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— Catalogue —

Takashi Ito's fossil decapod collections from the Holocene deposits in the Shimizu Port, Shizuoka City, Japan

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Abstract

A total of 792 specimens of the Takashi Ito fossil decapod collection were classified. These specimens were collected from Holocene deposits (ca. 7,700–6,900 cal BP) in the Shimizu Port, Shizuoka City, Shizuoka Prefecture, Japan. Forty-two species are identified and illustrated. New records for fossil decapods in Japan are as follows: *Lyreidus stenops*, *Notopus dorsipes*, *Mursia trispinosa*, *Phalangipus hystrix*, *Cryptopodia transitans*, *Liagore rubromaculata*, *Zalasius dromiaeformis*, *Haemocinus elatus*, *Jonas distinctus*, *Macrophthalmus (Macrophthalmus) telescopicus* and *Pseudopinnixa carinata*.

Key words: Crustacea, Decapoda, Quaternary, ¹⁴C age, artificial reclaimed land

1. Introduction

Fossil decapods were collected by one of the authors, Takashi Ito, from the artificial reclaimed land deposited around the Shimizu Port, Shizuoka Prefecture (Fig. 1). All specimens were collected as pebbles in dredged sediments from large scale construction of the Okitsu Terminal, an eastern part of the Shimizu Port. Therefore, the detailed locality of the sediments is unknown, but they seemed to be derived from the subsurface around the Shimizu Port. Most specimens

were included in nodules consisting of muddy sand, and some of them were included in massive unconsolidated muddy sand.

The unnamed Quaternary deposits (upper Pleistocene to Holocene) which consist mainly of sandy mud and sandy gravel layers, are distributed under the coastal plains along the Suruga Bay, Shizuoka Prefecture (e.g., Sugiyama and Shimokawa, 1990; Ishihara et al., 2014; Nishida and Ikehara, 2014; Kitamura et al., 2019), and the Holocene deposits are distributed from 0 to 100 m below the surface (Ishihara et al.,

2014). Additionally, Nishida and Ikehara (2014) showed that the Holocene deposits (up to ca. 5,000 cal BP) were distributed on the sea bottom of coastal areas of the western part of the Suruga Bay. Kitamura et al. (2019) showed that the Holocene deposits (ca. 4,000–1,400 cal BP) were distributed at 0 to 7 m depths underground about 1 km south of the Shimizu Port. These deposits seem to be the alluvium which was reclaimed from an alluvial lowland around the studied area. The nodules including fossils were pumped out from the bottom of the sea near the studied locality and seem to be derived from the Holocene deposits around the Shimizu Port.

Radiocarbon age of two decapod carapaces (*Notopus dorsipes* and *Arges parallelus*), one gastropod (*Unedogemmula uedo*) and one bivalve (*Diluvarca ferruginea*) was dated (Fig. 2). Samples were submitted to Paleo Labo Co. Ltd., Gifu, Japan, for ^{14}C analysis with a compact accelerator mass spectrometer (AMS; NEC, 15SDH). For samples, ^{14}C ages were converted to calendar ages before 1950 CE by using the Marine20 calibration curve (Heaton et al., 2020). The ^{14}C ages are shown in Table 1, suggesting that the present specimens are derived from the deposits during the Holocene transgression (ca. 7,700–6,900 cal BP).

2. Catalogue of the decapod species

A Total of 792 specimens belonging to 42 species were identified (Table 2). The higher classification of decapods of the present study follows Schram and

Koenemann (2021). All specimens are deposited in the Museum of Natural and Environmental History, Shizuoka (SPMN-FL 26418–27211).

The fossils of following species are the first recorded in Japan: *Lyreidus stenops*, *Notopus dorsipes*, *Mursia trispinosa*, *Phalangipus hystrix*, *Cryptopodia transitans*, *Liagore rubromaculata*, *Zalasius dromiaeformis*, *Haemocinus elatus*, *Jonas distinctus*, *Macrophthalmus (Macrophthalmus) telescopicus*, *Pseudopinnixa carinata*.

Order Decapoda Latreille, 1802

Infraorder Reptantia Boas, 1880

Parvorder Gebiidea de Saint Laurent, 1979

Family Upogebiidae Borradaile, 1903

Upogebiidae gen. et sp. indet.

(Pl. 1, Fig. A)

Material examined: SPMN-FL 26418.

Parvorder Anomura Milne Edwards, 1882

Superfamily Paguroidea Latreille, 1802

Family Diogenidae Ortmann, 1892

Genus *Dardanus* Paul'son, 1875

***Dardanus* sp. cf. *D. arrosor* (Herbst, 1796)**

(Pl. 1, Fig. B)

Material examined: SPMN-FL 26419.

***Dardanus* sp. cf. *D. impressus* (De Haan, 1849)**

(Pl. 1, Fig. C)

Material examined: SPMN-FL 26420.

