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A CATALOGUE OF THE FOSSIL DECAPOD CRUSTACEANS IN THE COLLECTIONS OF THE GEOLOGICAL SURVEY OF AUSTRIA IN VIENNA

MATÚŠ HYŽNÝ & IRENE ZORN



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Adresses of authors

Matúš Hyžný
Comenius University
Faculty of Natural Sciences
Department of Geology and Palaeontology
Ilkovičova 6, SVK-842 15 Bratislava
Slovakia
hyzny.matus@gmail.com

Irene Zorn
Geologische Bundesanstalt
Department of Palaeontology & Stratigraphy
Neulinggasse 38, 1030 Vienna
irene.zorn@geologie.ac.at

Cover images
Upper left: *Coeloma vigil* A. MILNE-EDWARDS, 1865 from the lower Oligocene (Rupelian) of Bassano del Grappa, Bocca di Marsan, Valrovina, Vicenza, Veneto, Italy. (Pl. 22, Fig. 8)
Upper right: *Bittnerilia* sp. from the middle Eocene (Lutetian) of San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Verona, Veneto, Italy. (Pl. 23, Fig. 9)
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A Catalogue of the Fossil Decapod Crustaceans in the Collections of the Geological Survey of Austria in Vienna

MATÚŠ HYŽNÝ[1,2] & IRENE ZORN[3]

2 Tables, 25 Plates

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1 MATÚŠ HYŽNÝ: Comenius University, Faculty of Natural Sciences, Department of Geology and Palaeontology, Ilkovičova 6, SVK-842 15 Bratislava, Slovakia. hyzny.matus@gmail.com
2 Natural History Museum, Department of Geology and Paleontology, Vienna, Burgring 7, 1010 Vienna, Austria.
3 IRENE ZORN: Geological Survey of Austria, Department of Paleontology & Stratigraphy, Neulinggasse 38, 1030 Vienna, Austria. irene.zorn@geologie.ac.at

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Abstract

The present catalogue lists and figures the material of all fossil decapod crustaceans housed in the collections of the Geological Survey of Austria in Vienna. Currently, more than 400 fossil decapod specimens are deposited there, including 55 types comprising 23 valid taxa. Newly identified type specimens include the paralectotypes of *Cancer brachychelus* and a paralectotype of *Palaeograpsus inflatus*. A couple of taxonomic decisions are proposed herein: *Callianassa tuberculata* is considered a senior subjective synonym of *Neocallichirus borensis* and *Clytiella* is removed from the family Erymidae and reassigned to the polychelid family Coleiidae. *Lophoranina reussi* is reported from Croatia for the first time. The presence of a directional asymmetry in the nature of chelipeds in *Palaeocarpilius macrochelus* and *Harpactocarcinus punctulatus* is suggested.

Katalog über die fossilen Zehnfußkrebse in den Sammlungen der Geologischen Bundesanstalt in Wien

Zusammenfassung

Im vorliegenden Katalog sind sämtliche fossilen decapoden Krebse in den Sammlungen der Geologischen Bundesanstalt in Wien aufgelistet und abgebildet. Zurzeit werden mehr als 400 fossile Exemplare von Zehnfußkrebsen kuratiert, inklusive 55 Typusexemplare innerhalb von 23 gültigen Taxa. Neuidentifizierte Typusexemplare sind die Paralectotypen von *Cancer brachychelus* und ein Paralectotypus von *Palaeograpsus inflatus*. Es werden einige taxonomische Entscheidungen vorgeschlagen: *Callianassa tuberculata* wird als älteres subjektives Synonym von *Neocallichirus borensis* betrachtet und *Clytiella* wird nicht mehr in die Familie Erymidae gestellt, sondern der polycheliden Familie Coleiidae zugewiesen. *Lophoranina reussi* wird zum ersten Mal aus Kroatien dokumentiert. Eine natürliche Richtungsasymmetrie der Chelipeden von *Palaeocarpilius macrochelus* und *Harpactocarcinus punctulatus* wird vermutet.

Introduction

The Geological Survey of Austria in Vienna (GBA) houses several important palaeocarcinological collections. Stojaspal (1975) already mentioned some decapods deposited at the GBA. Later, Müller (1998a) in his "Catalogus Fossilium Austriae" recorded the type material coming from Austria. Recently, Hyžný & Zorn (2016) documented in detail the type and figured material of fossil decapods deposited at the GBA, including the collections of Reuss (1859; therein 1858a), Bittner (1875, 1877, 1883, 1884a, 1893, 1895), Glaessner (1924, 1930, 1931) and Hyžný & Gašparič (2014). Whereas the catalogue of Hyžný & Zorn (2016) was aimed as a basis for reevaluation of numerous type specimens, this one puts all fossil decapod crustaceans deposited at the GBA in the taxonomic framework. The decapod collection of the GBA comprises 55 type specimens, of which 8 are holotypes, 3 paratypes, 14 lectotypes and 30 paralectotypes (Table 1). They belong to 23 valid taxa. The present contribution can in some way be considered the sequel of the previous catalogue. It primarily deals with material which has not been published previously and thus aims to bring the attention of scholars working on fossil decapods to the palaeontological collections of the GBA.

Fossil decapod crustaceans

Decapods are highly organized malacostracan arthropods with a carapace fused to all thoracic segments, three pairs of maxillipeds (behind the mandibles, maxillules, and maxillae) and normally five pairs of walking legs. In various decapod groups, chelae ("claws") are present at least on the first pair, although in achelatan lobsters, claws are not developed at all. An important part of the exoskeleton is the (dorsal) carapace, typically divided by grooves and sometimes "lineae" into specific regions which are considered of taxonomic importance (e.g., Glaessner, 1969; Schweitzer, 2003).

The taxonomy and higher classification of decapods have undergone major changes in the last fifty years (Glaessner, 1969; Bowman & Abele, 1982; Martin & Davis, 2001; De Grave et al., 2009; Schweitzer et al., 2010) and a number of issues related to the phylogeny of decapods remain to be solved. However, a consensus has been reached at least in recognition of major decapod lineages; their monophyly is strongly supported by numerous phylogenetic analyses published in the last decade (e.g., Bracken et al., 2009; Toon et al., 2009; Bracken-Grissom et al., 2013, 2014, and references therein).

In the fossil record only compact and/or strongly calcified body-parts are commonly preserved, including chelipeds, carapaces and pleons, although in exceptional cases entire specimens are preserved. Due to apparent body plan disparity (Pl. 1), fossil representatives of various decapod groups exhibit distinct modes of preservation. The preservational aspects discussed below are documented also in the collections of the GBA.

Lightly-sclerotised shrimps (Dendrobranchiata, Caridea; Pl. 1, Fig. 1) tend to be preserved only under special conditions with rapid burial and no subsequent disturbance (Plotnick, 1986); this is exemplified in decapods from lithographic limestones (e.g., Pl. 3) or black shales (e.g., Pl. 2, Fig. 1). More robustly built lobsters (Glypheidea, Astacidea, Polychelida, Achelata; Pl. 1, Figs. 3–5) often preserve entire carapaces, sometimes articulated with pleons, even in massive rocks (Karasawa et al., 2013; Hyžný et al., 2015a; see Pl. 4, Fig. 4). Fossorial ghost shrimps (Axiidea; Pl. 1, Fig. 2) and mud shrimps (Gebiidea) are lightly built and chelipeds are the most-durable parts of their bodies (Bishop & Williams, 2005; Hyžný & Klompmaker, 2015). They are often preserved as isolated cheliped elements (Pl. 5, Figs. 3–9) or cheliped disassociation units (Pl. 5, Figs. 1–2). Hermit crabs (Paguroidea; Pl. 1, Fig. 6) have strongly calcified chelipeds and isolated chelae are in most cases their only fossil remains (Pl. 8, Figs. 2–8), whereas squat lobsters (Galatheoidea) and true crabs (Brachyura; Pl. 1, Figs. 7, 9) often are preserved as isolated dorsal carapaces (Schweitzer, 2003; Hyžný et al., 2014; Jagt et al., 2015; Robins et al., 2016), sometimes articulated with sterna and pleons (Pl. 1, Fig. 10). Due to

Taxon	Coll. No.	Type status
Platychela trauthi Glaessner, 1931	GBA 1931/003/0002	PT
Platychela trauthi Glaessner, 1931	GBA 1931/003/0003/01	PT
Platychela trauthi Glaessner, 1931	GBA 1931/003/0003/02	PT
Linuparus bigranulatus Glaessner, 1930	GBA 1930/002/0003	HT
Clytiella spinifera Glaessner, 1931	GBA 1931/003/0001	HT
Munidopsis salinaria Gašparič et al., 2019	GBA 1892/005/0001	HT
Longodromites angustus (Reuss, 1858b)	GBA 2007/096/0005	HT
Goniodromites bidentatus Reuss, 1858b	GBA 2007/096/0006	LT
Goniodromites polyodon Reuss, 1858b	GBA 2007/096/0007/01	LT
Goniodromites polyodon Reuss, 1858b	GBA 2007/096/0007/02	PLT
Goniodromites polyodon Reuss, 1858b	GBA 2007/096/0008	LT of *Goniodromites complanatus* Reuss, 1858b
Prosopon verrucosum Reuss, 1858b	GBA 2007/096/0003	HT
Tanidromites pustulosa (von Meyer, 1860)	GBA 2007/096/0004/01	LT
Tanidromites pustulosa (von Meyer, 1860)	GBA 2007/096/0004/02	PLT
Konidromites gibbus (Reuss, 1858b)	GBA 2007/096/0009	LT
Lophoranina laevifrons (Bittner, 1875)	GBA 1875/005/0003/01	LT
Lophoranina laevifrons (Bittner, 1875)	GBA 1875/005/0003/02	PLT
Lophoranina laevifrons (Bittner, 1875)	GBA 1875/005/0003/03	PLT
Lophoranina laevifrons (Bittner, 1875)	GBA 1875/005/0003/04	PLT
Lophoranina laevifrons (Bittner, 1875)	GBA 1875/005/0003/05	PLT
Ranidina rosaliae Bittner, 1893	GBA 1893/004/0001/01	LT
Ranidina rosaliae Bittner, 1893	GBA 1893/004/0001/02	PLT
Ranidina rosaliae Bittner, 1893	GBA 1893/004/0001/03	PLT
Raninoides notopoides (Bittner, 1883)	GBA 1883/007/0004/01	LT
Raninoides notopoides (Bittner, 1883)	GBA 1883/007/0004/02	PLT
Raninoides notopoides (Bittner, 1883)	GBA 1883/007/0004/03	PLT
Raninoides notopoides (Bittner, 1883)	GBA 1883/007/0004/04	PLT
Tasadia carniolica (Bittner, 1884a)	GBA 1884/003/0006/01	LT of *Cancer carniolicus* Bittner, 1884a
Tasadia carniolica (Bittner, 1884a)	GBA 1884/003/0006/02	PLT of *Cancer carniolicus* Bittner, 1884a
Harpactocarcinus punctulatus (Desmarest, 1822)	GBA 2007/096/0002	LT of *Cancer brachychelus* Reuss, 1859
Harpactocarcinus punctulatus (Desmarest, 1822)	GBA 2007/096/0019	PLT of *Cancer brachychelus* Reuss, 1859
Harpactocarcinus punctulatus (Desmarest, 1822)	GBA 2007/096/0022	PLT of *Cancer brachychelus* Reuss, 1859
Harpactocarcinus punctulatus (Desmarest, 1822)	GBA 2007/096/0023	PLT of *Cancer brachychelus* Reuss, 1859
Harpactocarcinus punctulatus (Desmarest, 1822)	GBA 2007/096/0030	PLT of *Cancer brachychelus* Reuss, 1859
Mioplax socialis Bittner, 1884a	GBA 1884/003/0003/01	LT
Mioplax socialis Bittner, 1884a	GBA 1884/003/0003/02	PLT
Mioplax socialis Bittner, 1884a	GBA 1884/003/0003/03	PLT
Mioplax socialis Bittner, 1884a	GBA 1884/003/0003/04	PLT
Mioplax socialis Bittner, 1884a	GBA 1884/003/0003/05	PLT
Periacanthus horridus Bittner, 1875	GBA 1875/005/0010	LT
Micromaia tuberculata Bittner, 1875	GBA 1875/005/0009/01	LT
Micromaia tuberculata Bittner, 1875	GBA 1875/005/0009/02	PLT
Micromaia tuberculata Bittner, 1875	GBA 1875/005/0009/03	PLT
Micromaia tuberculata Bittner, 1875	GBA 1875/005/0009/04	PLT
Micromaia tuberculata Bittner, 1875	GBA 1875/005/0009/05	PLT
Micromaia tuberculata Bittner, 1875	GBA 1875/005/0009/06	PLT
Micromaia tuberculata Bittner, 1875	GBA 1875/005/0009/07	PLT
Bittnerilia eocaena (Bittner, 1883)	GBA 1883/007/0008	HT
Portunus radobojanus (Bittner, 1884a)	GBA 1884/003/0001	HT
Portunus stenaspis (Bittner, 1884a)	GBA 1884/003/0002	HT
Palaeograpsus inflatus Bittner, 1875	GBA 1875/005/0041	LT
Palaeograpsus inflatus Bittner, 1875	GBA 1875/005/0042	PLT
Macrophthalmus aquensis A. Milne-Edwards & Brocchi, 1879	GBA 1925/001/0001/01	PLT of *Macrophthalmus vindobonensis* Glaessner, 1924
Macrophthalmus aquensis A. Milne-Edwards & Brocchi, 1879	GBA 1925/001/0001/02	PLT of *Macrophthalmus vindobonensis* Glaessner, 1924
Macrophthalmus aquensis A. Milne-Edwards & Brocchi, 1879	GBA 1925/001/0001/03	PLT of *Macrophthalmus vindobonensis* Glaessner, 1924

Tab. 1.
Type specimens of fossil decapod crustaceans deposited at the GBA. HT = holotype, LT = lectotype, PLT = paralectotype, PT = paratype.

strong calcification, the most numerous remains of brachyuran crabs consist of fragmentary cheliped fingers (dactyli and fixed fingers; Pl. 1, Figs. 8–9, Pl. 12, Figs. 6–8), which are, however, of limited taxonomic use (SCHÄFER, 1954).

Catalogue of fossil decapod crustaceans

The material is ordered systematically largely following the classification scheme of SCHWEITZER et al. (2010). In some cases, a different opinion is presented (e.g. assignment of *Clytiella spinifera*); in such cases a brief discussion on the higher classification of the respective taxon is provided. Respective genera are listed alphabetically, subfamilies are not indicated. The synonymy lists are kept as brief as possible; works with exhaustive synonymies of the respective taxon are indicated with "[cum. syn.]". In the previous catalogue of HYŽNÝ & ZORN (2016), all types deposited at the GBA were documented photographically in sufficient detail. Some of these specimens are refigured herein and some additional documentation of selected details is provided.

Localities with fossil decapods

Fossil decapod crustaceans deposited at the GBA (and presented in the catalogue herein) come from twelve countries, namely Austria (>150 specimens), Bosnia (1 specimen), Croatia (11 specimens), Czech Republic (12 specimens), Germany (41 specimens), Hungary (4 specimens), Italy (147 specimens), Romania (1 specimen), Slovakia (3 specimens), Slovenia (20 specimens), Ukraine (3 specimens), and United Kingdom (1 specimen). The largest portion of the collection originates from the Miocene of Austria and the Eocene of Italy. Details about the respective localities and the stratigraphy of decapod-bearing strata are given in Table 2, where all studied specimens are also summarized.

Historical remarks

The palaeocarcinological collections of the GBA (former "k. k. Geologische Reichsanstalt") mainly originate from the 19th century. There are many notes on how the fossil material found its way into the stock of the collections. In the frame of the regular sessions of the "k. k. Geologische Reichsanstalt", protocols were written and published within the volumes of the "Jahrbuch der k. k. Geologischen Reichsanstalt" and the "Verhandlungen der k. k. Geologischen Reichsanstalt". From these notes one can identify the collector and/or donor of the fossils and in the majority of the cases the locality names were documented. Even if not explicitly mentioned in the protocols, it is likely that besides other fossil groups also the crustacean specimens came that way into the collection. Unfortunately, many handwritten labels got lost. The famous palaeontologists AUGUST EMANUEL REUSS (*08.07.1811 in Bilin, Czech Republic; †26.11.1873 in Vienna, Austria) and ALEXANDER BITTNER (*16.03.1850 in Frýdlant, Czech Republic; †31.03.1902 in Vienna, Austria) determined and published many of the decapod specimens in the collections of the "k. k. Geologische Reichsanstalt". Both scholars often left labels with their handwriting in the collection boxes; for handwriting of REUSS see Plates 15, 16, 19, and 20, one example from BITTNER is shown on Plate 12. The following remarks subsume the records that concern the decapod crustacean material presented in the catalogue further below.

In the time period between 01.04.1856 and 30.09.1856 numerous fossils arrived through the mapping geologists of the "k. k. Geologische Reichsanstalt" FRANZ FOETTERLE and HEINRICH WOLF from the province Venezia (Agordo, Recoaro, Belluno, "Monte Bolca", Verona, Riva, Gemona, Clauzetto, Vicenza) (N. N., 1856: 612). There are two labels with WOLF's handwriting belonging to three specimens of *Cancer punctulatus* from Parnina, San Floriano di Valpolicella.

At the session held on 28.03.1859 it was mentioned that eight boxes with fossils from the Muschelkalk of Recoaro, the Oolith of Rotzo, the Cretaceous of Schio (Verona), the Eocene of Verona, Ronca, Castelgomberto, Vicenza, Novale etc. were bought from GIOVANNI MENEGUZZO through arrangement of ADOLPH SENONER (N. N., 1859a: 141). MENEGUZZO (*29.04.1831 in Montecchio Maggiore, Italy; †29.01.1912 in Valdagno, Italy) was a well-known tradesman of fossils. SENONER (*27.07.1806 in Klagenfurt, Austria; †30.08.1895 in Vienna, Austria), a former doctor, worked together with the "k. k. Geologische Reichsanstalt" from 1850 onward and sent many fossils from Upper Italy (VACCARI, 2002: 181). Two boxes with fossils from the surroundings of Vicenza were sent by SENONER on 05.04.1859, which is documented in N. N. (1859b: 353).

The researcher and politician LODOVICO PASINI (*04.05.1804 in Schio, Italy; †22.05.1870, ibidem) donated a rich collection of fossils from the Venetian Alps to the "k. k. Geologische Reichsanstalt". Sent already in 1853, the box was stored in Venezia and only came to Vienna years later (29.04.1859) through mediation of SENONER. The collection consists of fossils from a number of locations including the Muschelkalk of Rovegliano at Recoaro, the Upper Triassic of Recoaro and the Valle dei Signori, the Oolith of Rotzo, the Neocom of Sette Comuni, the Upper Cretaceous of Monte Magre at Schio, the Eocene of Breonio at Verona, the Monte Lessini, Barbarano in the Monti Berici, Castelgomberto, Marostica and Possagno at Bassano, Monte Castellone at Magre and the Miocene of Novale, Monte Viale (HAIDINGER, 1859: 91).

FERDINAND STOLICZKA presented at the session held on 29.01.1861 a collection of Cenozoic fossils from the Southern Alps; the fossils were determined by him. It was partly a gift of PASINI, and partly compiled from collections of FOETTERLE and SENONER. The fossils stem from the Eocene of Ronca, Montecchio Maggiore, Sangonini, Lavacile, Castelgomberto etc. (HAUER, 1861: 16).

At the session on 23.06.1863 it was announced that two boxes with fossils ("Petrefacten") collected by SENONER in Verona were bought (N. N., 1863: 477) and at the session on 03.11.1863 it was reported that SENONER gave fossils to the museum of the "k. k. Geologische Reichsanstalt" (N. N., 1863). Today there are 191 collection boxes for various fossil groups labelled with the name of and collected

Country	Locality	Stratigraphy	Species	Coll. No.	Specimen(s)
Austria	Bad Vöslau	Miocene, Badenian, Baden Formation	Brachyura indet.	GBA 2009/014/0009	1
			Calappa sp.	GBA 2009/014/0008	1
			Tasadia carniolica (Bittner, 1884a)	GBA 2009/014/0010	3
Austria	Baden	Miocene, Badenian, Baden Formation	Brachyura indet.	GBA 2009/014/0011	1
			Paguridae gen. et spec. indet.	GBA 2009/014/0012/06	1
			Tasadia carniolica (Bittner, 1884a)	GBA 2009/014/0012/01–05	5
Austria	Drilling "Ebendorf 6" at Mistelbach, 17.2–20.7 m	Miocene, Sarmatian	Brachyura indet.	GBA 2009/014/0017	1
Austria	Drilling "Wiesfleck 2", 46–47 m	Miocene, Sarmatian	Brachyura indet.	GBA 2009/014/0007	1
Austria	Gamlitz at Ehrenhausen	Miocene, Badenian, Leithakalk	Brachyura indet.	GBA 2009/014/0004, GBA 2009/014/0031	18
			Daira speciosa (Reuss, 1871)	GBA 1877/005/0001–0009, GBA 2009/014/0032, GBA 2009/014/0033/01–06	25
Austria	Grund	Miocene, lower Badenian, Grund Formation	Brachyura indet.	GBA 2009/014/0022	4
Austria	Gschliefgraben at Gmunden	Eocene, Lutetian	*Lophoranina marestiana* (König, 1825)	GBA 2010/019/0093	1
			Zanthopsis bispinosa M'Coy, 1849	GBA 2010/019/0095, GBA 2012/109/0037	2
			Zanthopsis sp.	GBA 2010/019/0094	1
Austria	Guttaring	Eocene, Guttaring Group	*Karumballichirus tuberculatus* (Lőrenthey in Lőrenthey & Beurlen, 1929)	GBA 2010/035/0021	1
Austria	Hollingstein at Niederhollabrunn	Eocene, Priabonian, Reingrub Formation	*Linuparus bigranulatus* Glaessner, 1930	GBA 1930/002/0003–0004	2
Austria	Krenkogel, Grossau	Lower Jurassic, Gresten Formation ("Grestener Schichten")	?*Pustulina* sp.	GBA 2016/185/0049	1
Austria	Lunz am See, Polzberg	Triassic, Carnian, Julian, Reingraben Beds	*Clytiella spinifera* Glaessner, 1931	GBA 1931/003/0001	1
			Platychela trauthi Glaessner, 1931	GBA 1931/003/0002, GBA 1931/003/0003/01–02	3
Austria	Müllendorf	Miocene, Badenian, Leithakalk	Callianassidae (s.l.) indet. sp. 4	GBA 2009/014/0005	1
Austria	Muthmannsdorf	Cretaceous, upper Santonian–Campanian	*Mesostylus pervesleri* Hyžný & Summesberger, 2019	GBA 2012/051/0091	3
Austria	Nussdorf, Vienna (Wien)	Miocene, Badenian, Leithakalk	*Calappa* sp.	GBA 2007/106/0026	2
			Decapoda indet.	GBA 2009/014/0014, GBA 2009/014/0016	many
Austria	Nussdorf, Grünes Kreuz, Vienna (Wien)	Miocene, Badenian, Leithakalk	Brachyura indet.	GBA 2009/014/0015	2
Austria	Ohlsdorf at Gmunden	Eocene, Lutetian	*Lophoranina marestiana* (König, 1825)	GBA 2010/021/0036	2
			Lophoranina sp.	GBA 2010/021/0045	2
Austria	Ottnang	Miocene, Ottnangian, Ottnang Formation	*Gourretia* sp.	GBA 2009/014/0024/01	1
			Jaxea kuemeli Bachmayer, 1954	GBA 2009/014/0023	19
			Liocarcinus sp.	GBA 2009/014/0025/01–03	3
Austria	Pechgraben, NW Steinau	Lower Jurassic, Gresten Formation ("Grestener Schichten")	?*Pustulina* sp.	GBA 1909/001/0109	1
Austria	Poysdorf	Miocene, Badenian	Decapoda indet.	GBA 2009/014/0018	6
Austria	Reingruberhöhe at Bruderndorf	Eocene, Lutetian	*Lophoranina marestiana* (König, 1825)	GBA 2010/012/0067	1
Austria	Reitäcker at Muthmannsdorf	Upper Cretaceous, upper Santonian–Campanian	*Mesostylus pervesleri* Hyžný & Summesberger, 2019	GBA 2012/051/0090	1
Austria	Steinebrunn (Steinabrunn)	Miocene, Badenian	Decapoda indet.	GBA 2009/014/0019–0020	many
Austria	Strelzhof, Netting, Neue Welt	Upper Cretaceous, upper Santonian–Campanian	*Mesostylus pervesleri* Hyžný & Summesberger, 2019	GBA 2012/060/0020	1
Austria	Teiritzberg, Stetten (Landesziegelei)	Miocene, Karpatian, Korneuburg Formation	*Macrophthalmus aquensis* A. Milne-Edwards & Brocchi, 1879	GBA 1925/001/0001/01–03	3
Austria	Lake Traun	Eocene	*Lophoranina* sp.	GBA 2010/019/0098/01–02	1
			Neozanthopsis bruckmanni (von Meyer, 1862)	GBA 2010/019/0097	1

Country	Locality	Stratigraphy	Species	Coll. No.	Specimen(s)
Austria	Vienna	Miocene, Badenian	Decapoda indet.	GBA 2009/014/0013	2
Austria	Walbersdorf	Miocene, Badenian	*Ranidina rosaliae* Bittner, 1893	GBA 1893/004/0001/01–12	12
			Tasadia carniolica (Bittner, 1884a)	GBA 2009/014/0001–0002	14
			Decapoda indet.	GBA 2009/014/0006	7
Austria	Wullersdorf	Miocene, Badenian	Brachyura indet.	GBA 2009/014/0021	1
Bosnia	Dolnja Tuzla	Miocene, Badenian	*Munidopsis salinaria* Gašparič Hyžný, Jovanović, Ćorić & Vrabac, 2019	GBA 1892/005/0001	1
Croatia	Ljubač, Pag	middle–upper Eocene	*Lophoranina reussi* (Woodward, 1866)	GBA 2010/099/0025	1
Croatia	Radoboj, Krapina-Zagorje	Miocene, Sarmatian	*Mioplax socialis* Bittner, 1884a	GBA 1884/003/0003/01–05	5
			Portunus radobojanus (Bittner, 1884a)	GBA 1884/003/0001	1
			Portunus stenaspis (Bittner, 1884a)	GBA 1884/003/0002, GBA 2017/035/0022	2
			Portunidae indet.	GBA 2017/035/0019–0020	2
Czech Republic	Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein)	Jurassic–Cretaceous, Kimmeridgian–lower Berriasian, Štramberk Limestone	*Goniodromites bidentatus* Reuss, 1858b	GBA 2007/096/0006	1
			Goniodromites polyodon Reuss, 1858b	GBA 2007/096/0007/01–02, GBA 2007/096/0006, GBA 2007/096/0008	4
			Konidromites gibbus (Reuss, 1858b)	GBA 2007/096/0009	1
			Longodromites angustus (Reuss, 1858b)	GBA 2007/096/0005	1
			Tanidromites pustulosa (von Meyer, 1860)	GBA 2007/096/0004/01–02	2
Czech Republic	Kamenická Nová Víska (Neudörfl at Kamnitz, Böhmisch Kamnitz)	Cretaceous, Coniacian, Březno Beds ("Priesener Schichten")	?*Enoploclytia* sp.	GBA 2017/035/0066	1
			Polycnemidium pustulosum (Reuss, 1845)	GBA 1893/007/0001	1
Czech Republic	Štramberk (Stramberg)	Jurassic–Cretaceous, Kimmeridgian–lower Berriasian, Štramberk Limestone	*Prosopon verrucosum* Reuss, 1858b	GBA 2007/096/0003	1
Germany	Crailsheim (Kreilsheim)	Middle Triassic, Ladinian, Upper Muschelkalk	*Pemphix sueurii* (Desmarest, 1822)	GBA 2017/035/0057–0058	2
Germany	Grünten (Mountain), Immenstadt im Allgäu	Eocene	*Neozanthopsis bruckmanni* (von Meyer, 1862)	GBA 2010/033/0011	1
Germany	Kressenberg at Neukirchen	Eocene, Lutetian, Kressenberg Formation	*Lophoranina marestiana* (König, 1825)	GBA 2010/031/0032	1
		Eocene, Ypresian, Kressenberg Formation, Frauengrube Subformation	*Lophoranina* sp.	GBA 2010/028/0017	1
		Eocene, Lutetian, Kressenberg Formation	*Zanthopsis bispinosa* M'Coy, 1849	GBA 2007/096/0010, 0012–0018	8
Germany	Solnhofen-Langenaltheim area	Jurassic, Tithonian, *Hybonotum* Zone	Decapoda indet.	GBA 2017/035/0042–0047	6
			Antrimpos sp.	GBA 2017/035/0029–0032	4
			Antrimpos speciosus von Münster, 1839	GBA 2017/035/0033, GBA 2017/035/0055	2
			Eryma modestiforme (von Schlotheim, 1822)	GBA 2017/035/0035	1
			Eryon cuvieri Desmarest, 1817	GBA 2017/035/0036–0038	3
			Harthofia sp.	GBA 2017/035/0039–0040	2
			Hefriga sp.	GBA 2017/035/0041	1
			Mecochirus longimanatus (von Schlotheim, 1820)	GBA 2017/035/0048–0049	2
			Palaeastacus fuciformis (von Schlotheim, 1822)	GBA 2017/035/0050–0051	2
			Palinurina longipes von Münster, 1839	GBA 2017/035/0052	1
			Pleopteryx kuempeli Schweigert & Garassino, 2004	GBA 2017/035/0053	1
			Pustulina minuta (von Schlotheim, 1822)	GBA 2017/035/0054	1
			Stenochirus angustus (von Münster, 1839)	GBA 2017/035/0034	1

Country	Locality	Stratigraphy	Species	Coll. No.	Speci-men(s)
Germany	Sonthofen	Eocene	*Neozanthopsis bruckmanni* (VON MEYER, 1862)	GBA 2007/096/0011	1
Hungary	Halimba, Devecser	Eocene, Lutetian	*Harpactoxanthopsis quadrilobata* (DESMAREST, 1822)	GBA 2017/035/0059–0060	2
			Palaeocarpilius macrochelus (DESMAREST, 1822)	GBA 2010/114/0053	1
Hungary	Surroundings of Budapest (Ofen)	Eocene	*Lophoranina reussi* (WOODWARD, 1866)	GBA 2017/035/0061	1
Italy	Bassano del Grappa, Bocca di Marsan, Valrovina	Oligocene, Rupelian, Laverda Beds ("Schio-Schichten")	*Coeloma vigil* A. MILNE-EDWARDS, 1865	GBA 1875/005/0040	1
Italy	Castel Policella at Verona	Eocene, Priabonian–Oligocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2010/221/0001–0002	2
Italy	Castelcies	Eocene, Lutetian, San Giovanni Ilarione Beds ("San Giovanni Ilarione-Schichten")	*Palaeocarpilius macrochelus* (DESMAREST, 1822)	GBA 2010/181/0044	1
Italy	Castelgomberto	Oligocene, Rupelian, Castelgomberto Beds ("Castelgomberto-Schichten")	*Harpactoxanthopsis quadrilobata* (DESMAREST, 1822)	GBA 1875/005/0033/02, GBA 2010/124/0070	2
Italy	Cave del Predil (Raibl)	Triassic, Carnian, Raibl Beds ("Raibler Schichten")	*Antrimpos crassipes* (BRONN, 1858)	GBA 1930/002/0001	1
			Tetrachela raiblana (BRONN, 1858)	GBA 1858/004/0002/01–02, GBA 1930/002/0002/01–02	4
Italy	Eurubio at Marostica (Maròstega)	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2010/241/0001–0004	4
Italy	Fumane di Polesella at Verona	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2010/243/0001	1
			Lophoranina bittneri (LŐRENTHEY, 1902)	GBA 2010/243/0003–04	2
			Lophoranina sp.	GBA 2010/243/0002	1
			Palaeograpsus inflatus BITTNER, 1875	GBA 1875/005/0041	1
Italy	Laverda at Salcedo	Oligocene, Rupelian, Castelgomberto Beds ("Castelgomberto-Schichten") or Laverda Beds ("Schio-Schichten")	Brachyura indet.	GBA 2010/151/0068	4
			Coeloma vigil A. MILNE-EDWARDS, 1865	GBA 2010/151/0054	1
			Harpactocarcinus punctulatus (DESMAREST, 1822)	GBA 2010/124/0071, GBA 2010/151/0055–0067	19
			Palaeograpsus inflatus BITTNER, 1875	GBA 1875/005/0042	1
Italy	Magre at Schio	Oligocene, Chattian ("Schio-Schichten")	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2010/162/0001–0004	4
			Palaeocarpilius macrochelus (DESMAREST, 1822)	GBA 2010/162/0005	1
Italy	Marano di Valpolicella at Roveredo di Guà	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2017/035/0015	1
Italy	Marostica (Maròstega)	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2010/264/0003, GBA 2010/264/0004/02	2
			Palaeocarpilius macrochelus (DESMAREST, 1822)	GBA 2010/264/0004/01	1
Italy	Meledo Basso	Eocene	*Karumballichirus tuberculatus* (LŐRENTHEY in LŐRENTHEY & BEURLEN, 1929)	GBA 2010/266/0001	1
Italy	Membro di Chiampo	Eocene, Lutetian	*Lophoranina marestiana* (KÖNIG, 1825)	GBA 2017/035/0003	1
Italy	Monte Grumi at Castelgomberto	Oligocene, Rupelian, Castelgomberto Beds ("Castelgomberto-Schichten")	Decapoda indet.	GBA 2010/127/0092	1
Italy	Monte Masua di Negrar NW of Verona	Eocene, Lutetian	*Raninoides notopoides* (BITTNER, 1883)	GBA 1883/007/0004/01–04	4
Italy	Monte Postale di Bolca	Eocene, Lutetian	*Lophoranina marestiana* (KÖNIG, 1825)	GBA 2010/275/0056	1
Italy	Montecchio Maggiore	Oligocene, Rupelian, Castelgomberto Beds ("Castelgomberto-Schichten")	*Lophoranina* sp.	GBA 2010/128/0057	2
Italy	Mortisa, Belluno	Eocene, Priabonian	*Karumballichirus tuberculatus* (LŐRENTHEY in LŐRENTHEY & BEURLEN, 1929)	GBA 2010/269/0008	1

Country	Locality	Stratigraphy	Species	Coll. No.	Speci-men(s)
Italy	Mossano	Eocene, Priabonian	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 1883/007/0014/04, GBA 2010/270/0014	2
			Lophoranina sp.	GBA 2017/035/0021	1
Italy	Parnina, San Floriano di Valpolicella	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2007/096/0028–0030, GBA 2017/035/0012	4
Italy	Pesciara or Monte Postale near Bolca, Lessini Mountains	Eocene, Ypresian	*Justitia desmaresti* (SECRETAN, 1975)	GBA 2010/275/0053	1
Italy	Priabona, Monte di Malo	Eocene, Priabonian	*Palaeocarpilius macrochelus* (DESMAREST, 1822)	GBA 1883/007/0011	1
			Harpactoxanthopsis quadrilobata (DESMAREST, 1822)	GBA 1875/005/0033/01	1
			Harpactocarcinus punctulatus (DESMAREST, 1822)	GBA 1883/007/0014/05, GBA 2017/035/0005	2
Italy	Quarry “Scole” at Avesa, Verona	Eocene, Lutetian	*Lophoranina avesana* (BITTNER, 1884a)	GBA 1883/007/0001/01, GBA 1883/007/0020, GBA 1884/003/0007	3
Italy	San Bonifacio, Verona	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2017/035/0006	1
Italy	San Fiorano at Moron di Negrar	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2017/035/0007	1
Italy	San Gaudenzio at Brendola, Colli Berici	Eocene	*Palaeocarpilius macrochelus* (DESMAREST, 1822)	GBA 2017/035/0002	1
Italy	San Giovanni Ilarione	Eocene, Lutetian	Callianassidae (s.l.) indet. sp. 2	GBA 2010/182/0055/01	1
			Callianassidae (s.l.) indet. sp. 3	GBA 2010/182/0055/02	1
			Calcinus sp.	GBA 1875/005/0034/01	1
			Eocalcinus cavus BESCHIN, BUSULINI, DE ANGELI & TESSIER, 2002	GBA 2010/182/0055/03, GBA 2010/186/0252/01–04	5
			Lophoranina laevifrons (BITTNER, 1875)	GBA 1875/005/0003/01–05, GBA 1895/003/0001, GBA 2010/182/0054	9
			Lophoranina marestiana (KÖNIG, 1825)	GBA 1883/007/0001/02	1
			Lophoranina sp.	GBA 2010/186/0252/05	1
			Bittnerilia eocaena (BITTNER, 1883)	GBA 1883/007/0008	1
			Bittnerilia sp.	GBA 1875/005/0006	1
			Hepatiscus neumayri BITTNER, 1875	GBA 1883/007/0016, GBA 2017/035/0017–0018	3
			Hepatiscus ?*neumayri* BITTNER, 1875	GBA 2017/035/0023–0024	2
			Hepatiscus pulchellus BITTNER, 1875	GBA 1875/005/0008/01–02	2
			Micromaia tuberculata BITTNER, 1875	GBA 1875/005/0009/01–07, GBA 1883/007/0006/01–02	9
			Periacanthus horridus BITTNER, 1875	GBA 1875/005/0010, GBA 1895/003/0002	2
Italy	San Michele at Bassano, Marostica (Maròstega) near Vicenza	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2007/096/0002, 0022–0027, GBA 2017/035/0010–0011, GBA 2017/035/0013–0014	11
Italy	San Pietro in Cariano, Verona	Eocene	*Lophoranina reussi* (WOODWARD, 1866)	GBA 2007/096/0001	1
Italy	Santa Trinita, Venice, Venezia	Oligocene, Rupelian, Castelgomberto Beds (“Castelgomberto-Schichten”)	Callianassidae (s.l.) indet. sp. 1	GBA 2010/134/0105	1
Italy	unknown	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2010/370/0119	1
Italy	Val Rovina at Bassano	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 1883/007/0014/01–03	3
Italy	Valle San Floriano, Marostica (Maròstega)	Eocene	*Harpactocarcinus punctulatus* (DESMAREST, 1822)	GBA 2007/096/0019–0021, GBA 2017/035/0008	4
			Harpactoxanthopsis quadrilobata (DESMAREST, 1822)	GBA 2017/035/0009	1
			Palaeocarpilius macrochelus (DESMAREST, 1822)	GBA 2017/035/0016	1
			Portunus sp.	GBA 2017/035/0004	1

Country	Locality	Stratigraphy	Species	Coll. No.	Specimen(s)
Italy	Venezia	Eocene	*Palaeocarpilius macrochelus* (DESMAREST, 1822)	GBA 2017/035/0001	1
Romania	Lăpugiu de Sus (Lapugy), Transilvania	Miocene, Badenian	Decapoda indet.	GBA 2017/035/0067	1
Slovakia	Devínska Nová Ves	Miocene, Badenian	*Calappa* sp.	GBA 2009/014/0026/01–03	3
Slovenia	Kamnik (Stein in Oberkrain)	Miocene, Badenian	*Calliax michelottii* (A. MILNE-EDWARDS, 1860)	GBA 2009/014/0027	1
			Tasadia carniolica (BITTNER, 1884a)	GBA 2009/014/0003/01–04	4
Slovenia	Kink, Brestanica (Reichenburg)	Oligocene, Trbovlje Formation ("Sotzkaschichten")	Decapoda indet.	GBA 2010/049/0023	4
Slovenia	Plesko at Trbovlje (Trifail)	Miocene, Badenian	*Tasadia carniolica* (BITTNER, 1884a)	GBA 2010/005/0046	1
Slovenia	Toplice (Töplitz) at Zagorje ob Savi (Sagor)	Miocene, Badenian, Moravče Limestone ("Tüfferer Schichten")	*Cancer illyricus* BITTNER, 1884a	GBA 2010/005/0077	1
Slovenia	Trbovlje (Trifail)	Oligocene, Trbovlje Formation ("Sotzkaschichten")	*Glyphithyreus sulcatus* (BEURLEN, 1939)	GBA 2007/024/0005	1
			Coeloma sp.	GBA 2010/052/0026	1
Slovenia	Ulrichsberg, between Týnec (Teinitz) and Kamnik (Stein in Oberkrain)	Miocene, Badenian	*Tasadia carniolica* (BITTNER, 1884a)	GBA 1884/003/0006/01–02, GBA 2017/035/0062–0065	7
Ukraine	Kleparov (Kleparow), Lviv (Lemberg)	Miocene, Badenian	*Callianassa* cf. *kerepesiensis* MÜLLER, 1975	GBA 2009/014/0028/01	1
			Cancridae gen. et sp. indet.	GBA 2009/014/0028/02–03	2
United Kingdom	Isle of Sheppey, Kent, England	Eocene, Ypresian, London Clay Formation	*Zanthopsis leachii* (DESMAREST, 1822)	GBA 2020/001/0001	1
unknown	unknown	Eocene, Lutetian	*Zanthopsis bispinosa* M'COY, 1849	GBA 2010/120/0044	1
					404

Tab. 2.
Synoptic overview of localities with decapod-bearing strata with details on stratigraphy. All presently known fossil decapod specimens deposited at the GBA are included herein.

by SENONER in Veneto. In the collection of Crustacea, however, there are only three samples which bear the name of SENONER, including four specimens of *Harpactocarcinus punctulatus* from San Michele at Bassano and one specimen from Valle San Floriano at Marostica.

On 01.02.1864 it was reported that k. k. Controlor KARL KACZVINSKY of the "k. k. Schwefelwerksverwaltung" in Radoboj (Croatia) sent some Cenozoic fossils (HAUER, 1864: 11). Among them there was also a crab; this could be one of the specimens of BITTNER (1884a).

During the session on 06.12.1870 DIONÝZ ŠTÚR (*05.04.1827 in Beckov, Slovakia; † 09.10.1893 in Vienna, Austria) reported that in the course of two years the "k. k. Geologische Reichsanstalt" had bought several substantial collections of fossils from Upper Italy from MENEGUZZO (ŠTÚR, 1870), which also included the collection of TIBALDI and others mentioned in FUCHS (1868). Today, approximately 180 collection boxes with labels mentioning TIBALDI are available, but no single crustacean specimen is included. On one label related to the specimen of *Palaeocarpilius macrochelus* from San Gaudenzio at Brendola, Colli Berici, there is written that it was bought from MENEGUZZO in 1893, but there is no mention of such an acquisition in the "Verhandlungen" or the "Jahrbuch" for this year. In 1890 ŠTÚR himself found decapod remains in the clay pit of Walbersdorf (Austria), as is clearly documented by the collection label.

Abbreviations used in the catalogue:

GBA = Geologische Bundesanstalt (Geological Survey), Vienna, Austria

MFGI = Magyar Földtani és Geofizikai Intézet (Geological and Geophysical Institute), Budapest, Hungary

NHMW = Naturhistorisches Museum (Natural History Museum), Vienna, Austria

UMJGP = Universalmuseum Joanneum, Department for Geology & Palaeontology, Graz, Austria

Coll. No(s). = Collection number(s)

Systematic Palaeontology

Class Malacostraca Latreille, 1802
Order Decapoda Latreille, 1802
Suborder Dendrobranchiata Bate, 1888
Superfamily Penaeoidea Rafinesque, 1815
Family Penaeidae Rafinesque, 1815

Genus *Antrimpos* von Münster, 1839

Type species: *Antrimpos speciosus* von Münster, 1839, by subsequent designation of Woods (1924).

