

ARTÍCULO:

A new species of *Lacronia* Strand, 1942 from the highlands of Rio de Janeiro (Opiliones, Gonyleptidae, Pachylinae)

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ARTÍCULO:

A new species of *Lacronia* Strand, 1942 from the highlands of Rio de Janeiro (Opiliones, Gonyleptidae, Pachylinae)

Adriano B. Kury¹ & Victor G. D. Orrico

Abstract:

The fourth species of *Lacronia* is described from the mountains of Rio de Janeiro state, southeastern Brazil in an area of montane rainforest (WWF NT0160). *Lacronia ceci* sp. nov. resembles more closely the type species, *L. serripes* Mello-Leitão, due to the ornamentation of yellow granules on dorsal scutum and the subbasal prolateral apophysis of trochanter IV of male short, not-geniculate, instead of long, geniculate (elbow-like). It can be easily distinguished from all other species of *Lacronia* by the armature of eye mound which are rounded tubercles instead of high spines and of area III which is sexually dimorphic. An artificial key to the known species of the genus is presented..

Key words: Taxonomy; *Lacronia ceci* sp. nov.; National Park of the Serra dos Órgãos

Taxonomy: *Lacronia ceci* sp. nov.

Nueva especie de *Lacronia* Strand, 1942 de las tierras altas de Río de Janeiro (Opiliones, Gonyleptidae, Pachylinae)

Resumen:

Se describe la cuarta especie de *Lacronia*, procedente de las montañas de la ecorregión de selva costera (NT0160 del WWF) del Estado de Rio de Janeiro, sudeste de Brasil. *Lacronia ceci* sp. nov. parece muy próxima a la especie típica, *L. serripes* Mello-Leitão, debido a la ornamentación de gránulos amarillos del escudo dorsal y la corta y no geniculada apófisis subbasal prolateral del trocánter IV de los machos, en vez de una larga y geniculada. Puede ser distinguida fácilmente de las restantes especies de *Lacronia* por la armadura de la protuberancia ocular a base de tubérculos redondeados en vez de largas espinas y por un área III sexualmente dimórfica. Se presenta una clave artificial para las especies conocidas del género.

Palabras clave: Taxonomía; *Lacronia ceci* sp. nov.; Parque Nacional de la Sierra de los Órganos.

Taxonomía: *Lacronia ceci* sp. nov.

Introduction

The opilionofauna of the National Park of the Serra dos Órgãos in the highlands of Rio de Janeiro state, southeastern Brazil is the most diverse of the Americas (Bragagnolo & Pinto-da-Rocha, 2003). In spite of the repeated sampling of this area over the decades, undescribed species of Gonyleptidae still can be found. In this paper a new species of the genus *Lacronia* Strand, 1942 is described, being the fourth known for the genus. The previously known three species inhabit the coastal region of Santa Catarina to São Paulo states and were only found in bromeliads, while the new species is from a mountain range more to the interior and hitherto not found in bromeliads.

A note regarding our usage of the term opilionofauna: All technical words derived from the Latin word *opilio*, *-onis* should properly be formed with the genitive, although incautious usage traditionally established incorrect derivations. It is easy to verify this by looking at the family name Opilionidae and not "Opiliidae". We prefer here to use the correct derivations opilionofauna (as opposed to opiliofauna), opilionologist (opiliologist) and opilionological (opiliological).

Descriptions of colors use the standard names of the 267 Color Centroids of the NBS/IBCC Color System (Mundie, 1995). The colors depicted herein are described for some standardization of describing coloration of alcohol preserved specimens, not corresponding to the actual field coloration of the live animal.

A digital photograph was taken and then compared in the same monitor with the charts available in their homepage.

This procedure avoids differences caused by non-calibration of most general use monitors. We did not consciously establish a standard for illumination, since fluorescent against incandescent light provide different colors for a same sample. Pictures were taken with a Sony Cybershot Digital camera directly applied to the microscope ocular lens, illumination has been provided by two halogen 60 watt light bulbs at approximately 10 cm from the specimen along with a physical color sample adapted of those provided by professional paint dealers. Four small squares of Pure Cyan, Pure Magenta; Pure Blue; Pure Yellow, Black (CYMK system) served as a color scale. Once the difference between the real color and the observed color in the monitor was compensated, we were able to infer the real color of the specimen. Range of each color centroid as perceived by human eye is wide enough to account for errors of observation. In the **Table II** are listed the color centroids used in this paper as well as their Latin counterparts when available. This is considered relevant here because Latin color names are widely used in zoology and even to give names to species. Depository acronyms are Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ) and Museu de Zoologia, São Paulo (MZSP). All measurements are in mm.

