



Jocezia, a new Carpacorini genus from the Neotropics (Heteroptera: Pentatomidae: Pentatominae)

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Abstract

Carpacorini is the largest tribe of Pentatominae, containing 127 genera and more than 500 species distributed worldwide. A new genus, *Jocezia* n. gen., and a new species, *Jocezia inusitata* n. sp., from Argentina are described and illustrated. The new genus is included in the *Hypatropis* group, together with the genera *Hypatropis*, *Amauromelpia*, *Luridocimex* and *Stysiana*, and characterized by the head in lateral view with the mandibular plates in a higher level than clypeus and the absence of parameres. An updated key to the *Hypatropis* group genera is provided.

Key words: Stink bug, *Hypatropis* group, new taxa, Argentina, rice

Introduction

Pentatomidae is one of the three largest families of Heteroptera, with 940 genera and almost 5000 known species (Schuh & Weirauch 2020). According to the classification proposed by Rider *et al.* (2018), Carpacorini is the largest Pentatominae tribe, containing 127 genera and more than 500 species distributed worldwide. Among them, the genera *Hypatropis* Bergroth, *Amauromelpia* Fernandes & Grazia, *Luridocimex* Grazia, Fernandes & Schwertner and *Stysiana* Grazia, Fernandes & Schwertner constitute the *Hypatropis* group, characterized by the head in lateral view with the mandibular plates in a higher level than clypeus and the absence of parameres (Grazia *et al.* 1999; Fernandes & Grazia 2002). *Hypatropis* and *Amauromelpia* comprise five and three species, respectively, which are distributed in South America, with the exception of *H. rolstoni* Fernandes & Grazia and *A. ussu* Fernandes & Grazia that reach Central America (Fernandes & Grazia 1996, 1998). The monotypic genera *Luridocimex* is only known from Brazil (Grazia *et al.* 1998), while the four species of *Stysiana* are distributed in South America (Grazia *et al.* 1999). In Argentina, 26 genera and more than 80 species of Carpacorini are recorded, among them two genera and five species are in the *Hypatropis* group (Grazia & Schwertner 2008; Cioato *et al.* 2015; Dellapé *et al.* 2015; Bianchi *et al.* 2016, 2017; Faúndez *et al.* 2017a, b; Grazia *et al.* 2017). The purpose of this contribution is to describe and illustrate a new genus and a new species from Argentina belonging to the *Hypatropis* group. Moreover, an updated key to identify the genera of this group is provided.

Material and methods

The type specimen was deposited in the entomological collections of Museo de La Plata (MLP). Moreover, specimens of the *Hypatropis* group belonging to the entomological collections of Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina (MACN) and MLP were studied.

Terminology for male genitalia follows Fernandes & Grazia (1996, 1998, 2002), and Grazia *et al.* (1999). The genital capsule was dissected and cleared with a hot saturated KOH solution. The genital structures were preserved in microvials with glycerin. Pictures were taken using a Nikon SMZ 745 stereomicroscope and stacked with the software Helicon Focus 7.5.8., and the structures of male genitalia were drawn with the software CorelDRAW 2020.

Taxonomy

Key to genera of the *Hypatropis* group (modified from Grazia *et al.* 1999)

- 1 Anterolateral margins of pronotum subrectilinear or concave; head and pronotum declivent 2
- Anterolateral margins of pronotum convex; head and pronotum not declivent, dorsal surface uniformly flat 4
- 2 Connexivum covered by the forewings in the rest position, in dorsal view; proctiger with a transversal carina in basal third; phallus with strongly sclerotized ventral processes of conjunctiva; *ductus seminis distalis* sclerotized in distal portion.
 *Jocezia*, n. gen.
- Connexivum well-exposed, in dorsal view; proctiger with transversal carina in basal third and phallus with barely sclerotized ventral processes of conjunctiva, if strongly sclerotized, then lacking carina on proctiger; *ductus seminis distalis* delicate, usually not preserved after dissection 3
- 3 Proctiger with transversal carina; phallus with scarcely sclerotized ventral processes of conjunctiva *Hypatropis* Bergroth
- Proctiger without transversal carina, with 1+1 processes near middle length; phallus with strongly sclerotized ventral processes of conjunctiva *Amauromelpia* Fernandes & Grazia
- 4 Second labiomere clearly shorter than third and fourth together; inferior layer of ventral rim of pygophore with one median tooth-like projection *Luridocimex* Grazia, Fernandes & Schwertner
- Second labiomere almost as long as third and fourth together; inferior layer of ventral rim of pygophore with 1+1 tooth-like projections *Stysiana* Grazia, Fernandes & Schwertner

