



Paguroid anomurans from the upper Tithonian–lower Berriasian of Štramberk, Moravia (Czech Republic)

Zgornjetithonijski–spodnjeberiasijski raki samotarji iz Štramberka, Moravska (Česka)

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Abstract

Subsequent to a preliminary report on a handful of paguroid remains from the Tithonian (uppermost Jurassic) to lower Berriasian (Lower Cretaceous) Štramberk Limestone in Moravia (eastern Czech Republic), published in 2013, several field campaigns were organised by our research team during the summers of 2012–2015 and 2018. These resulted in the recovery of additional paguroid shields (or, anterior carapaces) that form the basis of the present study. The currently available material documents a diverse paguroid fauna. In fact, it ranks amongst the most diverse fossil paguroid assemblages known, following faunas from the upper Kimmeridgian of Nusplingen (southern Germany) and the Tithonian of Ernstbrunn (northeast Austria). New representatives of five families and five genera are described, named and illustrated, as follows: *Annuntidiogenes sagittula* sp. nov. (Diogenidae), *Protopagurus cerebellum* sp. nov. and *Protopagurus duopupae* sp. nov. (Paguridae), *Mesoparapylocheles janetjacksonae* sp. nov. (Parapylochelidae), *Masticacheles septemgradu* sp. nov. (Pilgrimchelidae) and *Ammopylocheles romankijoki* sp. nov. (Pylochelidae).

Izvleček

Po prvih poročilih o ostankih rakov samotarjev (Paguroidea) titonijske (zgornje jurske) do spodnje beriasijske (spodnje kredne) starosti iz apnencev v kamnolomu Štramberk na Moravskem (vzhodna Češka), ki so bila objavljena leta 2013, smo med leti 2012–2015 in poleti 2018 opravili več dodatnih terenskih raziskav. Pri raziskavah smo odkrili številne nove ščite (sprednje dele oklepa) rakov samotarjev, ki so predstavljeni v pričujočem članku. Opisan fosilni material predstavlja raznovrstno favno rakov samotarjev, ki se uvršča med najbolj raznolike znane fosilne paguroidne združbe, primerljive z zgornjo kimeridžijsko združbo regije Nusplingen (južna Nemčija) in titonijsko paguroidno združbo nahajališča Ernstbrunn (severovzhodna Avstrija). Opisani in predstavljeni so novi predstavniki petih družin in petih rodov rakov samotarjev: *Annuntidiogenes sagittula* sp. nov. (Diogenidae), *Protopagurus cerebellum* sp. nov. in *Protopagurus duopupae* sp. nov. (Paguridae), *Mesoparapylocheles janetjacksonae* sp. nov. (Parapylochelidae), *Masticacheles septemgradu* sp. nov. (Pilgrimchelidae) in *Ammopylocheles romankijoki* sp. nov. (Pylochelidae).

Introduction

The Štramberk Limestone, exposed along several exploitation levels at Kotouč quarry in the immediate vicinity of the town of Štramberk (Moravia, Czech Republic), comprises variably sized carbonate megablocks, breccias and conglomerates that represent deposition on a carbonate platform along the northern Tethyan margin in the area of the present-day Outer Western Carpathians during the latest Jurassic and earliest Cretaceous (Vašíček et al., 2018; Vaňková et al., 2019). In recent years, numerous macrofossils have been collected from this quarry thanks to an agreement between the VSB-Technical University of Ostrava and the management of Kotouč quarry. From about 1910 onwards, the quarry at Kotouč Hill has been the main source of macro- and microfossils that have been described in numerous palaeontological studies (see Vašíček & Skupien, 2004, 2005, 2019 for references). The reefal limestone facies at the quarry varies widely, ranging from very coarse-grained to gravelly layers or lenses, formed by e.g. molluscan shells and corals, to very fine-grained micritic limestones and (most commonly) fine-grained biodetritral limestones (e.g., Houša & Vašíček, 2005).