Results

Lacronia Strand, 1942

Luederwaldtia Mello-Leitão, 1923 (Mello-Leitão, 1923: 518) [junior homonym of *Luederwaldtia* Schmidt, 1922 (Hemiptera)].

Lacronia Strandt, 1942 (Strand, 1942: 397) (valid replacement name for *Luederwaldtia* Mello-Leitão, 1923); Kury, 2003a: 174; 2003b: 29.

REMARK: The original reference of *Luederwaldtia*, Schmidt, 1922, overlooked in Kury (2003a,b), is given here.

TYPE SPECIES: *Luederwaldtia serripes* Mello-Leitão, 1923, by original designation. Other included species: *Lacronia camboriu* Kury, 2003 and *Lacronia ricardoi* Kury, 2003.

DIAGNOSIS. Eye mound with two spines or rounded tubercles which may be fused at base. Areas I and IV (this only partially) divided in two halves by longitudinal groove. Mesotergum with paired armature on scutal area III, otherwise unarmed. Dorsal scutum with green/yellow spots and/or stripes over brown background. Femur III of both sexes with apical spur, incrassate in males. Tibia III of male incrassate with two distal ventral rows of spines growing towards apex. Coxa IV of male with strong lanceolate apical dorso-prolateral apophysis crenulated at posterior border and ventro-retrolateral spiniform apophysis. Trochanter IV of male with strong subbasal prolateral apophysis. Metatarsus IV of male may bear dorsal row of spiniform processes. Tarsal counts 5-6/9-12/7/7-8. Ventral plate of penis hexagonal or subrectangular, not cleft at apical

border with 3 - 4 + 1 + 3 pairs of macrosetae. Ventral process of glans narrow flabelliform with serrate margins. Stylus with distal part covered with small denticles.

Key to the four species of *Lacronia*

1. Trochanter IV of male with subbasal (medial) prolateral geniculate (elbow-like) apophysis; mesotergal areas I and II (also III-IV in *L. camboriu*) with light greenish yellow stripes surrounded by strong brown areas..... 2
 - Trochanter IV of male with subbasal prolateral non-geniculate apophysis; all mesotergal areas and free tergites with multiple small light greenish yellow spots 3
2. Metatarsus IV with dorsal row of high subequal spines (longer than its diameter) all along its extension; spines of eye mound clearly parallel *L. camboriu*
 - Metatarsus IV with dorsal row of short spines (much shorter than its diameter) all along its extension, increasing apically; spines of eye mound divergent, placed on a common elevated base *L. ricardoi*
3. Armature of eye mound and area III as sharp spines *L. serripes*
 - Armature of eye mound and area III as low tubercles *L. ceci* sp. nov.

Lacronia serripes (Mello-Leitão, 1923)

Luederwaldtia serripes Mello-Leitão, 1923 (Mello-Leitão, 1923: 519, fig. 5) [Soares, 1966: 284, figs 7-10 (redescription)].

Lacronia serripes: Strandt, 1942 (Strand, 1942: 397) (Kury, 2003a: 174).

TYPE MATERIAL: ♂ holotype, 1 ♂ paratype (MZSP 550, not examined).

TYPE LOCALITY BRAZIL. São Paulo. Ilha dos Alcatrazes.

RECORDS: BRAZIL. São Paulo. Ilha dos Búzios; Ilha da Vitória (Soares, 1966).

Lacronia camboriu Kury, 2003

Lacronia camboriu Kury, 2003 (Kury, 2003b: 33, figs 15-28).