Antrimpos crassipes (Bronn, 1858)

(Pl. 2, Fig. 1)

*1858 *Aeger crassipes* Bronn: 26, Pl. 5, Figs. 1, 2 [*non* Pl. 4, Fig. 5].
1929 *Antrimpos crassipes* (Bronn) – Glaessner: 54.
1930 *Antrimpos crassipes* (Bronn) – Glaessner: 139, Pl. 6, Fig. 1, Pl. 9, Fig. 3.
1931 *Antrimpos crassipes* (Bronn) – Glaessner: 473.
1967 *Antrimpos crassipes* (Bronn) – Förster: 142.
1998a *Antrimpos crassipes* (Bronn) – Müller: 7.
2010 *Antrimpos crassipes* (Bronn) – Schweitzer et al.: 9.
2016 *Antrimpos crassipes* (Bronn) – Hyžný & Zorn: 137, Pl. 14, Figs. 1a–c.

Coll. No.: GBA 1930/002/0001, near-complete individual (figured specimen of Glaessner, 1930: Pl. 6, Fig. 1).

Stratigraphic level: Upper Triassic (Carnian), Raibl Beds ("Raibler Schichten").

Locality: Cave del Predil (Raibl), Friuli-Venezia-Giulia, Italy.

Remarks: So far, the species has been identified from the Raibl Beds of Cave del Predil, Italy (Bronn, 1858; Glaessner, 1930) and the Reingraben Beds of Polzberg, Austria (Glaessner, 1931). The specimen deposited at the GBA is the best-preserved specimen from all the known material, exhibiting a near-complete carapace, a pleon with a tailfan and appendages. Unfortunately, the rostrum, a character considered of great taxonomic importance (Schweigert, 2001), is not preserved in the present specimen.

Antrimpos speciosus von Münster, 1839

(Pl. 2, Figs. 2–3)

*1839 *Antrimpos speciosus* von Münster: 50, Pl. 17, Figs. 1–5.
1839 *Antrimpos angustus* von Münster: 51, Pl. 17, Figs. 6–9.
1839 *Antrimpos bidens* von Münster: 52, Pl. 17, Fig. 10.
1839 *Antrimpos decemdens* von Münster: 53, Pl. 18, Fig. 1.
1839 *Antrimpos tridens* von Münster: 54, Pl. 18, Fig. 3.
1839 *Antrimpos trifidus* von Münster: 54, Pl. 19, Fig. 1.
1839 *Kölga quindens* von Münster: 61, Pl. 22, Fig. 1.
?1839 *Kölga gibba* von Münster: 61, Pl. 23, Fig. 1.
1839 *Kölga septidens* von Münster: 62, Pl. 23, Fig. 2.
?1839 *Kölga laevirostris* von Münster: 62, Pl. 23, Fig. 3.
1929 *Penaeus speciosus* (von Münster) – Glaessner: 310.
1925 *Antrimpos speciosus* von Münster – Van Straelen: 60, 73, Text-Fig. 44.
2007a *Antrimpos speciosus* von Münster – Polz: 8, Fig. 3c, tab. 2.
2010 *Antrimpos speciosus* von Münster – Schweitzer et al.: 9.
2016 *Antrimpos speciosus* von Münster – Schweigert et al.: 10, Pl. 2, Fig. 1, Pl. 9, Figs. 5–6. [cum. syn.]

Coll. Nos.: GBA 2017/035/0033, individual in ventral aspect with appendages and without carapace and pleon; GBA 2017/035/0055, near-complete individual in dorsolateral aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: The taxonomic history of *Antrimpos speciosus* von Münster, 1839 is rather complex. In this respect, Polz (2007a: table 2) provided a useful overview of penaeid species from the south German Jurassic Plattenkalk referred by von Münster (1839) to his genera *Antrimpos* and *Kölga*, and their nomenclatural changes by subsequent authors. Recently, *A. speciosus* was revised in respect of the original material by Schweigert et al. (2016).

One of the specimens deposited at the GBA (GBA 2017/035/0033; Pl. 2, Fig. 2a) bears a label "Pappenheim". This apparently does not refer to the place of collecting the specimen but rather to the place where it has been sold (G. Schweigert, pers. comm. September 2017).

Antrimpos sp.

(Pl. 2, Figs. 4–5)

Coll. Nos.: GBA 2017/035/0029, near-complete individual in lateral aspect with partially preserved appendages; GBA 2017/035/0030, fragmentary carapace with a partially preserved pleon in lateral aspect; GBA 2017/035/0031, posterior portion of pleon with telson and uropods; GBA 2017/035/0032, incomplete individual in lateral aspect without appendages.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: Specimens are either fragmentary or poorly preserved, thus, hindering the identification on the species level.

Suborder Pleocyemata Burkenroad, 1963
Infraorder Caridea Dana, 1852b
Superfamily Bresilioidea Calman, 1896
Family Alvinocarididae Christoffersen, 1986

Genus *Harthofia* Polz, 2007b

Type species: *Harthofia bergeri* Polz, 2007b, by original designation.

Harthofia sp.

(Pl. 3, Fig. 1)

Coll. No.: GBA 2017/035/0039–0040, complete individual preserved in lateral aspect (part and counterpart).

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: Preservation of the material does not allow closer identification.

Superfamily Pleopteryxoidea Schweigert & Garassino, 2006
Family Pleopteryxidae Schweigert & Garassino, 2006

Genus *Pleopteryx* Schweigert & Garassino, 2004

Type species: *Pleopteryx kuempeli* Schweigert & Garassino, 2004, by original designation.

Pleopteryx kuempeli Schweigert & Garassino, 2004

(Pl. 3, Fig. 3)

*2004 *Pleopteryx kuempeli* Schweigert & Garassino: 19, Figs. 15–18.
2006 *Pleopteryx kuempeli* Schweigert & Garassino – Schweigert & Garassino: 452, Figs. 2–6.
2010 *Pleopteryx kuempeli* Schweigert & Garassino – Schweitzer et al.: 16.

Coll. No.: GBA 2017/035/0053, near-complete individual preserved in lateral aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: Although the preservation of the specimen is far from being perfect, the outline of pleopods with large, feather-like appendices – a character typical for *Pleopteryx kuempeli* Schweigert & Garassino, 2004 – is clearly discernible.

Unplaced at superfamily and family levels

Genus *Hefriga* von Münster, 1839

Type species: *Hefriga serrata* von Münster, 1839, by subsequent designation of Oppel (1862).

Hefriga sp.

(Pl. 3, Fig. 2)

Coll. No.: GBA 2017/035/0041, near-complete individual preserved in lateral aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: Poor preservation hinders attribution on the species level.

Infraorder Astacidea Latreille, 1802
Superfamily Stenochiroidea Beurlen, 1928
Family Stenochiridae Beurlen, 1928

Genus *Stenochirus* Oppel, 1861

Type species: *Bolina angusta* von Münster, 1839, by monotypy.

Stenochirus angustus (von Münster, 1839)

(Pl. 3, Fig. 4)

*1839 *Bolina angusta* von Münster: 24, Pl. 9, Fig. 14.
1862 *Stenochirus angustus* (von Münster) – Oppel: 20, Pl. 4, Figs. 3–4.
1925 *Stenochirus angustus* (von Münster) – Van Straelen: 131.
1929 *Stenochirus angustus* (von Münster) – Glaessner: 380.
2006 *Stenochirus angustus* (von Münster) – Garassino & Schweigert: 14, Fig. 8, Pl. 3, Fig. 1, Pl. 12, Figs. 5–6. [cum. syn.]
2006 *Stenochirus angustus* (von Münster) – Schweigert et al.: 71, Figs. 3–4.
2010 *Stenochirus angustus* (von Münster) – Schweitzer et al.: 27.
2013 *Stenochirus angustus* (von Münster) – Karasawa et al.: 93.

Coll. No.: GBA 2017/035/0034, complete individual preserved in lateral aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: The label on the fossil reads "*Glyphea elongata*" (= *Palaeastacus fuciformis*, see below), however, based on long first pereiopods with keeled chelae the specimen can be attributed to *Stenochirus angustus* (cf. GARASSINO & SCHWEIGERT, 2006: Pl. 12, Fig. 6; SCHWEIGERT et al., 2006: Fig. 3).

Superfamily Erymoidea VAN STRAELEN, 1925
Family Erymidae VAN STRAELEN, 1925

Genus *Eryma* VON MEYER, 1840a
(= *Bolina* VON MÜNSTER, 1839 [*sensu* ÉTALLON, 1859]; = *Klytia* VON MEYER, 1840b; *Clytia* BEURLEN, 1928; = *Protoclytiopsis* BIRSTHEIN, 1958; = *Galicia* GARASSINO & KROBICKI, 2002)

Type species: *Macrourites modestiformis* VON SCHLOTHEIM, 1822, by subsequent designation of GLAESSNER (1929).

Eryma modestiforme (VON SCHLOTHEIM, 1822)

(Pl. 3, Fig. 7)

*1822 *Macrourites modestiformis* VON SCHLOTHEIM: 29, Pl. 2, Fig. 3.
1827 *Astacus leptodactylus* GERMAR: 100, Pl. 1, Fig. 4.
1862 *Eryma modestiforme* (VON SCHLOTHEIM) – OPPEL: 33, Pl. 6, Figs. 5–8.
1862 *Eryma leptodactylina* (GERMAR) – OPPEL: 35, Pl. 7, Figs. 1–4.
1925 *Eryma modestiformis* (VON SCHLOTHEIM) – VAN STRAELEN: 272.
1925 *Eryma leptodactylina* (GERMAR) – VAN STRAELEN: 273.
1928 *Eryma pseudoventrosa* BEURLEN: 163.
1929 *Clytia leptodactylus* (GERMAR) – GLAESSNER: 116.
1929 *Eryma modestiformis* (VON SCHLOTHEIM) – GLAESSNER: 156.
1929 *Eryma pseudoventrosa* BEURLEN – GLAESSNER: 158.
1966 *Eryma modestiformis* (VON SCHLOTHEIM) – FÖRSTER: 118, Pl. 16, Figs. 8–9, Pl. 17, Fig. 1.
1969 *Eryma modestiformis* (VON SCHLOTHEIM) – GLAESSNER: R455, Text-Fig. 258.4.
2000 *Eryma modestiforme* (VON SCHLOTHEIM) – SCHWEIGERT et al.: 4, Text-Fig. 1a, Pl. 1, Figs. 1–5.
2006 *Eryma modestiforme* (VON SCHLOTHEIM) – GARASSINO & SCHWEIGERT: 6, Fig. 8, Pl. 1, Fig. 1, Pl. 9, Figs. 1–2. [cum. syn.]
2010 *Eryma modestiforme* (VON SCHLOTHEIM) – SCHWEITZER et al.: 24.
2013 *Eryma modestiforme* (VON SCHLOTHEIM) – KARASAWA et al.: Fig. 9A.
2015a *Eryma modestiforme* (VON SCHLOTHEIM) – HYŽNÝ et al.: Fig. 3A.
2017 *Eryma modestiforme* (VON SCHLOTHEIM) – DEVILLEZ & CHARBONNIER: Fig. 2A.

Coll. No.: GBA 2017/035/0035, near-complete individual preserved in dorsal aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: Although the specimen is not well-preserved, its general morphology conforms to erymid lobsters. Chelipeds with relatively short fingers fit with the morphology of *Eryma modestiforme* (VON SCHLOTHEIM, 1822) as figured by FÖRSTER (1966: Pl. 16, Fig. 8), SCHWEIGERT et al. (2000: Text-Fig. 1a, Pl. 1, Figs. 1–5), HYŽNÝ et al. (2015a: Fig. 3A) and DEVILLEZ & CHARBONNIER (2017: Fig. 2A).

Genus *Palaeastacus* BELL, 1850

Type species: *Astacus sussexiensis* MANTELL, 1824, by subsequent designation of GLAESSNER (1929).

Palaeastacus fuciformis (VON SCHLOTHEIM, 1822)

(Pl. 3, Figs. 5–6)

*1822 *Macrourites fuciformis* VON SCHLOTHEIM: 30, Pl. 2, Fig. 2.
1827 *Astacus spinimanus* GERMAR: 101, Pl. 1, Fig. 3.
1839 *Glyphea fuciformis* (VON SCHLOTHEIM) – VON MÜNSTER: 16, Pl. 8, Figs. 1–2.
1839 *Glyphea intermedia* VON MÜNSTER: 17, Pl. 8, Figs. 6–7.
1839 *Glyphea crassula* VON MÜNSTER: 17, Pl. 8, Fig. 4 [*non* Fig. 5].
1839 *Glyphea elongata* VON MÜNSTER: 18, Pl. 8, Figs. 11–12 [*non* Figs. 8–10].
1862 *Eryma elongata* (VON MÜNSTER) – OPPEL: 37, Pl. 8, Figs. 1–2.
1862 *Eryma fuciformis* (VON SCHLOTHEIM) – OPPEL: 41, Pl. 9, Figs. 2–6.
1925 *Enoploclytia fuciformis* (VON SCHLOTHEIM) – VAN STRAELEN: 285.
1928 *Eryma fuciformis* (VON SCHLOTHEIM) – BEURLEN: 164.
1928 *Clytia elongata* (VON MÜNSTER) – BEURLEN: 170.
1929 *Eryma fuciformis* (VON SCHLOTHEIM) – GLAESSNER: 154.
1966 *Palaeastacus fuciformis* (VON SCHLOTHEIM) – FÖRSTER: 130, Text-Fig. 25.
2001 *Palaeastacus fuciformis* (VON SCHLOTHEIM) – SCHWEIGERT & RÖPER: 8, Fig. 5.
2006 *Palaeastacus fuciformis* (VON SCHLOTHEIM) – GARASSINO & SCHWEIGERT: 9, Fig. 8, Pl. 1, Fig. 3, Pl. 11, Fig. 5. [cum. syn.]
2010 *Palaeastacus fuciformis* (VON SCHLOTHEIM) – SCHWEITZER et al.: 25.

Coll. Nos.: GBA 2017/035/0050, near-complete individual preserved in dorsolateral aspect; GBA 2017/035/0051, complete individual preserved in lateral aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: Both specimens possess short chelae with numerous spines, a typical character of this species (SCHWEIGERT & RÖPER, 2001; GARASSINO & SCHWEIGERT, 2006). Specimens were identified correctly as *Palaeastacus fuciformis* (VON SCHLOTHEIM, 1822) already at the time of acquisition; one bears a label reading *Glyphea elongata* (= *P. fuciformis*) and the second one was assigned to *Glyphea fuciformis* (*sensu* VON MÜNSTER, 1839).

Family Enoploclytiidae DEVILLEZ, CHARBONNIER & BARRIEL, 2019

Genus *Enoploclytia* M'COY, 1849

Type species: *Astacus leachii* MANTELL, 1822, by original designation.

?*Enoploclytia* sp.

Coll. No.: GBA 2017/035/0066, cheliped propodus fragment.

Stratigraphic level: Upper Cretaceous (Coniacian); Březno Beds ("Priesener Schichten").

Locality: Kamenická Nová Víska (Neudörfl at Kamnitz, Böhmisch Kamnitz), Czech Republic.

Remarks: The specimen is poorly preserved, only a portion of the cuticle with several evenly spaced large tubercles is discernible. From the same area *Enoploclytia leachii* (MANTELL, 1822) is known (FRITSCH & KAFKA, 1887; VESELSKÁ, 2010; DEVILLEZ et al., 2017).

Genus *Pustulina* QUENSTEDT, 1858 (= *Phlyctisoma* BELL, 1863 [imprint 1862])

Type species: *Pustulina suevica* QUENSTEDT, 1858, by subsequent designation of GLAESSNER (1929).

Pustulina minuta (VON SCHLOTHEIM, 1822)

(Pl. 3, Fig. 8)

*1822 *Macrourites minutus* VON SCHLOTHEIM: 28, Pl. 3, Fig. 3.

1839 *Glyphea minuta* (VON SCHLOTHEIM) – VON MÜNSTER: 20, Pl. 9, Figs. 8–10.

pars 1839 *Glyphea verrucosa* VON MÜNSTER: 21, Pl. 9, Fig. 10 [*non* Fig. 12 = lectotype of *Eryma verrucosa* (VON MÜNSTER, 1839)].

1862 *Eryma minuta* (VON SCHLOTHEIM) – OPPEL: 39, Pl. 8, Figs. 6–8.

1929 *Eryma minuta* (VON SCHLOTHEIM) – GLAESSNER: 156.

1966 *Phlyctisoma minuta* (VON SCHLOTHEIM) – FÖRSTER: 142, Pl. 18, Fig. 9.

2006 *Pustulina minuta* (VON SCHLOTHEIM) – GARASSINO & SCHWEIGERT: 11, Fig. 8, Pl. 2, Fig. 1, Pl. 11, Fig. 6, Pl. 12, Figs. 1–2. [cum. syn.]

2010 *Pustulina minuta* (VON SCHLOTHEIM) – SCHWEITZER et al.: 26.

Coll. No.: GBA 2017/035/0054, complete individual preserved in dorsal aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: The specimen possesses chelae with short and stout fingers and bearing strong tuberculation; characters typical for *Pustulina minuta* (GARASSINO & SCHWEIGERT, 2006: 12).

?*Pustulina* sp.

(Pl. 3, Fig. 9)

1909 *Eryma* sp. – TRAUTH: 134.

1929 *Eryma*? sp. – GLAESSNER: 160.

1998a ?*Eryma* sp. – MÜLLER: 7.

Coll. Nos.: GBA 1909/001/0109, an incomplete right propodus (part and counterpart); GBA 2016/185/0049, fragment of a propodus.

Stratigraphic level: Lower Jurassic, Gresten Formation ("Grestener Schichten")

Locality: Pechgraben, Steinau NW, Upper Austria (GBA 1909/001/0109); Krenkogel, Grossau, Lower Austria (GBA 2016/185/0049).

Remarks: TRAUTH (1909: 134) identified the isolated incomplete propodus as *Eryma* sp. from the Gresten Formation of Pechgraben, Austria. Already GLAESSNER (1929) and MÜLLER (1998a) expressed doubts about the assignment on the genus level. Indeed, the material (GBA 1909/001/0109) is too fragmentary for secure identification. The propodus is relatively short, sub-rectangular in outline with slightly rounded margins and slightly globose in the cross-section (Pl. 3, Fig. 9). The propodus possesses an inflated dactylar bulge; the fixed finger appears short with a slight curvature. These characteristics may point to the assignment of *Pustulina* QUENSTEDT, 1858.

An additional specimen (GBA 2016/185/0049) from the Gresten Formation of Grossau represents a fragment of a propodus. Based on the ornamentation and presence of a dactylar bulge, and given the geographic and stratigraphic proximity of both specimens, they are considered conspecific.

Infraorder Glypheidea Zittel, 1885
Superfamily Glypheoidea Zittel, 1885
Family Mecochiridae Van Straelen 1925

Genus *Mecochirus* Germar, 1827
(= *Mecochiria* Secretan, 1968)

Type species: *Macrourites longimanatus* von Schlotheim, 1820, by subsequent designation of Woods (1927).

Mecochirus longimanatus (von Schlotheim, 1820)

(Pl. 4, Figs. 1–2)

*1820 *Macrourites longimanatus* von Schlotheim: 38.

1822 *Macrourites longimanatus* von Schlotheim – von Schlotheim: 33.

1827 *Mecochirus locusta* Germar: 102.

1827 *Mecochirus Bajeri* Germar: 103, Text-Fig. 5.

1839 *Pterochirus remimanus* Bronn in von Münster: 27, Pl. 16, Figs. 1–2.

1839 *Pterochirus elongatus* von Münster: 28, Pl. 16, Fig. 3.

1839 *Megachirus locusta* (Germar) – von Münster: 31, Pl. 11, Figs. 1–5.

1839 *Megachirus Bajeri* (Germar) – von Münster: 33, Pl. 12, Figs. 1–5, Pl. 13, Figs. 6–7.

1839 *Megachirus brevimanus* von Münster: 34, Pl. 13, Figs. 1?, 2–3.

1839 *Megachirus fimbriatus* von Münster: 35.

1839 *Megachirus intermedius* von Münster: 35, Pl. 13, Figs. 4?, 5.

1839 *Orphnea longimanus* von Münster: 42, Pl. 14, Fig. 7.

1862 *Mecochirus longimanus* (von Schlotheim) – Oppel: 82, Pl. 22, Fig. 4, Pl. 23, Fig. 1.

1862 *Mecochirus Bajeri* Germar – Oppel: 83, Pl. 23, Fig. 2.

1862 *Mecochirus brevimanus* (von Münster) – Oppel: 84, Pl. 22, Figs. 5–6.

1929 *Mecochirus Bajeri* Germar – Glaessner: 249.

1929 *Mecochirus longimanatus* (von Schlotheim) – Glaessner: 250.

1929 *Mecochirus brevimanus* (von Münster) – Glaessner: 249.

1969 *Mecochirus longimanatus* (von Schlotheim) – Glaessner: R464, Text-Fig. 270.1.

2006 *Mecochirus longimanatus* (von Schlotheim) – Garassino & Schweigert: 18, Fig. 9, Pl. 5, Fig. 1, Pl. 13, Fig. 6, Pl. 14, Fig. 1. [cum. syn.]

2010 *Mecochirus longimanatus* (von Schlotheim) – Schweitzer et al.: 20.

Coll. Nos.: GBA 2017/035/0048, a near-complete individual preserved in lateral aspect; GBA 2017/035/0049, a near-complete individual preserved in dorsolateral aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: Based on the revision of Garassino & Schweigert (2006), *Mecochirus brevimanus* (von Münster, 1839) represents a male, whereas the morphotype corresponding to the original material of *M. longimanatus* (von Schlotheim, 1820) is a female. Both specimens deposited at the GBA correspond to the female morphotype.

Family Pemphicidae Van Straelen, 1928

Genus *Pemphix* von Meyer, 1840b

Type species: *Palinurus sueurii* Desmarest, 1822, by subsequent designation of Glaessner (1929).

Pemphix sueurii (Desmarest, 1822)

(Pl. 4, Figs. 3–4)

*1822 *Palinurus Sueurii* Desmarest: 132, Pl. 10, Figs. 8–9.

1840b *Pemphix Sueuri* (Desmarest) – von Meyer: 3, Pl. 1, Pl. 2, Pl. 4, Figs. 35–36.

1927 *Pemphix sueurii* (Desmarest) – Assmann: 344, Text-Fig. on page 345, Pl. 9, Figs. 2–9, Pl. 10, Fig. 1, Pl. 12, Pl. 13, Figs. 3–4.

1929 *Pemphix Sueuri* (Desmarest) – Glaessner: 309. [cum. syn.]

1932 *Pemphix sueuri* (Desmarest) – Glaessner: 108, Fig. 1, 2B, 3B.

1966 *Pemphix sueuri* (Desmarest) – Förster: 160, Text-Fig. 36, Fig. 9.

1967 *Pemphix sueuri* (Desmarest) – Förster: 171, Text-Fig. 13.

1969 *Pemphix sueuri* (Desmarest) – Glaessner: R468, Fig. 271.2.

2010 *Pemphix sueuri* (Desmarest) – Schweitzer et al.: 22.

2013 *Pemphix sueurii* (Desmarest) – Karasawa et al.: 104, Fig. 9B.

Coll. Nos.: GBA 2017/035/0057, carapace articulated with pleon, including tailfan; GBA 2017/035/0058, carapace with partially preserved pereiopods.

Stratigraphic level: Middle Triassic, upper Muschelkalk.

Locality: Crailsheim (Kreilsheim), Baden-Württemberg, Germany.

Remarks: *Pemphix* von Meyer, 1840b is characterised by well-developed carapace grooves dividing the cephalothorax in a number of regions not unlike those in brachyuran crabs. The GBA specimens illustrate this feature well.

Family Platychelidae Glaessner, 1969

Genus *Platychela* Glaessner, 1931

Type species: *Platychela trauthi* Glaessner, 1931, by subsequent designation of Förster (1967).

Platychela trauthi Glaessner, 1931

(Pl. 4, Fig. 5)

*1931 *Platychela trauthi* Glaessner: 478, Text-Fig. 3, Pl. 16.

1967 *Platychela trauthi* Glaessner – Förster: 178, Text-Fig. 15.

1969 *Platychela trauthi* Glaessner – Glaessner: R458, Fig. 263.

1998a *Platychela trauthi* Glaessner – Müller: 8.

2010 *Platychela trauthi* Glaessner – Schweitzer et al.: 9.

non 2013 *Platychela trauthi* Glaessner – Karasawa et al.: Fig. 12C [= *Platychela kahleri* Glaessner, 1931].

2016 *Platychela trauthi* Glaessner – Hyžný & Zorn: 138, Pl. 16, Figs. 2–3.

Coll. Nos.: GBA 1931/003/0002 (paratype), badly-preserved carapace with partially preserved pleon and pereiopods; GBA 1931/003/0003/01 (paratype), badly-preserved carapace with partially preserved pleon and pereiopods; GBA 1931/003/0003/02 (paratype), counterpart of GBA 1931/003/0002.

Stratigraphic level: Upper Triassic (Carnian, Julian), Reingraben Beds.

Locality: Lunz am See, Polzberg, Lower Austria, Austria.

Remarks: *Platychela* Glaessner, 1931 is the type genus of the family Platychelidae Glaessner, 1969 which is considered a basal genus within the glypheoid clade (Karasawa et al., 2013). Original material of *P. trauthi* Glaessner, 1931 consisting of the holotype (NHMW 1910/0015/0018) and three paratypes (the GBA specimens) is rather poorly preserved and the species is in need of revision. Glaessner (1931) described also the second species of *Platychela*, i.e. *Platychela kahleri*. According to Glaessner (1931, 1965), *P. trauthi* occurs in the Reingraben Beds of Polzberg, whereas *P. kahleri* is known from the Raibl Beds of Cave del Predil.

Without an analysis and a further discussion, Förster (1967: 178) synonymised *Platychela kahleri* Glaessner, 1931 with *P. trauthi*, an act which was followed also by Schweitzer et al. (2010) and Karasawa et al. (2013). Pending a detailed revision, both species are considered distinct herein.

Infraorder Axiidea de Saint Laurent, 1979

Family Callianassidae Dana, 1852a

Genus *Callianassa* Leach, 1814

Type species: *Cancer Astacus subterraneus* Montagu, 1808, by monotypy.

Callianassa cf. *kerepesiensis* Müller, 1975

(Pl. 5, Fig. 8)

Coll. No.: GBA 2009/014/0028/01, isolated incomplete left propodus.

Stratigraphic level: Middle Miocene (Badenian).

Locality: Kleparov (Kleparow), Lviv (Lemberg), Ukraine.

Remarks: The material represents an isolated fragmentary left major propodus preserved in inner lateral aspect. The proportional length of the fixed finger to the manus (= propodus without fixed finger) suggests affinities to *Callianassa kerepesiensis* Müller, 1975 (compare Müller, 1984: Pl. 6). The material together with isolated dactyli of Cancridae gen. et sp. indet. (see below) was originally labelled as "*Pagurus Faujasii*".

Genus *Mesostylus* Bronn & Roemer, 1852

Type species: *Pagurus Faujasi* Desmarest, 1822, by monotypy.

Mesostylus pervesleri Hyžný & Summesberger, 2019

(Pl. 5, Figs. 1–2)

*2019 *Mesostylus pervesleri* Hyžný & Summesberger: 112, Figs. 3D–F, 4–5, 7–8, 11.

Coll. Nos.: GBA 2012/051/0090, fragmentary right propodus (with exposed inner lateral surface); GBA 2012/051/0091, left major cheliped consisting of articulated carpus, propodus and dactylus; GBA 2012/060/0020, left major cheliped consisting of articulated merus, carpus, propodus and dactylus (part and counterpart).

Stratigraphic level: Upper Cretaceous (upper Santonian–Campanian).

Localities: Reitäcker at Muthmannsdorf, Lower Austria, Austria (GBA 2012/051/0090); Muthmannsdorf, Lower Austria, Austria (GBA 2012/051/0091); Strelzhof, Netting, Neue Welt, Lower Austria, Austria (GBA 2012/060/0020).

Remarks: Specimens, typically preserved as cheliped disassociation units (Bishop & Williams, 2005; Hyžný & Klompmaker, 2015) represent a part of the material serving for the description of a new species (Hyžný & Summesberger, 2019).

Callianassidae (s.l.) indet. sp. 1

(Pl. 5, Fig. 6)

Coll. No.: GBA 2010/134/0105, isolated right major dactylus.

Stratigraphic level: Lower Oligocene (Rupelian), Castelgomberto Beds ("Castelgomberto-Schichten").

Locality: Santa Trinita at Venice, Venezia, Veneto, Italy.

Remarks: Given the intraspecific variation of ghost shrimp dactyli (HYŽNÝ & KLOMPMAKER, 2015), the attribution on the genus or species level is impossible.

Callianassidae (s.l.) indet. sp. 2

(Pl. 5, Fig. 7)

Coll. No.: GBA 2010/182/0055/01, fragmentary fixed finger.

Stratigraphic level: Middle Eocene (Lutetian), San Giovanni Ilarione Beds ("San Giovanni Ilarione-Schichten").

Locality: San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.

Remarks: The specimen is too fragmentary to be identified confidently. Although the tuberculation and serration on its lower margin is reminiscent of *Karumballichirus tuberculatus* (see below), similar ornamentation is known in a number of fossorial shrimp species.

Callianassidae (s.l.) indet. sp. 3

(Pl. 5, Fig. 9)

Coll. No.: GBA 2010/182/0055/02, isolated right propodus.

Stratigraphic level: Middle Eocene (Lutetian), San Giovanni Ilarione Beds ("San Giovanni Ilarione-Schichten").

Locality: San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.

Remarks: Lower and upper margins are diverging distally and the fixed finger has a blunt tooth. It probably represents a minor propodus, closer identification is, however, not possible unless preserved together with a major cheliped.

Callianassidae (s.l.) indet. sp. 4

(Pl. 5, Fig. 12)

Coll. No.: GBA 2009/014/0005, isolated right propodus.

Stratigraphic level: Middle Miocene (Badenian).

Locality: Müllendorf, Burgenland, Austria.

Remarks: The specimen is preserved as an internal mould; its attribution on the genus or species level is impossible without additional material.

Family Callichiridae MANNING & FELDER, 1991

Genus *Karumballichirus* POORE, DWORSCHAK, ROBLES, MANTELATTO & FELDER, 2019

Type species: *Callianassa karumba* POORE & GRIFFIN, 1979, by monotypy.

Karumballichirus tuberculatus (LŐRENTHEY in LŐRENTHEY & BEURLEN, 1929) comb. nov.

(Pl. 5, Figs. 3–5)

*1929 *Calianassa* [sic!] *tuberculata* LŐRENTHEY in LŐRENTHEY & BEURLEN: 51, Pl. 1, Fig. 9.

1929 *Callianassa tuberculata* LŐRENTHEY in LŐRENTHEY & BEURLEN – GLAESSNER: 93.

2006 *Neocallichirus borensis* BESCHIN, DE ANGELI, CHECCHI & MIETTO: 97, Fig. 2, Pl. 1, Figs. 4–6.

2006 *Neocallichirus borensis* BESCHIN et al. – DE ANGELI & GARASSINO: 16.

2010 *Neocallichirus borensis* BESCHIN et al. – SCHWEITZER et al.: 38

2016a *Neocallichirus borensis* BESCHIN et al. – HYŽNÝ et al.: 348, Fig. 6A–C.

2016a *Neocallichirus tuberculatus* (LŐRENTHEY in LŐRENTHEY & BEURLEN) – HYŽNÝ et al.: 350, Fig. 6D–G.

Coll. Nos.: GBA 2010/035/0021, left major propodus; GBA 2010/266/0001, right major propodus with broken fixed finger; GBA 2010/269/0008, incomplete right major propodus without its upper half.

Stratigraphic level: Eocene.

Locality: Guttaring, Carinthia, Austria (GBA 2010/035/0021); Meledo Basso, Vicenza, Veneto, Italy (GBA 2010/266/0001), Mortisa, Belluno, Veneto, Italy (GBA 2010/269/0008).

Remarks: *Callianassa tuberculata* was originally described from the middle Eocene of Kosd, Hungary, based on a number of specimens from brackish-water sediments (LŐRENTHEY & BEURLEN, 1929). The re-examination of the type material deposited at the MFGI has shown that the figure provided by LŐRENTHEY & BEURLEN (1929: Pl. 1, Fig. 9) is a reconstruction based on various fragments (HYŽNÝ et al., 2016a); no complete chela is available. Based on close similarity with extant *Neocallichirus karumba* (POORE & GRIFFIN, 1979), HYŽNÝ et al. (2016a) reassigned the species to *Neocallichirus* (s.l.) SAKAI, 1988. *Callianassa karumba* has recently become a type species of the newly erected genus *Karumballichirus* POORE, DWORSCHAK, ROBLES, MANTELATTO & FELDER, 2019, leading effectively into reassignment of *C. tuberculata* to *Karumballichirus*.

Based on several chelae (propodi and dactyli), BESCHIN et al. (2006) described *Neocallichirus borensis* from the Priabonian of Italy. Based on 1) morphological similarities, 2) roughly the same age, and 3) close geographical proximity, *N. borensis* is considered a junior subjective synonym of *C. tuberculata*.

Family Ctenochelidae Manning & Felder, 1991

Genus *Gourretia* de Saint Laurent, 1973

Type species: *Callianassa denticulata* Lutze, 1937 (= *Callianassa subterranea* var. *minor* Gourret, 1887), by original designation.

Gourretia sp.

(Pl. 5, Fig. 10)

2015b *Gourretia* sp. – Hyžný et al.: 221, Fig. 4a–c.

2016 *Gourretia* sp. – Hyžný & Zorn: 139, Pl. 17, Fig. 2a–b.

Coll. No.: GBA 2009/014/0024/01, major left propodus articulated with dactylus (figured specimen of Hyžný et al., 2015b: Fig. 4).

Stratigraphic level: Lower Miocene (Ottnangian).

Locality: Ottnang, Upper Austria, Austria.

Remarks: From the same locality two isolated dactyli are deposited together with the represented specimen. Probably, they all belong to the same species.

Family Eucalliacidae Manning & Felder, 1991

Genus *Calliax* de Saint Laurent, 1973

Type species: *Callianassa* (*Callichirus*) *lobata* de Gaillande & Lagardère, 1966, by original designation.

Calliax michelottii (A. Milne-Edwards, 1860)

(Pl. 5, Fig. 11)

*1860 *Callianassa Michelotti* A. Milne-Edwards: 341, Pl. 14, Fig. 3.

1929 *Callianassa Michelotti* A. Milne-Edwards – Glaessner: 84.

pars 1984 '*Callianassa*' *szobensis* Müller: 53, Pl. 7, Figs. 3–4. [*non* Figs. 5–6]

2010 *Callianassa michelotti* Schweitzer et al.: 35.

2010 *Callianassa szobensis* (Müller) – Schweitzer et al.: 37.

2014 *Calliax michelottii* (A. Milne-Edwards) – Hyžný & Gašparič: 45, Figs. 5–10. [cum. syn.]

2015b *Calliax michelottii* (A. Milne-Edwards) – Hyžný et al.: 222, Fig. 5.

2016 *Calliax michelottii* (A. Milne-Edwards) – Hyžný & Gross: 84, Figs. 6.1–6.4.

2016 *Calliax michelottii* (A. Milne-Edwards) – Hyžný & Zorn: 138, Pl. 17, Figs. 1a–b.

Coll. No.: GBA 2009/014/0027 (former coll. no. 2314), isolated major propodus (figured specimen of Hyžný & Gašparič, 2014: Fig. 9I and Hyžný & Zorn, 2016: Pl. 17, Fig. 1a–b).

Stratigraphic level: Middle Miocene (Badenian).

Locality: Kamnik (Stein in Oberkrain), Gorenjska, Slovenia.

Remarks: *Callianassa michelottii* was revised and reassigned to *Calliax* de Saint Laurent, 1973 by Hyžný & Gašparič (2014). *Calliax michelottii* from the surroundings of Kamnik, Slovenia was reported and figured by Hyžný & Gašparič (2014) and Gašparič & Brajkovič (2016).

Infraorder Gebiidea de Saint Laurent, 1979
Family Laomediidae Borradaile, 1903

Genus *Jaxea* Nardo, 1847

Type species: *Jaxea nocturna* Nardo, 1847, by monotypy.

Jaxea kuemeli Bachmayer, 1954

(Pl. 5, Figs. 13–14)

*1954 *Jaxea kümeli* Bachmayer: 64, Pl. 1, Figs. 1–2.

1969 *Jaxea kuemeli* Bachmayer – Glaessner: R477, Fig. 284.4.

1984 *Jaxea kuemeli* Bachmayer – Müller: 49.

1998a *Jaxea kuemeli* Bachmayer – Müller: 9.

2010 *Jaxea kuemeli* Bachmayer – Schweitzer et al.: 41.

2011 *Jaxea kuemeli* Bachmayer – Hyžný: 176, Figs. 2A–D, 3B, 5A–C, 6A–C, 7A–D.

2015 *Jaxea kuemeli* Bachmayer – Gašparič & Hyžný: 149, Figs. 8–9.

2015b *Jaxea kuemeli* Bachmayer – Hyžný et al.: 220, Figs. 2–3.

2016 *Jaxea kuemeli* Bachmayer – Hyžný & Zorn: 139, Pl. 17, Figs. 3–5.

2018 *Jaxea kuemeli* Bachmayer – Gašparič & Hyžný: 114, Pl. 1, Figs. A–G.

Coll. No.: GBA 2009/014/0023 (collective number), mostly chelipeds; the more-complete of the 19 specimens deposited at the GBA are figured specimens of Hyžný et al. (2015b: Figs. 3b–d).

Stratigraphic level: Lower Miocene (Ottnangian).

Locality: Ottnang, Upper Austria, Austria.

Remarks: The material fully corresponds to *Jaxea kuemeli* as redescribed by Hyžný (2011). A more detailed account on the specimens from Ottnang was provided by Hyžný et al. (2015b).

Infraorder Achelata Scholtz & Richter, 1995
Family Palinuridae Latreille, 1802

Genus *Justitia* Holthuis, 1946

Type species: *Palinurus longimanus* H. Milne Edwards, 1837 [in H. Milne Edwards, 1834–1840], by original designation.

Justitia desmaresti (Secretan, 1975)

(Pl. 6, Fig. 1)

1855 *Palinurus Desmarestii* De Zigno in litt. – Massalongo: 32. [nomen nudum]

*1975 *Palinurus desmaresti* De Zigno – Secretan: 339, Pl. 12, Fig. 1, Pl. 13, Figs. 1–5, Pl. 14, Figs. 1–4, Pl. 15, Figs. 1–4, Pl. 16, Figs. 3–4.

2001 *Justitia desmaresti* (Massalongo) – Garassino & Novati: 259, text-Figs. 3–7.

2006 *Justitia desmaresti* (Massalongo) – De Angeli & Garassino: 20.

2010 *Justitia desmaresti* (Massalongo) – Schweitzer et al.: 45.

2015 *Justitia desmaresti* (Secretan) – Giusberti et al.: 116, Figs. 1A, B, 3. [cum. syn.]

2019 *Justitia desmaresti* (Secretan) – Pasini et al.: 247, Fig. 9.

Coll. No.: GBA 2010/275/0053 (former coll. no. 2319), a near-complete individual in ventral aspect (length without antennae: approx. 15 cm).

Stratigraphic level: Lower Eocene (Ypresian).

Locality: Pesciara or Monte Postale, near Bolca, Lessini Mountains, Verona, Veneto, Italy.

Remarks: *Justitia desmaresti* (Secretan, 1975) is the most iconic decapod crustacean from the famous Ypresian Konservat-Lagerstätten of the Bolca area (Verona). Despite being mentioned and figured in the literature numerous times, only recently the confusing nomenclature of this species has been reassessed by Giusberti et al. (2015; see also Pasini et al. 2019).

Genus *Linuparus* White, 1847

Type species: *Palinurus trigonus* von Siebold, 1824, by monotypy.

Linuparus bigranulatus Glaessner, 1930

(Pl. 7, Figs. 1–2)

*1930 *Linuparus bigranulatus* Glaessner: 165, Pl. 8, Fig. 3.

1998a *Linuparus bigranulatus* Glaessner – Müller: 9.

2010 *Linuparus bigranulatus* Glaessner – Schweitzer et al.: 46.

2016 *Linuparus bigranulatus* Glaessner – Hyžný & Zorn: 138, Pl. 15, Figs. 1a–c.

Coll. Nos.: GBA 1930/002/0003 (former coll. no. 3457), posterior portion of carapace articulated with pleon with five preserved somites (holotype); GBA 1930/002/0004, imprint of the anterior portion of carapace.

Stratigraphic level: Upper Eocene (Priabonian), Reingruber Formation.

Locality: Hollingstein at Niederhollabrunn, Lower Austria, Austria.

Remarks: The holotype does not preserve the anterior portion of the carapace (Pl. 7, Fig. 2). However, the additional specimen (GBA 1930/002/0004), the one mentioned by Glaessner (1930: 165) as the specimen "number 3", exhibits the imprint of the anterior part. The specimen is figured here for the first time (Pl. 7, Fig. 1).

Genus *Palinurina* von Münster, 1839

Type species: *Palinurina longipes* von Münster, 1839 (= *P. intermedia* von Münster, 1839; = *P. pygmea* von Münster, 1839), by subsequent designation of Woods (1925).

Palinurina longipes von Münster, 1839

(Pl. 7, Fig. 6)

*1839 *Palinurina longipes* von Münster: 37, Pl. 14, Fig. 8.

1839 *Palinurina intermedia* von Münster: 37, Pl. 14, Figs. 9, 10?, Pl. 29, Fig. 8.

1839 *Palinurina pygmea* von Münster: 38, Pl. 14, Fig. 11.

1862 *Palinurina longipes* von Münster – Oppel: 86, Pl. 24, Fig. 1.

1862 *Palinurina pygmea* von Münster – Oppel: 87, Pl. 24, Fig. 2.

1925 *Palinurina longipes* von Münster – Van Straelen: 223.

1929 *Palinurina longipes* von Münster – Glaessner: 301.

1969 *Palinurina longipes* von Münster – Glaessner: R474, Text-Fig. 277.6.

1973 *Palinurina longipes* von Münster – Förster: 41, Figs. 4–7.

2006 *Palinurina pygmea* von Münster – Garassino & Schweigert: 32, Fig. 12, Pl. 18, Fig. 5, Pl. 19, Fig. 1. [cum. syn.]

2010 *Palinurina longipes* von Münster – Schweitzer et al.: 46.

Coll. No.: GBA 2017/035/0052, entire individual preserved in dorsolateral aspect.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: The specimen is poorly preserved, the general morphology (achelate lobster with robust antennae), however, speaks for attribution to *Palinurina longipes* which is the only species of the genus known from the Solnhofen area; the other species, *Palinurina tenera* Oppel, 1862 has been recently identified as non-adult stages of achelatan lobsters (Haug & Haug, 2016).

Infraorder Polychelida Scholtz & Richter, 1995

Superfamily Eryonoidea de Haan, 1841 [in de Haan, 1833–1850]

Family Coleiidae Van Straelen, 1925

Genus *Clytiella* Glaessner, 1931

Type species: *Clytiella spinifera* Glaessner, 1931, by monotypy.

Clytiella spinifera Glaessner, 1931

(Pl. 7, Fig. 7)

*1931 *Clytiella spinifera* Glaessner: 474, Text-Fig. 2, Pl. 15, Fig. 1.

1967 *Clytiella spinifera* Glaessner – Förster: 144.

1969 *Clytiella spinifera* Glaessner – Glaessner: R457, Fig. 261.1.

