

# Brazilian Miocene crabs I. Taxonomic review of *Cyclocancer tuberculatus* Beurlen, 1958 and *Hepatella amazonica* Beurlen, 1958 (Pancrustacea, Decapoda, Brachyura)

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**Abstract.** In describing *Cyclocancer* to accommodate his new species *C. tuberculatus*, Beurlen highlighted that his **new genus** was a cancriid intermediate in form between *Atelecyclus* and *Cancer*, but with enough characters to be placed in a **new genus**. Examination of *C. tuberculatus* type material revealed that *Cyclocancer* is a junior synonym of *Hepatus*. Therefore, *C. tuberculatus* is herein transferred into *Hepatus* as *H. beurleni* **nomen novum** because *H. tuberculatus* (Beurlen, 1958) is a junior homonym of *H. tuberculatus* Saussure (1858), a junior synonym of *Hepatus pudibundus* (Herbst, 1785). *Miohepatus* **gen. nov., comb. nov.** is proposed here to accommodate *Hepatella amazonica* Beurlen from the Pirabas Formation, Neogene, Pará, Brazil, based on new morphological evidence from the type material.

**Keywords.** Fossil decapods; Pirabas Formation; Systematics; Aethridae; Aethroidea.

## INTRODUCTION

Karl Beurlen (1901-1985) was a German geologist and paleontologist who worked in Brazil from 1950 to 1969, invited by the Departamento Nacional de Produção Mineral (DNPM), currently Agência Nacional de Mineração (ANM). During this period, he described several fossil crustacean species, with special reference to the decapods. One of his important works was in the Pirabas Formation, north region of Brazil, where he described several Miocene species (Beurlen, 1958) in the first work describing decapod crustaceans from that formation (Aguilera & Páes, 2012). Although with undeniable importance, this work needs revision, mostly in the descriptions and updated images, with new photos of the species studied.

The revaluation of the species described by Beurlen revealed that *Hepatella amazonica* Beurlen, 1958, does not belong to *Hepatella* Smith, in Verrill (1869) and cannot be assigned to an existing genus. Therefore, the **new genus**

*Miohepatus* is described here with *Miohepatus amazonicus* as a new combination. Also, morphological evidence based on the type material from the Pirabas Formation revealed that *Cyclocancer* Beurlen, 1958, is a junior synonym of *Hepatus* Latreille, in Bosc, 1801. *Cyclocancer tuberculatus* Beurlen, 1958 is transferred herein into *Hepatus* as *H. beurleni* **nomen novum**.

## Geological setting

The Pirabas Formation (Maury, 1925) consists of mixed siliciclastic-carbonate deposits associated with shallow-water coastal settings (grainstone and consolidated packstone, stratified wackestone to packstone, and laminated mudstone) (Rossetti *et al.*, 2013; Aguilera *et al.*, 2022). It is a young Cenozoic formation, deposited on the Brazilian equatorial platform of late early (~16 Ma) to late middle (13-12 Ma to younger) Miocene Pirabas Formation (Gomes *et al.*, 2023) (Fig. 1). The Pirabas Formation is representative of a variety of shallow

