

# TREATISE ONLINE

Number 180

Part R, Revised, Volume 1:  
Systematic Descriptions: Additions to Infraorders  
Achelata and Astacidea

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2024

**KU** PALEONTOLOGICAL  
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PART R, REVISED, VOLUME 1, TREATISE ONLINE 180:  
SYSTEMATIC DESCRIPTIONS: ADDITIONS TO  
INFRAORDERS ACHELATA AND ASTACIDEA

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ADDITIONS TO  
INFRAORDER ACHELATA

Over the course of the intervening years since SCHWEITZER and others (2015) was published, new knowledge has accumulated and new taxa have been discovered and recognized. Thus, our understanding of the Achelata has grown. The following are new genera classifications covering 2012 to December 2022. [These are additions to “Systematic descriptions: Infraorder Achelata,” *Treatise Online* 67, SCHWEITZER, FELDMANN, KARASAWA, & GARASSINO. 2015.]

Additions to

Family CANCRINIDAE Beurlen, 1930

[Cancrinidae BEURLEN, 1930, p. 342]

**Paracancrinus** HAUG, AUDDO, CHARBONNIER, PALERO, PETIT, ABI SAAD & HAUG, 2016, p. 99 [\**Cancrinus libanensis* GARASSINO & SCHWEIGERT, 2006, p. 74, fig. 5; OD]. Cephalothorax longer than wide; rostrum triangular, orbits wide, directed forward; pleon about as long as cephalothorax, uropods of exopods ovate, wide; flagellum of antenna stout and overall ovate basally, composed of several elements. *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 1. \**P. libanensis* (GARASSINO & SCHWEIGERT), holotype MSNM i26597, scale bar 1 cm (new; photo by D. Audo, MNHN).

Additions to

Family PALINURIDAE Latreille, 1802

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

**Eolinurus** PASINI, GARASSINO, ZORZIN, & GIUSBERTI, 2022, p. 12 [\**Palinurus desmaresti* SECRETAN, 1975, p. 339, pl. 12, I; OD]. Cephalothorax overall trian-

gular, widening posteriorly, uniformly granular; cervical groove deep, arcuate, sinuous; pleonal somites granular, pleura subtriangular; first antenna with short flagellum, shorter than last segment of peduncle; pereopod 1 short, stout, granular; pereopods 2–5 thin, granular; telson with three parallel longitudinal ridges. [Emended from PASINI & others, 2022, p. 12.] *Eocene (Ypresian)*: Italy.—FIG. 2, I. \**E. desmaresti*, MCSNV 23, scale bar 5 cm (new; photo provided by A. Garassino, Loma Linda University, California, USA).

**Palaeopalinuorellus** FRAAIJE, VAN BAKEL, JAGT, & BROCHET, 2020, p. 328 [\**P. culocervus*; OD]. Cephalothorax overall triangular, rounded apices, widest posteriorly; cervical groove deep, oriented oblique to axis laterally and crossing midline parallel to posterior margin; anterior to cervical groove, carapace ornamented with longitudinal rows of short, forward-directed spines; posterior to cervical groove, spines wider and more densely spaced. *Upper Jurassic (Oxfordian)*: France. *Upper Jurassic (Tithonian)*: Czech Republic. *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 2, 2. \**P. culocervus*, holotype, MAB k.3761, scale bar 5 mm (Fraaije & others, 2020, fig. 2A).

**Palinurus** WEBER, 1795, p. 94 [\**Astacus elephas* FABRICIUS, 1787, p. 331; M; =*Palinurus vulgaris* LATREILLE, 1804, p. 391] [= *Astacodes* BELL, 1863, p. 30 (type, *A. falcifer*, M)]. Subcylindrical carapace with well-marked cervical groove; very short rostrum; supraorbital spines large and obliquely flattened; median portion of antennular base projecting strongly between segments 2–3 of antennal stalks, their bases fused medially in front of epistome; pereopod 1 shorter than others; pereopods 2–5 long and slender; subrectangular telson. *Upper Jurassic–Upper Cretaceous, Holocene. Upper Jurassic (Tithonian)*: Czech Republic. *Lower Cretaceous (Hauterivian)* Switzerland, UK. *Lower Cretaceous (Hauterivian–Barremian)*: Argentina. *Lower Cretaceous (Albian)*: USA (Texas). *Upper Cretaceous (Cenomanian)*: Lebanon. *Upper Cretaceous (Turonian)*: Czech Republic, USA (Texas).