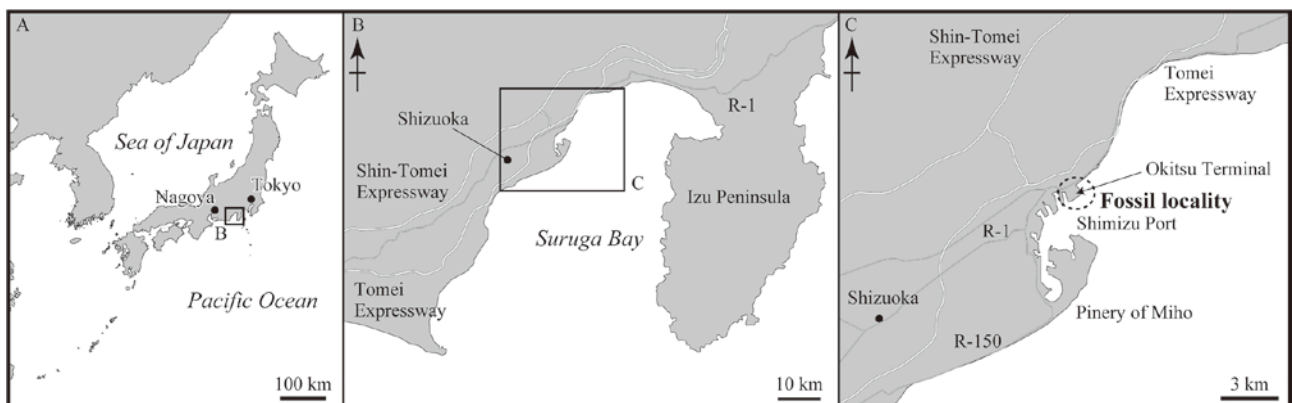


Fig. 1. A, Map showing the fossil locality. B, C, Details of the collecting site of the specimens.

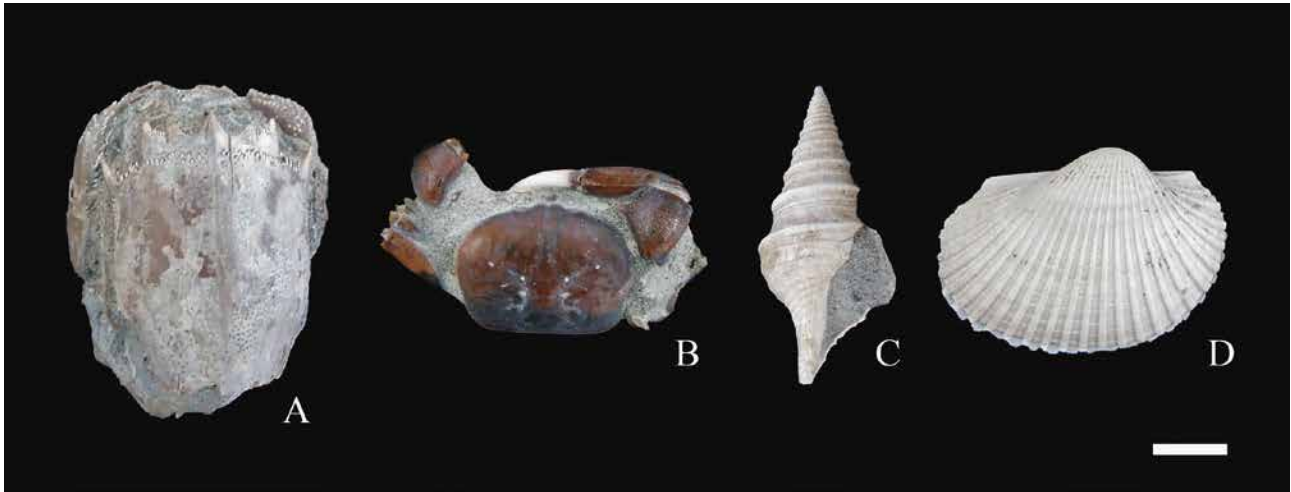


Fig. 2. Samples used for radiocarbon dating. **A**, *Notopus dorsipes*, SPMN-FL 26518; **B**, *Arges parallelus*, SPMN-FL27053; **C**, *Unedogemmula unedo*, SPMN-FL27210; **D**, *Diluvarca ferruginea*, SPMN-FL27211. Scale bar indicates 5.0 mm.

Table 1. ^{14}C ages of samples from the study area.

Specimen/ species	$\delta^{13}\text{C}$ (‰)	^{14}C age (yrBP $\pm 1\sigma$)	Calibrated age	
			1 σ	2 σ
SPMN-FL 26518 <i>Notopus dorsipes</i>	-19.94 \pm 0.19	6,850 \pm 25	7,251–7,092 cal BP (68.27%)	7,310–7,000 cal BP (95.45%)
SPMN-FL 27053 <i>Arges parallelus</i>	-13.15 \pm 0.19	7,345 \pm 25	7,686–7,560 cal BP (68.27%)	7,762–7,491 cal BP (95.45%)
SPMN-FL 27210 <i>Unedogemmula unedo</i>	-0.40 \pm 0.20	7,300 \pm 25	7,648–7,519 cal BP (68.27%)	7,707–7,447 cal BP (95.45%)
SPMN-FL 27211 <i>Diluvarca ferruginea</i>	-2.50 \pm 0.24	6,780 \pm 30	7,168–7,004 cal BP (68.27%)	7,250–6,931 cal BP (95.45%)

Dardanus* sp. cf. *D. crassimanus

(H. Milne Edwards, 1836)

(Pl. 1, Fig. D)

Material examined: SPMN-FL 26421.

Family Paguridae Latreille, 1802

Genus *Pagurus* Fabricius, 1775

***Pagurus* sp. cf. *P. similis* (Ortmann, 1892)**

(Pl. 1, Fig. E)

Material examined: SPMN-FL 26422.

Parvorder Brachyura Linnaeus, 1758

Section Dromiacea De Haan, 1833

Superfamily Dromioidea De Haan, 1833

Family Dromiidae De Haan, 1833

Subfamily Dromiinae De Haan, 1833

Genus *Lauridromia* McLay, 1993

***Lauridromia dehaani* (Rathbun, 1923)**

(Pl. 1, Figs. F–H)

Material examined: SPMN-FL 26423–26426.