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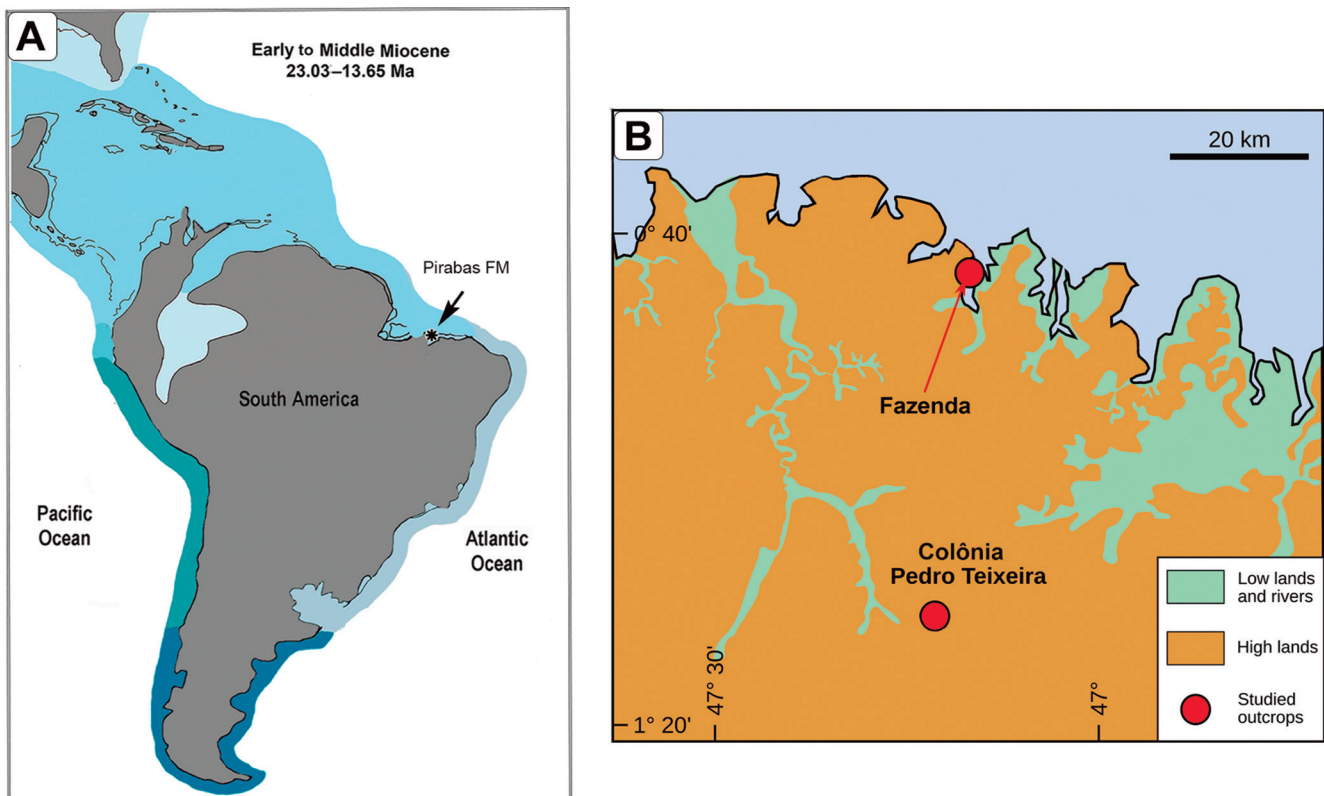
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**Figure 1.** (A, B) Location map of Pirabas Formation, Pará, Brazil. (A) Early to middle Miocene paleogeographic reconstruction of Pirabas Formation (23-13 Ma). (B) Pirabas Formation at Colônia Pedro Teixeira and Fazenda outcrops. Paleogeographic reconstruction and location map primarily based on Aguilera *et al.* (2016, 2022).

water paleoenvironments, including surf zones, tidal flats, coastal lagoons, and tidal inlet environments (Góes *et al.*, 1990; Rossetti & Góes, 2004; Rossetti *et al.*, 2013; Borges, 2016; Aguilera *et al.*, 2020; Lima *et al.*, 2020). The Pirabas Formation has been divided into two groups ( $\alpha$ ,  $\beta$ ) and three main facies ( $\alpha_1$ ,  $\alpha_2$ , and  $\beta$ ) (Aguilera *et al.*, 2022). The studied outcrops of Ponta da Fazenda in the Ilha de Fortaleza and Colônia Pedro Teixeira in Capanema are included in facies  $\alpha_1$  (characterized by echinoderm-bryozoan packstone to rudstone rich in mollusks) that suggest an outer inner platform exposed to oceanic influence.

## MATERIAL AND METHODS

The material studied is deposited in the invertebrate paleontology collections of the Museu de Ciências da Terra (MCTer/SGB-CPRM), and Museu Nacional da Universidade Federal do Rio de Janeiro (MNRJ). The *Hepatus beurleni* **nomen nov.** is a single fossil specimen, with part and counterpart (Fig. 2). The redescription of *Miohepatus amazonicus* **gen. nov., comb. nov.** is based on the single type specimen from the Pirabas Formation. Descriptions, drawings, and photographs were made using a stereomicroscope Nikon SMZ800N equipped with camera lucida and a Leica EZ4W, both with digital camera attached.

The Brachyura classification of Ng *et al.* (2008) was mostly used in suprafamilial rankings. Infraclassification rankings mostly follow De Grave *et al.* (2009) and Schweitzer *et al.* (2010). We also used the following abbreviations: cl, carapace length; cw, carapace width (taken at the widest

point); coll., collector or collected by; † indicates taxa with recent and fossil representants; †† indicates taxa exclusively known from fossils; L/W, length/width ratio.

