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Notes on *Iniocyphus iheringi* Raffray, 1912 (Coleoptera: Staphylinidae: Pselaphinae)

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Abstract

The only available specimen of *Iniocyphus iheringi* Raffray, 1912, type species of the type genus of the tribe Iniocyphini *Inyocyphus* Raffray, 1912, is redescribed and illustrated in detail. The original spelling of the species epithet iheringi is reinstated over jheringi, which was an incorrect subsequent spelling. The specimen examined is designate as the lectotype.

Key words: taxonomy, nomenclature, Brazil, Goniaceritae, type species

Introduction

Iniocyphus iheringi new genus and new species were described by Raffray in 1912, based on a single specimen from Brazil. He placed the genus in the tribe Tychini, which contained at that time current Tychini and Bythinini, as well as various other genera currently assigned to Iniocyphini and Proterini.

In 1942 (p. 277) Park listed the genus in Tychini. However in 1951 (p. 60) he accommodated it in its own monobasic subtribe Iniocyphini (sic) of the tribe Tanypleurini of Jeannel (1949: 79–80), together with the nominative subtribe and a third subtribe Dalmodini (sic). The spelling of the subtribe was corrected to Iniocyphina in Newton & Chandler's (1989) World Catalog of the Genera of Pselaphidae. Later, Newton & Thayer (1992: 20–21) noted that the name *Tanypleurus* was preoccupied and renamed this taxon *Natypleurus*; this resulted in the use of the tribal name Iniocyphini over the invalid name Tanypleurini.

Löbl (1994) examined the type of *I. iheringi* and listed some characters additional to the original description in the frame of his investigation into the systematic placement of his new genus *Awas*.

Then Chandler (2001) proposed major changes in the supertribe Goniaceritae (i.e. former Goniacerinae), resulting notably in the current assignment of some 40 genera within Iniocyphini, Proterini and Brachyglutini, including those described, transferred and/or synonymized since by other authors (i.e., Arai & Nomura 2007; Kurbatov *et al.* 2007; Löbl & Kurbatov 2004), to the previously monobasic Iniocyphina, while pointing out that resolving the phylogenetic relationships between and within these taxa remains "one of the major problems in the higher classification of the Pselaphinae" (Chandler 2001: 377). The situation appears even more challenging when considering that the vast majority of these genera are unrevised, with many of them being monobasic. Moreover recent collections contain large numbers of new forms that can hardly fit into the current genera without significantly loosening their concept, or proposing new genera.

Our contributions to a better understanding of these Pselaphinae were to revise first in detail the morphology of the type-genus of Proterini (i.e. *Proterus* Raffray, 1897, from Sumatra), and in that light to critically reexamine the other proterine genera to propose a new set of characters defining what we consider as Proterini *sensu stricto* (Cuccodoro & Kurbatov 2006; Kurbatov & Cuccodoro 2009). Concomitantly we revised or described some other proterine and iniocyphine genera uniquely sharing several common traits, and accommodated them together in a new informal group of genera (i.e., the *Morana*-group; Kurbatov *et al.* 2007). The definition of the subtribe Brachyglutina was also refined by Kurbatov & Sabella (2015), with notably the reassignment of genera into it from

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Iniocyphini (*Sogaella* Jeannel, 1960), and the transfer of others from it to Iniocyphini (*Araneabaxis* Chandler, 2001).

Recently Parker (2016), in the frame of a study dealing with fossil pselaphines, presented a preliminary phylogenetic analysis of the subfamily combining morphological and molecular data; although it included only a very limited set of goniacerite taxa, and no Proterini nor Iniocyphini, polyphyly of Goniaceritae was clearly demonstrated.

Here we present in detail the morphology of the type-genus of Iniocyphini by providing a redescription of the lectotype and only known specimen of *Iniocyphus iheringi*, type-species of this monobasic genus. We hope this study will not only facilitate further analysis of the phylogenetic relationships between and within Iniocyphini, Proterini and Brachyglutini, and maybe also other nearby pselaphine groups, but also help colleagues to identify new specimens of this quite enigmatic taxon.

Material and methods

The specimen examined in this study is housed in the Muséum National d'Histoire Naturelle, Paris, France (MNHN).