1998a *Clytiella spinifera* Glaessner – Müller: 8.

2010 *Clytiella spinifera* Glaessner – Schweitzer et al.: 22.

2016 *Clytiella spinifera* Glaessner – Hyžný & Zorn: 137, Pl. 16, Figs. 1a–b.

Coll. No.: GBA 1931/003/0001 (holotype), near-complete individual preserved in dorsolateral aspect.

Stratigraphic level: Upper Triassic (Carnian, Julian), Reingraben Beds.

Locality: Lunz am See, Polzberg, Lower Austria, Austria.

Remarks: *Clytiella* is an enigmatic genus with obscure affinities, which was emphasised already by Förster (1967: 145). Quite typical for similar enigmatic taxa, also *Clytiella spinifera*, the only known species, is based on a single specimen. Glaessner (1969) classified the genus within the erymid subfamily Clytiopsinae Beurlen, 1927. The subfamily was elevated to the family level by Karasawa et al. (2013). Hyžný & Zorn (2016: 137) expressed doubts about this assignment and suggested affinities with polychelid lobsters, although no arguments were given for such a stance. Here the opportunity is taken to discuss the affinities of *Clytiella* in more detail. The pleon of *Clytiella spinifera* is flattened, axially keeled and distinctly shorter than the carapace, thus, it is unlike any erymoid lobster (compare e.g., Karasawa et al., 2013: Fig. 9; Devillez et al., 2017: Figs. 2, 3, 6). The reconstruction of Glaessner (1931: Text-Fig. 2) is highly misleading in this respect. What is interpreted as being the spiny dorsal crest on the carapace is a mere preservation artefact. The length of respective pleonal somites in the reconstruction does not match the reality. The animal is apparently preserved in a dorsolateral orientation, rather than in a lateral aspect as suggested by Glaessner (1931: Text-Fig. 2). The proportionally short and broad pleon with an axial keel is quite typical for polychelid lobsters (compare Pl. 7, Figs. 5b, 7b, 8b). We refrain here from a detailed revision of *Clytiella spinifera* with comparison of relevant polychelid taxa, as it is beyond the scope of this catalogue. However, we propose reassignment of *Clytiella* from Erymidae Van Straelen, 1925 to Coleiidae Van Straelen, 1925. This taxonomic opinion is based on a presence of certain characters typical for the latter family in the holotype of *C. spinifera*, namely: 1) carapace flat and longer than wide, 2) pleon broad, shorter than carapace, and with axial keel, 3) relatively stout and short chelipeds unlike those present in erymids or advanced polychelids as Eryonidae de Haan, 1841 [in de Haan, 1833–1850] or Palaeopentachelidae Ahyong, 2009.

Genus *Tetrachela* Reuss, 1858a

Type species: *Bolina raiblana* Bronn, 1858, by monotypy.

Tetrachela raiblana (Bronn, 1858)

(Pl. 7, Fig. 8)

*1858 *Bolina Raiblana* Bronn: 22, Pl. 4, Figs. 1–3.

1858a *Stenochelus triasicus* Reuss: 2, Pl. 1, Fig. 1.

1858a *Tetrachela raiblana* Reuss: 5, Pl. 1, figs 2–7.

1929 *Tetrachela raiblana* Reuss – Glaessner: 382.

1930 *Tetrachela raiblana* Reuss – Glaessner: 143, Pl. 9, fig. 1.

1931 *Tetrachela raiblana* Reuss – Glaessner: 480.

1965 *Tetrachela raiblana* Reuss – Glaessner: 112.

1969 *Tetrachela raiblana* Reuss – Glaessner: R470, Fig. 272.

1998a *Tetrachela raibliana* [sic!] Reuss – Müller: 9.

2009 *Tetrachela raiblana* Reuss – Ahyong: 370, Fig. 1A.

2010 *Tetrachela raiblana* Reuss – Schweitzer et al.: 45.

2013 *Tetrachela raiblana* Reuss – Feldmann et al.: 8, fig. 5.3.

2013 *Tetrachela raiblana* Reuss – Karasawa et al.: Fig. 7E.

2016 *Tetrachela raiblana* Reuss – Hyžný & Zorn: 131, 138, Pl. 3 Figs. 1–2, Pl. 15 Fig. 2.

2018 *Tetrachela raiblana* Reuss – Audo et al.: 46, Figs. 1–3, 4R.

Coll. Nos.: GBA 1858/004/0002/01, individual in ventral aspect without carapace; GBA 1858/004/0002/02, individual in dorsal aspect with poorly-preserved carapace; GBA 1930/002/0002/01, individual in dorsal aspect with well-preserved carapace and pleon and partially preserved pereiopods (figured specimen of Glaessner, 1930; see also Audo et al., 2018); GBA 1930/002/0002/02, pereiopods of single individual in ventral aspect without carapace.

Stratigraphic level: Upper Triassic (Carnian), Raibl Beds ("Raibler Schichten").

Locality: Cave del Predil (Raibl), Friuli-Venezia-Giulia, Italy.

Remarks: The species was originally described under the genus *Bolina* von Münster, 1839. Reuss (1858a) reassigned the species to the newly erected genus *Tetrachela* Reuss, 1858a. This act has been widely accepted (e.g., Glaessner, 1969; Müller, 1998a; Schweitzer et al., 2010; Karasawa et al., 2013). *Tetrachela raiblana* was a sole species of the family Tetrachelidae Beurlen, 1930. Although Ahyong (2009) considered the family as the most primitive among polychelidan lobsters and in his phylogenetic analysis of Polychelida he used it as an outgroup, the most recent analysis by Karasawa et al. (2013) came up with different results. The unique status of Tetrachelidae has recently

been disputed by AUDO et al. (2018); *Tetrachela* is nowadays considered a representative of the well-known family Coleiidae VAN STRAELEN, 1925.

Family Eryonidae DE HAAN, 1841 [in DE HAAN, 1833–1850]

Genus *Eryon* DESMAREST, 1817

Type species: *Eryon cuvieri* DESMAREST, 1817 (=*Macrourites arctiformis* VON SCHLOTHEIM, 1820), by monotypy.

Eryon cuvieri DESMAREST, 1817

(Pl. 7, Figs. 3–5)

*1817 *Eryon Cuvieri* DESMAREST: 512–513.
1820 *Macrourites arctiformis* VON SCHLOTHEIM: 37.
1822 *Macrourites arctiformis* VON SCHLOTHEIM – VON SCHLOTHEIM: 34, Pl. 3, Fig. 1.
1822 *Eryon Cuvieri* DESMAREST – DESMAREST in DESMAREST & BRONGNIART: 129, Pl. 10, Fig. 4.
1827 *Eryon Cuvieri* DESMAREST – GERMAR: 98.
1827 *Eryon acutus* GERMAR: 100.
1839 *Eryon pentagonus* von MÜNSTER: 10, Pl. 10, Fig. 1.
1862 *Eryon arctiformis* (VON SCHLOTHEIM) – OPPEL: 15, Pl. 3, Fig. 1.
1925 *Eryon Cuvieri* DESMAREST – VAN STRAELEN: 113.
1925 *Eryon arctiformis* (VON SCHLOTHEIM) – VAN STRAELEN: 114, Fig. 63.
1929 *Eryon arctiformis* (VON SCHLOTHEIM) – GLAESSNER: 164.
1969 *Eryon arctiformis* (VON SCHLOTHEIM) – GLAESSNER: R470, Fig. 274.2.
2006 *Eryon arctiformis* (VON SCHLOTHEIM) – GARASSINO & SCHWEIGERT: 29, Fig. 11, Pl. 7, Pl. 17, Fig. 1.
2010 *Eryon arctiformis* (VON SCHLOTHEIM) – SCHWEITZER et al.: 43.
2012 *Eryon cuvieri* DESMAREST – CHARBONNIER et al.: 851, Figs. 1–2. [cum. syn.]
2013 *Eryon cuvieri* DESMAREST – FELDMANN et al.: 3, Fig. 2.1.

Coll. Nos.: GBA 2017/035/0036, near-complete individual in dorsal aspect; GBA 2017/035/0037, near-complete individual in ventral aspect; GBA 2017/035/0038, individual in ventral aspect with partially preserved pereiopods.

Stratigraphic level: Upper Jurassic, Tithonian (*Hybonotum* Zone).

Locality: Solnhofen-Langenaltheim area, Bavaria, Germany.

Remarks: *Eryon cuvieri* DESMAREST, 1817 is the only species of *Eryon* present in the Solnhofen-type lithographic limestones.

Infraorder Anomura MACLEAY, 1838
Superfamily Galatheoidea SAMOUELLE, 1819
Family Munidopsidae ORTMANN, 1898

Genus *Munidopsis* WHITEAVES, 1874

Type species: *Munidopsis curvirostra* WHITEAVES, 1874, by monotypy.

Munidopsis salinaria GAŠPARIČ, HYŽNÝ, JOVANOVIĆ, ĆORIĆ & VRABAC, 2019

(Pl. 8, Fig. 1)

*2019 *Munidopsis salinaria* GAŠPARIČ, HYŽNÝ, JOVANOVIĆ, ĆORIĆ & VRABAC: 4, Fig. 2.

Coll. No.: GBA 1892/005/0001 (holotype), a near-complete dorsal carapace.

Stratigraphic level: Middle Miocene (Badenian).

Locality: Dolnja Tuzla, Bosnia.

Remarks: Although the specimen is slightly distorted, important carapace features can be recognized. *Munidopsis salinaria* differs from its European (Paratethyan) Miocene congeners, i.e. *Munidopsis lieskovensis* HYŽNÝ & SCHLÖGL, 2011 and *M. palmuelleri* HYŽNÝ, GAŠPARIČ, ROBINS & SCHLÖGL, 2014, particularly in the carapace ornamentation; the carapace surface is covered with parallel striae which are arranged in longer ridges in the mesogastric region and in the posterior part of the carapace.

Superfamily Paguroidea LATREILLE, 1802
Family Diogenidae LATREILLE, 1802

Genus *Calcinus* DANA, 1851a

Type species: *Cancer tibicen* HERBST, 1791 [in Herbst 1791–1796], by original designation.

Calcinus sp.

(Pl. 8, Fig. 7)

1875 *Eumorphactaea* sp. – BITTNER: 93, Pl. 2, Fig. 13.
2016 *Calcinus* sp. – HYŽNÝ & ZORN: 131, Pl. 4, Figs. 3a–e.

Coll. No.: GBA 1875/005/0034/01, isolated left propodus (figured specimen of BITTNER, 1875).

Stratigraphic level: Middle Eocene (Lutetian).

Locality: San Giovanni Ilarione, Verona, Veneto, Italy.

Remarks: An isolated propodus originally assigned to *Eumorphactaea* sp. by BITTNER (1875) is morphologically close to some species of *Calcinus* DANA, 1851a; e.g. *Calcinus agnoensis* BESCHIN, DE ANGELI, CHECCHI & ZARANTONELLO, 2005. Based on this similarity, HYŽNÝ & ZORN (2016: 132) reassigned the propodus in question to *Calcinus* sp. Closer identification is not possible.

Genus *Eocalcinus* Vía Boada, 1959

Type species: *Eocalcinus eocenicus* Vía Boada, 1959, by original designation.

Eocalcinus cavus Beschin, Busulini, De Angeli & Tessier, 2002

(Pl. 8, Figs. 2–6)

*2002 *Eocalcinus cavus* Beschin, Busulini, De Angeli & Tessier: 10, Pl. 1, Figs. 5a–b, Pl. 2, Fig. 1.

2005 *Eocalcinus cavus* Beschin et al. – Beschin et al.: 12, Pl. 2, Fig. 2.

2010 *Eocalcinus cavus* Beschin et al. – Schweitzer et al.: 54.

2012 *Eocalcinus cavus* Beschin et al. – Beschin et al.: 22, Fig. 16, Pl. 2, Fig. 10.

2017 *Eocalcinus cavus* Beschin et al. – De Angeli & Caporiondo: 13, Text-Fig. 5, Pl. 1, Figs. 3–4.

Coll. Nos.: GBA 2010/182/0055/03, complete left propodus articulated with dactylus; GBA 2010/186/0252/01–04 (former coll. no. 2311), four incomplete left propodi, two of them articulated with dactyli.

Stratigraphic level: Middle Eocene (Lutetian), San Giovanni Ilarione Beds ("San Giovanni Ilarione-Schichten").

Locality: San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.

Remarks: One of the studied specimens (GBA 2010/186/0252/01) has bryozoan epibionts (see Key et al., 2017).

Family Paguridae Latreille, 1802

Paguridae gen. et sp. indet.

(Pl. 8, Fig. 8)

Coll. No.: GBA 2009/014/0012/06, isolated right dactylus.

Stratigraphic level: Middle Miocene (Badenian).

Localities: Baden, Lower Austria, Austria.

Remarks: Middle Miocene (Badenian) paguroid hermit crabs of the Pannonian Basin system have been well-documented only in respect to the morphology of the propodus (Müller, 1984). Taxonomic evaluation of isolated dactyli awaits further comparative studies.

Infraorder Brachyura Linnaeus, 1758

Section Dromiacea de Haan, 1833 [in de Haan, 1833–1850]

Superfamily Glaessneropsoidea Patrulius, 1959

Family Longodromitidae Schweitzer & Feldmann, 2009

Genus *Longodromites* Patrulius, 1959

Type species: *Pithonoton angustum* Reuss, 1858b, by original designation.

Longodromites angustus (Reuss, 1858b)

(Pl. 9, Fig. 1)

*1858b *Pithonoton angustum* Reuss: 11.

1859 *Pithonoton angustum* Reuss – Reuss: 72, Pl. 24, Fig. 3.

1895 *Prosopon angustum* (Reuss) – Remeš: 203, Pl. 2, Fig. 10.

1929 *Pithonoton angustum* Reuss – Glaessner: 319.

1959 *Longodromites angustus* (Reuss) – Patrulius: 254, Fig. 1a.

1966 *Longodromites angustus* (Reuss) – Patrulius: 514, Pl. 31, Figs. 25, 26.

2009 *Longodromites angustus* (Reuss) – Schweitzer & Feldmann: 101, Figs. 1.6, 7.4–7.7. [cum. syn.]

2010 *Longodromites angustus* (Reuss) – Schweitzer et al.: 63.

2011 *Longodromites angustus* (Reuss) – Franțescu: 292, Fig. 15.

2012 *Longodromites angustus* (Reuss) – Schweitzer et al.: 13, Figs. 8.1a–1b.

2015c *Longodromites angustus* (Reuss) – Hyžný et al.: 637, Figs. 3A–C, 8B.

2016 *Longodromites angustus* (Reuss) – Hyžný & Zorn: 130, Pl. 2, Figs. 8a–b.

Coll. No.: GBA 2007/096/0005 (former coll. no. 2357), isolated dorsal carapace (holotype).

Stratigraphic level: Kimmeridgian–lower Berriasian, Štramberk Limestone.

Locality: Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.

Remarks: Although traditionally the limestones in the Štramberk area have been assumed to be of Tithonian age (Houša, 1975), more recent age estimates indicate a much longer time span, i.e., from the uppermost Kimmeridgian to the lower Berriasian (Fraaije et al., 2013; Gašparič et al., 2015). The same applies to all specimens from the Štramberk area described and/or reported by Reuss (1858b, 1859).

Superfamily Homolodromioidea Alcock, 1900
Family Goniodromitidae Beurlen, 1932

Genus *Goniodromites* Reuss, 1858b
(= *Iberihomola* Van Straelen, 1940)

Type species: *Goniodromites bidentatus* Reuss, 1858b, by subsequent designation of Glaessner (1929).

Goniodromites bidentatus Reuss, 1858b

(Pl. 9, Fig. 2)

*1858b *Goniodromites bidentatus* Reuss: 12.

1859 *Goniodromites bidentatus* Reuss – Reuss: 72, Pl. 24, Figs. 5, 6.

1860 *Prosopon bidentatum* (Reuss) – von Meyer: 200.

1925 *Goniodromites bidentatus* Reuss – Van Straelen: 354, Fig. 161.

1929 *Pithonoton* (*Goniodromites*) *bidentatum* (Reuss) – Glaessner: 237.

1966 *Pithonoton bidentatum* (Reuss) – Patrulius: 512, Pl. 31, Figs. 19–20.

1969 *Pithonoton* (*Goniodromites*) *bidentatus* (Reuss) – Glaessner: R486, Fig. 293.3.

1998a *Pithonoton bidentatum* (Reuss) – Müller: 17.

2006 *Goniodromites bidentatus* Reuss – Feldmann et al.: 9.

2008 [imprint 2007] *Goniodromites bidentatus* Reuss – Schweitzer & Feldmann: 125, Pl. 2, Fig. A.

2010 *Goniodromites bidentatus* Reuss – Schweitzer et al.: 59.

2012 *Goniodromites bidentatus* Reuss – Schweitzer et al.: 4, Fig. 3.1a.

2016 *Goniodromites bidentatus* Reuss – Hyžný & Zorn: 128, Pl. 2, Figs. 3a–d.

Coll. No.: GBA 2007/096/0006 (former coll. no. 2363), isolated dorsal carapace (lectotype).

Stratigraphic level: Kimmeridgian–lower Berriasian, Štramberk Limestone.

Locality: Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.

Remarks: The species was revised by Feldmann et al. (2006) and Schweitzer & Feldmann (2008 [imprint 2007]).

Goniodromites polyodon Reuss, 1858b

(Pl. 9, Figs. 3–6)

*1858b *Goniodromites polyodon* Reuss: 165.

1858b *Goniodromites complanatus* Reuss: 165.

1859 *Goniodromites polyodon* Reuss – Reuss: 73, Pl. 24, Fig. 4.

1859 *Goniodromites complanatus* Reuss – Reuss: 73, Pl. 24, Fig. 7.

1860 *Prosopon polyodon* (Reuss) – von Meyer: 201.

1860 *Prosopon complanatus* (Reuss) – von Meyer: 203.

1925 *Goniodromites polyodon* Reuss – Van Straelen: 352, Fig. 160.

1929 *Prosopon* (*Goniodromites*) *polyodon* (Reuss) – Glaessner: 328.

2008 [imprint 2007] *Goniodromites polyodon* Reuss – Schweitzer & Feldmann: 127, Pl. 2, Fig. C.

2010 *Goniodromites polyodon* Reuss – Schweitzer et al.: 59.

2012 *Goniodromites polyodon* Reuss – Schweitzer et al.: 4, Fig. 3.1b.

2016 *Goniodromites polyodon* Reuss – Hyžný & Zorn: 128, Pl. 2, Figs. 1–2, 6.

Coll. Nos.: GBA 2007/096/0007/01 (former coll. no. 2359), isolated dorsal carapace (lectotype of *G. polyodon*); GBA 2007/096/0007/02 (former coll. no. 2359), isolated dorsal carapace (paralectotype of *G. polyodon*); GBA 2007/096/0008 (former coll. no. 2362), internal mould of carapace (lectotype of *G. complanatus*).

Stratigraphic level: Kimmeridgian–lower Berriasian, Štramberk Limestone.

Locality: Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.

Remarks: Van Straelen (1925) was the first to revise the species. He recognised that *G. complanatus* is an internal mould of *G. polyodon*. In their subsequent revision, Schweitzer & Feldmann (2008 [imprint 2007]) concurred with Van Straelen (1925) in synonymising both taxa.

Interestingly, the rock sample with the lectotype of *Goniodromites bidentatus* (GBA 2007/096/0006) contains an additional specimen which we refer to *Goniodromites polyodon*. The opportunity is taken herein to figure this specimen for the first time (Pl. 9, Fig. 6).

Family Prosopidae von Meyer, 1860

Genus *Prosopon* von Meyer, 1835

Type species: *Prosopon tuberosum* von Meyer, 1840b, by subsequent designation of Glaessner (1929).

Prosopon verrucosum Reuss, 1858b

(Pl. 9, Fig. 9)

*1858b *Prosopon verrucosum* Reuss: 11.

1859 *Prosopon verrucosum* Reuss – Reuss: 70, Pl. 24, Fig. 1.

1860 *Prosopon verrucosum* Reuss – von Meyer: 217.

1929 *Prosopon verrucosum* Reuss – Glaessner: 347.

1998a *Prosopon verrucosum* Reuss – Müller: 16.

2009 *Prosopon verrucosum* Reuss – Schweitzer & Feldmann: 71, Figs. 2.7, 2.8, 2.11, 2.12.

2010 *Prosopon verrucosum* Reuss – Schweitzer et al.: 61.

2012 *Prosopon verrucosum* Reuss – Schweitzer et al.: 16, Fig. 10.1c.

2016 *Prosopon verrucosum* Reuss – Hyžný & Zorn: 130, Pl. 2, Figs. 7a–b.

Coll. No.: GBA 2007/096/0003 (former coll. no. 2360), isolated dorsal carapace (holotype).

Stratigraphic level: Kimmeridgian–lower Berriasian, Štramberk Limestone.

Locality: Štramberk (Stramberg), Czech Republic.

Remarks: HYŽNÝ & ZORN (2016: 130) erroneously stated that the cuticle of the specimen is well-preserved. In fact, the specimen is an internal mould and the cuticle is preserved only in some places (Pl. 9, Figs. 9a–b).

Family Tanidromitidae SCHWEITZER & FELDMANN, 2008 [imprint 2007]

Genus *Tanidromites* SCHWEITZER & FELDMANN, 2008 [imprint 2007]

Type species: *Prosopon insigne* VON MEYER, 1860, by original designation.

Tanidromites pustulosa (VON MEYER, 1860)

(Pl. 9, Fig. 7)

1858b *Pithonoton rostratum* VON MEYER – REUSS: 11.

1859 *Pithonoton rostratum* VON MEYER – REUSS: 71, Pl. 23, Fig. 7, Pl. 24, Fig. 2.

*1860 *Prosopon pustulosum* VON MEYER: 195.

1925 *Coelopus pustulosus* (VON MEYER) – VAN STRAELEN: 360.

1929 *Coelopus pustulosus* (VON MEYER) – GLAESSNER: 123.

1969 *Coelopus pustulosus* (VON MEYER) – GLAESSNER: R486, Fig. 293.2.

2010a *Tanidromites pustulosa* (VON MEYER) – SCHWEITZER & FELDMANN: 58, Figs. 1.13–14. [cum. syn.]

2010 *Pithonoton* (s.s.) *pustulosus* (VON MEYER) – SCHWEITZER et al.: 60.

2016 *Eodromites rostratus* (VON MEYER) – HYŽNÝ & ZORN: 130, Pl. 2, Figs. 4–5.

Coll. Nos.: GBA 2007/096/0004/01 (former coll. no. 2361), isolated dorsal carapace (lectotype); GBA 2007/096/0004/02 (former coll. no. 2361), isolated dorsal carapace (paralectotype).

Stratigraphic level: Kimmeridgian–lower Berriasian, Štramberk Limestone.

Locality: Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.

Remarks: REUSS (1859) attributed the studied specimens from Ignaziberg to *Pithonoton rostratum*. The material was removed from that species by VON MEYER (1860) and reassigned to a newly erected species *Prosopon pustulosum*. The species was later placed to *Coelopus* (VAN STRAELEN, 1925). SCHWEITZER & FELDMANN (2010a) restudied the original material of REUSS (1859) and selected the better preserved (and figured) specimen as the lectotype of *P. pustulosum*. They also reassigned the species into *Tanidromites*. Note that HYŽNÝ & ZORN (2016) erroneously listed the original material of REUSS (1859; therein 1858a) as *Eodromites rostratus*.

Superfamily Konidromitoidea SCHWEITZER & FELDMANN, 2010b

Family Konidromitidae SCHWEITZER & FELDMANN, 2010b

Genus *Konidromites* SCHWEITZER & FELDMANN, 2010b (= *Oxythyreus* REUSS, 1858b non *Oxythyreus* WESTWOOD, 1841)

Type species: *Oxythyreus gibbus* REUSS, 1858b, by original designation.

Konidromites gibbus (REUSS, 1858b)

(Pl. 9, Fig. 8)

*1858b *Oxythyreus gibbus* REUSS: 12.

1859 *Oxythyreus gibbus* REUSS – REUSS: 75, Pl. 24, Figs. 8–9.

1895 *Oxythyreus gibbus* REUSS – REMEŠ: 201, Pl. 1, Fig. 5.

1895 *Oxythyreus minor* REMEŠ: 201, Pl. 1, Fig. 6.

1929 *Oxythyreus gibbus* REUSS – GLAESSNER: 285.

1969 *Oxythyreus gibbus* REUSS – GLAESSNER: R489, Fig. 301.2.

2010 *Oxythyreus gibbus* REUSS – SCHWEITZER et al.: 62.

2010b *Konidromites gibbus* (REUSS) – SCHWEITZER & FELDMANN: 365, Fig. 1. [cum. syn.]

2012 *Konidromites gibbus* (REUSS) – SCHWEITZER et al.: 20, Figs. 1a–b.

2016 *Konidromites gibbus* (REUSS) – HYŽNÝ & ZORN: 129, Pl. 1, Figs. 4, 5a–d.

Coll. No.: GBA 2007/096/0009 (former coll. no. 2358), isolated dorsal carapace (lectotype).

Stratigraphic level: Kimmeridgian–lower Berriasian, Štramberk Limestone.

Locality: Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.

Remarks: REUSS (1859) figured two specimens of *Oxythyreus gibbus*; however, only one is deposited at the GBA (HYŽNÝ & ZORN, 2016).

Dromiacea incertae sedis

Genus *Polycnemidium* REUSS, 1859

Type species: *Dromilites pustulosus* REUSS, 1845, by monotypy.

Polycnemidium pustulosum (REUSS, 1845)

(Pl. 8, Fig. 9)

*1845 *Dromilites pustulosus* REUSS: 15, Pl. 7, Figs. 26, 29, Pl. 9, Fig. 23.

1859 *Polycnemidium pustulosum* (REUSS) – REUSS: 6, Pl. 3, Fig. 1.

1887 *Polycnemidium pustulosum* (Reuss) – Fritsch & Kafka: 45, Text-Fig. 68.

1893 *Polycnemidium pustulosum* (Reuss) – Frič: 104, Fig. 131.

1929 *Polycnemidium pustulosum* (Reuss) – Glaessner: 333.

1930 *Polycnemidium pustulosum* (Reuss) – Glaessner: 151.

1969 *Polycnemidium pustulosum* (Reuss) – Glaessner: R495, Fig. 305.2.

2010 *Polycnemidium pustulosum* (Reuss) – Schweitzer et al.: 81.

2014 *Polycnemidium pustulosus* [sic!] (Reuss) – Karasawa et al.: 235.

2016 *Polycnemidium pustulosus* [sic!] (Reuss) – Schweitzer et al.: 363, Fig. 14B.

Coll. No.: GBA 1893/007/0001, near-complete carapace.

Stratigraphic level: Upper Cretaceous (Coniacian); Březno Beds ("Priesener Schichten").

Locality: Kamenická Nová Víska (Neudörfl bei Kamnitz), Czech Republic.

Remarks: The specimen is a referred specimen from Frič (1893: 104).

The classification of *Polycnemidium* on the higher level is contentious. Although once attributed to Necrocarcinidae Förster, 1968 (Schweitzer et al., 2010; Karasawa et al., 2014) it has been considered as Dromiacea incertae sedis lately (Schweitzer et al., 2016). Even though *Polycnemidium pustulosum*, the sole species of the genus, is known from a number of specimens, none of them possesses ventral portions with taxonomically important characters. Thus, until more and better material is recovered, the classification within Dromiacea incertae sedis is followed herein.

Section Raninoida de Haan, 1839 [in de Haan, 1833–1850]

Superfamily Raninoidea de Haan, 1839 [in de Haan, 1833–1850]

Family Raninidae de Haan, 1839 [in de Haan, 1833–1850]

Genus *Lophoranina* Fabiani, 1910

Type species: *Ranina marestiana* König, 1825, by monotypy.

Lophoranina avesana (Bittner, 1884a)

(Pl. 10, Figs. 1–3)

1883 *Ranina* cfr. *Marestiana* König – Bittner: 301, Pl. 1, Fig. 2.

*1884a *Ranina Marestiana* var. *avesana* Bittner – Bittner: 16, Pl. 1, Figs. 1–3.

1929 *Ranina* (*Lophoranina*) *Marestiana* var. *avesana* (Bittner) – Glaessner: 367.

2006 *Lophoranina marestiana* var. *avesana* (Bittner) – De Angeli & Garassino: 35.

2011 *Lophoranina avesana* (Bittner) – Beschin et al.: 41, Figs. 6A–D, Pl. 2, Figs. 1–3, 4a–c.

2016 *Lophoranina marestiana* (König) – Hyžný & Zorn: 135, Pl. 9, Figs. 1a–g.

2016 *Lophoranina avesana* (Bittner) – Hyžný & Zorn: 136, Pl. 9, Figs. 2a–b.

Coll. Nos.: GBA 1883/007/0001/01 (former coll. no. 2323), incomplete individual with complete anterior portion of carapace and partially preserved chelipeds and sternum, (figured specimen of Bittner, 1883: Pl. 1, Fig. 2); GBA 1883/007/0020, incomplete carapace; GBA 1884/003/0007, isolated pterygostomial region and third maxilliped, cast of a figured specimen (Bittner, 1884a: Pl. 1, Fig. 2).

Stratigraphic level: Middle Eocene (Lutetian).

Locality: Quarry "Scole" at Avesa near Verona, Veneto, Italy.

Remarks: The specimen GBA 1883/007/0001/01, originally described as *Ranina* cfr. *Marestiana*, shows a configuration of carapace ridges typical for *Lophoranina avesana* (Beschin et al., 2011). Note, that Hyžný & Zorn (2016) classified the specimen erroneously as *L. marestiana*. The specimen GBA 1884/003/0007 is the cast of the pterygostomial region and the third maxilliped of material which is deposited at the Museo di Storia Naturale in Verona.

Lophoranina bittneri (Lőrenthey, 1902)

(Pl. 10, Fig. 4)

1875 *Ranina* nov. spec.? Bittner: 66, Pl. 1, Fig. 3.

*1902 *Ranina Bittneri* Lőrenthey: 809, Pl. 1, Figs. 1–2.

1903 *Ranina Bittneri* Lőrenthey – Lőrenthey, 104, Pl. 1, Figs. 1–2.

1929 *Ranina* (*Lophoranina*) *Bittneri* Lőrenthey – Lőrenthey & Beurlen: 114, Pl. 5, Figs. 2–3.

1929 *Ranina* (*Lophoranina*) *Bittneri* Lőrenthey – Glaessner: 365.

1983 *Lophoranina bittneri* (Lőrenthey) – Busulini et al.: 60, Pl. 1, Fig. 5.

1988 *Lophoranina bittneri* (Lőrenthey) – Beschin et al.: 179, Text-Fig. 7.3, Pl. 6, Figs. 2–4.

1998 *Lophoranina bittneri* (Lőrenthey) – Beschin et al.: 20, Fig. 8.3.

2001 *Lophoranina bittneri* (Lőrenthey) – De Angeli & Beschin: 17, Fig. 13.5.

2006 *Lophoranina bittneri* (Lőrenthey) – De Angeli & Garassino: 34.

2010 *Lophoranina bittneri* (Lőrenthey) – Schweitzer et al.: 73.

2011 *Lophoranina bittneri* (Lőrenthey) – Beschin et al.: 43, Fig. 7, Pl. 3, Figs. 1–2. [cum. syn.]

Coll. Nos.: GBA 2010/243/0003, carapace fragment; GBA 2010/243/0004, near-complete carapace (without front).

Stratigraphic level: Eocene.

Locality: Fumane di Polesella at Verona, Veneto, Italy.

Remarks: Although the material is not complete, the presence of mostly continuous carapace ridges forming a characteristic pattern (compare BESCHIN et al., 2011: Fig. 7) suggests an assignment to *Lophoranina bittneri* (LŐRENTHEY, 1902).

Lophoranina laevifrons (BITTNER, 1875)

(Pl. 10, Figs. 5–7)

*1875 *Ranina laevifrons* BITTNER: 68, Pl. 1, Fig. 4.

1895 *Ranina laevifrons* BITTNER – BITTNER: 247, Pl. 1, Figs. 3–4.

1929 *Ranina* (*Lophoranina*) *laevifrons* BITTNER – GLAESSNER: 366.

1983 *Lophoranina laevifrons* (BITTNER) – BUSULINI et al.: 61, Pl. 2, Fig. 4.

1988 *Lophoranina laevifrons* (BITTNER) – BESCHIN et al.: 181, text-Figs. 7.4–7.6, Pl. 7, Figs. 3–5.

2006 *Lophoranina laevifrons* (BITTNER) – DE ANGELI & GARASSINO: 34. [cum. syn.]

2010 *Lophoranina laevifrons* (BITTNER) – SCHWEITZER et al.: 73.

2012 *Lophoranina laevifrons* (BITTNER) – BESCHIN et al.: 37, Fig. 31, Pl. 5, Fig. 1. [cum. syn.]

2016 *Lophoranina laevifrons* (BITTNER) – HYŽNÝ & ZORN: 133, 137, Pl. 7, Figs. 1–5, Pl. 13, Figs. 1a–d.

Coll. Nos.: GBA 1875/005/0003/01 (former coll. no. 2312), near-complete carapace without posteriormost portion (lectotype); GBA 1875/005/0003/02 (former coll. no. 2312), near-complete carapace (paralectotype); GBA 1875/005/0003/03 (former coll. no. 2312), fragmentary carapace (paralectotype); GBA 1875/005/0003/04 (former coll. no. 2312), fragmentary carapace (paralectotype); GBA 1875/005/0003/05 (former coll. no. 2327), fragmentary carapace (paralectotype; figured specimen in BITTNER, 1875: Pl. 1, Fig. 4); GBA 1895/003/0001 (former coll. no. 2330), complete carapace (figured specimen of BITTNER, 1895: Pl. 1, Figs. 3–4); GBA 2010/182/0054, three fragmentary carapaces.

Stratigraphic level: Middle Eocene (Lutetian).

Localities: San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Gran Groce, Verona, Veneto, Italy (GBA 1875/005/0003/01–05); San Giovanni Ilarione, Verona, Veneto, Italy (GBA 1895/003/0001, GBA 2010/182/0054).

Remarks: For *Lophoranina laevifrons* (BITTNER, 1875), anterior carapace ridges running across the carapace in a more or less horizontal fashion are typical.

Lophoranina marestiana (KÖNIG, 1825)

(Pl. 11, Figs. 3–5)

*1825 *Ranina Maresiana* [sic!] KÖNIG: 2 (*R. Maresiana* [sic!]), Pl. 1, Fig. 15 (*R. Maretiana* [sic!]).

1859 *Ranina Marestiana* KÖNIG – REUSS: 20, Pl. 5, Figs. 1–2.

1863 *Ranina Fabri* SCHAFHÄUTL: 222, Pl. 60, Fig. 1, Pl. 61, Fig. 1.

1863 *Ranina Helli* SCHAFHÄUTL: 223, Pl. 60, Fig. 3.

1875 *Ranina Marestiana* KÖNIG – BITTNER: 64, Pl. 1, Figs. 1–2.

1883 *Ranina Marestiana* KÖNIG – BITTNER: 300, Pl. 1, Fig. 1.

1929 *Lophoranina marestiana* (KÖNIG) – GLAESSNER: 366.

1969 *Lophoranina marestiana* (KÖNIG) – VÍA BOADA: 240, Pl. 1, Figs. 1–3. [cum. syn.]

1988 *Lophoranina marestiana* (KÖNIG) – BESCHIN et al.: 175, Text-Fig. 6, Pl. 5, Figs. 2–4, Pl. 6, Figs. 1a–c.

1998a *Lophoranina marestiana* (KÖNIG) – MÜLLER: 25.

2003 *Lophoranina marestiana* (KÖNIG) – MIKUŽ: 24, Pl. 1, Figs. 1–2.

2006 *Lophoranina marestiana* (KÖNIG) – DE ANGELI & GARASSINO: 34.

2010a *Lophoranina marestiana* (KÖNIG) – MIKUŽ: 48, Pl. 1, Figs. 1–11.

2010 *Lophoranina marestiana* (KÖNIG) – SCHWEITZER et al.: 73.

2016 *Lophoranina marestiana* (KÖNIG) – BESCHIN et al.: 35, Fig. 28, Pl. 5, Figs. 3–4. [cum. syn.]

2016 *Lophoranina marestiana* (KÖNIG) – HYŽNÝ & ZORN: 135, Pl. 8, Figs. 3a–e.

2017 *Lophoranina fabri* (SCHAFHÄUTL) – PASINI & GARASSINO: 64, Fig. 17.

2017 *Lophoranina helli* (SCHAFHÄUTL) – PASINI & GARASSINO: 66, Fig. 18.

Coll. Nos.: GBA 1883/007/0001/02 (former coll. no. 2323), complete carapace, (figured specimen of BITTNER, 1883: Pl. 1, Fig. 1); GBA 2010/012/0067, incomplete carapace; GBA 2010/021/0036, two incomplete carapaces; GBA 2010/019/0093, incomplete carapace; GBA 2010/031/0032, incomplete carapace; GBA 2010/275/0056, incomplete carapace; GBA 2017/035/0003, incomplete carapace.

Stratigraphic level: Middle Eocene (Lutetian).

Localities: San Giovanni Ilarione, Verona, Veneto, Italy (GBA 1883/007/0001/02); Reingruberhöhe at Bruderndorf, Lower Austria, Austria (GBA 2010/012/0067); Ohlsdorf at Gmunden, Upper Austria, Austria (GBA 2010/021/0036); Gschliefgraben at Gmunden, Upper Austria, Austria (GBA 2010/019/0093); Monte Postale di Bolca, Verona, Veneto, Italy (GBA 2010/275/0056); Membro di Chiampo, Italy (GBA 2017/035/0003); Kressenberg at Neukirchen, Bavaria, Germany (GBA 2010/031/0032).

Remarks: Although *Lophoranina marestiana* (KÖNIG, 1825) is one of the most widespread and best-known representatives of *Lophoranina*, there are still issues which are a matter of debate. For instance, GLAESSNER (1929) and VÍA BOADA (1969) considered *Ranina fabri* and *R. helli*, described from the Eocene of Germany by SCHAFHÄUTL (1863), as junior subjective synonyms of *L. marestiana*, whereas PASINI & GARASSINO (2017) regarded both of them as separate species. Interestingly, although GLAESSNER (1929) and VÍA BOADA (1969) did not provide any arguments for synonymisation, which was criticised by PASINI & GARASSINO (2017), the latter authors did not provide any differential diagnoses distinguishing *L. fabri* and *L. helli* from other species either. One specimen deposited at the GBA (GBA 2010/031/0032, Pl. 11, Fig. 4) identified as *Ranina helli* and coming from its type area shows enough characters (i.e., development of carapace ridges) to be safely attributed to *L. marestiana*. Regarding the taxonomic status of *L. fabri* and *L. helli*, the opinion of GLAESSNER (1929) is followed and both taxa are considered synonymous with *L. marestiana*.

Lophoranina reussi (Woodward, 1866)

(Pl. 10, Figs. 8–9)

1859 *Ranina* sp. – Reuss: 21, Pl. 5, Figs. 3–4.

*1866 *Ranina Reussii* Woodward: 591.

1883 *Ranina Reussii* Woodward – Bittner: 302.

1929 *Ranina* (*Lophoranina*) *Reussi* Woodward – Lőrenthey & Beurlen: 111, Pl. 5, Fig. 1.

1929 *Ranina* (*Lophoranina*) *Reussi* Woodward – Glaessner: 368.

1969 *Lophoranina reussi* (Woodward) – Vía Boada: 110, Fig. 12, Pl. 5, Fig. 2, Pl. 6, Figs. 2–4.

1988 *Lophoranina reussi* (Woodward) – Beschin et al.: 183, Figs. 7.1–2, Pl. 7, Figs. 1–2.

2001 *Lophoranina reussi* (Woodward) – De Angeli & Beschin: 18.

2006 *Lophoranina reussi* (Woodward) – De Angeli & Garassino: 35.

2010 *Lophoranina reussi* (Woodward) – Schweitzer et al.: 74.

2011 *Lophoranina reussi* (Woodward) – Beschin et al.: 47, Figs. 10A–B, Pl. 3, Figs. 3–4.

2012 *Lophoranina reussi* (Woodward) – Beschin et al.: 38, Fig. 32, Pl. 5, Fig. 2. [cum. syn.]

2016 *Lophoranina* cf. *reussi* (Woodward) – Hyžný & Zorn: 130, Pl. 1, Figs. 2a–c.

2018 *Lophoranina reussi* (Woodward) – Beschin et al.: 164, Fig. 69.

Coll. Nos.: GBA 2007/096/0001, incomplete carapace (figured specimen of Reuss, 1859: pl. 5, Fig. 3); GBA 2010/099/0025, complete carapace; GBA 2017/035/0061, fragmentary carapace.

Stratigraphic level: Eocene.

Localities: San Pietro in Cariano, Verona, Veneto, Italy (GBA 2007/096/0001); Ljubač, Pag, Dalmatia, Croatia (GBA 2010/099/0025); Ofen, Budapest surroundings, Hungary (GBA 2017/035/0061).

Remarks: The figured specimen of Reuss (1859) clearly is a representative of *Lophoranina* Fabiani, 1910. Because it does not possess frontal and posterior margins, its identification on the species level is difficult, and also Hyžný & Zorn (2016) classified the specimen in open nomenclature as *L.* cf. *reussi*. However, the morphology and orientation of the terraces on the dorsal side of the carapace suggests close affinities to *Lophoranina reussi* (Woodward, 1866) as depicted by Beschin et al. (2011: Figs. 10A-B). The locality of the specimen is not certain; at least Reuss (1859) and Fabiani (1910) expressed some doubts about it.

The specimen GBA 2010/099/0025 from Ljubač is considered the first reported occurrence of the species from Croatia. From its congeners, only *L. marestiana* has been recorded from Croatia until now (Mikuž, 2003, 2010a).

Lophoranina sp.

(Pl. 11, Figs. 6–8)

Coll. Nos.: GBA 2010/019/0098/01–02, carapace and cheliped fragments; GBA 2010/021/0045, two carapace fragments; GBA 2010/028/0017, carapace fragment; GBA 2010/128/0057, two carapace fragments; GBA 2010/186/0252/05, fragment of pterygostomial region; GBA 2010/243/0002, carapace fragment; GBA 2017/035/0021, carapace fragment.

Stratigraphic level: Eocene–Oligocene.

Localities: Lakeside of Lake Traun, Upper Austria, Austria (GBA 2010/019/0098/01–02); Ohlsdorf at Gmunden, Upper Austria, Austria (GBA 2010/021/0045); Kressenberg at Neukirchen, Bavaria, Germany (GBA 2010/028/0017); Montecchio Maggiore, Vicenza, Veneto, Italy (GBA 2010/128/0057); San Giovanni Ilarione, Ciuppio (GBA 2010/186/0252/05); Fumane di Polesella at Verona (GBA 2010/243/0002); Mossano, Vicenza, Veneto, Italy (GBA 2017/035/0021).

Remarks: The specimens are too fragmentary for reliable placement on the species level.

Genus *Ranidina* Bittner, 1893

Type species: *Ranidina rosaliae* Bittner, 1893, by monotypy.

Ranidina rosaliae Bittner, 1893

(Pl. 11, Fig. 1)

*1893 *Ranidina Rosaliae* Bittner: 33, Pl. 2, Fig. 2.

1929 *Ranidina Rosaliae* Bittner – Lőrenthey & Beurlen: 121, Pl. 5, Fig. 8.

1929 *Ranidina Rosaliae* Bittner – Glaessner: 360.

1969 *Ranidina rosaliae* Bittner – Glaessner: R501, Fig. 313.3.