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Cite: C. E. Schweitzer & R. M. Feldmann. 2024. Part R, Revised, Volume 1, Systematic descriptions: Additions to Infraorders Achelata and Astacidea. *Treatise Online* 180:1–7, 6 fig. [<https://doi.org/10.17161/to.vi.22528>].

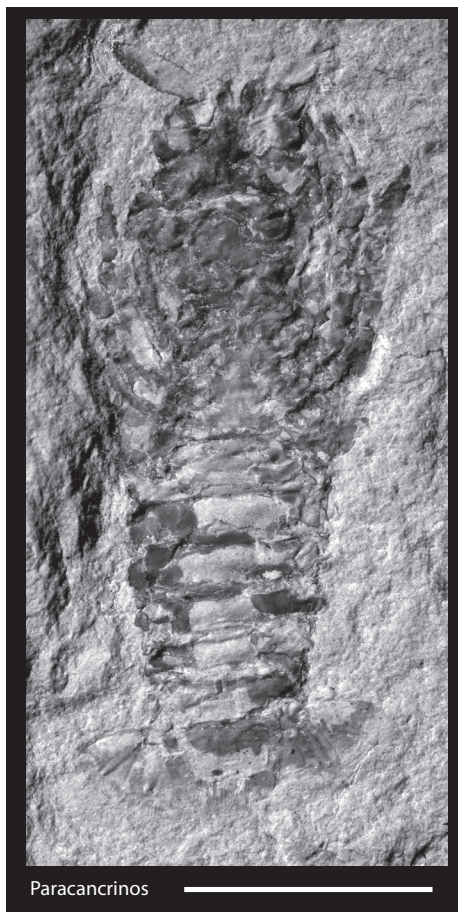


FIG 1. Cancrinidae (p. 1).

*Upper Cretaceous (Santonian)*: USA (Texas). *Upper Cretaceous (Campanian)*: USA (Mississippi). *Upper Cretaceous (Coniacian–Maastrichtian)*: Germany. *Holocene*: Indian Ocean, Mediterranean Sea, North Atlantic Ocean, southeastern African coast.—\**P. elephas* (FABRICIUS). Not shown, please see Fig. 5,3*a–b* in *Treatise Online* 67, p. 7.

**Phyllamphion** REINHARDT, 1849, p. 2 [\**P. elegans*, p. 6; M; =*Araeosternus wieneckii* DE MAN, 1881] [=*Araeosternus* DE MAN, 1881, p. 13, (type, *Araeosternus wieneckii*, OD); =*Palinurellus* VON MARTENS, 1878, p. 131 (type, *Araeosternus gundlachi*, M); =*Synaxes* BATE, 1881, p. 222 (type, *S. hybridica*, M)]. Cephalothorax elongate-ovate, rostrum wide, flat, triangular; rostral horns or spines absent; cephalothorax ornamented with dense granules and short setae; stridulating organ absent; anterior part of lateral margins without spines. [Emended from HOLTHUIS, 1991, p.168.] *Eocene (Priabonian)*: Italy. *Holocene*: Cosmopolitan (tropical).—FIG. 2,3. \**P. elegans*, Holocene, scale bar 5 cm (Holthuis, 1991, fig. 313).

## Additions to

### Family SCYLLARIDAE Latreille, 1825

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

**Charbelicaris** HAUG, AUDO, CHARBONNIER, PALERO, PETIT, ABI SAAD, & HAUG, 2016, p. 100 [\**C. maronites*, p. 100, fig. 6; OD]. Cephalothorax about as long as wide; orbits directed forward; pleon slightly shorter than cephalothorax, uropods of exopods ovate; flagellum of antenna stout, ovate, composed of several elements. *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 3,1. \**C. maronites*, holotype, MNHN.FA48955, scale bar 1 cm (photo by J. T. Haug & C. Haug, Ludwig Maximilian University of Munich, Germany).

**Ibacus** LEACH, 1815, p. 151 [\**I. peronii*, pl. 119; M]. Cephalothorax wider than long; front concave, orbits circular; anterior margin with tiny spines; anterolateral angle much produced into spine, cervical incision very deep, lateral margins posterior to cervical incision with six or seven stout spines; axial keel; pleonal somites with axial keels. *Eocene (Ypresian)*: Pakistan. *Holocene*: Indo-West Pacific Ocean.—FIG. 3,2. *I. alticrenatus* BATE, 1888, USNM 213119, Holocene, New Zealand, scale bar 1 cm (new).