Jocezia Dellapé & Fuentes, new genus

Type-species: *Jocezia inusitata* Dellapé & Fuentes new species

Etymology: The genus name is the combination of the name and surname of our colleague, Prof. Jocelia Grazia, as a tribute to her many and valuable contributions to the knowledge of the Pentatomoidea. The gender is feminine.

Diagnosis. This genus is recognized from other genera of the *Hypatropis* group by a combination of the following features: apex of scutellum attaining to the anterior margin of connexivum of segment VI; corium with a discontinuous impunctate narrow strip visible on the anterior third and at the end of radial vein, extending to the end of the corium; connexivum covered by the forewings in the rest position; and males with the *ductus seminis distalis* sclerotized in the distal portion.

Description. Body oblong, flattened dorsoventrally. Coloration predominantly castaneous. Dorsal surface densely and almost uniformly punctate with dark brown to black punctures (Fig. 1A). Abdominal ventral surface more densely punctate than dorsal surface, punctures slightly smaller (Fig. 1B). Head in lateral view with mandibular plates in a higher level than clypeus. Dorsal surface of head with an impunctate area between eyes and ocelli, almost the size of an eye. Antenniferous tubercles with a lateral rhomboid spine. First antennomere not attaining apex of head (Fig. 1D). First and second antennomeres subequal in length, third subequal to fifth, and both longer than fourth; fourth antennomere slightly depressed dorsoventrally. Ventral surface of head with uniformly distributed punctures, more dense at bucculae. Bucculae with a small anterior tooth, rectilinear, weakly developed and tapering towards base of head. First labiomere contained between bucculae and covered by them in lateral view. Second labiomere shorter than third and fourth together. Labium ending between pro- and mesocoxae (Fig. 1B). Pronotum trapezoidal, anterior two thirds slightly declivent; densely and uniformly punctate. Cicatrices concolorous with the pronotal disc, delimited by punctures, and with few punctures at middle; 1+1 small pale yellow spots posterior to inner angles of the cicatrices (Figs. 1A, 1D). Anterolateral angles of pronotum with a small tooth (Fig. 1D). Anterolateral margins subrectilinear, slightly crenulated on anterior third. Humeral angles not protruding (Fig. 1A). Scutellum densely and uniformly punctate, basal angles with foveae, apex rounded reaching the anterior margin of connexivum of segment VI. Corium uniformly punctate, with a discontinuous impunctate narrow strip (srv) visible on the anterior third and at the end of radial vein, extending to the end of the corium, and with other impunctate narrow strip parallel to claval suture (scs). Apex of each radial vein with a small, pale yellow callus. Posterior angle of corium acute, reaching the connexivum of segment VI medially. Hemelytral membrane hyaline and infuscate, veins brown, some bifurcated (Fig. 1A). Pro-, meso- and metasternum dark brown, punctate and with a median longitudinal narrow pale strip bearing white setae (Fig. 1E). Mesosternum not carinate. Metasternum flattened. Peritreme spout-shaped, shorter than half the width of the metapleural evaporatorium. Evaporatorium dull and punctate (Fig. 1F). Coxae, trochanters and tarsi immaculate. Femora and tibiae with black dots at base of setae. Tibiae sulcate

dorsally (Fig. 1B). Connexivum covered by the forewings in the rest position, with dark brown to black punctures, posterolateral angles of each segment with a small darker spot. Posterolateral angles of each connexivum almost rectilinear. Ventral surface of abdomen punctate, more densely punctate in a longitudinal strip at level of spiracles. Subcalloused pale-yellow small spots (s), ventral to spiracles, impunctate. Each trichobothrium separated by an imaginary line tangential dorsal to spiracles (Figs. 1B–C).