Images were taken using a Leica DFC425 camera in conjunction with a Leica M205-C compound microscope. Zerene Stacker (version 1.04) was used for image stacking. All images were modified and grouped using Adobe Photoshop and Illustrator CS6. All images were made on the dry specimen or its parts using reflected light, except Fig. 9 made using transmitted light on the abdomen immersed in glycerine.

The length and width of body parts were measured between points of maximum extension. The abdominal tergites are numbered based on order of visibility. Morphological terminology follows that of Chandler (2001), except for our use of 'ventrite' instead of 'sternite' when describing meso- and metathoracic structures.

Iniocyphus Raffray, 1912

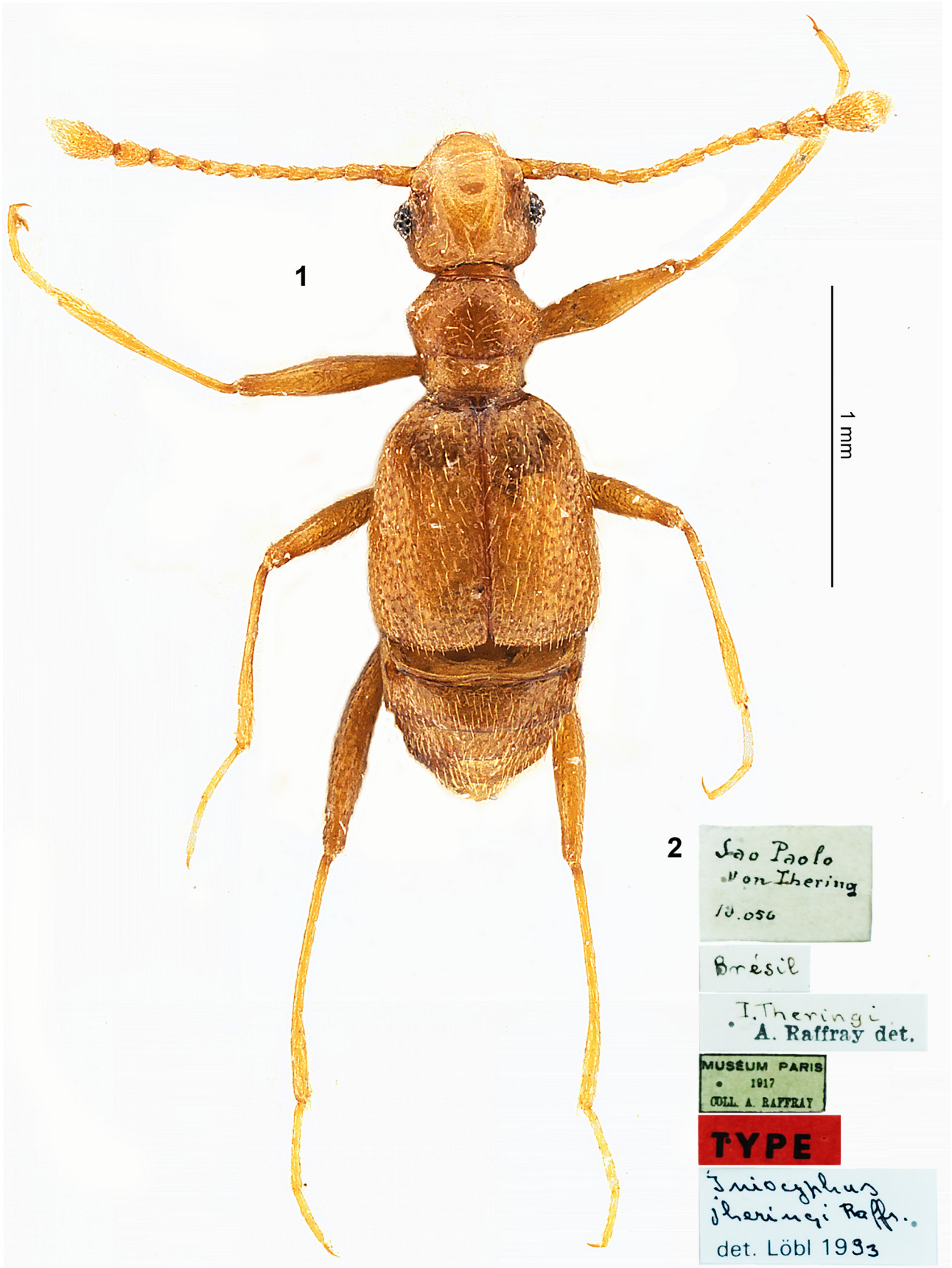
(Figs. 1–23)

Iniocyphus Raffray, 1912: 435; 1924: 144. Park 1942: 277; Newton & Chandler 1989: 50; Löbl, 1994: 692. Chandler 2001: 375.