Fieldwork carried out by our research team in the Upper Jurassic–Lower Cretaceous reefal limestones at Kotouč quarry during the summers of 2012–2015 and 2018, has provided a highly diverse decapod crustacean fauna comprising remains of isopods, macrurans, anomurans, and brachyurans. Paguroid material collected during the first campaign was recorded in a preliminary paper; this included a handful of shields (or, portions of anterior carapaces) and a single sixth abdominal tergite (Fraaije et al., 2013). In 2015, Gašparič et al. described the galatheoid *Galahteites zitteli* (Moericke, 1889) from the infill of a test of a nucleolitid echinoid, collected in June 2014.

With at least 18 species, in eight families, the Tithonian (Late Jurassic) paguroid fauna from Ernstbrunn (Austria) is by far the most diverse fossil assemblage recorded to date. In second place, with 13 species in six families, follows that from Nusplingen (upper Kimmeridgian, southern Germany), just ahead of the assemblage described below, which comprises 11 species in seven families. Herein, we follow Vašíček & Skupien (2019) and Vaňková et al. (2019) for the stratigraphical placement of the material studied. Seven species are here recorded from the upper Tithonian, and four from the lower Berriasian part of the section exposed at Kotouč.

Material and methods

Specimens, usually only partially exposed, were mechanically prepared under a LOMO MBS-10 stereomicroscope, using needles and pneumatic aircsribes of the types Hardy Winkler HW-1 and HW-70/3. Accidentally chipped pieces were glued back by Starbond super fast thin CA glue.

For photography, specimens were first dyed with black water colour, and when dry, coated with ammonium chloride, in order to gain maximum contrast of fine details. Specimens were photographed using a Canon digital SLR in aperture priority, Zeiss Luminar 100 mm and 63 mm macrolenses on a Nikon PB-4 bellows unit. A copy stand was used, and a Euromex coldlight source for illumination. Post-processing was done in GIMP 10.0; levels and curves were adjusted for white balance and contrast, the sharpness slightly enhanced with an ‘unsharp mask’.

Systematic palaeontology

We here adopt the carapace-based classification and descriptive terminology of extinct paguroids proposed by Fraaije (2014) and Fraaije et al. (2019). All material is contained in the collections of the Oertijdmuseum, Boxtel (the Netherlands; abbreviation: MAB).

Order Decapoda Latreille, 1802

Infraorder Anomura H. Milne Edwards, 1832

Superfamily Paguroidea Latreille, 1802

Family Annuntidiogenidae Fraaije, 2014

Genus *Annuntidiogenes* Fraaije, Van Bakel, Jagt & Artal, 2008

Type species: *Annuntidiogenes ruizdegaonai* Fraaije, Van Bakel, Jagt & Artal, 2008, by original designation.

Included species: *Annuntidiogenes sagittula* sp. nov., *An. elongatus* Fraaije, Robins, Van Bakel, Jagt & Bachmayer, 2019, *An. hoelderi* Fraaije, Robins, Van Bakel, Jagt & Bachmayer, 2019, *An. jurassicus* Fraaije, 2014, *An. massetispinosus* Fraaije, Van Bakel & Jagt, 2017, *An. sunuciorum* Fraaije, Van Bakel, Jagt & Artal, 2008, *An. ruizdegaonai* and *An. worfi* Fraaije, Van Bakel, Jagt, Klompmaker & Artal, 2009.

***Annuntidiogenes sagittula* sp. nov.**
(Pl. 1.1)

Diagnosis: Shield longer than wide, divided into distinct regions by grooves; long triangular rostrum extending beyond postocular and

postantennal spines; convex postrostral ridge; scabrous ornament on anterior gastric region; long and wide central gastric groove forming arrow-shaped figure in conjunction with rostrum; elongated, bipartite massetic region; pronounced triangular anterior branchial area; posterior intragastric grooves parallel to cervical groove.

Derivation of name: Latin *sagittula*, meaning small arrow, in reference to the typical arrowhead shape of the central anterior groove in conjunction with the triangular rostrum.

Type material: The holotype, and sole specimen known to date (MAB k.3631), is a near-complete shield; as preserved, maximum carapace length measures 4.0 mm, maximum shield width is 3.0 mm.

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 5; lower Berriasian (see Vašíček & Skupien, 2019, p. 39, fig. 3, locality 10; Vaňková et al., 2019, section B, layer B22).

