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Systematic Descriptions: Infraorders Procaridea,  
Stenopodea, Caridea

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SYSTEMATIC DESCRIPTIONS: INFRAORDERS  
PROCARIDEA, STENOPODEA, CARIDEA

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Arrangement of infraorders, superfamilies, families, and genera of pleocyemate shrimp follows DE GRAVE and others (2009), CHAN and others (2010), De GRAVE, CHU, and CHAN (2010), SCHWEITZER and others (2010), DE GRAVE and FRANSEN (2011); LI and others (2011), DE GRAVE and others (2014), DE GRAVE, FRANSEN, and PAGE (2015), DAVIS and others (2018), LIAO and others (2019), CHOW, DeGRAVE, and TSANG (2020) and WoRMS (2020). Superfamilies are only used for those that have more than one family. Superfamilies and their constituent families are listed first, in alphabetical order of superfamilies, followed by families not placed in superfamilies, arranged in alphabetical order. Holocene occurrences are based largely on data in DE GRAVE and FRANSEN (2011).

**Suborder PLEOCYEMATA**  
**Burkenroad, 1963**

[Pleocyemata BURKENROAD, 1963, p. 4]

Carapace variable, may or may not be fused to epistome; eyes stalked, usually well developed, occasionally absent; antennules with peduncle with three articles, flagellae may be reduced, stylocerite present or absent; antennae with peduncles numbering 1 to 6, flagellum variable in length, scaphocerite present or absent; mandibles, maxillae, maxillules, and maxillipeds present, third

maxilliped pediform or operculate; first pair of pereopods usually chelate, second and third pairs of pereopods may be chelate or subchelate, fourth and fifth pairs variously achelate or subchelate; pleon variously developed, may be asymmetrical, male first and/or second pleopods may be developed into gonopods, telson and uropods often forming a tail fan, uropods may be reduced or absent; gills phyllobranchiate or tribranchiate; sexes separate, female with gonopores on coxae of third pereopods or sixth sternal somite; males with gonopores on coxae of fifth pereopod or eighth sternite; eggs attached to pleopods of females, eggs hatch as zoea. [Emended from DAVIE, 2002, p. 171.] *Upper Devonian/Mississippian–Holocene.*

**Infraorder PROCARIDEA**  
**Felgenhauer & Abele, 1983**

[*nom. corr.* SCHRAM & KOENEMANN, 2021, p. 514 *pro* Procarididea FELGENHAUER & ABELE, 1983, p. 305]

As for Procarididae. *Middle Jurassic (Callovian)–Holocene.*

**Family PROCARIDIDAE**  
**Chace & Manning, 1972**

[Procarididae CHACE & MANNING, 1972, p. 6]

Rostrum small, without supra- or subrostral spines; third maxillipeds composed of seven segments, long, pereopod-like; all pereopods achelate, all with prominent

exopods, fourth and fifth pereopods shortest. [Emended from HOLTHUIS, 1993, p. 21; WICKSTEN, 2010. p. 194.] *Holocene*.

**Procaris** CHACE & MANNING, 1972, p. 6 [\**P. ascensionis*; OD]. Pleonal somite 3 with dorsal cap which is a posteriorly directed spinelike structure; pleopods 3–5 without appendices internae. [Emended from HOLTHUIS, 1993, p. 21.] *Holocene*: South Atlantic Ocean.—FIG. 1,1. \**P. ascensionis*, Holocene, Ascension Island (USNM drawing by F. A. Chace, Jr., [EZID 65665/m344420721-67e8-4424-9fc7-6518e4f4b67b]).

### Family UDORELLIDAE Van Straelen, 1925]

[Udorellidae VAN STRAELEN, 1925, p. 98]

Rostrum short, without supra- or subrostral spines; cervical groove curved anteriorly; antennular peduncles longer than those of the antennae; third maxilliped ending in long thin terminal segment, finely spinose; pereopods subchelate or achelate, short; pleonal somites with rounded pleurae; pleopods long, with multiarticulate flagellae. *Upper Jurassic (Kimmeridgian)*.

**Udorella** OPPEL, 1862, p. 104 [\**U. agassizi* OPPEL, 1862, p. 105, pl. 31, fig. 1, 2; M]. As for family. *Upper Jurassic (Kimmeridgian)*: Germany.—FIG. 1,2. \**U. agassizi*, holotype, SNSB-BSPG AS XIX 501 (new).

### PROCARIDEA *incertae sedis*

**Udora** MÜNSTER, 1839, p. 69 [\**U. brevispina* MÜNSTER, 1839, p. 69, pl. 27,2; SD OPPEL, 1862, p. 112]. Rostrum extending beyond eyes but shorter than antennular peduncle, curved; armed with up to five suprarostal spines; carapace approximately two-thirds as high as it is long; pereopods achelate, decreasing in length posteriorly, spinose; maxilliped 3 setose; ischium of pereopods reduced. [Emended from SUDARSKY, 2016, p. 31.] *Middle Jurassic (Callovian)*: France. *Upper Jurassic (Kimmeridgian)*: France. *Tithonian*: Germany.—FIG. 1,3. \**U. brevispina*, holotype BSP AS VII 725, Tithonian, Germany, scale bar 1 cm (new).

### Infraorder STENOPODEA Bate, 1888

[*nom. correct.* SCHRAM & KOENEMANN, 2021, p. 547, *pro* Stenopidea BATE, 1888, p. 206]

Cylindrical carapace, fused to thorax; antennae with peduncle composed of five segments and scaphocerite; epistome

comprised of two parts, narrow anterior part between antennae and larger spinose posterior part; third maxillipeds long, pediform, with seven segments; all five pereopods well developed, first to third pereopods chelate, third typically most robust; pleura of second pleonal somite not overlapping pleura of first pleonal somite, pleopods without petasma or appendix masculina; exopodite of uropods without diaeresis; gills tribranchiate. [Emended from DAVIE, 2002, p. 172.] *Upper Devonian/Mississippian–Holocene*.

### Family STENOPODIDAE Claus, 1872

[*nom. correct.* SMITH & WELDON in HARMER & SHIPLEY, 1909, p. 162, *pro* Stenopinae CLAUS, 1872, p. 500] [=Macromaxillocarididae ALVAREZ, ILLIFFE, & VILLALOBOS, 2006, p. 368; =Spongicolidae SCHRAM, 1986, p. 284]

Body compressed; telson elongate, lance-shaped, ending in two strong spines, sometimes with a much smaller spine in between; endopodite with two longitudinal dorsal ridges; third maxilliped always with a distinct exopodite, approximately same size as first pereopod and not longer than first to third pereopods; one to three chelate appendages, occlusal surfaces of chelae with peg-like spines; third pereopod longest; telson long, sharp, terminating in two spines. [Emended from ALVAREZ, ILLIFFE, & VILLALOBOS, 2006, p. 367.] *Upper Devonian/Mississippian–Holocene*.

**Stenopus** LATREILLE, 1819, p. 71 [\**Palaemon hispidus* OLIVIER, 1811 in 1811–1812, p. 666; M] [=Byzenus RAFINESQUE, 1814, p. 23 (type, *B. scaber*, M); =*Embryocaris* ORTMANN, 1893, p. 85 (type, *E. stylicauda*, M, see ICZN Opinion 522, 1958)]. Carapace and pleon densely, evenly, and strongly spinose, spines sometimes arranged into rows, spines curved anteriorly. [Emended from HOLTHUIS, 1993, p. 313.] *Holocene*: Cosmopolitan (tropical).—FIG. 1,4. \**S. hispidus* (OLIVIER), USNM 256797, Holocene, Ascension Island, scale bar 1 cm (new).

**Devonostenopus** JONES, FELDMANN, SCHWEITZER, SCHRAM, BEHR, & HAND, 2014, p. 1254 [\**D. pennsylvaniensis*; OD]. Carapace granular to punctate, with minute, anteriorly directed spines on the ventrolateral margin; pleonites smooth, pleonites 3, 5, and 6 approximately equal in length, pleonites 1, 2, and 4 reduced; posterolateral angles of pleura 2–4 bear an acute, triangular spine, pleonite 6 tapers posteriorly; tail fan with spatulate uropods and lanceolate telson without diaeresis. [Emended

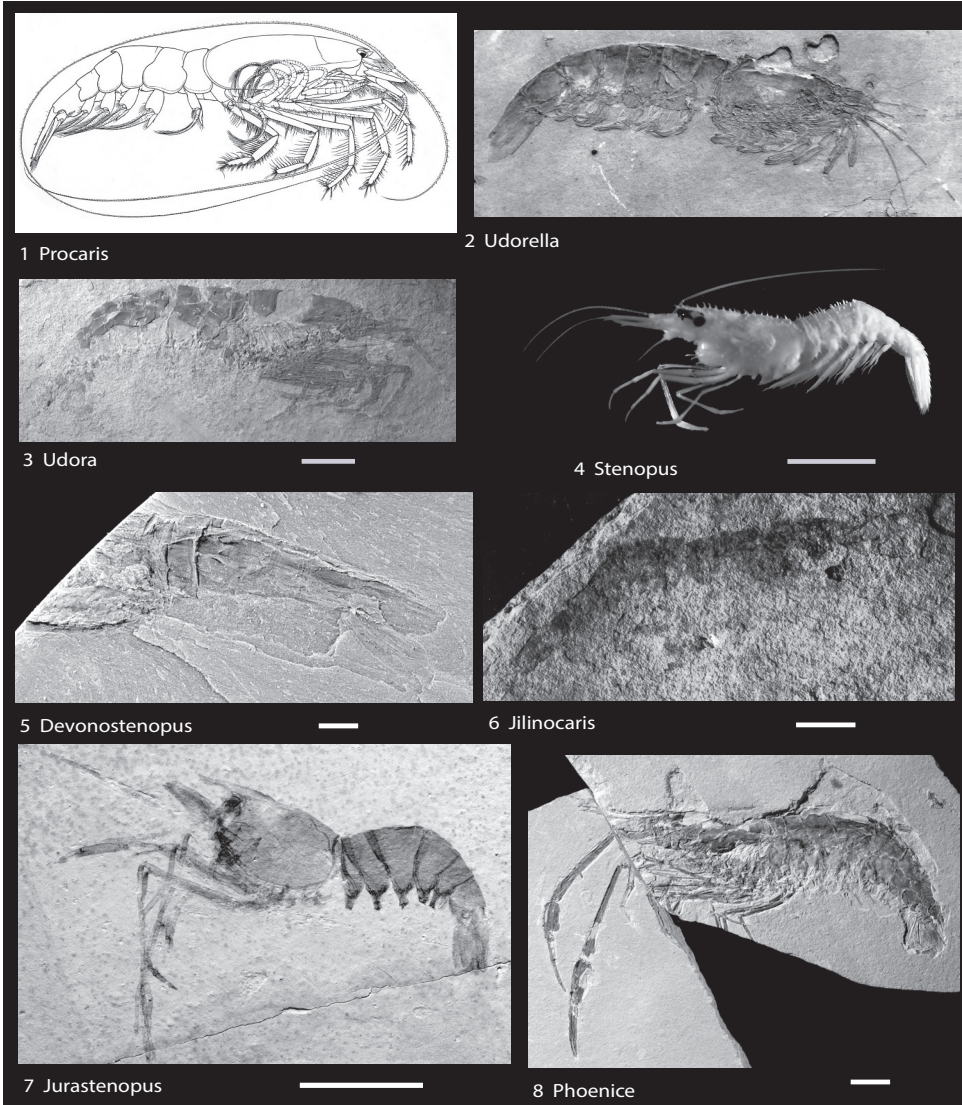


FIG 1. Procarididae, Udorellidae, Stenopodidae (p. 2–4).

from JONES & others, 2014, p. 1254.] *Upper Devonian–Mississippian*: USA (Pennsylvania).—FIG. 1,5. \**D. pennsylvaniensis*, holotype, CM39653, scale bar 1 mm (new).

**Jilinocaris** SCHRAM, YANBIN, VONK, & TAYLOR, 2000, p. 237 [\**J. chinensis*; OD]. Cylindrical carapace; short rostrum above a well-developed optic notch; antennules and antennae robust, with a large broad scale, flagella extremely long; major pereopodal cheliped far back on the thorax; pleurae of the first three somites with thickened rims on their antero-ventral aspects: the first subtriangular, the

second somewhat subquadrangular and overlapping the first, and the third somite as the largest with an anteriorly broadly rounded extension overlapping the second; principal point of flexure of the abdomen located at the third somite; narrow fourth to sixth somites apparently lacking well-developed pleura and forming a rather straight unit; uropod long and well developed. [Emended from SCHRAM & others, 2000, p. 237.] *Upper Cretaceous (Santonian)*: China.—FIG. 1,6. \**J. chinensis*, holotype IGP 126268, scale bar 5 mm (reproduced with permission from SCHRAM & others, 2000, fig. 2).

**Jurastenopus** WINKLER, SCHWEIGERT, WINKLER, HÄRER, & NOLLER, 2021, p. 92 [\**J. frattigianii*, p. 92, fig. 2–8; OD]. Small-sized stenopodidean; carapace lacking grooves, ornamented with several spines; rostrum straight, elongate, with 16 dorsal and three ventral teeth; pleomeres 1 to 3 without pleural overlaps; pleomeres 4 to 6 forming a distinct junction; chela of pereopod 3 largest; carpus and propodus of pereopod 4 and 5 subdivided; telson distally rounded; uropodal exopod without diaeresis. [Emended from WINKLER & others, 2021, p. 92.] *Upper Jurassic (Tithonian)*: Germany.—FIG. 1,7. \**J. frattigianii*, holotype SMNS 70626, scale bar 1 cm (new).

?**Phoenice** GARASSINO, 2001, p. 240 [\**P. pasinii*, p. 240, fig. 1–2; OD]. Rostrum long, with suprarostal spines; carapace with cervical and branchio-cardiac grooves; scaphocerite well developed; third maxilliped 3 spinose; pereopods 2? or 3? much longer than other pereopods, articles long and slender, chelae bulbous, with long fingers, unknown if other pereopods chelate or not; pleonal somites with blunt pleura, pleura of somite 2 not overlapping somite 1. *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 1,8. \**P. pasinii*, MSNM i24799, scale bar 1 cm (new).

## Infraorder CARIDEA Dana, 1852

[Caridea DANA, 1852a in 1852–1853, p. 528]

Carapace cylindrical, compressed either laterally or dorsally; eyes stalked, may be reduced or absent; antennules bi- or triramous, with stylocerite; antennae with peduncle with five elements and scaphocerite; third maxilliped with fewer than seven segments; first two pereopods usually chelate; pleurae of second somite of pleon overlapping first and third somites, pleopods usually biramous; telson and uropods forming tail fan; male gonopores on fifth coxae, female on third coxae. [Emended from HOLTHUIS, 1993, p. 13; DAVIE, 2002, p. 178; BAUER, 2004, p. 9.] *Upper Triassic (Norian)–Holocene*.

## Superfamily ALPHEOIDEA Rafinesque, 1815

[*nom. transl.* HOLTHUIS, 1993, p. 186, ex *Alphidia* RAFINESQUE, 1815, p. 98]

Both first pereopods either simple or chelate; carpus of second pereopod multi-articulate, ranging from a few articles to more than 20. *Upper Cretaceous (Santonian)–Holocene*.

## Family ALPHEIDAE Rafinesque, 1815

[*nom. transl.* RANDALL, 1840, p. 140, ex *Alphidia* RAFINESQUE, 1815, p. 98] [=Pterocarididae CHRISTOFFERSON, 1990, p. 97]

Rostrum, if present, usually immovably attached to remainder of carapace, without single subterminal dorsal tooth; carapace with cardiac notch present; eyestalks short, often partially or completely concealed by carapace; first two pereopods distinctly chelate; first pereopods robust, usually longer and more developed than second, often sexually dimorphic, heavy, strongly modified for snapping; second pereopod with carpus subdivided into three to five segments, three posterior pairs of pereopods not unusually elongate, carpus shorter than propodus. [Emended from CHACE, 1988, p. 3; DAVIE, 2002, p. 179; BAUER, 2004, p. 37.] *Oligocene ( Chattian)–Holocene*.

**Alpheus** FABRICIUS, 1798, p. 380 [\**A. avarus* FABRICIUS, 1798, p. 404; SD LATREILLE, 1810, p. 422] [= *Cryptophthalmus* RAFINESQUE, 1814, p. 23 (type, *C. ruber*, M); = *Autonomaea* RISSO, 1816, p. 166, type, *A. olivii*, M; = *Asphalius* ROUX, 1831, p. 2 (type, *Palaemon brevirostris* OLIVIER, 1811 in 1811–1812, p. 664, M); = *Dienecia* WESTWOOD, 1835, p. 552 (type, *Hippolyte? rubra* HAILSTONE, 1835, p. 272, M); = *Nauplius* RISSO, 1844, p. 95 (type, *Nika variegata* RISSO, 1816, p. 86, SD HOLTHUIS, 1977, p. 76); = *Phleusa* NARDO, 1847, p. 6 (type, *P. cynea*, M); = *Halopsyché* DE SAUSSURE, 1857 (type, *H. lutaria*, M); = *Alpheoides* PAULSON, 1875, p. 111 (type, *Alpheus insignis* HELLER, 1861, p. 26, SD HOLTHUIS, 1955, p. 91); = *Paralpheus* BATE, 1888, p. 567 (type, *Palaemon diversimanus* OLIVIER, 1811 in 1811–1812, p. 663, M); = *Ihunor* ARMSTRONG, 1949, p. 12 (type, *Crangon rathbunae* SCHMITT, 1924, p. 74, M); = *Oligorostra* CIAMPAGLIO & WEAVER, 2008, p. 106, (type, *O. alabami* CIAMPAGLIO & WEAVER, 2008, p. 107, fig. 4B, 5A–G, OD); = *Oligosella* CIAMPAGLIO & WEAVER, 2008, p. 109 (type, *O. longi* CIAMPAGLIO & WEAVER, 2008, p. 109, fig. 6A–G; OD)] [*non* *Crangon* WEBER, 1795, p. 94 (type, *Astacus Malabaricus* FABRICIUS, 1775, ICZN Opinion 334, 1955)]. Rostrum extending into carina onto dorsal carapace, eyes completely covered by carapace, carapace with orbital spines and orbitorostral groove, pterygostomial angle not developed; first pereopods strongly chelate, pereopod 2 with more slender chelae. [Emended from POORE, 2004, p. 99.] *Oligocene–Holocene*. *Oligocene ( Chattian)*: USA (Alabama, Mississippi). *Miocene (Aquitanian)*: France. *Miocene (Burdigalian)*: Austria. *Miocene (Langbian)*: Austria, Czech Republic, Netherlands, Poland. *Miocene (Serravallian)*: Austria, Slovakia. *Miocene (Tortonian)*:

France. *Miocene*: Poland, Venezuela. *Pleistocene*: Egypt, Japan. *Holocene*: Cosmopolitan.—FIG. 2, 1. *A. armillatus* H. MILNE-EDWARDS 1837 in 1834–1840, neotype, MNHN-IU-2010-4062, Holocene, Caribbean Sea, scale bar 1 cm (photo by F. Baptiste, MNHN, Project RECOLNAT).

**Family BARBOURIIDAE**  
**Christofferson, 1987**

[*nom. correct.* CHRISTOFFERSON, 1990, p. 96, *pro* Barbouridae CHRISTOFFERSON, 1987, p. 350]

Rostrum short, with dorsal spines, reaching at least to end of eye; second pereopods with 15–16 carpal articles. [WICKSTEN, 2010, p. 198.] *Miocene* (*Serravallian–Tortonian*)–*Holocene*.

**Barbouria** RATHBUN, 1912, p. 455 [\**B. poeyi*, OD; =*Hippolyte cubensis* VON MARTENS, 1872, p. 136]. Rostrum with suprarostreal spines; supraorbital spines absent; pereopods 3–5 with carpus entire. [Emended from HOLTHUIS, 1993, p. 218.] *Holocene*: Caribbean Sea.—FIG. 2, 2. \**Barbouria cubensis*, Holocene, Caribbean Sea (USNM drawing by F.A. Chace, Jr., [EZID 65665/m3e109ba04-63b7-45f1-9ad3-558c32c4494c]).

**Tomaricaris** GARASSINO, PASINI, & NAZARKIN, 2022, p. 2 [\**T. ainuensis*, M, OD]. Carapace with strongly convex lower margin; rostrum long, upper margin arcuate and upturned, with two subrostral and six suprarostreal spines; pereopods 1 and 2 with slender chelae; possible tiny chela on pereopod 2, with multiarticulate carpus; pereopods 3–5 with multiarticulate elements, with spinose basal articles. *Miocene* (*Serravallian–Tortonian*): Russia (Sakhalin Island).—FIG. 2, 3. \**T. ainuensis*, ZIN 89969, scale bar 1 cm (new; photo by M. Nazarkin, Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia).

**Family BYTHOCARIDIDAE**  
**Christofferson, 1987**

[Bythocarididae CHRISTOFFERSON, 1987, p. 350]

Rostrum sometimes with suprarostreal spines, flanked by large supraorbital spine; third maxilliped with terminal segment flattened; first pereopod chelate; and carpus of second pereopod with 8 to 11 articles. [Emended from DE GRAVE & others, 2014, p. 503.] *Holocene*.

**Bythocaris** SARS, 1870, p. 149 [\**B. simplicirostris*; M]. Rostrum short, without spines; supraorbital and antennal spines present, dorsal median carina sometimes with short spine anteriorly; pereopod 1 short, equal; pereopod 2 slender, long, carpus subdivided; pereopods 3–5 long, with spines on

meri, propodi, and dactyli. [Emended from ABELE & MARTIN, 1989, p. 27.] *Holocene*: North Atlantic Ocean, Arctic.—FIG. 2, 4. \**B. simplicirostris*, ZMBN-98489, Holocene, Norway, scale bar 1 cm (image from boldsystems.org, University of Bergen, Natural History Collection, Norway).