This published work and the nomenclatural acts it contains have been registered in ZooBank, the online registration system for the ICZN.

## RESULTS

### Systematic Paleontology

**Brachyura Latreille, 1802**  
**Eubrachyura de Saint Laurent, 1980**  
**Aethroidea Dana, 1851**  
**Aethridae Dana, 1851**

**Type genus:** *Aethra* Latreille, in Cuvier, 1816.

**Other genera:** *Actaeomorpha* Miers, 1877; *Drachiella*† Guinot in Serène & Soh, 1976; *Eohepatella*†† Beschin & De Angeli, 2017; *Eriosachila*†† Blow & Manning, 1996; *Hepatella*† Smith in Verrill, 1869; *Hepaticus*†† Bittner, 1875; *Hepatus* Latreille, in Bosc, 1801; *Ilerdapaticus* Artal & Van Bakel, 2018; *Mainhepaticus*†† De Angeli & Beschin, 1999; *Matutites*†† Blow & Manning, 1996; *Miohepatus* **gen. nov.**; *Osachila*† Stimpson, 1871; *Politohepaticus zorzini* Beschin, Busulini, Fornaciari, Papazzoni & Tessier, 2018; *Prehepatus*†† Rathbun, 1935; *Priabonella*†† Beschin, De Angeli, Checchi & Mietto, 2006; *Pseudohepaticus*†† Blow & Manning, 1996; *Sakaila* Manning & Holthuis, 1981.

**Remarks:** Aethridae currently embraces fossil and extant members which share similarities proposed by Guinot (1966, 1967) and they are currently positioned in Aethroidea (Ng *et al.*, 2008; De Grave *et al.*, 2009). Fossil specimens generally are attributed to this family by the general carapace outline and ornamentation, which is octagonal to subquadrate, wider than long; antero- and posterolateral margins clearly demarcated; and antero-lateral margins entire to cristate, may be expanded to form subclypeiform structure (Davie, 2002).

### Genus *Hepatus* Latreille, in Bosc, 1801

*Hepatus* Latreille, in Bosc, 1801: 55, 56 [type species: *Calappa angustata* Fabricius, 1798, by monotypy, junior synonym of *Hepatus pudibundus* (Herbst, 1785)].  
*Hepatus* Latreille, 1802: 22 [type species: *Calappa angustata* Fabricius, 1798, by monotypy, junior synonym of *Hepatus pudibundus* (Herbst, 1785)].  
*Hepatulus* Fowler, 1912: 590 [type species: *Hepatus fasciatus* Latreille, 1803; unnecessary replacement name for *Hepatus* Latreille, in Bosc, 1801].  
*Hepatoides* Balss, 1957: 1612 [unnecessary replacement name for *Hepatus* Latreille, in Bosc, 1801].  
*Cyclocancer* Beurlen, 1958: 15 [type species *Cyclocancer tuberculatus* Beurlen, 1958, by monotypy].

**Included species:** *Hepatus beurleni*†† **nomen nov.**; *H. biformis*†† Collins & Todd in Todd & Collins, 2005; *H. bottomsii*†† Blow, 2003; *H. chiliensis*† H. Milne-Edwards, 1837; *H. epheliticus* (Linnaeus, 1763); *H. gronovii* Holthuis, 1959; *H. guraboensis*†† Collins in Collins *et al.*, 2009; *H. kossmanni* Neumann, 1878; *H. lineatus*† Rathbun, 1898; *H. lineatus*†† Collins & Todd in Todd & Collins, 2005; *H. nodosus*†† Collins & Morris, 1976; *H. pauli*†† Collins, Garvie & Mellish, 2014; *H. praecox*†† Collins, Donovan & Dixon, 1996; *H. pudibundus* (Herbst, 1785); *H. scaber* Holthuis, 1959; *H. spinimarginatus*†† Feldmann, Schweitzer & Encinas, 2005.