Description: Shield longer than wide (L/W ratio 1.14), divided into distinct regions by grooves; long, spinose and ridged triangular rostrum extending beyond postocular and postantennal spines; very shallow convex orbital and antennal cavities; convex postrostral ridge; long and wide central gastric groove, forming arrowhead-shaped configuration in conjunction with triangular rostrum; scabrous ornament on anterior gastric region, central gastric groove not extending posteriorly; elongated, bipartite massetic region; small, elongated keraial region; pronounced triangular anterior branchial area; posterior intragastric grooves parallel to cervical groove.

Remarks: Intragastric grooves (also known as Y-linea in extant paguroids) are parallel to the cervical groove; this is a unique feature shared by representatives of the family Annuntidiogenidae. *Annuntidiogenes sagittula* sp. nov. can be distinguished from all congeners known to date by the unique combination of a very wide central anterior gastric groove, a bipartite massetic region and a triangular, ridged rostrum; in conjunction with the gastric groove, this forms a typical arrowhead shape.

Family Diogenidae Ortmann, 1892

Genus *Bachmayerus* Fraaije, Van Bakel, Jagt & Skupien, 2013

Type species: *Bachmayerus cavus* Fraaije, Van Bakel, Jagt & Skupien, 2008, by original designation.

Bachmayerus cavus Fraaije, Van Bakel, Jagt & Skupien, 2013
(Pl. 1.2)

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 7; upper Tithonian (see Vašíček & Skupien, 2019, p. 39, fig. 3).

Type material: The holotype, and sole specimen known to date (MAB k.3631), is a near-complete shield; as preserved, maximum carapace length measures 4.0 mm, maximum shield width is 3.0 mm.

Remarks: For a detailed description, reference is made to Fraaije et al. (2013).

Genus *Eopaguropsis* Van Bakel, Fraaije, Jagt & Artal, 2008

Type species: *Eopaguropsis loercheri* Van Bakel, Fraaije, Jagt & Artal, 2008, by original designation.

Eopaguropsis cf. *nidiaquilae* Fraaije, Krzemiński, Van Bakel, Krzemińska and Jagt, 2012
(Pl. 1.3)

Locality and level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 6; upper Tithonian (see Vašíček & Skupien, 2019, p. 39, fig. 3, locality 3).

Material: The specimen (MAB k.3759), is an incomplete shield; as preserved, maximum carapace length measures 7.0 mm, maximum shield width is 5.0 mm.

Remarks: For a detailed description, reference is made to Fraaije et al. (2012c).

Family Gastrodoridae Van Bakel, Fraaije, Jagt & Artal, 2008

Genus *Gastrodorus* von Meyer, 1864

Type species: *Gastrodorus neuhausensis* von Meyer, 1864, by monotypy.

Included species: *Gastrodorus bzo-wiensis* Krzemińska, Krzemiński, Fraaije, Van Bakel & Jagt, 2015, *G. cretahispanicus* Klomp maker, Artal, Fraaije & Jagt, 2011, *G. kotoucensis* Fraaije, Van Bakel, Jagt & Skupien, 2013 and *G. neuhausensis* von Meyer, 1864.

Gastrodorus kotoucensis Fraaije, Van Bakel,
Jagt & Skupien, 2013
(Pl. 1.4)

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 7; upper Tithonian (see Vašíček & Skupien, 2019, p. 39, fig. 3).

Remarks: For a detailed description, reference is made to Fraaije et al. (2013).

Family Paguridae Latreille, 1802
Genus *Protopagurus* Fraaije, Robins, Van Bakel,
Jagt & Bachmayer, 2019

Type species: *Protopagurus janoscheki* Fraaije, Robins, Van Bakel, Jagt & Bachmayer, 2019, by original designation.

Included species: *Protopagurus janoscheki*, *Protopagurus cerebellum* sp. nov. and *Protopagurus duopupae* sp. nov.

Remarks: To date, we are unaware of any representative of the family Paguridae from Oxfordian and Kimmeridgian strata, in spite of intensive fieldwork in southern Germany and southern Poland over several years. The oldest known pagurid has recently been described from the middle to lower upper Tithonian of Ernstbrunn (Austria; see Fraaije et al., 2019). The new taxa from the lower Berriasian of Moravia appear to substantiate the notion that this group rose to dominance during the latest Jurassic (and up to the present day) and ousted the more ancient groups of symmetrical hermit crabs.