**Llajassus** NYBORG & GARASSINO, 2017, p. 312 [\**Parri-bacus caesius* SQUIRES, 2001, p. 21, fig. 44–46; OD]. Carapace approximately as wide as long, widest anteriorly; front apparently more or less straight; lateral margins spinose anteriorly, notch at intersection of cervical groove with lateral margin; cervical groove very deep, extending obliquely toward axis from margin, then turning strongly posteriorly, then crossing axis; mesogastric region strong; axial keel composed of large tubercles posterior to cervical groove; branchial keels with large tubercles. *Eocene (Ypresian)*: USA (California, Oregon)—FIG. 3,3. \**L. caesius* (SQUIRES), LACMIP 15450.7, LACMIP Type 12760, Ypresian, California, scale bar 1 cm (photo from A. Garassino, Loma Linda University, California, USA).

**Parsacus** GARASSINO, BAHRAMI, YAZDI, & VEGA, 2014, p. 50 [\**P. eocenicus*, p. 50, fig. 5A–G; OD]. Cephalothorax ovate, wider than long; front straight; orbits circular, directed forward; cervical and post-cervical incisions very shallow, lateral margins serrate; axial keel discontinuous, nodose. *Eocene*: Iran.—FIG. 3,4. \**P. eocenicus*, holotype EUIC 10147, scale bar 1 cm (photo from A. Garassino, Loma Linda University, California, USA).

## ACHELATA *incertae sedis*

**Lessinoachela** PASINI, GARASSINO, ZORZIN, & GIUBERTI, 2022, p. 27 [\**L. scaligera*; OD]. Cephalothorax obovate, widest at about mid-length, lateral margins convex, ornamented with widely spaced, very large tubercles; supraorbital spines absent; deep cervical groove, deeply V-shaped medially; posterior margin concave; transverse row of strong tubercles anterior to cervical groove;