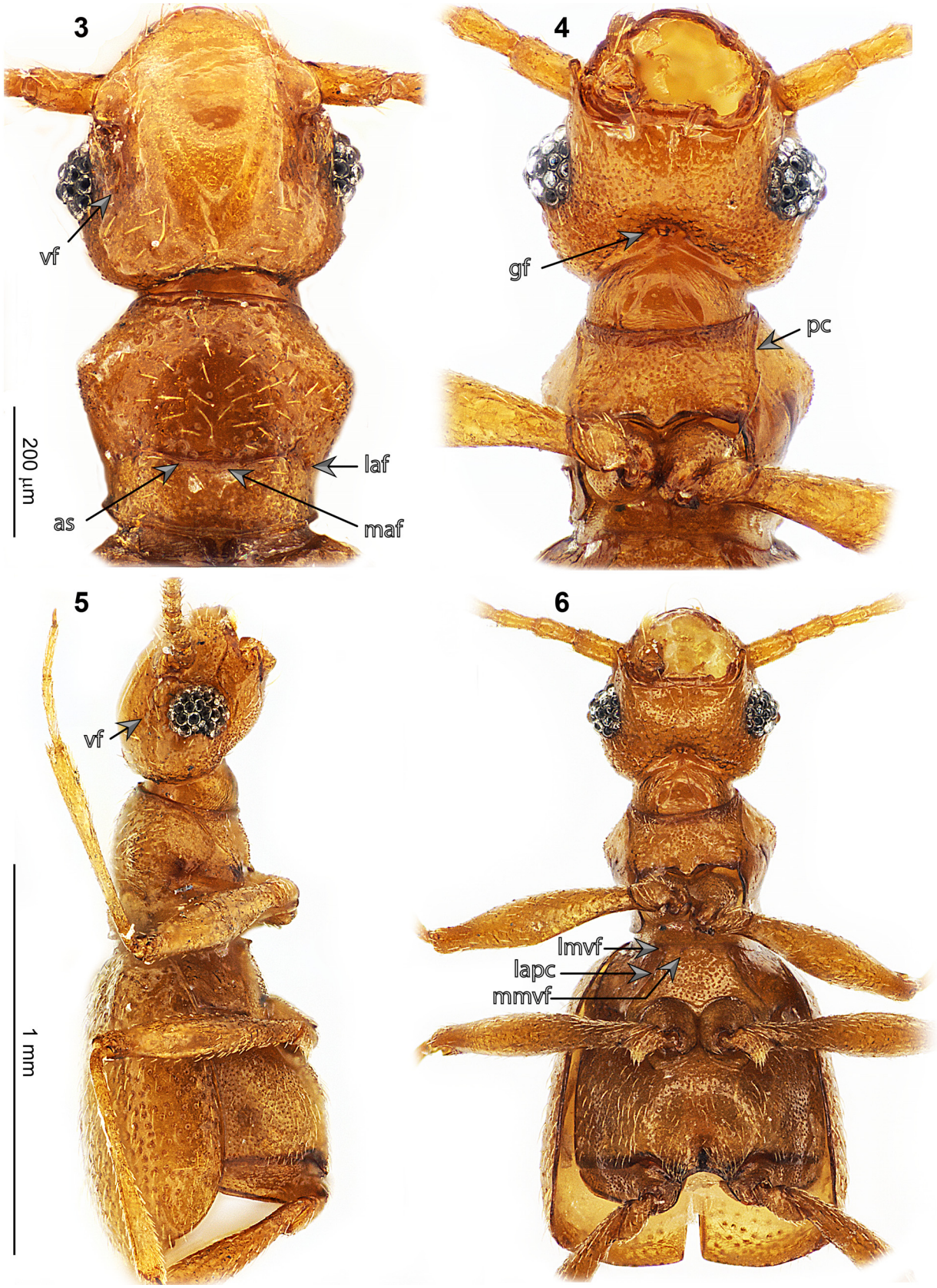
Type species. *Iniocyphus iheringi* Raffray, 1912, by monotypy.