Protopagurus duopupae sp. nov.
(Pl. 1.5)

Diagnosis: Well-areolated shield, slightly longer than wide; large, elongated massetic region, anteriorly covered with scale-like ornamentation; shallow central gastric groove centrally indenting convex postfrontal ridge; anterior part of gastric region covered with scale-like ornamentation; thin, elongated anterior branchial area; well-delineated, reniform keraial region; shield irregularly covered with (setal) pores.

Derivation of name: Latin *duo* and *pupa* (-e), a noun in apposition, or two puppets, in allusion to the morphology of the gastric region.

Type material: The holotype, and sole specimen known to date (MAB k.3626), is an incomplete shield of a maximum carapace length, as preserved, of 12.0 mm; the maximum shield width is 13.0 mm.

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 5; lower Berriasian (see Vašíček & Skupien, 2019, p. 39, fig. 3, locality 10; Vaňková et al., 2019, section B, layer B22).

Description: Well-areolated shield, slightly longer than wide; large, elongated massetic region, anteriorly covered with scale-like ornamentation, posteriorly covered with broad, shallow, pitted furrow slightly curving from anteriormost keraial region to mid-massetic edge; shallow central gastric groove centrally indenting convex postfrontal ridge; anterior part of gastric region covered with scale-like ornamentation; posteriorly a row of large pits is forming subtransverse furrow; thin, elongated anterior branchial area; well-delineated, reniform keraial region; shield irregularly covered with (setal) pores. Frontal area and posteriormost part of shield not preserved.

Protopagurus cerebellum sp. nov.
(Pl. 2.1)

Diagnosis: Well-areolated shield, slightly longer than wide; convex orbital cavity, ending in triangular postocular projection; large, elongated massetic region, with large pores; central gastric groove centrally indenting convex postfrontal ridge; anterior part of gastric region covered with brain-like ornamentation; thin, elongated anterior branchial area; small, reniform keraial region; shield irregularly covered with (setal) pores.

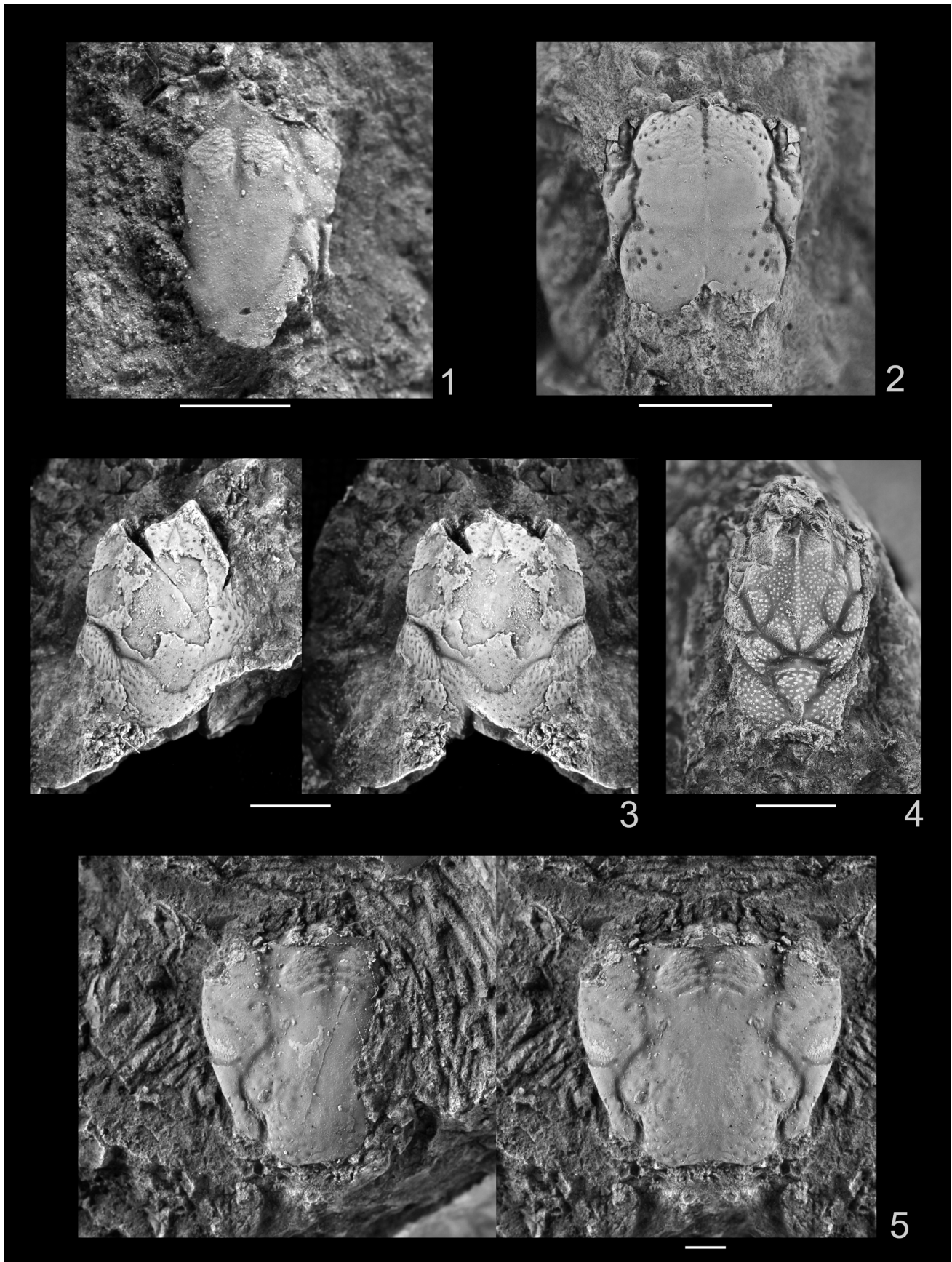
Derivation of name: Latin *cerebellum*, or brains (noun used in apposition), referring to the brain-like ornament of the anterior gastric region.