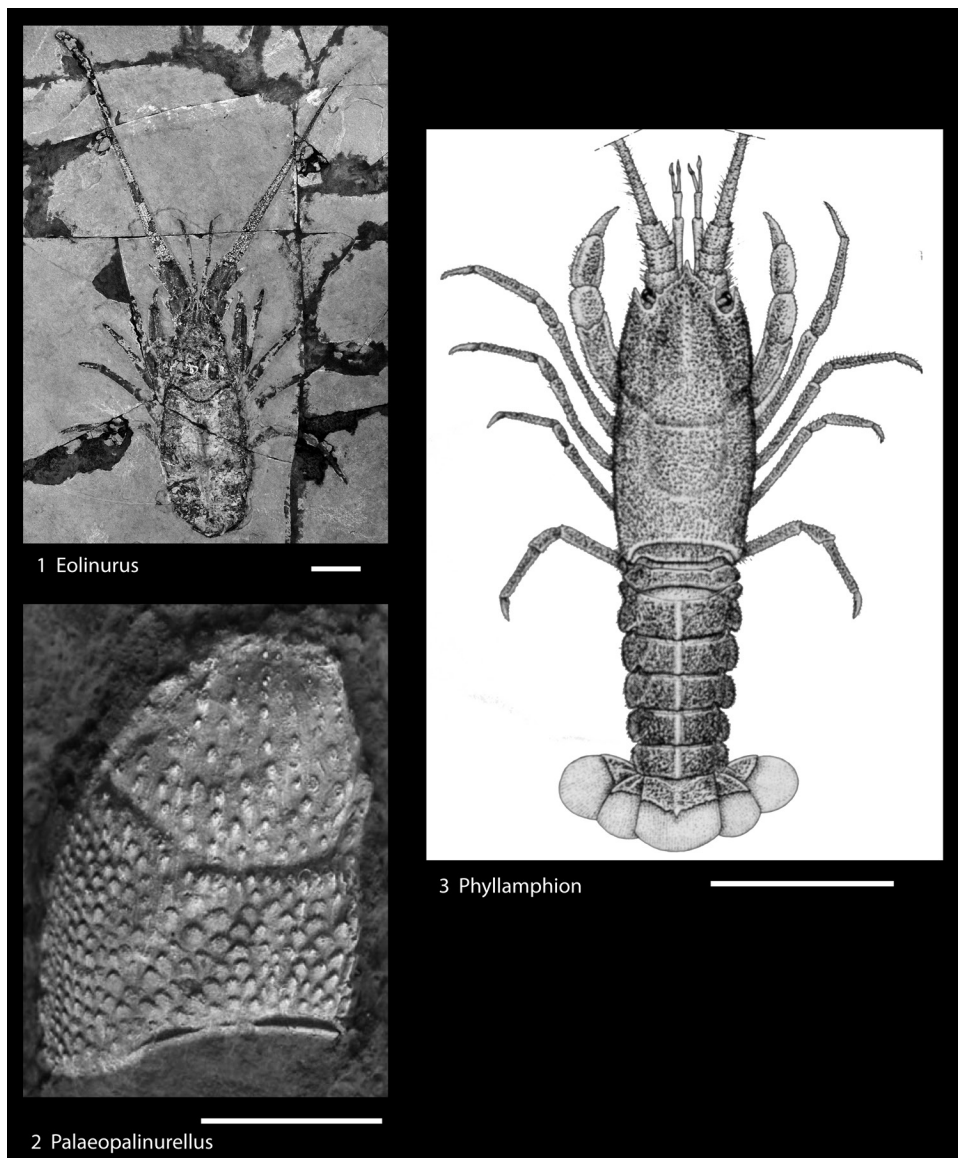


FIG 2. Paluinuridae (p. 1–2).

pleonal somites with transverse grooves; pereopods achelate. [Emended from PASINI & others, 2022, p. 27.] *Eocene* (*Ypresian*): Italy.—FIG. 4,1. \**L. scaligera*, holotype, MCSNV 95, scale bar 10 cm (photo from A. Garassino, Loma Linda University, California, USA).

*Polzicaris* HAUG, AUDO, CHARBONNIER, & HAUG, 2013, p. 365 [\**Eryoneicus? Sahel almae* ROGER, 1944, p. 191, fig. 1–2; OD]. Larval stage of an achelate lobster; five pairs of appendages, thoracopods 4–8, with seven well-sclerotized articles each, two distal elements form a pseudochelate termina-

tion, which is additionally equipped with thin elongate spines; exopods developed on thoracopods 4–8, with multi-annulated distal part; insertion of thoracopods 4–8 in a circular arrangement; pleon with well-developed tergites and tergo-pleurae; uropods and telson incompletely known, but well developed. [Emended from HAUG & others, 2013, p. 365.] *Upper Cretaceous* (*Santonian*): Lebanon.—FIG. 4,2. \**P. sahelalmae*, MNHN-B18905, scale bar 1 cm (photo by J. T. Haug & C. Haug, Ludwig Maximilian University of Munich, Germany).