TYPE MATERIAL: ♂ holotype, 1 ♂ paratype (MNRJ 4956, examined) BRAZIL, Santa Catarina. Balneário Camboriú, Praia da Laranjeira, 23.ii.2002, Alessandro P.L. Giupponi col., 2 ♂♂ 6 ♀♀ paratypes (MNRJ 5990) BRAZIL, Santa Catarina. Itajaí, slope of hill close to the sea, in bromeliads, 09.iii.1999, Adriano B. Kury, Alessandro P.L. Giupponi & Ricardo Pinto-da-Rocha col.

Lacronia ricardoi Kury, 2003

Lacronia ricardoi Kury, 2003 (Kury: 2003b: 31, figs 1-14).

TYPE MATERIAL: ♂ holotype, 1 ♀ 1 juv paratypes (MZSP 21373, examined), 1 ♀ paratype (MZSP 10589, examined) BRAZIL, São Paulo. Peruíbe, in bromeliads, 28-30.vi.1982 Expedition of Museum col.

***Lacronia ceci* Kury & Orrico, sp. nov.**

Figs 1-12.

TYPE MATERIAL. BRAZIL. Rio de Janeiro. Teresópolis: National Park Serra dos Órgãos, trail to Rancho Frio, near Paquequer River (-22.456548°, -42.999458° elev. 1177m), ♂ holotype 3 ♂♂ 3 ♀♀ paratypes (MNRJ 16189) 05.viii.2005, A. Giupponi, A. Kury, D. Pedroso & V. Orrico col., in dead bamboo hollows during day and on vegetation at night; near researchers lodging in internodes of dead bamboo (*Guadua taguara*) cluster (-22.455658°, -42.998250° elev. 1144m), 1 ♂ paratype (MNRJ 17794) 03.xii.2005, A. Kury, V. Orrico & G. Terra col. This is an area of montane rainforest, WWF ecoregion NT0160 (World Wildlife Fund, 2006).

ETYMOLOGY. Species name is a noun in apposition referring to the character Ceci from the Brazilian novel "O Guarani" by José de Alencar, first published in 1857. Ceci is a nickname for Cecília, who was a beautiful white girl in love with the Indian hero, Peri. In the story, their romantic encounters happened in the margins of the Paquequer River, where the new species has been collected. As an oblique reference, the species name also honors Cecília C. Farias who is the scientific supervisor of the research in the National Park Serra dos Órgãos and who kindly provided logistical support and granted our access to that protected area of conservation.

DISTRIBUTION. Known only from the type locality.

DIAGNOSIS. Readily distinguished from *L. ricardo* and *L. camboriu* by the dorsal ornamentation formed of whitish round granules instead of continuous stripes, by the prolateral apophysis of trochanter IV non-geniculate. Distinguished from all other three known *Lacronia* by the armature of eye mound and scutal area III constituted by small rounded tubercles in male instead of high sharp spines. Females present strong brown spines instead of light greenish yellow tubercles. Metatarsus IV of male show intra-specific variation. *Alpha* males bear a dorsal row of spiniform processes.

DESCRIPTION:

Male holotype.

Measurements. Dorsal scutum: carapace length 1.8, carapace width 2.5, abdominal portion length 3.1, abdominal portion width 5.3. Pedipalpus: Pp Tr 0.5, Pp Fe 1.1, Pp Pa 0.6, Pp Ti 0.9, Pp Ta 0.8 and Pp claw 0.8. Legs I-IV femur and tibia: Fe I 2.2, Fe II 4.7, Fe III 3.7, Fe IV 4.6, Ti I 1.5, Ti II 3.6, Ti III 2.4 and Ti IV 3.4.

Outline of dorsal scutum pyriform (Fig. 1). Carapace much smaller than abdominal scutum. Abdominal scutum with lateral margins strongly convex, widest at area II. Eye mound well defined, elliptic, located far from anterior border of carapace, with a pair of small rounded tubercles separated from each other; frontal hump low, unarmed (Fig. 3). Anterior margin of carapace smooth and unarmed. Lateral margin of carapace with one anterior slit-like and one posterior rounded ozopore (Fig. 5). Mesotergum divided in four areas, area I divided in left and right halves. Area IV very short, partially fused to area III, its boundary with area III effaced in the middle. All areas unarmed, except area III with a pair of paramedian well separated rounded tubercles (Figs 1, 2). Rounded granules

throughout all areas, a pair on carapace, posterior to eye mound. Free tergites with a transverse row of small tubercles. Sternites and anal opercle smooth and unarmed (Fig. 6).