Male genitalic structures: pygophore quadrangular, external opening dorsoposteriorly; posterolateral angles rounded, slightly projected posteriorly. Ventral rim (vr) forming two layers: superior layer (sl) expanded in 1+1 conical anteriorly-directed projections (cp), on each side of proctiger; inferior layer (il) carinated, with 1+1 small tooth-like projections (tp) separated from each other; carina evanescent between the tooth-like projections (Figs. 2A–C). Proctiger (x), with a transversal carina (cx) in basal third; apex of proctiger rounded and slightly expanded (Figs. 2D–E). Parameres absent. Phallus almost as long as wide, flattened dorsoventrally. Articulatory apparatus (aa) with simple basal plates; dorsal connectives (dc) and *processus capitati* (pca) well-developed. Phallosome (ph) broadly opened posteriorly; ventral face with 1+1 subparallel median processes, *processus phallosomeae 1* (pph1); and dorsal face with 1+1 small lateral processes, *processus phallosomeae 2* (pph2), near articulation zone with basal plates. Posterolateral angles of phallosome slightly developed. Conjunctiva (cj) with two pair of well-sclerotized processes: one ventral, *processus conjunctivae 1* (pcj1), in 1+1 digitiform arms; the other lateral, *processus conjunctivae 2* (pcj2), in 1+1 stout structures dorsally curved at apex; a small tumescence (tu) dorsally to base of *processus conjunctivae 2*. Vesica (v) with a dorsal shield-like process, *processus vesicae* (pv) (Figs. 2F–K). *Ductus seminis distalis* (dsd) helicoidal and sclerotized distally (Fig. 2L).

Female unknown.

Distribution. Argentina: Corrientes.

Comments. *Jocezia* is related to *Hypatropis*, *Amauromelpia*, *Luridocimex* and *Stysiana* by the head in lateral view with mandibular plates in a higher level than clypeus, and the absence of parameres.

Jocezia can be distinguished from *Luridocimex* by the subrectilinear anterolateral margins of pronotum, the declivent head and pronotum, and the 1+1 tooth-like projections at inferior layer of ventral rim of pygophore. In *Luridocimex*, the anterolateral margins of pronotum are convex, the head and pronotum are not declivent, and the inferior layer of ventral rim of pygophore shows only a median tooth-like projection.

With *Hypatropis* and *Amauromelpia*, *Jocezia* shares the anterolateral subrectilinear margins of pronotum, and the 1+1 tooth-like projections at inferior layer of ventral rim of pygophore. The strongly sclerotized *processus conjunctivae 1* of the phallus, similar to *Stysiana* and *Amauromelpia*, allow to distinguish *Jocezia* from *Hypatropis*. In this last genus the *processus conjunctivae 1* of the phallus is barely sclerotized. *Jocezia* can be distinguished from *Amauromelpia* by the proctiger with an entire transversal carina, rather the 1+1 processes near middle length in *Amauromelpia*.

Finally, this new genus can be distinguished from *Stysiana* by the rectilinear anterolateral margins of pronotum, the connexivum covered by the forewings in the rest position and the *ductus seminis distalis* sclerotized in the distal portion. *Stysiana* shows convex anterolateral margins of pronotum, an exposed connexivum in dorsal view and a delicate *ductus seminis distalis*, character shared with *Hypatropis*, *Amauromelpia*, and *Luridocimex*. This last character in *Jocezia*, together with the scutellum attaining the anterior margin of connexivum of segment VI, the discontinuous narrow strip adjacent to the radial vein, the connexivum covered by the forewings in the rest position in dorsal view, and the abdomen with a more densely punctate longitudinal stripe at level of spiracles are all characters that differ from the other genera in the *Hypatropis* group and allows to discriminate this new genus.

***Jocezia inusitata* Dellapé & Fuentes, new species**

(Figs. 1, 2)

Holotype. Male. ARGENTINA, Corrientes, Berón de Astrada, 11-VII-2017, Fuentes-Rodríguez D. col. (MLP).

Etymology: The epithet is derived from the Latin word “*inusitata*”, meaning rare, unusual, or uncommon, referring to the peculiarities of its morphology and also the infrequency with which this stink bug has been collected.