1984 *Ranidina rosaliae* Bittner – Müller: 71, Pl. 46, Fig. 6.

2010 *Ranidina rosaliae* Bittner – Schweitzer et al.: 73.

2016 *Ranidina rosaliae* Bittner – Hyžný & Zorn: 136, Pl. 12, Figs. 1–3.

Coll. Nos.: GBA 1893/004/0001/01, individual in dorsal aspect with partially preserved pereiopods (lectotype); GBA 1893/004/0001/02, fragmentary carapace with preserved sternum and pleon (paralectotype); GBA 1893/004/0001/03, fragmentary carapace with preserved sternum (paralectotype); GBA 1893/004/0001/04–12, fragmentary carapaces.

Stratigraphic level: Middle Miocene (Badenian).

Locality: Walbersdorf, Burgenland, Austria.

Remarks: *Ranidina* is a monotypic genus with *Ranidina rosaliae* being its type species. Besides the dorsal carapace, the type material of *R. rosaliae* exhibits a well-preserved sternum, pterygostomial regions, third maxillipeds and a pleon. Thus, all important morphological characters for detailed comparison with extant raninid genera are available.

However, until now, no revision of this monotypic genus in respect with the current state of taxonomy and systematics of raninid crabs has been conducted.

Genus *Raninoides* H. Milne Edwards, 1837 [in H. Milne Edwards, 1834–1840]

Type species: *Ranina laevis* Latreille, 1825, by monotypy.

Raninoides notopoides (Bittner, 1883)

(Pl. 11, Fig. 2)

*1883 *Ranina notopoides* Bittner: 304, Pl. 1, Figs. 3a–b.
1929 *Ranina* (*Raninoides*) *notopoides* Bittner – Glaessner: 362.
1969 *Laeviranina notopoides* (Bittner) – Vía Boada: 124, 388.
2006 *Raninoides notopoides* (Bittner) – De Angeli & Garassino: 39.
2010 *Raninoides notopoides* (Bittner) – Schweitzer et al.: 76.
2016 *Raninoides notopoides* (Bittner) – Hyžný & Zorn: 135, Pl. 9, Figs. 3–6.

Coll. Nos.: GBA 1883/007/0004/01, near-complete carapace without rostrum (lectotype); GBA 1883/007/0004/02, incomplete carapace with partially preserved sternum and pterygostomial regions (paralectotype); GBA 1883/007/0004/03, incomplete carapace (paralectotype); GBA 1883/007/0004/04, incomplete carapace with pterygostomial regions (paralectotype).

Stratigraphic level: Middle Eocene (Lutetian).

Locality: Monte Masua di Negrar northwest of Verona, Veneto, Italy.

Remarks: The type collection is the only known material belonging to this species. All four type specimens were documented photographically by Hyžný & Zorn (2016: Pl. 9, Figs. 3–6).

Section Eubrachyura de Saint Laurent, 1980
Subsection Heterotremata Guinot, 1977
Superfamily Aethroidea Dana, 1851b
Family Aethridae Dana, 1851b

Genus *Hepatiscus* Bittner, 1875

Type species: *Hepatiscus neumayri* Bittner, 1875, by subsequent designation of Glaessner (1929).

Hepatiscus neumayri Bittner, 1875

(Pl. 12, Figs. 1–3)

*1875 *Hepatiscus Neumayri* Bittner: 75, Pl. 1, Fig. 8.
1883 *Hepatiscus Neumayri* Bittner – Bittner: 312, Pl. 1, Fig. 9.
1910 *Hepatiscus Neumayri* Bittner – Fabiani: 35, Pl. 1, Fig. 2.
1929 *Hepatiscus Neumayri* Bittner – Glaessner: 209.
1969 *Hepatiscus neumayri* Bittner – Glaessner: R518, Fig. 326.11.
1983 *Hepatiscus neumayri* Bittner – Busulini et al.: Pl. 3, Fig. 2.
2001 *Hepatiscus neumayri* Bittner – De Angeli & Beschin: 23.
2006 *Hepatiscus neumayri* Bittner – De Angeli & Garassino: 43.
2010 *Hepatiscus neumayri* Bittner – Schweitzer et al.: 85.
2012 *Hepatiscus neumayri* Bittner – Beschin et al.: 40, Fig. 34, Pl. 5, Figs. 7–8. [cum. syn.]
2016 *Hepatiscus neumayri* Bittner – Hyžný & Zorn: 134, Pl. 8, Fig. 5a–b.
2017 *Hepatiscus neumayri* Bittner – Beschin & De Angeli: 26, Figs. 3.1–3.2.

Coll. Nos.: GBA 1883/007/0016 (former coll. no. 2321), complete isolated carapace (figured specimen of Bittner, 1883: Pl. 1, Fig. 9); GBA 2017/035/0017, near-complete carapace; GBA 2017/035/0018, complete carapace; GBA 2017/035/0023–0024, two incomplete carapaces.

Stratigraphic level: Middle Eocene (Lutetian).

Locality: San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Verona, Veneto, Italy.

Remarks: Bittner (1875) described the species based on a single specimen. The second specimen was reported later by Bittner (1883). Bittner (1883: Pl. 1, Fig. 9) figured only the anterior portion of the second specimen's carapace; the entire specimen was figured by Hyžný & Zorn (2016: Pl. 8, Fig. 5). During the revision of the decapod material deposited at the GBA two additional specimens of this species have been found, both registered together with the material of *Hepatiscus pulchellus* Bittner, 1875. Incomplete carapaces deposited under GBA 2017/035/0023–0024 are assigned to *H. neumayri* only questionably.

Hepatiscus pulchellus Bittner, 1875

(Pl. 12, Figs. 4–5)

*1875 *Hepatiscus pulchellus* Bittner: 75, Pl. 1, Figs. 9–10.
1910 *Hepatiscus pulchellus* Bittner – Fabiani: 36, Pl. 1, Figs. 3–4.
1929 *Hepatiscus pulchellus* Bittner – Glaessner: 209.
1983 *Hepatiscus pulchellus* Bittner – Busulini et al.: 64, Pl. 3, Fig. 5.
1994 *Hepatiscus pulchellus* Bittner – Beschin et al.: 171, Pl. 2, Fig. 3.
2006 *Hepatiscus pulchellus* Bittner – De Angeli & Garassino: 43.
2010 *Hepatiscus pulchellus* Bittner – Schweitzer et al.: 85.
2012 *Hepatiscus pulchellus* Bittner – Beschin et al.: 42, Fig. 35, Pl. 5, Fig. 9. [cum. syn.]
2016 *Hepatiscus pulchellus* Bittner – Hyžný & Zorn: 132, Pl. 4, Figs. 4a–c, 5a–c.
2017 *Hepatiscus pulchellus* Bittner – Beschin & De Angeli: 26, Fig. 3.3.

Coll. Nos.: GBA 1875/005/0008/01 (former coll. no. 2315), complete carapace in dorsal aspect; GBA 1875/005/0008/02 (former coll. no. 2315), complete carapace in dorsal aspect.

Stratigraphic level: Middle Eocene (Lutetian).

Locality: San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.

Remarks: De Angeli & Garassino (2006: 44) noted that the repository of the type collection was unknown. Hyžný & Zorn (2016: 132), however, claimed that the material was well curated at the GBA; they figured two specimens of this species and selected lectotype and paralectotype therein. This selection was done based on comparison with the original figures of Bittner (1875: Pl. 1, Figs. 9–10). Recent examination of the specimens of *Hepatiscus pulchellus* deposited in the collections of the NHMW by one of us (Hyžný, pers. obs. 2019) proved that the original material of the respective species had been deposited there. As a result, the lectotype and paralectotype selections of *H. pulchellus* presented by Hyžný & Zorn (2016) are invalid.

Hepatiscus pulchellus differs from its congener *H. neumayri* Bittner, 1875 largely by the carapace ornamentation, which is more elaborated in the former one. For more detailed comparison see Beschin et al. (2012).

Superfamily Calappoidea de Haan, 1833 [in de Haan, 1833–1850]

Family Calappidae de Haan, 1833 [in de Haan, 1833–1850]

Genus *Calappa* Weber, 1795

Type species: *Cancer granulatus* Linnaeus, 1758, by subsequent designation of Latreille (1810).

Calappa sp.

(Pl. 12, Figs. 6–8)

Coll. Nos.: GBA 2009/014/0026/01–03, three isolated right dactyli; GBA 2007/106/0026, two isolated right dactyli; GBA 2009/014/0008, one isolated fragmentary right dactylus.

Stratigraphic level: Middle Miocene (Badenian).

Localities: Nussdorf, Vienna, Austria (GBA 2007/106/0026); Bad Vöslau, Lower Austria (GBA 2009/014/0008); Devínska Nová Ves, Slovakia (GBA 2009/014/0026/01–03).

Remarks: From the middle Miocene strata of the former Paratethys Sea two *Calappa* species are known, the lower Badenian *Calappa praelata* Lőrenthey in Lőrenthey & Beurlen, 1929 and the upper Badenian *Calappa heberti* Brocchi, 1883. According to Müller (1984: 67), the cheliped dactylus of *C. heberti* bears a proximal lobe directed distally; in *C. praelata* the lobe is situated on the almost symmetrical upper margin of the dactylus. Since no specimen of the studied material shows a preserved proximal lobe, the attribution of the material on the species level is not possible. Müller (1998a: 22) opined that "all recognisable specimens of *Calappa* from Austria belong to *C. praelata* Lőrenthey in Lőrenthey & Beurlen, 1929, thus probably most detached fingers also belong here".

Superfamily Cancroidea Latreille, 1802

Family Cancridae Latreille, 1802

Genus *Cancer* Linnaeus, 1758

Type species: *Cancer pagurus* Linnaeus, 1758, by subsequent designation of Latreille (1810).

Cancer illyricus Bittner, 1884a

(Pl. 12, Fig. 9)

*1884a *Cancer illyricus* Bittner: 26, Pl. 1, Fig. 7.
1884b *Cancer illyricus* Bittner: 491, 588.
1929 *Cancer illyricus* Bittner – Glaessner: 103.
2010 *Cancer illyricus* Bittner – Schweitzer et al.: 101.

Coll. No.: GBA 2010/005/0077, right chela consisting of articulated carpus, propodus and dactylus.

Stratigraphic level: Middle Miocene (Badenian), Moravče Limestone ("Tüfferer Schichten" / "Tüfferer Mergel").

Locality: Toplice (Töplitz) at Zagorje ob Savi (Sagor), Dolenjska (Unterkrain), Slovenia.

Remarks: The specimen GBA 2010/005/0077 representing an isolated cheliped apparently is an original material of Bittner (1884a), who commented upon the specimen as most probably conspecific with the type specimen of *C. illyricus* Bittner (1884a). Unfortunately, the type specimen representing an isolated carapace is lost and the attribution of the isolated cheliped to this species is not without doubts. Interestingly, Bittner (1884b) reported both, *Cancer carniolicus* and *C. illyricus* from the same strata; therefore, both taxa may represent the same animal. Pending the revision of discussed species, we keep both of them as distinct taxa.

Genus *Tasadia* Müller in Janssen & Müller, 1984 (? = *Glebocarcinus* Nations, 1975)

Type species: *Cancer carniolicus* Bittner, 1884a, by monotypy.

Tasadia carniolica (Bittner, 1884a)

(Pl. 13, Figs. 1–14)

*1884a *Cancer carniolicus* Bittner: 27, Pl. 1, Figs. 8–9.
1884b *Cancer carniolicus* Bittner: 491, 549.
1897 *Cancer Szontaghii* Lőrenthey: 159.
1904 *Cancer Bittneri* Toula: 163, text-Figs. 1–5.
1929 *Cancer Bittneri* Toula – Glaessner: 101.
1929 *Cancer carniolicus* Bittner – Glaessner: 102.

1929 *Cancer Szontaghi* Lőrenthey – Glaessner: 108.

1929 *Atelecyclus Szontaghi* (Lőrenthey) – Lőrenthey & Beurlen: 156, Pl. 8, Fig. 9a–b.

1929 *Atelecyclus carniolicus* (Bittner) – Lőrenthey & Beurlen: 158, Pl. 8, Fig. 5.

1952 *Atelecyclus szontaghi vindobonensis* Bachmayer & Küpper: 201, Figs. 1–2.

1969 *Cyclocancer szontaghii* (Lőrenthey) – Glaessner: R508, Fig. 318.5.

1984 "*Cancer*" *szontaghii* Lőrenthey – Müller: 77, 112, Pl. 59, Figs. 1–5, Pl. 60, Figs. 1–2.

1984 "*Cancer*" *szontaghii vindobonensis* (Bachmayer & Küpper) – Müller: 78, 112.

1984 "*Cancer*" *carniolicus* Bittner – Müller: 78, 112.

1984 "*Cancer*" *bittneri* Toula – Müller: 78, 112.

1984 *Tasadia carniolica* (Bittner) – Müller in Janssen & Müller: 22, Text-Fig. 4a, Pl. 4, Fig. 3, Pl. 5, figs 1–2.

1998a *Tasadia carniolica* (Bittner) – Müller: 29.

2010 *Tasadia carniolica* (Bittner) – Schweitzer et al.: 103.

2010b *Tasadia carniolica* (Bittner) – Mikuž: 14, Pl. 1, Figs. 1–3.

2015d *Tasadia carniolica* (Bittner) – Hyžný et al.: 146, Figs. 4A–I. [cum. syn.]

2016 *Tasadia carniolica* (Bittner) – Hyžný: tab. 1, Fig. 10I.

2016 *Tasadia carniolica* (Bittner) – Hyžný & Zorn: 135, Pl. 10, Figs. 1–2.

Coll. Nos.: GBA 1884/003/0006/01 (former coll. no. 2325), complete carapace with sternum (lectotype of *Cancer carniolicus*); GBA 1884/003/0006/02 (former coll. no. 2325), incomplete carapace (paralectotype of *Cancer carniolicus*); GBA 2009/014/0001/01–07, seven complete or incomplete carapaces; GBA 2009/014/0002/01–07, seven incomplete carapaces; GBA 2009/014/0003/01–04, four incomplete carapaces; GBA 2009/014/0010, three isolated cheliped fingers; GBA 2009/014/0012/01–05, five isolated cheliped fingers; GBA 2010/005/0046, near-complete carapace; GBA 2017/035/0062, near-complete carapace; GBA 2017/035/0063, two incomplete carapaces; GBA 2017/035/0064, fragmentary carapace with partially preserved right cheliped; GBA 2017/035/0065, near-complete carapace.

Stratigraphic level: Middle Miocene (Badenian).

Localities: Ulrichsberg, between Týnec (Teinitz) and Kamnik (Stein in Oberkrain), Gorenjska, Slovenia (GBA 1884/003/0006/01–02; GBA 2017/035/0062–0065); Bad Vöslau, Lower Austria (GBA 2009/014/0010); Baden, Lower Austria (GBA 2009/014/0012/01–05); Plesko near Trbovlje (Trifail), Slovenia (GBA 2010/005/0046); Kamnik (Stein in Oberkrain), Gorenjska, Slovenia (GBA 2009/014/0003/01–04); Walbersdorf, Burgenland, Austria (GBA 2009/014/0001–0002).

Remarks: Bittner (1884a) described *Cancer carniolicus* based on altogether five specimens from Slovenia, from which two (the figured specimens of Bittner, 1884a: Pl. 1, Figs. 8–9) are deposited at the GBA (GBA 1884/003/0006/01–02). The species has been chosen as a basis for erection of the new genus *Tasadia* by Müller in Janssen & Müller (1984). Later, however, Müller (1998a: 28–29) expressed some doubts about the distinct generic status of *Tasadia*. Because a detailed revision of *Tasadia carniolica*, the only species of the genus, is beyond the scope of the present catalogue, *Tasadia* is here considered a distinct taxon.

The material deposited at the GBA comes from three main areas: 1) Slovenia, 2) Burgenland (Austria) and 3) Lower Austria. Some specimens (GBA 2009/014/0002) were previously identified as *Cancer styriacus* Bittner, 1884a. This species was described based on a single specimen from Aigen at Fehring, Styria. The holotype of *C. styriacus*, which was supposed to be deposited at the GBA (Bittner, 1884a: 26), however, seems to be lost as already noted by Müller (1984: 76); repeated searching by the present authors was not successful. The specimens identified as *C. styriacus* do not conform to the description and figure of Bittner (1884a: 25, Pl. 1, Fig. 6) and are considered conspecific with *C. carniolicus*. In this respect, however, it is important to note that a certain degree of variation in the carapace outline, ornamentation, and region delineation is observable in the studied material (as also documented in Pl. 13). A detailed comparative analysis of all these aspects is pending.

Cancridae gen. et sp. indet.

Coll. No.: GBA 2009/014/0028/02–03, two isolated dactyli.

Stratigraphic level: Middle Miocene (Badenian).

Locality: Kleparov (Kleparow), Lviv (Lemberg), Ukraine.

Remarks: Specimens are too fragmentary for closer identification.

Superfamily Carpilioidea Ortmann, 1893
Family Carpiliidae Ortmann, 1893

Genus *Palaeocarpilius* A. Milne-Edwards, 1862

Type species: *Cancer macrochelus* Desmarest, 1822, by original designation.

Palaeocarpilius macrochelus (Desmarest, 1822)

(Pl. 14, Figs. 1–4)

*1822 *Cancer macrochelus* Desmarest: 91, Pl. 7, Figs. 1–2.

1822 *Cancer Boscii* Desmarest: 94, Pl. 8, Figs. 3–4.

1859 *Atergatis Boscii* (Desmarest) – Reuss: 30, Pl. 9, Figs. 4–9, Pl. 10, Fig. 1, Pl. 11, Figs. 1–4, Pl. 12, Figs. 1–2.

1859 *Atergatis stenura* Reuss: 35, Pl. 11, Figs. 5–7.

1859 *Atergatis platycheilus* Reuss: 36, Pl. 10, Figs. 2–3.

1862 *Palaeocarpilius macrocheilus* [sic!] (Desmarest) – A. Milne-Edwards: 186, Pl. 1, Fig. 2, Pl. 2, Fig. 1, Pl. 3, Fig. 1.

1875 *Palaeocarpilius macrocheilus* [sic!] (Desmarest) – Bittner: 83.

1875 *Palaeocarpilius stenurus* (Reuss) – Bittner: 84.

1875 *Palaeocarpilius platycheilus* (Reuss) – Bittner: 84, Pl. 3, Fig. 4.

1883 *Palaeocarpilius macrocheilus* [sic!] (Desmarest) – Bittner: 311.

1883 *Palaeocarpilius platycheilus* (Reuss) – Bittner: 311.

1893 *Palaeocarpilius macrocheilus* [sic!] (Desmarest) – Bittner: 20.

1929 *Palaeocarpilius macrocheilus* [sic!] (Desmarest) – Glaessner: 292.

1929 *Palaeocarpilius macrocheilus* [sic!] (Desmarest) – Lőrenthey & Beurlen: 222.

1969 *Palaeocarpilius macrochelus* (Desmarest) – Glaessner: R520, Fig. 328.1.

2001 *Palaeocarpilius macrochelus* (Desmarest) – De Angeli & Beschin: 32, Text-Fig. 27.

2003 *Palaeocarpilius macrocheilus* [sic!] (Desmarest) – Schweitzer: 1112.

2006 *Palaeocarpilius macrochelus* (Desmarest) – De Angeli & Garassino: 62. [cum. syn.]

2010 *Palaeocarpilius macrocheilus* [sic!] (Desmarest) – Schweitzer et al.: 115.

Coll. Nos.: GBA 1883/007/0011, well-preserved near-complete male individual (referred material of Bittner, 1883); GBA 2010/114/0053, incomplete right chela consisting of propodus articulated with dactylus; GBA 2010/162/0005, near-complete female individual; GBA 2010/181/0044, fragment of dactylus; GBA 2010/264/0004/01, isolated fragmentary dactylus; GBA 2017/035/0001, near-complete male individual with both chelipeds preserved (right is the crusher); GBA 2017/035/0002, complete male individual with both chelipeds (right is the crusher); GBA 2017/035/0016, near-complete individual of indeterminate sex with both chelipeds.

Stratigraphic level: Middle Eocene–Oligocene.

Localities: Italy, Veneto: Priabona, Monte di Malo, Vicenza (GBA 1883/007/0011); Magre at Schio, Vicenza (GBA 2010/162/0005); Castelcies, Treviso (GBA 2010/181/0044); Marostica (Maròstega), Vicenza (GBA 2010/264/0004/01); Valle San Floriano, Marostica (Maròstega), Vicenza (GBA 2017/035/0016); Venezia (Venice), Vicenza (GBA 2017/035/0001); San Gaudenzio near Brendola, Colli Berici, Vicenza, (GBA 2017/035/0002). Hungary: Halimba, Devecser, Komitat Veszprem (GBA 2010/114/0053).

Remarks: *Palaeocarpilius macrochelus* is a well-known species reported from a number of Eocene localities. It seems that there is a fixed (directional) asymmetry present in handedness of *P. macrochelus*, since right chelae consistently appear to be crushers. The same phenomenon also seems to be present in *Harpactocarcinus punctulatus* (Desmarest, 1822); see below.

Family Zanthopsidae Vía Boada, 1959

Genus *Harpactocarcinus* A. Milne-Edwards, 1862

Type species: *Cancer punctulatus* Desmarest, 1822, by original designation.

Harpactocarcinus punctulatus (Desmarest, 1822)

(Pl. 15, Figs. 1–5; Pl. 16, Figs. 1–8; Pl. 17, Figs. 1–6; Pl. 18, Figs. 1–4)

*1822 *Cancer punctulatus* Desmarest: 92, Pl. 7, Figs. 3–4.

1859 *Cancer punctulatus* Desmarest – Reuss: 25, Pl. 15, Figs. 1–5, Pl. 16, Figs. 1–4, Pl. 17, Figs. 1–4.

1859 *Cancer brachychelus* Reuss: 29, Pl. 13, Fig. 5, Pl. 18, Figs. 1–3.

1862 *Harpactocarcinus punctulatus* (Desmarest) – A. Milne-Edwards: 66, Pl. 8, Fig. 1, Pl. 9, Fig. 1.

1875 *Harpactocarcinus punctulatus* (Desmarest) – Bittner: 86.

1883 *Harpactocarcinus punctulatus* (Desmarest) – Bittner: 311.

1929 *Harpactocarcinus punctulatus* (Desmarest) – Glaessner: 204.

1969 *Harpactocarcinus punctulatus* (Desmarest) – Vía Boada: 239, Text-Fig. 29, pls. 24–27.

1969 *Harpactocarcinus punctulatus* (Desmarest) – Glaessner: R518, Fig. 327.

2006 *Harpactocarcinus punctulatus* (Desmarest) – De Angeli & Garassino: 76. [cum. syn.]

2010 *Harpactocarcinus punctulatus* (Desmarest) – Schweitzer et al.: 117.

2013 *Harpactocarcinus punctulatus* (Desmarest) – Beschin et al.: 130, Pl. 3, Figs. 2–3.

2015 *Harpactocarcinus punctulatus* (Desmarest) – Beschin et al.: 16, Pl. 1, Figs. 1–5.

2016 *Harpactocarcinus punctulatus* (Desmarest) – Hyžný & Zorn: 128, Pl. 1, Figs. 1a–g.

Coll. Nos.: GBA 1883/007/0014/01, female with a partially preserved right chela; GBA 1883/007/0014/02, isolated left chela; GBA 1883/007/0014/03, individual of indeterminate sex with partially preserved chelipeds; GBA 1883/007/0014/04, incomplete male; GBA 1883/007/0014/05, complete female with chelipeds; GBA 2007/096/0002, female with partially preserved chelipeds (lectotype of *Cancer brachychelus* Reuss, 1859); GBA 2007/096/0019, female individual without appendages (paralectotype of *C. brachychelus*); GBA 2007/096/0020, incomplete male individual; GBA 2007/096/0021, female individual without appendages; GBA 2007/096/0022, female individual with right cheliped (paralectotype of *C. brachychelus*); GBA 2007/096/0023, female individual (paralectotype of *C. brachychelus*); GBA 2007/096/0024, incomplete female individual; GBA 2007/096/0025, individual of indeterminate sex; GBA 2007/096/0026, incomplete female individual; GBA 2007/096/0027, incomplete female individual; GBA 2007/096/0028, incomplete female individual; GBA 2007/096/0029, female individual; GBA 2007/096/0030, incomplete female individual (paralectotype of *C. brachy-*

chelus); GBA 2010/124/0071, female with a right chela; GBA 2010/151/0055, incomplete female with partially preserved chelipeds; GBA 2010/151/0056/01, individual of indeterminate sex; GBA 2010/151/0056/02, female with partially preserved chelipeds; GBA 2010/151/0057/01, individual of indeterminate sex; GBA 2010/151/0057/02, individual of indeterminate sex; GBA 2010/151/0058/01, female without appendages; GBA 2010/151/0058/02, individual of indeterminate sex; GBA 2010/151/0059, individual of indeterminate sex with both chelae; GBA 2010/151/0060, incomplete female; GBA 2010/151/0061, individual of indeterminate sex; GBA 2010/151/0062, female with chelipeds; GBA 2010/151/0063, female with chelipeds; GBA 2010/151/0064, female with chelipeds; GBA 2010/151/0065/01, female with partially preserved chelipeds; GBA 2010/151/0065/02, female with partially preserved chelipeds; GBA 2010/151/0066/01, incomplete female; GBA 2010/151/0066/02, incomplete male; GBA 2010/151/0067, individual of indeterminate sex; GBA 2010/162/0001, well-preserved male with chelipeds; GBA 2010/162/0002, male without appendages; GBA 2010/162/0003, an individual of indeterminate sex without appendages; GBA 2010/162/0004, individual of indeterminate sex with partially preserved chelipeds; GBA 2010/221/0001, female individual with left cheliped; GBA 2010/221/0002, female with partially preserved chelipeds; GBA 2010/241/0001, incomplete female; GBA 2010/241/0002, incomplete female; GBA 2010/241/0003, incomplete individual of indeterminate sex; GBA 2010/241/0004, individual of indeterminate sex; GBA 2010/243/0001, female with partially preserved chelipeds; GBA 2010/264/0003, female with both chelipeds; GBA 2010/264/0004/02, female without chelipeds; GBA 2010/270/0014, female without appendages; GBA 2010/370/0119, male without appendages; GBA 2017/035/0005, female without appendages; GBA 2017/035/0006, individual of indeterminate sex without appendages; GBA 2017/035/0007, incomplete female; GBA 2017/035/0008, incomplete individual of indeterminate sex; GBA 2017/035/0010, female without appendages; GBA 2017/035/0011, individual of indeterminate sex; GBA 2017/035/0012, female with partially preserved chelipeds; GBA 2017/035/0013, female without appendages; GBA 2017/035/0014, female with both chelipeds; GBA 2017/035/0015, individual of indeterminate sex with incomplete right chela.

Stratigraphic levels: Middle Eocene–Oligocene.

Localities: San Michele at Bassano, Marostica near Vicenza (GBA 2007/096/0002, GBA 2007/096/0022–0027; GBA 2017/035/0010–0011; GBA 2017/035/0013–0014); Eurubio at Marostica (Maròstega), Vicenza (GBA 2010/241/0001–0004); Marostica (Maròstega), Vicenza (GBA 2010/264/0003, GBA 2010/264/0004/02); Valle San Floriano, Marostica (Maròstega), Vicenza (GBA 2007/096/0019–0021; GBA 2017/035/0008); Val Rovina at Bassano, Vicenza (GBA 1883/007/0014/01–03); Parnina, San Floriano di Valpolicella (GBA 2007/096/0028–0030; GBA 2017/035/0012); Marano di Valpolicella at Roveredo di Guà, Verona (GBA 2017/035/0015); Priabona, Monte di Malo, Vicenza (GBA 1883/007/0014/05, GBA 2017/035/0005); Mossano, Vicenza (GBA 1883/007/0014/04, GBA 2010/270/0014); San Bonifacio, Verona (GBA 2017/035/0006); San Fiorano at Moron di Negrar, Verona (GBA 2017/035/0007); Fumane di Polesella at Verona (GBA 2010/243/0001); Castel Policella at Verona (GBA 2010/221/0001–0002); unknown locality of Eocene age (GBA 2010/370/0119); Magre at Schio, Vicenza (GBA 2010/162/0001–0004); Laverda at Salcedo, Vicenza (GBA 2010/124/0071, GBA 2010/151/0055–0067). All localities are in Italy, Veneto.

Remarks: Nearly all specimens of *Harpactocarcinus punctulatus* (Desmarest, 1822) deposited at the GBA are a part of historical collections. A number of specimens (GBA 1883/007/0014/05, GBA 2007/096/0002, GBA 2007/096/0019–0030) bear old etiquettes with the handwriting of A. E. Reuss (some of them are shown in Pls. 15–16). Most of the specimens come from the localities mentioned by Reuss (1859) and Bittner (1883). Thus, the specimens largely represent the reference material ("Belegmaterial") of Reuss (1859) and Bittner (1883).

Hyžný & Zorn (2016: 128) selected the specimen GBA 2007/096/0002 as a lectotype of *Cancer brachychelus* Reuss, 1859 (= *Cancer punctulatus* Desmarest, 1822); they noted that although Reuss (1859) based his description on more than 20 specimens, the rest of the type collection had to be considered lost. Recently, however, a portion of the collection of Reuss (1859) has been identified by original labels with the handwriting of A. Reuss. Those labelled as *Cancer brachychelus* are considered part of the syntype collection and, thus, effectively represent the lectotype (selected previously by Hyžný & Zorn, 2016) and paralectotypes (selected herein).

In all specimens of *Harpactocarcinus punctulatus* deposited at the GBA, the right chela is the crusher, the left is the cutter. Given the number of examined specimens it is hypothesised here that *H. punctulatus* exhibited a fixed (directional) asymmetry in handedness. More statistically-oriented studies need to be done to test this.

Some specimens from Laverda at Salcedo have preserved colour markings on their third maxillipeds (Pl. 18, Figs. 1–2) and cheliped fingertips (Pl. 18, Figs. 2–4).

Genus *Harpactoxanthopsis* Vía Boada, 1959

Type species: *Cancer quadrilobatus* Desmarest, 1822, by original designation.

Harpactoxanthopsis quadrilobata (Desmarest, 1822)

(Pl. 18, Figs. 5–10)

*1822 *Cancer quadrilobatus* Desmarest: 93, Pl. 8, Figs. 1–2.

1859 *Cancer quadrilobatus* Desmarest – Reuss: 81.

1862 *Harpactocarcinus quadrilobatus* (Desmarest) – A. Milne-Edwards: 74, Pl. 3, Fig. 2, Pl. 4, Fig. 1, Pl. 5. Fig. 1.

1875 *Harpactocarcinus quadrilobatus* (Desmarest) – Bittner: 89, Pl. 2, Figs. 4–5, Pl. 3, Figs. 1–2.

1883 *Harpactocarcinus quadrilobatus* (Desmarest) – Bittner: 312.

1929 *Harpactocarcinus quadrilobatus* (Desmarest) – Glaessner: 205. [cum. syn.]

1929 *Xanthopsis quadrilobata* (DESMAREST) – LŐRENTHEY & BEURLEN: 208, Pl. 9, Figs. 3–4, Pl. 10, Fig. 7.

1969 *Harpactoxanthopsis quadrilobata* (DESMAREST) – VÍA BOADA: 276, Fig. 33, Pls. 30–32.

1969 *Harpactoxanthopsis kressenbergensis* (VON MEYER) – VÍA BOADA: 284, Fig. 34, Pls. 33–34.

1969 *Harpactoxanthopsis quadrilobata* (DESMAREST) – GLAESSNER: R518, Fig. 326.10.

1994 *Harpactoxanthopsis quadrilobata* (DESMAREST) – BESCHIN et al.: 186, Pl. 8, Fig. 1.

1998a *Harpactoxanthopsis quadrilobata* (DESMAREST) – MÜLLER: 33.

2006 *Harpactoxanthopsis quadrilobata* (DESMAREST) – DE ANGELI & GARASSINO: 77. [cum. syn.]

2009 *Harpactoxanthopsis quadrilobata* (DESMAREST) – BESCHIN et al.: 70. [cum. syn.]

2010 *Harpactoxanthopsis quadrilobatus* [sic!] (DESMAREST) – SCHWEITZER et al.: 117.

2010 *Harpactoxanthopsis quadrilobatus* [sic!] (DESMAREST) – HYŽNÝ: 119, Figs. 2A–F.

2012 *Harpactoxanthopsis quadrilobata* (DESMAREST) – BESCHIN et al.: 65, Fig. 58, Pl. 13, Figs. 6a–d.

2014 *Harpactoxanthopsis quadrilobatus* [sic!] (DESMAREST) – HYŽNÝ: 23, Figs. 1A–F.

2016 *Harpactoxanthopsis quadrilobata* (DESMAREST) – HYŽNÝ & ZORN: 132, Pl. 5, Figs. 1–2.

2017 *Harpactoxanthopsis quadrilobatus* [sic!] (DESMAREST) – LÓPEZ-HORGUE & BODEGO: 21, Figs. 12C–H, 13A–D.

Coll. Nos.: GBA 1875/005/0033/01, female individual with right cheliped (figured specimen of BITTNER, 1875: Pl. 3, Fig. 1); GBA 1875/005/0033/02, male individual with both chelipeds (figured specimen of BITTNER, 1875: Pl. 2, Fig. 4); GBA 2010/124/0070, female without extremities; GBA 2017/035/0009, female without extremities; GBA 2017/035/0059, female with incomplete carapace and without appendages; GBA 2017/035/0060, female with complete carapace and without appendages.

Stratigraphic level: Middle/upper Eocene (Lutetian–Priabonian)–lower Oligocene (Rupelian).

Localities: Priabona, Monte di Malo, Vicenza, Veneto, Italy (GBA 1875/005/0033/01); Castelgomberto (GBA 1875/005/0033/02, GBA 2010/124/0070); Valle San Floriano at Marostica (Maròstega) (GBA 2017/035/0009); Halimba, Devecser, Hungary (GBA 2017/035/0059–60).

Remarks: DE ANGELI & GARASSINO (2006) listed the species as restricted to the Lutetian of Italy. But already BITTNER (1875) reported material from the Priabonian.

Genus *Neozanthopsis* SCHWEITZER, 2003

Type species: *Harpactocarcinus americanus* RATHBUN, 1928, by original designation.

Neozanthopsis bruckmanni (VON MEYER, 1862)

(Pl. 19, Figs. 1–3)

pars 1859 *Xanthopsis hispidiformis* VON SCHLOTHEIM – REUSS: 46, Pl. 12, Fig. 3, Pl. 13, Fig. 6, Pl. 14, Figs. 1–4, 6, Pl. 23, Figs. 3–5.

*1862 *Xanthopsis Bruckmanni* – VON MEYER: 152, Pl. 16, Figs. 5–11, Pl. 17, Figs. 1–3.

1929 *Xanthopsis Bruckmanni* VON MEYER – GLAESSNER: 396.

1983 *Xanthopsis bruckmanni* VON MEYER – PREY: 104.

1998a *Zanthopsis bruckmanni* VON MEYER – MÜLLER: 33.

2003 *Neozanthopsis bruckmanni* (VON MEYER) – SCHWEITZER: 1119.

2010 *Neozanthopsis bruckmanni* (VON MEYER) – SCHWEITZER et al.: 118.

2017 *Neozanthopsis bruckmanni* (VON MEYER) – CHECCHI et al.: 32, Figs. 2.1–2.2. [cum. syn.]

Coll. Nos.: GBA 2007/096/0011, individual with partially preserved chelipeds (figured specimen of REUSS, 1859: Pl. 14, Fig. 4); GBA 2010/019/0097, individual with entire carapace and both chelipeds; GBA 2010/033/0011, incomplete female individual with partially preserved pleon.

Stratigraphic level: Eocene.

Localities: Lakeside of Lake Traun, Upper Austria, Austria (GBA 2010/019/0097); Sonthofen, Bavaria, Germany (GBA 2007/096/0011); Grünten (Mountain), Immenstadt im Allgäu, Bavaria, Germany (GBA 2010/033/0011).

Remarks: Species of the genus *Zanthopsis* (= *Xanthopsis*) have a rather complicated taxonomic history due to numerous changing concepts applied for the classification of the studied material. Specimens considered here as *Neozanthopsis bruckmanni* were originally treated as *Xanthopsis hispidiformis* VON SCHLOTHEIM, 1822 by REUSS (1859). Already GLAESSNER (1929: 396) reassigned a part of the material to *Xanthopsis bruckmanni*, which was included within a newly erected genus *Neozanthopsis* by SCHWEITZER (2003).

Genus *Zanthopsis* M'COY, 1849

Type species: *Cancer leachii* DESMAREST, 1822, by original designation.

Zanthopsis leachii (DESMAREST, 1822)

*1822 *Cancer Leachii* DESMAREST: 95, Pl. 8, Figs. 5, 6.

pars 1929 *Xanthopsis Leachi* (DESMAREST) – GLAESSNER: 397.

2003 *Zanthopsis leachii* (DESMAREST) – SCHWEITZER: 1117, Figs. 4.1, 4.6.

2010 *Zanthopsis leachii* (DESMAREST) – SCHWEITZER et al.: 118.

Coll. No.: GBA 2020/001/0001, individual with carapace and both chelipeds.

Stratigraphic level: Lower Eocene (Ypresian), London Clay Formation.

Locality: Isle of Sheppey, United Kingdom.

Remarks: The species represents a rather common element of the crab fauna of the London Clay Formation. REUSS (1859: 52) compared the material from Kressenberg, Bavaria (see below), with *Zanthopsis leachii*. Given the historical nature of the specimen of *Z. leachii* in the collections of the GBA, it is fairly possible that the respective specimen was used as a reference material by REUSS himself.

Zanthopsis bispinosa M'COY, 1849

(Pl. 20, Figs. 1–3; Pl. 21, Figs. 1–2)

*1849 *Xanthopsis bispinosa* M'COY: 164.

1858 *Xanthopsis bispinosa* M'COY – BELL: 14, Pl. 1, Figs. 5, 6, 10.

pars 1859 *Xanthopsis hispidiformis* VON SCHLOTHEIM – REUSS: 46, Pl. 14, Fig. 5.

pars 1929 *Xanthopsis Leachi* (DESMAREST) – GLAESSNER: 397.

1998a *Zanthopsis bispinosa* VON SCHLOTHEIM [sic!] – MÜLLER: 33.

?1998a *Zanthopsis nodosa* M'COY – MÜLLER: 33.

2003 *Zanthopsis bispinosa* BELL [sic!] – SCHWEITZER: 1117.

2010 *Zanthopsis bispinosa* BELL [sic!] – SCHWEITZER et al.: 118.

2014 (?)*Ranina marestiana* (KÖNIG) – WEIDINGER: 103, Fig. 32.

2016 *Zanthopsis bispinosa* M'COY – HYŽNÝ & ZORN: 130, Pl. 1, Figs. 3a–c.

Coll. Nos.: GBA 2007/096/0010, internal mould of near-complete carapace (figured specimen of REUSS, 1859: Pl. 14, Fig. 5); GBA 2010/019/0095, individual with carapace, pleon and right cheliped; GBA 2007/096/0012, incomplete carapace; GBA 2007/096/0013, incomplete carapace; GBA 2007/096/0014, incomplete female with preserved pleon; GBA 2007/096/0015, incomplete carapace; GBA 2007/096/0016, incomplete and tectonically deformed individual; GBA 2007/096/0017, incomplete and tectonically deformed individual; GBA 2010/096/0018, incomplete and tectonically deformed individual, cut in two by a fault; GBA 2010/120/0044, incomplete carapace; GBA 2012/109/0037, female individual with right cheliped and partially preserved pereiopods.

Stratigraphic level: Middle Eocene (Lutetian).

Localities: Kressenberg at Neukirchen, Bavaria, Germany (GBA 2007/096/0010, GBA 2007/096/0012–0018); Gschliefgraben at Gmunden, Upper Austria, Austria (GBA 2010/019/0095, GBA 2012/109/0037); unknown locality (GBA 2010/120/0044)

Remarks: GLAESSNER (1929) considered *Xanthopsis bispinosa* synonymous with *Xanthopsis laeachi* (DESMAREST, 1822). SCHWEITZER (2003) and SCHWEITZER et al. (2010) considered both taxa as distinct, an opinion which is also followed herein.

WEIDINGER (2014) figured a complete carapace of this species from Gschliefgraben at Gmunden, but assigned it erroneously to (?)*Ranina marestiana*.

Several specimens at the GBA (GBA 2007/096/0013–0018), bearing labels reading "*Xanthopsis hispidiformis*", have recently been identified as the original material of REUSS (1859). Thus, the original material under the heading *Xanthopsis hispidiformis* in REUSS (1859: 46) is composed of two separate taxa, treated in current taxonomy as *Neozanthopsis bruckmanni* and *Zanthopsis bispinosa*.

Zanthopsis sp.

Coll. No.: GBA 2010/019/0094, carapace fragment.

Stratigraphic level: Middle Eocene (Lutetian).

Locality: Gschliefgraben at Gmunden, Upper Austria, Austria.

Remarks: The material is too fragmentary to be assigned on the species level.

Superfamily Dairoidea SERÈNE, 1965
Family Dairidae SERÈNE, 1965

Genus *Daira* DE HAAN, 1833 [in DE HAAN, 1833–1850]

Type species: *Cancer perlatus* HERBST, 1790 [in Herbst 1782–1790], by subsequent designation of ICZN (1987): Opinion 73, Direction 78.

Daira speciosa (REUSS, 1871)

(Pl. 22, Figs. 1–5)

*1871 *Phymatocarcinus speciosus* REUSS: 326, Figs. 1–4.

1877 *Phymatocarcinus speciosus* REUSS – BITTNER: 435, Pl. 1, Figs. 1–10.

1928 *Daira speciosa* (REUSS) – GLAESSNER: 191.

1929 *Daira speciosa* (REUSS) – GLAESSNER: 135.

1984 *Daira speciosa* (REUSS) – MÜLLER: 90, Pl. 79, Figs. 1–6, Pl. 80, Figs. 1–2.

1987 *Daira speciosa* (REUSS) – FRIEBE: 61, Pl. 2, Figs. 3–4.

1996 *Daira speciosa* (REUSS) – MÜLLER: 11, Pl. 2, Fig. 5.

1998a *Daira speciosa* (REUSS) – MÜLLER: 27, Pl. 2, Fig. 2.

2010 *Daira speciosa* (REUSS) – GATT & DE ANGELI: 1334, text-Figs. 8A–C. [cum. syn.]

2010 *Daira speciosa* (REUSS) – SCHWEITZER et al.: 105.

2014 *Daira speciosa* (REUSS) – COLLINS: 38, Pl. 2, Fig. 12.

2015 *Daira speciosa* (REUSS) – KLOMPMAKER et al.: 146, Figs. 6A–D.

2016 *Daira speciosa* (REUSS) – HYŽNÝ: Tab. 1, Fig. 10J.

2016 *Daira speciosa* (Reuss) – Hyžný & Gross: 108, Fig. 15.2.

2016 *Daira speciosa* (Reuss) – Hyžný & Zorn: 133, Pl. 7, Figs. 6–9.

