

Jekelius (Jekelius) verdui nov. sp., a new species from Spain (Coleoptera: Geotrupidae: Geotrupinae)

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Abstract: *Jekelius (Jekelius) verdui* nov. sp. (Coleoptera: Geotrupidae: Geotrupinae) is described from Spain. Differences with the nearest species are discussed. This new species is very close to *Jekelius (Jekelius) hernandezi* (López-Colón, 1988), although both are clearly distinguished by the male's protibia and the aedeagus.

Key words: Coleoptera, Geotrupidae, *Jekelius (Jekelius) verdui* nov. sp., description, taxonomy, distribution, Spain.

Resumen: *Jekelius (Jekelius) verdui* nov. sp., nueva especie de España (Coleoptera: Geotrupidae: Geotrupinae). Se describe *Jekelius (Jekelius) verdui* nov. sp. (Coleoptera: Geotrupidae: Geotrupinae) de España. Se discuten las diferencias con las especies más próximas. Esta nueva especie se encuentra muy próxima a *Jekelius (Jekelius) hernandezi* (López-Colón, 1988), aunque ambas se distinguen claramente por la protibia del macho y el edeago.

Palabras clave: Coleoptera, Geotrupidae, *Jekelius (Jekelius) verdui* nov. sp., descripción, taxonomía, distribución, Spain.

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Introduction

The genus *Jekelius* López-Colón, 1989 comprises 29 species with a circum-Mediterranean distribution, although one taxon reaches Asia Minor (see Annex I) (BARAUD, 1992; LÓPEZ-COLÓN, 1992, 1996, 2000, 2003, 2004; LÓPEZ-COLÓN & BAHILLO DE LA PUEBLA, 2023, 2024a, b; SOMMER et al., 2025; KYLIES et al., 2025). It is divided into three subgenera: *Jekelius* sensu stricto, *Rudolfpetrovitzia* Rey & López-Colón, 2003 and *Reitterius* López-Colón, 1996. The 17 Ibero-Balearic species belong to the subgenus *Jekelius*, being all of them convex, medium-sized, black with more or less weak lateral metallic tones, which in some cases extends to the elytra and pronotum, and disappearing in others completely; among them, *Jekelius balearicus* (López-Colón, 1984) is exclusive to the Balearic Islands, and *Jekelius intermedius* (Costa, 1839), that also reaches these islands, but not the Iberian Peninsula despite its wide Mediterranean distribution (BARAUD, 1992; LÓPEZ-COLÓN & ROMERO SAMPER, 1996; LÓPEZ-COLÓN, 2000, 2003, 2004; NIKOLAJEV et al., 2016; HUCHET et al., 2020; LÓPEZ-COLÓN & BAHILLO DE LA PUEBLA, 2023, 2024a, b; KYLIES et al., 2025).

The Ibero-Balearic *Jekelius* are characterized externally by their clypeus always semicircular, not flattened at the front; upper edge of the mandible straight and entire; elytral stippling fine or very fine, scarce, more or less aligned in striations; apical tooth of male's anterior tibia bifurcated; and posterior edge of the metafemora entire.

Material and methods

To obtain the images that accompany this paper, serial photographs were taken at different focus planes using a Meopta laboratory microscope and a CMOS 5 digital camera. The photographs were subsequently stacked with Helicon Focus 8.2 software.

The material studied has been collected in Carboneras de Guadazaón¹ (Cuenca, Spain) and labelled as follows:

- **Holotypus:** 1 ♂, White label: Spain, 6-12.4.2025 / Carboneras env. / lgt. P. Kylies. White label: Carboneras de Guadazaón (Cuenca), 6-12-IV-2025 / Petr Kylies leg. Red label: *Jekelius verdui* ♂ / Kylies, Pucholt, López-Colón & Bahillo de la Puebla, Holotypus. The specimen is kept in the collection of Entomology of Museo Nacional de Ciencias Naturales (Madrid).
- **Allotypus:** 1 ♀, White label: Spain, 6-12-IV-2025 / Carboneras env. / P. Kylies lgt. White label: Carboneras de Guadazaón (Cuenca), 6-12-IV-2025 / Petr Kylies leg. Red label: *Jekelius verdui* ♀ / Kylies, Pucholt, López-Colón & Bahillo de la Puebla, Holotypus. The specimen is kept in the collection of Entomology of Museo Nacional de Ciencias Naturales (Madrid).
- **Paratypi:** 53 ♂♂ and 66 ♀♀. All the specimens are kept in the collections of Petr Kylies, Martin Mařík and Jiří Kliča.
 - 26 ♂♂ and 39 ♀♀, White label: Spain, 6-12-IV-2025 / Carboneras de Guadazaón / P. Kylies lgt. Red label: *Jekelius verdui* ♂ or ♀ / Kylies, Pucholt, López-Colón & Bahillo de la Puebla, Paratypus.
 - 1 ♂, White label: Spain, 6-12-IV-2025 / Carboneras env. / P. Kylies lgt. White label: Carboneras de Guadazaón (Cuenca), 6-12-IV-2025 / Petr Kylies leg. Red label: *Jekelius verdui* ♂ / Kylies, Pucholt, López-Colón & Bahillo de la Puebla, Paratypus.
 - 8 ♂♂ and 6 ♀♀, White label: Spain, Carboneras de Guadazaón, 5-V-2025 / Martin Mařík lgt. / Carboneras de Guadazaón. Red label: *Jekelius verdui* ♂ or ♀ / Kylies, Pucholt, López-Colón & Bahillo de la Puebla, Paratypus.
 - 3 ♂♂ and 6 ♀♀, White label: Spain, Carboneras de Guadazaón, 5-V-2025 / Jiří Kliča lgt. / Carboneras de Guadazaón. Red label: *Jekelius verdui* ♂ or ♀ / Kylies, Pucholt, López-Colón & Bahillo de la Puebla, Paratypus.

Description

Jekelius (Jekelius) verdui nov. sp.

Holotypus

Total length: 15,5 mm. Convex and broad, black in colour, shiny, sometimes with slight bluish lateral reflections or, normally, without them (Figs. 1-3). Cephalic tubercle conical, strong and fairly

¹ Carboneras de Guadazaón (Cuenca, Spain) is located at an altitude of 1035 m.

elevated; clypeus densely dotted (Fig. 7); prominent cheeks; upper edge of mandibles not sinuate (Figs. 5-6). Antenna as in Fig. 8.

Pronotum large, convex and transverse, without a median depression on the anterior margin; anterior angle obtuse; posterior angle very rounded; base with interrupted ridge on each side of the middle; very dense, double punctation all over its surface, in both males and females (Figs. 9-10).

Small triangular, transverse scutellum, twice as wide as long, without punctation (Fig. 9).

Elytra fused, with punctations weak but visible, aligned; anterior angle sunken, concave (Fig. 10).

Mesosternal process evident (Fig. 11).

Mesosternum ♂ (Fig. 11), compared to mesosternum ♀ (Fig. 12).

Abdominal sternites punctated, with a lot of hairiness (Figs. 13-14).

Pygidium densely hairy, with black and prostrate hairs.

Brachypterous. Wings reduced, 2.8 mm long (Fig. 15).

Pro- and mesofemora with unarmed anterior and posterior margins. Unarmed metafemora, without denticulation on the posterior margin. All of them have a slightly marked, hairy, dotted posterior line.

Protibiae with the apical tooth bifurcated in the male; the third external tooth not thickened inwards; the ventral surface completely unarmed, concave, with a weak but evident keel in the basal half of the tibia, closely attached to the teeth line (Fig. 16). The denticulation of the lower internal ridge shows a stronger tooth aligned with the base of the second external tooth; there are also three other teeth, much smaller but well-defined, located in the basal third and opposite the corresponding external teeth (Fig. 17).

Metatibiae, as in Fig. 19.

Aedeagus: Length: 3.70 mm. Slightly widened towards the centre, at the level of the basal region of the parameres; without an evident central notch on the dorsal surface of the phallobase. The dorsal basal arch of the parameres narrows in the centre, where it is marked by a suture. Parameres with well-developed sclerifications on the mediodorsal margins; the one on the left paramere greater and the one on the right also well-developed and curved towards the middle, being markedly concave in the apical third (Figs. 20-21).

Allotypus

Female. Total length: 16,0 mm. Similar to the male, but with the anterior tibiae of a different shape. Anterior tibiae with a simple, non-bifurcated apical tooth; the third external tooth in the same plane as the others, not thickened; the ventral surface is completely unarmed, concave, while the denticulation of the lower internal ridge also has a series of very weak teeth (Fig. 18).

Variation of the length

Total length of Paratypes: ♂♂: 15,0-17,0 mm; ♀♀: 14,0-17,5 mm.