Description. Habitus as in Fig. 1. Head with eyes well-developped (at least in male, female unknown), temples long, moderately convex; vertexal foveae very small, opening near upper eye margins (Figs. 3, 5: vf); postantennal notches narrow; ocular-mandibular carinae present; ventral surface covered with pointed microtubercles; gular area depressed at middle, with two gular foveae (Fig. 4: gf). Antennae (Fig. 7) with eleven antennomeres, much longer than combined length of head and pronotum; club consisting of antennomeres IX–XI, with antennomeres IX wider than III–VIII, and X much longer than wide. Mouthparts as in Figs. 18–21, 23; maxillary palpi (Fig. 23) with article 3 distinctly quandrangular, with mesal margin long, almost as long as external margin; no trichome at the outside of the article 4 (see Nomura, 1991: 40).

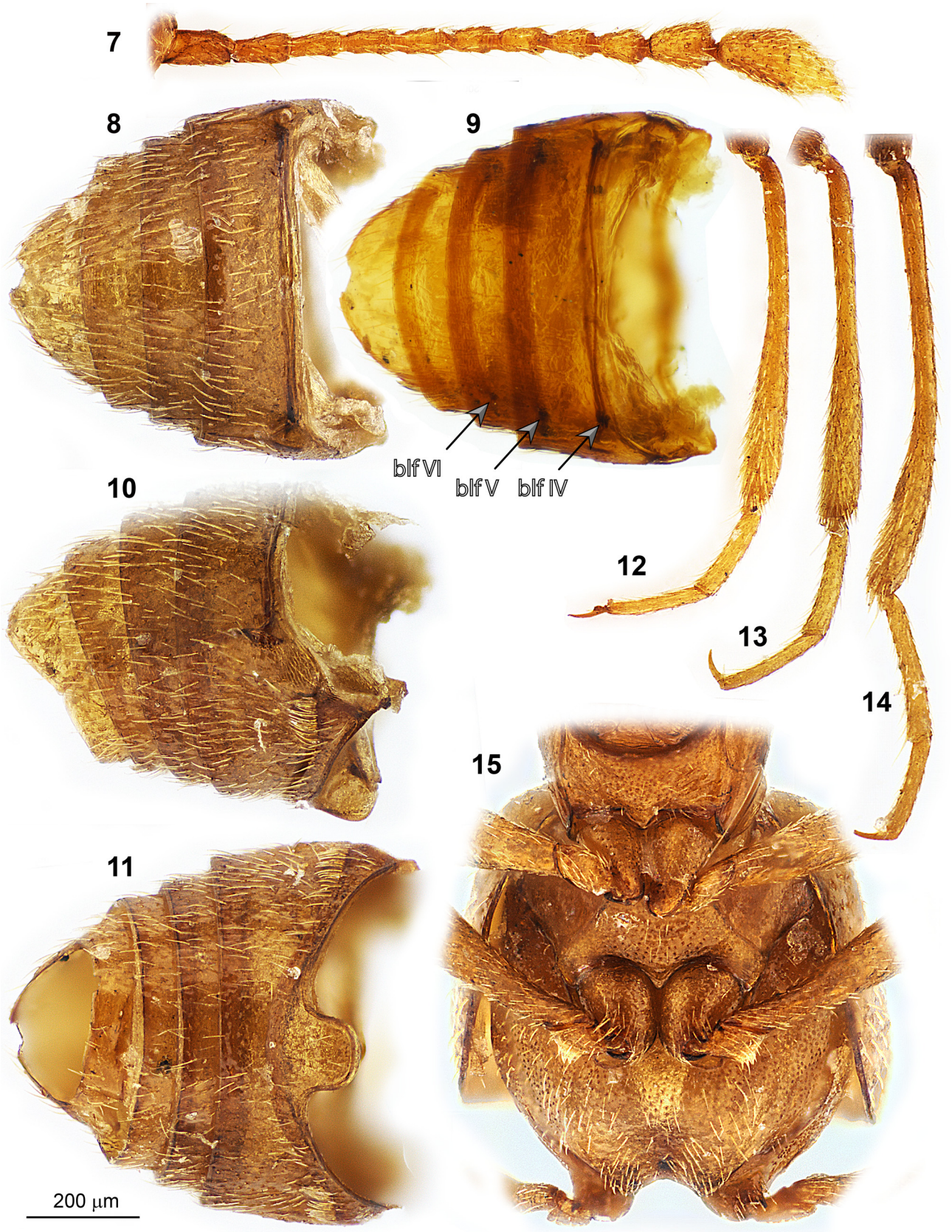
Pronotum fairly hexagonal, sides slightly sinuate posteriorly; median antebasal fovea present (Fig. 3: maf); antebasal sulcus present (Fig. 3: as), joining the lateral foveae (Fig. 3: laf); areas posterior to antebasal sulcus and near most protruding portion of lateral edges covered with pointed microtubercles. Prosternum lacking prosternal foveae ; paranotal carinae present, entire (Fig 4: pc) ; center covered with pointed microtubercles. Elytra very long, longer than their maximal width combined, and two times longer than abdomen in dorsal view, without foveae, sulci or carinae ; with small concavity at posterolateral angles (as one of locking devices *sensu* Nomura, 1991: 16, Figs. 28–29). Wings well-developped. Mesoventrite with pairs of median mesoventral foveae (Fig. 6: mmvf), lateral mesoventral foveae (Fig. 6: lmvf), longitudinal anapleural carinae (*sensu* Nomura, 1991: 12, fig. 18a; Fig. 6: lapc). Metaventrite apparently with pair of small lateral mesocoxal foveae (not clearly visible without preparation); posterior edge between metacoxae in dorsal view evenly concave. Legs (Figs. 12–13) rather long; pro- and mesocoxae conical, contiguous, oblique (Fig. 15); metacoxae moderately distants (Fig. 15); tarsomeres 1 very short, tarsomeres 2 slightly shorter than 3, latter with 1 claw (Fig. 17).