Section Raninoidea Ahyong and others, 2007

Superfamily Raninoidea De Haan, 1839

Family Lyreididae Guinot, 1993

Subfamily Lyreidinae Guinot, 1993

Genus *Lyreidus* De Haan, 1841

***Lyreidus stenops* Wood-Mason, 1887**

(Pl. 1, Figs. I–K)

Material examined: SPMN-FL 26427–26475.**Table 2.** List of decapods in T. Ito's collection.

Species	Number of Specimen
Upogebiidae gen. et sp. indet.	1
<i>Dardanus</i> sp. cf. <i>D. arrosor</i>	1
<i>Dardanus impressus</i>	1
<i>Dardanus</i> sp. cf. <i>D. crassimanus</i>	1
<i>Pagurus</i> sp. cf. <i>P. similis</i>	1
<i>Lauridromia dehaani</i>	4
<i>Lyreidus stenops</i>	49
<i>Notopus dorsipes</i>	43
<i>Dorippe sinica</i>	9
<i>Paradorippe granulata</i>	13
<i>Calappa lophos</i>	81
<i>Calappa philargius</i>	4
<i>Mursia armata</i>	4
<i>Mursia trispinosa</i>	1
<i>Arcania elongata</i>	6
<i>Myra celeries</i>	127
<i>Philyra syndactyla</i>	52
<i>Leucosia anatum</i>	26
<i>Seulocia rhomboidalis</i>	93
<i>Hyastenus diacanthus</i>	2
<i>Phalangipus hystrix</i>	6
<i>Cryptopodia transitans</i>	1
<i>Enoplolambrus validus</i>	15
<i>Liagore rubromaculata</i>	31
<i>Zalasius dromiaeformis</i>	2
<i>Arges parallelus</i>	62
<i>Haemocinus elatus</i>	2
<i>Eucrate crenata</i>	5
<i>Entricoplax vestita</i>	11
<i>Carcinoplax</i> sp.	1
<i>Ommatocarcinus macgillivrayi</i>	26
<i>Mariaplax chenaie</i>	4
<i>Romaleon gibbosulum</i>	22
<i>Jonas distinctus</i>	1
<i>Liocarcinus corrugatus</i>	2
<i>Charybdis (Charybdis) japonica</i>	28
<i>Charybdis (Charybdis) miles</i>	21
<i>Charybdis (Charybdis) variegata</i>	6
<i>Macrophthalmus (Macrophthalmus) telescopicus</i>	16
<i>Venitus latreillei</i>	4
<i>Tritodynamia rathbunae</i>	6
<i>Pseudopinnixa carinata</i>	1
Total	792

Family Raninidae De Haan, 1839

Subfamily Notopodinae Serène and Umali, 1972

Genus *Notopus* De Haan, 1841***Notopus dorsipes* (Linnaeus, 1758)**

(Fig. 2A, Pl. 1, Figs. L–S)

Material examined: SPMN-FL 26476–26518.

Section Eubrachyura de Saint Laurent, 1980

Superfamily Dorippoidea MacLeay, 1838

Family Dorippidae MacLeay, 1838

Subfamily Dorippinae MacLeay, 1838

Genus *Dorippe* Weber, 1795***Dorippe sinica* Chen, 1980**

(Pl. 2, Fig. A)

Material examined: SPMN-FL 26519–26527.Genus *Paradorippe* Serène and Romimohtarto,
1969***Paradorippe granulata* (De Haan, 1841)**

(Pl. 2, Figs. B, C)

Material examined: SPMN-FL 26528–26540.

Superfamily Calappoidea De Haan, 1833

Family Calappidae De Haan, 1833

Genus *Calappa* Weber, 1795***Calappa lophos* (Herbst, 1782)**

(Pl. 2, Figs. D–H)

Material examined: SPMN-FL 26541–26621.***Calappa philargius* (Linnaeus, 1758)**

(Pl. 2, Figs. I–K)

Material examined: SPMN-FL 26622–26625.Genus *Mursia* Desmarest, 1823***Mursia armata* De Haan, 1837**

(Pl. 2, Fig. L)

Material examined: SPMN-FL 26626–26629.***Mursia trispinosa* Parisi, 1914**

(Pl. 2, Fig. M)

Material examined: SPMN-FL 26630.

Superfamily Leucosioidea Samouelle, 1819
 Family Leucosiidae Samouelle, 1819
 Subfamily Ebalinae Stimpson, 1871
 Genus *Arcania* Leach, 1817

***Arcania elongata* Yokoya, 1933**

(Pl. 2, Fig. N)

Material examined: SPMN-FL 26631–26636.

Genus *Myra* Leach, 1817

***Myra celeries* Galil, 2001**

(Pl. 2, Figs. O–R)

Material examined: SPMN-FL 26637–26763.

Genus *Philyra* Leach 1814

***Philyra syndactyla* Ortmann, 1892**

(Pl. 2, Fig. S)

Material examined: SPMN-FL 26764–26815.

Subfamily Leucosiinae Samouelle, 1819

Genus *Leucosia* Weber, 1875

***Leucosia anatum* (Herbst, 1783)**

(Pl. 2 Figs. T–V)

Material examined: SPMN-FL 26816–26841.

Genus *Seulocia* Galil, 2005

***Seulocia rhomboidalis* (De Haan, 1841)**

(Pl. 3, Figs. A–D)

Material examined: SPMN-FL 26842–26934.

Superfamily Majoidea Samouelle, 1819

Family Epialtidae MacLeay, 1838

Subfamily Pisinae Dana, 1851

Genus *Hyastenus* White, 1847

***Hyastenus diacanthus* (De Haan, 1839)**

(Pl. 3, Fig. E)

Material examined: SPMN-FL 26935–26936.