Chelicerae weak, without remarkable swellings, processes and/or spines. Pedipalpal trochanter with three geminated ventral setiferous tubercles (Fig. 4). Pedipalpal femur with one mesal sub-apical setiferous tubercles and one ventral basal setiferous tubercles. Pedipalpal patella with one mesal sub-distal setiferous tubercles. Pedipalpal tibia with two rows of setiferous tubercles; four (IiIi) ventro-mesal and four (IiIi) ventro-ectal of which the two distal are geminated. Tarsus with two rows of setiferous tubercles; three (IiIi) ventro-mesal and four (iIiI) ventro-ectal.

Coxa I – III each with ventral transverse row of six-eight setiferous tubercles increasing anteriorly. Femur II straight, with small apical retrolateral spur and, ventrally, (as for tibia II) with two ventral rows of minute granules increasing apically. Femur III (Fig. 7) substraight, growing thicker distally, with two ventral rows of small setiferous granules increasing apically and strong apical retrolateral spur. Tibia III (Fig. 7) growing thicker distally, with two ventral rows of stout spines, growing longer apically, spines of ventro-retrolateral row larger than those of ventro-prolateral row. Patella III finely tuberculated. Metatarsus III thicker at the proximal half. Coxa IV with 1) stout lanceolate apical dorso-prolateral apophysis, bearing retrolateral slight crenulations and a sub-distal branch and 2) a ventro-retrolateral spiniform apophysis with secondary branch.

Trochanter IV with four apophyses (Fig. 8): 1) prolateral border with subbasal very large complex doubled apophysis and 2) apical short tubercular apophysis. Retrolateral border with 3) anterior strong curved spiniform apophysis and 4) apical short tubercular apophysis. Femur IV (Fig. 9) straight, with rows of short tubercles enlarging as they stand more apical, and subapical prolateral (shorter) and retrolateral spurs. Patella IV with similar armature to patella III but with stouter spines. Tibia IV (Fig. 9) with thick pointed spines with one apical spur. Metatarsus IV slightly sinuous with astragalus thickened (Fig. 10). Tarsal formula 6(3)/9(3) /7/7.

Color (in alcohol). Dorsal scutum and leg background strong orange with deep orange mottling. Legs much darker at apices and with varied dark reticulation. Central portion of abdominal scutum strong brown. Granules of dorsal scutum including point of tubercles of area III Light greenish yellow sharply contrasting with background. Greenish hue tending to vanish in preserved specimens. Tarsus IV pale yellow. Pedipalpus and chelicera a blend of a brilliant and strong yellow with deep yellow reticulation.

Genitalia (male paratype, Figs 11-12). Ventral plate of penis hexagonal, not cleft at apical border with 3 + 1 + 3 pairs of macrosetae. Ventral process of glans narrow, cylindrical, widened and flabelliform with serrate margins only at apex. Stylus slender, slightly swollen at apex. Distal part of stylus armed with a few small denticles.

Female. Quite similar to male, also presenting the small tubercular yellow rounded tubercles in the carapace and the typical ornamentation of the species with yellow granules and yellow-tipped tubercles. Spines of area III sharp and high (contrasting with rounded tubercles of male), armature of coxa and trochanter IV weaker. Coxa IV not as large as in males. Females also present apical spurs in femora I to IV but the other armature is underdeveloped. Ventrally, females present the same armature as males in pedipalpal coxa and coxae I, II and III.

VARIATION. Range on tarsal counts given in Table I.

ECOLOGICAL REMARKS: *Lacronia ceci* sp. nov. is the first species of the genus to be found in highlands away from the coast. The other three species of *Lacronia* are known from coastal environments: *Lacronia serripes* is known only from small islands (Mello-Leitão, 1923). The other two were found in continental “restinga” biome.

Individuals of both sexes of *Lacronia ceci* were found inside bamboo (*Guadua taguara*) hollows or in immediately surrounding areas. No individuals were found in other locations during diurnal collectings. *Lacronia camboriu* and *L. ricardo* were found inside bromeliads (Kury, 2003b), suggesting that the species of this genus are related to phytotelmata.