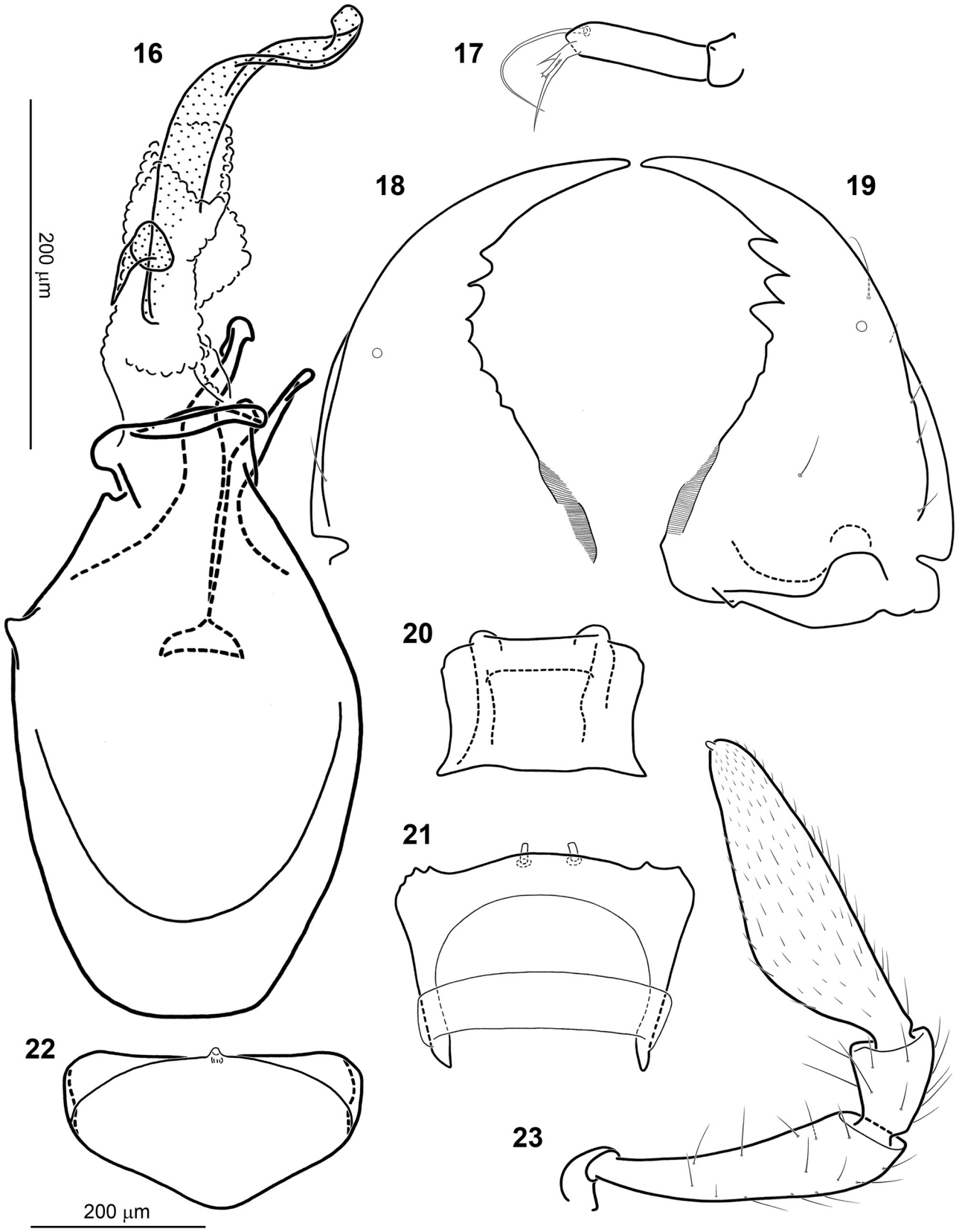
FIGURES 1–2. *Iniocyphus iheringi* Raffray, 1912. lectotype. (1) Habitus habitus. (2) Labels. Scale bar for (1).



