequinoctialis* LUND, 1793, p. 22; OD] [= *Pseudibacis* GUÉRIN-MÉNEVILLE, 1855, p. 139 (type, *P. veranyi* GUÉRIN-MÉNEVILLE, 1855, p. 140, pl. 5, M); = *Scyllaridia* BELL, 1858, p. 35 (type, *S. koenigii* BELL, 1858, p. 35, pl. 8,1–3, M); the latter two names were suppressed by ICZN in Opinion 293, 1954]. Subrectangular carapace, moderately vaulted, longer than wide, orbits at anterolateral corner, with distinct cervical and postcervical incisions and grooves; anterior margin between eyes and the anterolateral angle concave; pleon with median longitudinal carinae; subrectangular telson; pereiopod 5 may be chelate. *Lower Cretaceous (Albian)–Holocene*: France,



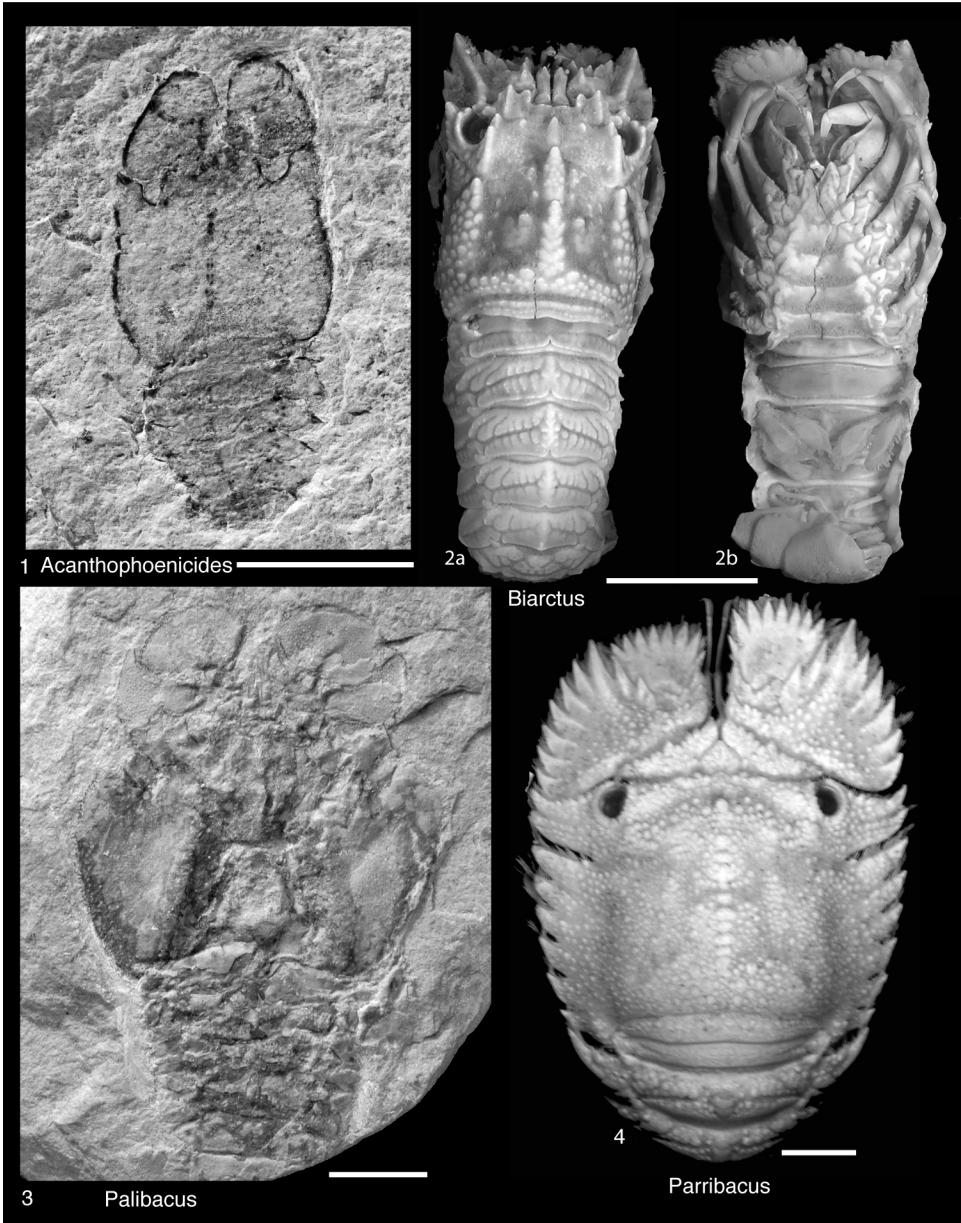


FIG. 10. Scyllaridae (p. 10–11).