**Family HIPPOLYTIDAE Bate, 1888**

[Hippolytidae BATE, 1888, p. 576] [=Alopidae CHRISTOFFERSON, 1987, p. 350; =Merhippolytidae CHRISTOFFERSON, 1990, p. 97; =Nauticarididae CHRISTOFFERSON, 1987, p. 350; =Thorellinae CHRISTOFFERSON, 1990, p. 97]

Rostrum usually a discrete, uninflated extension of remainder of carapace; carapace without cardiac notch (except in *Saron*); eyes fully exposed, not unusually elongate; third maxilliped with fewer than seven segments; first pereopods more robust than second pair, usually subequal, not swollen, distinctly chelate; second pereopods with carpus with two or more articles. [Emended from CHACE, 1997, p. 39; DAVIE, 2002, p. 251.] *Upper Cretaceous* (*Santonian*)–*Holocene*. Only unnamed specimens in fossil record.

**Hippolyte** LEACH, 1814, p. 431 [\**Hippolyte varians*; M] [=*Nectoceras* RAFINESQUE, 1817, p. 41 (type, *N. pelagica*, M); =*Virbius* STIMPSON, 1860, p. 35 (type, *Hippolyte acuminatus* DANA, 1852b, p. 24, SD KINGSLEY, 1880, p. 421); =*Bellidia* GOSSE, 1877, p. 313 (type, *B. huntii*, M)]. Rostrum variable, supraorbital spine present; pereopod 2 with carpus with three articles; pereopod 1 with fingers shorter than palm, not terminating in interlocking spines, chela 1.5 times as long as carpus, carpus not very deeply excavate for reception of chela; pereopod 2 symmetrical, fingers not longer than palm, carpus subdivided into three articles; pereopod 3 with dactyl not gradually tapering to acute apex, dactyl and propodus prehensile in functional males. [Emended from CHACE, 1997, p. 59.] *Holocene*: Cosmopolitan.—FIG. 2, 5. *Hippolyte inermis* LEACH, 1816 in 1815–1816, MNHN-IU-2019-558, Holocene, Mediterranean Sea (photo by Z. Duris, MNHN).

**Family LYSMATIDAE**  
**Christofferson, 1987**

[*nom. transl.* CHRISTOFFERSON, 1987, p. 350, *ex* Lysmatinae DANA, 1852b, p. 16]

Rostrum with supra- and subrostral spines; second pereopods may be unequal, with multiarticulate carpus; third to fifth pereopods sometimes with multiarticulate propodus. [Emended from WICKSTEN, 2010, p. 198.] *Holocene*.

*Lysmata* RISSO, 1816, p. 175 [\**Melicerta seti caudata*, designated by ICZN Opinion 522, 1958] [= *Aglaope RAFINESQUE*, 1814, p. 24 (type, *A. striata*, M); = *Niphea RAFINESQUE*, 1815, p. 98 (type, *A. striata*, M); = *Melicerta* RISSO, 1816, p. 109 (type, *M. Seti Caudata*, SD H. MILNE EDWARDS, 1837, pl. 54, fig. 3); = *Opithocheirus* LEACH, 1830, p. 172 (type, *O. chrysophthalmus*, M); = *Usterocheirus* LEACH, 1830, p. 173 (type, *U. macropocoilium*, M); = *Arno* ROUX, 1831, p. 18 (type, *A. striata*, M); = *Eretmocaris* BATE, 1888, p. 894 (type, *E. stylostris*, SD HOLTHUIS, 1955, p. 114)]. Rostrum with supra- and subrostral spines; carapace with marginal, unarticulated antennal spine and sometimes with pterygostomial spine; pleon with first pleuron entire, not bifurcate; first pereopods with fingers shorter than palm, not terminating in distal spines, chela approximately as long as or much longer than carpus, latter not excavate to receive propodus, ischium often produced into long process; second pereopods symmetrical, fingers no longer than palm; carpus subdivided into 13–36 articles. [Emended from CHACE, 1997, p. 97.] *Holocene*: Cosmopolitan.—FIG. 2,6. \**Lysmata seti caudata*, MNHN-IU-2019-1218, Holocene, Mediterranean Sea (photo by Z. Duris, MNHN).

### Family MERGUIIDAE Christofferson, 1990

[Merguiidae CHRISTOFFERSON, 1990, p. 97]

Rostrum extending to end of eye; first and second pereopods with slender chelae; carpus of second pereopod with 22–24 articles; exopod of uropod with posterolateral spine. [Emended from WICKSTEN, 2010, p. 191.] *Holocene*.

*Merguia* KEMP, 1914, p. 121 [\**Hippolyte oligodon* DE MAN, 1888, p. 277; M]. As for family. *Holocene*: Burma, Brazil. Semi-terrestrial.—FIG. 2,7. \**M. oligodon* (DE MAN), ZC6119, Holocene, Japan, scale bar 1 cm (new; photo by H. Kato, Natural History Museum and Institute, Chiba, Japan).

### Family OGYRIDIDAE Hay & Shore, 1918

[*nom. corr.* HOLTHUIS, 1955, p. 93, *pro* Ogyridae HAY & SHORE, 1918, p. 388]

Rostrum greatly reduced; eyes unusually elongate, reaching nearly to distal end of antennular peduncle; carapace without antennal or pterygostomial spines, first pereopods approximately as robust as second pair, distinctly chelate; second pereopods with carpus subdivided into four articles; third to fourth pereopods setose distally; first somite of pleon overlaps carapace. [Emended

from CHACE, 1992, p. 79; DAVIE, 2002, p. 276; BAUER, 2004, p. 56; EMMERSON, 2016, p. 299.] *Holocene*.

*Ogyrides* STEBBING, 1914, p. 31 [\**Ogyris orientalis* STIMPSON, 1860, p. 36; M] [= *Ogyris* STIMPSON, 1860, p. 36, type, *O. orientalis non Ogyris* WESTWOOD in DOUBLEDAY & WESTWOOD, 1851 in 1850–1852, pl. 75 (Lepidoptera)]. As for family. *Holocene*: Atlantic Ocean, Indo-Pacific Ocean.—FIG. 2,8. *O. alphaerostris* (KINGSLEY, 1880), MNHN-IU-2016-4745, Holocene, Caribbean Sea (photo by Z. Duris, MNHN).

### Family THORIDAE Kingsley, 1878

[*nom. transl.* CHRISTOFFERSON, 1987, p. 350, *ex* Thorinae KINGSLEY, 1878a]

Rostrum variable, with suprarostal spines; first pereopods equal, chelae large; second pereopods equal, carpus with 2 to 12 articles. [Emended from WICKSTEN, 2010, p. 199; DE GRAVE & others, 2014, p. 503]. *Holocene*.

*Thor* KINGSLEY, 1878b, p. 94 [\**T. floridanus*; M] [= *Paschocaris* NOBILI, 1905, p. 395 (type, *Hippolyte paschalis* HELLER, 1862, p. 276, OD)]. Rostrum not longer than antennular peduncle, with 28 supra-rostral spines and none to two subrostral spines; carapace with antennal tooth, not basally articulated; pereopod 1 with fingers shorter than palm, not terminating in interlocking spines, chela almost twice as long as carpus, carpus not deeply excavate for reception of chela; pereopod 2 symmetrical, fingers shorter than palm, carpus subdivided into six or seven articles; pereopod 3 with dactyl and propodus prehensile in functional males. [Emended from CHACE, 1997, p. 90.] *Holocene*: Cosmopolitan (tropical).—FIG. 3,1. *T. amboinensis* (DE MAN, 1887–1888), MNHN-IU-2014-582, Holocene, Papua New Guinea (photo by Z. Duris, MNHN).

### Superfamily CAMPYLONOTOIDEA Sollaud, 1913

[*nom. transl.* CHACE, 1992, p. 77, *ex* Campylonotidae SOLLAUD, 1913, p. 184]

Rostrum with spines; first pereopods smaller than second pereopods; second pereopods subequal or very unequal. [Emended from WICKSTEN, 2010, p. 196.] *Holocene*.

### Family BATHYPALAEONELLIDAE de Saint Laurent, 1985

[Bathypalaemonellidae DE SAINT LAURENT, 1985, p. 473]



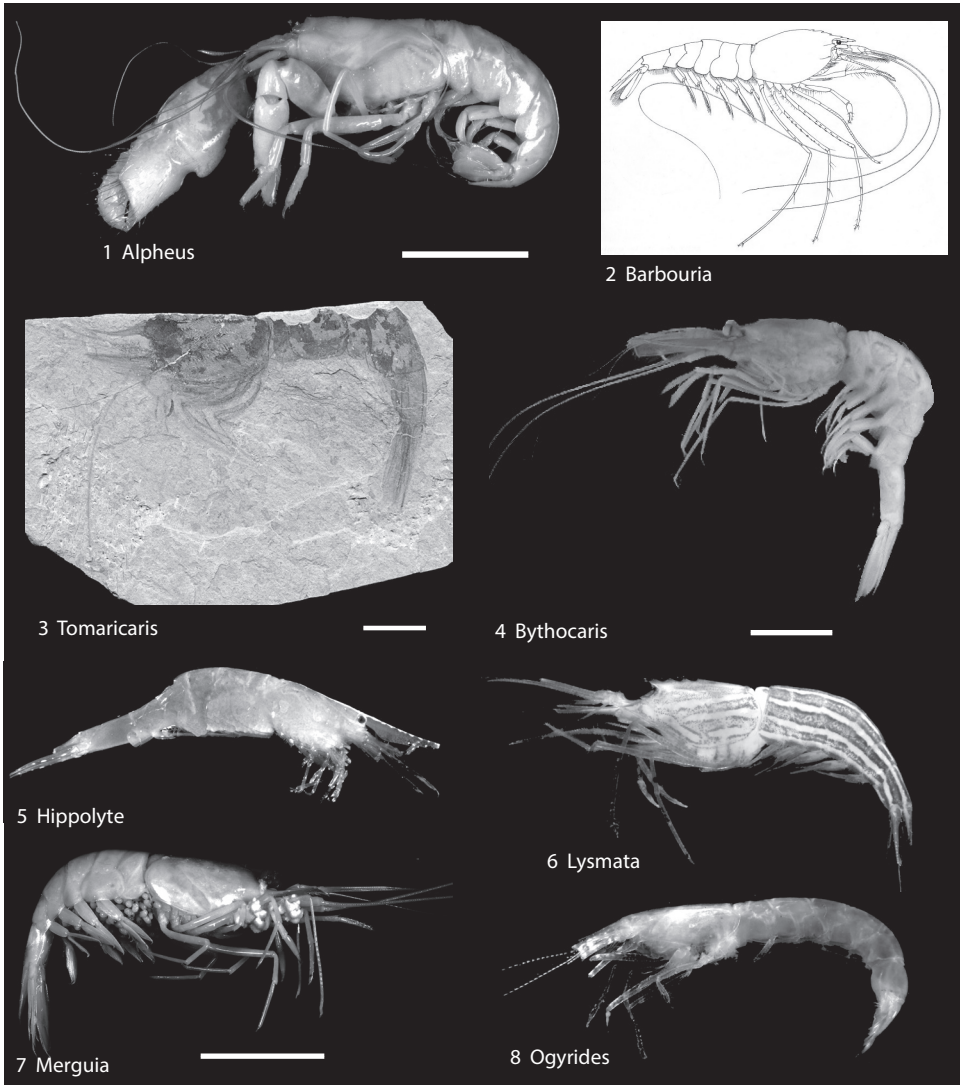


FIG 2. Alpheidae, Barbouriidae, Bythocarididae, Hippolytidae, Lysmatidae, Merguiidae, Ogyrididae (p. 4–6).

Rostrum slender, elongate, with varying numbers of supra and subrostral spines and articulated suprarostal spines, extending onto anterior carapace; third maxilliped with exopod, five-segmented, slender, pereiopod-like, antepenultimate segment fused with next proximal segment; first pereiopods subequal, slender; second pereiopods very unequal, carried flexed beneath thoracic sternites, with unique locking mechanism, fingers short; third pereiopods with dactyl spinose on flexor

margin. [Emended from CHACE, 1997, p. 31; DAVIE, 2002, p. 230.] *Holocene*.

*Bathypalaemonella* BALSS, 1914a, p. 597 [\**B. zimmeri*; M]. As for family. *Holocene*: Cosmopolitan (tropical).—FIG. 3,2. *B. adenensis* CLEVA, 2001, MNHN-IU-2008-16764, Holocene, Gulf of Aden, scale bar 5 mm (photo by L. Flamme, MNHN, Project RECOLNAT).

**Family CAMPYLONOTIDAE**  
Sollaud, 1913

[Campylonotidae SOLLAUD, 1913, p. 184]

Third maxilliped slender, pereopod-like; first pair of pereopods chelate, usually more slender than, rarely subequal to, second pair; second pair of pereopods subequal, with undivided carpus. [Emended from CHACE, 1992, p. 77; DAVIE, 2002, p. 235.] *Holocene*.

**Campylonotus** BATE, 1888, p. 767 [\**C. semistriatus*; SD HOLTHUIS, 1955, p. 41]. As for family. *Holocene*: South Atlantic Ocean, Australia, Antarctica.—FIG. 3,3. *C. vagans* BATE, 1888, MNHN-IU-2013-19277, Holocene, South Atlantic Ocean, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

## Superfamily CRANGONOIDEA Haworth, 1825

[*nom. transl.* BALSS, 1915, p. 56, ex Crangonidae HAWORTH, 1825, p. 184]

Carapace robust, compressed dorsolaterally, often ornamented with carinae, spines, grooves, tubercles, or some combination of these; rostrum variable, fixed to carapace; first pereopods subchelate, more robust than second pereopods, second pereopods may have multiarticulate carpus, second pereopods may be reduced or rarely absent. [Emended from BAUER, 2004, p. 45; WICKSTEN, 2010, p. 200.] *Upper Cretaceous (Cenomanian)–Holocene*.

### Family CRANGONIDAE Haworth, 1825

[Crangonidae HAWORTH, 1825, p. 184; ICZN Opinion 334, 1955] [=Pontocaridinae CHRISTOFFERSON, 1988, p. 46; =Philocherinae CHRISTOFFERSON, 1988, p. 46; =Pontophilinae CHRISTOFFERSON, 1988, p. 46; =Paracrangoninae CHRISTOFFERSON, 1988, p. 46]

Rostrum variable, usually short, depressed, immovably attached to remainder of carapace; carapace often sculptured with carinae, spines, or both; first pereopods subchelate; second pereopods with undivided carpus, second pereopods may be absent. [Emended from CHACE, 1984, p. 28.] *Upper Cretaceous (Cenomanian–Santonian)–Holocene*.

**Crangon** FABRICIUS, 1798, p. 387 [\**Cancer crangon* LINNAEUS, 1758, p. 632; AT, ICZN Opinion 334, 1955] [=Crago LAMARCK, 1801, p. 159 (type, *C. crangon*, M); =Crangonus RAFINESQUE, 1815, p. 98, unnecessary replacement name for *Crangon*; =Steiracrangon KINAHAN, 1862, p. 64 (type, *Crangon allmanni* KINAHAN, 1860, SD FOWLER 1912, p. 319); =Bannikovia GARASSINO & TERUZZI, 1996, p. 7 (type, *B. maikopensis*, OD);

=*Longitergite* GARASSINO & TERUZZI, 1996, p. 6 (type, *L. miocenicus*, OD)]. Rostrum short; carapace with a dorsal spine; pereopod 1 stout, subchelate, approximately as long as pereopod 2, pereopod 2 slender, chelate. *Miocene*: Russia (western). *Holocene*: Cosmopolitan.—FIG. 3,4. \**C. crangon*, MNHN-IU-2019-840, Holocene, Mediterranean Sea (photo by Z. Duris, MNHN).

**Miocrangon** GARASSINO, PASINI, & NAZARKIN, 2021, p. 137 [\**M. tartaricus*; OD]. Carapace subrectangular, median dorsal ridge; carapace surface scabrous; maxilliped 3 stout, granular; pleonal somites granular; uropodal exopod with distal lateral spine. [Emended from GARASSINO, PASINI, & NAZARKIN, 2021, p. 137.] *Miocene (Serravalian–Tortonian)*: Russia (Sakhalin Island).—FIG. 3,5. \**M. tartaricus*, holotype, ZIN 89828, scale bar 5 cm (new; photo by M. Nazarkin, Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia).

**Morscrangon** GARASSINO & JAKOBSEN, 2005, p. 98 [\**M. acutus*; OD]. Carapace strongly sculptured, with longitudinal keels, with very strong spines laterally and dorsally; antennal spines very long; pleonal somites 3–6 with posterior spines; pereopod 1 with pseudochelate terminations. *Eocene (Ypresian)*: Denmark.—FIG. 3,6. \**M. acutus* (adapted from Garassino & Jakobsen, 2005, fig. 2).

**Odontochelion** GARASSINO, 1994, p. 17 [\**Notostomus cretaceus* ROGER, 1946, p. 35, fig. 28; OD]. Rostrum short; carapace dorsal margin with tiny spines, with three pairs of spinose keels, dorsal-most short, two ventral-most keels extending nearly entire length of carapace; pereopods apparently achelate. *Upper Cretaceous (Cenomanian–Santonian)*: Lebanon.—FIG. 3,7. \**O. cretaceus* (ROGER), MNHN.F.B18881, scale bar 5 mm (photo by G. Doitteau, MNHN, Project RECOLNAT).

### Family GLYPHOCRANGONIDAE Smith, 1884

[Glyphocrangonidae SMITH, 1884, p. 364; ICZN Opinion 470, 1957] [=Rhachocarinae SMITH, 1882, p. 41]

Carapace cuticle unusually firm, rigid; rostrum immovably attached to remainder of carapace, dorsally and ventrally flattened or concave, with suprarostal spines; carapace strongly sculptured with ridges, grooves, spines, and tubercles; first pair of pereopods subchelate, second pair of pereopods with multi-articulate carpus. [Emended from DAVIE, 2002, p. 246]. *Upper Cretaceous (Cenomanian)–Holocene*.

**Glyphocrangon** A. MILNE EDWARDS, 1881, p. 3 [\**G. spinicauda*; OD; ICZN Opinion 470, 1957] [=Thalascaris BATE, 1878, p. 282 (type, *Glyphocrangon rimapes* BATE, 1888, p. 523, SD HOLTHUIS, 1971, p. 269); =Rhachocaris SMITH, 1882, p. 41]

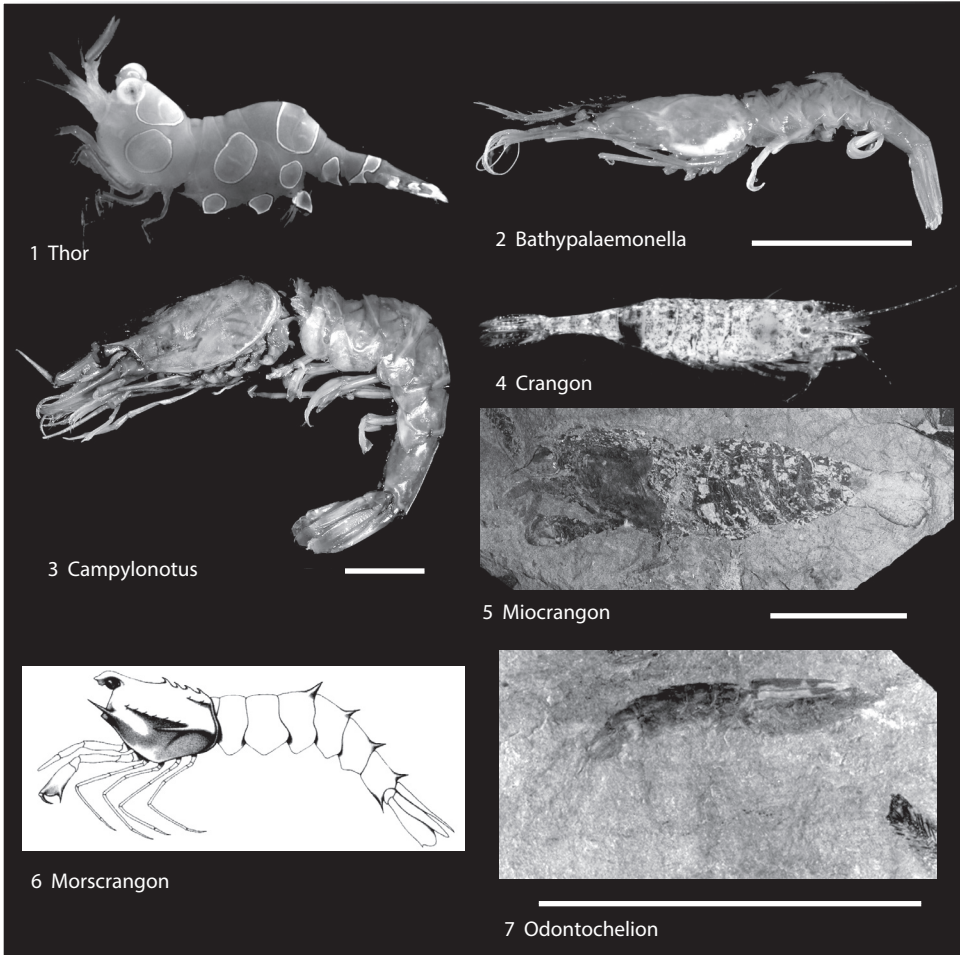


FIG 3. Thoridae, Bathypalaemonellidae, Campylonotidae, Crangonidae (p. 6–8).

(type, *R. agassizii*, SD FOWLER, 1912, p. 556); =*Plastocrangon* ALCOCK, 1901, p. 133 (type, *G. caecescens* WOOD-MASON & ALCOCK, 1891, p. 357, SD FOWLER, 1912, p. 556)]. Carapace cuticle unusually firm, rigid; rostrum immovably attached to remainder of carapace, dorsally and ventrally flattened or concave, with suprarostal spines; carapace strongly sculptured with ridges, grooves, spines, and tubercles; first pair of pereiopods subchelate, second pair of pereiopods with multi-articulate carpus. [Emended from DAVIE, 2002, p. 246.] *Holocene*: Cosmopolitan.—FIG. 4,1. \**G. spinicauda*, syntype MNHN-IU-2014-22801, Holocene, North Atlantic Ocean, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

**Armacrangon** CHARBONNIER, AUDO, GARASSINO, & HYŽNÝ, 2017, p. 107 [\**A. edwardsi*; OD]. Carapace deeply sculpted, with strong nodes, groove pattern complex, cervical groove strong, postcervical

groove present. *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 4,2. \**A. edwardsi*, holotype MNHN.FA51507, scale bar 1 cm (photo by D. Audo, MNHN, Project RECOLNAT).