Description. Small size (body length 7mm, abdominal width 3.5mm). Coloration predominantly castaneous with dark brown to black punctures. Lateral margins of mandibular plates dorsal and ventrally black. Antennae reddish. Pronotum densely and uniformly punctate, with darker areas along lateral margins (Figs. 1A, 1D). Mandibular

plates longer than clypeus, not contiguous before clypeus (Fig. 1D). First labiomere occupying approximately two thirds of bucculae and covered by them in lateral view. Pronotum trapezoidal, anterior two thirds slightly declivent; anterolateral angles with a small tooth. Connexivum covered by the forewings in the rest position, with dark brown to black punctures. Ventral surface of abdomen uniformly punctate, but more densely punctate along spiracles (Figs. 1B–C).

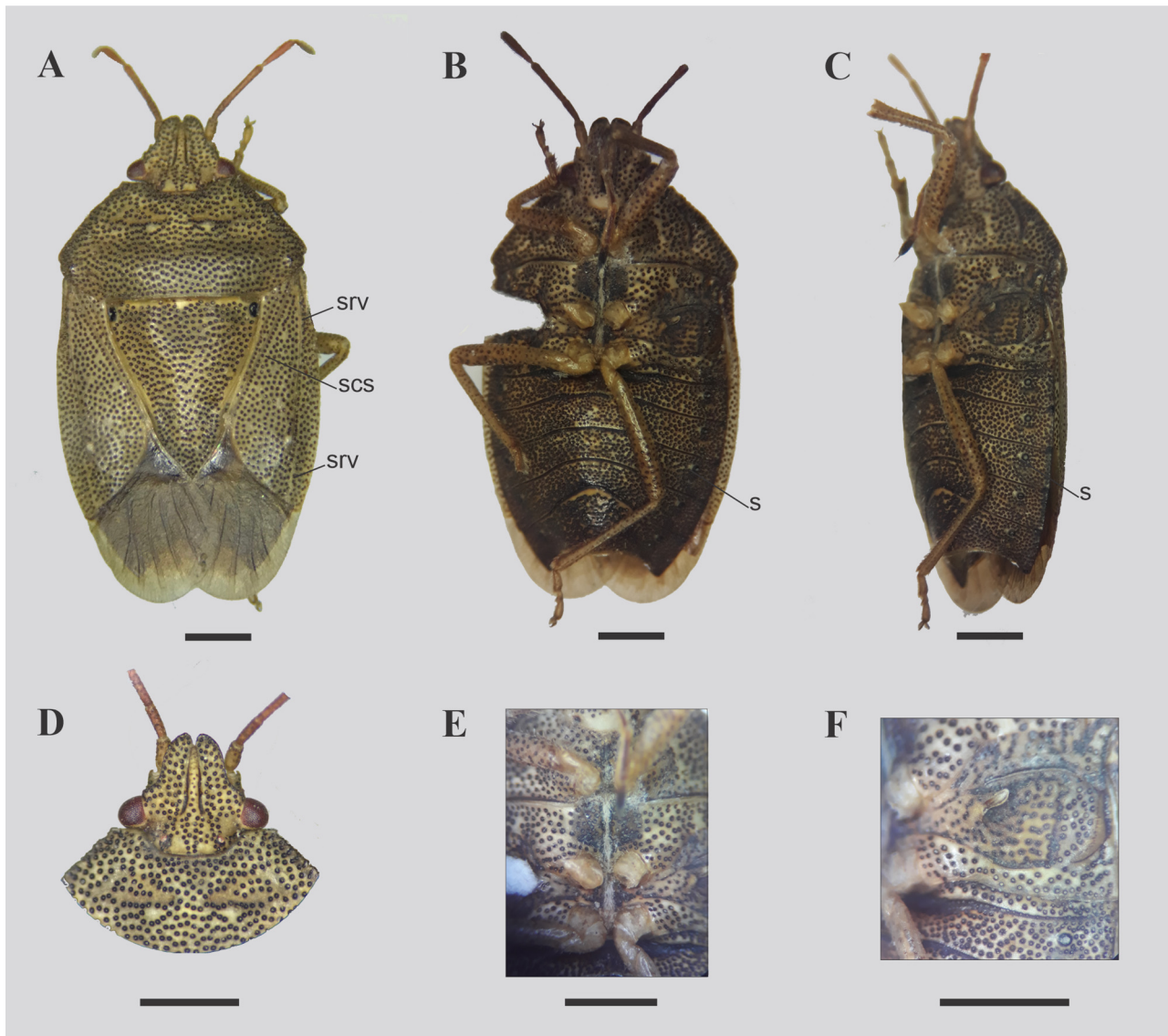


FIGURE 1. *Jocezia inusitata* n. gen. n. sp. (Holotype). A. dorsal view; B. ventral view; C. ventrolateral view; D. magnification of head; E. magnification of pro-, meso- and metasternum; F. magnification of external scent efferent system (s: subcalloused pale-yellow spot; scs: impunctate narrow strip parallel to claval suture; srv: discontinuous impunctate narrow strip on radial vein). Scale bars: 1mm.

Male genitalic structures: dorsal rim of pygophore (dr) excavated in an open “U” shape; posterolateral angles rounded and slightly projected posteriorly. Superior layer of ventral rim (sl) expanded in 1+1 conical projections (cp), anteriorly projected, without teeth, reaching almost the transversal carina, on each side of