**Remarks:** The authorship of *Hepatus* has been generally attributed to Latreille (1802: 22) (*e.g.*, Desmarest & Bosc, 1830; Holthuis, 1959; Glaessner, 1969; Ng *et al.*, 2008; De Grave *et al.*, 2009; Schweitzer *et al.*, 2010). *Hepatus* was recently attributed to Bosc (1801: 55, 56) (see WoRMS, 2023). Bosc (1801: 29, 48) makes it clear that he used some results of Latreille's manuscript – which was in preparation. More importantly, Bosc (1801: 29, 48) attributed authorship to Latreille (see Opinion 1133: 97 by C. Dupuis, Case 1879, BZN 1979: 97 for *Talitrus* Bosc, 1802). According to the ICZN (1999: Art. 50.1.1) "if it is clear from the contents that some person other than an author of the work is alone responsible both for the name or act and for satisfying the criteria of availability other than actual publication, then that other person is the author of the name or act". Thus, the authorship for *Hepatus* should therefore be Latreille, in Bosc (1801: 55, 56) (type species *Calappa angustata* Fabricius, 1798, by monotypy). Desmarest & Bosc (1830: 42, 209), in the second edition of Bosc (1801,

1802) attributed the authorship of *Hepatus* to Latreille. Here we follow Dupuis (Opinion 1133: 97) (for more details see ICZN Case 1879; Bousfield & Holthuis, 1969; Dupuis, 1975; Holthuis, 1975).

### *Hepatus beurleni* nomen nov.

(Fig. 2A-E)

<https://zoobank.org/78AF63CA-91E9-499D-B3E8-ED1BE02E7A26>

*Cyclocancer tuberculatus* Beurlen, 1958: 15 [type locality: Pirabas Formation, Brazil, Pará holotype (MNRJ-4617-I). – Schweitzer *et al.*, 2010: 102; Távora *et al.*, 2010b: 214; Luque *et al.*, 2017: 12.

**Type material:** Holotype MNRJ-4617-I, part and counterpart, early-middle Miocene, Pirabas Formation, Brazil, Pará, Ilha de Fortaleza, Ponta da Fazenda, C.S. Ferreira e O.R. da Cunha coll.

**Occurrence and age:** Brazil, Pará, Ilha de Fortaleza, Ponta da Fazenda, Pirabas Formation, early-middle Miocene.

**Etymology:** The specific epithet of the new name honors Karl Beurlen, a prominent German paleontologist who worked in the Instituto Geológico Brasileiro and described this species.

**Diagnose:** Carapace ovoid, wider than long (cw 38 mm, cl 28 mm; W/L ratio 1.4). Rostrum narrow, orbits small. Anterior margins convex, strongly crenated, lobes extending to anterior posterolateral margins. Posterolateral margins short, slightly concave, upturned anteriorly, crenulated posteriorly, with a large knob-like lobe separating it from the posterior margin. Posterior margin narrow, straight, crenulated. Greatest width near midlength. Carapace with 8 protuberances on gastric, cardiac, and branchial regions; mesogastric region higher than the remaining carapace regions; protuberances surmounted with a cluster of small granules. Mesobranchial protuberance oblong, transversal separated from gastric and cardiac regions by a shallow groove.

**Remarks:** *Cyclocancer tuberculatus* Beurlen, 1958 is here-in transferred into *Hepatus* as *H. beurleni* **nomen nov.**, a new species name for *H. tuberculatus* (Beurlen, 1958) as it became a junior homonym of *H. tuberculatus* Saussure (1858), a junior synonym of *Hepatus pudibundus* (Herbst, 1785).

Janssen & Müller (1984) were the first to indicate that *Cyclocancer tuberculatus* is more related to *Hepatus* than to any other Cancroidea (superfamily where *Cyclocancer* Beurlen, 1958 was originally included). Salva & Feldmann (2001) also questioned the position of *Cyclocancer* in Cancridae, although not citing its resemblance with *Hepatus*. Feldmann *et al.* (2005) mentioned that when the front of the carapace is missing, as is the case of the holotype of *Hepatus beurleni* **nomen nov.**, it is difficult to distinguish *Hepatus* from the cancrinid *Metacarcinus*



A. Milne-Edwards, 1862; however, the presence of distinct elevations of the carapace in *Hepatus* makes possible to differentiate it from *Metacarcinus*.

*Hepatus beurleni* **nomen nov.**, has the diagnostic characters of *Hepatus* (as understood by Feldmann et al., 2005: 433), such as carapace much broader than long, broadly obovate, vaulted; crenated anterolateral margins; posterolateral margin concave; and posterior margin narrow.