**Gladicrangon** CHARBONNIER, AUDO, GARASSINO, & HYŽNÝ, 2017, p. 110 [\**G. coriacea*; OD]. Rostrum long, spatulate in dorsal view; carapace strongly sculptured; pleonites strongly calcified. *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 4,3. \**G. coriacea*, holotype MNHN.FA51512, scale bar 1 cm (photo by D. Audo, MNHN, Project RECOLNAT).

## Superfamily OPLOPHOROIDEA Dana, 1852

[*nom. transl.* Hoplophoroida ALCOCK, 1901, p. 55, *pro* Oplophorinae DANA, 1852b, p. 18, ICZN Opinion 470, 1957]

Rostrum immovable, attached to remainder of carapace, otherwise variable; carinate keel may be present on carapace dorsal midline; antennular flagella simple, without accessory branches; mandible with palp, molar, and incisor processes not deeply separated; third maxilliped elongate, not unusually expanded, five-segmented, bearing well-developed exopod; all pereopods bearing well-developed exopod, three anterior pairs, at least, bearing strap-like epipod with endpiece extending perpendicularly into branchial chamber, first and second pereopods with well-developed chela and undivided carpus; fifth pereopods lacking dactyl; spines may be present on posterior margins of fourth and fifth pleonal tergites; sixth pleonal somite may be twice as long as fifth; third pleonal somite may have dorsal axial spine; pleopods bearing appendices interna; photophores present. [Emended from CHACE, 1986, p. 4; DAVIE, 2002, p. 278; BAUER 2004, p. 57; CHAN & others, 2010, p. 179; WICKSTEN, 2010, p. 194.]

### Family ACANTHEPHYRIDAE

Bate, 1888

[Acanthephyridae BATE, 1888, p. 927] [=Ephyrinae DANA, 1852b, p. 16; =Miersiidae SMITH, 1886, p. 608; =Tropiocaridae BATE, 1888, p. 927; =Notostominae ORTMANN, 1898, p. 1126]

Carapace and pleonites often with dorsal keels; first and second pereopods similar, chelate, moderate in size; third to fifth pereopods not abnormally long. [CHACE, 1986, p. 6; EMMERSON, 2016, p. 145.] *Holocene*.

*Acanthephyra* A. MILNE-EDWARDS, 1881, p. 12 [\**A. armata*; OD] [=Ephyra ROUX, 1831, p. 24 (type, *Alpheus pelagicus*, SD KINGSLEY, 1880, p. 416); =*Miersia* KINGSLEY, 1880, p. 416, replacement name for *Ephyra*; =*Bentheocaris* BATE, 1888, p. 723 (type, *B. stylostratis*, SD HOLTHUIS, 1955, p. 14); =*Acanthephyropsis* RIGGIO, 1895, p. 246 (type, *Acanthephyra pulchra* A. MILNE-EDWARDS, 1890, p. 163, M); =*Hoplocaricyphus* COUTIÈRE, 1907, p. 7 (type, *H. similis*, M)]. Rostrum with more than or equal to the number of ventral spines; pleonal somites 3–6 with dorsal carinae, somites 4 and 5 usually with posterior spine. [Emended from HOLTHUIS, 1993, p. 31]. *Holocene*: Cosmopolitan.—FIG. 4,4. \**A. armata*, MNHN-IU-2013-18811, *Holocene*, Caribbean Sea (photo by L. Corbari, MNHN).

### Family OPLOPHORIDAE Dana, 1852

[Oplophorinae DANA, 1852b, p. 18; ICZN Opinion 470, 1957]

Carapace with carinate keel along dorsal midline, sixth somite may be twice as long as fifth, third to fifth pleonal somites may have long posterodorsal spines. [Emended from CHACE 1986, p. 2; DAVIE, 2002, p. 278; EMMERSON, 2016 p. 151]. *Lower Cretaceous (Berriasian–Valanginian)–Holocene*.

*Oplophorus* H. MILNE-EDWARDS, 1837 in 1834–1840, p. 423 [\**O. typus* H. MILNE-EDWARDS, 1837 in 1834–1840, p. 424; OD] [=*Hoplophorus* AGASSIZ, 1846 in 1842–1846, p. 262, unjustified emendation; ICZN Opinion 470, 1957]. Subrectangular carapace; abdominal somites with long mediodorsal teeth; telson acutely triangular. *Lower Cretaceous–Holocene*. *Lower Cretaceous (Berriasian–Valanginian)*: Spain. *Upper Cretaceous (Coniacian–Maastrichtian)*: Germany. *Holocene*: Cosmopolitan.—FIG. 4,5. *Oplophorus gracilirostris* A. MILNE EDWARDS, 1881, MNHN-IU-2010-114, *Holocene*, Madagascar (photo by C.W. Lin, MNHN).

### Superfamily BRESILIOIDEA Calman, 1896

[*nom. transl.* THOMPSON, 1965, p. 5, ex Bresiliidae CALMAN, 1896, p. 7]

Rostrum usually with spines; first and second pereopods chelate, first pereopod usually with stronger chelae. [Emended from WICKSTEN, 2010, p. 194.] *Holocene*.

### Family AGOSTOCARIDIDAE Hart & Manning, 1986

[Agostocarididae HART & MANNING, 1986, p. 411]

Mandible with palp; all maxillipeds and first and second pereopods with exopods; first pereopods stronger than second, with carpus articulating on ventral face of propodus; second pereopods weakly chelate, longer but more slender than first, carpus undivided, carpus and propodus articulated in usual manner, dactylus strongly reduced; third to fifth pereopods longer than first two pereopods. [Emended from HART & MANNING, 1986, p. 411.] *Holocene*.

*Agostocaris* HART & MANNING, 1986, p. 411 [\**A. williamsi*; OD]. As for family. *Holocene*: Mexico and Caribbean Sea.—FIG. 4,6. *Agostocaris bozanic* KENSLEY, 1988, USNM 1007294, *Holocene*, Mexico, scale bar 1 cm (new).

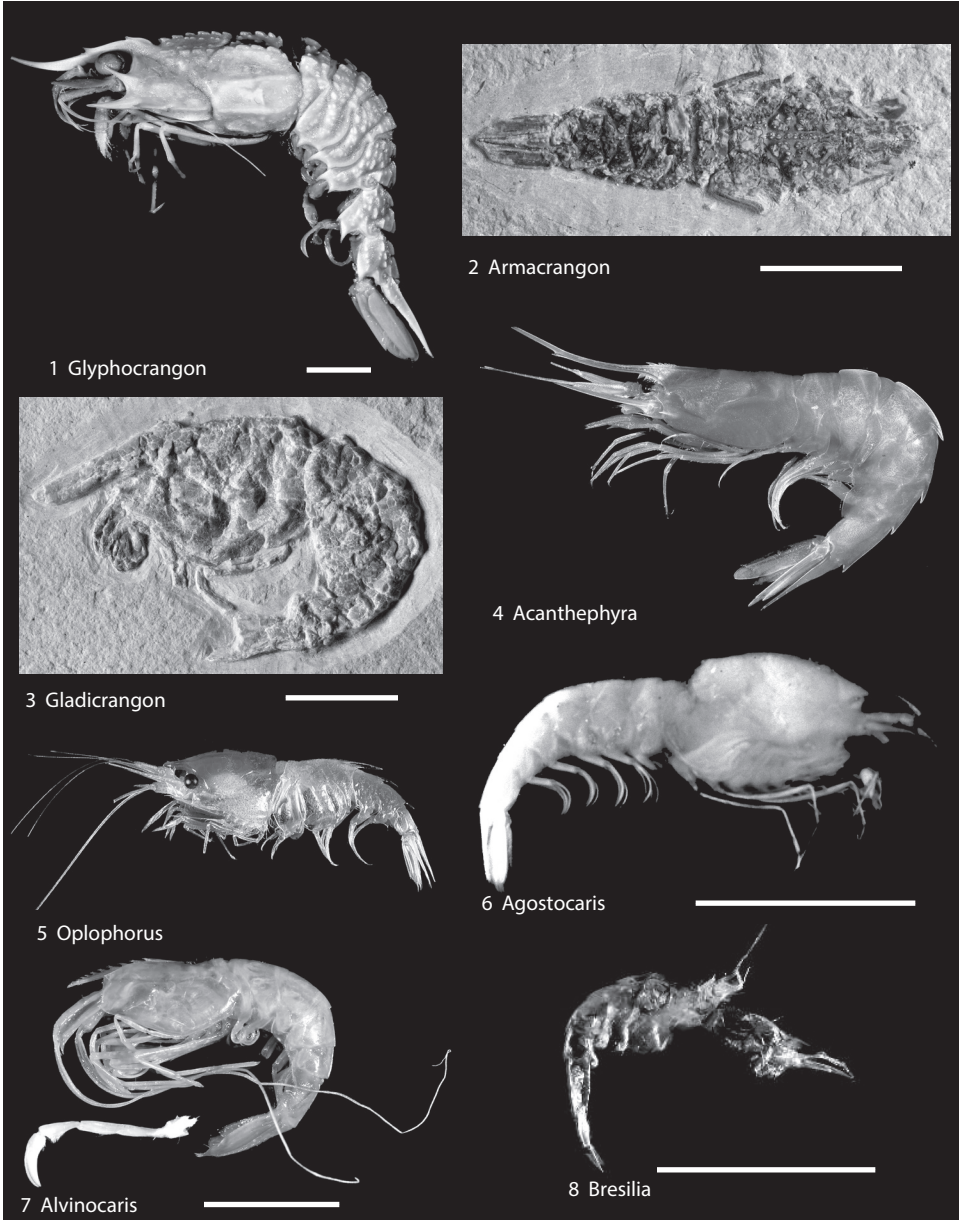


FIG. 4. Glyphocrangonidae, Acanthephyridae, Oplophoridae, Agostocarididae, Alvinocarididae, Bresiliidae (p. 8–12).

**Family ALVINOCARIDIDAE**  
**Christoffersen, 1986**

[Alvinocarididae CHRISTOFFERSEN, 1986, p. 273]

Third maxillipeds and pereopods without exopods and epipods; first pereopods with bird-head shaped chela, merus, and ischium

distinct; appendices internae reduced. [Emended from WICKSTEN, 2010, p. 194.]

**Alvinocaris** WILLIAMS & CHACE, 1982, p. 136 [\**A. lusca*; OD]. Rostrum compressed laterally in anterior half, supra- and subrostral spines; lateral carinae confluent posteriorly with orbital margin; carapace with antennal and pterygostomial spines;

telson with three to nine pairs of dorsolateral spines and three to five pairs of principal terminal spines; pereopods 1 and 2 with merus and ischium distinct; pereopod 1 robust; chela larger than that of 2 and with long fingers pectinate along prehensile edges; carpus hollowed distally to receive proximal end of palm; pereopod 2 shorter and more slender than 1; pereopods 3–5 similar, achelate. [Emended from WILLIAMS & CHACE, 1982, p. 136.] *Holocene*: Cosmopolitan on mid-ocean ridges.—FIG. 4,7. \**A. lusca*, MNHN-IU-2008-16685, Holocene, Galapagos, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

### Family BRESILIIDAE Calman, 1896

[Bresiliidae CALMAN, 1896, p. 7]

Rostrum serrate; pereopods with exopods; first pereopods chelate, stouter and usually shorter than second pereopods, which have undivided carpus. First maxilliped with exopod not terminating distally in broad, semidetached lobe; with endite not unusually large. Second maxilliped with exopod; with segments arranged in usual serial manner. Third maxilliped slender, pereopod-like, with exopod. Mandible with palp and incisor process separated from molar process. First maxilla with distal endite not unusually large. Second maxilla with distal endite mesially bilobate; proximal endite not incised near distal margin; palp not vestigial. [Emended from CHACE, 1992, p. 76; DAVIE, 2002, p. 232.] *Holocene*.

*Bresilia* CALMAN, 1896, p. 7 [\**B. atlantica*; M].

Eye without spine on peduncle; dactylus of first pereopod as long as or shorter than fixed finger, without large spine on occlusal surface. [Emended from HOLTHUIS, 1993, p. 69.] *Holocene*: Cosmopolitan in caves and on sea mounts.—FIG. 4,8. *B. corsicana* FOREST & CALS, 1977, holotype, MNHN-IU-2014-22819, Holocene, Mediterranean Sea, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

### Family DISCIADIDAE Rathbun, 1902

[*nom. correct.* KEMP, 1920, p. 137, *pro* Discidae RATHBUN, 1902, p. 289; ICZN Opinion 433, 1956]

Rostrum short, dorsoventrally flattened, with or without supra- and subrostral spines; carapace with or without antennal and branchiostegal spines; first pereopods with ischium and merus fused, dactyls of first and second pereopods semicircular. [Emended from WICKSTEN, 2010, p. 195; EMMERSON,

2016, p. 176.] *Holocene*: Indo Pacific Ocean, Caribbean Sea, Atlantic Ocean.

*Discias* RATHBUN, 1902, p. 290 [\**D. serrifer*; M].

Carapace without antennal and branchiostegal spines; telson with two or three lateral spines and three posterior spines. [Emended from HOLTHUIS, 1993, p. 70.] *Holocene*: Indo Pacific Ocean, Caribbean Sea, Atlantic Ocean.—FIG. 5,1. *Discias serratirostris* LEBOUR, 1949, MNHN-IU-2016-4350, Holocene, Caribbean Sea (photo by Z. Duris, MNHN).

### Family PSEUDOCHELIDAE

De Grave & Moosa, 2004

[Pseudochelidae DE GRAVE & MOOSA, 2004, p. 7]

Rostrum with dorsal spines and at least one ventral spine; carapace with antennal spine, no other spines present; telson triangular, with three pairs of lateral spines; first pereopods more robust than second, carpus partially recessed into merus; third to fifth pereopods chelate (or pseudochelate). Exopods well developed on all pereopods. [Emended from DE GRAVE & MOOSA, 2004, p. 5; WICKSTEN, 2010, p. 195.] *Holocene*.

*Pseudocheles* CHACE & BROWN, 1978, p. 757 [\**P. enigma*; OD]. As for family. *Holocene*: Indonesia, Australia, USA (Florida).—FIG. 5,2. \**Pseudocheles* sp., MNHN-IU-2016-4261, Holocene, Caribbean Sea (photo by Z. Duris, MNHN).

### Superfamily

### NEMATOCARCINOIDEA

Smith, 1884

[*nom. transl.* CHRISTOFFERSON, 1990, p. 98, *ex* Nematocarcinae SMITH, 1884, p. 368]

Rostrum with spines; first pereopods chelate, usually shorter and stouter than second pereopods. [Emended from WICKSTEN, 2010, p. 195.] *Holocene*.

### Family EUGONATONOTIDAE

Chace, 1937

[Eugonatonotidae CHACE, 1937, p. 15; ICZN Opinion 470, 1957] [=Gomphonotidae CHACE, 1936, p. 25; =Gonatonotidae GURNEY in GURNEY & LEBOUR, 1941, p. 122; =Galatheacarididae VERESHCHAKA, 1997, p. 362]

Rostrum long, strongly upturned, with supra- and subrostral spines; carapace with longitudinal lateral ridges; third maxilliped with exopod, composed of five segments, slender, pereopod-like, antepenultimate

segment fused with next proximal segment; pereopods with exopods on all five pairs; first and second pereopods robust, fingers without terminal tuft of setae but bearing long lateral and terminal spines forming basket-like cage when closed, first pereopods subequal, stouter and shorter than second pereopods, with one fixed and one movable finger; second pereopods subequal, fixed finger not curving subrectangularly around short, broad movable finger, carpus entire, undivided; third pereopod with flexor margin of dactyl spinose. [Emended from DAVIE, 2002, p. 243.] *Holocene*.

*Eugonatonotus* SCHMITT, 1926, *corrigenenda et addenda* facing p. 311 [\**Gonatonotus crassus* A. MILNE EDWARDS, 1881, p. 10; M] [= *Gonatonotus* A. MILNE EDWARDS, 1881, p. 10, non *Gonatonotus* ADAMS & WHITE in WHITE, 1847, p. 57; = *Gomphonotus* CHACE, 1936, p. 25 (type, *G. crassus* [A. MILNE EDWARDS], M; ICZN Opinion 470, 1957)]. As for family. *Holocene*: Indo-Pacific Ocean.—FIG. 5,3. \**E. crassus* (A. MILNE EDWARDS), MNHN-IU-2013-18884, *Holocene*, Caribbean Sea (photo by L. Corbari, MNHN).

#### Family NEMATOCARCINIDAE

Smith, 1884

[*nom. transl.* SMITH, 1886, p. 608, ex Nematocarcininae SMITH, 1884, p. 368]

Rostrum immovable, attached to remainder of carapace, laterally compressed, narrow in lateral aspect, with suprarostrals and/or subrostrals spines; carapace relatively smooth, not strongly sculptured; third maxilliped elongate, with five segments; pereopods slender; first and second pereopods with well-developed chelae and undivided carpus, third to fifth pereopods unusually long, with carpus several times as long as propodus; pleopods with appendix interna. [Emended from CHACE, 1986, p. 68; DAVIE, 2002, p. 271; WICKSTEN, 2010, p. 195.] *Holocene*.

*Nematocarcinus* A. MILNE EDWARDS, 1881, p. 14 [\**N. cursor*; M] [= *Eumiersia* SMITH, 1882, p. 77 (type, *E. ensifera*; M); = *Stochasmus* BATE, 1888, p. 822) type, *S. exilis*; M]]. Pereiopods 3–5 extremely long, several times the length of the carapace, carpus many times longer than propodus. *Holocene*: Indo-Pacific Ocean, Africa, Australia, Antarctica.—FIG. 5,4. *Nematocarcinus gracilipes* FILHOL, 1884,

*Holocene*, Cape Verde, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

#### Family RHYNCHOCINETIDAE

Ortmann, 1890

[*Rhynchocinetidae* Ortmann, 1890, p. 459]

Rostrum hinged, with supra- and subrostral spines; carapace without lateral ridges, antennal and supraorbital spines may be present; first pereopods subequal and stouter than second pereopods, first two pereopods with chelae forming a basket-like cage when closed; pleon with dorsal hump at third somite; telson with three pairs of posterior marginal spines. [Emended from HOLTHUIS, 1993, p. 19; WICKSTEN, 2010, p. 195; EMMERSON, 2016, p. 188.] *Holocene*.

*Rhynchocinetes* H. MILNE-EDWARDS, 1837, p. 168 [\**R. typus*; M]. As for family. *Holocene*: Cosmopolitan (tropical and temperate).—FIG. 5,5. \**R. typus*, syntype, MNHN-IU-2014-22121, *Holocene*, Indian Ocean. scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

#### Family XIPHOCARIDIDAE

Ortmann, 1895

[*nom. transl.* CHACE, 1992, p. 71, ex Xiphocarinae ORTMANN, 1895, p. 399]

Rostrum with very fine supra- and subrostral spines; third pereopod with prominent curved spines on the posterior margin of the dactylus. [HOLTHUIS, 1993 p. 19; WICKSTEN, 2010, p. 196.] *Holocene*.

*Xiphocaris* VON MARTENS, 1872, p. 139 [\**Hippolyte elongatus* GUÉRIN-MÉNEVILLE, 1856, pl. 2, 16; M]. As for family. *Holocene*: Caribbean Sea.—FIG. 5,6. \**X. elongata*, *Holocene*, Caribbean (photo by J. Poupin, Ecole Navale, Brest, France [crustiesfroverseas.free.fr]).

#### Superfamily PALAEMONOIDEA

Rafinesque, 1815

[*nom. transl.* BALSS, 1921, p. 7, ex Palemonia RAFINESQUE, 1815, p. 98]

Rostrum short or long, with supra- and subrostral spines; carapace subrectangular, compressed dorsolaterally; third maxilliped composed of six segments or less; first and second pereopods distinctly chelate, dactyl meeting opposing finger when flexed, not crossing, chelae not terminating in dense

brushes of long setae; first pereopods not stouter than second; second pereopods with undivided carpus. [Emended from CHACE & BRUCE, 1993, p. 2–3.] *Upper Jurassic (Tithonian)–Holocene*.

**Family DESMOCARIDIDAE**  
**Borradaile, 1915**

[*nom. transl.* CHACE, 1992, p. 74, ex Desmocaridinae BORRADAILE, 1915, p. 206]

Carapace with supraorbital spine; telson without dorsolateral spines; first pereopods small, slender, chelae with setal brushes; second pereopods similar in size to first; pleopods reduced. [Emended from BAUER, 2004, p. 49; WICKSTEN, 2010, p. 196.] *Holocene*.

*Desmocarid* SOLLAUD, 1911, p. 913 [\**Palaemonetes trispinosus* AURIVILLIUS, 1898, p. 29; M]. As for family. *Holocene*: West Africa.—FIG. 5,7. \**D. trispinosa* (AURIVILLIUS), USNM 171373, *Holocene*, Nigeria, scale bar 1 cm (new).

**Family EURYRHYNCHIDAE**  
**Holthuis, 1950**

[*nom. transl.* MARTIN & DAVIS, 2001, p. 72, ex Euryrhynchinae HOLTHUIS, 1950, p. 1]

Upper flagellum of first antennae divided into two rami; uropod expodal diaeresis with large cuspidate setae. [WICKSTEN, 2010, p. 197.] *Holocene*.

*Euryrhynchus* MIERS, 1878, p. 662 [\**E. wrzesniowski*; M] [= *Euryrhynchella* BALSS, 1955, p. 1308, unnecessary replacement name]. Rostrum flattened, without spines. [HOLTHUIS, 1993, p. 183.] *Holocene*: West Africa.—FIG. 5,8. *E. amazoniensis* TIEFENBACHER, 1978, paratype, RBINS INV.97205, *Holocene*, Brazil, scale bar 1 cm (photo from virtualcollections.naturalsciences.be).