Coll. Nos.: GBA 1877/005/0001, near-complete carapace with preserved cuticular surface (figured specimen of Bittner, 1877: Pl. 1, Fig. 1); GBA 1877/005/0002, fragment of cuticle (figured specimen of Bittner, 1877: Pl. 1, Fig. 2); GBA 1877/005/0003, fragment of cuticle; GBA 1877/005/0004, portion of right chela preserved as internal cast ("Steinkern") (figured specimen of Bittner, 1877: Pl. 1, Fig. 4); GBA 1877/005/0005, mould of merus and carpus of left cheliped (figured specimen of Bittner, 1877: Pl. 1, Fig. 5); GBA 1877/005/0006, left chela consisting of carpus, propodus and dactylus (figured specimen of Bittner, 1877: Pl. 1, Fig. 6); GBA 1877/005/0007, left chela consisting of carpus, propodus and dactylus preserved as internal cast (figured specimen of Bittner, 1877: Pl. 1, Fig. 7); GBA 1877/005/0008, carpus of left chela preserved as internal cast figured specimen of Bittner, 1877: Pl. 1, Fig. 8); GBA 1877/005/0009, portion of walking leg preserved as "Steinkern" (figured specimen of Bittner, 1877: Pl. 1, Fig. 9); GBA 2009/014/0032, ten cheliped fragments; GBA 2009/014/0033/01–02, internal casts of two near-complete carapaces; GBA 2009/014/0033/03–05, three fragmentary carapaces; GBA 2009/014/0033/06, cheliped fragment.

Stratigraphic level: Middle Miocene (Badenian), "Leithakalk".

Locality: Gamlitz at Ehrenhausen, Styria, Austria.

Remarks: *Daira speciosa* (Reuss, 1871) is one of the most common Miocene reef-associated crabs known from the circum-Mediterranean area (Müller, 1984; Hyžný, 2016). Its very distinctive morphology allows easy identification even in the field at the outcrop.

Superfamily Goneplacoidea MacLeay, 1838
Family Chasmocarcinidae Serène, 1964

Genus *Mioplax* Bittner, 1884a

Type species: *Mioplax socialis* Bittner, 1884a, by monotypy.

Mioplax socialis Bittner, 1884a

(Pl. 22, Figs. 6–7)

*1884a *Mioplax socialis* Bittner: 23, Pl. 2, Figs. 3a–f.

1928 *Mioplax socialis* Bittner – Glaessner: 194.

1929 *Mioplax socialis* Bittner – Glaessner: 258.

1929 *Mioplax socialis* Bittner – Lőrenthey & Beurlen: 258, Pl. 16, Fig. 10.

1969 *Mioplax socialis* Bittner – Glaessner: R524, Fig. 333.1.

1998a *Mioplax socialis* Bittner – Müller: 38.

2010 *Mioplax socialis* Bittner – Schweitzer et al.: 133.

2016 *Mioplax socialis* Bittner – Hyžný & Gross: 105, Figs. 13.4–13.5

2016 *Mioplax socialis* Bittner – Hyžný & Zorn: 136, Pl. 11, Figs. 1–5.

2016b *Mioplax socialis* Bittner – Hyžný et al.: 169, Figs. 3–4. [cum. syn.]

Coll. Nos.: GBA 1884/003/0003/01, individual with carapace and partially preserved pereiopods, including both chelipeds (lectotype, figured specimen of Bittner, 1884a: Pl. 2, Fig. 3b); GBA 1884/003/0003/02, female individual in ventral aspect with sternum and third maxilliped (paralectotype); GBA 1884/003/0003/03, complete carapace (paralectotype); GBA 1884/003/0003/04, near-complete carapace without front (paralectotype); GBA 1884/003/0003/05, imprint of female individual in ventral aspect showing sternum and partially preserved pereiopods (paralectotype).

Stratigraphic level: Middle Miocene (lower Sarmatian).

Locality: Radoboj, Krapinsko-Zagorska, Croatia.

Remarks: Bittner (1884a: 23) described *Mioplax socialis* based on numerous specimens from the Sarmatian strata at Radoboj, Croatia. Recently, the species has been revised by Hyžný et al. (2016b).

The type collection has recently been renumbered. The specimens with repository numbers GBA 2009/014/0029/01–05 *sensu* Hyžný et al. (2016b) and Hyžný & Zorn (2016) are currently deposited under numbers GBA 1884/003/0003/01–05.

Family Mathildellidae Karasawa & Kato, 2003

Genus *Coeloma* A. Milne-Edwards, 1865

Type species: *Coeloma vigil* A. Milne-Edwards, 1865, by monotypy.

Coeloma vigil A. Milne-Edwards, 1865

(Pl. 22, Figs. 8–9)

*1865 *Coeloma vigil* A. Milne-Edwards: 324, Pl. 35, Figs. 1–3.

1875 *Coeloma vigil* A. Milne-Edwards – Bittner: 97, Pl. 5, Figs. 1–4.

1883 *Coeloma vigil* A. Milne-Edwards – Bittner: 314.

1929 *Coeloma vigil* A. Milne-Edwards – Glaessner: 122.

1929 *Coeloma vigil* A. Milne-Edwards – Lőrenthey & Beurlen: 243, Pl. 15, Fig. 16.

1969 *Coeloma* (*Coeloma*) *vigil* A. Milne-Edwards – Glaessner: R524, Fig. 332.2a.

2001 *Coeloma* (*Coeloma*) *vigil* A. Milne-Edwards – De Angeli & Beschin: 29, Text-Fig. 24.

2006 *Coeloma vigil* A. Milne-Edwards – De Angeli & Garassino: 56. [cum. syn.]

2010 *Coeloma vigil* A. Milne-Edwards – Schweitzer et al.: 137.

2012 *Coeloma vigil* A. Milne-Edwards – Hyžný & Zágoršek: 19, Text-Fig. 3.

2016 *Coeloma vigil* A. Milne-Edwards – Hyžný & Zorn: 131, Pl. 4, Figs. 2a–e.

Coll. Nos.: GBA 1875/005/0040, female individual with carapace, pleon and partially preserved pereiopods, including chelipeds (figured specimen of Bittner, 1875: Pl. 5, Fig. 4); GBA 2010/151/0054, male individual with sternum and pleon.

Stratigraphic level: Lower Oligocene (Rupelian), Laverda Beds ("Schio-Schichten") and Castelgomberto Beds ("San Giovanni Ilarione-Schichten").

Localities: Bassano del Grappa, Bocca di Marsan, Valrovina, Vicenza, Veneto, Italy (GBA 1875/005/0040); Laverda at Salcedo, Veneto, Italy (GBA 2010/151/0054).

Remarks: *Coeloma vigil* A. Milne-Edwards, 1865 is a well-known species reported from Italy (De Angeli & Garassino, 2006), Hungary (Lőrenthey & Beurlen, 1929) and Slovakia (Hyžný & Zágoršek, 2012).

Coeloma sp.

Coll. No.: GBA 2010/052/0026, near-complete individual with preserved pereiopods.

Stratigraphic level: Upper Oligocene, Trbovlje Formation ("Sotzkaschichten").

Locality: Trbovlje (Trifail), Slovenia.

Remarks: The specimen, although complete, does not show important taxonomic characters for attribution on the species level. Due to geographic and stratigraphic proximity with *Coeloma vigil* (see above), it is likely that the Slovenian specimen also represents that species.

Superfamily Majoidea Samouelle, 1819
Family Epialtidae MacLeay, 1838

Genus *Periacanthus* Bittner, 1875

Type species: *Periacanthus horridus* Bittner, 1875, by monotypy.

Periacanthus horridus Bittner, 1875

(Pl. 23, Figs. 1–2)

*1875 *Periacanthus horridus* Bittner: 77, Pl. 2, Fig. 1.

1895 *Periacanthus horridus* Bittner – Bittner: 250, Pl. 1, Figs. 1–2.

1929 *Periacanthus horridus* Bittner – Glaessner: 311.

1929 *Periacanthus horridus* Bittner – Lőrenthey & Beurlen: 152, Pl. 7, Fig. 8.

1969 *Periacanthus horridus* Bittner – Glaessner: R502, Fig. 314.8.

1994 *Periacanthus horridus* Bittner – Beschin et al.: 177, Pl. 5, Fig. 1.

2001 *Periacanthus horridus* Bittner – De Angeli & Beschin: 26, Text-Fig. 20.

2006 *Periacanthus horridus* Bittner – De Angeli & Garassino: 49.

2010 *Periacanthus horridus* Bittner – Schweitzer et al.: 92.

2016 *Periacanthus horridus* Bittner – Beschin et al.: 44, Fig. 37, Pl. 7, Fig. 4. [cum. syn.]

2016 *Periacanthus horridus* Bittner – Hyžný & Zorn: 133, 137, Pl. 5, Figs. 4a–b, Pl. 13, Figs. 2a–d.

Coll. Nos.: GBA 1875/005/0010 (former coll. no. 2326), near-complete carapace (lectotype); GBA 1895/003/0002 (former coll. no. 2329), incomplete carapace with preserved ventral parts of the anterior (figured specimen of Bittner, 1895: Pl. 1, Fig. 2).

Stratigraphic level: Middle Eocene (Lutetian).

Locality: San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.

Remarks: The lectotype (GBA 1875/005/0010) is the best-preserved specimen of this species deposited at the GBA. The other specimen (GBA 1895/003/0002) shows a preserved buccal cavern and antennal region.

Family Majidae Samouelle, 1819

Genus *Micromaia* Bittner, 1875

Type species: *Micromaia tuberculata* Bittner, 1875, by monotypy.

Micromaia tuberculata Bittner, 1875

(Pl. 23, Figs. 3–8)

*1875 *Micromaia tuberculata* Bittner: 76, Pl. 2, Fig. 2.

1883 *Micromaja* [sic!] *tuberculata* Bittner – Bittner: 308, Pl. 1, Fig. 6.

1910 *Micromaja* [sic!] *tuberculata* Bittner – Fabiani: 39, Pl. 2, Figs. 3–4.

1929 *Micromaia tuberculata* Bittner – Lőrenthey & Beurlen: 141, Pl. 7, Figs. 4–5.

1929 *Micromaia tuberculata* Bittner – Glaessner: 257.

1969 *Micromaia tuberculata* Bittner – Vía Boada: 162, Pl. 11, Figs. 1–4, Pl. 12, Fig. 1.

1985 *Micromaia tuberculata* Bittner – Beschin et al.: 101, Text-Figs. 3(1), 4(1), Pl. 1, Figs. 1–2.

1994 *Micromaia tuberculata* Bittner – Beschin et al.: 178, Pl. 5, Figs. 2–4.

2001 *Micromaia tuberculata* Bittner – De Angeli & Beschin: 24, Text-Figs. 18(1), 19.

2005 *Micromaia tuberculata* Bittner – Beschin et al.: 20, Pl. 4, Fig. 1.

2006 *Micromaia tuberculata* Bittner – De Angeli & Garassino: 48.

2010 *Micromaia tuberculata* Bittner – Schweitzer et al.: 96.

2011 *Micromaia tuberculata* Bittner – Mihály: 255, Figs. 3–4.

2012 *Micromaia tuberculata* Bittner – Beschin et al.: 44, Fig. 38, Pl. 6, Fig. 2. [cum. syn.]

2016 *Micromaia tuberculata* Bittner – Hyžný & Zorn: 132, 134, Pl. 6, Figs. 1–8, Pl. 8, Figs. 1–2.

Coll. Nos.: GBA 1875/005/0009/01 (former coll. no. 2305), complete carapace with preserved ventral parts of anterior portion including pterygostomial regions, (lectotype); GBA 1875/005/0009/02 (former coll. no. 2310), near-complete carapace (paralectotype); GBA 1875/005/0009/03 (former coll. no. 2305), near-complete carapace (paralectotype); GBA 1875/005/0009/04 (former coll. no. 2305), incomplete carapace (paralectotype); GBA 1875/005/0009/05 (former coll. no. 2305), near-complete carapace (paralectotype); GBA 1875/005/0009/06 (former coll. no. 2305), anterior portion of carapace (paralectotype); GBA 1875/005/0009/07 (former coll. no. 2305), near-complete carapace (paralectotype); GBA 1883/007/0006/01, near-complete carapace with the ventral parts of the anterior portion (figured specimen of Bittner, 1883: Pl. 1, Fig. 6); GBA 1883/007/0006/02, incomplete carapace. Note: GBA 1875/005/0009 = former coll. no. 2305; GBA 1883/007/0006 = former coll. no. 2324.

Stratigraphic level: Middle Eocene (Lutetian).

Locality: San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.

Remarks: This is the type species of the genus *Micromaia* Bittner, 1875, which is morphologically close to *Paramaja* Kubo, 1936 (Ng & Richer de Forges, 2015). There are differences in development of antorbital and pseudorostral spines and *Paramaja* is generally larger than *Micromaia*.

Superfamily Parthenopoidea MacLeay, 1838
Family Parthenopidae MacLeay, 1838

Genus *Bittnerilia* De Angeli & Garassino, 2003

Type species: *Lambrus eocaenus* Bittner, 1883, by monotypy.

Bittnerilia eocaena (Bittner, 1883)

(Pl. 23, Fig. 10)

*1883 *Lambrus eocaenus* Bittner: 309, Pl. 1, Figs. 7a–c.

1929 *Parthenope eocaena* (Bittner) – Glaessner: 307.

1983 *Parthenope eocaena* (Bittner) – Busulini et al.: 62, Pl. 2, Figs. 3a–b.

1994 *Parthenope eocaena* (Bittner) – Beschin et al.: 181, Pl. 6, Figs. 1a–b.

2003 *Bittnerilia eocaena* (Bittner) – De Angeli & Garassino: 17, Figs. 2–4.

2006 *Bittnerilia eocaena* (Bittner) – De Angeli & Garassino: 40.

2010 *Bittnerilia eocenica* [sic!] (Bittner) – Schweitzer et al.: 97.

2012 *Bittnerilia eocaena* (Bittner) – Beschin et al.: 51, Fig. 44, Pl. 7, Fig. 4. [cum. syn.]

2016 *Bittnerilia eocaena* (Bittner) – Hyžný & Zorn: 134, Pl. 8, Figs. 4a–e.

Coll. No.: GBA 1883/007/0008 (former coll. no. 2322), incomplete carapace (holotype).

Stratigraphic level: Middle Eocene (Lutetian).

Locality: San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.

Remarks: Originally, the species was based on a single incomplete carapace lacking the front (Bittner, 1883). With a more complete material including a cheliped, the species was redescribed by De Angeli & Garassino (2003).

Bittnerilia sp.

(Pl. 23, Fig. 9)

1875 *Calappa* spec. – Bittner: 74, Pl. 1, Figs. 7a–b.

1929 *Calappa* sp. – Glaessner: 72.

2001 *Calappa* spec. – De Angeli & Beschin: 22.

2006 *Calappa* sp. – De Angeli & Garassino: 41.

2016 ?*Bittnerilia* sp. – Hyžný & Zorn: 131, Pl. 4, Figs. 1a–e.

Coll. No.: GBA 1875/005/0006 (former coll. no. 2328), right chela consisting of propodus articulated with dactylus (figured specimen of Bittner, 1875: Pl. 1, Fig. 7a–b).

Stratigraphic level: Middle Eocene (Lutetian).

Locality: San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Verona, Veneto, Italy.

Remarks: Based on the similarities with *Bittnerilia eocaena* (Bittner, 1883) as described and depicted by De Angeli & Garassino (2003: Figs. 2.5, 4.3), Hyžný & Zorn (2016) reassigned the material to ?*Bittnerilia* sp. The studied specimen is an internal mould, thus, the outline of the upper propodal margin cannot be compared with the material of *B. eocaena* in detail. The second congener, *B. dentata* Beschin, De Angeli, Checchi & Zarantonello, 2005 is known only from the carapace; thus, the intra- and interspecific variation in the chelae of *Bittnerilia* is unknown. Assignment on the genus level is therefore only preliminary.

Superfamily Portunoidea Rafinesque, 1815
Family Polybiidae Ortmann, 1893

Genus *Liocarcinus* Stimpson, 1871

Type species: *Portunus holsatus* Fabricius, 1798, by original designation.

Liocarcinus sp.

(Pl. 24, Fig. 4)

1950 *Achelous vindobonensis* Bachmayer: 137, Pl. 1, Fig. 5.

1998a Portunidae ind. sp.: Müller: 32.

2015b *Liocarcinus* sp. – Hyžný et al.: Fig. 10.

2016 *Liocarcinus* sp. – Hyžný & Zorn: 139, Pl. 17, Figs. 6–8.

Coll. No.: GBA 2009/014/0025/01–03, isolated cheliped dentitions (figured specimens of HYŽNÝ et al., 2015b: Figs. 10c–e).

Stratigraphic level: Lower Miocene (Ottnangian).

Locality: Ottnang, Upper Austria, Austria.

Remarks: BACHMAYER (1950) described *Achelous vindobonensis* based on a single incomplete chela coming from the drilling Grosskrut 3. The material was later treated as Portunidae indet. by MÜLLER (1998b). Based on the comparison with chelipeds of the extant portunoid crab *Liocarcinus* (SPIRIDONOV et al., 2014: Fig. 3D), the material has been transferred to that genus by HYŽNÝ et al. (2015b). Besides the specimen from Grosskrut 3, additional specimens of cheliped dentition from Ottnang deposited at the GBA were identified as such (HYŽNÝ et al., 2015b; HYŽNÝ & ZORN, 2016). It is possible that the discussed isolated cheliped portions actually belong to *Liocarcinus ottnangensis* (BACHMAYER, 1953), a species originally known only from the carapace material but lately revised in the light of new findings (HYŽNÝ et al., 2015b).

Family Portunidae RAFINESQUE, 1815

Genus *Portunus* WEBER, 1795

Type species: *Cancer pelagicus* LINNAEUS, 1758, by subsequent designation of RATHBUN (1926).

Portunus radobojanus (BITTNER, 1884a)

(Pl. 24, Fig. 1)

*1884a *Neptunus radobojanus* BITTNER: 20, Pl. 2, Fig. 1.

1929 *Neptunus radobojanus* BITTNER – GLAESSNER: 268.

1929 *Colneptunus radobojanus* (BITTNER) – LŐRENTHEY in LŐRENTHEY & BEURLEN: 183, Pl. 14, Fig. 3.

2010 *Portunus radobojanus* (BITTNER) – SCHWEITZER et al.: 112.

2016 *Portunus radobojanus* (BITTNER) – HYŽNÝ & ZORN: 136, Pl. 10, Figs. 3a–e.

Coll. No.: GBA 1884/003/0001, badly-preserved individual with sternum, pleon and partially preserved pereiopods (holotype).

Stratigraphic level: Middle Miocene (lower Sarmatian).

Locality: Radoboj, Krapinsko-Zagorska, Croatia.

Remarks: BITTNER (1884a) based the description of *Neptunus radobojanus* on a single specimen with preserved sternum, pleon and portions of pereiopods. Due to the preserved features it was possible to identify the specimen as a female individual. Unfortunately, the original specimen (part and counterpart) was badly damaged, apparently through weathering, and as a consequence the morphological details given by BITTNER (1884a) are no more discernible. The original preservation of the material is difficult to estimate as it is fairly possible that the figure given by BITTNER (1884a: Pl. 2, Fig. 1) is actually a reconstruction.

Portunus stenaspis (BITTNER, 1884a)

(Pl. 24, Figs. 2–3)

*1884a *Neptunus stenaspis* BITTNER: 21, Pl. 2, Fig. 2.

1929 *Neptunus stenaspis* BITTNER – GLAESSNER: 269.

1929 *Scylla stenaspis* (BITTNER) – LŐRENTHEY in LŐRENTHEY & BEURLEN: 176, Pl. 14, Fig. 2.

2010 *Portunus stenaspis* (BITTNER) – SCHWEITZER et al.: 112.

Coll. No.: GBA 1884/003/0002, badly-preserved individual (holotype); GBA 2017/035/0022, badly-preserved individual.

Stratigraphic level: Middle Miocene (lower Sarmatian).

Locality: Radoboj, Krapinsko-Zagorska, Croatia.

Remarks: The specimens preserved within nodules were badly damaged, apparently through weathering; thus, no morphological details important for the attribution on the species level are discernible. Although two specimens attributable to *Portunus stenaspis* (BITTNER, 1884a) are present in the GBA collection, only one is explicitly mentioned by BITTNER (1884a). Since it is difficult to decide which specimen of the two served as a basis for the species description, the better preserved one is chosen here to represent the holotype.

BITTNER (1884a) pointed out the affinities of the material to the genus *Scylla*; LŐRENTHEY & BEURLEN (1929) actually treated the species as *Scylla stenaspis*. SCHWEITZER et al. (2010) listed the species as a representative of *Portunus*.

Portunus sp.

(Pl. 24, Fig. 5)

Coll. No.: GBA 2017/035/0004, male individual with broken anterolateral teeth and preserved venter.

Stratigraphic level: Eocene.

Locality: Valle San Floriano at Marostica (Maròstega), Vicenza, Veneto, Italy.

Remarks: The preservation without any cuticular surfaces does not allow closer identification of the specimen. In the collections of the GBA, it has been deposited in the same drawer as the Eocene decapods from northern Italy, namely with *Harpactocarcinus punctulatus* and *Palaeocarpilius macrochelus*. Although some specimens from this lot have been safely identified as material of REUSS (1859), there is no mention of a similar portunid crab in the respective work. A. MILNE-EDWARDS (1860) described a number of Cenozoic portunids from Italy, including *Neptunus arcuatus* A. MILNE-EDWARDS, 1860; *N. incertus* A. MILNE-EDWARDS, 1860, *N. larteti* A. MILNE-EDWARDS, 1860; and *N. vicentinus* A. MILNE-EDWARDS, 1860. None of these species is well-studied; in fact, the repository of the types of all species but the last one is unknown (DE ANGELI & GARASSINO, 2006), and therefore comparison cannot be done. The specimen GBA 2017/035/0004 is rather similar to *Neptunus convexus* RISTORI, 1889 (= *Portunus ristorii* KARASAWA, SCHWEITZER & FELDMANN, 2008) from the lower Oligocene (Rupelian) of Italy as figured by ALLASINAZ (1987: Pl. 4, Figs. 3–8). DE ANGELI & MARANGON (2003: 102) noted the presence of a curved

spine on both sides of the posterior carapace margin; due to poor preservation it is difficult to state whether such spines are present in the GBA specimen. Thus, we classify it in open nomenclature as *Portunus* sp.

Portunidae indet.

Coll. No.: GBA 2017/035/0019–0020, badly-preserved fragments.

Stratigraphic level: Middle Miocene (lower Sarmatian).

Locality: Radoboj, Krapinsko-Zagorska, Croatia.

Remarks: The preservation of the material does not allow closer identification.

Superfamily Xanthoidea MacLeay, 1838
Family Panopeidae Ortmann, 1893

Genus *Glyphithyreus* Reuss, 1859
(= *Plagiolophus* Bell, 1858 non Pomel, 1847)

Type species: *Glyphithyreus formosus* Reuss, 1859, by monotypy.

Glyphithyreus sulcatus (Beurlen, 1939)

(Pl. 25, Fig. 1)

1939 *Plagiolophus sulcatus* Beurlen: 155, Pl. 7, Fig. 11.

2004 *Glyphithyreus sulcatus* (Beurlen) – Karasawa & Schweitzer: 148.

2010 *Glyphithyreus sulcatus* (Beurlen) – Schweitzer et al.: 121.

2016 *Glyphithyreus sulcatus* (Beurlen) – Hyžný & Gross: 110, Fig. 15.1.

2020 *Glyphithyreus sulcatus* (Beurlen) – Hyžný et al.: 86, Figs. 3–5.

Coll. No.: GBA 2007/024/0005, imprint of a near-complete individual with preserved pereiopods (including chelipeds). The specimen is a counterpart of UMJGP Inv.No. 56664 (figured in Hyžný & Gross, 2016: Fig. 15.1).

Stratigraphic level: Upper Oligocene, Trbovlje Formation ("Sotzkaschichten").

Locality: Trbovlje (Trifail), Slovenia.

Remarks: Already Bittner (1884a: 29) mentioned the presence of a crab morphologically close to *Plagiolophus* Bell, 1858. Comparison of the specimen in question (GBA 2007/024/0005) with the holotype of *Glyphithyreus sulcatus* (Beurlen, 1939) confirmed that both samples belong to the same species (Hyžný et al., 2020).

Genus *Palaeograpsus* Bittner, 1875

Type species: *Palaeograpsus inflatus* Bittner, 1875, by monotypy.

Palaeograpsus inflatus Bittner, 1875

(Pl. 25, Figs. 5–6)

*1875 *Palaeograpsus inflatus* Bittner: 100, Pl. 2, Fig. 11.

1910 *Palaeograpsus inflatus* Bittner – Fabiani: 40, Pl. 2, Figs. 5–6.

1929 *Palaeograpsus inflatus* Bittner – Glaessner: 295.

1929 *Palaeograpsus inflatus* Bittner – Lőrenthey & Beurlen: 254, Pl. 16, Fig. 2.

1995 *Palaeograpsus inflatus* Bittner – De Angeli: 16, Text-Figs. 3.2–3, Pl. 2, Figs. 2–4.

2004 *Palaeograpsus inflatus* Bittner – Schweitzer & Karasawa: 80.

2006 *Palaeograpsus inflatus* Bittner – De Angeli & Garassino: 69.

2009 *Palaeograpsus inflatus* Bittner – Beschin et al.: 77, Pl. 4, Fig. 3.

2010 *Palaeograpsus inflatus* Bittner – Schweitzer et al.: 121.

2013 *Palaeograpsus inflatus* Bittner – Beschin et al.: 137, Pl. 4, Fig. 2.

2016 *Palaeograpsus inflatus* Bittner – Beschin et al.: 60, Fig. 52, Pl. 10, Fig. 6. [cum. syn.]

2016 *Palaeograpsus inflatus* Bittner – Hyžný & Zorn: 133, Pl. 5, Figs. 3a–c.

Coll. Nos.: GBA 1875/005/0041 (lectotype), near-complete carapace; GBA 1875/005/0042 (paralectotype), complete carapace.

Stratigraphic level: GBA 1875/005/0041: middle Eocene (Lutetian)/upper Eocene (Priabonian); Bittner (1875) did not indicate the exact stratigraphic position of the material. GBA 1875/005/0042: lower Oligocene, Castelgomberto Beds ("Castelgomberto-Schichten").

Localities: Fumane di Polesella, Verona, Veneto, Italy (GBA 1875/005/0041); Laverda at Salcedo, Vicenza, Veneto, Italy (GBA 1875/005/0042).

Remarks: Bittner (1875) examined two specimens of this species. Hyžný & Zorn (2016: 133) mentioned that only one was deposited at the GBA. The specimen was actually the one figured in Bittner (1875: Pl. 2, Fig. 11) and was selected as the lectotype by Hyžný & Zorn (2016). Recently, the second specimen of *Palaeograpsus inflatus* was discovered in the collections of the GBA, fitting the description of Bittner (1875). This specimen becomes the paralectotype and the opportunity is taken here to provide its photographic documentation. After the revisionary work of Schweitzer & Karasawa (2004), *Palaeograpsus inflatus* remained the only species of the genus *Palaeograpsus* Bittner, 1875. Unfortunately, none of the type specimens preserves ventral parts of the animal. Thus, assignment on the higher taxonomic level remains obscure (compare with Hyžný & Zorn, 2016: 133). It has to be noted, however, that the pleon of the species has been reported and figured by De Angeli (1995).

Subsection Thoracotremata Guinot, 1977
Superfamily Ocypodoidea Rafinesque, 1815
Family Macrophthalmidae Dana, 1851c

Genus *Macrophthalmus* Desmarest, 1823

Type species: *Goneplax transversus* Latreille, 1817, by monotypy.

Macrophthalmus aquensis A. Milne-Edwards & Brocchi, 1879

(Pl. 25, Figs. 2–4)

*1879 *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi: 115.

1924 *Macrophthalmus vindobonensis* Glaessner: 109, Figs. 1–2.

1928 *Macrophthalmus vindobonensis* Glaessner – Glaessner: 196.

1929 *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi – Glaessner: 242.

1929 *Macrophthalmus vindobonensis* Glaessner – Glaessner: 243.

1984 *Macrophthalmus vindobonensis* Glaessner – Müller: 98, Pl. 95, Fig. 6, Pl. 96, Figs. 1–2, 4–5, ?Fig. 3

1993 *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi – Müller: 24, Figs. 11A–B.

1996 *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi – Müller: 13.

1998a *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi – Müller: 39.

1998b *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi – Müller: 275, Pl. 1, Figs. 9–10, Pl. 2, Fig. 1.

2016 *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi – Hyžný & Gross: 112, Figs. 16.1–16.3

2016 *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi – Hyžný & Zorn: 137, Pl. 13, Figs. 3–5.

Coll. Nos.: GBA 1925/001/0001/01, imprint of incomplete dorsal carapace (front is missing) with partially preserved pereiopods (paralectotype of *Macrophthalmus vindobonensis* Glaessner, 1924); GBA 1925/001/0001/02, male individual in ventral aspect with partially preserved pereiopods (paralectotype of *M. vindobonensis*); GBA 1925/001/0001/03, male individual with preserved dorsal carapace and sternum (paralectotype of *M. vindobonensis*).

Stratigraphic level: Lower Miocene (Karpatian), Korneuburg Formation.

Locality: Teiritzberg, Landesziegelei Stetten, Lower Austria, Austria.

Remarks: Glaessner (1924) described *Macrophthalmus vindobonensis* based on numerous specimens recovered at Teiritzberg (see also Müller, 1998b). Later, Müller (1993) synonymised *M. vindobonensis* with *M. aquensis* A. Milne-Edwards & Brocchi, 1879 from Aix (France). The species apparently had wider geographic distribution across the circum-Mediterranean area and if present, its fossil remains often occur in large numbers; Müller (1998b) mentioned hundreds of specimens from Teiritzberg.

Brachyura indet.

Coll. Nos.: GBA 2009/014/0004; GBA 2009/014/0007; GBA 2009/014/0009; GBA 2009/014/0011; GBA 2009/014/0015; GBA 2009/014/0017; GBA 2009/014/0021; GBA 2009/014/0022; GBA 2009/014/0031; GBA 2010/151/0068. All specimens represent cheliped fragments.

Stratigraphic levels: Oligocene–upper Miocene (for details see Table 2).

Localities: Gamlitz at Ehrenhausen, Styria, Austria (GBA 2009/014/0004, GBA 2009/014/0031); Wiesfleck, drilling "Wiesfleck 2", 46–47 m, Burgenland, Austria (GBA 2009/014/0007); Bad Vöslau, Lower Austria, Austria (GBA 2009/014/0009); Baden, Lower Austria, Austria (GBA 2009/014/0011); Nussdorf, Grünes Kreuz, Vienna, Austria (GBA 2009/014/0015); Ebendorf at Mistelbach, drilling "Ebendorf 6", 17.2–20.7 m, Lower Austria, Austria (GBA 2009/014/0017); Wullersdorf, Lower Austria, Austria (GBA 2009/014/0021); Grund, Lower Austria, Austria (GBA 2009/014/0022); Laverda at Salcedo, Vicenza, Veneto, Italy (GBA 2010/151/0068).

Remarks: The fragmentary nature of the material prevents closer identification. The isolated cheliped fragments from the Sarmatian of Ebendorf at Mistelbach (GBA 2009/014/0017), however, may belong to freshwater crabs of the family Potamidae Ortmann, 1896.

Decapoda indet.

Coll. Nos.: Body fossils: GBA 2017/035/0042, juvenile shrimp in lateral aspect; GBA 2017/035/0043, juvenile shrimp in lateral aspect; GBA 2017/035/0044, individual with partially preserved pereiopods and pleon in dorsoventral orientation; GBA 2017/035/0045, lobster in lateral aspect without carapace; GBA 2017/035/0046, poorly preserved lobster in lateral aspect; GBA 2017/035/0047, poorly preserved shrimp in lateral aspect. Pereiopod fragments: GBA 2009/014/0006, GBA 2009/014/0013–0014, GBA 2009/014/0016, GBA 2009/014/0018–0020, GBA 2010/049/0023, GBA 2010/127/0092; GBA 2017/035/0067.

Stratigraphic levels: Upper Jurassic, Tithonian (*Hybonotum* Zone); Oligocene–middle Miocene, Badenian (for details see Table 2).

Localities: Walbersdorf, Ziegelei, Burgenland, Austria (GBA 2009/014/0006); Grinzing, Vienna, Austria (GBA 2009/014/0013); Nussdorf, Vienna, Austria (GBA 2009/014/0014, GBA 2009/014/0016); Poysdorf, Lower Austria, Austria (GBA 2009/014/0018); Steinabrunn, Lower Austria, Austria (GBA 2009/014/0019–0020); Kink, Brestanica (Reichenburg), Slovenia (GBA 2010/049/0023); Monte Grumi at Castelgomberto, Vicenza, Veneto, Italy (GBA 2010/127/0092); Lapugy, Romania (GBA 2017/035/0067); Solnhofen-Langenaltheim area, Bavaria, Germany (GBA 2017/035/0042–0047).

Remarks: The fragmentary nature or poor preservation of the material prevents closer identification.

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Plates

Plate 1

Body plans of selected decapod groups

Fig. 1: Dendrobranchiata: Penaeoidea.
Lateral view of entire animal (modified after CHAN, 1998a).

Fig. 2: Axiidea: Callianassidae.
Lateral view of entire animal; note the pronounced heterochely (modified after BIFFAR, 1971).

Fig. 3: Astacidea.
Dorsal view of entire animal (modified after CHAN, 1998b).

Fig. 4: Polychelida.
Dorsal view of entire animal; note the presence of chelae on the first four pairs of pereiopods (modified after CHAN, 1998b).

Fig. 5: Achelata: Palinuridae.
Dorsal view of entire animal; note the absence of chelae on pereiopods (modified after CHAN, 1998b).

Fig. 6: Anomura: Paguroidea.
Dorsal view of entire animal; note the reduced pereiopods 4 and 5 (modified after NG, 1998).

Fig. 7: Brachyura: Raninidae.
Dorsal view of entire animal (modified after NG, 1998).

Fig. 8: Brachyura: Calappidae.
Lateral view of right chela with specialised dactylus (modified after NG, 1998).

Fig. 9: Brachyura: Portunidae.
Dorsal view of entire animal (modified after NG, 1998).

Fig. 10: Brachyura: Portunidae.
Ventral view of male (a) and female (b) sternum with folded pleon (modified after NG, 1998).

P1–P5 = pereiopods 1–5

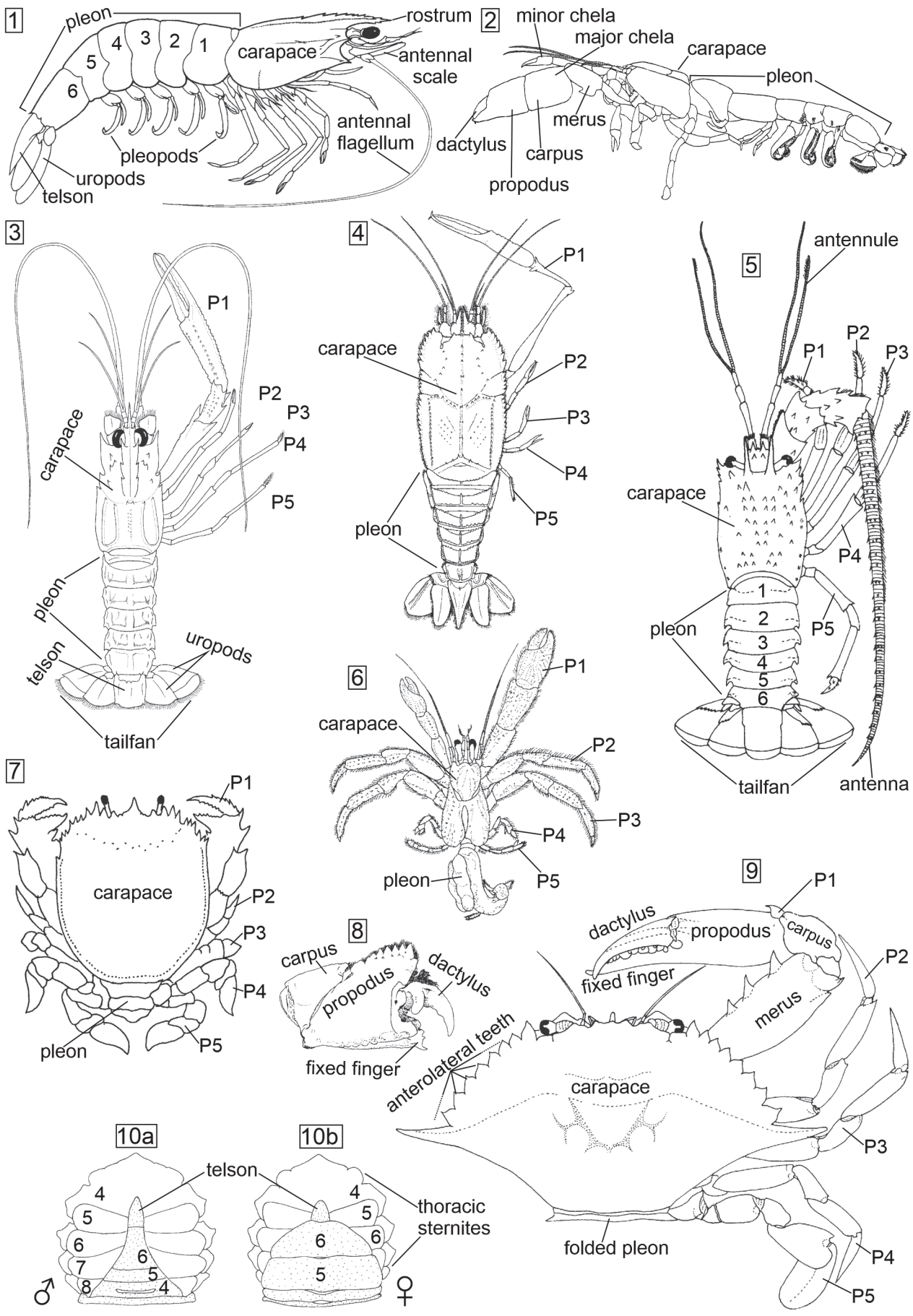

1
pleon
rostrum
4
3
2
1
5
6
carapace
antennal scale
antennal flagellum
pleopods
uropods
telson
2
minor chela
major chela
carapace
pleon
merus
dactylus
carpus
propodus
3
P1
P2
P3
P4
P5
carapace
pleon
telson
uropods
tailfan
4
P1
carapace
P2
P3
P4
P5
pleon
5
antennule
P1
P2
P3
carapace
P4
1
2
3
4
5
6
pleon
P5
tailfan
antenna
6
P1
carapace
P2
P3
P4
P5
pleon
7
P1
carapace
P2
P3
P4
P5
pleon
8
carpus
propodus
dactylus
fixed finger
9
P1
dactylus
propodus
carpus
P2
fixed finger
merus
anterolateral teeth
carapace
P3
folded pleon
P4
P5
10a
telson
4
5
6
7
8
6
5
4
♂
10b
4
5
6
6
5
thoracic sternites
♀

Plate 2

Dendrobranchiata: Penaeoidea: Penaeidae: *Antrimpos*

Fig. 1: *Antrimpos crassipes* (Bronn, 1858) from the Upper Triassic (Carnian) of Cave del Predil (Raibl), Italy.
Near-complete individual (figured specimen of Glaessner, 1930: Pl. 6, Fig. 1) in lateral aspect.
Coll. No.: GBA 1930/002/0001.

Fig. 2: *Antrimpos speciosus* von Münster, 1839 from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany; note the historical label (see the text for comments).
Individual in ventral aspect with appendages and without carapace and pleon (a); detail of preserved appendages (b).
Coll. No.: GBA 2017/035/0033.

Fig. 3: *Antrimpos speciosus* von Münster, 1839 from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete individual in dorsolateral aspect.
Coll. No.: GBA 2017/035/0055.

Fig. 4: *Antrimpos* sp. from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Fragmentary carapace with a partially preserved pleon in lateral aspect.
Coll. No.: GBA 2017/035/0030.

Fig. 5: *Antrimpos* sp. from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete individual in lateral aspect with partially preserved appendages.
Coll. No.: GBA 2017/035/0029.

Scale bar = 10 mm.

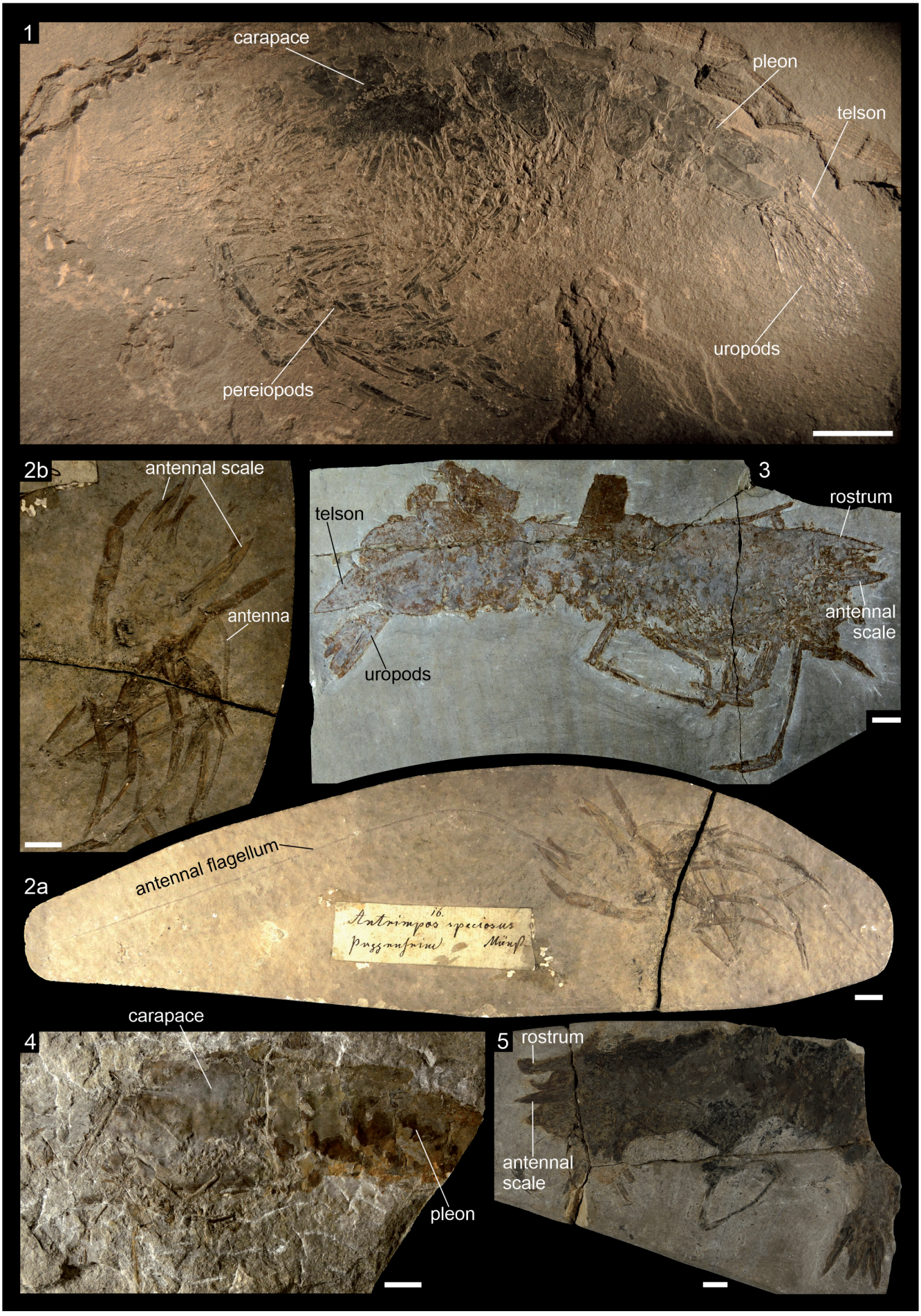

1
carapace
pleon
telson
uropods
pereiopods
2b
antennal scale
antenna
3
telson
rostrum
antennal scale
uropods
2a
antennal flagellum
16.
Antrimpos speciosus
Münst
4
carapace
pleon
5
rostrum
antennal scale

Plate 3

Caridea, Astacidea

Fig. 1: *Harthofia* sp. from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Complete individual (Coll. No.: GBA 2017/035/0040) in lateral aspect (a); counterpart (Coll. No.: GBA 2017/035/0039) of the same specimen (b).