Among the fossil species, *H. lineatinus* and *H. biformis* from the late Pliocene of Panama and Miocene-Pliocene of Panama and Costa Rica, respectively, differ from *H. beurleni* **nomen nov.** (characters within brackets) by having the carapace anterolateral margins tridenticulate (vs anterolateral margins with short lobes of about the same size). *Hepatus guraboensis* Collins, in Collins et al., 2009, from the Miocene of the Dominican Republic stands apart by having the anterolateral margins with short triangular spines increasing in size posteriorly (vs anterolateral margins strongly crenated). *Hepatus nodosus* Collins & Morris, 1976, from the Miocene of Trinidad differs by having the anterolateral margins divided into four blunt teeth (vs anterolateral margins strongly crenated, extending to anterior posterolateral margins).

*Hepatus bottomsii* Blow, 2003, from the Pliocene of Virginia, United States, can be distinguished by the anterolateral margins of the carapace consisting of 40 blunt denticles situated from 12-13 or more bidentate or tridentate teeth (vs anterolateral margins consisting of simple lobes). *Hepatus pauli* Collins, Garvie & Mellish, 2014, from the Pleistocene of Texas, United States, differs by having 12-13 tridentate spines on the anterolateral margins (vs anterolateral margins consisting of simple lobes). *Hepatus spinimarginatus* Feldmann, Schweitzer & Encinas, 2005, from the Miocene of Chile differs by having the posterolateral margins rimmed by very finely beaded elevation (vs posterolateral margin strongly crenulated).

The following set of characters differentiate *H. beurleni* **nomen nov.**, from all of its extant congeners: 1) posterior margin narrow, crenulated, almost straight; 2) posterolateral margin strongly crenulated with a large lobe between the posterolateral and posterior margins; and 3) anterolateral margin crenated, with short lobes of about the same size.

The holotype MNRJ-4617-I had been missing for decades and was considered lost, but was recently found together in the MCTer collection, probably due to an old



**Figure 2.** (A-E) *Hepatus beurleni* **nomen nov.** (A) *Hepatus beurleni* original label as *Cyclocancer tuberculatus* Beurlen, 1958. (B) Holotype MNRJ-4617-I, part and counterpart. (C) *Cyclocancer tuberculatus* Beurlen, 1958 original photograph and illustration. (D) and (E) dorsal and frontal view. Scale: 20 mm.

forgotten loan, posteriorly returned to the institution of origin (Museu Nacional do Rio de Janeiro/MNRJ). This fact allowed the specimen to escape the fire that hit the Museu Nacional in 2018 and destroyed a large part of the paleontological collections, which gives it even greater importance.

### Genus *Miohepatus* new genus

<https://zoobank.org/76AE969B-27E0-4112-85A5-DDE9B2F5A503>

**Type species:** *Hepatella amazonica* Beurlen, 1958, by present designation. Gender masculine.

**Included species:** *Miohepatus amazonicus* **gen. nov.**, **comb. nov.** (Beurlen, 1958) [*Hepatella*]; *M. peruvianus* **gen. nov.**, **comb. nov.** (Rathbun, 1933) [*Hepatella*].

**Diagnosis:** As for the type species.

**Occurrence:** Brazil, Pará, Colônia Pedro Teixeira, Capanema, Pirabas Formation, early-middle Miocene.

**Etymology:** The generic name is a combination of the generic name *Hepatus* and Miocene in allusion to the age of the type species.

**Remarks:** *Miohepatus* **gen. nov.** is erected here to accommodate *Hepatella amazonica* Beurlen, 1958 from the early-middle Miocene, Pirabas Formation, Pará, Brazil, originally assigned to the recent genus *Hepatella* Smith, in Verrill, 1869 (type species *Hepatella amica* Smith, in Verrill, 1869) from the tropical eastern Pacific Beurlen (1958) wrongly justified the assignment of his species to *Hepatella* by: the 1) presence of a carapace with remarkable elevations in the gastric, cardiac and branchial regions; 2) prominent rostrum; and 3) concave anterolateral margins. However, he was correct in suggesting a close relationship between *Hepatella amazonica* and *H. peruviana*, a recent species from the east Pacific coast. Accordingly, *Hepatella peruviana* is transferred along with *H. amazonica* to *Miohepatus* **gen. nov.**

*Miohepatus* **gen. nov.**, as revealed by both species, can be differentiated from *Hepatella* (characters for *H. amica* within brackets) by the: 1) carapace octagonal, slightly longer than wide, 1.1 width/length ratio (vs carapace subrectangular, remarkable longer than wide, 1.7 width/length ratio); 2) rostrum extending well beyond orbits (vs rostrum slightly exceeding orbits); and 3) posterolateral margins strongly concave (vs posterolateral margins nearly parallel).