Type material: The holotype, and sole specimen known to date (MAB k.3628), is a near-complete shield of a maximum carapace length, as preserved, of 3.0 mm; the maximum shield width is 3.0 mm.

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 5; lower Berriasian (see Vašíček & Skupien, 2019, p. 39, fig. 3, locality 10; Vaňková et al., 2019, section B, layer B22).

Description: Well-areolated shield, longer than wide; rostrum not preserved; convex orbital cavity with smooth rim, ending in triangular postocular projection; large, elongated massetic region, irregularly covered with large pores, also on anterior lateral edge; central gastric groove centrally indenting convex postfrontal ridge; an-

PLATE 1



1 - *Annuntidiogenes sagittula* sp. nov.;

2 - *Bachmayerus cavus* Fraaije, Van Bakel, Jagt & Skupien, 2013;

3 - *Eopaguropsis* cf. *nidiaquilae* Fraaije, Krzemiński, Van Bakel, Krzemińska and Jagt, 2012, original (left), composite (right);

4 - *Gastrodorus kotoucensis* Fraaije, Van Bakel, Jagt & Skupien, 2013;

5 - *Protopagurus duopupae* sp. nov., original (left), composite (right); all scale bars 2 mm.

terior part of gastric region covered with brain-like ornamentation, posteriorly ending convexly; thin, elongated anterior branchial area; small, reniform keraial region; shield irregularly covered with (setal) pores.

Family Parapylochelidae Fraaije, Klompmaker & Artal, 2012a

Genus *Housacheles* Fraaije, Van Bakel, Jagt & Skupien, 2013

Type species: *Housacheles timidus* Fraaije, Van Bakel, Jagt & Skupien, 2013, by original designation.

Housacheles timidus Fraaije, Van Bakel, Jagt & Skupien, 2013
(Pl. 2.2)

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 5 (see Vašíček & Skupien, 2019, p. 39, fig. 3).

Remarks: For a detailed description, reference is made to Fraaije et al. (2013).

Genus *Mesoparapylocheles* Fraaije, Klompmaker & Artal, 2012a

Type species: *Mesoparapylocheles michaeljacksoni* Fraaije, Klompmaker & Artal, 2012a, by original diagnosis.

Included species: *Mesoparapylocheles jaegeri* Fraaije, 2014, *M. michaeljacksoni*, *M. schweigerti* Fraaije, 2014, *M. strouhali* Fraaije, Robins, Van Bakel, Jagt & Bachmayer, 2019 and *M. zapfei* Fraaije, Robins, Van Bakel, Jagt & Bachmayer, 2019.