Etimology / Derivatio nominis

Dedicated to the entomologist Dr. José Ramón Verdú for his numerous and important studies in the last three decades, alone or together with other entomologist colleagues, focused on the phylogeny and ecology of Geotrupidae which have led to an exponential evolution of the knowledge of the group.

Discussion

The closest species to *Jekelius (Jekelius) verdui* nov. sp. is *Jekelius (Jekelius) hernandezi* (López-Colón, 1988), although both species are clearly distinguished by the male's anterior tibia and the aedeagus. Both belong to the "intermedius" group with the following characteristics:

- Male's protibiae with the third external tooth thickened and directed downwards in a different plane than the others.

- Male's protibiae with a very weak ventral keel applied towards the denticles of the lower-internal margin.
- Abdominal setae denser.
- Anterior angles of the pronotum obtuse.
- Aedeagus with the dorsal basal arch not thickened in the middle.

Acknowledgements

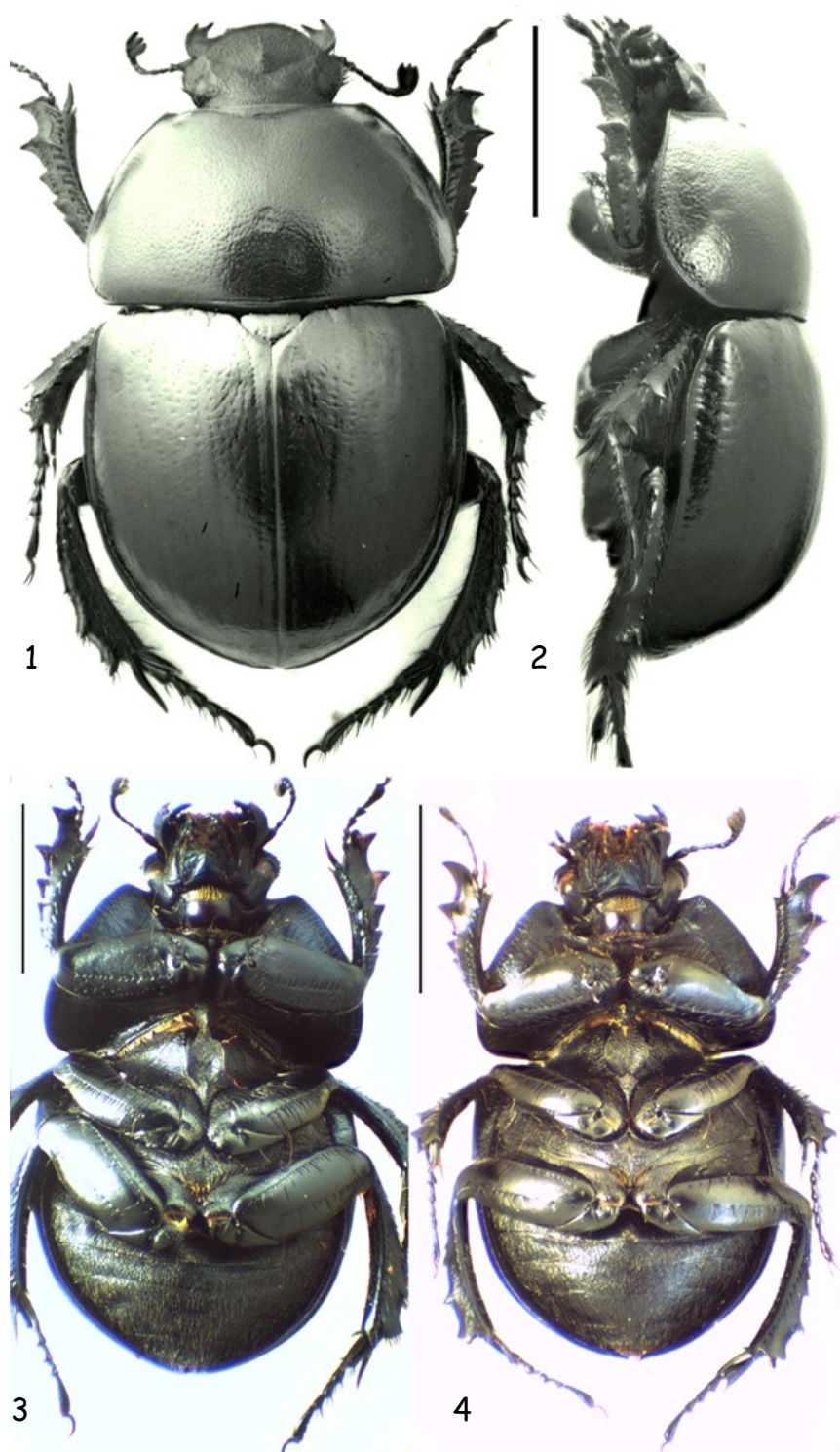
We thank Dr. L. Mencl (Masarykovo náměstí 5, Týnec nad Labem) for taking all the photographs that illustrate this paper.