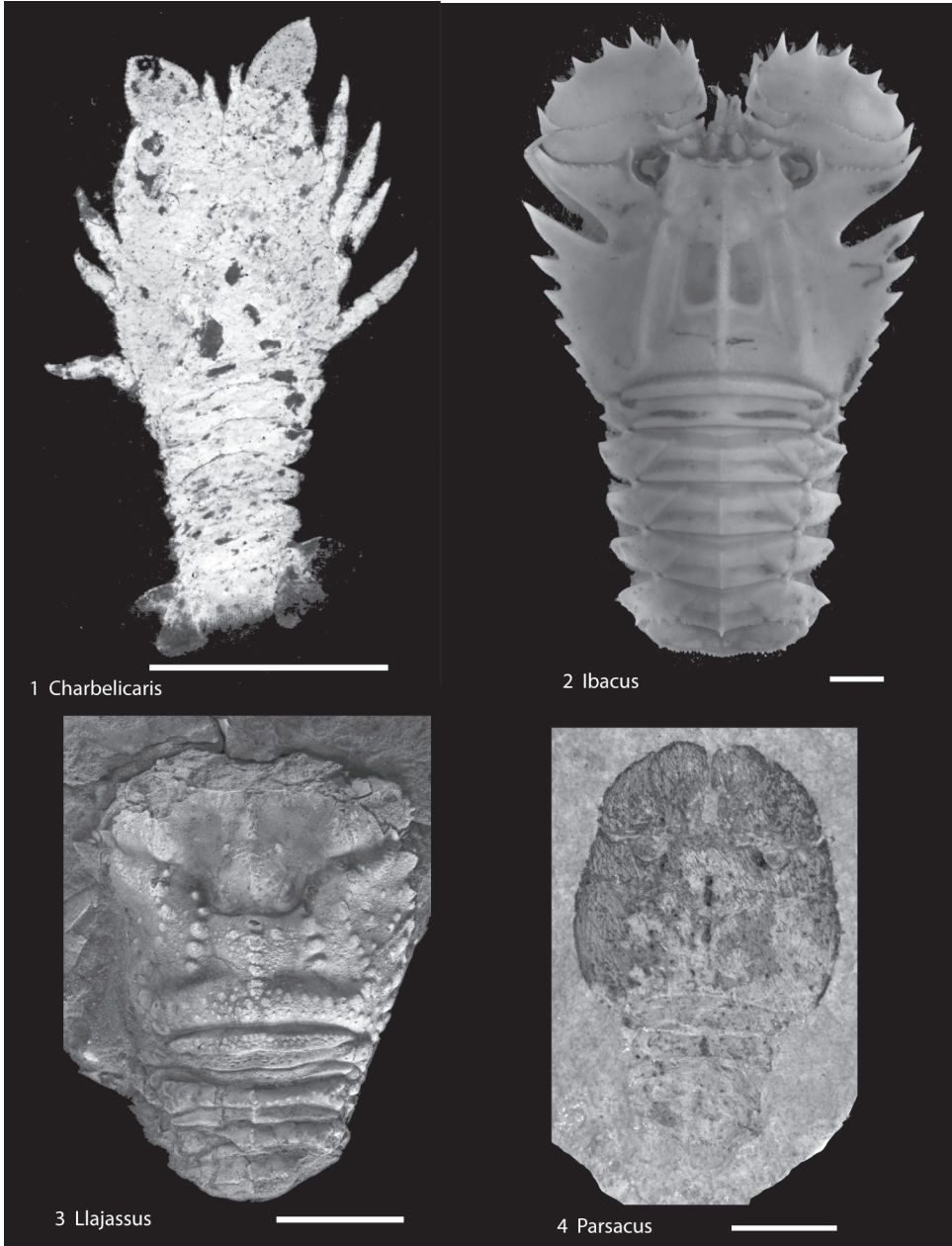
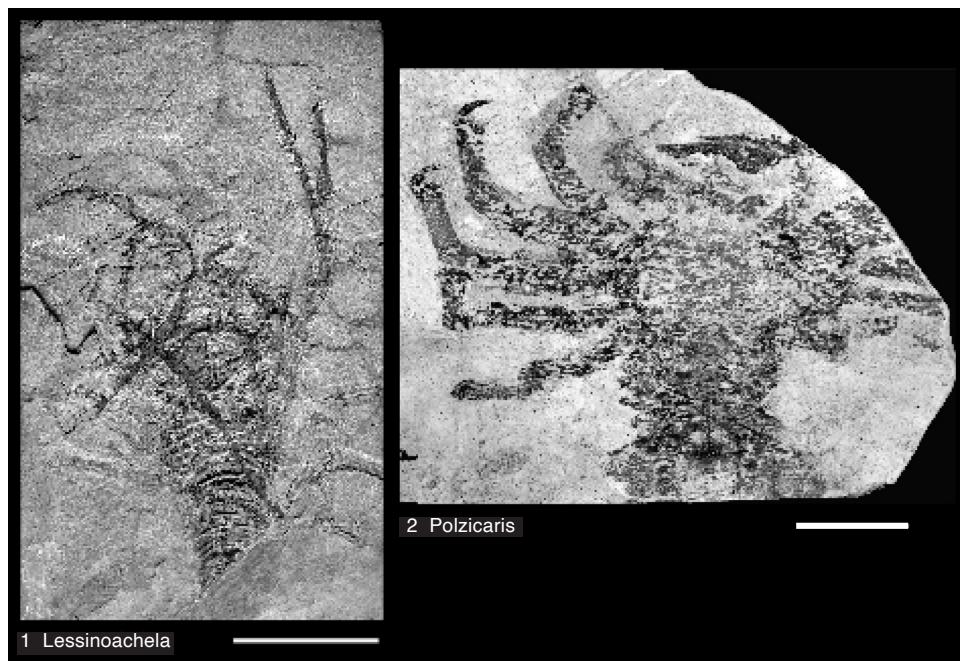


FIG 3. Scyllaridae (p. 2).

FIG 4. *Achelata incertae sedis* (p. 2–3).