**Family PALAEMONIDAE**  
**Rafinesque, 1815**

[*nom. correct.* SAMOUELLE, 1819, p. 96, pro *Palaemonia* RAFINESQUE, 1815, p. 98; ICZN Opinion 564, 1959] [= *Anchistoididae* BORRADAILE, 1915, p. 205; *Gnathophyllidae* DANA, 1852b, p. 16; = *Drimoidae* ORTMANN, 1896, p. 425; = *Hymenoceridae* ORTMANN, 1890, p. 460; = *Kakaducarididae* BRUCE, 1993, p. 44]

Rostrum well developed, with supra and sub-rostral spines; carapace without complete longitudinal suture; telson usually with two or three pairs of spines on posterior margin; third maxilliped composed of no

more than six segments, antepenultimate segment neither articulated with, nor much wider than, next proximal segment; first and second pereopods distinctly chelate, dactyl meeting fixed finger when flexed, usually not crossing; first pereopod not stouter than second; second pereopod usually with undivided carpus, with dactyl usually not distinctly serrate on extensor margin; second pleopod with appendix masculina in males. [Emended from CHACE & BRUCE, 1993, p. 4; DAVIE, 2002, p. 289.] *Lower Cretaceous (Barremian)–Holocene*.

*Palaemon* WEBER, 1795, p. 94 [\**P. adspersus* RATHKE, 1837, p. 368; by direction of ICZN Opinion 564, 1959] [= *Palaander* HOLTHUIS, 1950, p. 8 (type, *Palaemon elegans* RATHKE, 1837, p. 370, OD)]. Rostrum with many supra- and subrostral spines, carapace with branchiostegal groove; pleura of fifth pleonite sharp; telson with two pairs of spines on the dorsal surface and one pair on the distal extremity. [HOLTHUIS, 1993, p. 101.] *Lower Cretaceous–Holocene*. *Lower Cretaceous (Aptian)*: Italy. *Upper Cretaceous (Campanian–Maastrichtian)*: Italy. *Oligocene*: Brazil, Czech Republic, Republic of Georgia, Italy. *Miocene (Aquitanian)*: Mexico (Chiapas). *Miocene (Messinian)*: Italy. *Holocene*: Cosmopolitan.—FIG. 6,1. *P. serratus* (PENNANT, 1777), syntype MNHN-IU-2014-23518, *Holocene*, France, scale bar, 1 cm (photo by M. Hennion, MNHN, Project RECOLNAT).

*Alburnia* BRAVI & GARASSINO, 1998b, p. 107 [\**A. petinensis*; OD]. Rostrum long, with many supra-rostral spines and one subrostral spine; carapace short, high; pereopods 1 and 2 chelate, merus and carpus strongly elongate; pereopod 2 longer than 1; pleon short, pleonites high. [Emended from BRAVI & GARASSINO, 1998b, fig. 14]. *Lower Cretaceous (Albian)*: Italy.—FIG. 6,9. \**A. petinensis*, holotype, M21834, (photo, NonCommercial-ShareAlike 4.0 International [CC BY-NC-SA 4.0]).

*Bahiacaris* SCHWEITZER, SANTANA, PINHEIRO, & FELDMANN, 2019, p. 72 [\**Atyoida roxoi* BEURLEN, 1950, p. 456; OD]. Rostrum long, minutely serrate on upper margin; scaphocerite not extending beyond rostrum; carapace high, short; tip of telson with setae, two pairs of movable spines dorsally; pereopods 1 and 2 shorter than pereopods 3–5. [Emended from SCHWEITZER & others, 2019, p. 72.] *Lower Cretaceous (Aptian/Albian)*: Brazil.—FIG. 6,2. \**B. roxoi*, (BEURLEN) USNM 722100, scale bar 1 mm (new).

*Bechleja* HOUŠA, 1957 [imprint 1956], p. 365 [\**B. inopinata*, text-fig. 1–7, pl. 1–3; OD]. Rostrum extending slightly beyond eye; carapace with convex dorsal surface carapace; pereopod 1 chelate, chelae small; pereopod 2 strongly chelate, longest of all pereopods; pereopods 4–5 shorter than



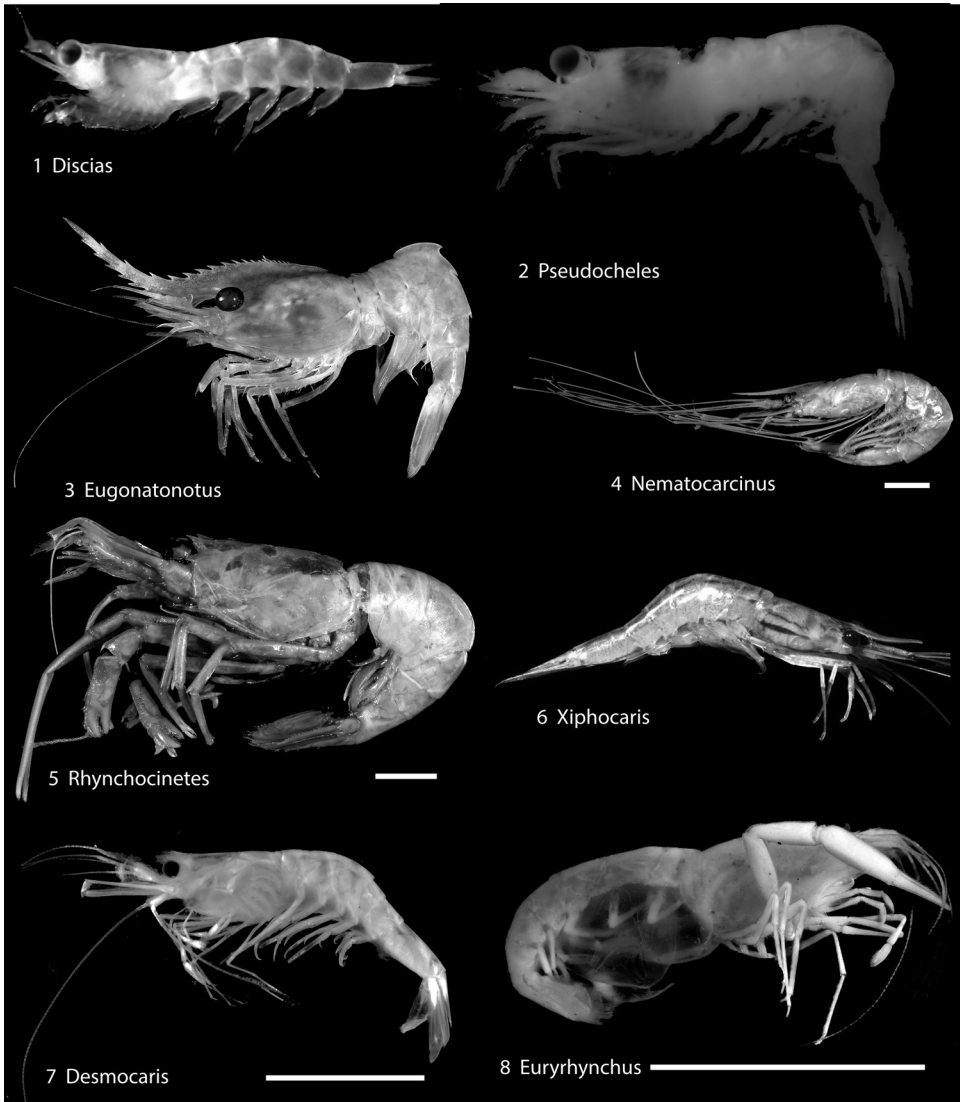


FIG. 5. Disciadae, Pseudochelidae, Eugonatonotidae, Nematocarcinidae, Rhynchocinetidae, Xiphocarididae, Desmocarididae, Euryrhynchidae (p. 12–14).

peraeopod 2, slender. *Eocene–Miocene*. *Eocene*: USA (Wyoming). *Oligocene (Rupelian)*: Czech Republic. *Oligocene*: Brazil. *Miocene*: Czech Republic.—FIG. 6,3. \**B. inopinata*, NM P1174, Oligocene, Czech Republic, scale bar 1 cm (new).

**Beurlenia** MARTINS-NETO & MEZZALIRA, 1991a, p. 156 [\**B. araripensis*, p. 157, pl. 1, text-fig. 1; OD]. *Antennae* and antennules long; rostrum long, with suprarostal spines; peraeopod 2 long, with large chelae, isochelous; other peraeopods long, slender. *Lower Cretaceous (Aptian)*: Brazil.—FIG. 6,4. \**B. araripensis*, MPSC CR2108, scale bar, 1 cm (new).

**Kellnerius** SANTANA, PINHEIRO, DA SILVA, & ÁLAMO SARAIVA, 2013, p. 294 [\**K. jamaicaruensis*; OD]. Rostrum long, tip slightly upturned, with five suprarostal spines; carapace approximately twice as long as high, antennal spine present. [Emended from SANTANA & others, 2013, p. 294.] *Lower Cretaceous (Albian)*: Brazil.—FIG. 6,5. \**K. jamaicaruensis*, holotype, LPU 648 A, scale bar 1 cm (new; photo by W. Santana, Universidade Sagrado Coração, Bauru, SP, Brazil).

**Micropsalis** VON MEYER, 1859, p. 18 [\**M. papyracea*, p. 18, pl. 2, 14–17; M]. Rostrum with supraros-

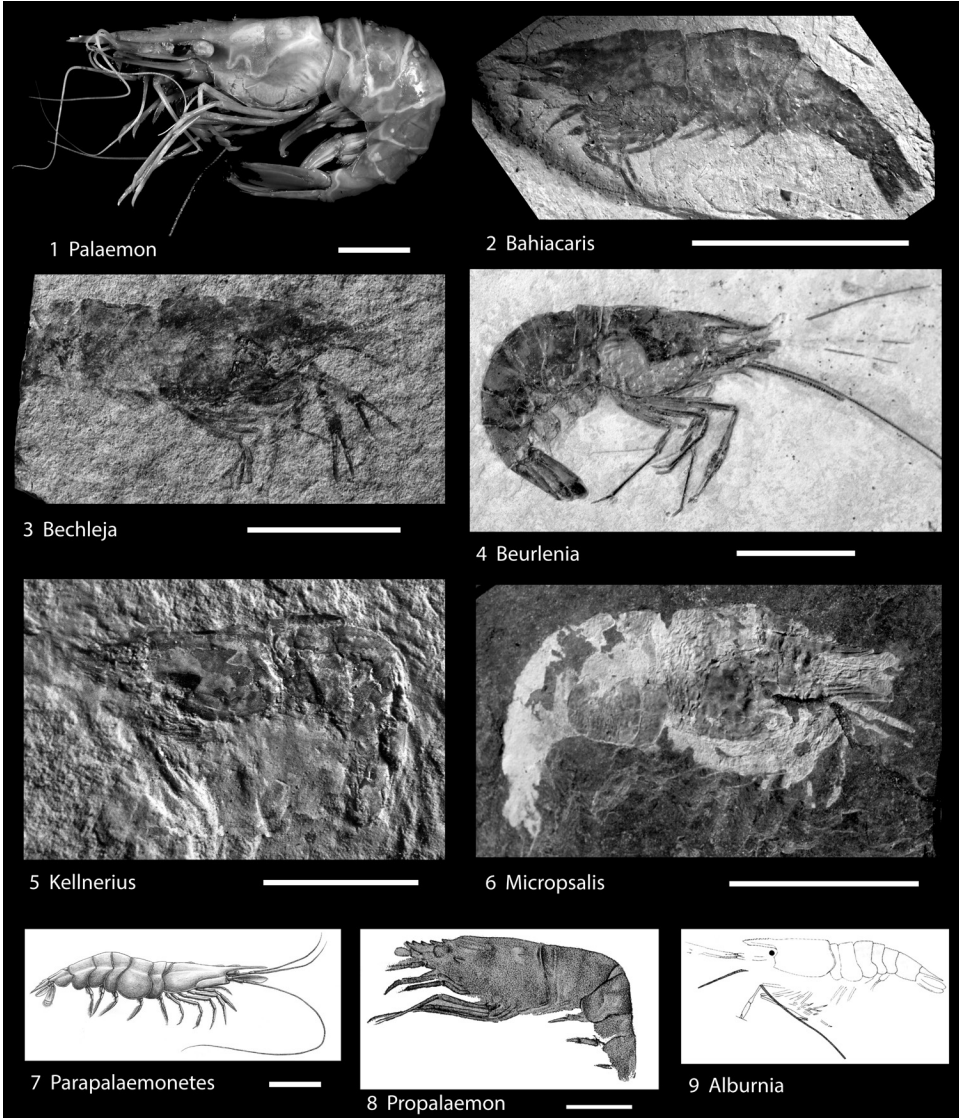


FIG. 6. Palaemonidae (p. 14–16).

tral spines, first pereiopod chelate, chelae large; antennae long, three times the length of carapace. *Eocene*: Italy. *Oligocene*: Czech Republic, Germany.—FIG. 6,6. \**M. papyracea*, BSP 1987 I 107, Oligocene, Germany, scale bar 1 cm (new). **Parapalaemonetes** BRANDT & SCHULZ, 2013, p. 78 [\**P. thuringiacus*; OD]. Carapace long; rostrum long; with one epigastric spine; strong antennal and pterygostomial spines; maxilliped 3 shorter than pereiopods; pereiopod 1 chelate; other pereiopods achelate. *Middle Triassic (Ladinian)*: Germany.—FIG. 6,7. \**P. thuringiacus*, reconstruction, scale bar, 1 cm (Brandt & Schulz, 2013, fig. 15).

**Propalaemon** WOODWARD, 1903, p. 98 [\**P. osborniensis*, p. 98, pl. 5,1–4; SD WOODS, 1925 in 1925–1931, p. 4]. Rostrum short, with suprarostreal teeth; carapace with hepatic spine; long and slender pereiopods; long pleopods. *Oligocene*: Brazil, UK (England).—FIG. 6,8. \**P. osborniensis*, drawing of syntype NHMUK In. 24494, Oligocene, England (UK), scale bar 1 cm (new).

**Pseudocaridinella** MARTINS-NETO & MEZZALIRA, 1991b, p. 365 [\**Atyoida tremembeensis* BEURLEN, 1950, p. 454, fig. 2; OD]. Rostrum with one subrostrual spine; carpus of pereiopod 2 excavate (concave?); pereiopods 1 and 2 chelate, moderate in

size and equal in size; pleonal somites short. *Oligocene* (Chattian): Brazil.—FIG. 7,1. \**P. tremembeensis* (BEURLEN), scale bar 1 cm (drawing from Beurlen, 1950, fig. 2a).

**Schmelingia** SCHWEIGERT, 2002, p. 5 [\**S. wulfi*; OD]. Rostrum short; carapace smooth; first pereopods very long and large, much longer than carapace, merus, carpus and manus elongate, fixed finger short, movable finger curved, longer than fixed finger. *Upper Jurassic* (Tithonian): Germany.—FIG. 7,2. \**S. wulfi*, holotype, JME Inv.-Nr. SOS 4788, scale bar 1 cm (new).

**Yongjiacaris** GARASSINO, YANBIN, SCHRAM, & TAYLOR, 2002, p. 75 [\**Y. zhejiangensis*, p. 75, fig. 4–6; OD]. Rostrum short, apparently without supra- and subrostral spines; carapace smooth; telson with two pairs of spines on dorsal surface; pereopods 1 and 2 chelate, 2 slightly longer; pereopods 4 and 5 longer than 1 and 2. *Lower Cretaceous* (Barremian): China.—FIG. 7,3. \**Y. zhejiangensis*, holotype IGP 126296, scale bar 1 cm (Garassino & others, 2002, fig. 6.1).

### Family TYPHLOCARIDIDAE Annandale & Kemp, 1913

[*nom. transl.* CHACE, 1992, p. 71, ex Typhlocaridinae ANNANDALE & KEMP, 1913, p. 245]

Carapace divided longitudinally by complete longitudinal dorsolateral suture and postantennal suture; eyes reduced. [Emended from WICKSTEN, 2010, p. 197.] *Holocene*.

**Typhlocaris** CALMAN, 1909, p. 93 [\**T. galilea*; M]. As for family. *Holocene*: Sea of Galilee.—FIG. 7,4. \**T. galilea* (CALMAN, 1909, fig. 1.1).

### Superfamily PANDALOIDEA Haworth, 1825

[*nom. transl.* THOMPSON, 1966, p. 321, ex Pandalidae HAWORTH, 1825, p. 184]

Rostrum well developed, usually with subrostral spines or setae; sixth pleomere with a posterolateral process rounded or terminating in small tooth; telson with longitudinal row of spiniform setae; first pereopods with tiny or completely reduced fingers; second pereopods subequal or unequal, basis with small process on lateral surface, carpus multiarticulate. [Emended from KOMAI, CHAN, & DE GRAVE, 2019, p. 392.] *Upper Cretaceous* (Cenomanian)—*Holocene*.

### Family CHLOROTOCELLIDAE Komai, Chan, & De Grave, 2019

[Chlorotocellidae KOMAI, CHAN, & DE GRAVE, 2019, p. 392]

Rostrum, if present, without subrostral spines or fringe of setae; sixth pleomere posterolateral process rounded or truncate; telson with dorsolateral spiniform setae located adjacent to lateral margins; fingers of first pereopods tiny or nearly absent; second pereopods always subequal, basis without small process on lateral surface of basis, carpus with three articles. [Emended from KOMAI, CHAN, & DE GRAVE, 2019, p. 392.] *Holocene*.

**Chlorotocella** BALSS, 1914b, p. 33 [\**C. gracilis*; M]. Rostrum elongate, very slender, gently upturned, extending beyond antennal scaphocerite, with two suprarostal spines at base; carapace with supraorbital spine, suborbital lobe prominent, small pterygostomial spine; pleonites dorsally rounded, pleonites 4 and 5 with pair of posterolateral spines; pleonite 5 with deep transverse groove near posterodorsal margin, with small posterovenral spine; pleonite 6 with minute posteromedian spine and tiny; elements of pereopods 3, 4, and 5 each with setae. [Emended from KOMAI, CHAN, & DE GRAVE, 2019, p. 398.] *Holocene*: Indo-Pacific Ocean.—FIG. 7,5. \**C. gracilis*, *Holocene*, southeast Asia, scale bar 1 cm (Balss, 1914b, fig. 16).

### Family PANDALIDAE Haworth, 1825

[Pandalidae HAWORTH, 1825, p. 184] [=Thalassocarididae BATE, 1888, p. 682; =Heterocarpodidae THOMPSON, 1965, p. 5, 1966, p. 314; =Pantominae CHRISTOFFERSON, 1989, p. 265; =Austropandalini CHRISTOFFERSON, 1989, p. 265; =Plesionikidae CHRISTOFFERSON, 1989, p. 265; =Dorodoteidae CHRISTOFFERSON, 1989, p. 266]

Rostrum well developed, usually with subrostral spines or setae; sixth pleomere with a posterolateral process usually terminating in small tooth; telson with longitudinal row of spiniform setae located on dorsolateral ridges; first pereopods with tiny or completely reduced fingers or achelate; second pereopods subequal or unequal, basis with small process on lateral surface, carpus multiarticulate but not with three articles. [Emended from KOMAI, CHAN, & DE GRAVE, 2019, p. 392.] *Upper Cretaceous* (Cenomanian)—*Holocene*.

**Pandalus** LEACH, 1814, p. 432 [\**P. montagui*; M] [=*Dymas* KRÖYER, 1861, p. 63 (type, *D. typus*, OD); =*Boreocaris* ORTMANN, 1893, p. 84 (type, *B. moebiusi*, M)]. Rostrum with supraorbital spines movable. [HOLTHUIS, 1993, p. 262.] *Miocene*: Japan. *Holocene*: North Pacific Ocean.—FIG. 7,6. \**P. chani* KOMAI, 1999, paratype, MNHN-IU-2014-

23332, Holocene, Taiwan, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

**Palaeopandalus** CHARBONNIER, AUDO, GARASSINO, & HYŽNÝ, 2017, p. 98 [\**P. komaii*; OD]. Rostrum long, tip upturned, with suprarostal spines; pereopods long, slender, pereopod 1 possibly achelate, pereopod 2 with multiarticulate carpus. *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 7,7. \**P. komaii*, holotype, MNHN.F.A51491, scale bar 1 cm (photo by L. Cazes, MNHN, Project RECOLNAT).

Families not placed in superfamilies, listed alphabetically:

#### Family ATYIDAE De Haan, 1849

[*nom. correct.* DANA, 1852b, p. 16, *pro* Atyadea DE HAAN, 1849 in 1833–1850, p. 168; ICZN Opinion 470, 1957]

Rostrum, if present, attached to rest of carapace; carapace without longitudinal lateral ridges; eyes neither unusually long nor concealed beneath carapace; antennule with two flagella, neither with accessory branch; third maxilliped five-segmented, slender, pereopod-like; pereopods usually with strap-like epipods (mastigobranchs) on at least first three pairs; first and second pereopods similar, with fingers of chela usually terminating in tuft of setae; second pereopod with carpus undivided; fifth pereopod with dactylar grooming comb. [Emended from CHACE, 1997, p. 3; DAVIE, 2002, p. 222; EMMERSON, 2016, p. 162.] *Lower Cretaceous (Berriasian–Barremian)–Holocene*.

**Atya** LEACH, 1816, p. 36 [\**Atya scaber* LEACH, 1815 in 1815–1816, p. 345; M; ICZN Opinion 470, 1957] [= *Evatya* SMITH, 1871, p. 95 (type, *Evatya crassai*, M); = *Euatya* KOELBEL, 1884, p. 317, unnecessary emendation of *Evatya*]. Carpus of pereopods 1 and 2 approximately as long as high; maxilliped 3 setose at tip; pereopod 3 of males without spine on merus. [Emended from HOLTHUIS, 1993, p. 41.] *Holocene*: Atlantic Ocean.—FIG. 8,1. *Atya intermedia* BOUVIER, 1904, syntype, MNHN-IU-2014-22814, Holocene, Equatorial Africa, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

**Caridina** H. MILNE-EDWARDS, 1837 in 1834–1840, p. 362 [\**C. typus*; OD]. Rostrum laterally compressed, usually with supra- and subrostral spines, rarely unarmed; dactylus of chelae shorter than fixed finger; carpus of pereopod 2 hardly excavated anteriorly. [Emended from HOLTHUIS, 1993, p. 42.] *Oligocene*: France. *Holocene*: Indo-Pacific Ocean.—FIG. 8,2. *C. gueryi* MARQUET, KEITH, & KALFATAK, 2009, paratype, MNHN-IU-2015-1769,

Holocene, Vanuatu, scale bar 2 mm (photo by L. Flamme, MNHN, Project RECOLNAT).