Genus *Phalangipus* Latreille, 1828

***Phalangipus hystrix* (Miers, 1886)**

(Pl. 3, Figs. F, G)

Material examined: SPMN-FL 26937–26942.

Superfamily Parthenopoidea MacLeay, 1838

Family Parthenopidae MacLeay, 1838

Subfamily Parthenopinae MacLeay, 1838

Genus *Cryptopodia* H. Milne Edwards, 1834

***Cryptopodia transitans* (Ortmann, 1893)**

(Pl. 3, Fig. H)

Material examined: SPMN-FL 26943.

Genus *Enoplolambrus* A. Milne Edwards, 1878

***Enoplolambrus validus* (De Haan, 1837)**

(Pl. 3, Figs. I–K)

Material examined: SPMN-FL 26944–26958.

Superfamily Xanthoidea MacLeay, 1838

Family Xanthidae MacLeay, 1819

Subfamily Xanthinae MacLeay, 1838

Genus *Liagore* De Haan, 1833

***Liagore rubromaculata* (De Haan, 1835)**

(Pl. 3, Figs. L–P)

Material examined: SPMN-FL 26959–26989.

Subfamily Zalasiinae Serène, 1968

Genus *Zalasius* Rathbun, 1897

***Zalasius dromiaeformis* (De Haan, 1839)**

(Pl. 3, Fig. Q)

Material examined: SPMN-FL 26990–26991.

Superfamily Pilumnoidea Samouelle, 1819

Family Pilumnidae Samouelle, 1819

Subfamily Rhizopinae Stimpson, 1858

Genus *Arges* De Haan, 1833

***Arges parallelus* De Haan, 1833**

(Fig. 2B, Pl. 3, Figs. R–V)

Material examined: SPMN-FL 26992–27053.

Superfamily Pseudozioidea Alcock, 1898

Family Planopilumnidae Serène, 1984

Genus *Haemocinus* Ng, 2003

***Haemocinus elatus* (A. Milne-Edwards, 1873)**

(Pl. 4, Fig. A)

Material examined: SPMN-FL 27054–27055.

Superfamily Goneplacoidea MacLeay, 1838

Family Euryplacidae Stimpson, 1871

Genus *Eucrate* De Haan, 1835***Eucrate crenata* (De Haan, 1835)**

(Pl. 4, Figs. B, C)

Material examined: SPMN-FL 27056–27060.

Family Goneplacidae MacLeay, 1838

Genus *Entricoplax* Castro, 2007***Entricoplax vestita* (De Haan, 1833)**

(Pl. 4, Fig. D)

Material examined: SPMN-FL 27061–27071.Genus *Carcinoplax* H. Milne Edwards, 1852***Carcinoplax* sp.**

(Pl. 4, Fig. E)

Material examined: SPMN-FL 27072.Genus *Ommatocarcinus* White, 1851***Ommatocarcinus macgillivrayi*****White, 1851**

(Pl. 4, Figs. F, G)

Material examined: SPMN-FL 27073–27098.

Family Hexapodidae Miers, 1886

Genus *Mariaplax* Rahayu and Ng, 2014***Mariaplax chenae* Rahayu and Ng, 2014**

(Pl. 4, Fig. H)

Material examined: SPMN-FL 27099–27102.

Superfamily Cancroidea Latreille, 1802

Family Cancridae Latreille, 1802

Genus *Romaleon* Gistel, 1848***Romaleon gibbosulum* (De Haan, 1833)**

(Pl. 4, Figs. I, J)

Material examined: SPMN-FL 27103–27124.

Superfamily Corystoidea Samouelle, 1819

Family Corystidae Latreille, 1802

Genus *Jonas* Hombron and Jacquinot, 1846***Jonas distinctus* (De Haan, 1835)**

(Pl. 4, Fig. K)

Material examined: SPMN-FL 27125.

Superfamily Portunoidea Rafinesque, 1815

Family Carcinidae MacLeay, 1838

Subfamily Polybiinae Paul'son, 1875

Genus *Liocarcinus* Stimpson, 1871***Liocarcinus corrugatus* (Pennant, 1777)**

(Pl. 4, Figs. L, M)

Material examined: SPMN-FL 27126–27127.

Family Portunidae Rafinesque, 1815

Subfamily Thalamitinae Paul'son, 1875

Genus *Charybdis* De Haan, 1833***Charybdis (Charybdis) japonica* (A. Milne Edwards, 1861)**

(Pl. 4, Figs. N, O)

Material examined: SPMN-FL 27128–27155.***Charybdis (Charybdis) miles* (De Haan, 1835)**

(Pl. 4, Fig. P)

Material examined: SPMN-FL 27156–27176.***Charybdis (Charybdis) variegata* (Fabricius, 1798)**

(Pl. 4, Fig. Q)

Material examined: SPMN-FL 27177–27182.

Subsection Thoracotremata Guinot, 1977

Superfamily Ocypodoidea Rafinesque, 1815

Family Macrophthalmidae Dana, 1851

Subfamily Macrophthalminae Dana, 1875

Genus *Macrophthalmus* Desmarest, 1823***Macrophthalmus (Macrophthalmus) telescopicus* (Owen, 1839)**

(Pl. 4, Figs. R, S)

Material examined: SPMN-FL 27183–27198.Genus *Venitus* Barnes, 1967

***Venitus latreillei* (Desmarest, 1822)**

(Pl. 4, Fig. T)

Material examined: SPMN-FL 27199–27202.