The **new genus** differs from *Hepatus* in that the carapace dorsal surface is uneven, vaulted in the central region, with eight protuberances in the cardiac, gastric and branchial regions (vs carapace dorsal surface almost smooth in adults, convex, carapace regions poorly differentiated in *Hepatus*).

The rostrum bilobed with a median sulcus in *Miohepatus* **gen. nov.** is similar to that of *Osachila*

Stimpson, 1871 (type species *Osachila tuberosa* Stimpson, 1871), *Mainhepaticus* De Angeli & Beschin, 1999 (type species *M. zannatoi* De Angeli & Beschin, 1999), *Politohepaticus* Beschin, Busulini, Fornaciari, Papazzoni & Tessier, 2018 (type species *P. zorzini* Beschin, Busulini, Fornaciari, Papazzoni & Tessier, 2018), and *Priabonella* Beschin, De Angeli, Checchi & Mietto, 2006 (type species *P. violatti* Beschin, De Angeli, Checchi & Mietto, 2006). However, *Miohepatus* **gen. nov.** can be separated from *Osachila* by having a posterolateral margin of carapace crenulated (vs posterolateral margin of carapace nearly straight, obtuse, rugose, and armed with two of three tuberculliform teeth in *Osachila*); in having a slightly convex posterior margin of the carapace (vs posterior margin of carapace bilobed in *Mainhepaticus*); by the dorsal surface of the carapace ornamented with protuberances (vs carapace dorsal surface smooth in *Politohepaticus*); and by having a carapace wider than long (vs carapace slightly longer than wide in *Priabonella*).

*Drachiela* Guinot, in Serène & Soh, 1976 [type species *D. sculpta* (Haswell, 1879)], *Eriosachila* Blow & Manning, 1996 [type species *E. petiti* Blow & Manning, 1996], *Ilerdapaticus* Artal & Van Bakel, 2018 [type species *I. guardiae* Artal & Van Bakel, 2018], *Matutites* Blow & Manning, 1996 [type species *M. anthonyae* Blow & Manning, 1996], *Pseudohepaticus* Blow & Manning, 1996 [type species *P. marinoi* Blow & Manning, 1996], all stand apart from *Miohepatus* **gen. nov.** by having the rostrum slightly exceeding the orbits (vs rostrum distinctly exceeding the orbits in *Miohepatus* **gen. nov.**).

The **new genus** differs from *Aethra* Latreille, in Cuvier, 1816 [type species *A. scruposa* (Linnaeus, 1764)] by having an octagonal carapace and concave posterolateral margin (vs carapace elliptical and posterolateral margin slightly convex in *Aethra*). It differs from *Actaeomorpha* Miers, 1877 [type species *A. erosa* Miers, 1877] in having three tubercles on the gastric region (vs two large elevations on the gastric region, behind each orbit in *Actaeomorpha*); and differs from *Sakaila* Manning & Holthuis, 1981 [type species *S. africana* Manning & Holthuis, 1981] by having a crenulated posterolateral margins and carapace dorsal surface with eight protuberances (vs posterolateral margins with eight distinct teeth and carapace dorsal surface with six major protuberances in *Sakaila*).

The **new genus** shares with *Hepaticus* Bittner, 1875 (type species *H. poverelli* Vía, 1959) the presence of eight protuberances on the carapace dorsal surface, bilobed rostrum, and concave posterolateral margins. However, *Hepaticus* stands apart in having the anterolateral carapace margins with six lobes instead of the anterolateral carapace margins crenated, with 12 small lobes as in *Miohepatus* **gen. nov.** *Miohepatus* **gen. nov.** differs from *Eohepatella* Beschin & De Angeli, 2017 [type species *E. plana* Beschin & De Angeli, 2017] by having an octagonal carapace and the presence of eight protuberances on the carapace dorsal surface (vs oval carapace and six protuberances on the carapace dorsal surface in *Eohepatella*). *Prehepatus* Rathbun, 1935 is known only by chelae (see Schweitzer et al., 2006).