Fig. 2: *Hefriga* sp. from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete individual in lateral aspect.
Coll. No.: GBA 2017/035/0041.

Fig. 3: *Pleopteryx kuempeli* SCHWEIGERT & GARASSINO, 2004 from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete individual in lateral aspect.
Coll. No.: GBA 2017/035/0053.

Fig. 4: *Stenochirus angustus* VON MÜNSTER, 1839 from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Complete individual in lateral aspect.
Coll. No.: GBA 2017/035/0034.

Fig. 5: *Palaeastacus fuciformis* (VON SCHLOTHEIM, 1822) from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Complete individual in lateral aspect.
Coll. No.: GBA 2017/035/0051.

Fig. 6: *Palaeastacus fuciformis* (VON SCHLOTHEIM, 1822) from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete individual in dorsolateral aspect.
Coll. No.: GBA 2017/035/0050.

Fig. 7: *Eryma modestiforme* (VON SCHLOTHEIM, 1822) from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete individual in dorsal aspect.
Coll. No.: GBA 2017/035/0035.

Fig. 8: *Pustulina minuta* (VON SCHLOTHEIM, 1822) from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Complete individual in dorsal aspect.
Coll. No.: GBA 2017/035/0054.

Fig. 9: ?*Pustulina* sp. from the Lower Jurassic of Pechgraben, Upper Austria, Austria.
Incomplete right propodus (without fixed finger) in outer lateral (a), inner lateral (b), and distal (c) views; counterpart of the same specimen (d).
Coll. No.: GBA 1909/001/0109.

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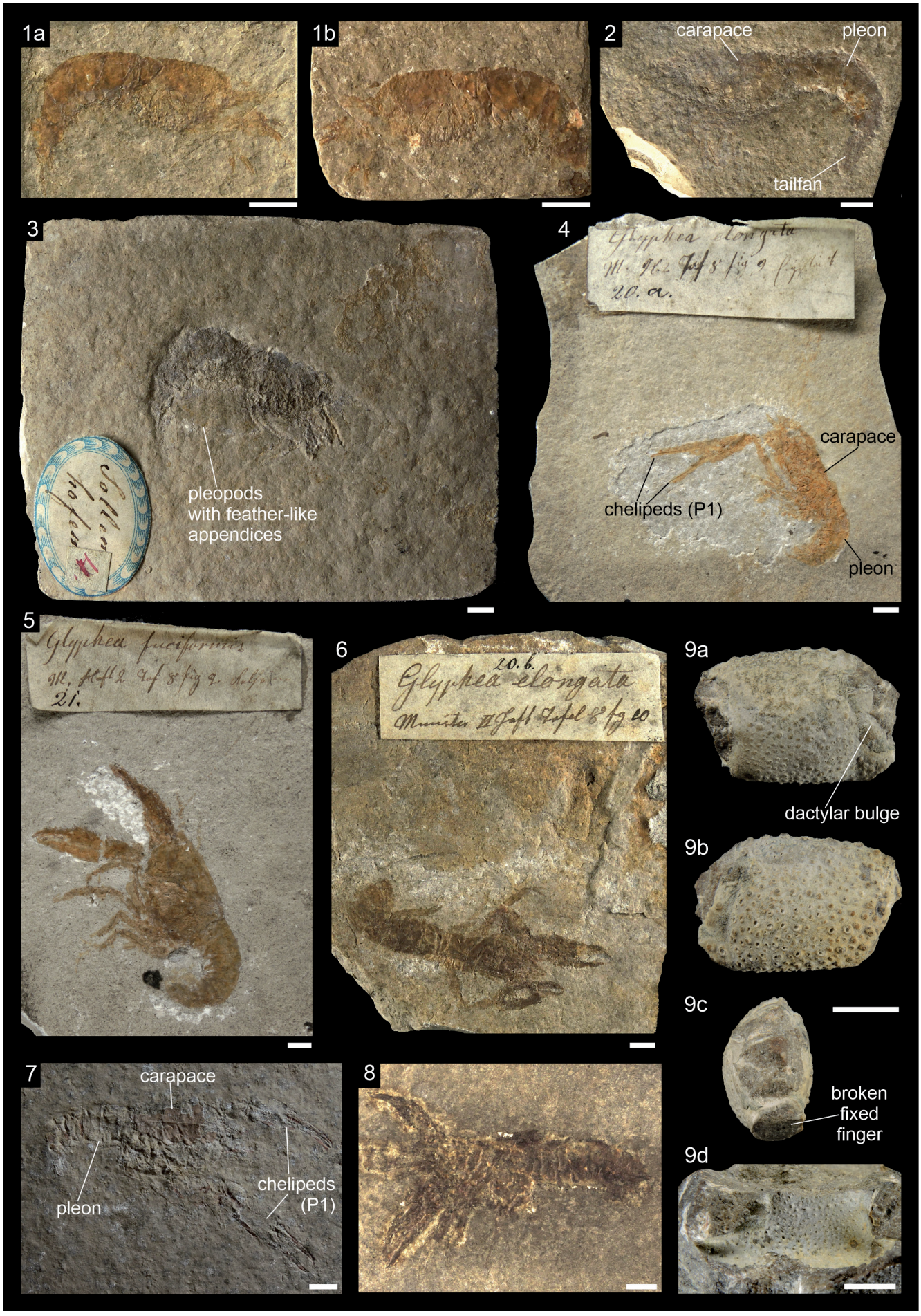

1a
1b
2
carapace
pleon
tailfan
3
pleopods
with feather-like
appendices
4
carapace
chelipeds (P1)
pleon
5
6
9a
dactylar bulge
9b
9c
broken
fixed
finger
9d
7
carapace
pleon
chelipeds
(P1)
8

Plate 4

Glypheidea

Fig. 1: *Mecochirus longimanatus* (VON SCHLOTHEIM, 1820) from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete female individual in dorsolateral aspect.
Coll. No.: GBA 2017/035/0049.

Fig. 2: *Mecochirus longimanatus* (VON SCHLOTHEIM, 1820) from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete female individual in lateral aspect.
Coll. No.: GBA 2017/035/0048.

Fig. 3: *Pemphix sueurii* (DESMAREST, 1822) from the Middle Triassic of Crailsheim, Baden-Württemberg, Germany.
Carapace with partially preserved pereiopods, whitened.
Coll. No.: GBA 2017/035/0058.

Fig. 4: *Pemphix sueurii* (DESMAREST, 1822) from the Middle Triassic of Crailsheim, Baden-Württemberg, Germany.
Carapace articulated with pleon (including tailfan), whitened.
Coll. No.: GBA 2017/035/0057.

Fig. 5: *Platychela trauthi* GLAESSNER, 1931 from the Upper Triassic (Carnian) of Lunz am See, Polzberg, Austria.
Poorly preserved carapace with partially preserved pleon and pereiopods, whitened
Coll. No.: GBA 1931/003/0002 (paratype).

Scale bar = 5 mm.

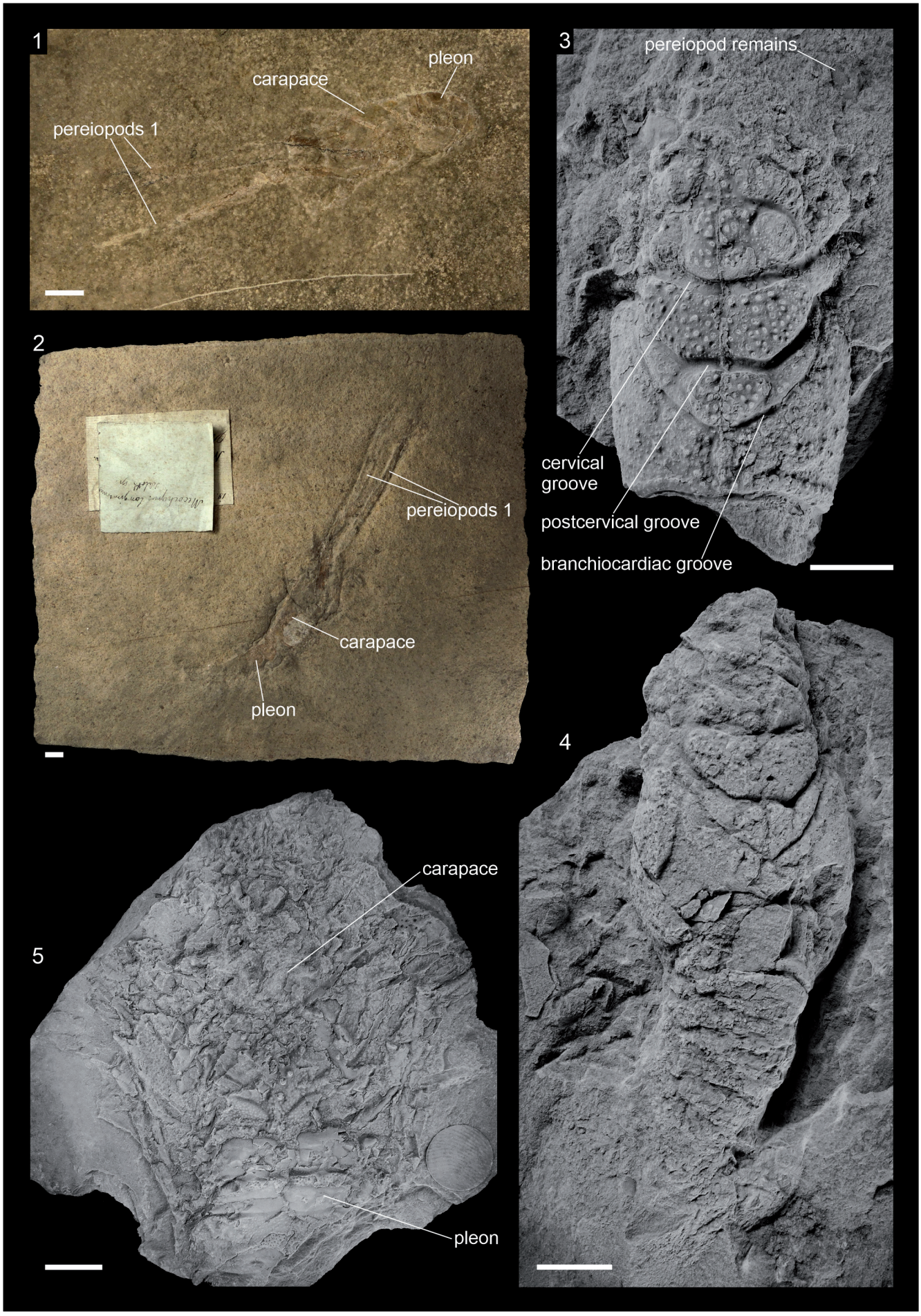

1
pleon
carapace
pereiopods 1
2
pereiopods 1
carapace
pleon
3
pereiopod remains
cervical groove
postcervical groove
branchiocardiac groove
4
5
carapace
pleon

Plate 5

Axiidea, Gebiidea

Fig. 1: *Mesostylus pervesleri* HYŽNÝ & SUMMESBERGER, 2019 from Strelzhof, Netting, Lower Austria, Austria.
Left major cheliped consisting of articulated merus, carpus, propodus and dactylus; whitened.
Coll. No.: GBA 2012/060/0020.

Fig. 2: *Mesostylus pervesleri* HYŽNÝ & SUMMESBERGER, 2019 from Muthmannsdorf, Lower Austria, Austria.
Left major cheliped consisting of articulated carpus, propodus and dactylus; whitened.
Coll. No.: GBA 2012/051/0091.

Fig. 3: *Karumballichirus tuberculatus* (LŐRENTHEY in LŐRENTHEY & BEURLEN, 1929) from the Eocene of Mortisa, Belluno, Veneto, Italy.
Incomplete right major propodus without its upper half, whitened.
Coll. No.: GBA 2010/269/0008.

Fig. 4: *Karumballichirus tuberculatus* (LŐRENTHEY in LŐRENTHEY & BEURLEN, 1929) from the Eocene of Meledo Basso, Vicenza, Veneto, Italy.
Right major propodus with broken fixed finger in a) outer lateral view and b) inner lateral view, whitened.
Coll. No.: GBA 2010/266/0001.

Fig. 5: *Karumballichirus tuberculatus* (LŐRENTHEY in LŐRENTHEY & BEURLEN, 1929) from the Eocene of Guttaring, Carinthia, Austria.
Left major propodus, whitened.
Coll. No.: GBA 2010/035/0021.

Fig. 6: Callianassidae (s.l.) indet. sp. 1 from the lower Oligocene (Rupelian) of Santa Trinita at Venice, Venezia, Veneto, Italy.
Isolated right major dactylus in outer lateral (a), inner lateral (b), upper (c), and occlusal (d) views.
Coll. No.: GBA 2010/134/0105.

Fig. 7: Callianassidae (s.l.) indet. sp. 2 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.
Fragmentary fixed finger.
Coll. No.: GBA 2010/182/0055/01.

Fig. 8: *Callianassa* cf. *kerepesiensis* MÜLLER, 1975 from the middle Miocene (Badenian) of Kleparov, Lviv, Ukraine.
Isolated incomplete left propodus.
Coll. No.: GBA 2009/014/0028/01.

Fig. 9: Callianassidae (s.l.) indet. sp. 3 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.
Isolated right propodus.
Coll. No.: GBA 2010/182/0055/02.

Fig. 10: *Gourretia* sp. from the lower Miocene (Ottnangian) of Ottnang, Upper Austria, Austria.
Major left propodus articulated with dactylus.
Coll. No.: GBA 2009/014/0024/01.

Fig. 11: *Calliax michelottii* (A. MILNE-EDWARDS, 1860) from the middle Miocene (Badenian) of Kamnik, Slovenia.
Isolated major propodus.
Coll. No.: GBA 2009/014/0027.

Fig. 12: Callianassidae (s.l.) indet. sp. 4 from the middle Miocene (Badenian) of Müllendorf, Burgenland, Austria.
Isolated right propodus.
Coll. No.: GBA 2009/014/0005.

Fig. 13: *Jaxea kuemeli* BACHMAYER, 1954 from the lower Miocene (Ottnangian) of Ottnang, Upper Austria, Austria.
Near-complete individual in lateral aspect.
Coll. No.: GBA 2009/014/0023 (collective number).

Fig. 14: *Jaxea kuemeli* BACHMAYER, 1954 from the lower Miocene (Ottnangian) of Ottnang, Upper Austria, Austria.
Chela consisting of propodus articulated with dactylus.
Coll. No.: GBA 2009/014/0023 (collective number).

Scale bar = 5 mm.

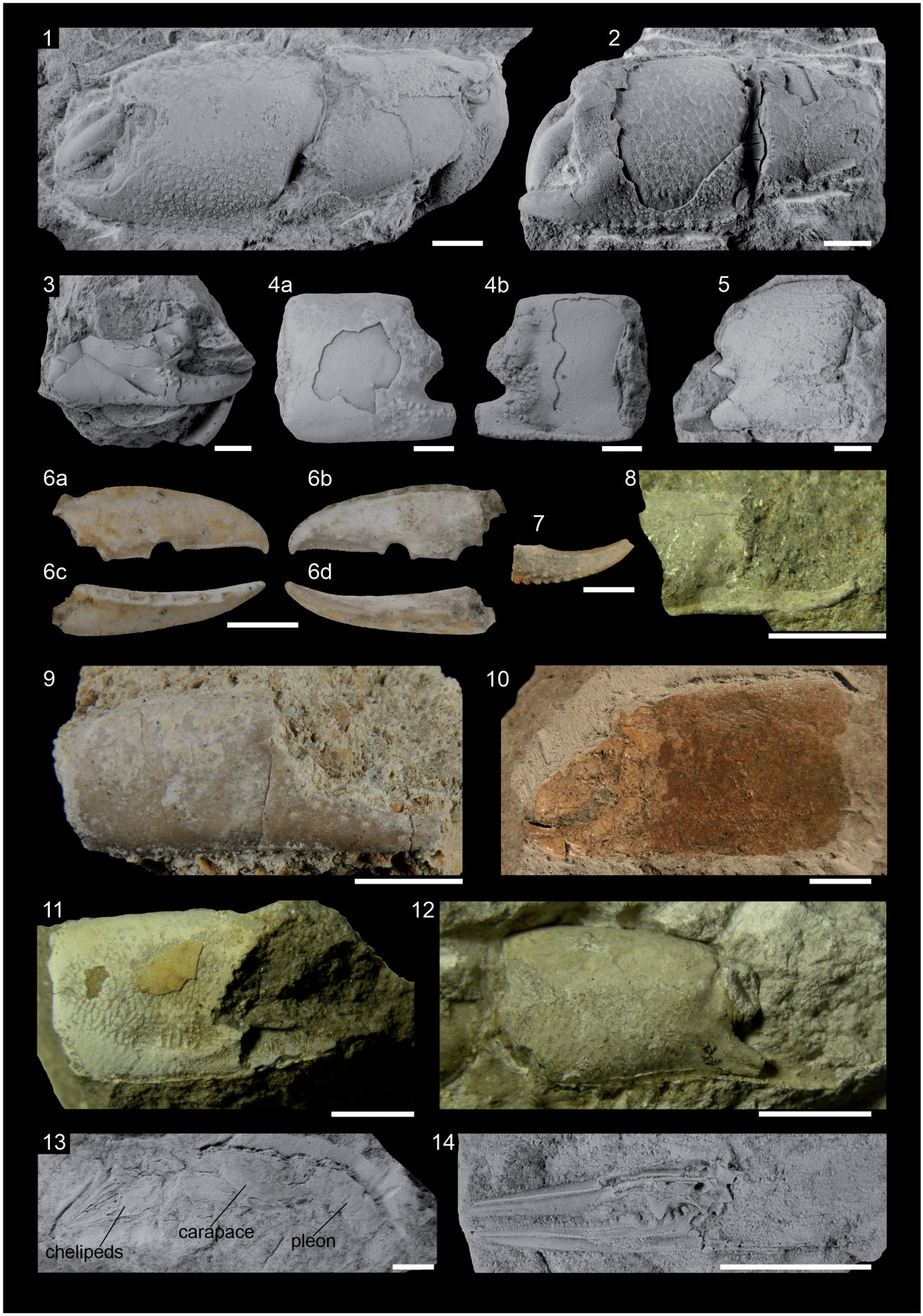

1
2
3
4a
4b
5
6a
6b
6c
6d
7
8
9
10
11
12
13
chelipeds
carapace
pleon
14

Plate 6

Achelata: Palinuridae: *Justitia*

Fig. 1: *Justitia desmaresti* (SECRETAN, 1975) from the lower Eocene (Ypresian) of the Bolca area, Lessini Mountains, Verona, Veneto, Italy. Near-complete individual in ventral aspect.
Coll. No.: GBA 2010/275/0053.

Scale bar = 10 mm.


1
2379

Plate 7

Achelata, Polychelida

Fig. 1: *Linuparus bigranulatus* GLAESSNER, 1930 from the upper Eocene (Priabonian) of Hollingstein at Niederhollabrunn, Lower Austria, Austria.
Imprint of the anterior portion of the carapace, unwhitened (a) and whitened under two different angled lights (b, c).
Coll. No.: GBA 1930/002/0004.

Fig. 2: *Linuparus bigranulatus* GLAESSNER, 1930 from the upper Eocene (Priabonian) of Hollingstein at Niederhollabrunn, Lower Austria, Austria.
Posterior portion of carapace articulated with pleon, whitened.
Coll. No.: GBA 1930/002/0003 (holotype).

Fig. 3: *Eryon cuvieri* DESMAREST, 1817 from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete individual in ventral aspect.
Coll. No.: GBA 2017/035/0037.

Fig. 4: *Eryon cuvieri* DESMAREST, 1817 from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Individual in ventral aspect with partially preserved pereiopods; note the preservation of mandibles.
Coll. No.: GBA 2017/035/0038.

Fig. 5: *Eryon cuvieri* DESMAREST, 1817 from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Near-complete individual in dorsal aspect (a); detail of pleon (b).
Coll. No.: GBA 2017/035/0036.

Fig. 6: *Palinurina longipes* VON MÜNSTER, 1839 from the Upper Jurassic (Tithonian) of the Solnhofen-Langenaltheim area, Bavaria, Germany.
Entire individual preserved in dorsolateral aspect.
Coll. No.: GBA 2017/035/0052.

Fig. 7: *Clytiella spinifera* GLAESSNER, 1931 from the Upper Triassic (Carnian) of Lunz am See, Polzberg, Lower Austria, Austria.
Near-complete individual preserved in dorsolateral aspect (a); detail of pleon (b).
Coll. No.: GBA 1931/003/0001 (holotype).

Fig. 8: *Tetrachela raiblana* (BRONN, 1858) from the Upper Triassic (Carnian) of Cave del Predil (Raibl), Friuli-Venezia-Giulia, Italy.
Individual in dorsal aspect with well-preserved carapace and pleon and partially preserved pereiopods (a); detail of pleon (b).
Coll. No.: GBA 1930/002/0002/01.

Scale bar = 5 mm.

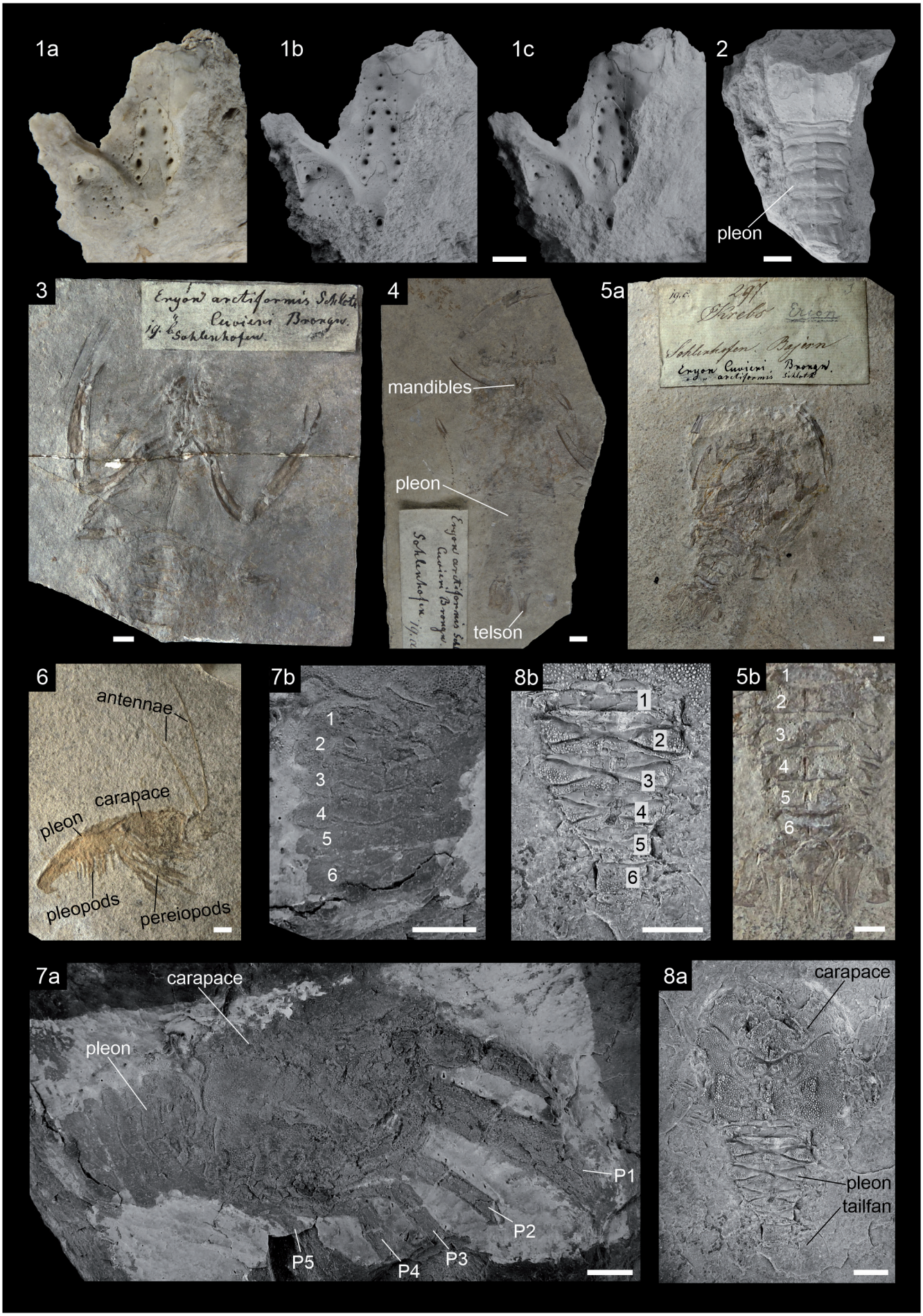

1a
1b
1c
2
pleon
3
4
mandibles
pleon
telson
5a
6
antennae
carapace
pleon
pleopods
pereiopods
7b
1
2
3
4
5
6
8b
1
2
3
4
5
6
5b
1
2
3
4
5
6
7a
carapace
pleon
P1
P2
P3
P4
P5
8a
carapace
pleon
tailfan

Plate 8

Anomura and Brachyura: Dromiacea: *Polycnemidium*

Fig. 1: *Munidopsis salinaria* Gašparič, Hyžný, Jovanović, Ćorić & Vrabac, 2019 from the middle Miocene (Badenian) of Dolnja Tuzla, Bosnia.
Near-complete dorsal carapace under two different angled lights (a, b).
Coll. No.: GBA 1892/005/0001 (holotype).

Fig. 2: *Eocalcinus cavus* Beschin, Busulini, De Angeli & Tessier, 2002 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.
Complete left propodus articulated with dactylus.
Coll. No.: GBA 2010/182/0055/03.

Fig. 3: *Eocalcinus cavus* Beschin, Busulini, De Angeli & Tessier, 2002 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.
Near-complete left propodus articulated with dactylus.
Coll. No.: GBA 2010/186/0252/03.

Fig. 4: *Eocalcinus cavus* Beschin, Busulini, De Angeli & Tessier, 2002 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.
Left propodus with bryozoan epibionts in inner lateral (a), outer lateral (b, c) and upper (d) views.
Coll. No.: GBA 2010/186/0252/01.

Fig. 5: *Eocalcinus cavus* Beschin, Busulini, De Angeli & Tessier, 2002 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.
Fragmentary left propodus articulated with dactylus.
Coll. No.: GBA 2010/186/0252/04.

Fig. 6: *Eocalcinus cavus* Beschin, Busulini, De Angeli & Tessier, 2002 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.
Fragmentary left propodus (without fixed finger).
Coll. No.: GBA 2010/186/0252/02.

Fig. 7: *Calcinus* sp. from the middle Eocene (Lutetian) of San Giovanni Ilarione, Verona, Veneto, Italy.
Isolated left propodus.
Coll. No.: GBA 1875/005/0034/01.

Fig. 8: Paguridae gen. et sp. indet. from the middle Miocene (Badenian) of Baden, Lower Austria, Austria.
Isolated right dactylus in outer lateral (a), inner lateral (b), upper (c) and occlusal (d) views.
Coll. No.: GBA 2009/014/0012/06.

Fig. 9: *Polycnemidium pustulosum* (Reuss, 1845) from the Upper Cretaceous (Coniacian) of Kamenická Nová Víska (Neudörfl bei Kamnitz), Czech Republic.
Near-complete carapace under two different angled lights (a, b); whitened (c).
Coll. No.: GBA 1893/007/0001.

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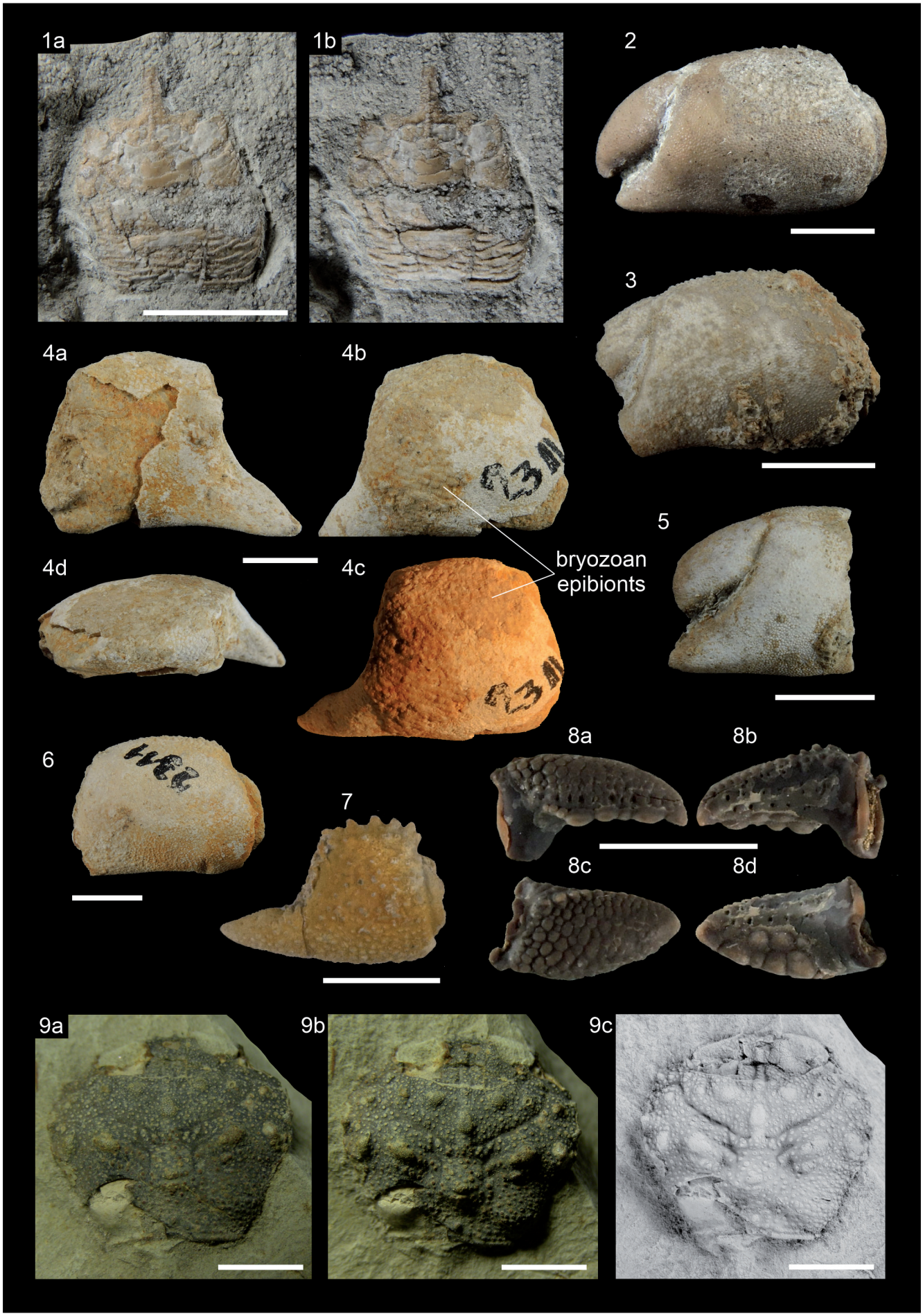

1a
1b
2
3
4a
4b
4c
4d
bryozoan
epibionts
5
6
7
8a
8b
8c
8d
9a
9b
9c

Plate 9

Brachyura: Dromiacea

Fig. 1: *Longodromites angustus* (REUSS, 1858b) from the Kimmeridgian–lower Berriasian of Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.
Internal mould of the carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 2007/096/0005 (holotype).

Fig. 2: *Goniodromites bidentatus* REUSS, 1858b from the Kimmeridgian–lower Berriasian of Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.
Isolated dorsal carapace with preserved cuticular surfaces, whitened.
Coll. No.: GBA 2007/096/0006 (lectotype).

Fig. 3: *Goniodromites polyodon* REUSS, 1858b from the Kimmeridgian–lower Berriasian of Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.
Internal mould of the carapace in dorsal view, whitened.
Coll. No.: GBA 2007/096/0008 (lectotype of *Goniodromites complanatus* REUSS, 1858b).

Fig. 4: *Goniodromites polyodon* REUSS, 1858b from the Kimmeridgian–lower Berriasian of Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.
Isolated dorsal carapace, whitened.
Coll. No.: GBA 2007/096/0007/01 (lectotype).

Fig. 5: *Goniodromites polyodon* REUSS, 1858b from the Kimmeridgian–lower Berriasian of Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.
Isolated dorsal carapace, whitened.
Coll. No.: GBA 2007/096/0007/02 (paralectotype).

Fig. 6: *Goniodromites polyodon* REUSS, 1858b from the Kimmeridgian–lower Berriasian of Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.
Isolated dorsal carapace with preserved cuticular surfaces in anterior (a), dorsal (b) and lateral (c) views. The specimen is associated with the lectotype of *Goniodromites bidentatus* REUSS, 1858b shown also in Fig. 2.
Coll. No.: GBA 2007/096/0006.

Fig. 7: *Tanidromites pustulosa* (VON MEYER, 1860) from the Kimmeridgian–lower Berriasian of Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.
Isolated dorsal carapace, whitened.
Coll. No.: GBA 2007/096/0004/01 (lectotype).

Fig. 8: *Konidromites gibbus* (REUSS, 1858b) from the Kimmeridgian–lower Berriasian of Ignáce (Ignaziberg) near Nový Jičín (Neu Titschein), Czech Republic.
Isolated dorsal carapace, whitened.
Coll. No.: GBA 2007/096/0009 (lectotype).

Fig. 9: *Prosopon verrucosum* REUSS, 1858b from the Kimmeridgian–lower Berriasian of Štramberk (Stramberg), Czech Republic.
Isolated dorsal carapace in anterior (a), and dorsal (b) views; whitened (c).
Coll. No.: GBA 2007/096/0003 (holotype).

Scale bar = 5 mm.

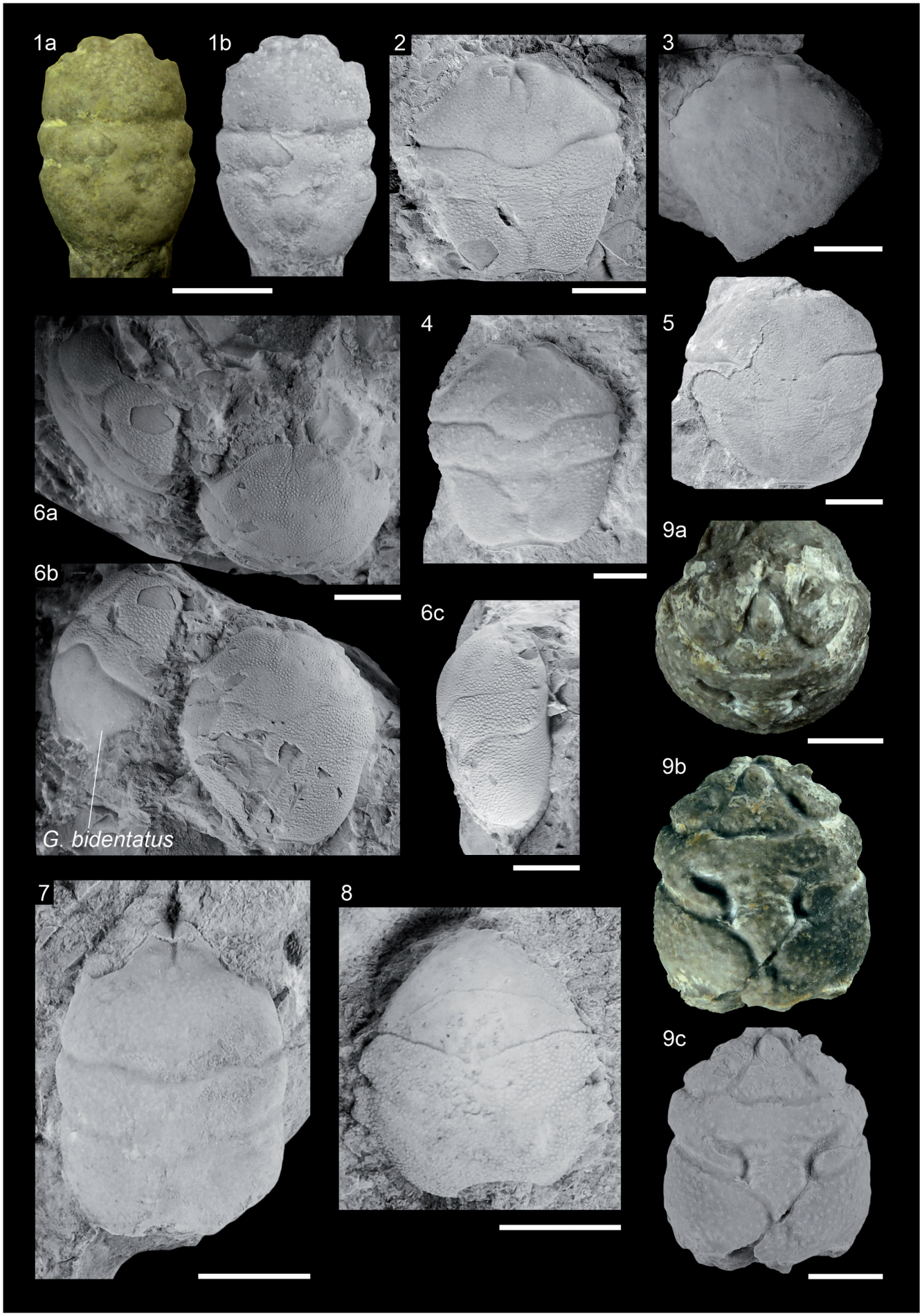

1a
1b
2
3
4
5
6a
6b
6c
G. bidentatus
7
8
9a
9b
9c

Plate 10

Brachyura: Raninidae: *Lophoranina*

Fig. 1: *Lophoranina avesana* (BITTNER, 1884a) from the middle Eocene (Lutetian) of the quarry "Scole" at Avesa near Verona, Veneto, Italy.
Incomplete carapace in dorsal view.
Coll. No.: GBA 1883/007/0020.

Fig. 2: *Lophoranina avesana* (BITTNER, 1884a) from the middle Eocene (Lutetian) of the quarry "Scole" at Avesa near Verona, Veneto, Italy.
Incomplete individual with complete anterior portion of carapace and partially preserved chelipeds and sternum, whitened.
Coll. No.: GBA 1883/007/0001/01 (figured specimen of BITTNER, 1883: Pl. 1, Fig. 2).

Fig. 3: *Lophoranina avesana* (BITTNER, 1884a) from the middle Eocene (Lutetian) of the quarry "Scole" at Avesa near Verona, Veneto, Italy.
Isolated pterygostomial region and third maxilliped, whitened.
Coll. No.: GBA 1884/003/0007 (cast of a figured specimen of BITTNER, 1884a: Pl. 1, Fig. 2).

Fig. 4: *Lophoranina bittneri* (LŐRENTHEY, 1902) from the Eocene of Fumane di Polesella at Verona, Veneto, Italy.
Near-complete carapace (a); whitened (b).
Coll. No.: GBA 2010/243/0004.

Fig. 5: *Lophoranina laevifrons* (BITTNER, 1875) from the middle Eocene (Lutetian) of San Giovanni Ilarione, Verona, Veneto, Italy.
Complete carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 1895/003/0001 (figured specimen of BITTNER, 1895: Pl. 1, Figs. 3–4).

Fig. 6: *Lophoranina laevifrons* (BITTNER, 1875) from the middle Eocene (Lutetian) of San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Gran Croce, Verona, Veneto, Italy.
Near-complete carapace (a); whitened (b).
Coll. No.: GBA 1875/005/0003/02 (paralectotype).

Fig. 7: *Lophoranina laevifrons* (BITTNER, 1875) from the middle Eocene (Lutetian) of San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Gran Croce, Verona, Veneto, Italy.
Near-complete carapace without posteriormost portion (a); whitened (b).
Coll. No.: GBA 1875/005/0003/01 (lectotype).

Fig. 8: *Lophoranina reussi* (WOODWARD, 1866) from the Eocene of San Pietro in Cariano, Verona, Veneto, Italy.
Incomplete carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 2007/096/0001 (figured specimen of REUSS, 1859: Pl. 5, Fig. 3).

Fig. 9: *Lophoranina reussi* (WOODWARD, 1866) from the Eocene of Ljubac, Pag, Dalmatia, Croatia.
Complete carapace under two different light settings, whitened (a, b).
Coll. No.: GBA 2010/099/0025.

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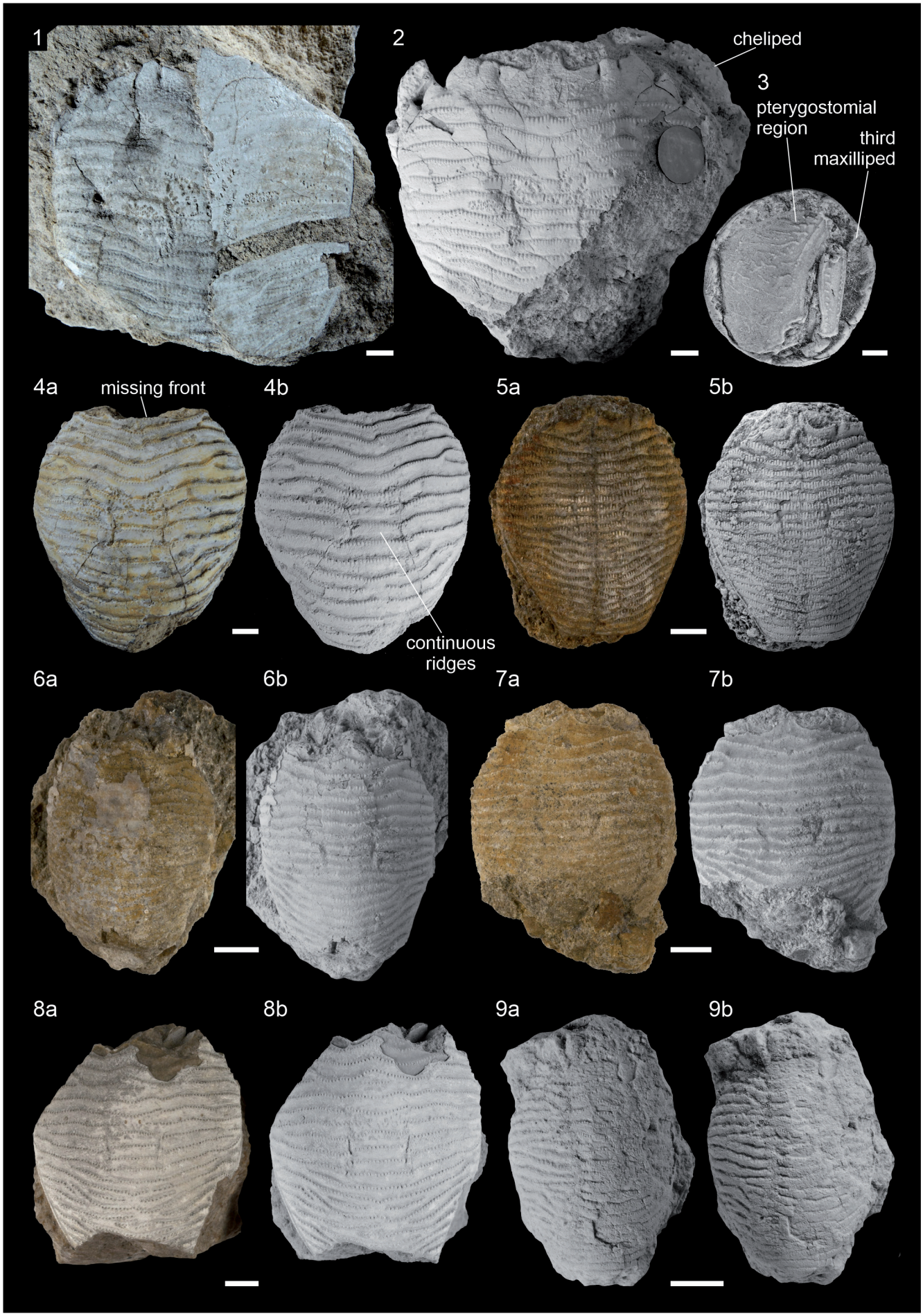

1
2
cheliped
3
pterygostomial region
third maxilliped
4a
missing front
4b
5a
5b
continuous ridges
6a
6b
7a
7b
8a
8b
9a
9b

Plate 11

Brachyura: Raninidae: ***Lophoranina***, ***Ranidina***, ***Raninoides***

Fig. 1: *Ranidina rosaliae* BITTNER, 1893 from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Individual in dorsal aspect with partially preserved pereiopods, whitened.
Coll. Nos.: GBA 1893/004/0001/01 (lectotype).