Subfamily Tritodynamiinae Števcíć, 2005

Genus *Tritodynamia* Ortmann, 1893***Tritodynamia rathbunae* Shen, 1932**

(Pl. 4, Figs. U–X)

Material examined: SPMN-FL 27203–27208.

Superfamily Grapsoidea MacLeay, 1838

Family Varunidae H. Milne Edwards, 1853

Subfamily Gaeticinae Davie and Ng, 2007

Genus *Pseudopinnixa* Ortmann, 1894***Pseudopinnixa carinata* Ortmann, 1894**

(Pl. 4, Figs. Y, Z)

Material examined: SPMN-FL 27209.**3. Acknowledgements**

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Plate 1

Fig. A. Upogebiidae gen. et sp. indet.

アナジャコ科の未定種

SPMN-FL 26418, pereopods.

Fig. B. *Dardanus* sp. cf. *D. arrosor* (Herbst, 1796)

ケスジヤドカリの近似種

SPMN-FL 26419, right chela of pereopod 1.

Fig. C. *Dardanus* sp. cf. *D. impressus* (De Haan, 1849)

イボアシヤドカリの近似種

SPMN-FL 26420, left chela of pereopod 1.

Fig. D. *Dardanus* sp. cf. *D. crassimanus* (H. Milne Edwards, 1836)

イシダタミヤドカリの近似種

SPMN-FL 26421, left chela of pereopod 1.

Fig. E. *Pagurus* sp. cf. *P. similis* (Ortmann, 1892)

ヤマブキホンヤドカリの近似種

SPMN-FL 26422, left chela of pereopod 1 and other pereopods.

Figs. F–H. *Lauridromia dehaani* (Rathbun, 1923)

カイカムリ

Fig. F, SPMN-FL 26423, carapace.

Figs. G, H, SPMN-FL 26424, carapace and pereopods, *G*, dorsal view; *H*, upper view.**Figs. I–K. *Lyreidus stenops* Wood-Mason, 1887**

トゲナシビワガニ

Fig. I, SPMN-FL 26427, carapace.

Figs. J, K, SPMN-FL 26428, *J*, carapace and cheliped; *K*, cheliped.**Figs. L–S. *Notopus dorsipes* (Linnaeus, 1758)**

アサヒガニモドキ

Figs. L, M, SPMN-FL 26476, carapace and pereopods, *L*, dorsal view; *M*, ventral view.Figs. N, O, SPMN-FL 26477, carapace and pereopods, *N*, dorsal view; *O*, upper view.Figs. P, Q, SPMN-FL 26478, carapace and pereopods, *P*, dorsal view; *Q*, upper view.Figs. R, S, SPMN-FL 26479, carapace and pereopods, *R*, dorsal view; *S*, upper view.

Scale bars indicate 5.0 mm.