***Miohepatus amazonicus* (Beurlen, 1958)  
new combination  
(Fig. 3A-E)**

<https://zoobank.org/DD1D6AF9-E23C-4B95-9F30-1C8A3EFC96A6>

*Hepatella amazonica* Beurlen, 1958: 3, pl. I fig. 1, pl. III, fig. 1 [type locality: Pirabas Formation, Brazil, Pará; holotype in MCTer/SGB-CPRM]. – Collins et al., 2009: 95; Schweitzer et al., 2010: 85; Távora et al., 2010b: 212; Távora et al., 2010a: 50, 54; Aguilera & Páes, 2012: 35, tab. 1; Aguilera et al., 2013: 113; Luque et al., 2017: 8.

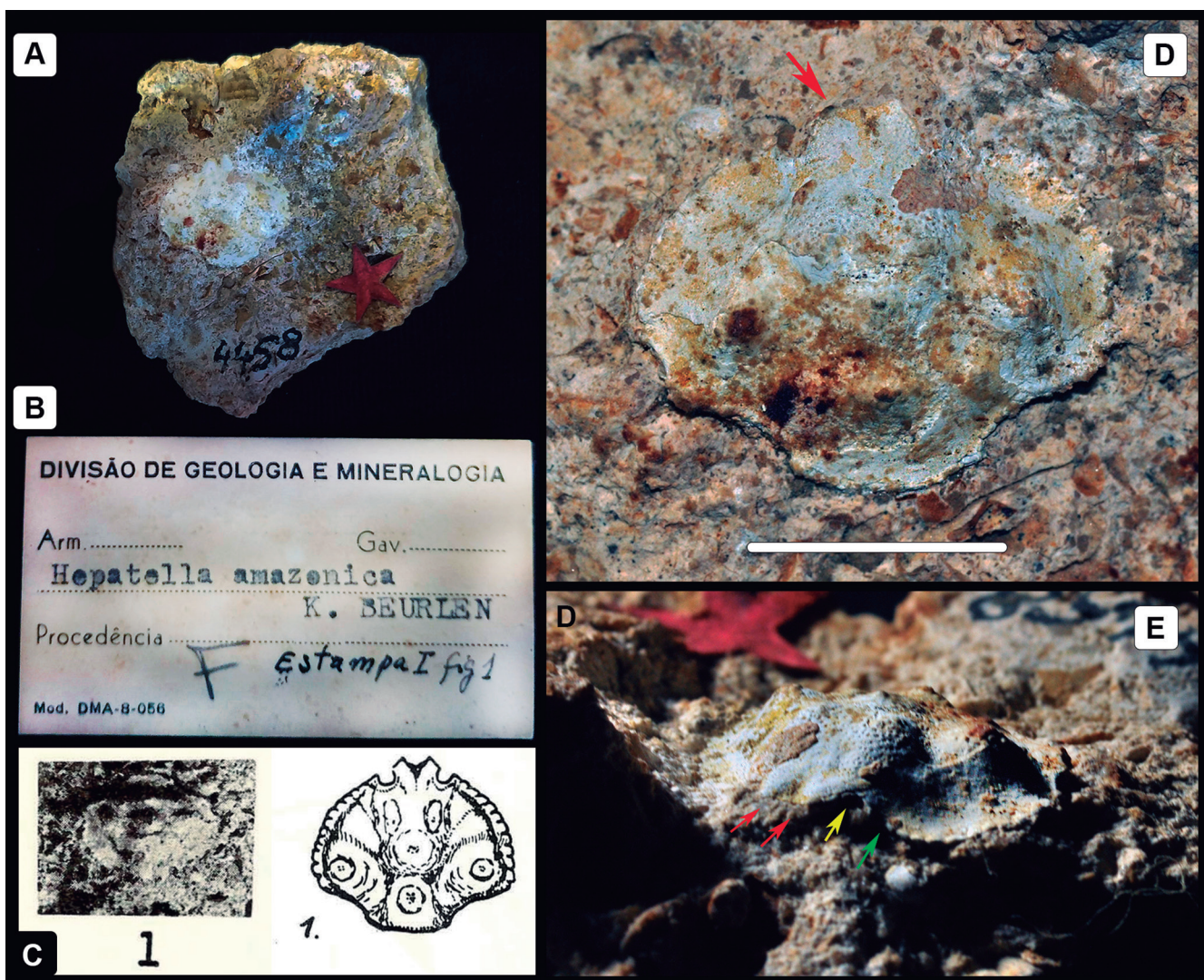
*Hepatella amazonica* – Vega et al., 2009: 56, pl. 1, figs. 15-18; Aguilera et al., 2010: 109, fig. 6.2.15-6.2.19 [not *Hepatella amazonica* Beurlen, 1958].