FIGURES 3–6. *Iniocyphus iheringi* Raffray, 1912. lectotype. (3–4) Head (mouthparts removed) and pronotum, in (3) dorsal and (4) ventral views. (5–6) Head (mouthparts removed) and thorax, in (5) lateral and (6) ventral views. Scale bar 200 µm for (3–4), and scale bar 1 mm for (5–6). Abbreviations: as—antebasal sulcus, gf—gular fovea, laf—lateral antebasal fovea, lapc—longitudinal anapleural carina, lmvf—lateral mesoventral fovea, maf—median antebasal fovea, mmvf—median mesoventral fovea, pc—paranotal carina. vf—vertexal fovea.



FIGURES 7–15. *Iniocyphus iheringi* Raffray, 1912. lectotype. (7) antenna. (8–11) abdomen (apical segment removed), in (8–11) dorsal, (10) lateral and (11) ventral views. and pronotum, in (3) dorsal and (4) ventral views. (12) Anterior tibia and tarsus. (13) Middle tibia and tarsus. (14) Posterior tibia and tarsi. (15) Thorax, in ventrofrontal view. Abbreviations: blfIV—basolateral fovea of tergite IV, blfV—basolateral fovea of tergite V, blfVI—basolateral fovea of tergite VI.



FIGURES 16–23. *Iniocyphus iheringi* Raffray, 1912. lectotype. (16) Aedeagus (internal sac everted), in ventral view. (17) Apical middle tarsus. (18) Left mandible. (19) Right mandible. (20) Mentum. (21) Labrum. (22) Abdominal sternite VIII. (23) Right maxillary palpus ventral views. Scale bars: vertical for (16–21, 23), and horizontal for (22).

Abdomen with five visibles tergites (IV–VIII) and six visibles sternites (III–VIII) ; tergites IV–VI each with pair of small basolateral foveae (Fig. 9: blfIV, blfV and blfVI) ; sternite III with apical margin visible on entire length, including posteriorly metacoxae; sternite IV with pair of basolateral foveae; sternite VIII (Fig. 22) with mediobasal gland.

Upper part of head and mesotrochanters apparently sexually modified. Aedeagus membranous, with 2 parameres fused at base and affixed slightly asymetrically to median lobe.

Comments. With respect to the various genera currently assigned to Iniocyphini, Proterini, and Brachyglutini, the genus *Iniocyphus* is characterized by the following unique features : 1) Presence of pointed microtubercles on pronotum, prosternum and ventral surface of head ; 2) Elytra unusually long, longer than their maximal width combined ; 3) Mesocoxae conical and oblique. Within these three tribes the presence of markedly elongate antennomeres X is quite rare and occurs only here and there, such as for example in *Simplicorfa* Chandler , 2001 (Inyociphini : Natypleurina), and males of *Exoterus* Cuccodoro & Kurbatov, 2006 (Proterini). Also notable and potentially of high significance in further reassessments of phylogenetic position of the genus in the system are the quandrangular shape of the third segment of the maxillary palpi, the lack of trichome at the outside of the fourth segment of the maxillary palpi, and the apical margin of abdominal sternite III visible on its entire length.