UK (England), *Albian*; Italy, UK (England), *Ypresian*; Cosmopolitan, *Holocene*.—FIG. 11,2a. \**S. aequinoctialis* (LUND), dorsal view, USNM 17004, scale bar, 1 cm (new).—FIG. 11,2b. *S. punctatus* WOODS, holotype, dorsal carapace, (BMNH) In. 22411, *Albian*, England, scale bar, 1 cm (new).—FIG. 11,2c. *S. nodifer* (STIMPSON, 1866), dorsal view,

USNM 274950, scale bar, 1 cm (new).—FIG. 11,2d. *S. delfosi* HOLTHUIS, USNM unnumbered, scale bar, 1 cm (new).  
**Scyllarus** FABRICIUS, 1775, p. 413 [\**Cancer arctus* LINNAEUS, 1758, p. 633; M] [= *Chrysoma* RISSO, 1826, p. 88 (type, *C. mediterranea*, M); = *Arctus* DE HAAN, 1849 in 1853–1850, p. 238 (type, *Cancer*

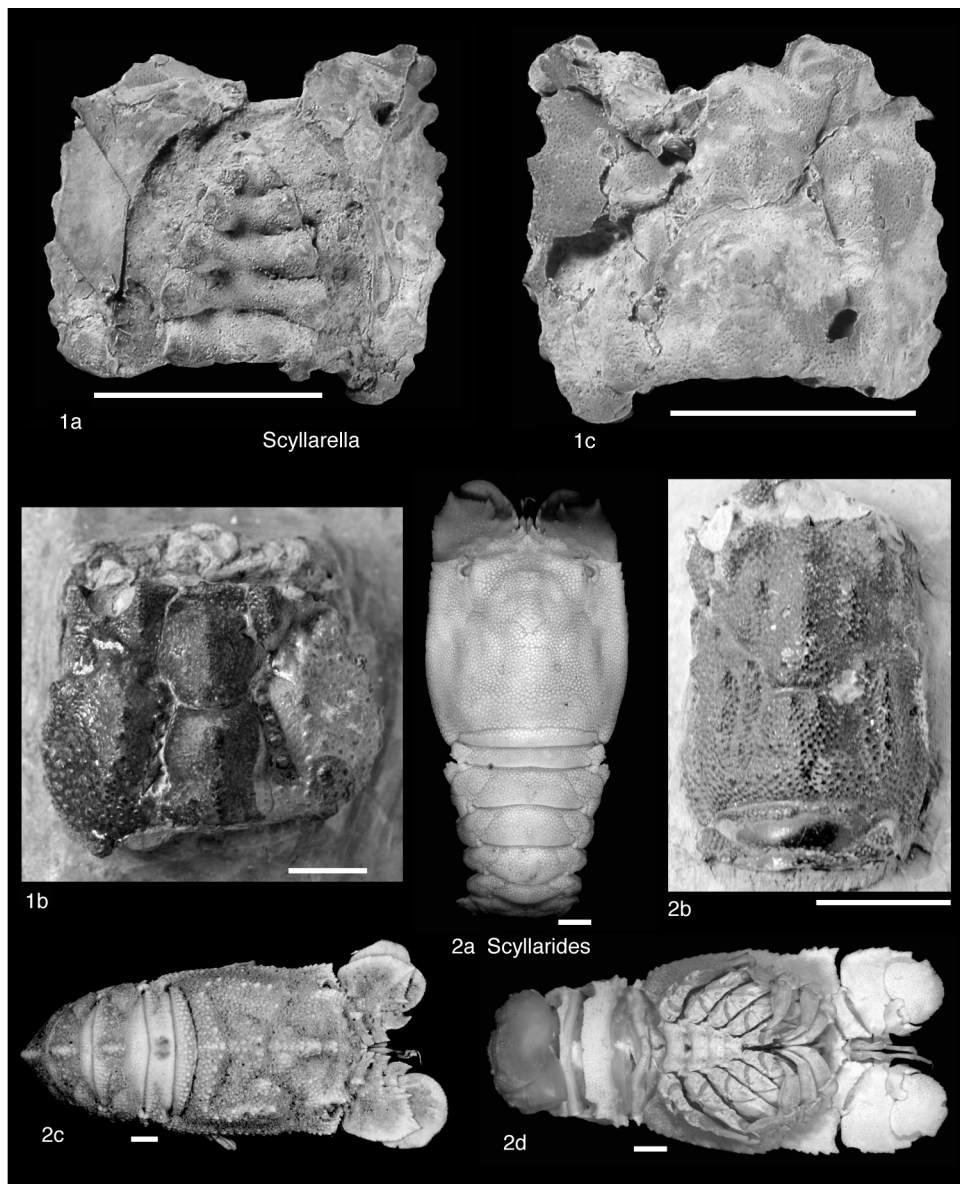


FIG. 11. Scyllaridae (p. 11–13).