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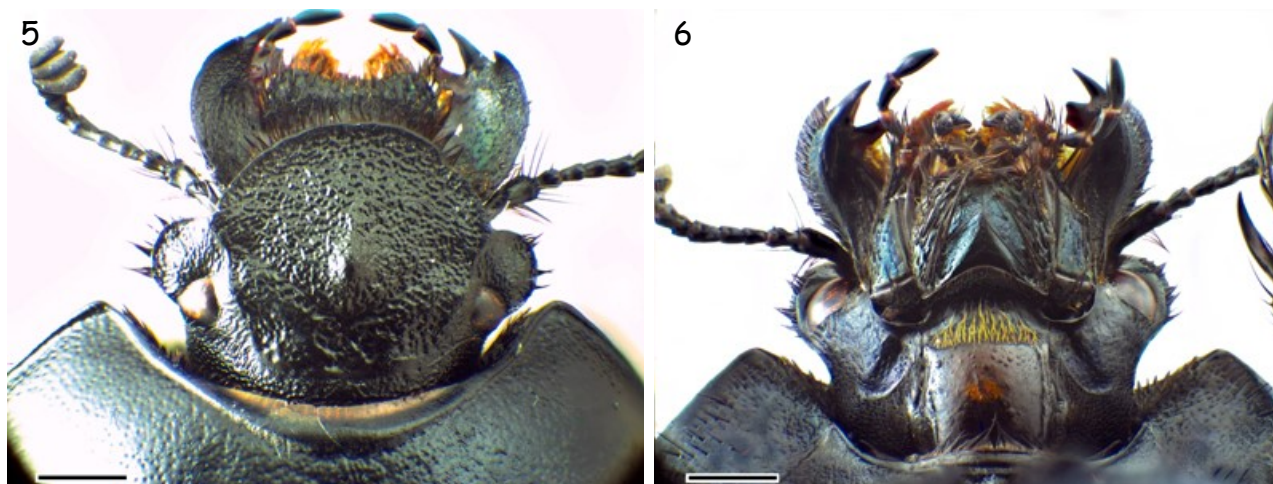
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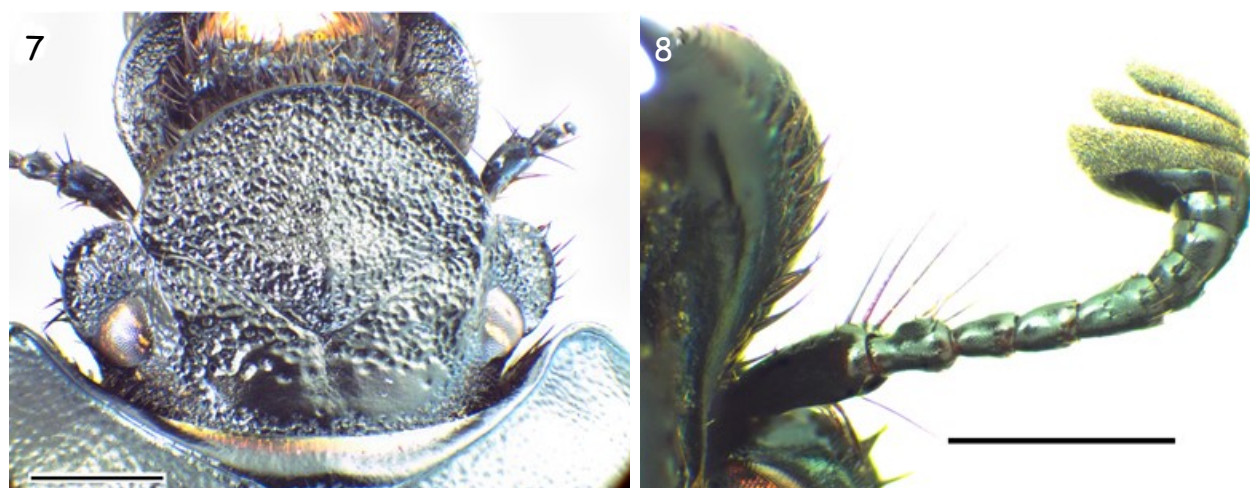
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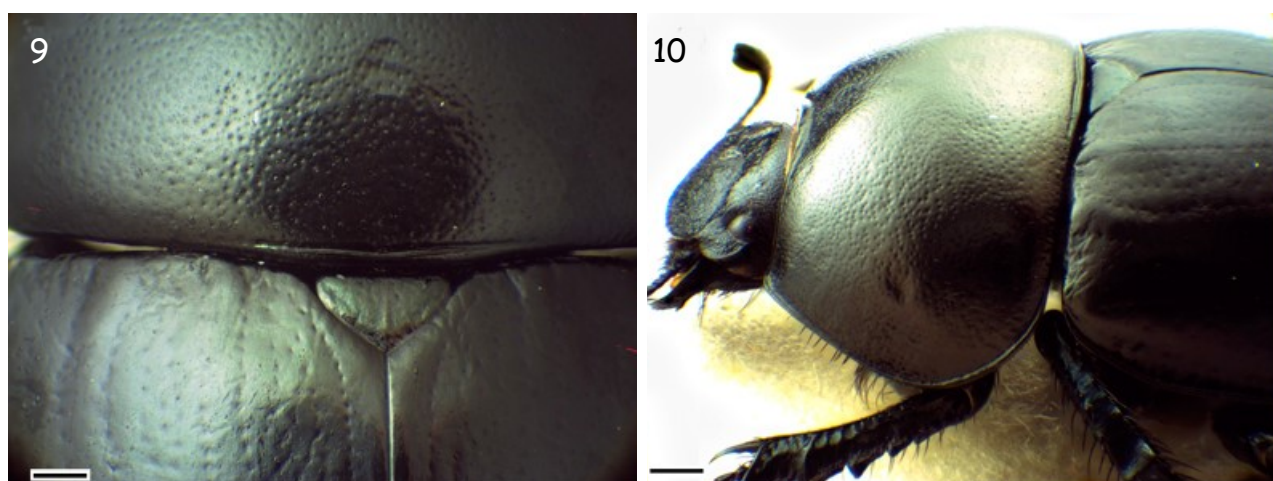
Figs. 1-4. - Habitus of *Jekelius (Jekelius) verdui* n. sp. (scales: 5 mm). 1.- Male (Paratypus) (dorsal view). 2.- Male (Paratypus) (lateral view). 3.- Male (Paratypus) (ventral view). 4.- Female (Paratypus) (ventral view).