*Hepatella amazonica* – Beschin & De Angeli, 2017: 25 [misspelling].

**Material examined:** Holotype MCT-I 4458, early-middle Miocene, Pirabas Formation, Brazil, Pará, Capanema, Colônia Pedro Teixeira, F. Ackermann coll.

**Occurrence and age:** Brazil, Pará, Colônia Pedro Teixeira, Capanema, Pirabas Formation, early-middle Miocene.

**Redescription:** Carapace octagonal, wider than long (cw 18.5 mm, cl 15 mm; W/L ratio 1.2); greatest width at the posterolateral corner. Carapace dorsal surface uneven, vaulted centrally, concave marginally, anterior surface punctate, regions well defined. Cervical groove well defined. Rostrum partially preserved, bilobed, extending well beyond orbits; lobes separated medially by short cleft. Left orbit well preserved, small, circular, well visible in dorsal view. Carapace with eight distinct protuberances on cardiac, branchial, and gastric regions. Cardiac, mesobranchial and metagastric protuberances slightly higher than metabranchial and protogastric. Each protuberance bears a single large central granule, surrounded by some smaller ones. Anterolateral margins crenated, with 12 small rounded lobes. Posterolateral margins distinctly concave, arcuate, crenulated; shorter than anterolateral margins. Posterior margin narrow, crenulated, slightly convex.



**Figure 3.** (A-E) *Miohepatus amazonicus* new genus, new combination. (A) Holotype MCT.I.4458. (B) *Miohepatus amazonicus* original label as *Hepatella amazonica* Beurlen, 1958. (C) *Hepatella amazonica* Beurlen, 1958 original photograph and illustration. (D) dorsal view; red arrow: rostrum; white arrows: concave posterolateral margins. (E) left frontolateral view; red arrows: bilobed rostrum; yellow arrow: left orbit; green arrow: left anterolateral margin. Scale: 10 mm.

**Remarks:** *Miohepatus amazonicus* **gen. nov., comb. nov.** is closely related to *M. peruvianus* **gen. nov., comb. nov.** However, they differ in the presence of a small protuberance on each metabranchial region in *M. amazonicus* **gen. nov., comb. nov.**, whereas the metabranchial protuberance is absent in *M. peruvianus*.

*Miohepatus amazonicus* **gen. nov., comb. nov.** differs from *Hepatus beurleni* **nomen nov., comb. nov.** [characters for *H. beurleni* within brackets] by having the carapace octagonal (vs carapace ovoid) and the carapace W/L ratio of 1.2 (vs carapace W/L ratio of 1.4). In addition, *H. beurleni* has a large knob-like lobe separating the posterolateral margins from the posterior margin, which is absent in *M. amazonicus*.

Vega et al. (2009) mentioned the occurrence of *M. amazonicus* **gen. nov., comb. nov.** (as *H. amazonica*) from the lower Miocene of the Chiapas, Mexico. However, from the figures provided by Vega et al. (2009) it seems that their material is not attributable to *M. amazonicus*. The main differences are in the curvature of the posterolateral margin of the carapace, much more accentuated in *M. amazonicus* **gen. nov., comb. nov.** (Fig. 2) (vs almost straight in the specimen figured by Vega et al., 2009: pl. 1, figs. 15-18); and in the surface of the carapace with six main protuberances and two small protuberances on the metabranchial region in *M. amazonicus* **gen. nov., comb. nov.** (Fig. 2) (vs eight equally inflated elevations on the carapace in the material studied by Vega et al., 2009: pl. 1, figs. 15-18). Actually, the general carapace shape and the short bilobed rostrum of specimens from Mexico are similar to that of *Eriosachila* rather than to *M. amazonicus* **gen. nov., comb. nov.**, although with quite different posterolateral margin (Vega et al., 2009: pl. 1). A reexamination of the material from Vega et al. (2009) is needed to clarify its taxonomic assignment.

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