**Delclosia** RABADÀ I VIVES, 1993, p. 354 [\**Oplophorus roselli* VÍA, 1971, p. 608; OD]. Rostrum long, with numerous suprarostal spines, arcuate, concave at mid-length and upturned at tip; pereopods 1 and 2 chelate; pereopods 3–5 longer than pereopods 1 and 2. *Lower Cretaceous (Berriasian–Barremian)*: Spain.—FIG. 8,3. *D. almeni* LÓPEZ-HORGUE & BODEGO, 2017, left to right, holotype BCB-D3, paratype BCB-D4, paratype BCB-D5, Hauterivian–Barremian, Spain, scale bar 1 cm (new; photo by M. López-Horgue, University of the Basque Country, Spain).

#### Family PASIPHAEIDAE Dana, 1852

[Pasiphaeidae DANA, 1852b, p. 13; ICZN Opinion 470, 1957] [=Leptocheilidae PAULSON, 1875, p. 105]

Body strongly compressed; rostrum short, usually without supra- and subrostral spines; carapace without cervical groove; first and second pair of pereopods similar, second slightly larger than first, both larger and stronger than third to fifth pairs, fourth pereopods usually smallest; carpus of second pair of pereopods entire; fingers of chela with many teeth (pectinate), may cross at tips; exopods present, but epipods absent on all pereopods. [Emended from WICKSTEN, 2010, p. 194; FRANSEN, 2014, p. 97; EMMERSON, 2016, p. 132.] *Oligocene–Holocene*.

**Pasiphaea** SAVIGNY, 1816, p. 50 [\**Alpheus sivado* Risso, 1816, p. 93, pl. 3,4; M; ICZN Opinion 470, 1957]. Rostrum a very short, upward-directed spine. [HOLTHUIS, 1993, p. 23.] *Oligocene*: Russia. *Holocene*: Cosmopolitan.—FIG. 8,4. *Pasiphaea telacantha* HAYASHI, 2004, holotype, MNHN-IU-2008-14055, Holocene, New Caledonia, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

#### Family PHYSETOCARIDIDAE

##### Chace, 1940

[*nom. corr.* HOLTHUIS, 1955, p. 128, *pro* Physetocaridae CHACE, 1940, p. 196]

Rostrum developed as a hoodlike prolongation of the carapace; first pereopods achelate, without dactyl; second pereopods with multisegmented carpus, chelate, fixed finger curving subrectangularly around short broad movable finger. [Emended from CHACE, 1940, p. 196; WICKSTEN, 2010, p. 197.] *Holocene*.

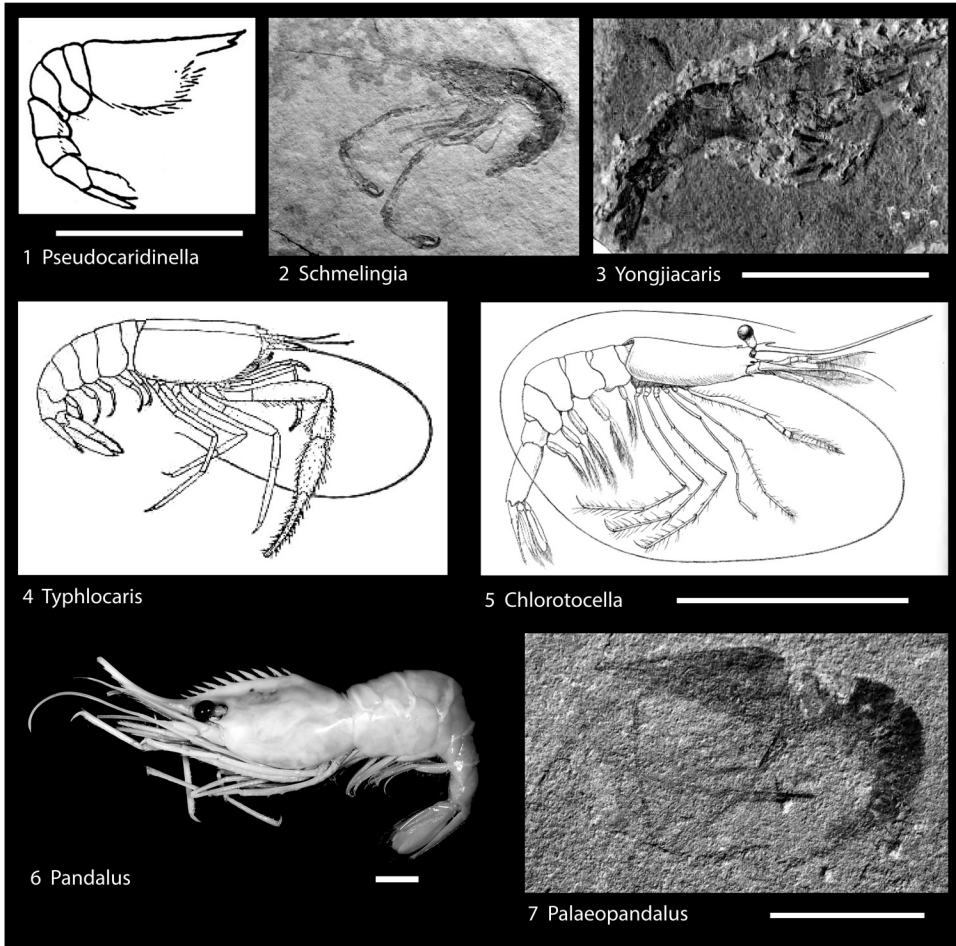


FIG. 7. Palaemonidae, Typhlocarididae, Chlorotocellidae, Pandalidae (p. 17–18).

*Physetocaris* CHACE, 1940, p. 196 [*\*P. microphthalmal*; M]. As for family. *Holocene*: Northwest Atlantic. —FIG. 8,5. *\*P. macrophthalmal*, USNM 222478, Holocene, central Atlantic Ocean, scale bar 1 cm (new).

**Family PLEOPTERYXIDAE  
Schweigert & Garassino, 2006**

[Pleopteryxidae SCHWEIGERT & GARASSINO, 2006, p. 451]

Carapace with strong pterygostomial spine; rostrum with several large supra-rostral spines; third maxilliped apparently very strong and stout; pereiopods long and slender; pleopods biramous, very long, covered with large feather-like structures. *Upper Jurassic (Tithonian)*: Germany.

*Pleopteryx* SCHWEIGERT & GARASSINO, 2004, p. 19 [*\*P. kuempeli*; OD]. As for family. *Upper Jurassic (Tithonian)*: Germany. —FIG. 8,6. *\*P. kuempeli*, holotype, SMNS 64942, scale bar 1 cm (new).

**Family PROCESSIDAE Ortmann, 1896**

[Processidae ORTMANN, 1896, p. 424; ICZN Opinion 434, 1956] [=Nikidae BATE, 1888, p. 503; =Hectarthropidae BATE, 1888, p. 883]

Rostrum slender, not or barely extending beyond eyes, with two small distal spines; carapace smooth with antennal spine only, sometimes with deep postorbital groove; pereiopods unequal, first pereiopod with right chela, left pereiopod achelate or both chelate; second pereiopods unequal, right

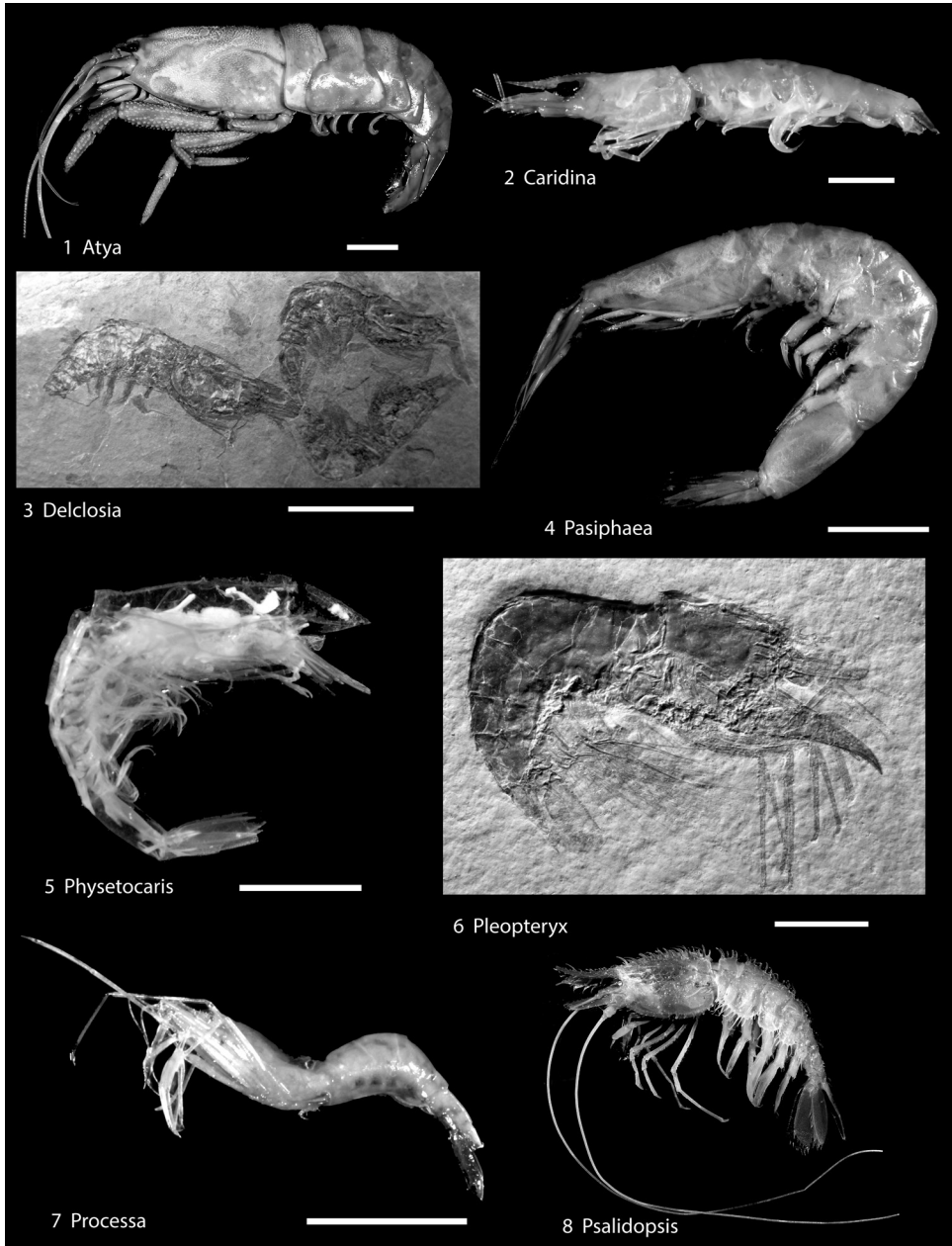


FIG. 8. Atyidae, Pasiphaeidae, Physetocarididae, Pleopteryxidae, Processidae, Psalidopodidae (p. 18–21).

periopod usually much longer than left, chela small, carpus and merus multi-articulate. [Emended from FRANSEN, 2014, p. 152.] *Holocene*.

*Processa* LEACH, 1815 in 1815–1875, caption of pl. 41 [\**P. canaliculata*; M, ICZN Opinion 434, 1956]

[= *Thalassalpes* BOSCH, 1813, p. 233 (type, *Nika edulis* RISSO, 1816, p. 85, SD HOLTHUIS, 1955, p. 116); = *Nika* RISSO, 1816, p. 84 (type, *N. edulis*, SD H. MILNE-EDWARDS, 1837, pl. 52, 1); = *Velocina* GISTL, 1848, p. x, unnecessary replacement name for *Processa*; = *Hectarthropus* BATE, 1888, p. 889 (type, *H. expansus* BATE, 1888, p. 892, SD HOLTHUIS,

1955, p. 117)]. Rostrum usually slender in dorsal aspect; telson with distinct dorsolateral spines; first pereopods with one chelate (usually right), other with simple dactyl. Second pereopods shorter, with carpus composed of more than six articles. [Emended from CHACE, 1997, p. 37.] *Holocene*: Cosmopolitan.—FIG. 8,7. *P. brasiliensis* CHRISTOFFERSEN, 1979, paratype, MNHN-IU-2014-22357, Holocene, Brazil, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

**Family PSALIDOPODIDAE**  
**Wood-Mason & Alcock, 1892**

[Psalidopodidae WOOD-MASON & ALCOCK, 1892, p. 265; ICZN Opinion 470, 1957]

Carapace and rostrum strongly spinose; first pereopods with both fingers movable, crossing; second pereopods with chela surrounded by setae. [BAUER, 2004, p. 70; WICKSTEN, 2010, p.196.] *Holocene*.

**Psalidopus** WOOD-MASON & ALCOCK, 1892, p. 266 [\**P. huxleyi*; SD HOLTHUIS, 1955, p. 81]. As for family. *Holocene*: Indo-Pacific Ocean.—FIG. 8,8. \**P. huxleyi* (HOLTHUIS), MNHN-IU-2011-3840, Holocene, Papua New Guinea (photo by R. L. Lee, MNHN).

**Family STYLODACTYLIDAE**  
**Bate, 1888**

[Stylodactylidae BATE, 1888, p. 850]

Rostrum almost as long as or longer than rest of carapace, with supra- and sometimes subrostral spines; third maxilliped and first and second pereopods setose, longer than third to fifth pereopods; first and second pereopods with very long slender fingers of chelae, fingers more than ten times as long as high and more than five times as long as palm. [BAUER, 2004, p. 71; HOLTHUIS, 1993, p. 18; WICKSTEN, 2010, p. 196; EMMERSON, 2016, p. 196.] *Holocene*.

**Stylodactylus** A. MILNE EDWARDS, 1881, p. 11 [\**S. serratus*; M]. Stylocerite at least four times as long as wide, narrow, sharp. [HOLTHUIS, 1993, p. 85.] *Holocene*: Caribbean Sea, Indo-Pacific Ocean.—FIG. 9,1. \**S. serratus*, syntype, MNHN-IU-2014-22281, Holocene, Caribbean Sea, scale bar 1 cm (photo by L. Flamme, MNHN, Project RECOLNAT).

**CARIDEA Family Uncertain**

**Acanthinopus** PINNA, 1974, p. 23 [\**A. gibbosus*; M]. Rostrum short; carapace rectangular; pereopods long and slender, with at least some spinose

elements. *Upper Triassic (Norian)*: Italy.—FIG. 9,2. \**A. gibbosus*, holotype, MCSNB 3109, scale bar 1 cm (new).

**Alcmonacaris** POLZ, 2008, p. 2 [\**A. winkleri*, p. 3, text-fig. 1–2, pl. 1–2; OD]. Carapace elongate, trapezoidal; with an antennal spine; rostrum with serrate suprarostal surface, may have a keel laterally; maxilliped 3 setose; pereopods slender. Not long, pereopod 2 may have claws; pleonal somite 6 longest; telson with three pairs of movable spines and terminal spines. *Upper Jurassic (Tithonian)*: Germany.—FIG. 9,3. \**A. winkleri*, holotype, JME-SOS8084, scale bar 5 mm (new).

**Bavaricaris** WINKLER, 2021, p. 52 [\**B. haereri*, p. 52, fig. 2–8; OD]. Carapace short, approximately as long as high; rostrum long, arcing dorsally, with at least nine dorsal rostral spines and one ventral rostral spine; pereopods very slender, manus of pereopod 2 elongate. *Upper Jurassic (Tithonian)*: Germany.—FIG. 9,4. \**B. haereri*, holotype SMNS 70531/1, scale bar, 1 cm (new, photo by M. Boller, SMNS).

**Blaculla** MÜNSTER, 1839, p. 75 [\**B. nicoides* MÜNSTER, 1839, p. 76, pl. 29,1; SD GLAESSNER, 1929, p. 66]. Rostrum moderate in length; maxilliped 3 pediform, stout; pereopod 1 chelate, shorter and stouter than pereopod 2; pereopod 2 much longer than pereopod 1, multiarticulate carpus, chelae with long fingers, apparently asymmetrical, one slightly shorter and less robust; pereopods 3–5 long, slender. *Upper Jurassic (Tithonian)*: Germany.—FIG. 9,5. \**B. nicoides*, SMNS 65421, scale bar 1 cm (new).

**Buergerocaris** SCHWEIGERT & GARASSINO, 2004, p. 24 [\**B. psittacoides*; OD]. Rostrum extending beyond eyes and antennular peduncle, curved, with supra and subrostral spines; carapace approximately as high as long; first three pairs of pereopods chelate, progressively increasing in length; pereopod 1 most robust; chelae of pereopods 1 and 2 bulbous; pereopod 4 longest; dorso-pleonal carina present on pleonal somites 3–6. [Emended from SUDARSKY, 2016, p. 22.] *Upper Jurassic (Kimmeridgian–Tithonian)*: Germany.—FIG. 9,6. \**B. psittacoides*, holotype, SMNS 65010, scale bar 1 cm (new).

**Ctenodusa** SCHWEIGERT, GARASSINO, & PASINI, 2016, p. 20 [\**Dusa bronni* OPPEL, 1862, p. 108, pl. 32,3; OD]. Carapace higher distally, rostrum straight, with eight suprarostal spines; pereopods 1 and 2 chelate, each with long spinose; pleonal somites becoming lobar distally, somite 6 longest. *Upper Jurassic (Tithonian)*: Germany.—FIG. 9,7. \**Ctenodusa bronni* (OPPEL), holotype, MNHB MB.A1104, scale bar 1 cm (new).

**Harthofia** POLZ, 2007, p. p. 3 [\**H. bergeri*, p. 3, text-fig. 1–2, pl. 1; OD]. Rostrum extending beyond eyes but not antennular peduncle, curved, with supra- and subrostral spines; carapace approximately three-fourths as high as long; scaphocerite to antennular peduncle ratio variable from equal length to up to scaphocerite twice length of antennular peduncle; pereopods short, pereopods 1 and 2 chelate; pereopod 1 most robust and longest;

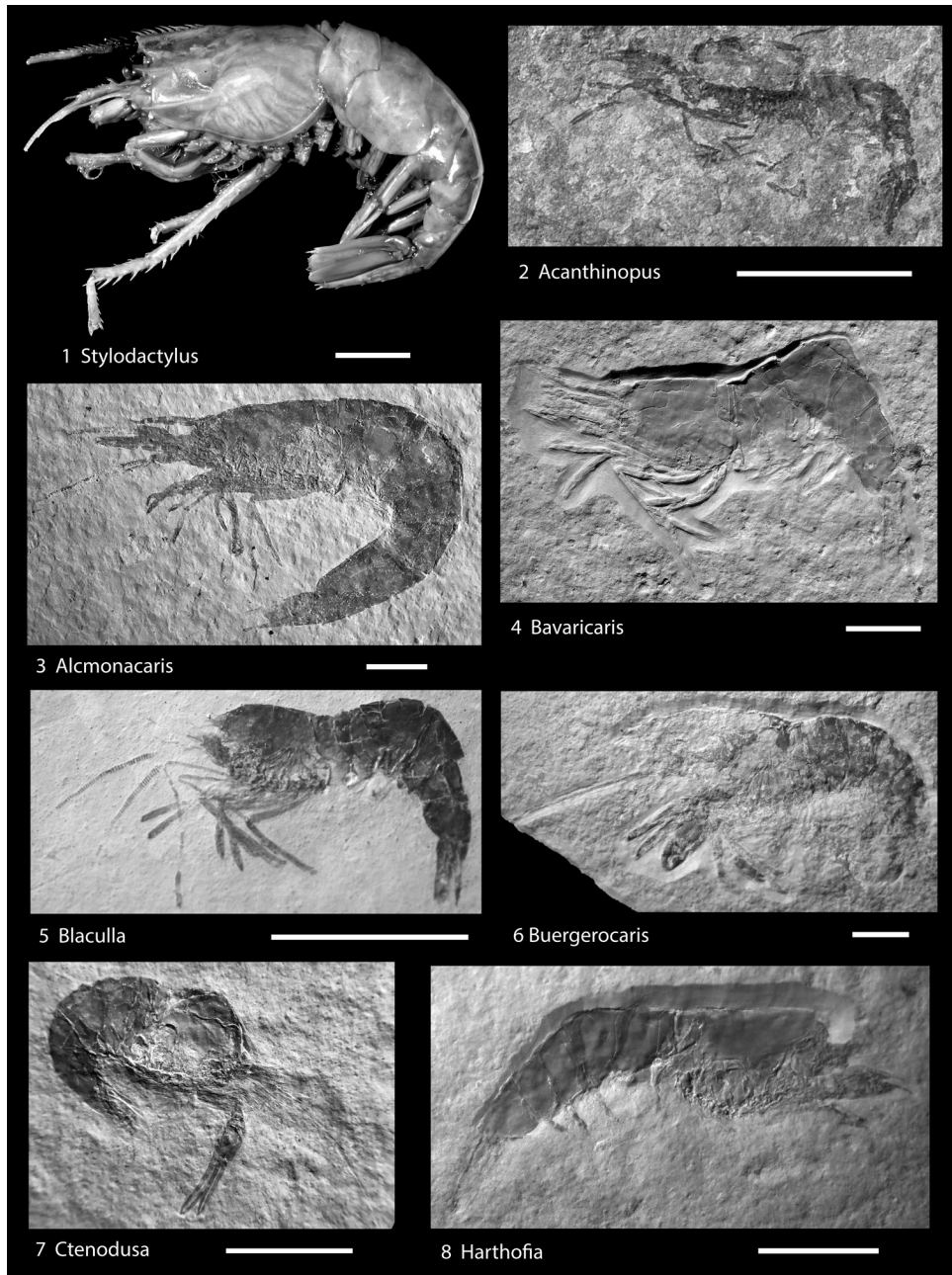


FIG. 9. Stylodactylidae, Caridea Family Uncertain (p. 21–22).

telson setose. [Emended from SUDARSKY, 2016, p. 27.] *Upper Jurassic (Tithonian)*: Germany.—FIG. 9,8. \**H. bergeri*, #935 Wulf Collection, Germany, scale bar 1 cm (new).