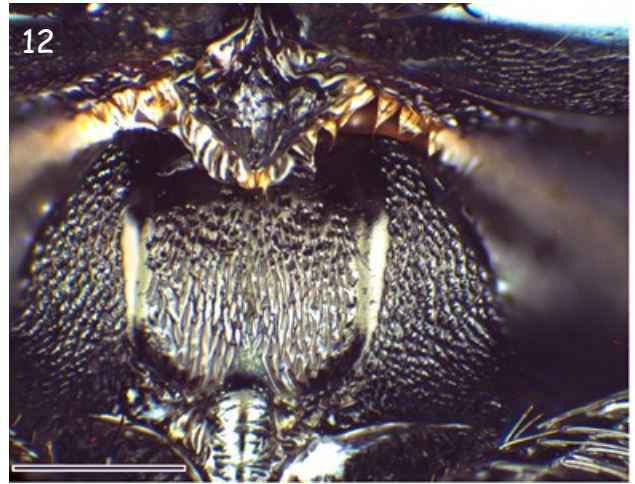
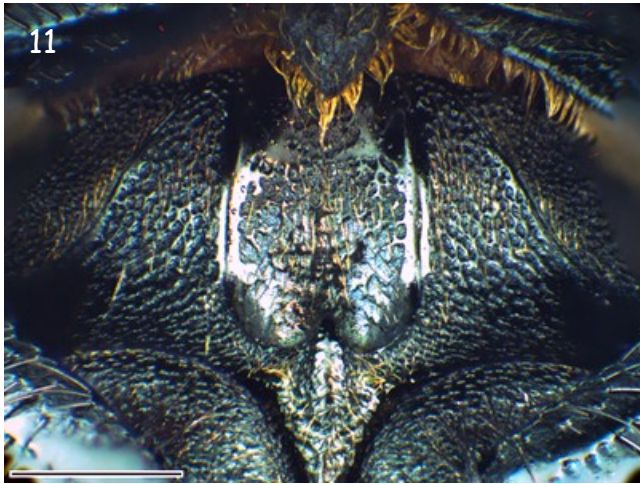
Figs. 5-6. - *Jekelius (Jekelius) verdui* n. sp. (scales: 1 mm). **5.** - Head, male (Paratypus) (dorsal view). **6.** - Head, male (Paratypus) (ventral view).