Plate 1

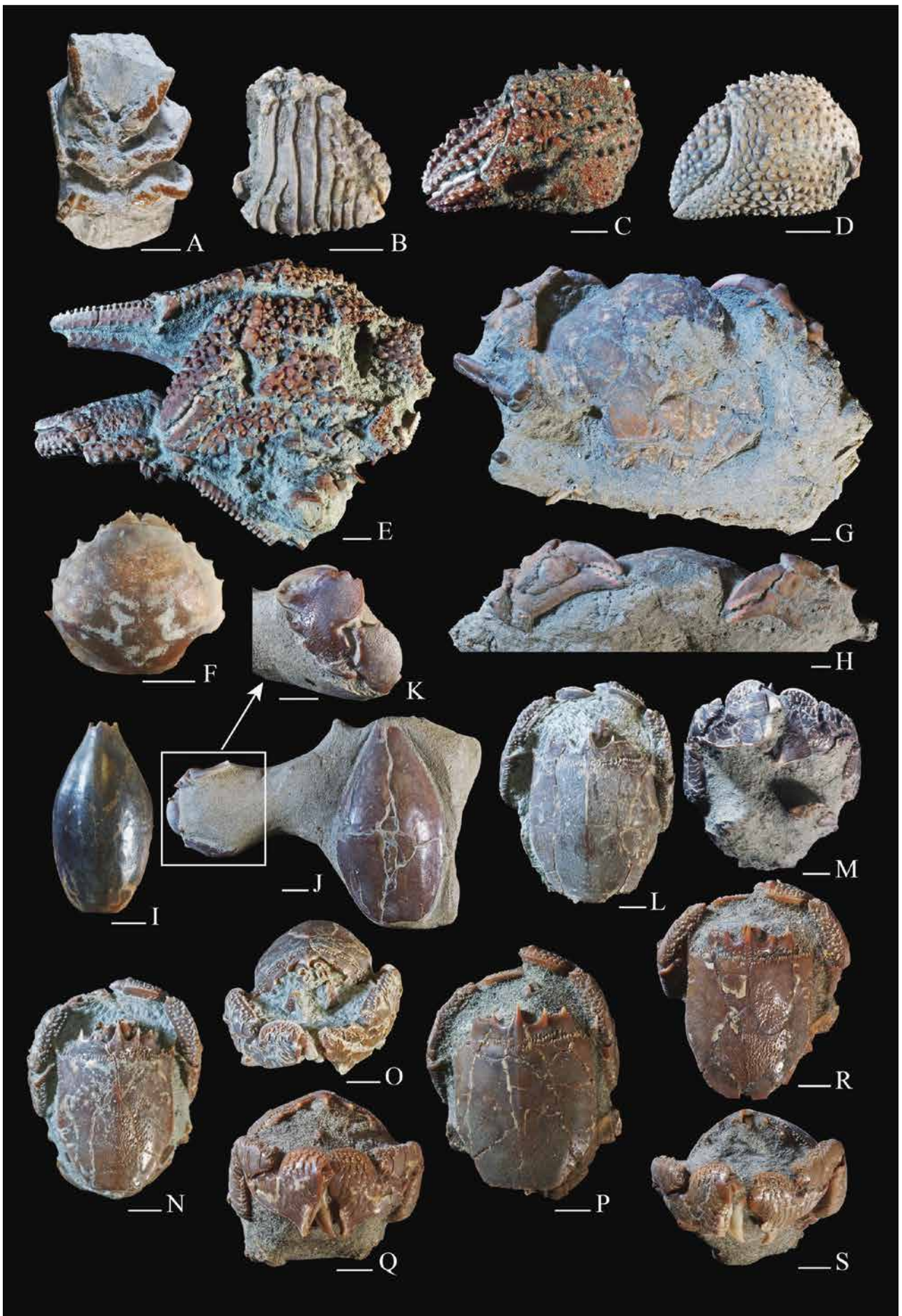


Plate 2

Fig. A. *Dorippe sinica* Chen, 1980

キメンガニ

SPMN-FL 26519, carapace.

Figs. B, C. *Paradorippe granulata* (De Haan, 1841)

サメハダヘイケガニ

Fig. B, SPMN-FL 26528, carapace.

Fig. C, SPMN-FL 26529, carapace.

Figs. D–H. *Calappa lophos* (Herbst, 1782)

トラフカラッパ

Fig. D, SPMN-FL 26541, carapace.

Fig. E, SPMN-FL 26542, carapace.

Figs. F, G, SPMN-FL 26543, *F*, carapace; *G*, left chela.

Fig. H, SPMN-FL 26544, right chela.

Figs. I–K. *Calappa philargius* (Linnaeus, 1758)

メガネカラッパ

Figs. I, J, SPMN-FL 26622, *I*, carapace; *J*, close-up view of the carapace. Arrows indicate the trace of attachment of barnacle *Solidobalanus socialis*.

Fig. K, SPMN-FL 26623, carapace.

Fig. L. *Mursia armata* De Haan, 1837

キンセンモドキ

SPMN-FL 26626, carapace.

Fig. M. *Mursia trispinosa* Parisi, 1914

ミツハキンセンモドキ

SPMN-FL 26630, carapace.

Fig. N. *Arcania elongata* Yokoya, 1933

ナガジュウイチトゲコブシ

SPMN-FL 26631, carapace.

Figs. O–R. *Myra celeris* Galil, 2001

テナガコブシ

Fig. O, SPMN-FL 26637, carapace.

Figs. P, Q, SPMN-FL 26638, *P*, carapace; *Q*, *Solidobalanus socialis* attaching to the carapace. Photograph taken by scanning microscope (SU-6600).

Fig. R, SPMN-FL 26639, manus of cheliped.

Fig. S. *Philyra syndactyla* Ortmann, 1892

ヒラコブシ

SPMN-FL 26764, carapace.

Figs. T–V. *Leucosia anatum* (Herbst, 1783)

ツノナガコブシ

Figs. T, U, SPMN-FL 26816, *T*, carapace; *U*, octopod drilling hole (arrow of Fig. T). Photograph taken by scanning microscope (SU-6600).

Fig. V, SPMN-FL 26817, carapace and cheliped.

Scale bars A–P, R–T, V indicate 5.0 mm and Q, U indicate 1.0 mm.