Mesoparapylocheles janetjacksonae sp. nov.
(Pl. 2.3)

Diagnosis: Shield well calcified, longer than wide, well areolated; globose massetic region; prominent triangular rostrum; triangular postocular spines. Gastric region of arrowhead shape, pointing posteriorly. Distinct and complete U-shaped branchiocardiac groove, parallel to V-shaped cervical groove.

Derivation of name: Named after Janet (Dimita Jo) Jackson, well-known American singer, songwriter, actress, dancer and sister of the late Michael Jackson after whom the first member of this genus was named.

Type material: The holotype, and sole specimen known to date (MAB k.3623a, b), is a

near-complete carapace of a maximum carapace length, as preserved, of 5.0 mm; the maximum shield width is 3.5 mm.

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 7; upper Tithonian (see Vašíček & Skupien, 2019, p. 39, fig. 3).

Description: Well-calcified, smooth, areolated shield, subcylindrical transversely, slightly convex longitudinally; pronounced, slightly downarched triangular rostrum, base wider than long, slender spinose tip; ocular-frontal area exceeding half of total maximum width; orbital cavity subcircular, bounded by distinct triangular postocular spines; thin, central gastric groove centrally indenting convex postfrontal ridge; gastric region of arrowhead shape, pointing posteriorly with a pair of gastric pits close to keraial region; elongated keraial region with straight lateral margin; prominent, reniform, globose massetic region; cardiac region anteriorly not delineated; elongated mesobranchial region with deep incision centrally running parallel to cervical groove; distinct U-shaped branchiocardiac groove, parallel to deep, V-shaped cervical groove.

Remarks: *Mesoparapylocheles janetjacksonae* sp. nov. differs from all other Jurassic paguroids in the combination of an elongated keraial region with a straight, rather than convex, lateral margin; a narrower reniform, rather than broader, trapezoidal, massetic region, as well as a very convex postfrontal ridge. The new species differs from the mid-Cretaceous *M. michaeljacksoni* in having elongated keraial and massetic regions (rather than globose ones) and a cardiac region that is not posteriorly delineated as in *M. michaeljacksoni*.

Family Pilgrimchelidae Fraaije, 2014
Genus *Masticacheles* Fraaije, Krzemiński, Van Bakel, Krzemińska & Jagt, 2014