Iniocyphus iheringi Raffray, 1912

(Figs. 1–23)

Iniocyphus iheringi Raffray, 1912: 436.

Iniocyphus jheringi (Newton & Chandler 1989: 50; Löbl 1994: 692; Chandler 2001: 375; Kurbatov *et al.* 2007: 592), incorrect subsequent spelling.

Type material. **Lectotype**, by present designation: Brazil, Sao Paulo, leg. von Jhering, male (MNHN: coll. Raffray).

Description. Body (Fig. 1) yellowish (single known specimen possibly teneral). Pubescence fairly uniform, slightly longer and denser on abdomen, consisting mostly of rather recumbent setae. Head slightly longer than wide (eyes omitted), frontovertexal area slightly paler than surrounding areas, bearing putative sexually dimorphic features; occipital area glabrous, sparsely punctate; temples as long as eyes in lateral view (at least in male); area with microtubercules extended anteriorly to ocular-mandibular carinae, and posteriorly to temples (where they are visible in dorsal view). Antennae (Fig. 7) with all antennomeres elongate. Pronotum more heavily punctate than distal part of head, except area posteriorly antebasal sulcus densely covered with microtubercules. Elytra with punctation similar to that on pronotal disc.

Male. Head with frontovertexal area paler than nearby teguments, slightly swollen and glabrous, the latter area bordered above eyes with shallow irregular longitudinal sulcus ; eyes with 20–22 facets ; mesotrochanters bearing dense tuft of setae (Fig. 15). Aedeagus as in Fig, 16; abdominal sternite VIII as in Fig. 22.

Female: Unknown.

Distribution and natural history. The only available information on the distribution and natural history of *I. iheringi* is that it was collected in “São Paulo”, Brazil. However, it is not clear if this type locality refers to the city or the eponymous state.

Nomenclatural notes. *Spelling of the species epithet.* Raffray (1912: 436) explicitly dedicated the species *iheringi* to the collector of the holotype “(…) M. von Jhering, directeur du Musée Paulista à São Paolo (…)”. This spelling of the epithet was used by Raffray (1924: 144) and Park (1942: 277), until it appeared as *jheringi* in Newton & Chandler’s World Catalog of the genera of Pselaphinae (1989: 50), which new spelling was adopted subsequently (Chandler 2001: 375; Kurbatov *et al.* 2007: 592; Löbl 1994: 692). However, considering that the epithet *iheringi* was correctly derived by Raffray from "Ihering", which is the Latinized form of "Jhering" used even by von Jhering himself (see labels Fig. 2), under ICZN (1999) Article 32.5.1.1 the original spelling has to be maintained. And *jheringi* is an incorrect subsequent spelling as its first use by Newton & Chandler (1989) cannot be interpreted as demonstrably intentional (ICZN, 1999: Article 33.2.1).

Status of the type. In the original description the use of “type” in the singular, and the dedication “(…) C’est un bel et curieux insecte que je suis heureux de dédier à M. von Jhering (…) qui l’a découvert (…)” [= “(…) It is a nice and interesting insect that I am glad to dedicate to M. von Jhering (…) who discovered it (…)”] strongly

suggest that Raffray had just one specimen at hand. However in the same article Raffray (1912: 426) used both the singular and the plural of "type" for a species described in both sexes, and we miss an explicit statement that the specimen was indeed unique as he did elsewhere in the text, such as "(…) un seul ♂ (…)" [= "(…) only one ♂ (…)"] and "(…) Cette espèce, dont je ne connais malheureusement qu'une ♀ (…)" [= "(…) This species, of which I unfortunately know only one ♀ (…)"]. So, although very unlikely, the presence somewhere of a second "type" of *I. iheringi* cannot be totally excluded. The specimen treated above is thus technically a syntype (ICZN, 1999: Article 73.1.2) and, in the interest of stability of nomenclature, we here designate it as the lectotype, and label it accordingly.

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