Hefriga MÜNSTER, 1839, p. 73 [\**H. serrata*; SD GLAESSNER, 1929, p. 207; MÜNSTER apparently

misspelled the trivial name as *sorrata* on p. 73, as he spelled it as *serrata* on p. 88] [=*Bombur* MÜNSTER, 1839, p. 74 (type, *B. complicatus*; SD GLAESSNER, 1929, p. 67, see FÖRSTER, 1967, p. 172)]. Rostrum extending beyond eyes and antennular peduncle, straight, with between six and nine suprarostreal



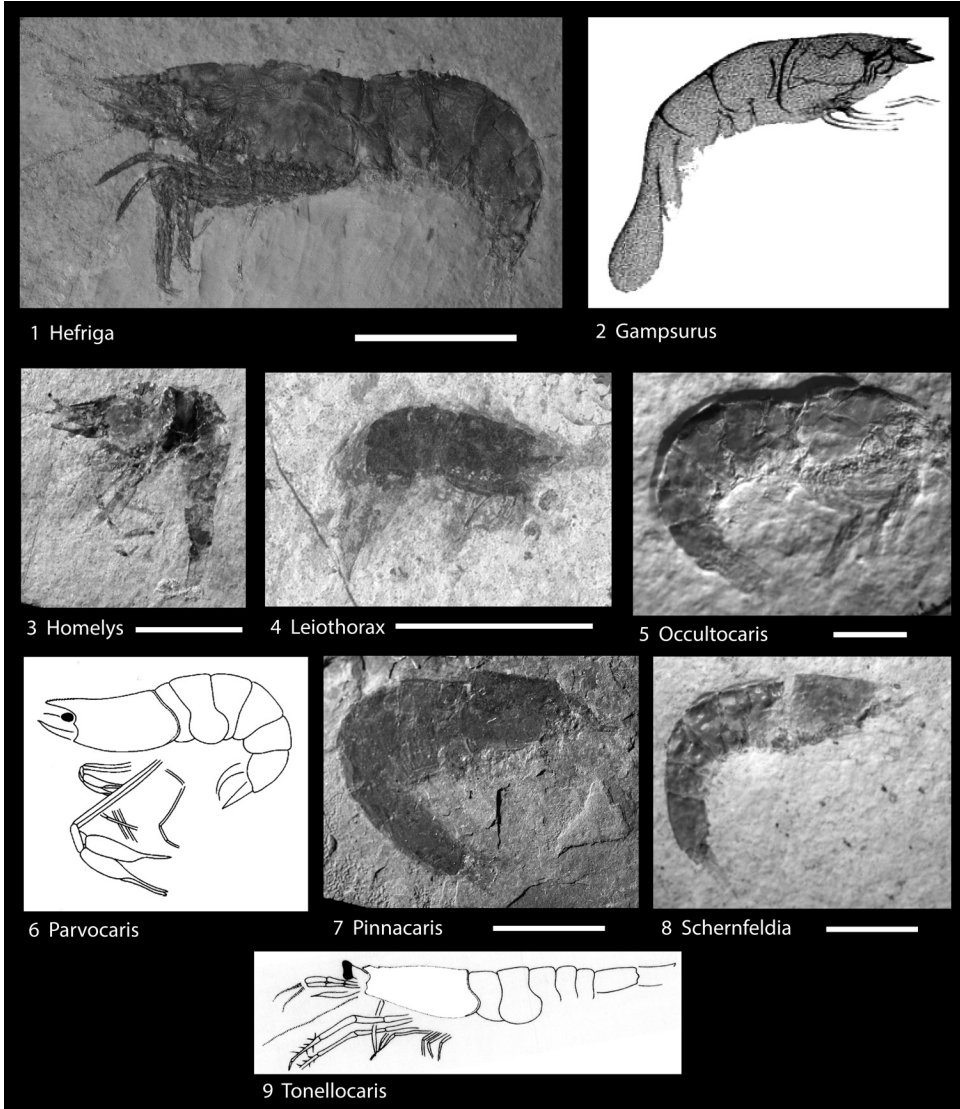


FIG. 10. Caridea Family Uncertain (p. 22–24).

spines; carapace twice as long as high; pereiopods 1 and 2 chelate, bulbous and with highly curved fingers and more robust than the rest, pereiopod 1 generally most robust, pereiopod 3 longest, merus with spines; uropods and telson setose. [Emended from SUDARSKY, 2016, p. 27.] *Upper Triassic*: Switzerland. *Upper Jurassic (Tithonian)*: Germany.—FIG. 10,1. \**H. serrata* (GLAESSNER), holotype, BSP AS VII 721, Tithonian, Germany, scale bar 1 cm (new).

**Gampsurus** VON DER MARCK in VON DER MARCK & SCHLÜTER, 1868, p. 303 [\**Euryurus dubius* VON DER MARCK, 1863, p. 76, pl. 14,7; OD] [=*Euryurus* VON

DER MARCK, 1863, p. 76]. Based on a single incomplete specimen. Rostrum short, with two or three suprarostal spines; carapace short, subrectangular; pleonal somite 2 with subrounded pleura; telson drawn so as to look like a manatee's tail. *Upper Cretaceous*: Germany.—FIG. 10,2. \**G. dubius* (VON DER MARCK, 1863, pl. 14,7).

**Homelys** VON MEYER, 1844, p. 331 [\**H. minor*; SD GLAESSNER, 1929, p. 213]. Appearing to be an incompletely preserved shrimp; carapace long, with rostrum and antennae; abdomen flexed ventrally at somites 3 and 4. *Miocene*: Germany.—FIG. 10,3. \**H. minor*, BSP AS I 971, scale bar 5 mm (new).

- Leiothorax** PINNA, 1974, p. 24 [*\*L. triasicus*, p. 24, pl. 12,2, pl. 13,4; M]. Based on a single incomplete specimen. Rostrum short, with suprarostal spines; carapace short, high; pleonal somites short, high; pereopods appearing to be short, slender. *Upper Triassic (Norian)*: Italy.—FIG. 10,4. *\*L. triasicus*, holotype, MCSNB 3156, scale bar 1 cm (new).
- Occultocaris** WINKLER, 2014, p. 84 [*\*O. frattigianii*; OD]. Rostrum not extending beyond eyes or antennular peduncle, curved, unarmed; carapace with antennal spine; pereopods 1 and 2 chelate, pereopods progressively increasing in length, pereopod 4 longest, setose; pereopod 1 most robust with bulbous manus. *Upper Jurassic (Tithonian)*: Germany.—FIG. 10,5. *\*O. frattigianii*, holotype, SMNS 70224/1, scale bar 1 cm (new).
- Parvocaris** BRAVI & GARASSINO, 1998a, p. 154 [*\*P. samnitica*; OD]. Rostrum moderate in length; at least one pair of pereopods with bulbous chelae. *Lower Cretaceous (Albian)*: Italy.—FIG. 10,6. *\*P. samnitica*, drawing of holotype M20545 (BRAVI & GARASSINO, 1998a, fig. 24).
- Pinnacaris** GARASSINO & TERUZZI, 1993, p. 12 [*\*P. dentata*; OD]. Rostrum short, with supra-rostral spines; pereopods slender, terminations not known; pleonal somite 6 long. *Upper Triassic (Norian)*: Italy.—FIG. 10,7. *\*P. dentata*, MSNM i10693, scale bar 1 cm (new).
- Schernfeldia** WINKLER, 2013, p. 78 [*\*S. schweigerti*; OD]. Rostrum short, with supra- and subrostral spines; carapace with hepatic and antennal spines; carpus of pereopod 1 setose; pereopods slender. *Upper Jurassic (Tithonian)*: Germany.—FIG. 10,8. *S. schweigerti*, holotype, SMNS 70111, scale bar 1 cm (new).
- Tonellocaris** GARASSINO, 1998, p. 64 [*\*T. brevisrostrata*; M]. Rostrum short, with suprarostal spines; third maxilliped? spinose; pereopods slender, terminations not known. [Emended from GARASSINO, 1998, fig. 2.] *Lower Cretaceous (Barremian–Aptian)*: Italy.—FIG. 10,9. *\*T. brevisrostrata*, drawing of holotype MFSN 21537.

## ABBREVIATIONS OF MUSEUM REPOSITORIES

- BCB**: Department of Stratigraphy and Palaeontology, University of the Basque Country/Euskal Herriko Unibertsitatea (UPV/EHU), Leioa (Biscay, Basque Country), Spain
- BSP, SNSB-BSPG**: Bayerische Staatsammlung für Paläontologie und historische Geologie München (Munich), Germany
- CM**: Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA
- IGP**: Institute of Geology and Paleontology, Academia Sinica, Nanjing, China
- JME**: Jura-Museum Eichstätt, Germany
- LPU**: Laboratório de paleontologia da Universidade Regional do Cariri, Brazil
- M**: Museo di Paleontologia di Napoli, Italy
- MCSNB**: Museo Civico di Scienze Naturali di Bergamo, Italy
- MFSN**: Museo Friulano di Storia Naturale, Udine, Italy
- MNHB**: Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
- MNHN**: Muséum National d'histoire naturelle, Paris, Crustacean Collection, France
- MPSC**: Museu de Paleontologia Plácido Cidade Nuvens, Santana do Cariri, Brazil
- MSNM**: Museo Civico di Storia Naturale di Milano, Italy
- NHMUK**: Palaeontology Collections, The Natural History Museum, London, UK
- NM**: Národní Muzeum, Prague, Czech Republic
- RBINS**: Royal Belgian Institute of Natural Sciences, Brussels, Belgium
- SMNS**: Staatliches Museum für Naturkunde, Stuttgart, Germany
- USNM**: United States National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA
- ZC**: Crustacea Collection, Natural History Museum and Institute, Chiba, Japan
- ZIN**: Zoological Institute of Russian Academy of Sciences, Department of Marine Biology, Saint-Petersburg, Russia
- ZMBN**: Museum of Zoology, University of Bergen, Bergen, Norway

## REFERENCES

- Abele, L. G., & J. W. Martin. 1989. American species of the deep-sea shrimp genus *Bythocaris* (Crustacea, Decapoda, Hippolytidae). *Bulletin of Marine Science* 45:26–51.
- Agassiz, Louis. 1842–1846. *Nomenclatoris Zoologici Index Universalis, continens nomina systematica classium, ordinum, familiarum et generum animalium omnium, tam viventium quam fossilium, secundum ordinem alphabeticum unicum disposita, adjectis homonymis plantarum*. Solduri, Sumptibus et Typis Jent et Gassma. 1135 p.
- Alcock, Alfred. 1901. A descriptive catalogue of the Indian Deep-Sea Crustacea Decapoda Macrura and Anomola in the Indian Museum being a revised account of the deep-sea species collected by the Royal Indian Marine Survey Ship Investigator. Trustees of the Indian Museum, Calcutta. 286 p., 3 pl.
- Alvarez, Fernando, T. M. Iliffe, & J. L. Villalobos. 2006. Macromaxillocarididae, a new family of stenopodidean shrimp from an anchialine cave in the Bahamas, with the description of *Macromaxillocaris bahamaensis*, n. gen., n. sp. *Journal of Crustacean Biology* 26:366–378.
- Annandale, Nelson, & Stanley Kemp. 1913. The Crustacea Decapoda of the Lake of Tiberias. *Journal and Proceedings of the Asiatic Society of Bengal* 9:241–258.
- Armstrong, J. C. 1949. New Caridea from the Dominican Republic. *American Museum Novitates* 1410:1–27.

- Aurivillius, C. W. S. 1898. Krustaceen aus dem Kamerun-Gebiete. Bihang till Kungliga Svenska Vetenskapsakademiens Handlingar 24:1–31, pl. 1–4.
- Balss, Heinrich. 1914a. Diagnosen neuer Macruren der Valdivia Expedition. Zoologischer Anzeiger 44:592–599.
- Balss, Heinrich. 1914b. Ostasiatische Decapoden II. Die Natantia und Reptantia. Abhandlungen der Mathematisch-Physikalischen Klasse der Königlich Bayerischen Akademie der Wissenschaften, 10 (Supplement 2):1–101, pl. 1.
- Balss, Heinrich. 1915. Expeditionen S.M. "Pola" in das Rote Meer. Nördliche und südliche Hälfte 1895/96 1897/88. Zoologische Ergebnisse. XXX. Die Decapoden des Roten Meeres. I. Die Macruren. Denkschriften der Kaiserlichen Akademie der Wissenschaften, mathematische-naturwissenschaftliche Klasse 91:1–38.
- Balss, Heinrich. 1921. Results of Dr. E. Mjöberg's Swedish Scientific Expeditions to Australia 1910–1913. XXIX. Stomatopoda, Macrura, Paguridea und Galatheidæ. Bihang till Kungliga Svenska Vetenskapsakademiens Handlingar 61:1–24.
- Balss, Heinrich. 1955. VI. Ökologie. In H. Balss, W. von Buddenbrock, H.-E. Gruner, & E. Korschelt, eds., Klassen und Ordnungen des Tierreichs, Band 5, Abteilung 1, Buch 7, Lieferung 10. Akademische Verlagsgesellschaft Geest & Portig K.-G. Leipzig, p. 1285–1367.
- Bate, C. S. 1878. On the *Willemoesia* group of Crustacea. Annals and Magazine of Natural History (series 5) 2:273–283, 484–489, pl. 13.
- Bate, C. S. 1888. Report on the Crustacea Macrura collected by H. M. S. "Challenger" during the years 1873–1876. Reports on the Scientific Results of the Voyage of H.M.S. Challenger (Zoology) 24:1–942. Published by Order of Her Majesty, London.
- Bauer, R. T. 2004. Remarkable Shrimps: Adaptations and Natural History of the Carideans. University of Oklahoma Press. Norman. 282 p.
- Beurlen, Karl. 1950. Alguns restos de Crustáceos Decápodos d'água doce fósseis no Brasil. Anais da Academia Brasileira de Ciências 22(4):453–459.
- Borradaile, L. A. 1915. Notes on Caridea. Annals and Magazine of Natural History (series 8) 15:205–213.
- Bosc, L. A. G. 1813. Essay historique sur les crustacés de la mer de Nice; par M. Rizzo (Extrait d'un rapport fait à l'institut par M. Bosc). Nouveau Bulletin des Sciences, par la Société Philomatique 66:233–234.
- Bouvier, E.-L. 1904. Crevettes de la famille des Atyidés: espèces qui font partie des collections du Muséum d'Histoire Naturelle. Bulletin du Muséum d'Histoire naturelle 10:129–138.
- Brandt, Sebastian, & Manfred Schulz. 2013. Zwei neue natante Dekapoden aus den Oberen Muschelkalk (Mittel-Trias, Ladin) des Germanischen Beckens—*Antrimpos germanicus* n. sp. und *Parapalaemonetes thuringiacus* n. gen. n. sp. Veröffentlichungen des Naturkundemuseums Erfurt 32:67–95.
- Bravi, Sergio, & Alessandro Garassino. 1998a. New biostratigraphic and palaeoecologic observations on the «Plattenkalk» of the Lower Cretaceous (Albian) of Pietraroia (Benevento, S Italy), and its decapod crustaceans assemblage. Atti della Società italiana di Scienze Naturali e del Museo civico di Storia naturale in Milano 138:119–171.
- Bravi, Sergio, & Alessandro Garassino. 1998b. Plattenkalk of the Lower Cretaceous (Albian) of Petina in the Alburni Mounts (Campania, S Italy), and its decapod crustaceans assemblage. Atti della Società italiana di Scienze Naturali e del Museo civico di Storia naturale in Milano 138:89–118.
- Bruce, A. J. 1993. *Kakaducaris glabra* gen. nov., sp. nov., a new freshwater shrimp from the Kakadu National Park, Northern Territory, Australia, Crustacea: Decapoda: Palaemonidae with the designation of a new subfamily Kakaducaridinae. Hydrobiologia 268:27–44.
- Burkenroad, M. D. 1963. The evolution of the Eucarida (Crustacea, Eumalacostraca) in relation to the fossil record. Tulane Studies in Geology 2:3–16.
- Calman, W. T. 1896. On deep-sea Crustacea from the south-west of Ireland. Transactions of the Royal Irish Academy 31:1–22.
- Calman, T. W. 1909. On a blind prawn from the Sea of Galilee (*Typhlocaris galilea* g. et sp. n.). Transactions of the Linnean Society of London, second series, Zoology 11:93–97, pl. 19.
- Chace, F. A., Jr. 1936. Revision of the bathypelagic prawns of the family Acanthephyridae, with notes on a new family, Gomphonotidae. Journal of the Washington Academy of Sciences 26:24–31.
- Chace, F. A., Jr. 1937. A correction in crustacean nomenclature. Proceedings of the New England Zoological Club 16:15–16.
- Chace, F. A., Jr. 1940. Plankton of the Bermuda Oceanographic Expeditions. IX. The bathypelagic caridean Crustacea. Zoologica, New York 25:117–209.
- Chace, F. A., Jr. 1984. The Caridean shrimps (Crustacea: Decapoda) of the *Albatross* Philippine Expedition, 1907–1910, Part 2: families Glyphocrangonidae and Crangonidae. Smithsonian Contributions to Zoology 397:1–63.
- Chace, F. A., Jr. 1986. The Caridean shrimps (Crustacea: Decapoda) of the *Albatross* Philippine Expedition, 1907–1910, Part 4: families Ophlophoridae and Nematocarinidae. Smithsonian Contributions to Zoology 432:1–82.
- Chace, F. A., Jr. 1988. The caridean shrimps (Crustacea: Decapoda) of the *Albatross* Philippine Expedition 1907–1910. Part 5: Family Alpheidae. Smithsonian Contributions to Zoology 466:1–99.
- Chace, F. A., Jr. 1992. On the classification of the Caridea (Decapoda). Crustaceana 63:70–80.
- Chace, F. A., Jr. 1997. The Caridean shrimps (Crustacea: Decapoda) of the *Albatross* Philippine Expedition, 1907–1910, Part 7: Families Atyidae, Eugonatonotidae, Rhynchocinetidae, Bathypalaemonellidae, Processidae, and Hippolytidae. Smithsonian Contributions to Zoology 587:1–106.
- Chace, F. A., Jr., & D. E. Brown. 1978. A new polychelate shrimp from the Great Barrier Reef of Australia and its bearing on the family Bresiliidae (Crustacea: Decapoda: Caridea). Proceedings of the Biological Society of Washington 91:756–766.
- Chace, F. A., Jr., & A. J. Bruce. 1993. The caridean