Fig. 2: *Raninoides notopoides* BITTNER, 1883 from the middle Eocene (Lutetian) of Monte Masua di Negrar northwest of Verona, Veneto, Italy.
Near-complete carapace without rostrum (a); whitened (b).
Coll. No.: GBA 1883/007/0004/01 (lectotype).

Fig. 3: *Lophoranina marestiana* (KÖNIG, 1825) from the middle Eocene (Lutetian) of San Giovanni Ilarione, Verona, Veneto, Italy.
Complete carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 1883/007/0001/02 (figured specimen of BITTNER, 1883: Pl. 1, Fig. 1).

Fig. 4: *Lophoranina marestiana* (KÖNIG, 1825) from the middle Eocene (Lutetian) of Kressenberg at Neukirchen, Bavaria, Germany.
Incomplete carapace, whitened.
Coll. No.: GBA 2010/031/0032.

Fig. 5: *Lophoranina marestiana* (KÖNIG, 1825) from the middle Eocene (Lutetian) of Gschliefgraben at Gmunden, Upper Austria, Austria.
Incomplete carapace, whitened.
Coll. No.: GBA 2010/019/0093.

Fig. 6: *Lophoranina* sp. from the upper Eocene (Priabonian) of Mossano, Vicenza, Veneto, Italy.
Carapace fragment.
Coll. No.: GBA 2017/035/0021.

Fig. 7: *Lophoranina* sp. from the Eocene of the lakeside of Lake Traun (Traunseeufer), Upper Austria, Austria.
Cheliped merus.
Coll. No.: GBA 2010/019/0098/01.

Fig. 8: *Lophoranina* sp. from the Eocene of the lakeside of Lake Traun (Traunseeufer), Upper Austria, Austria.
Carapace fragment.
Coll. No.: GBA 2010/019/0098/02.

Scale bar = 5 mm.

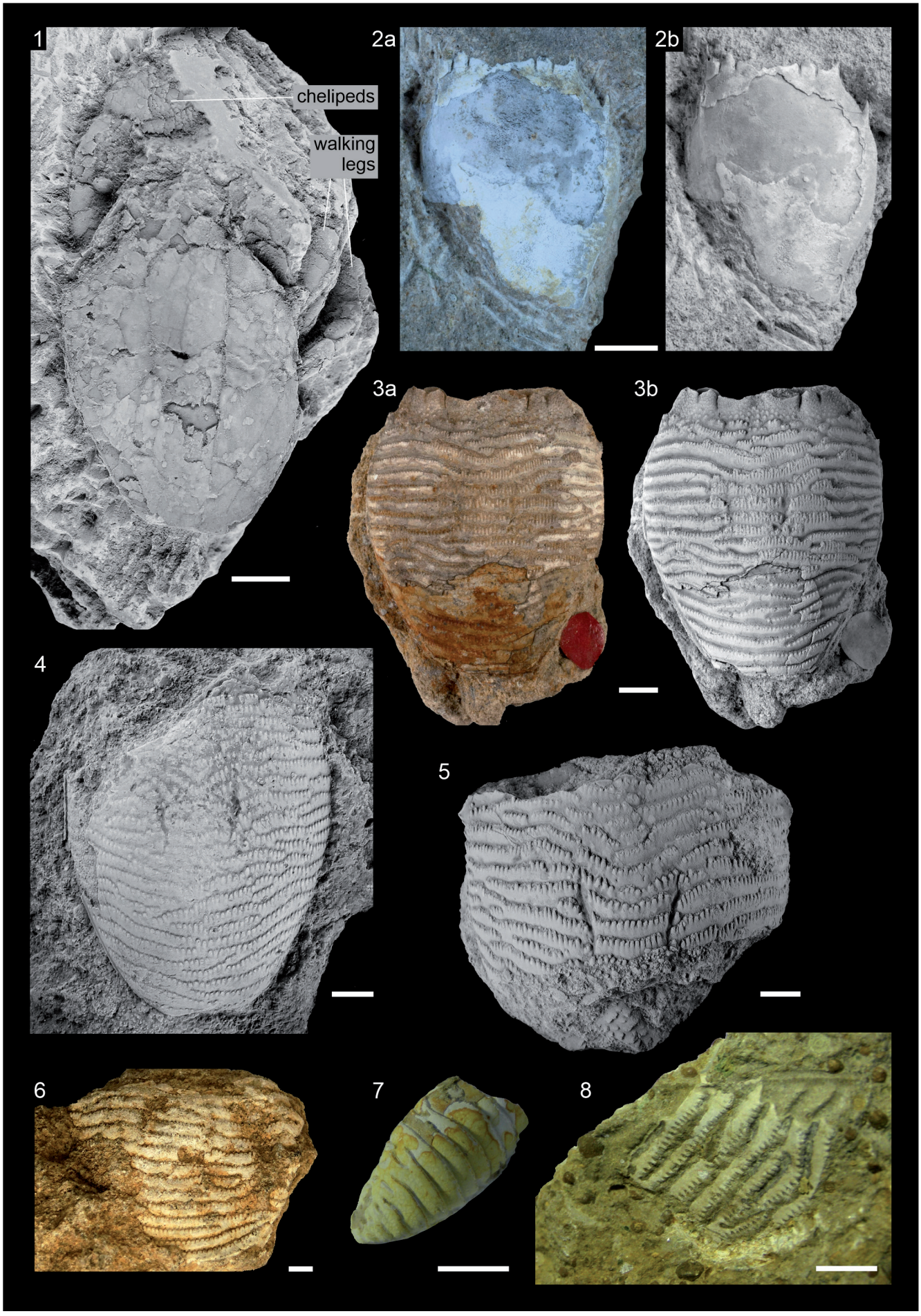

1
chelipeds
walking legs
2a
2b
3a
3b
4
5
6
7
8

Plate 12

Brachyura: Aethridae: *Hepatiscus*, Calappidae: *Calappa*, Cancridae: *Cancer*

Fig. 1: *Hepatiscus neumayri* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Verona, Veneto, Italy.
Complete isolated carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 1883/007/0016.

Fig. 2: *Hepatiscus neumayri* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Verona, Veneto, Italy.
Near-complete isolated carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 2017/035/0017.

Fig. 3: *Hepatiscus neumayri* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Verona, Veneto, Italy.
Complete isolated carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 2017/035/0018.

Fig. 4: *Hepatiscus pulchellus* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Complete isolated carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 1875/005/0008/01 (lectotype).

Fig. 5: *Hepatiscus pulchellus* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Complete isolated carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 1875/005/0008/02 (paralectotype).

Fig. 6: *Calappa* sp. from the middle Miocene (Badenian) of Devínska Nová Ves, Slovakia.
Isolated right dactylus in outer lateral view.
Coll. No.: GBA 2009/014/0026/01.

Fig. 7: *Calappa* sp. from the middle Miocene (Badenian) of Devínska Nová Ves, Slovakia.
Isolated right dactylus in outer lateral view.
Coll. No.: GBA 2009/014/0026/02.

Fig. 8: *Calappa* sp. from the middle Miocene (Badenian) of Devínska Nová Ves, Slovakia.
Isolated right dactylus in outer lateral view.
Coll. No.: GBA 2009/014/0026/03.

Fig. 9: *Cancer illyricus* BITTNER, 1884a from the middle Miocene (Badenian) of Toplice (Töplitz) at Zagorje ob Savi (Sagor), Slovenia.
Right chela consisting of articulated carpus, propodus and dactylus (a); handwritten label by REUSS (b).
Coll. No.: GBA 2010/005/0077.

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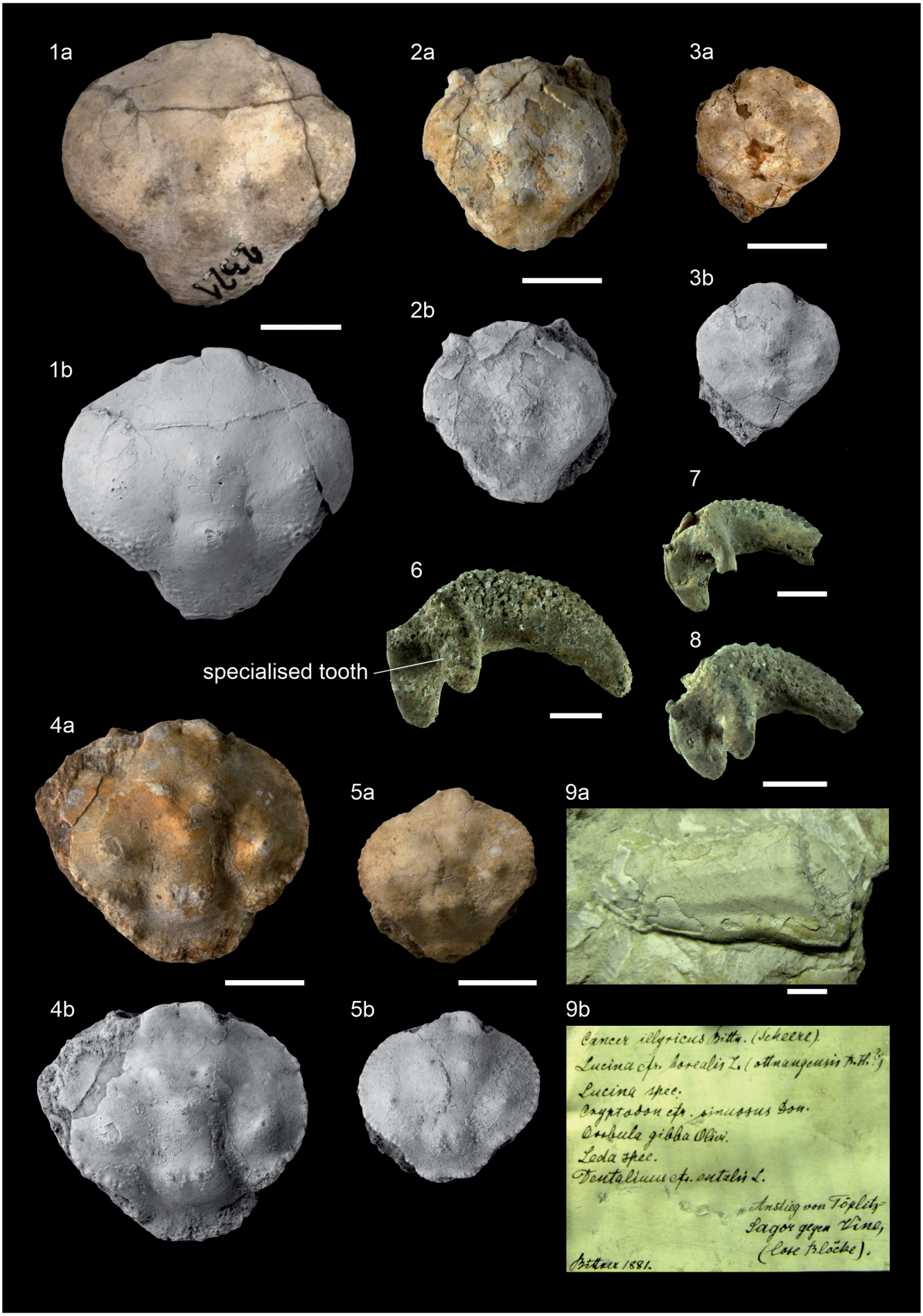

1a
2a
3a
1b
2b
3b
7
6
specialised tooth
8
4a
5a
9a
4b
5b
9b
Cancer illyricus Brtt. (Scheere).
Lucina cfr. borealis L. (ottnangensis R.H. Z.)
Lucina spec.
Cryptodon cfr. sinuosus Don.
Donacula gibba Olivi.
Leda spec.
Dentalium cfr. entalis L.
Anstieg von Töplitz
gegen Vino,
(Lose Blöcke).
Brtt. 1881.

Plate 13

Brachyura: Cancridae: *Tasadia*

Fig. 1: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Ulrichsberg, between Týnec (Teinitz) and Kamnik (Stein in Oberkrain), Gorenjska, Slovenia.
Near-complete individual with carapace, sternum and right cheliped in dorsal (a), posterodorsal (b), and ventral (c) views; all whitened.
Coll. No.: GBA 1884/003/0006/01 (lectotype).

Fig. 2: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Ulrichsberg, between Týnec (Teinitz) and Kamnik (Stein in Oberkrain), Gorenjska, Slovenia.
Incomplete carapace, whitened.
Coll. No.: GBA 1884/003/0006/02 (paralectotype).

Fig. 3: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Complete carapace with partially preserved pereiopods, whitened.
Coll. No.: GBA 2009/014/0001/01.

Fig. 4: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Incomplete carapace with partially preserved pereiopods, whitened.
Coll. No.: GBA 2009/014/0001/02.

Fig. 5: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Incomplete carapace, whitened.
Coll. No.: GBA 2009/014/0002/01.

Fig. 6: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Near-complete carapace, whitened.
Coll. No.: GBA 2009/014/0002/02.

Fig. 7: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Plesko near Trbovlje (Trifail), Slovenia.
Near-complete carapace with associated chelipeds in anterior (a) and dorsal (b) views; both whitened.
Coll. No.: GBA 2010/005/0046.

Fig. 8: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Fragmentary carapace, whitened.
Coll. No.: GBA 2009/014/0001/03.

Fig. 9: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Near-complete carapace, whitened.
Coll. No.: GBA 2009/014/0002/03.

Fig. 10: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Kamnik (Stein in Oberkrain), Gorenjska, Slovenia.
Incomplete carapace, whitened.
Coll. No.: GBA 2009/014/0003/01.

Fig. 11: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Ventral view of presumed male individual, whitened.
Coll. No.: GBA 2009/014/0002/04.

Fig. 12: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Near-complete carapace, whitened.
Coll. No.: GBA 2009/014/0002/05.

Fig. 13: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Ulrichsberg, between Týnec (Teinitz) and Kamnik (Stein in Oberkrain), Gorenjska, Slovenia.
Near-complete carapace, whitened.
Coll. No.: GBA 2017/035/0065.

Fig. 14: *Tasadia carniolica* (BITTNER, 1884a) from the middle Miocene (Badenian) of Walbersdorf, Burgenland, Austria.
Ventral view of male individual, whitened.
Coll. No.: GBA 2009/014/0001/04.

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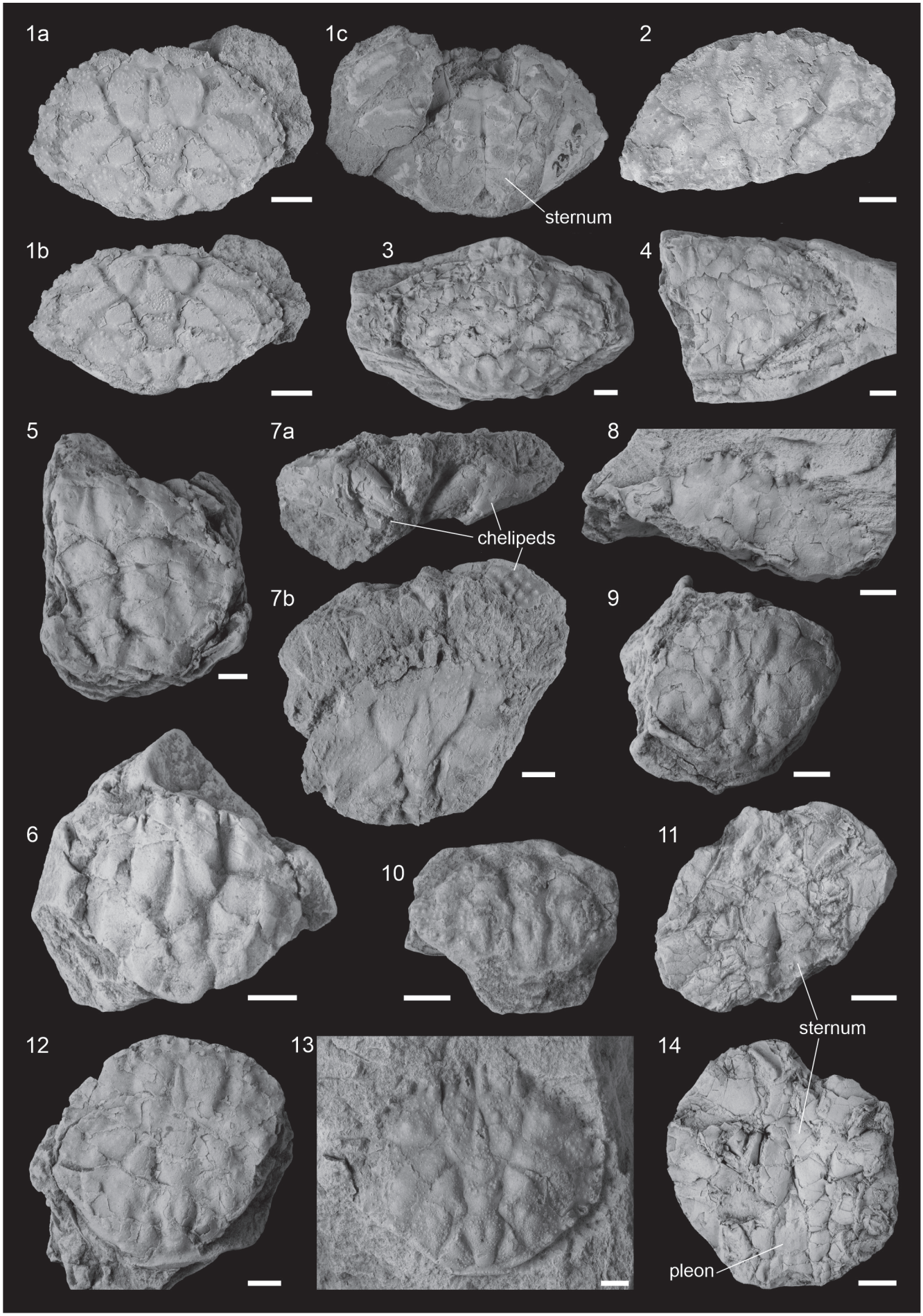

1a
1c
2
sternum
1b
3
4
5
7a
8
chelipeds
7b
9
6
10
11
sternum
12
13
14
pleon

Plate 14

Brachyura: Carpiliidae: *Palaeocarpilius*

Fig. 1: *Palaeocarpilius macrochelus* (DESMAREST, 1822) from the Eocene of Marostica (Maròstega), Vicenza, Veneto, Italy.
Near-complete individual in anterior (a), dorsal (b), and ventral (c) views.
Coll. No.: GBA 2017/035/0016.

Fig. 2: *Palaeocarpilius macrochelus* (DESMAREST, 1822) from the Eocene of Priabona, Monte di Malo, Vicenza, Veneto, Italy.
Near-complete male individual in anterior view, whitened (a); posterodorsal view, whitened (b); dorsal view (c); dorsal view, whitened (d); ventral view (e), ventral view, whitened (f).
Coll. No.: GBA 1883/007/0011.

Fig. 3: *Palaeocarpilius macrochelus* (DESMAREST, 1822) from the Eocene of San Gaudenzio at Brendola, Colli Berici, Vicenza, Veneto, Italy.
Complete male individual in dorsal (a), anteroventral (b), and ventral (c) views; d) detail on the pleon.
Coll. No.: GBA 2017/035/0002.

Fig. 4: *Palaeocarpilius macrochelus* (DESMAREST, 1822) from the Eocene of Venezia (Venice), Vicenza, Veneto, Italy.
Near-complete male individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2017/035/0001.

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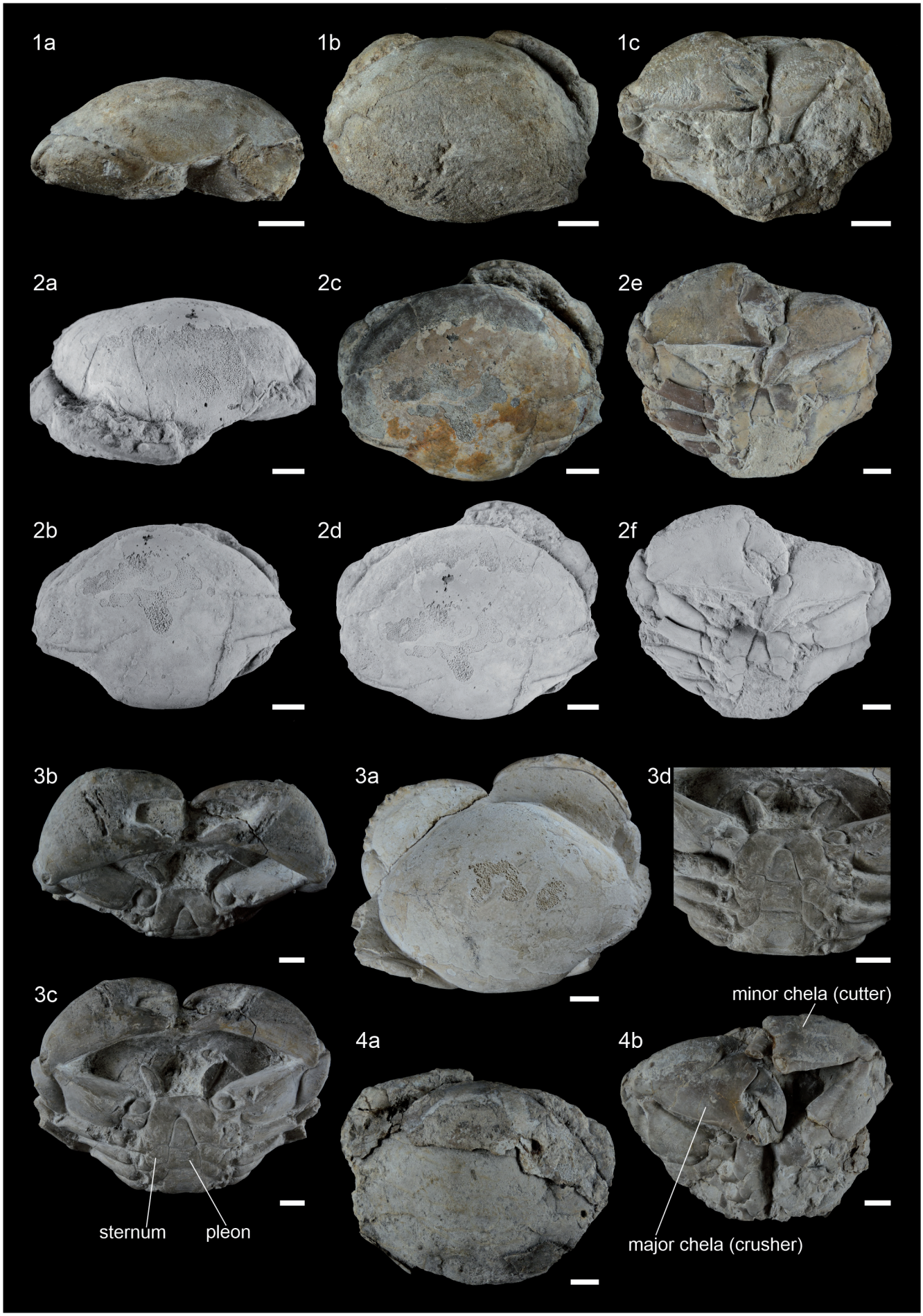

1a
1b
1c
2a
2c
2e
2b
2d
2f
3b
3a
3d
3c
4a
4b
minor chela (cutter)
major chela (crusher)
sternum
pleon

Plate 15

Brachyura: Zanthopsidae: *Harpactocarcinus*
Type collection of *Cancer brachychelus* REUSS, 1859

Fig. 1: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of San Michele at Bassano, Marostica near Vicenza, Italy.
Female individual with partially preserved chelipeds in dorsal (a) and ventral (b) views; handwritten label by REUSS (c).
Coll. No.: GBA 2007/096/0002 (lectotype of *Cancer brachychelus* REUSS, 1859; figured specimen of REUSS, 1859: Pl. 13, Fig. 5).

Fig. 2: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from Eocene of Valle San Floriano, Marostica (Maròstega), Vicenza, Veneto, Italy.
Female individual in dorsal (a) and ventral (b) views; handwritten label by REUSS (c).
Coll. No.: GBA 2007/096/0019 (paralectotype of *Cancer brachychelus* REUSS, 1859).

Fig. 3: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of San Michele at Bassano, Marostica near Vicenza, Veneto, Italy.
Female individual with partially preserved chelipeds in dorsal (a) and ventral (b) views; handwritten label by REUSS (c).
Coll. No.: GBA 2007/096/0022 (paralectotype of *Cancer brachychelus* REUSS, 1859).

Fig. 4: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of Parnina, San Floriano di Valpolicella, Italy.
Female individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2007/096/0030 (paralectotype of *Cancer brachychelus* REUSS, 1859).

Fig. 5: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of San Michele at Bassano, Marostica near Vicenza, Veneto, Italy.
Female individual in dorsal (a) and ventral (b) views; handwritten label by REUSS (c).
Coll. No.: GBA 2007/096/0023 (paralectotype of *Cancer brachychelus* REUSS, 1859).

Scale bar = 10 mm.

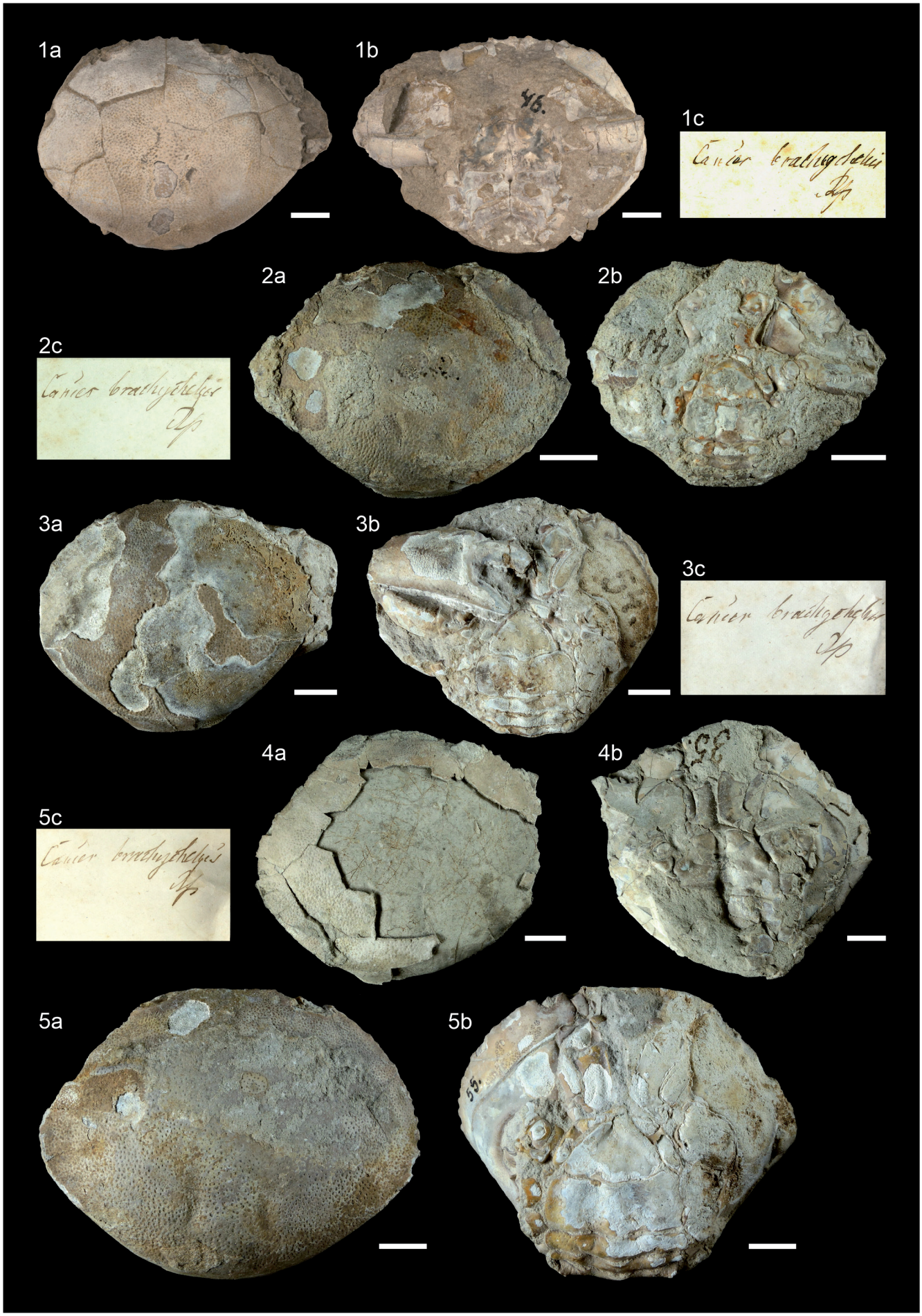

1a
1b
46.
1c
2a
2b
2c
3a
3b
3c
4a
4b
5c
5a
5b

Plate 16

Brachyura: Zanthopsidae: *Harpactocarcinus*

Fig. 1: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of San Michele at Bassano, Marostica near Vicenza, Veneto, Italy.
Individual of indeterminate sex in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2007/096/0025.

Fig. 2: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of San Michele at Bassano, Marostica near Vicenza, Veneto, Italy.
Incomplete female individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2007/096/0024.

Fig. 3: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of Parnina, San Floriano di Valpolicella, Italy.
Incomplete female individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2007/096/0028.

Fig. 4: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of Valle San Floriano, Marostica (Maròstega), Vicenza, Veneto, Italy.
Female individual without appendages in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2007/096/0021.

Fig. 5: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of Valle San Floriano, Marostica (Maròstega), Vicenza, Veneto, Italy.
Incomplete male individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2007/096/0020.

Fig. 6: Handwritten labels by REUSS.

Fig. 7: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the upper Eocene (Priabonian) of Priabona, Monte di Malo, Vicenza, Veneto, Italy.
Female individual with chelipeds in dorsal view, whitened.
Coll. No.: GBA 1883/007/0014/05.

Fig. 8: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of Val Rovina at Bassano, Vicenza, Veneto, Italy.
Female individual in dorsal (a), anterodorsal (b), and anterior (c) views; all whitened.
Coll. No.: GBA 1883/007/0014/01.

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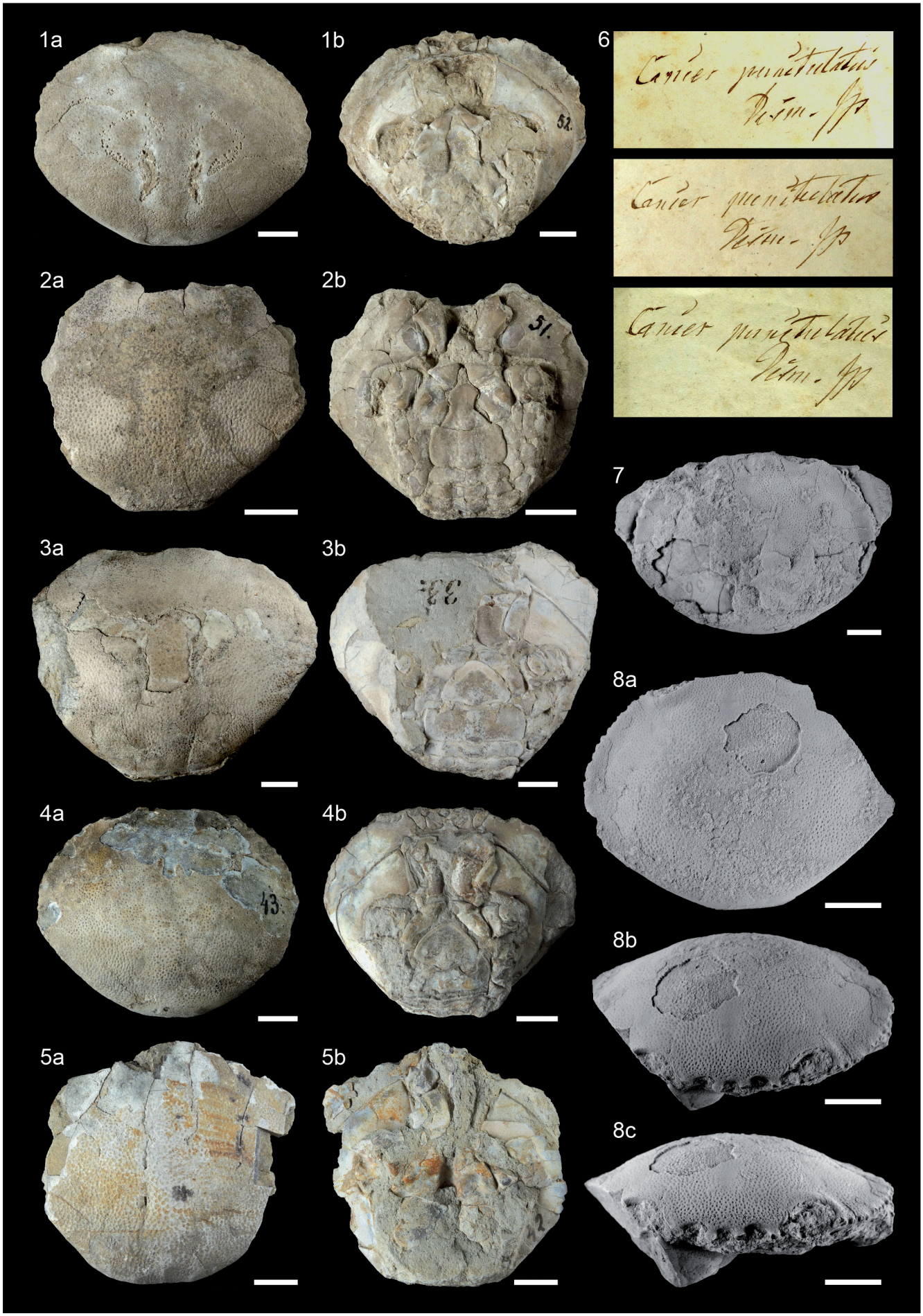

1a
1b
6
2a
2b
7
3a
3b
8a
4a
4b
8b
5a
5b
8c

Plate 17

Brachyura: Zanthopsidae: *Harpactocarcinus*

Fig. 1: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the upper Oligocene (Chattian) of Magre at Schio, Vicenza, Veneto, Italy.
Male individual without appendages in anterior (a), dorsal (b), and ventral (c) views.
Coll. No.: GBA 2010/162/0002.

Fig. 2: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the upper Oligocene (Chattian) of Magre at Schio, Vicenza, Veneto, Italy.
Male individual in anterior (a), dorsal (b), and ventral (c) views.
Coll. No.: GBA 2010/162/0001.

Fig. 3: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the upper Eocene (Priabonian) of Castel Policella at Verona, Veneto, Italy.
Female individual in anterior (a), dorsal (b), and ventral (c) views.
Coll. No.: GBA 2010/221/0001.

Fig. 4: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the upper Eocene (Priabonian) of Priabona, Monte di Malo, Vicenza, Veneto, Italy.
Female individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2017/035/0005.

Fig. 5: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of Parnina, San Floriano di Valpolicella, Italy.
Female individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2017/035/0012.

Fig. 6: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of San Fiorano at Moron di Negrar, Verona, Veneto, Italy.
Female individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2017/035/0007.

Scale bar = 10 mm.

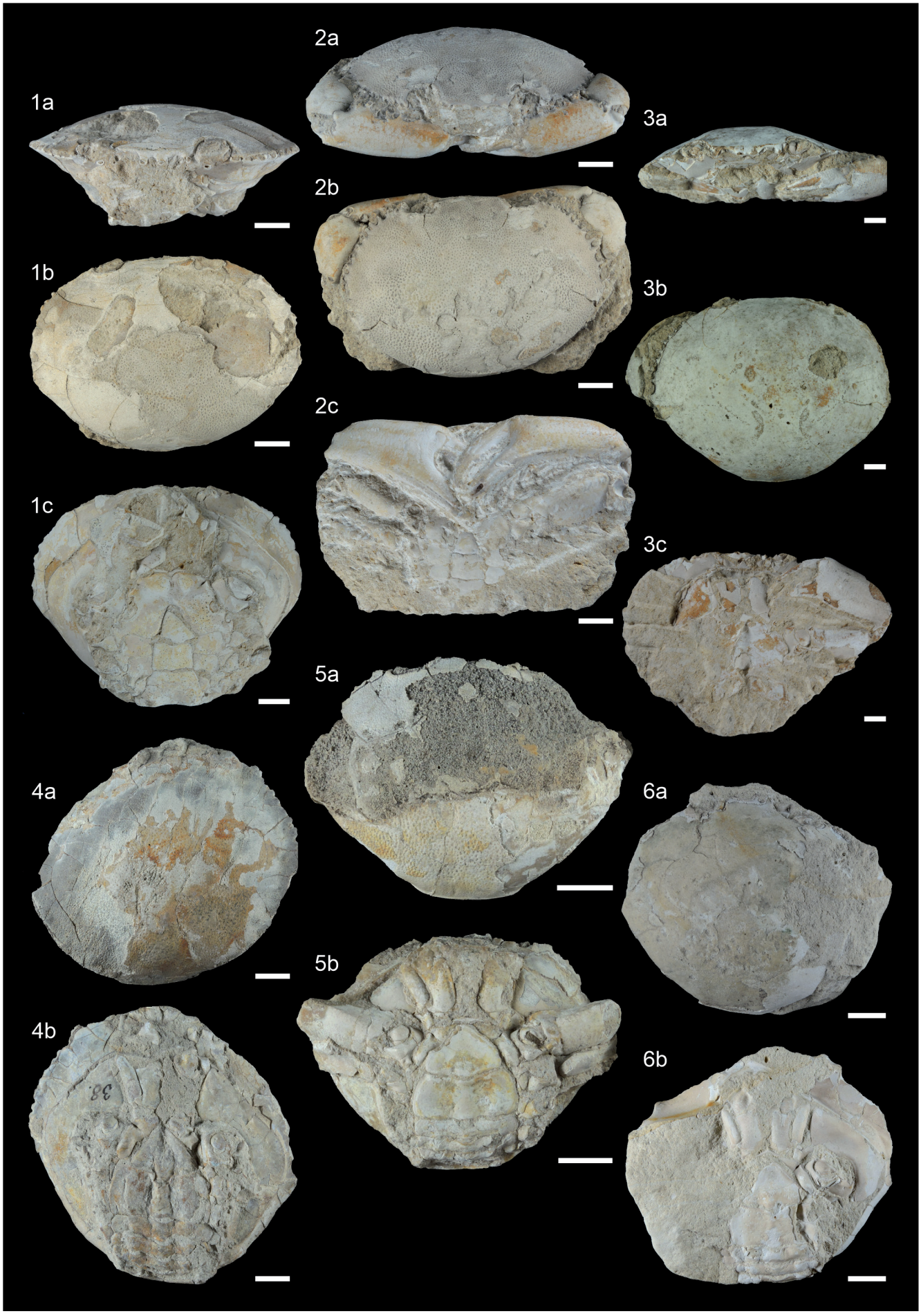

1a
2a
3a
2b
1b
3b
2c
1c
3c
5a
4a
6a
5b
4b
6b

Plate 18

Brachyura: Zanthopsidae: *Harpactocarcinus*, *Harpactoxanthopsis*

Fig. 1: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the lower Oligocene (Rupelian) of Laverda at Salcedo, Vicenza, Veneto, Italy.
Incomplete female in dorsal (a) and ventral (b) views; note colour markings on the third maxillipeds.
Coll. No.: GBA 2010/151/0060.

Fig. 2: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the lower Oligocene (Rupelian) of Laverda at Salcedo, Vicenza, Veneto, Italy.
Incomplete female individual with partially preserved chelipeds in ventral view; note colour markings on the third maxillipeds and cheliped fingertips.
Coll. No.: GBA 2010/151/0055.

Fig. 3: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the Eocene of San Michele at Bassano, Marostica near Vicenza, Veneto, Italy.
Female individual with both chelipeds in ventral view; note colour markings on the cheliped fingertips.
Coll. No.: GBA 2017/035/0014.

Fig. 4: *Harpactocarcinus punctulatus* (DESMAREST, 1822) from the lower Oligocene (Rupelian) of Laverda at Salcedo, Vicenza, Veneto, Italy.
Female individual with both chelipeds in ventral view; note colour markings on the cheliped fingertips.
Coll. No.: GBA 2010/151/0064.

Fig. 5: *Harpactoxanthopsis quadrilobata* (DESMAREST, 1822) from the lower Oligocene (Rupelian) of Castelgomberto, Italy.
Male individual with both chelipeds in dorsal (a) and ventral (b) views.
Coll. No.: GBA 1875/005/0033/02 (figured specimen of BITTNER, 1875: Pl. 2, Fig. 4).

Fig. 6: *Harpactoxanthopsis quadrilobata* (DESMAREST, 1822) from the upper Eocene (Priabonian) of Priabona, Monte di Malo, Vicenza, Veneto, Italy.
Female individual with right cheliped in dorsal (a) and ventral (b) views.
Coll. No.: GBA 1875/005/0033/01 (figured specimen of BITTNER, 1875: Pl. 3, Fig. 1).

Fig. 7: *Harpactoxanthopsis quadrilobata* (DESMAREST, 1822) from the Eocene of Valle San Floriano at Marostica (Maròstega), Italy.
Female individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2017/035/0009.

Fig. 8: *Harpactoxanthopsis quadrilobata* (DESMAREST, 1822) from the middle Eocene (Lutetian) of Halimba, Devecser, Hungary.
Female individual in dorsal view.
Coll. No.: GBA 2017/035/0060.

Fig. 9: *Harpactoxanthopsis quadrilobata* (DESMAREST, 1822) from the middle Eocene (Lutetian) of Halimba, Devecser, Hungary.
Female individual in ventral view.
Coll. No.: GBA 2017/035/0059.

Fig. 10: *Harpactoxanthopsis quadrilobata* (DESMAREST, 1822) from the upper Oligocene of Castelgomberto, Italy.
Female individual in dorsal view.
Coll. No.: GBA 2010/124/0070.