proctiger. Inferior layer of ventral rim (il) carinate, with 1+1 small –barely visible– tooth-like projections (tp) separated from each other; carina evanescent between the tooth-like projections. Surface of ventral rim, between layers, irregularly concave and scarcely punctate. Ventral surface of pygophore punctate in posterior half (Figs. 2A–C). Proctiger (x) wider than longer, with a transversal carina (cx) in basal third, surface of distal two-thirds concave and punctate; apex rounded and slightly expanded (Figs. 2D–E). Phallus almost as long as wide, dorso-ventrally flattened. Articulatory apparatus (aa) with simple basal plates; dorsal connectives (dc) and *processus capitati* (pca) well-developed. Phalotheca (ph) broadly opened posteriorly; ventral face with 1+1 broad, subparallel median processes widened at apex,

processus phallothecae 1 (pph1), shorter than pcj1; and dorsal face with 1+1 small blunt lateral processes, *processus phallothecae 2* (pph2), near articulation zone with basal plates. Posterolateral angles of phallotheca rounded and slightly developed. *Processus conjunctivae 1* (pcj1), in 1+1 digitiform thin arms, with apical third dorsally curved; and *processus conjunctivae 2* (pcj2), in 1+1 stout structures, with acute apex dorsally curved; a small finger-shape tumescence (tu) dorsally to base of *processus conjunctivae 2*. Vesica (v) with a dorsal shield-like process, *processus vesicae* (pv) smoothly grooved transversally (Figs. 2F–K). *Ductus seminis distalis* (dsd) helicoidal and sclerotized in distal portion (Fig. 2L).