- shrimps (Crustacea: Decapoda) of the *Albatross* Philippine Expedition 1907-1910, Part 6: Superfamily Palaemonoidea. Smithsonian Contributions to Zoology 543:1–152.
- Chace, F. A., Jr., & R. B. Manning. 1972. Two new caridean shrimps, one representing a new family, from marine pools on Ascension Island (Crustacea: Decapoda: Natantia). Smithsonian Contributions to Zoology 131:1–18.
- Chan, T.-Y., H. C. Lei, C. P. Li, & K. H. Chu. 2010. Phylogenetic analysis using rDNA reveals polyphyly of Ophiophoridae (Decapoda: Caridea). Invertebrate Systematics 24:172–181.
- Charbonnier, Sylvain, Denis Audo, Alessandro Garrasino, & Matúš Hyžný. 2017. Fossil Crustacea of Lebanon. Publications Scientifiques du Muséum, Paris. 252 p.
- Chow, L. H., Sammy De Grave, & L. M. Tsang. 2020. The family Anchistioidea Borradaile, 1915 (Decapoda: Caridea) is a synonym of Palaemonidae Rafinesque, 1815 based on molecular and morphological evidence. Journal of Crustacean Biology 40:277–287.
- Christoffersen, M. L. 1979. Campagne de la Calypso au large des côtes Atlantiques de l’Amérique du Sud (1961–1962). I. Decapod Crustacea: Alpheoidea. Annales de l’Institut Océanographique 55(supplement):297–377.
- Christoffersen, M. L. 1986. Phylogenetic relationships between Ophiophoridae, Atyidae, Pasiphaeidae, Alvinocarididae fam. n., Bresiliidae, Psalidopodidae and Disciidae (Crustacea Caridea Atyoidea). Boletim de Zoologia, Universidade de São Paulo 10:273–281.
- Christoffersen, M. L. 1987. Phylogenetic relationships of hippolytid genera, with an assignment of new families for the Crangonoidea and Alpheoidea (Crustacea, Decapoda, Caridea). Cladistics 3:348–362.
- Christoffersen, M. L. 1988. Genealogy and phylogenetic classification of the world Crangonoidea (Crustacea, Caridea), with a new species and new records for the south west Atlantic. Revista Nordestina de Biología 6:43–59.
- Christoffersen, M. L. 1989. Phylogeny and classification of the Pandaloidea (Crustacea, Caridea). Cladistics 5:259–274.
- Christoffersen, M. L. 1990. A new superfamily classification of the Caridea (Crustacea: Pleocyemata) based on phylogenetic pattern. Journal of Zoological Systematics and Evolutionary Research 28:94–106.
- Ciampaglio, C. N., & P. G. Weaver. 2008. Two new genera of Coleoidea from the Chickasawhay Limestone (Oligocene) of Alabama. Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen 250:103–111.
- Claus, C. F. W. 1872. Grundzüge der Zoologie zum Gebrauche an Universitäten und höherem Lehranstalten sowie zum Selbststudium (2nd edition). N. G. Elwert’sche Universitäts-Buchhandlung, Marburg und Leipzig. 1170 p.
- Cleva, R. 2001. Les Bathypalaemonellidae de Saint-Laurent, 1985 (Crustacea, Decapoda, Caridea) avec description d’une espèce nouvelle et définition d’un genre nouveau. Zoosystema 23:757–782.
- Coutière, Henri. 1907. Sur quelques forms larvaires énigmatiques d’Eucyphotes, provenant des collections de S.A.S. le Prince de Monaco. Bulletin de l’Institut Océanographique 104:1–70.
- Cuvier, Georges. 1800. Leçons d’anatomie comparée de G. Cuvier, membre de l’Institut national, professeur au Collège de France et à l’École centrale du Panthéon 1:521 p., 9 tables.
- Dana, J. D. 1852b. Conspectus Crustaceorum quae in Orbis Terrarum circumnavigatione, Carolo Wilkes e classe Reipublicae Foederatae duce, lexit et descripsit. Macroure. Proceedings of the Academy of Natural Sciences in Philadelphia 6:10–28.
- Dana, J. D. 1852a-1853. Parts I and II, Crustacea. U.S. Exploring Expedition During the Years 1838, 1839, 1840, 1841, 1842, under the Command of Charles Wilkes, U.S.N. 13:1–1618, 1 map; separate folio atlas with 96 pl. C. Sherman. Philadelphia.
- Davie, P. J. F. 2002. Crustacea: Malacostraca: Phyllocarida, Hoplocarida, Eucarida (Part 1). In A. Wells & W. W. K. Houston, eds., Zoological Catalogue of Australia, Vol. 19.3A. CSIRO Publishing. Melbourne. 551 p.
- Davis, K. E., Sammy De Grave, Cyrille Delmer, & M. A. Wills. 2018. Freshwater transitions and symbioses shaped evolution and extant diversity of caridean shrimps. Communications Biology [doi:10.1038/s42003-018-0018-6].
- De Grave, Sammy, K. H. Chu, & Tim-Yan Chan. 2010. On the systematic position of *Galathea abyssalis* (Decapoda: Galatheaocaridoidea). Journal of Crustacean Biology 30:521–527.
- De Grave, Sammy, & C. H. J. M. Fransen. 2011. Carideorum Catalogus: The recent species of the dendrobranchiate, stenopodidean, procarididean and caridean shrimps (Crustacea: Decapoda). Zoologische Mededelingen 85(9):195–588.
- De Grave, Sammy, C. H. J. M. Fransen, & T. J. Page. 2015. Let’s be pals again: Major systematic changes in Palaemonoidea (Crustacea: Decapoda). PeerJ [doi:10.7717/peerj.1167].
- De Grave, Sammy, C. P. Li, L. M. Tsang, K. H. Chu, & Tim-Yan Chan. 2014. Unweaving hippolytid systematics (Crustacea, Decapoda, Hippolytidae): Resurrection of several families. Zoologica Scripta 43:496–507.
- De Grave, Sammy, & M. K. Moosa. 2004. A new species of the enigmatic shrimp genus *Pseudocheles* (Decapoda: Bresiliidae) from Sulawesi (Indonesia), with the designation of a new family Pseudochelelidae. Crustacea Research 33:1–9.
- De Grave, Sammy, N. D. Pentcheff, S. T. Ah Yong, T.-Y. Chan, K. A. Crandall, P. C. Dworschak, D. L. Felder, R. M. Feldmann, C. H. J. M. Fransen, L. Y. D. Goulding, Rafael Lemaitre, M. L. Low, J. W. Martin, P. K. L. Ng, C. E. Schweitzer, S. H. Tan, Dale Tshudy, & Regina Wetzer. 2009. A classification of Recent and fossil genera of decapod crustaceans. The Raffles Bulletin of Zoology (Supplement 21):1–109.
- De Haan, William. 1833–1850. Crustacea. In P. F. von Siebold, ed., Fauna Japonica sive Descriptio Animalium, quae in Itinere per Japoniam, Jussu et Auspiciis Superiorum, qui summum in India Batava Imperium Tenent, Suscepto, Annis 1823–1830 Collegit, Notis,

- Observationibus et Adumbrationibus Illustravit. J. Müller et Co. Lugduni Batavorum (Leyden). p. i–xvii, i–xxxi, ix–xvi, 1–243, pl. A–J, L–Q, 1–55, circular table 2.
- Doubleday, Edward, & J. O. Westwood. 1850–1852. The genera of diurnal Lepidoptera : Comprising their generic characters, a notice of their habits and transformations, and a catalogue of the species of each genus, Volume 2. Longman, Brown, Green and Longmans. London. 534 p., 80 pl.
- Emmerson, W. D. 2016. Infraorder Caridea. A Guide to, and Checklist for, the Decapoda of Namibia, South Africa and Mozambique (Volume 1). Cambridge Scholars Publishing, Newcastle Upon Tyne, UK. p. 129–334.
- Fabricius, J. C. 1775. Systema entomologiae, sistens insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus. p. 1–832.
- Fabricius, J. C. 1798. Supplementatione Entomologiae Systematicae. C. G. Proft et Storch. Hafnie (Copenhagen). i–iv + 572 p.
- Felgenhauer, B. E., & L. G. Abele. 1983. Phylogenetic relationships among shrimp-like decapods. In F. R. Schram, ed., Crustacean Phylogeny. A. A. Balkema. Rotterdam. p. 291–311.
- Filhol, Henri. 1884. Explorations sous-marines. Voyage du "Talisman". La Nature, Revue des sciences et de leurs applications aux arts et à l'industrie 12:119–122, 134–138, 147–151, 161–164, 182–186, 198–202, 230–234, 278–282, 326–330, 391–394.
- Forest, Jacques, & Philippe Cals. 1977. Une deuxième espèce du genre *Bresilia* Calman, *B. corsicana* sp. nov. Comparaison avec *B. atlantica* Calman (Crustacea Decapoda Bresiliidae). Bulletin du Muséum national d'Histoire naturelle (série 3) Zoologie 453:549–565.
- Förster, Reinhard. 1967. Die reptanten Dekapoden der Trias. Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen 128(2):136–194.
- Fowler, H. W. 1912. Part II. The Crustacea of New Jersey. Report of the New Jersey State Museum 1911:29–650, 150 pl.
- Fransen, C. H. J. M. 2014. Shrimps and Prawns. In K. E. Carpenter & Nicoletta De Angelis, eds., The Living Marine Resources of the Eastern Central Atlantic. Volume 1. Introduction, crustaceans, chitons, and cephalopods. FAO Species Identification Guide for Fishery Purposes. Food and Agriculture Organization of the United Nations. Rome. p. 37–196.
- Garassino, Alessandro. 1994. The macruran decapod crustaceans of the Upper Cretaceous of Lebanon. Paleontologia Lombarda, Milano (nuova serie) 3:1–27, pl. 1–13.
- Garassino, Alessandro. 1998. Nuovo studio sui crostacei decapodi del Cretacico inferiore (Barremiano superiore-Aptiano) della Valle del Torrente Cornappo (Udine, NE Italia). Gortania—Atti del Museo Friulano di Storia Naturale 20:59–73.
- Garassino, Alessandro. 2001. New decapod crustaceans in the Cenomanian (Upper Cretaceous) of Lebanon. Atti della Società italiana di Scienze Naturali e del Museo civico di Storia naturale in Milano 141(2):237–250.
- Garassino, Alessandr, & S. L. Jakobsen. 2005. *Morscrangon acutus* n. gen. n. sp. (Crustacea: Decapoda: Caridea) from the Fur Formation (early Eocene) of the Islands of Mors and Fur (Denmark). Atti della Società italiana di Scienze Naturali e del Museo civico di Storia naturale in Milano 146(1):95–107.
- Garassino, Alessandro, Giovanni Pasini, & M. V. Nazarkin. 2021. First report of caridean shrimps, crabs (Decapoda) and mysidaceans (Peracarida) from the middle-late Miocene of Sakhalin Island, Russia. Neues Jahrbuch für Geologie und Palantologie, Abhandlungen 301/2:135–146.
- Garassino, Alessandro, Giovanni Pasini, & M. V. Nazarkin. 2022. A new caridean shrimps (Crustacea, Decapoda) from the middle-late Miocene of Sakhalin Island, Russia. Neues Jahrbuch für Geologie und Palantologie, Abhandlungen 303/1:1–9.
- Garassino, Alessandro, & Giorgio Teruzzi. 1993. A new decapod crustacean assemblage from the Upper Triassic of Lombardy (N. Italy). Paleontologia Lombarda, (nuova serie) 1:1–27, 5 pl.
- Garassino, Alessandro, & Giorgio Teruzzi. 1996. The genera *Longitergite* nov. and *Bannikovia* nov. in the Lower Miocene of N Caucasus (Russia) (Crustacea, Decapoda). Atti della Società italiana di Scienze Naturali e del Museo civico di Storia naturale in Milano 136(1):3–14.
- Garassino, Alessandro, Shen Yanbin, F. R. Schram, & R. S. Taylor. 2002. *Yongjiacaris zhejiangensis* n. gen. n. sp. (Crustacea, Decapoda) from the Barremian (Lower Cretaceous) of Zhejiang Province (China). Bulletin of Mizunami Fossil Museum 29:73–80.
- Gistel, Johannes. 1848. Naturgeschichte des Thierreichs für Höhere Schulen. Hoffman'scher Verlags-Buchhandlung. Stuttgart. v–xvi + 216 p., 32 pl.
- Glaessner, M. F. 1929. Crustacea Decapoda. In F. J. Pompeckj, ed., Fossilium catalogus 1: Animalium. W. Junk. Berlin. 41:1–464.
- Gosse, P. H. 1877. On *Bellidita Huntii*, a genus and species of Crustacea supposed to be new. The Annals and Magazine of Natural History (series 4) 20: 313–316, pl. 10.
- Guérin-Méneville, F. E. 1856. Animaux articulés à pieds articulés. Crustacés. In Ramon de la Sagra, Historia Fisica, Politica y Natural de Isla de Cuba 7:1–87, pl. 1–3.
- Gurney, Robert, & M. V. Lebour. 1941. On the larvae of certain Crustacea Macrura mainly from Bermuda. Journal of the Linnean Society of London, Zoology 41:89–181.
- Hailstone, Samuel. 1835. Notices of another species of *Pontophilus*, and of a crustacean allied to the genus *Hippolyte*. The Magazine of Natural History and Journal of Zoology, Botany, Mineralogy, Geology, and Meteorology 8:270–273.
- Hart, C. W., & R. B. Manning. 1986. Two new shrimps (Procarididae and Agostocaridae, new family) from marine caves of the western North Atlantic. Journal of Crustacean Biology 6(3):408–416.
- Haworth, A. H. 1825. A new binary arrangement of the macrurous Crustacea. The Philosophical Magazine and Journal 65:183–184.
- Hay, W. P., & C. A. Shore. 1918. The decapod

- crustaceans of Beaufort, N.C., and the surrounding region. *Bulletin of the United States Bureau of Fisheries* 35:371–475, pl. 25–39.
- Hayashi, K.-I. 2004. Revision of the *Pasiphaea cristata* Bate, 1888 species group of *Pasiphaea* Savigny, 1816, with descriptions of four new species, and referral of *P. australis* Hanamura, 1989 to *Alainopasiphaea* Hayashi, 1999 (Crustacea: Decapoda: Pasiphaeidae). In B. A. Marshall & B. Richer de Forges, eds., *Tropical Deep-Sea Benthos* 23. Mémoires du Muséum national d'Histoire naturelle 191:319–373.
- Heller, Camil. 1861. Synopsis der im rothen Meeres vorkommenden Crustaceen. Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien 11:1–32.
- Heller, Camil. 1862. Beiträge zur Crustaceen-Fauna des rothen Meeres. Zweiter Theil. Sitzungsberichte der mathematisch-naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften in Wien 44:241–295, pl. 1–3.
- Holthuis, L. B. 1946. Biological results of the Snellius expedition. XIV. The Decapoda Macrura of the Snellius expedition. I. The Stenopodidae, Nephropsidae, Scyllaridae and Palinuridae. *Temminckia* 7:1–178, pl. 1–11.
- Holthuis, L. B. 1950. The Decapoda of the Siboga Expedition. Part X. The Palaemonidae collected by the Siboga and Snellius expeditions with remarks on other species. I. Subfamily Palaemoninae. *Siboga Expeditie* 39a9:1–268.
- Holthuis, L. B. 1955. The recent genera of the caridean and stenopodidean shrimps (Class Crustacea, order Decapoda, supersection Natantia) with keys for their determination. *Zoologische Verhandlungen* 26:1–157.
- Holthuis, L. B. 1971. Biological results of the University of Miami deep-sea Expeditions. 75. The Atlantic shrimps of the deep-sea genus *Glyphocrangon* A. Milne Edwards, 1881. *Bulletin of Marine Science* 21:267–373.
- Holthuis, L. B. 1977. The Mediterranean decapod and stomatopod Crustacea in A. Risso's published works and manuscripts. *Annales du Muséum d'Histoire naturelle de Nice* 5:37–88.
- Holthuis, L. B. 1993. The recent genera of the Caridean and Stenopodidean shrimps (Crustacea, Decapoda): with an appendix on the order Amphionidacea. Leiden, Nationaal Natuurhistorisch Museum. 328 p.
- Houša, Václav. 1957 [imprint 1956]. *Bechleja inopinata* n. g., n. sp., ein neuer Krebs aus dem böhmischen Tertiär (Decapoda, Palaemonidae). *Sborník Ústředního Ústavu Geologické, (Oddíl Paleontologický)* 23:365–395, pl. 1–3.
- ICZN (International Commission on Zoological Nomenclature). 1955. Opinion 334. Validation, under the Plenary Powers, of the generic names *Crangon* Fabricius, 1798, and *Alpheus* Fabricius, 1798 (Class Crustacea, Order Decapoda). Opinions and Declarations Rendered by the International Commission on Zoological Nomenclature 10(1):1–44.
- ICZN (International Commission on Zoological Nomenclature). 1956. Opinion 433. Use of the Plenary Powers to secure that the generic name *Discias* Rathke, 1902 (Class Crustacea, Order Decapoda) shall be the oldest available name for the genus concerned. Opinions and Declarations Rendered by the International Commission on Zoological Nomenclature 14(17):393–402.
- International Commission on Zoological Nomenclature. 1956. Opinion 434. Use of the Plenary Powers to secure that the names “Upogebia” [Leach], [1814], and “Processa” Leach, [1815], shall be the oldest available names for the genera in question and that the family-group names based upon those generic names shall be the oldest available names for the family-group taxa concerned. Opinions and Declarations Rendered by the International Commission on Zoological Nomenclature 14(18):403–424.
- ICZN (International Commission on Zoological Nomenclature). 1957. Opinion 470. Addition to the “Official List of Generic Names in Zoology” of the names of one hundred and two genera of Caridea (Class Crustacea, Order Decapoda) and use of the Plenary Powers for various purposes in connection therewith. Opinions and Declarations Rendered by the International Commission on Zoological Nomenclature 16(9):129–202.
- ICZN (International Commission on Zoological Nomenclature.) 1958. Opinion 522. Suppression under the Plenary Powers (i) of certain names given by C. S. Rafinesque to genera and species of the orders Decapoda and Stomatopoda (Class Crustacea) in the period 1814–1818 and (ii) of certain specific names currently regarded as senior subjective synonyms of the names of the type species of the genera *Homola* and *Lissa*, both of Leach, 1815, respectively both being genera assigned to the first of the foregoing orders. Opinions and Declarations Rendered by the International Commission on Zoological Nomenclature 19(9):211–248.
- ICZN (International Commission on Zoological Nomenclature). 1959. Opinion 564. Suppression under the Plenary Powers of the specific name *squilla* Linnaeus, 1758, as published in the combination *Cancer squilla*, and designation under the same Powers of *Palaemon adspersus* Rathke, 1837, to be the type species of the genus *Palaemon* Weber, 1795, and matters incidental thereto (Class Crustacea, Order Decapoda). Opinions and Declarations Rendered by the International Commission on Zoological Nomenclature 20(31):337–358.
- Jones, W. T., R. M. Feldmann, C. E. Schweitzer, F. R. Schram, Rose-Anna Behr, & K. L. Hand. 2014. The first Paleozoic stenopodidean from the Huntley Mountain Formation (Devonian Carboniferous), North-Central Pennsylvania. *Journal of Paleontology* 88:1251–1256.
- Kemp, Stanley. 1914. V. Notes on Crustacea Decapoda in the Indian Museum. Hippolytidae. Records of the Indian Museum 10:81–121, pl. 1-7.
- Kemp, Stanley. 1920. XIV. Notes on Crustacea Decapoda in the Indian Museum. On the occurrence of the Caridean genus *Discias* in Indian Waters. Records of the Indian Museum 19:137–143.
- Kensley, Brian. 1988. New species and records of cave shrimps from the Yucatan Peninsula (Decapoda:

- Agostocarididae and Hippolytidae). *Journal of Crustacean Biology* 8:688–699.
- Kinahan, J. R. 1860. On a *Crangon* new to science, with notices of other nondescript Crustacea, and observations on the distribution of the Crustacea Podophthalmia of the eastern, or Dublin marine, district of Ireland. *Proceedings of the Natural History Society of Dublin* 2:27–34.
- Kinahan, J. R. 1862. On the Brittanian species of *Crangon* and *Galathea*; with some remarks on the homologies of these groups. *Transactions of the Royal Irish Academy* 24:45–113.
- Kingsley, J. S. 1878a. List of the North American Crustacea belonging to the suborder Caridea. *Bulletin of the Essex Institute* 10 [for 1878]:53–71.
- Kingsley, J. S. 1878b. Notes on the North American Caridea in the Museum of the Peabody Academy of Science at Salem, Mass. *Proceedings of the Academy of Natural Sciences of Philadelphia* 1878:89–98.
- Kingsley, J. S. 1880. On a collection of Crustacea from Virginia, North Carolina, and Florida, with a revision of the genera of Crangonidae and Palaemonidae. *Proceedings of the Academy of Natural Sciences of Philadelphia* 1879:383–427, pl. 14.
- Koelbel, Carl. 1884. *Carcinologisches. Sitzungsberichte der Mathematisch-Naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften* 90:312–322, pl. 1.
- Komai, Tomoyuki. 1999. A revision of the genus *Pandalus* (Crustacea: Decapoda: Caridea: Pandalidae). *Journal of Natural History* 33:1265–1372.
- Komai, Tomoyuki, T.-Y. Chan, & Sammy De Grave. 2019. Establishment of a new shrimp family Chlorotocellidae for four genera previously assigned to Pandalidae (Decapoda, Caridea, Pandaloidea). *Zoosystematics and Evolution* 95:391–402.
- Krøyer, Henrik. 1861. Et bidrag til kundskab om Krebsdyrfamilien Mysidae. *Naturhistorisk Tidsskrift (third series)* 1:1–75, pl. 1–2.
- Lamarck, J. B. P. A. 1801. *Système des animaux sans vertébrés, ou tableau général des classes, des ordres et des genres de ces animaux; présentant leurs caractères essentiels et leurs distribution, d'après la considération de leurs rapports naturels et de leur organisation, et suivant l'arrangement établi dans les galeries du Muséum d'Histoire Naturelle, parmi leurs dépouilles conservées; précédé du discours d'ouverture du cours de zoologie, donné dans le Muséum national d'Histoire naturelle l'an 8 de la République.* Chez Deterville. Paris. 432 p.
- Latreille, P. A. 1810. *Considérations générale sur l'Ordre naturel des Animaux composant les Classes des Crustacés, des Arachnides et des Insectes; avec un tableau Méthodique de leurs genres, disposés en familles.* Paris. 444 p.
- Latreille, P. A. 1819. *Salicoques, Nouveau Dictionnaire d'Histoire naturelle appliquée aux Arts, à l'Agriculture, à l'Économie rurale et domestique, à la Médecine, etc.* Volume 30. Chez Deterville. Paris. p. 68–73.
- Leach, W. E. 1814. *Crustaceology.* In D. Brewster, ed., *Edinburgh Encyclopaedia.* Edinburgh. 7:383–437, pl. 221.
- Leach, W. E. 1815–1816. A tabular view of the external characters of four classes of animal which Linne arranged under Insecta: with the distribution of the genera composing three of these classes into orders and c. and descriptions of several new genera and species. *Transactions of the Linnean Society of London* 11(2):306–400, and 'Errata'. [Dated 1815, but published 24 January 1816.]
- Leach, W. E. 1815–1875. *Malacostraca Podophthalmata Britanniae, or descriptions of such British species of the Linnean genus Cancer as have their eyes elevated on footstalks.* p. 1–124, pl. 1–45.
- Leach, W. E. 1816. *Sur une nouvelle distribution des classes des Crustacés, des Myriapodes et des Arachnides.* *Bulletin des Sciences de la Société Philomathique de Paris.* 1816:31–41.
- Leach, W. E. 1830. On three new genera of the malacostracean Crustacea, belonging to the family Squillidae. *Transactions of the Plymouth Institution* 1:172–175.
- Lebour, M. V. 1949. Some new decapod Crustacea from Bermuda. *Proceedings of the Zoological Society of London* 118:1107–1117.
- Li, C. P., Sammy De Grave, Tin-Yam Chan, H. C. Lei, & K. H. Chu. 2011. Molecular systematics of caridean shrimps based on five nuclear genes: Implications for superfamily classification. *Zoologischer Anzeiger* 250:270–279.
- Liao, Yunshi, K. Y. Ma, Sammy De Grave, Tomoyuki Komai, T.-Y. Chan, & K. H. Chu. 2019. Systematic analysis of the caridean shrimp superfamily Pandaloidae (Crustacea: Decapoda) based on molecular and morphological evidence. *Molecular Phylogenetics and Evolution* 134:200–210.
- Linnaeus, Carolus von. 1758. *Systema Naturae per Regna tria Naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis.* Editio Decima, reformata, Vol. 1. Laurentii Salvii. Holmiae (Stockholm). 823 p.
- López-Horgue, M. A., & Arantxa Bodego. 2017. Mesozoic and Cenozoic decapod crustaceans from the Basque-Cantabrian basin (Western Pyrenees): New occurrences and faunal turnovers in the context of basin evolution. *BSGF Earth Science Bulletin* 188(14):1–28.
- de Man, J. G. 1887–1888. Bericht über die von Herrn Dr. J. Brock im indischen Archipel gesammelten Decapoden und Stomatopoden. *Archiv für Naturgeschichte* 53(2):215–600, pl. 7–22a.
- de Man, J. G. 1888. Report on the podophthalmous Crustacea of the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson F.R.S., Superintendent of the Museum. *Journal of the Linnean Society, Zoology* 22:1–305, pl. 1–19.
- Marquet, Gerard, Philippe Keith, & Donna Kalfatak. 2009. *Caridina gueryi*, a new species of freshwater shrimp (Decapoda, Atyidae) from Santo Island, Vanuatu. *Crustaceana* 82:159–166.
- Martens, Eduard von. 1872. Ueber Cubanische Crustaceen. *Archiv für Naturgeschichte* 38:77–147, pl. 4–5.
- Martin, J. W., & G. B. Davis. 2001. An updated classification of the Recent Crustacea. *Natural History Museum of Los Angeles County, Science Series* 39:1–124.