Acknowledgements

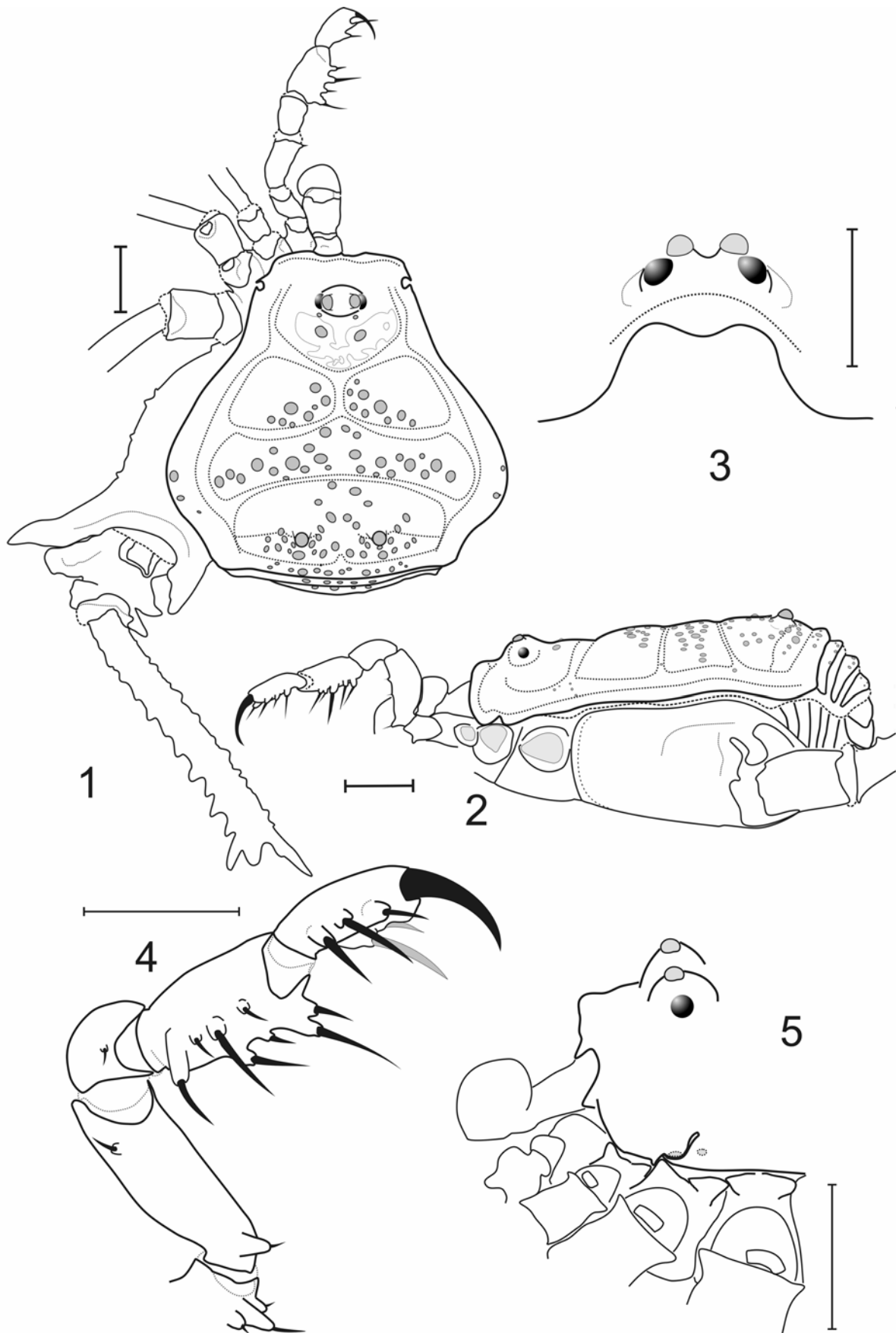
This study was supported by grant # 520406/98-2 from the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) to ABK. The Fundação Universitária José Bonifácio (FUJB) contributed to the equipment of the Laboratory of Arachnology of MNRJ. Thanks to Andressa Paladini (PUC-RS) for checking the original reference by Schmidt. Thanks to Gilberto Terra (UFSCar) for identifying the bamboo species.