*arctus*, AT); =*Arctus* DANA, 1852, p. 14 (type, *Cancer arctus*, M); =*Nisto* SARATO, 1885, p. 3 (type, *Cancer arctus*, SD HOLTHUIS, 1991, p. 216); =*Yalomus* RAFINESQUE in HOLTHUIS, 1985, p. 140 (type, *Y. depressus* RAFINESQUE in HOLTHUIS, 1985, p. 141, M)]. Subrectangular carapace not broader than long, flattened, with short rostrum, eyes situated near anterolateral corner; 2–3 distinct spines in the median line before the cervical

groove; lateral margin with fine spines; terminal plate of antennae with distinct spines; pleon with median longitudinal carina and dendritic sculpture; subrectangular telson. *Upper Cretaceous–Holocene*: UK (England), *Upper Cretaceous*; Java, *lower Miocene*; Mediterranean Sea, Atlantic Ocean, *Holocene*.—FIG. 12a–b. \**S. arctus* (LINNAEUS), USNM 205817, dorsal (a) and ventral (b) views, scale bar, 1 cm (new).

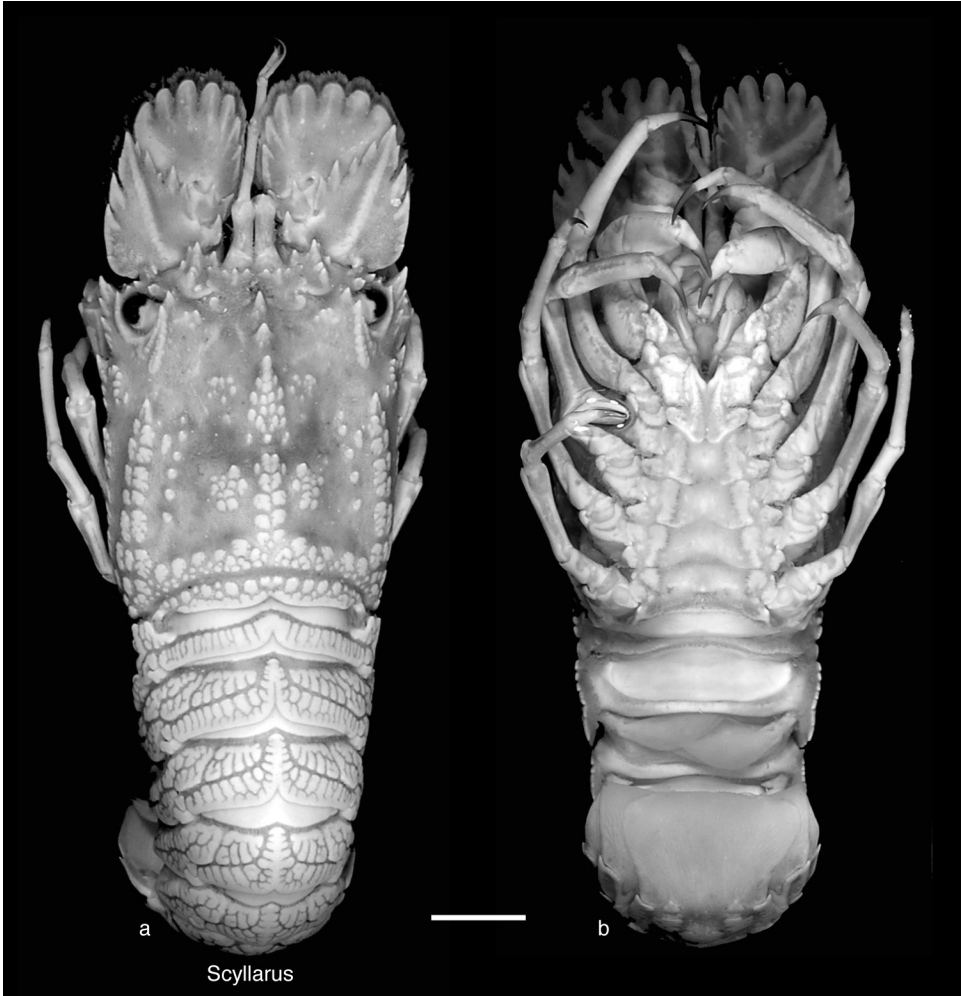


FIG. 12. Scyllaridae (p. 13–14).

### ABBREVIATIONS FOR MUSEUM REPOSITORIES

**BMNH:** The Natural History Museum, London, UK  
**BSP:** Bayerische Staatsammlung für Paläontologie und  
 historische Geologie München (Munich), Germany  
**CM:** Carnegie Museum of Natural History, Pittsburgh,  
 Pennsylvania, USA  
**KSU:** Decapod Comparative Collection, Department  
 of Geology, Kent State University, Kent, Ohio, USA  
**LPI:** Invertebrate Paleontology Collection, Chengdu  
 Institute of Geology and Mineral Resources, Cheng-  
 du, Sichuan Province, China

**MNHN:** Muséum National d'histoire naturelle, Paris,  
 Département Histoire de la Terre, Paris, France  
**NHMW:** Naturhistorisches Museum Wien (Natural  
 History Museum of Vienna), Austria  
**SDSM:** South Dakota School of Mines and Technology,  
 Rapid City, South Dakota, USA  
**USNM:** United States National Museum of Natural Hi-  
 story, Smithsonian Institution, Washington, D.C., USA  
**UT:** University of Texas at Austin, Texas Natural Science  
 Center, Non-vertebrate Paleontology Laboratory,  
 Austin, Texas, USA  
**ZRC:** Department of Zoology, National University  
 of Singapore



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