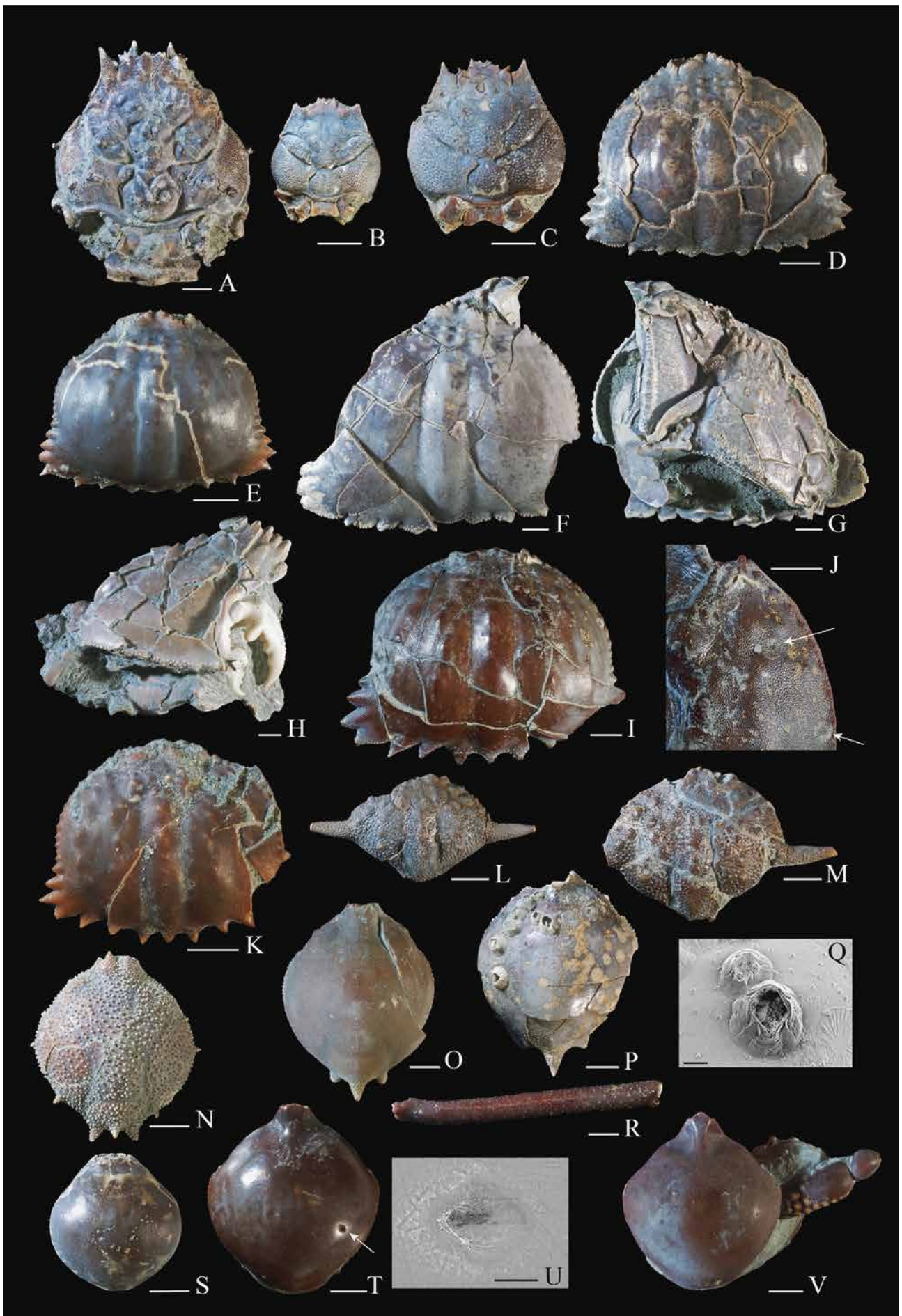


Plate 3

Figs. A–D. *Seulocia rhomboidalis* (De Haan, 1841)

ヒシガタコブシ

Fig. A, SPMN-FL 26842, carapace and chelipeds.

Figs. B–D, SPMN-FL 26843, carapace, *B*, dorsal view; *C*, ventral view; *D*, octopod drilling hole (arrow of Fig. B). Photograph taken by scanning microscope (SU-6600).**Fig. E. *Hyastenus diacanthus* (De Haan, 1839)**

ツノガニ

SPMN-FL 26935, carapace.

Figs. F, G. *Phalangipus hystrix* (Miers, 1886)

アシナガツノガニ

Fig. F, SPMN-FL 26937, carapace.

Fig. G, SPMN-FL 26838, carapace.

Fig. H. *Cryptopodia transitans* (Ortmann, 1893)

カワリヒシガニ

SPMN-FL 26943, carapace.

Figs. I–K. *Enoplolambrus validus* (De Haan, 1837)

ヒシガニ

Fig. I, SPMN-FL 26944, carapace covered with the barnacle species, *Solidobalanus socialis*.

Fig. J, SPMN-FL 26945, carapace.

Fig. K, SPMN-FL 26946, left cheliped.

Figs. L–P. *Liagore rubromaculata* (De Haan, 1835)

ベニホシマンジュウガニ

Figs. L, M, SPMN-FL 26959, carapace and pereopods, *L*, dorsal view; *M*, ventral view.Figs. N, O, SPMN-FL 26960, carapace and pereopods, *N*, dorsal view; *O*, ventral view.

Fig. P, SPMN-FL 26961, carapace and pereopods.

Fig. Q. *Zalasia dromiaeformis* (De Haan, 1839)

ドロイシガニ

SPMN-FL 26990, carapace.

Figs. R–V. *Arges parallelus* De Haan, 1833

ムカシメクラガニ

Fig. R, SPMN-FL 26992, carapace and pereopods.

Figs. S, T, SPMN-FL 26993, carapace and pereopods, *S*, dorsal view; *T*, ventral view.Figs. U, V, SPMN-FL 26994, carapace and pereopods, *U*, dorsal view; *V*, ventral view.

Scale bars A–C, E–V indicate 5.0 mm and scale bar D indicates 0.1 mm.