- Martins-Neto, R. G., & Sérgio Mezzalira. 1991a. Descrição de novos crustáceos (Caridea) da Formação Santana, Cretáceo Inferior do nordeste do Brasil. *Anais Academia Brasileira de Ciências* 63(2):155–160.
- Martins-Neto, R. G., & Sérgio Mezzalira. 1991b. Revisão dos Paleomonídeos Terciários Brasileiros (Crustacea, Caridea) com descrição de novas taxa. *Anais Academia Brasileira de Ciências* 63(4):361–367.
- Miers, E. J. 1878. On a collection of Crustacea, Decapoda and Isopoda, chiefly from South America, with descriptions of new genera and species. *Proceedings of the Zoological Society of London* 1877:653–679, pl. 66–69.
- Milne Edwards, Alphonse. 1881. Description des quelques crustacés macroures provenant des grandes profondeurs de la Mer des Antilles. *Annales des Sciences Naturelles* (6)11:1–15.
- Milne Edwards, Alphonse. 1890. Diagnose d'un crustacé macroure nouveau de la Méditerranée. *Bulletin de la Société Zoologique de France* 15:163.
- Milne-Edwards, Henri. 1834–1840. Histoire naturelle des Crustacés, comprenant l'anatomie, la physiologie, et la classification de ces animaux 1 [1834]:1–468; 2 [1837]:1–532; 3 [1840]:1–638, Atlas: 1–32, pl. 1–42.
- Milne-Edwards, Henri. 1836–1844. Les Crustacés. *In* George Cuvier, Le Règne Animal distribué d'après son organization, pour servir de base à l'histoire des animaux, et d'introduction à l'anatomie compare, fourth edition 17 (text):1–278, 18 (atlas), pl. 1–80.
- Milne-Edwards, Henri. 1837. Note sur le Rhynchocinète, nouveau genre de Crustacé décapode. *Annales des Sciences Naturelles* (serie 2) 7:165–168, pl. 4c.
- Münster, G. G. zu. 1839. Abbildung und Beschreibung der fossilen langschwänzigen Krebse in den Kalkschiefern von Bayern. *Beiträge zur Petrefactenkunde* 2:1–88, 29 pl.
- Nardo, G. D. 1847. Sinonimia moderna delle specie registrate nell'opera intitolata: descrizione de' Crostacei, de' Pesci che abitano le lagune e gulfo Veneto rappresentari in figure, a chiaro-scuro ed a colori dell'Abate Stefano Chierighini Ven. Clodivense applicata per commissione governativa Venice. p. i–xi, 1–127.
- Nobili, Giuseppe. 1905. Diagnose préliminaires de 34 espèces et variétés nouvelles et de 2 genres nouveaux de Décapodes de la Mer Rouge. *Bulletin du Muséum d'Histoire Naturelle, Paris* 11(6):393–411.
- Olivier, A. G. 1811–1812. Histoire Naturelle. Insectes. *In* Encyclopédie Méthodique (Dictionnaire Encyclopédique Méthodique). Zoologie 8. Liège. Paris. 722 p.
- Oppel, Albert. 1862. Ueber jurassische Crustaceen. *Palaeontologische Mittheilungen aus dem Museum der K. Bayerischen Staates* 1:1–120.
- Ortmann, A. E. 1890. Die Unterordnung Natantia Boas: die Decapoden-Krebse des Strassburger Museums mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und z. Z. im Strassburger Museum aufbewahrten Formen, I. *Zoologische Jahrbücher, (Systematik, Ökologie und Geographie der Tiere)* 5:437–542, pl. 36, 37.
- Ortmann, A. E. 1893. Decapoden und Schizopoden. *Ergebnisse der Plankton-Expedition der Humboldt-Stiftung 2* (G.b.). p. 1–120, 7 pl., 3 maps.
- Ortmann, A. E. 1895. A study of the systematic and geographical distribution of the decapod family Atyidae Kingsley. *Proceedings of the Academy of Natural Sciences of Philadelphia* 1894:397–417.
- Ortmann, A. E. 1896. Das System der Decapoden-Krebse. *Zoologische Jahrbücher, (Systematik, Geographie und Biologie der Thiere)* 9:409–453.
- Ortmann, A. E. 1898. Die Klassen und Ordnungen der Arthropoden wissenschaftlich dargestellt in Wort und Bild. Crustacea. (Zweite Hälfte: Malacostraca). Dr. H.G. Bronn's Klassen und Ordnungen des Thier-Reichs, wissenschaftlich dargestellt in Wort und Bild 5(2):1319 p.
- Paul'son, Otton. 1875. Studies on the Crustacea of the Red Sea with notes regarding other seas. Part 1. Podophthalmata and Edriophthalmata (Cumacea). S. V. Kul'zhenko. Kiev. p. 1–164, 21 pl. [Translation published for The National Science Foundation, Washington, D. C. and Smithsonian Institution, U.S.A., by the Israel Program for Scientific Translations, 1961.]
- Pennant, Thomas. 1777. *British Zoology, Vol. IV. Crustacea. Mollusca. Testacea.* London. p. i–viii, 1–154, pl. 1–93.
- Pinna, G. 1974. I crostacei della fauna triassica di Cene in Val Seriana (Bergamo). *Memorie della Società italiana di Scienze naturali e del Museo civico di Storia naturale in Milano* 21(1):5–34, 16 pl.
- Poore, G. C. B. 2004. *Marine Decapod Crustacea of Southern Australia. A Guide to Identification.* Museum Victoria. Melbourne. p. i–ix + 574 p.
- Polz, H. 2007. Die Garnelengattung *Harthofia* g. nov. (Crustacea: Decapoda: Pleocyemata: Caridea) mit zwei neuen Arten aus den Solnhofener Plattenkalken von Eichstätt. *Archaeopteryx* 25:1–13.
- Polz, H. 2009 [imprint 2008]. *Almonacaris winkleri* g. nov. sp. nov. (Crustacea: Decapoda: Pleocyemata: Caridea) aus den Solnhofener Plattenkalken von Eichstätt. *Archaeopteryx* 26:1–9.
- Rabadá i Vives, David. 1993. Crustáceos decápodos lacustres de las calizas litográficas del Cretácico Inferior de España: Las Hoyas (Cuenca 1993.) y el Montsec de Rubies (Lleida). *Cuadernos de Geología Ibérica, Madrid* 17:345–370.
- Rafinesque, C. S. 1814. *Précis des Découvertes et travaux somiologiques.* Royale Typographie Militaire. Palermo. 55 p.
- Rafinesque, C. S. 1815. *Analyse de la nature, ou tableau de l'univers et des corps organisés.* L'Imprimerie de Jean Barravecchia. Palermo. 224 p.
- Rafinesque, C. S. 1817. *Museum of Natural Sciences.* Synopsis of four new genera and ten new species of Crustacea, found in the United States. *The American Monthly Magazine and Critical Review* 2:41–44.
- Randall, J. W. 1840. *Catalogue of the Crustacea brought by Thomas Nuttall and J. K. Townsend, from the West Coast of North America and the Sandwich Islands, with description of such species as are apparently new, among which are included several species*



- of different localities, previously existing in the collection of the Academy. *Journal of the Academy of Natural Sciences at Philadelphia* 8:106–147, pl. 3–7.
- Rathbun, M. J. 1902. Papers from the Hopkins Stanford Galapagos Expedition, 1898–1899. VIII. Brachyura and Macrura. *Proceedings of the Washington Academy of Sciences* 4:275–292, pl. 12.
- Rathbun, M. J. 1912. Some Cuban Crustacea with notes on the Astacidea, by Walter Faxon, and a list of Isopoda, by Harriet Richardson. *Bulletin of the Museum of Comparative Zoology at Harvard College* 54:451–460, pl. 1–5.
- Rathke, Heinrich. 1837. Zur Fauna der Krym. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg 3:291–454, pl. 1–10.
- Riggio, G. 1895. Sul rinvenimento di nuovi Crostacei macruri nei mari dell Sicilia. *Il Naturalista Siciliano, Giornale di Scienze Naturali* 14:244–249, pl. 1.
- Risso, Antoine. 1816. Histoire naturelle des Crustacés des environs de Nice. Paris. p. 1–175, pl. 1–3.
- Risso, Antoine. 1844. Crustacés. *In Nouveau guide du voyageur dans Nice et notices sur notices sur l'histoire civile et naturelle de cette ville*. Second edition. Nice, De la Société Typographique. p. 93–99.
- Roger, Jean. 1946. Les invertébrés des couches à poissons du Crétacé supérieur du Liban. *Mémoires de la Société Géologique de France* 51:1–92.
- Roux, Polydore. 1831. Mémoire sur la classification des Crustacés de la tribu des Salicoques. Dufort Cadet. Marseilles. 39 p., 4 table.
- de Saint Laurent, Michelle. 1985. Remarques sur la distribution des Crustacés Décapodes. *In Lucien Laubier & Claude Monniot, eds., Peuplements profonds du Golfe de Gascogne. Campagnes BIOGAS. National Institute for Ocean Science (IFREMER). Brest.* p. 469–478.
- Samouelle, George. 1819. *The Entomologist's Useful Compendium, or an Introduction to the British Insects*, etc. T. Boys. London. 496 p.
- Santana, William, A. P. Pinheiro, C. M. R. da Silva, & A. Álamo Saraiva. 2013. A new fossil caridean shrimp (Crustacea: Decapoda) from the Cretaceous (Albian) of the Romualdo Formation, Araripe Basin, northeastern Brazil. *Zootaxa* 3620:293–300.
- Sars, G. O. 1870. Nye Dybvandscrustaceer fra Iofoten. *Forhandlinger i Videnskabs-Selskabet i Christiana* 1869:147–174.
- Saussure, Henri de. 1857. Note carcinologique sur la famille des Thalassinides et sur celle de Astacidés. *Revue et Magasin de Zoologie Pure et Appliquée (série 2)* 9:99–102.
- Savigny, J.C. 1816. Mémoires sur les animaux sans vertébrés, Part 1. Description et classification des animaux invertébrés et articulés. G. Dufour. Paris. p. 1–118.
- Schmitt, W. L. 1924. Report on the Macrura, Anomura and Stomatopoda collected by the Barbados-Antigua Expedition from the University of Iowa in 1918. *University of Iowa Studies in Natural History* 10:65–99, pl. 1–5.
- Schmitt, W. L. 1926. Report on the Crustacea Macrura (Families Penaeidae, Campylonotidae and Pandalidae) obtained by the F.I.S. "Endeavour" in Australian seas. Zoological results of the fishing experiments carried out by F.I.S. "Endeavour" 1909–10 under H. C. Dannevig 5(6):311–381, pl. 57–68 + corrigenda et addenda.
- Schram, F. R., 1986. *Crustacea*. Oxford University Press. New York. 606 p.
- Schram, F. R. & Stefan Koenemann. 2021. *Evolution and Phylogeny of Pancrustacea*. Oxford University Press. New York. 827 p.
- Schram, F. R., Shen Yanbin, Ronald Vonk, & R. S. Taylor, 2000. The first fossil stenopodidean. *Crustaceana* 73:235–242.
- Schweigert, Günter. 2002. Zwei neue Garnelen (Decapoda: Dendrobranchiata, Eukyphida) aus oberjurassischen Plattenkalken Süddeutschlands. *Stuttgarter Beiträge zur Naturkunde (B)* 323:1–11, 5 fig.
- Schweigert, Günter, & Alessandro Garassino. 2004. New genera and species of shrimps (Crustacea: Decapoda: Dendrobranchiata, Caridea) from the Upper Jurassic lithographic limestones of S. Germany. *Stuttgarter Beiträge zur Naturkunde (B)* 350:1–33, 23 fig.
- Schweigert, Günter, & Alessandro Garassino. 2006. News on *Pleopteryx kuempeli* Schweigert and Garassino, an enigmatic shrimp (Crustacea: Decapoda: Caridea: Pleopteryxoida superfamily. nov.) from the Upper Jurassic of S Germany. *Neues Jahrbuch für Geologie Paläontologie, (Monatshefte)* 2006:449–461, 6 fig.
- Schweigert, Günter, Alessandro Garassino, & Giovanni Pasini. 2016. The Upper Jurassic Solnhofen decapod crustacean fauna: review of the types from old descriptions. Part II. Superfamily Penaeoidea and infraorder Caridea. *Memorie della Società Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano* 42:3–41.
- Schweitzer, C. E., R. M. Feldmann, Alessandro Garassino, Hiroaki Karasawa, & Günter Schweigert. 2010. Systematic list of fossil decapod crustacean species. *Crustaceana Monographs*, 10. Brill. Leiden. 222 p.
- Schweitzer, C. E., William Santana, Allysson Pinheiro, & R. M. Feldmann. 2018 (imprint 2019). Redescription and illustration of caridean shrimp from the Cretaceous (Aptian) of Brazil. *Journal of South American Earth Sciences* 90:70–75.
- Smith, S. I. 1871. List of the Crustacea collected by J. A. McNeil in Central America. *First Annual Report of the Trustees of the Peabody Academy of Science, January 1869:87–98*.
- Smith, Geoffrey, & W. F. R. Weldon. 1909. *Crustacea*, Chapter VI. Crustacea, Malacostraca (continued), Eumalacostraca (continued), Eucarida, Euphausiacea, Compound Eyes, Decapoda. *In S. F. Harmer & A. E. Shipley, eds., Cambridge Natural History* 4:144–196.
- Smith, S. I. 1882. Reports on the results of dredging, under the supervision of Alexander Agassiz, on the East Coast of the United States, during the summer of 1880, by the U. S. Coast Survey Steamer "Blake," Commander J. R. Bartlett, U.S.N., commanding. XVII. Report on the Crustacea. Part I. Decapoda. *Bulletin of the Museum of Comparative Zoology at Harvard College* 10:1–104, pl. 1–14.
- Smith, S. I. 1884. Report on the decapod Crustacea of the Albatross dredgings off the East coast of the

- United States in 1883. Reports of the United States Fisheries Commission 10:345–426, pl. 1–10.
- Smith, S. I. 1886. Report on the decapod Crustacea of the Albatross dredgings off the East Coast of the United States during the summer and autumn of 1884. Report of the Commissioner for 1885, United States Commission of Fish and Fisheries. 13:605–705, pl. 1–20 [Preprint issued in 1886, published in journal in 1887.]
- Sollaud, Edmond. 1911. *Desmocarisc trispinosus* (= *Palaeomonetes trispinosus* Aurivillius), type d'un nouveau genre, à nombreux caractères ancestraux de Décapodes palémonides. Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences 152:913–916.
- Sollaud, Edmond. 1913. Nouvelles observations sur les Crevettes du genre *Campylonotus* Bate (= *Anchistiella* A. M.-E.), type d'une famille de Caridea: les Campylonotidae. Bulletin du Muséum national d'Histoire naturelle (série 1) 9:184–190.
- Stebbing, T. R. R. 1914. South African Crustacea. Part VII. Annals of the South African Museum 15:1–55, pl. I (LXV)–XII (LXXVI).
- Stimpson, William. 1860. Prodrômus descriptionis animalium evertibratorum, quae in Expeditione ad Oceanum Pacificum Septentrionalem, a Republica Federata missa, Cadwaladaro Ringgold et Johanne Rodgers Ducibus, observavit et descripsit. Pars VIII. Crustacea Macrura. Proceedings of the Academy of Natural Sciences of Philadelphia 1860:22–47.
- Sudarsky, Sergio. 2016. A phylogenetic analysis of fossil and extant shrimp-like decapods (Dendrobranchiata and Caridea). Unpublished M.S. thesis, Kent State University, Kent, Ohio 126 p.
- Thompson, J. R. 1965. Comments on phylogeny of section Caridea (Decapoda Natantia) and the phylogenetic importance of the Oplophoroidea. Abstracts of Papers of the Symposium on Crustacea held at Ernakulam, India. p. 5.
- Thompson, J. R. 1966. Comments on phylogeny of section Caridea (Decapoda Natantia) and the phylogenetic importance of the Oplophoroidea. Symposium Series of the Marine Biological Association of India, No. 2. Proceedings of the Symposium on Crustacea held at Ernakulam, 12–15 January, 1965. Part I:314–326.
- Tiefenbacher, Ludwig. 1978. Zur Systematik und Verbreitung der Euryrhynchinae (Decapoda, Natantia, Palaemonidae). Crustaceana 35:177–189.
- Van Straelen, Victor. 1925. Contribution à l'étude des Crustacés Décapodes de la période jurassique. Mémoires d'Académie Royale de Belgique, Science (série 2, number 4) 7:1–462, pl. 1–10.
- Vereshchaka, A. L. 1997. New family and superfamily for a deep-sea shrimp from the Galathea collections. Journal of Crustacean Biology 17:361–373.
- Vía, Luis. 1971. Crustáceos decápodos del jurásico superior del Montsec (Lérida). Cuadernos Geología Ibérica 2:607–612.
- von der Marck, Wilhelm. 1863. Fossile Fische, Krebse und Pflanzen aus dem Plattenkalke der jüngsten Kreide in Westphalen. Palaeontographica 11:1–83.
- von der Marck, Wilhelm, & Clemens Schlüter. 1868. Neue Fische und Krebse aus der Kreide von Westphalen. Palaeontographica 15:269–305, pl. 51–54.
- von Meyer, Hermann. 1844. *Lagomys*, *Chelydra*, *Coluber oweni* u. a. Arten, *Grapsus speciosus*, *Homelys major* und *minor* und Vogel-reste von Öningen. Neues Jahrbuch für Mineralogie, Geologie, Geognosie, und Petrefaktenkunde 1844:329–340.
- von Meyer, Hermann. 1859. *Micropsalis papyracea* aus der Rheinischen Braunkohle. Palaeontographica 8:18–21, pl. 2.
- Weber, Friderico. 1795. Nomenclator entomologicus secundum Entomologiam Systematicum ill. Fabricii adjectis speciebus recens detectis et varietatibus. C. E. Bohn. Chilonii et Hamburgi (Kiel & Hamburg). 171 p.
- Westwood, J. O. 1835. The species of crustaceous animals discovered and described by Mr. Hailstone, and illustrated and annotated on by Mr. Westwood. The Magazine of Natural History and Journal of Zoology, Botany, Mineralogy, Geology, and Meteorology 8:551–553.
- White, Adam. 1847. Descriptions of new Crustacea from the Eastern seas. Proceedings of the Zoological Society of London 15:56–58.
- Wicksten, M. K. 2010. Infraorder Caridea Dana, 1852. In F. R. Schram & J. C. von Vaupel Klein, eds., The Crustacea, Vol. 9, Part A, Eucarida: Euphausiacea, Amphionidacea, and Decapoda (partim). Brill. Leiden. p. 165–206.
- Williams, A. B., & F. A. Chace, Jr. 1982. A new caridean shrimp of the family Bresiliidae from thermal vents of the Galapagos Rift. Journal of Crustacean Biology 2:136–147.
- Winkler, Norbert. 2013. A new genus and species of caridean shrimps from the Upper Jurassic Solnhofen Lithographic Limestones of Schernfeld (South Germany). Zitteliana A 53:77–83.
- Winkler, Norbert. 2014. A new caridean shrimp (Crustacea: Decapoda: Dendrobranchiata) from the Upper Jurassic Solnhofen Lithographic Limestones of Schernfeld (South Germany). Zitteliana A 54:83–90.
- Winkler, Norbert. 2021. One new genus and three new species of caridean shrimps (Crustacea: Decapoda) from the Upper Jurassic Solnhofen Lithographic Limestones (southern Germany). Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen 299:49–70.
- Winkler, Norbert, Günter Schweigert, Annette Winkler, Jürgen Härer, & Markus Noller. 2021. The first fossil stenopodidean (Crustacea: Decapoda: Pleocyemata) from the Solnhofen Lithographic Limestones (Upper Jurassic, Southern Germany). Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen 302:89–104.
- Wood-Mason, James, & Alfred Alcock. 1891. Natural history notes from H. M. Indian marine survey steamer "Investigator", Commander R. F. Hoskyn, R.N., commanding. Series II, No. 1. On the results of deep-sea dredging during the season 1890–1891. Annals and Magazine of Natural History (series 6) 8:353–362.
- Wood-Mason, James, & Alfred Alcock. 1892. Natural history notes from H.M. Indian marine survey steamer "Investigator", Commander R. F. Hoskyn,

- R.N., commanding. Series II, No. 1. On the results of deep-sea dredging during the season 1890–1891. *Annals and Magazine of Natural History* (series 6) 9:265–275, pl. 14–15.
- Woods, Henry. 1925–1931. A monograph of the fossil macrurous Crustacea of England. Palaeontographical Society, London. p. 1–122.
- Woodward, Henry. 1903. On some fossil prawns from the Osborne Beds of the Isle of Wight. *Geological Magazine* (new series) 10(3):96–99, pl. 5.
- WoRMS Editorial Board. 2020. World Register of Marine Species. Available from <http://www.marinespecies.org> at VLIZ. Accessed 2020-05-15. [doi:10.14284/170].