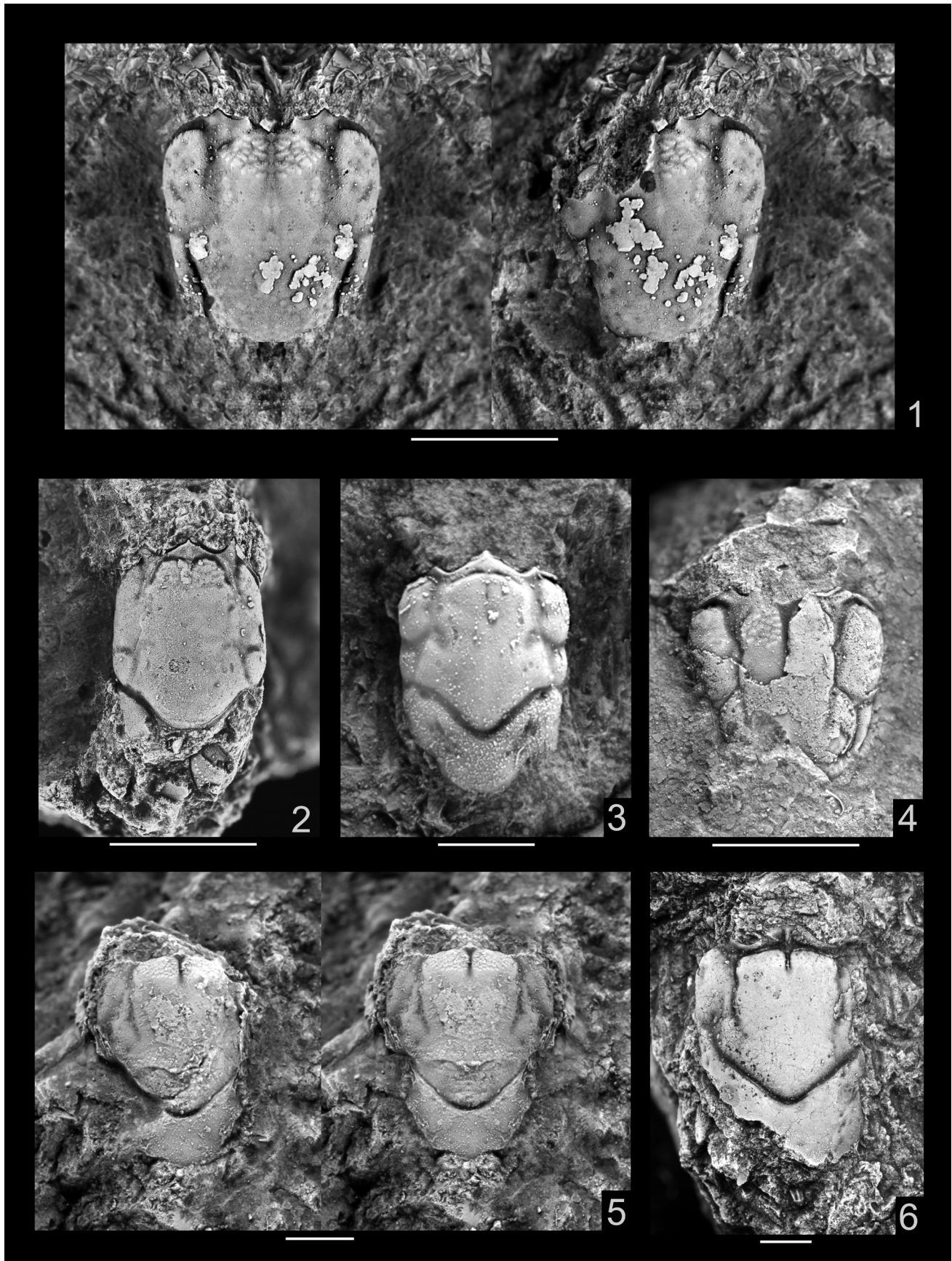
Type species: *Masticacheles longirostris* Fraaije, Krzemiński, Van Bakel, Krzemińska & Jagt, 2014, by original diagnosis.

Included species: *Masticacheles longirostris* and *Masticacheles minimus* Fraaije, 2014 and *Masticacheles septemgradu* sp. nov.

Masticacheles septemgradu sp. nov.
(Pl. 2.4)

Diagnosis: Shield well calcified, well areolated, with distinct regions; convex orbital cav-

PLATE 2



- 1 - *Protopagurus cerebellum* sp. nov., original (right), composite (left);
 2 - *Housacheles timidus* Fraaije, Van Bakel, Jagt & Skupien, 2013;
 3 - *Mesoparapylocheles janetjacksonae* sp. nov.;
 4 - *Masticacheles septemgradu* sp. nov.;
 5 - *Ammopylocheles mclaughlinae* Van Bakel, Fraaije, Jagt & Artal, 2008, original (left), composite (right);
 6 - *Ammopylocheles romankijoki* n. sp.; all scale bars 2 mm.

ity with sharp postocular projection, convex post-rostral ridge centrally indented by long central groove; anterior part of gastric region crenulated; large, elongated massetic region; crescent keraial region; narrow anterior branchial area.

Derivation of name: Named after 'Level 7' at Kotouč quarry (see e.g., Vašíček & Skupien, 2019, fig. 3); Latin *septem* and *gradu*, noun used in apposition.

Type material: The holotype, and sole specimen known to date (MAB k.3757), is an incomplete shield of a maximum carapace length, as preserved, of 2.5 mm; the maximum shield width is 2.5 mm.

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 7; upper Tithonian (see Vašíček & Skupien, 2019, p. 39, fig. 3).

Description: Well-calcified and clearly areolated shield, convex transversely, slightly convex longitudinally; convex orbital cavity bordered with sharp postocular projection; ocular-frontal area equalling about 60 per cent of total maximum width; convex post-rostral ridge centrally indented by long central groove; anterior part of gastric region crenulated; prominent, globose and elongated massetic region; crescent keraial region laterally convex with its anterior tip centrally/forwardly directed; relatively narrow anterior branchial area; rostrum and posterior part of carapace not preserved.