## ADDITIONS TO INFRAORDER ASTACIDEA

Over the course of the intervening years since FELDMANN, SCHWEITZER, and KARASAWA (2016), was published, new knowledge has accumulated and new taxa have been discovered and recognized. Thus, our understanding of the Astacidea has grown. The following are new genera classifications covering 2012 to December 2022. [These are additions to “Systematic descriptions: Infraorder Astacidea,” *Treatise Online 74* (FELDMANN, SCHWEITZER, & KARASAWA, 2016)].

### Additions to

#### Family NEPHROPIDAE Dana, 1852

[Nephropinae DANA, 1852, p. 15] [=Homaridae HUXLEY, 1879, p. 781; Thaumastochelidae BATE, 1888, p. 46]

**Notahomarus** CHARBONNIER, AUDO, GARASSINO, & HYŽNÝ, 2017, p. 126 [\**Pseudastacus hakeleensis* FRAAS, 1878, p. 346, pl. 4, 1; OD]. Supraorbital carina short, spinose; first pereiopods heterochelous, with crusher and cutter claws, chelae ornamented

with tubercles; pleonites smooth. [Emended from CHARBONNIER & others, 2017, p. 126.] *Upper Cretaceous (Cenomanian)*: Lebanon.—FIG. 5. \**N. hakeleensis*, holotype SMNS 60439, scale bar 1 cm (photo from S. Charbonnier, MNHN).

### Additions to

#### Family ASTACIDAE Latreille, 1802

[*nom. correct.* SAMOUELLE, 1819, p. 94, *pro* Astacini LATREILLE, 1802 in 1802–1803, p. 32, ICZN Direction 12, 1955] [=Potamobiidae HUXLEY, 1879, p. 775]

**Emplastron** O'FLYNN, AUDO, & KAWAI, 2021, p. 380 [\**Astacus edwardsi* VAN STRAELEN, 1928, p. 4, pl. 1; OD]. Cephalothorax with anterior and posterior postorbital keels; epistome with ornamentation posterior to urinary orifice; rostrum wide, with lateral keels; cervical groove distinct; ventral margin of cephalothorax rimmed; pleonites rounded. [Emended from O'FLYNN, AUDO, & KAWAI, 2021, p. 380.] *Paleocene (Thanetian)*: France.—FIG. 6. \**E. edwardsi* (VAN STRAELEN), scale bar 1 cm (O'Flynn, Audo, & Kawai, 2021, fig. 1A, reproduced by permission of President of the Palaeontological Society of Japan).

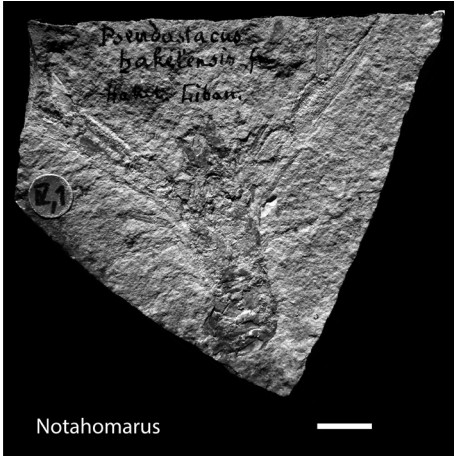


FIG 5. Nephropidae (p. 5).

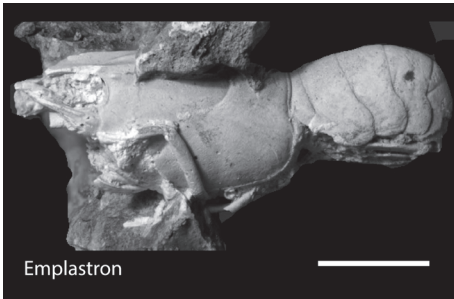


FIG 6. Astacidae (p. 5).

## ABBREVIATIONS FOR MUSEUM REPOSITORIES

- EUIC:** Paleontological Collection, University of Isfahan, I. R. Iran  
**LACMIP:** Natural History Museum of Los Angeles County, California, USA  
**MAB k:** Oertijdmuseum, Boxtel, The Netherlands  
**MCSNV:** Museo di Storia Naturale di Verona, Italy  
**MNHN:** Muséum National d'histoire naturelle, Paris, Collection de Paléontologie, France  
**MSNM:** Museo Civico di Storia Naturale di Milano, Italy  
**SMNS:** Staatliches Museum für Naturkunde, Stuttgart, Germany

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