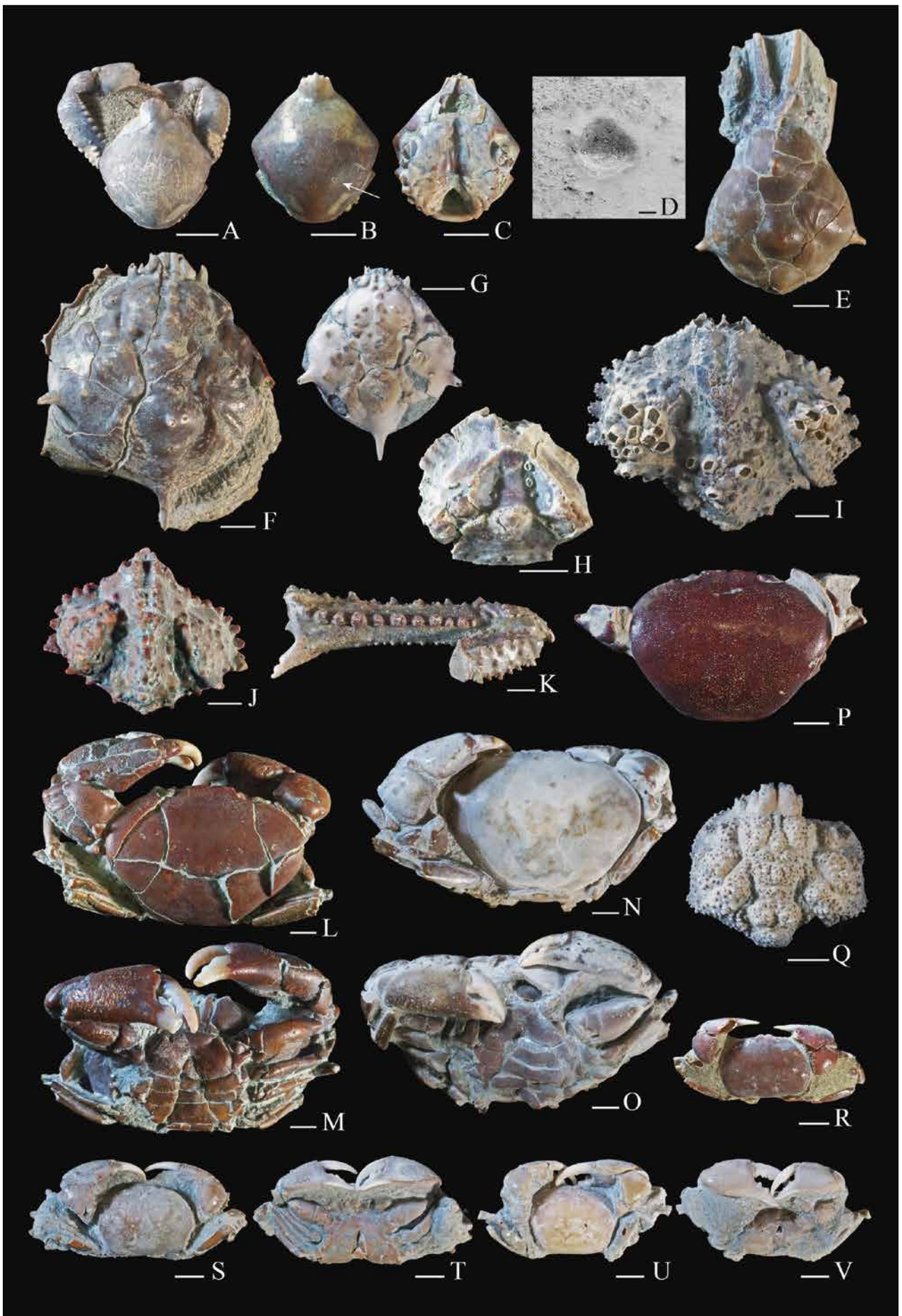


Plate 4

Fig. A. *Haemocinus elatus* (A. Milne-Edwards, 1873)

ヒラコウケブカガニ

SPMN-FL 27054, carapace and pereopods.

Figs. B, C. *Eucrate crenata* (De Haan, 1835)

マルバガニ

Fig. B, SPMN-FL 27056, carapace.

Fig. C, SPMN-FL 27057, right chela.

Fig. D. *Entricoplax vestita* (De Haan, 1833)

ケブカエンコウガニ

SPMN-FL 27061, carapace and pereopods.

Fig. E. *Carcinoplax* sp.

エンコウガニ属の未定種

SPMN-FL 27072, right chela.

Figs. F, G. *Ommatocarcinus macgillivrayi* White, 1851

メナガエンコウガニ

Fig. F, SPMN-FL 27073, carapace.

Fig. G, SPMN-FL 27074, carapace.

Fig. H. *Mariaplax chenae* Rahayu and Ng, 2014

ヒメムツアシガニ

SPMN-FL 27099, carapace and pereopods.

Figs. I, J. *Romaleon gibbosulum* (De Haan, 1833)

イボイチョウガニ

Fig. I, SPMN-FL 27103, carapace.

Fig. J, SPMN-FL 27104, carapace.

Fig. K. *Jonas distinctus* (De Haan, 1835)

ヒゲガニ

SPMN-FL 27125, carapace.

Fig. L, M. *Liocarcinus corrugatus* (Pennant, 1777)

シワガザミ

Fig. L, SPMN-FL 27126, carapace.

Fig. M, SPMN-FL 27127, left cheliped.

Figs. N, O. *Charybdis (Charybdis) japonica* (A. Milne Edwards, 1861)

イシガニ

Fig. N, SPMN-FL 27128, carapace and pereopods.

Fig. O, SPMN-FL 27129, carapace.

Fig. P. *Charybdis (Charybdis) miles* (De Haan, 1835)

アカイシガニ

SPMN-FL 27156, carapace.

Fig. Q. *Charybdis (Charybdis) variegata* (Fabricius, 1798)

カワリイシガニ

SPMN-FL 27177, carapace.

Figs. R, S. *Macrophthalmus (Macrophthalmus) telescopicus* (Owen, 1839)

ホンメナガオサガニ

Fig. R, SPMN-FL 27183, carapace and pereopods.

Fig. S, SPMN-FL 27184, carapace and pereopods.

Fig. T. *Venitus latreillei* (Desmarest, 1822)

ノコハオサガニ

SPMN-FL 27199, carapace and pereopods.

Figs. U–X. *Tritodynamia rathbunae* Shen, 1932

オオヨコナガピンノ

Figs. U, V, SPMN-FL 27203, carapace and pereopods, *U*, dorsal view; *V*, ventral view.

Figs. W, X SPMN-FL 27204, carapace and pereopods, *W*, dorsal view; *X*, ventral view.

Figs. Y, Z. *Pseudopinnixa carinata* Ortmann, 1894

ウモレマメガニ

Figs. Y, Z, SPMN-FL 27209, carapace and pereopods, *Y*, dorsal view; *Z*, upper view.

Scale bars indicate 5.0 mm.