Remarks: Until now, the family Pilgrimcheliidae appeared to be confined to the Jurassic, to be replaced subsequently by, for instance, annuntidiogenids. *Masticacheles septemgradu* sp. nov. can be differentiated from congeners by the typical crescentic morphology of the keraial region, with its anterior tip directed centrally/forwardly rather than laterally/forwardly, as well as a narrower anterior branchial area.

Family Pylochelidae Bate, 1888

Subfamily Trizochelinae Forest, 1987

Genus *Ammopylocheles* Van Bakel, Fraaije, Jagt & Artal, 2008

Type species: *Ammopylocheles mclaughlinae* Van Bakel, Fraaije, Jagt & Artal, 2008, by original designation.

Included species: *Ammopylocheles mclaughlinae*, *Am. petersi* Fraaije, 2014, *Am. robertboreki* Fraaije, Krzemiński, Van Bakel, Krzemińska & Jagt, 2012b and *Am. romankijoki* sp. nov.

Ammopylocheles mclaughlinae Van Bakel, Fraaije, Jagt & Artal, 2008
(Pl. 2.5)

Locality and level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 8; upper Tithonian (see Vašíček & Skupien, 2019, p. 39, fig. 3).

Material: The specimen (MAB k.3760) is an incomplete shield with part of the posterior carapace; as preserved, maximum carapace length measures 7.0 mm, maximum shield width is 5.5 mm.

Remarks: For a detailed description, reference is made to Van Bakel et al. (2008). Members of the genus *Ammopylocheles* range from the middle Oxfordian (Fraaije et al., 2012b) to the lower Berriasian (the present study). *Ammopylocheles mclaughlinae* is by far the commonest element in Kimmeridgian deposits at Nusplingen (Fraaije, 2014) and at Geisingen (Van Bakel et al., 2008) in southern Germany, but it is rather uncommon to rare at Ernstbrunn (Austria). The same appears to hold true for Štramberk.

Ammopylocheles romankijoki n. sp.
(Pl. 2.6)

Diagnosis: Typical smooth carapace of pylochelid; carapace longer than broad, shield of equal width and length; broad rostrum and convex, rimmed orbital cavity; pronounced post-frontal ridge, centrally indented by deep, short central gastric groove; elongated massetic region; reniform keraial region, distinct V-shaped cervical groove.

Derivation of name: Named after Roman Kijok (Poland), who collected the specimen and kindly donated it to the Oertijdmuseum, Boxtel.

Type material: The holotype, and sole specimen known to date (MAB k.3758), is a near-complete shield with part of the posterior carapace, measuring 10.0 mm in maximum total length and 7.0 mm in width.

Type locality and type level: Kotouč quarry (Štramberk, Moravia, Czech Republic), level 5; lower Berriasian (see Vašíček & Skupien, 2019, p. 39, fig. 3, locality 10; Vaňková et al., 2019, section B, layer B22).

Description: Carapace longer than broad, shield as wide as long, strongly convex in transverse section, slightly convex in longitudinal section; broad rostrum posteriorly extending into pronounced central ridge, effacing towards central gastric groove; broad and convex, rimmed orbital cavity; postantennal projections obtuse;

transverse, convex, post-rostral ridge, with few large pores, medially subdivided by a short, deep, central gastric groove; elongated, more or less oval massetic region; subrounded keraial region not well delineated, about one third size of massetic region; deep V-shaped cervical groove, posterior part of carapace less well calcified (partially preserved), smooth with irregularly distributed large (setal) pores.

Remarks: This new species, of early Berriasian age, is the youngest member of the genus. It differs from its middle Oxfordian congener *A. robertboreki* in having a larger, wider rostrum, a shorter central gastric groove and a more clearly V-shaped cervical groove. *Ammopylocheles romankijoki* sp. nov. differs from *A. mclaughlinae* in having a much larger massetic region, a wider and more pronounced rostrum and a more angular V-shaped cervical groove. The new species differs from *Am. petersi* in having a much smaller and more subrounded keraial region, in lacking ornament on the anterior and posterior gastric regions and in having a more angular V-shaped cervical groove.

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