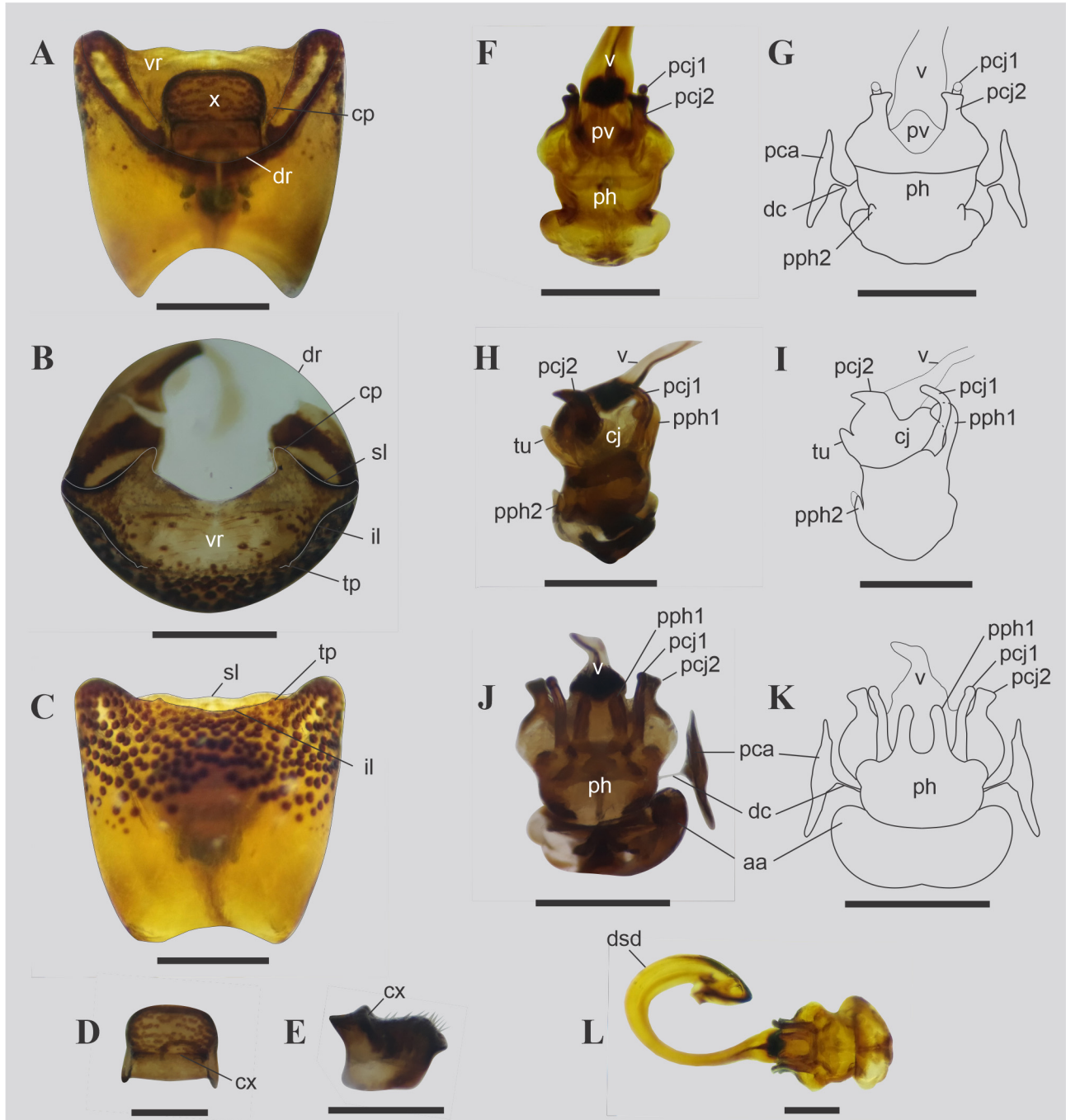


FIGURE 2. Male genitalia of *Jocezia inusitata* n. gen. n. sp. A–C. Pygophore: A. dorsal view; B. posterior view; C. ventral view. D–E. Proctiger: D. dorsal view; E. lateral view. F–L. Phallus: F–G. dorsal view; H–I. lateral view; J–L. ventral view (aa: articulatory apparatus; cj: conjunctiva; cp: conical projections; cx: carina; dc: dorsal connectives; dr: dorsal rim; dsd: *ductus seminis distalis*; il: inferior layer; pca: *processus capitati*; pcj1: *processus conjunctivae 1*; pcj2: *processus conjunctivae 2*; ph: phallotheca; pph1: *processus phallothecae 1*; pph2: *processus phallothecae 2*; pv: *processus vesicae*; sl: superior layer; tp: tooth-like projections; tu: tumescence; v: vesica; vr: ventral rim; x: proctiger). Scale bars: 0.5mm.

Female unknown.

Distribution. Argentina: Corrientes.

Host plant. Poaceae: *Oryza sativa* L. “rice”.

Comments. The specimen was collected in a commercial rice field during winter (rice stubble). Several species currently placed in Carpororini are known to be pests of Poaceae, particularly rice, e.g. many species of *Oebalus* Stål, *Mormidea* Amyot & Serville, and *Tibraca* Stål (Panizzi *et al.* 2000). In South America, species of *Glypheapomis* Berg and *Hypatropis* are associated with rice crops, but its status as pest is unknown (Farias *et al.* 2012; Krinski *et al.* 2015).

Conclusions

In this contribution the number of Carpororini recorded from Argentina is updated to 27 genera and 84 species, with three genera and six species belonging to the *Hypatropis* group, distributed in the northeast of the country.

On the other hand, a careful study of characters in a phylogenetic framework is necessary to evaluate the monophyly of the *Hypatropis* group and to hypothesize the relationships among the genera located in this group and within the Carpororini.

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