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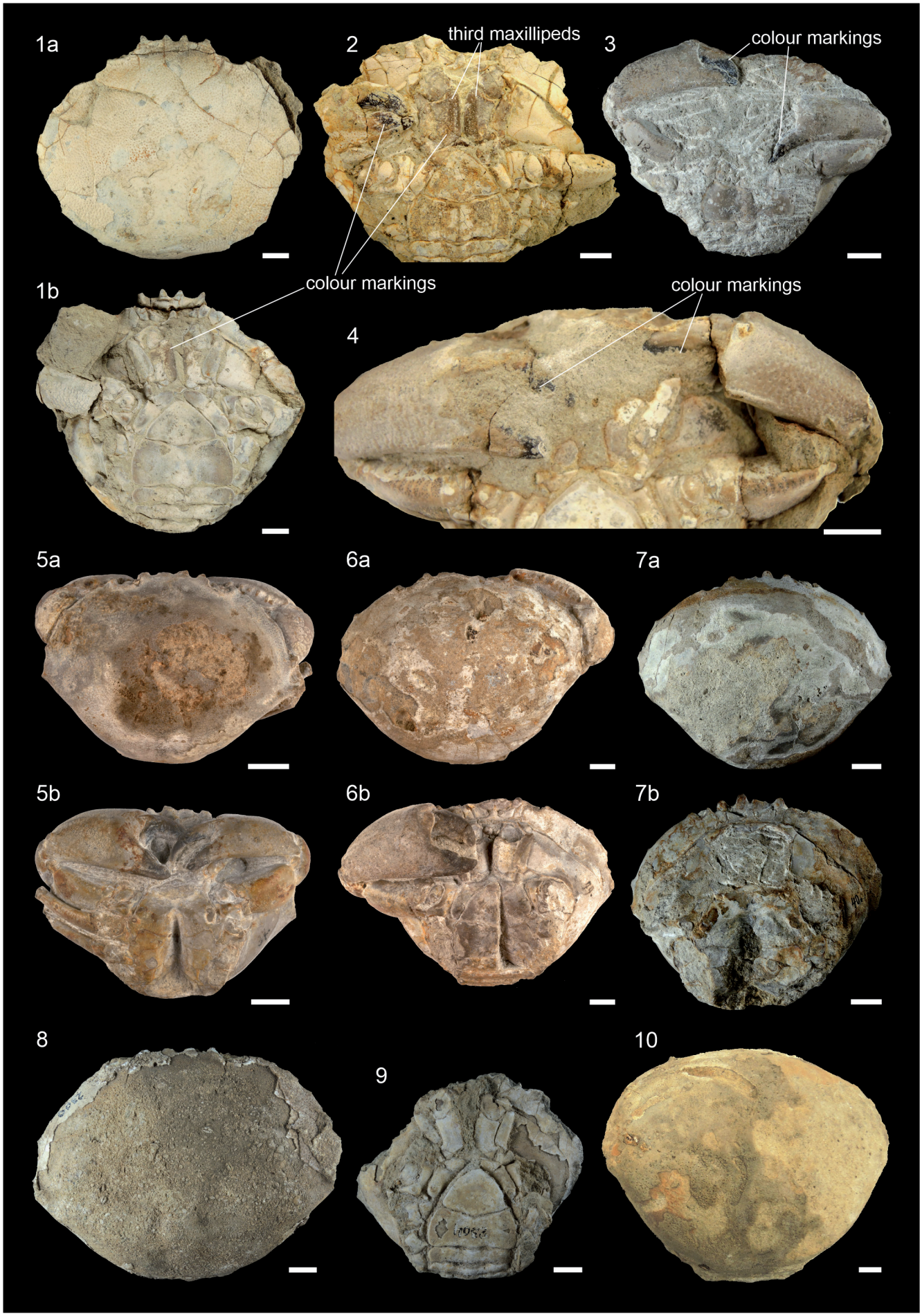

1a
2
third maxillipeds
3
colour markings
1b
colour markings
4
colour markings
5a
6a
7a
5b
6b
7b
8
9
10

Plate 19

Brachyura: Zanthopsidae: *Neozanthopsis*

Fig. 1: *Neozanthopsis bruckmanni* (VON MEYER, 1862) from the Eocene of Sonthofen, Bavaria, Germany.
Individual with partially preserved chelipeds in dorsal view, unwhitened (a); dorsal view, whitened (b); ventral view, unwhitened (c); ventral view, whitened (d); handwritten label by REUSS (e); figure from REUSS (1859: Pl. 14, Fig. 4) (f).
Coll. No.: GBA 2007/096/0011.

Fig. 2: *Neozanthopsis bruckmanni* (VON MEYER, 1862) from the Eocene of the lakeside of Lake Traun (Traunseeufer), Upper Austria, Austria.
Individual in dorsal view (a); detail of the frontal margin (b).
Coll. No.: GBA 2010/019/0097.

Fig. 3: *Neozanthopsis bruckmanni* (VON MEYER, 1862) from the Eocene of Grünten (Mountain), Immenstadt im Allgäu, Bavaria, Germany.
Incomplete female individual in dorsal view, unwhitened (a); dorsal view, whitened (b); ventral view, unwhitened (c); ventral view, whitened (d).
Coll. No.: GBA 2010/033/0011.

Scale bar = 5 mm.

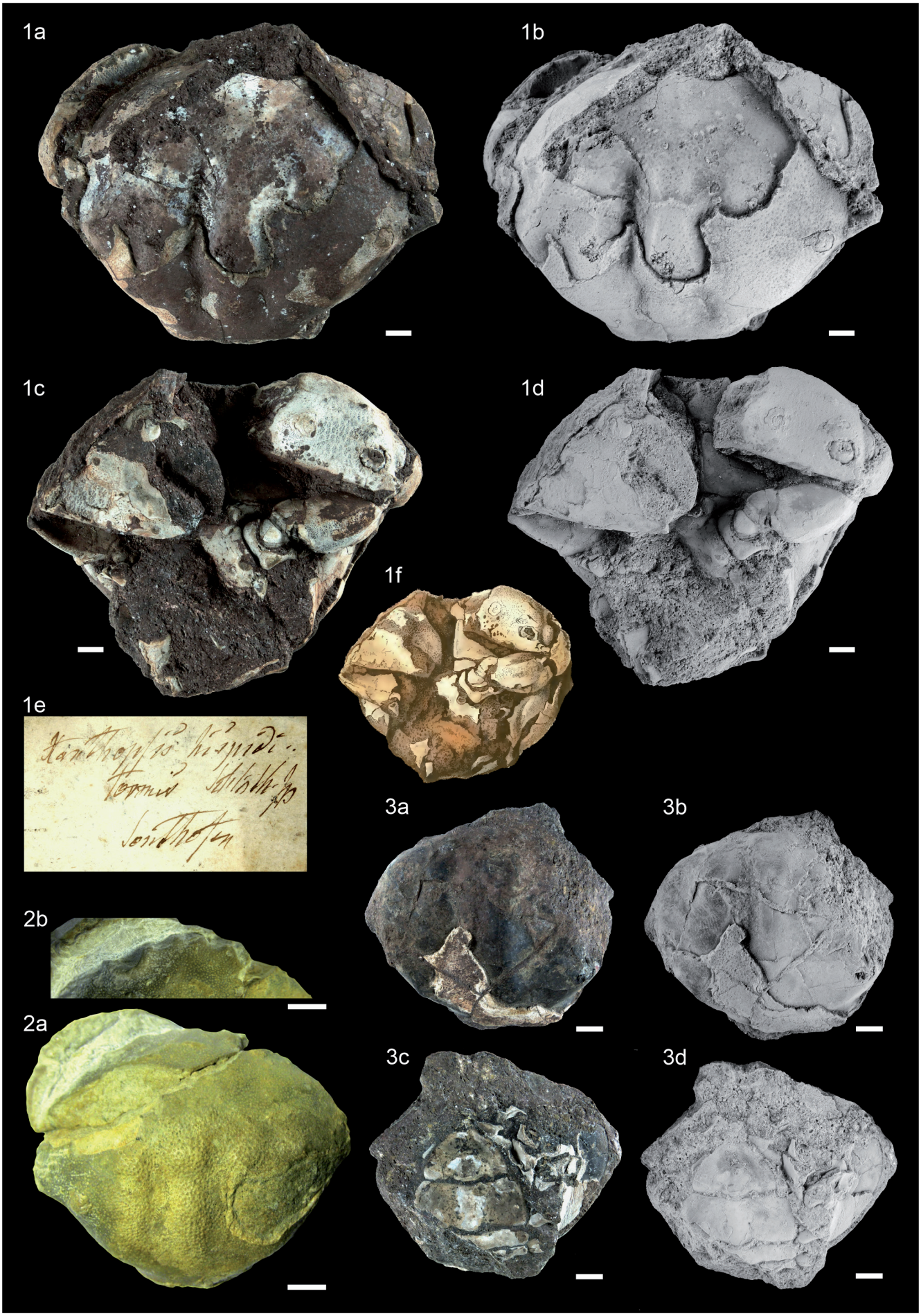

1a
1b
1c
1d
1f
1e
3a
3b
2b
2a
3c
3d

Plate 20

Brachyura: Zanthopsidae: *Zanthopsis*

Fig. 1: *Zanthopsis bispinosa* M'COY, 1849 from the Eocene of Kressenberg at Neukirchen, Bavaria, Germany.
Original figure of REUSS (1859: Pl. 14, Fig. 5) (a); internal mould of near-complete carapace in dorsal view, whitened (b); anterior view, whitened (c); handwritten label by REUSS (d).
Coll. No.: GBA 2007/096/0010.

Fig. 2: *Zanthopsis bispinosa* M'COY, 1849 from the Eocene of Kressenberg at Neukirchen, Bavaria, Germany.
Incomplete female individual in dorsal view, unwhitened (a); dorsal view, whitened (b), ventral view, unwhitened (c); whitened (d); handwritten label by REUSS (e).
Coll. No.: GBA 2007/096/0014.

Fig. 3: *Zanthopsis bispinosa* M'COY, 1849 from the Eocene of Kressenberg at Neukirchen, Bavaria, Germany.
Incomplete carapace in dorsal view, unwhitened (a); whitened under different light angles (b, c); anterior view, whitened (d); handwritten label by REUSS (e).
Coll. No.: GBA 2007/096/0012.

Scale bar = 5 mm.

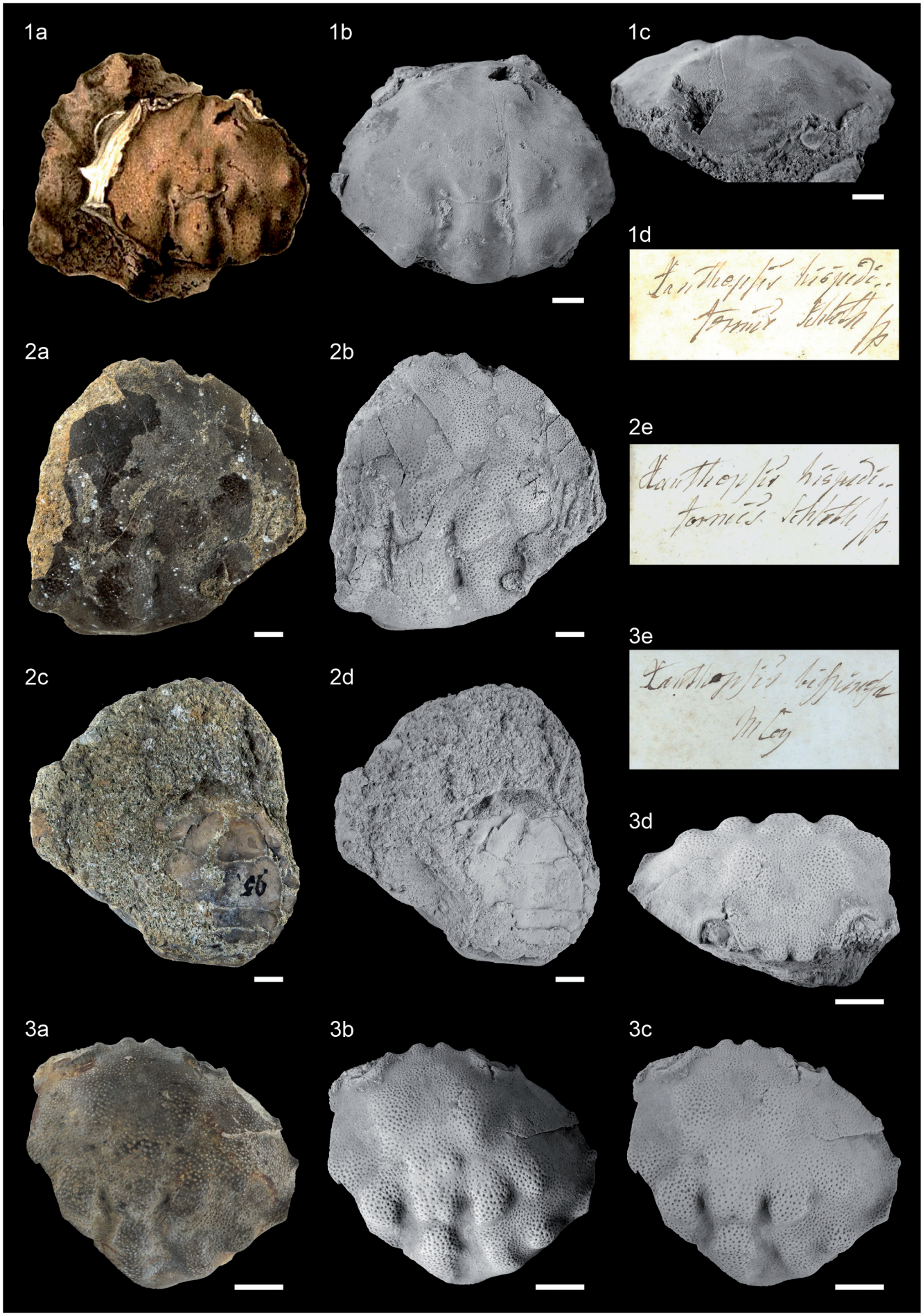

1a
1b
1c
1d
2a
2b
2e
2c
2d
3e
3d
3a
3b
3c

Plate 21

Brachyura: Zanthopsidae: *Zanthopsis*

Fig. 1: *Zanthopsis bispinosa* M'Coy, 1849 from the middle Eocene (Lutetian) of Gschliefgraben at Gmunden, Upper Austria, Austria. Near-complete individual in dorsal view, unwhitened (a); dorsal view, whitened (b); posterodorsal view, whitened (c); ventral view, unwhitened (d); ventral view, whitened (e); posterior view, whitened (f); anterodorsal view, whitened (g); anterior view, whitened (h); lateral view, whitened (i).
Coll. No.: GBA 2010/019/0095.

Fig. 2: *Zanthopsis bispinosa* M'Coy, 1849 from the middle Eocene (Lutetian) of Gschliefgraben at Gmunden, Upper Austria, Austria. Near-complete female individual in dorsal view, unwhitened (a); dorsal view, whitened (b); ventral view, unwhitened (c); ventral view, whitened (d); chela in lateral view, whitened (e).
Coll. No.: GBA 2012/109/0037.

Scale bar = 5 mm.

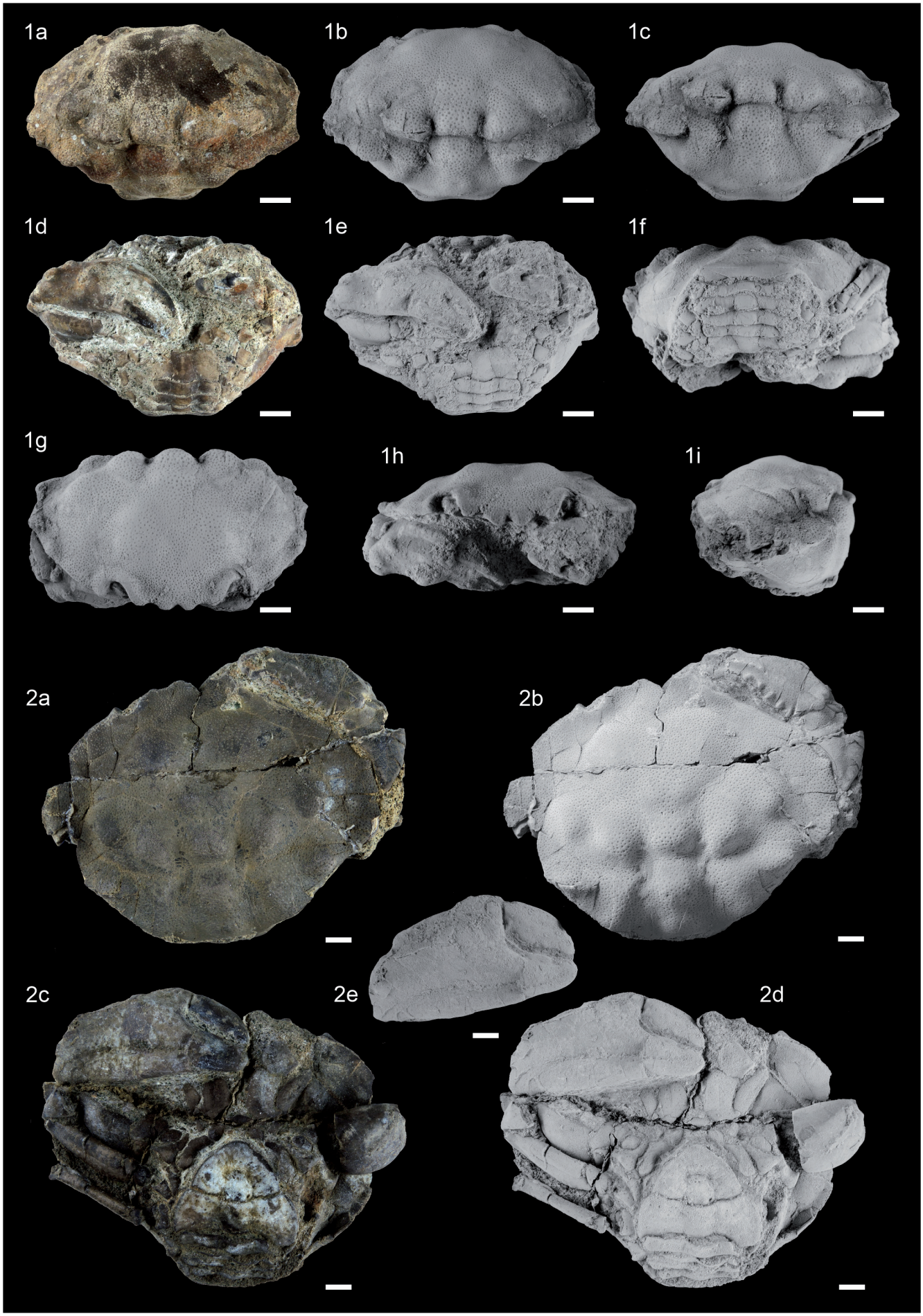

1a
1b
1c
1d
1e
1f
1g
1h
1i
2a
2b
2c
2e
2d

Plate 22

Brachyura: Dairidae: *Daira*, Chasmocarcinidae: *Mioplax*, Mathildellidae: *Coeloma*

Fig. 1: *Daira speciosa* (REUSS, 1871) from the middle Miocene (Badenian) of Gamlitz at Ehrenhausen, Styria, Austria.
Near-complete carapace with preserved cuticular surface, whitened.
Coll. No.: GBA 1877/005/0001 (figured specimen of BITTNER, 1877: Pl. 1, Fig. 1).

Fig. 2: *Daira speciosa* (REUSS, 1871) from the middle Miocene (Badenian) of Gamlitz at Ehrenhausen, Styria, Austria.
Internal cast of a near-complete carapace, whitened.
Coll. No.: GBA 2009/014/0033/02.

Fig. 3: *Daira speciosa* (REUSS, 1871) from the middle Miocene (Badenian) of Gamlitz at Ehrenhausen, Styria, Austria.
Internal cast of a near-complete carapace, whitened.
Coll. No.: GBA 2009/014/0033/01.

Fig. 4: *Daira speciosa* (REUSS, 1871) from the middle Miocene (Badenian) of Gamlitz at Ehrenhausen, Styria, Austria.
Left chela consisting of carpus, propodus and dactylus, whitened.
Coll. No.: GBA 1877/005/0006 (figured specimen of BITTNER, 1877: Pl. 1, Fig. 6).

Fig. 5: *Daira speciosa* (REUSS, 1871) from the middle Miocene (Badenian) of Gamlitz at Ehrenhausen, Styria, Austria.
Internal cast of left chela consisting of carpus, propodus and dactylus, whitened.
Coll. No.: GBA 1877/005/0007 (figured specimen of BITTNER, 1877: Pl. 1, Fig. 7).

Fig. 6: *Mioplax socialis* BITTNER, 1884a from the middle Miocene (lower Sarmatian) of Radoboj, Krapinsko-Zagorska, Croatia.
Individual with carapace, including both chelipeds, in dorsal view (a); whitened (b).
Coll. No.: GBA 1884/003/0003/01 (lectotype).

Fig. 7: *Mioplax socialis* BITTNER, 1884a from the middle Miocene (lower Sarmatian) of Radoboj, Krapinsko-Zagorska, Croatia.
Female individual in ventral aspect with sternum and third maxilliped, whitened.
Coll. No.: GBA 1884/003/0003/02 (paralectotype).

Fig. 8: *Coeloma vigil* A. MILNE-EDWARDS, 1865 from the lower Oligocene (Rupelian) of Bassano del Grappa, Bocca di Marsan, Valrovina, Vicenza, Veneto, Italy.
Near-complete female individual in dorsal view (a); whitened (b).
Coll. No.: GBA 1875/005/0040 (figured specimen of BITTNER, 1875: Pl. 5, Fig. 4).

Fig. 9: *Coeloma vigil* A. MILNE-EDWARDS, 1865 from the lower Oligocene (Rupelian) of Laverda at Salcedo, Veneto, Italy.
Male individual in dorsal view (a); dorsal view, whitened (b); ventral view (c); ventral view, whitened (d).
Coll. No.: GBA 2010/151/0054.

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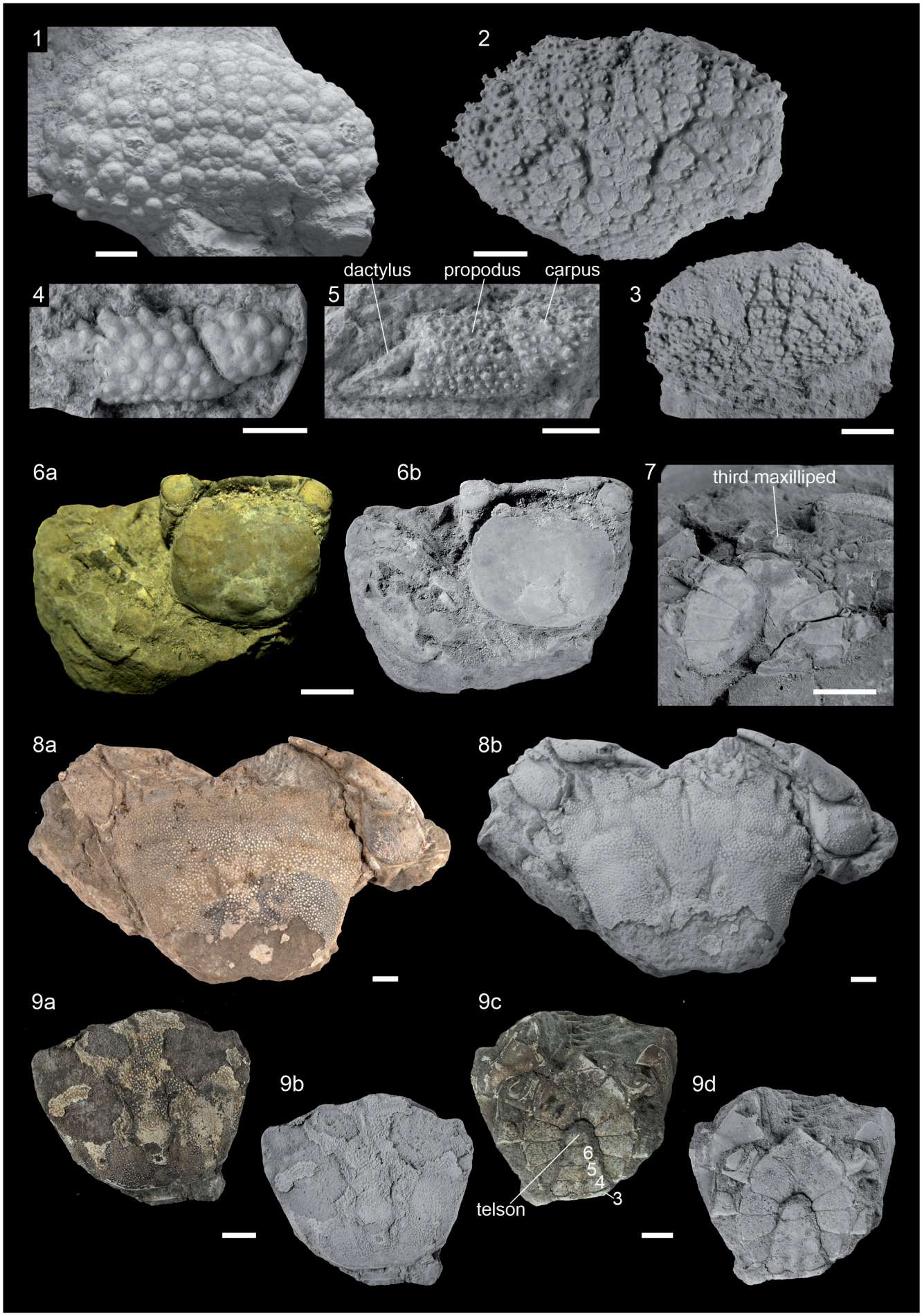

1
2
dactylus
propodus
carpus
4
5
3
6a
6b
7
third maxilliped
8a
8b
9a
9b
9c
9d
6
5
4
3
telson

Plate 23

Brachyura: Epialtidae: *Periacanthus*, Majidae: *Micromaia*, Parthenopidae: *Bittnerilia*

Fig. 1: *Periacanthus horridus* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Near-complete carapace, whitened.
Coll. No.: GBA 1875/005/0010 (lectotype).

Fig. 2: *Periacanthus horridus* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Incomplete carapace, whitened.
Coll. No.: GBA 1895/003/0002 (figured specimen of BITTNER, 1895: Pl. 1, Fig. 2).

Fig. 3: *Micromaia tuberculata* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Near-complete carapace, whitened.
Coll. No.: GBA 1875/005/0009/05 (paralectotype).

Fig. 4: *Micromaia tuberculata* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Near-complete carapace, whitened.
Coll. No.: GBA 1875/005/0009/02 (paralectotype).

Fig. 5: *Micromaia tuberculata* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Near-complete carapace, whitened.
Coll. No.: GBA 1875/005/0009/03 (paralectotype).

Fig. 6: *Micromaia tuberculata* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Complete carapace in dorsal (a) and ventral (b) views, both whitened.
Coll. No.: GBA 1875/005/0009/01 (lectotype).

Fig. 7: *Micromaia tuberculata* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Anterior portion of carapace, whitened.
Coll. No.: GBA 1875/005/0009/06 (paralectotype).

Fig. 8: *Micromaia tuberculata* BITTNER, 1875 from the middle Eocene (Lutetian) of San Giovanni Ilarione, Val Ciuppio, Verona, Veneto, Italy.
Ventral view of the anterior portion of near-complete carapace, whitened.
Coll. No.: GBA 1883/007/0006/01 (figured specimen of BITTNER, 1883: Pl. 1, Fig. 6).

Fig. 9: *Bittnerilia* sp. from the middle Eocene (Lutetian) of San Giovanni Ilarione, Rivo di Mel, Val Ciuppio, Verona, Veneto, Italy.
Right chela consisting of propodus articulated with dactylus, whitened.
Coll. No.: GBA 1875/005/0006 (figured specimen of BITTNER, 1875: Pl. 1, Fig. 7).

Fig. 10: *Bittnerilia eocaena* (BITTNER, 1883) from the middle Eocene (Lutetian) of San Giovanni Ilarione, Ciuppio, Verona, Veneto, Italy.
Incomplete carapace in dorsal view, whitened.
Coll. No.: GBA 1883/007/0008 (holotype).

Scale bar = 5 mm.

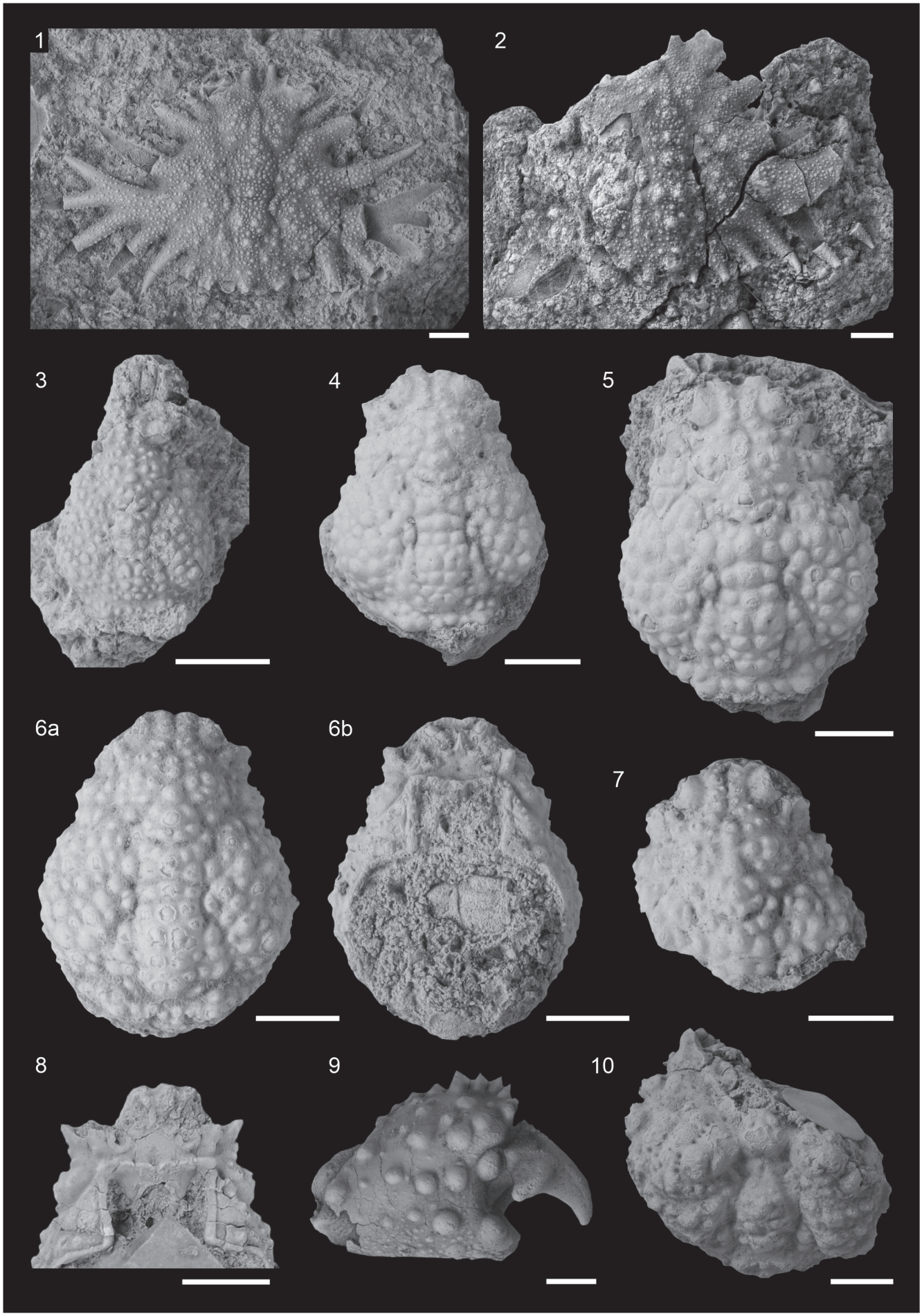

1
2
3
4
5
6a
6b
7
8
9
10

Plate 24

Brachyura: Portunoidea

Fig. 1: *Portunus radobojanus* (Bittner, 1884a) from the middle Miocene (lower Sarmatian) of Radoboj, Krapinsko-Zagorska, Croatia.
Original figure of Bittner (1884a: Pl. 2, Fig. 1) (a); badly-preserved individual in dorsal (b) and ventral (c) views.
Coll. No.: GBA 1884/003/0001 (holotype).

Fig. 2: *Portunus stenaspis* (Bittner, 1884a) from the middle Miocene (lower Sarmatian) of Radoboj, Krapinsko-Zagorska, Croatia.
Original figure of Bittner (1884a: Pl. 2, Fig. 2) (a); badly-preserved individual in dorsal view (b).
Coll. No.: GBA 1884/003/0002 (holotype).

Fig. 3: *Portunus stenaspis* (Bittner, 1884a) from the middle Miocene (lower Sarmatian) of Radoboj, Krapinsko-Zagorska, Croatia.
Badly-preserved individual in dorsal view.
Coll. No.: GBA 2017/035/0022.

Fig. 4: *Liocarcinus* sp. from the lower Miocene (Ottnangian) of Ottnang, Upper Austria, Austria.
Isolated cheliped dentition, whitened.
Coll. No.: GBA 2009/014/0025/01 (figured specimen of Hyžný et al., 2015b: Figs. 10c).

Fig. 5: *Portunus* sp. from the Eocene of Valle San Floriano at Marostica (Maròstega), Vicenza, Veneto, Italy.
Male individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 2017/035/0004.

Scale bar = 5 mm.

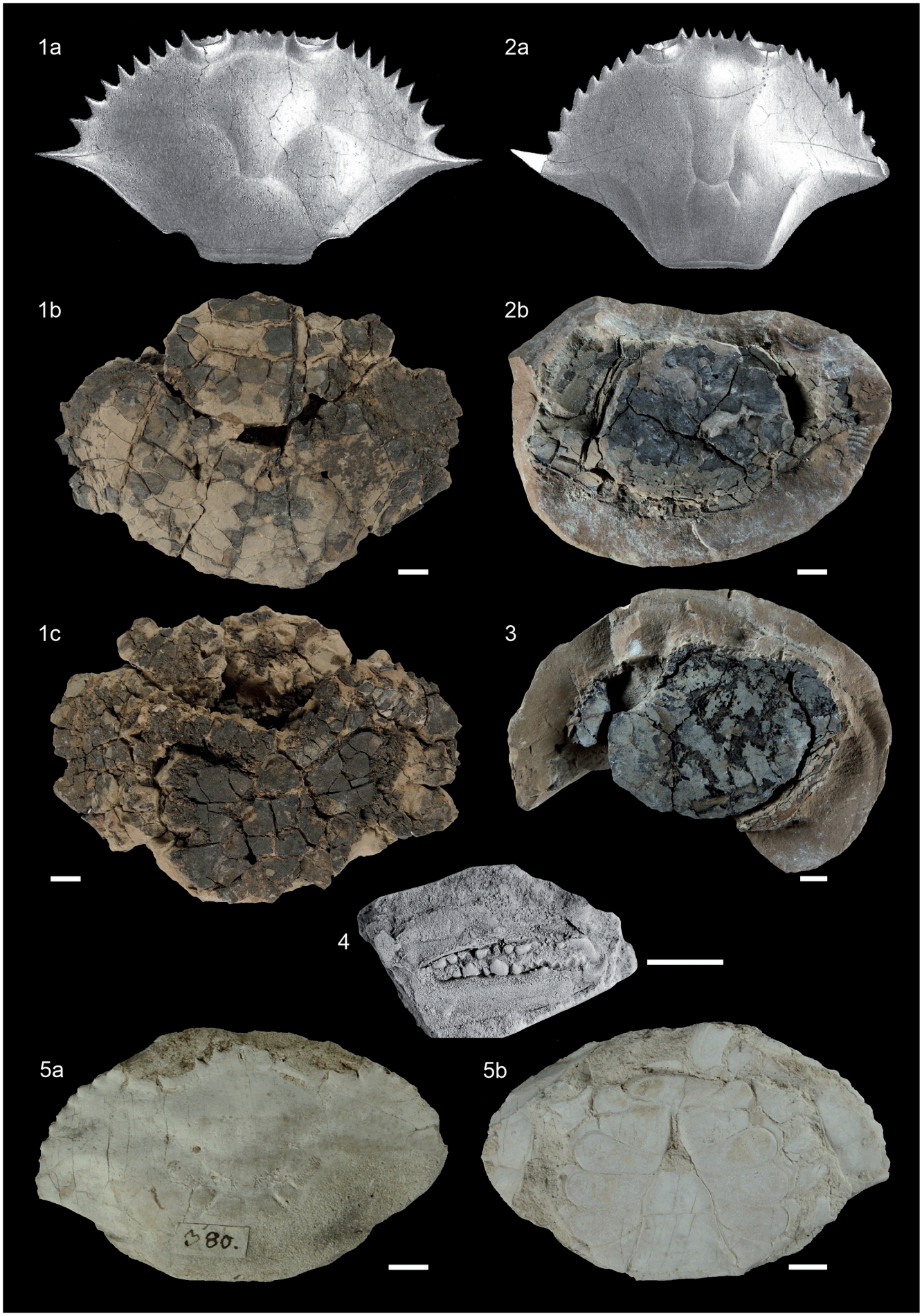

1a
2a
1b
2b
1c
3
4
5a
5b
380.

Plate 25

Brachyura: Xanthoidea, Ocypodoidea

Fig. 1: *Glyphithyreus sulcatus* (Beurlen, 1939) from the upper Oligocene of Trbovlje (Trifail), Slovenia.
Imprint of a near-complete individual with preserved pereiopods.
Coll. No.: GBA 2007/024/0005.

Fig. 2: *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi, 1879 from the lower Miocene (Karpatian) of Teiritzberg, Landesziegelei Stetten, Lower Austria, Austria.
Male individual in dorsal (a) and ventral (b) views.
Coll. No.: GBA 1925/001/0001/03 (paralectotype of *Macrophthalmus vindobonensis* Glaessner, 1924).

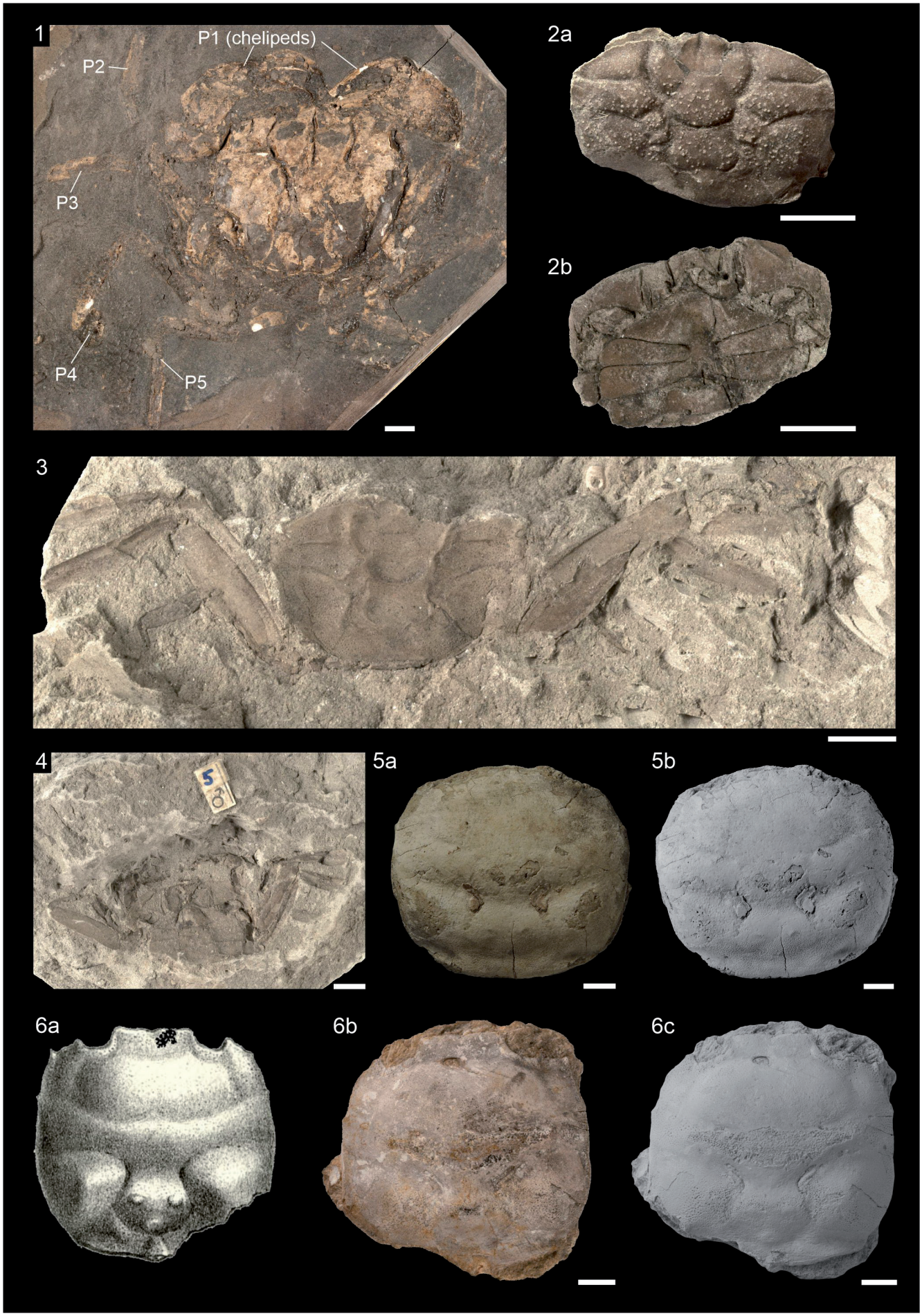
Fig. 3: *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi, 1879 from the lower Miocene (Karpatian) of Teiritzberg, Landesziegelei Stetten, Lower Austria, Austria.
Imprint of incomplete dorsal carapace (front is missing) with partially preserved pereiopods.
Coll. No.: GBA 1925/001/0001/01 (paralectotype of *Macrophthalmus vindobonensis* Glaessner, 1924).

Fig. 4: *Macrophthalmus aquensis* A. Milne-Edwards & Brocchi, 1879 from the lower Miocene (Karpatian) of Teiritzberg, Landesziegelei Stetten, Lower Austria, Austria.
Male individual in ventral aspect with partially preserved pereiopods.
Coll. No.: GBA 1925/001/0001/02 (paralectotype of *Macrophthalmus vindobonensis* Glaessner, 1924).

Fig. 5: *Palaeograpsus inflatus* Bittner, 1875 from the Eocene of Laverda at Salcedo, Vicenza, Veneto, Italy.
Carapace in dorsal view (a); whitened (b).
Coll. No.: GBA 1875/005/0042 (paralectotype).

Fig. 6: *Palaeograpsus inflatus* Bittner, 1875 from the Eocene of Fumane di Polesella, Verona, Veneto, Italy.
Original figure of Bittner (1875: Pl. 2, Fig. 11) (a); carapace in dorsal view (b); whitened (c).
Coll. No.: GBA 1875/005/0041 (lectotype).

Scale bar = 5 mm.


1
P1 (chelipeds)
P2
P3
P4
P5
2a
2b
3
4
5a
5b
6a
6b
6c

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	fuciformis	*Glyphea*	17, 18		
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*	*michelottii*	*Calliax*	22	Pl. 5, Fig. 11	Tab. 2
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	minuta	*Eryma*	18		
	minuta	*Glyphea*	18		
	minuta	*Phlyctisoma*	18		
*	*minuta*	*Pustulina*	18	Pl. 3, Fig. 8	Tab. 2
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	notopoides	*Ranina*	32		
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