Figs. 7-8. - *Jekelius (Jekelius) verdui* n. sp. (scales: 1 mm). **7.** - Head, female (Paratypus) (ventral view). **8.** - Antenna, male (Paratypus) (ventral view).



Figs. 9-10. - *Jekelius (Jekelius) verdui* n. sp. (scales: 1 mm). **9.** - Scutellum, male (Paratypus). **10.** - Posterior angle of the pronotum and anterior angle of the elytra, male (Paratypus) (lateral view, male (Paratypus) (lateral view).



Figs. 11-12.- Mesosternum of *Jekelius (Jekelius) verdui* n. sp. (scales: 1 mm). 11.- Male (Paratypus). 12.- Female (Paratypus).



Figs. 13-14.- Abdominal sternites of *Jekelius (Jekelius) verdui* n. sp. (scales: 1 mm). 13.- Male (Paratypus). 14.- Female (Paratypus).



Fig. 15.- *Jekelius (Jekelius) verdui* n. sp. Atrophied wing, female (Paratypus) (scale: 1 mm).



Figs. 16-19. - *Jekelius (Jekelius) verdui* n. sp. (scales: 1 mm). 16.- Anterior tibia, male (Paratypus) (dorsal and ventral view). 17.- Anterior tibia, male (Paratypus) (lateral view). 18.- Anterior tibia, female (Paratypus) (dorsal and ventral view). 19.- Metatibia male (Paratypus).

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Spain, 6.-12.4.2025
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lgt. P. Kylies

Carboneras de
Guadalupe (CUENCA)
6-12-IV-2025
Petr. Kylies leg.

Jekelius ♂
verdui
Kylies, Puchot,
López-Colón &
Bañillo de la Hoz
- HOLOTYPE -

Fig. 21. - *Jekelius (Jekelius) verdui* n. sp. Original labels (Holotypus).

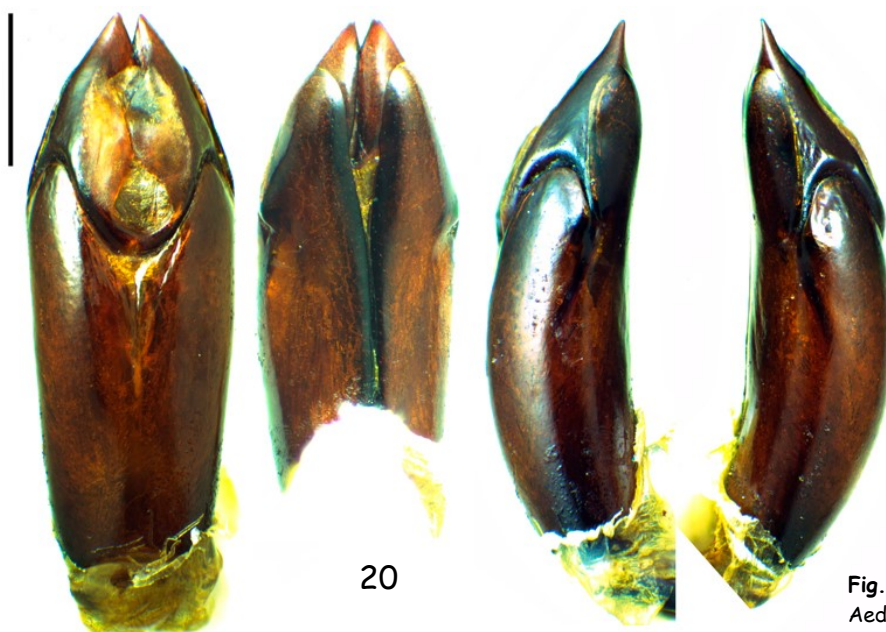


Fig. 20. - *Jekelius (Jekelius) verdui* n. sp. Aedeagus (Paratypus) (dorsal, ventral and lateral views).