Table I. Tarsal counts of male and female paratypes of *L. ceci* sp. nov.

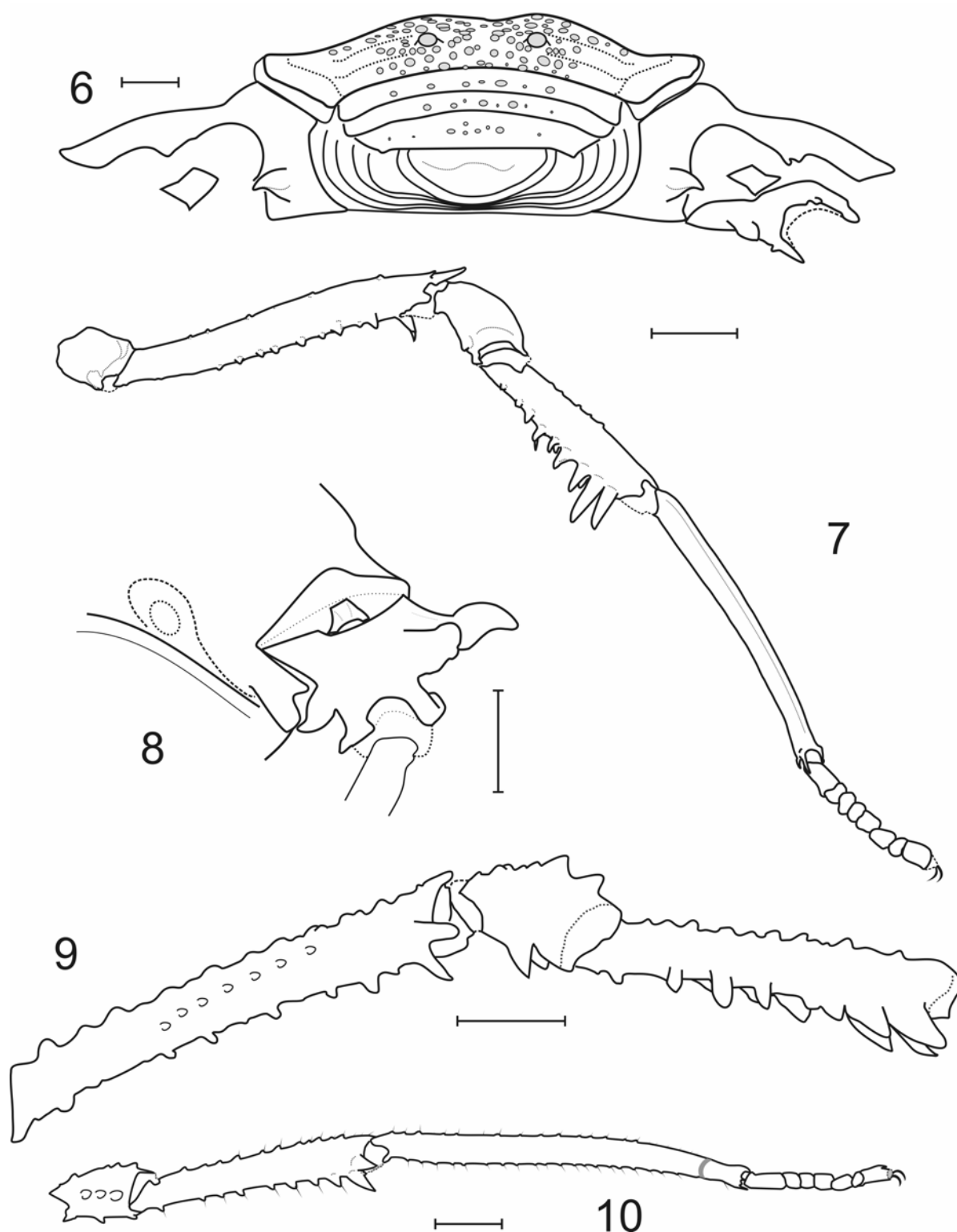
<i>Lacronia ceci</i> sp. nov.	Tarsal count			
Legs	I	II	III	IV
Males (n=4)	6	8-9	7	7
Females (n=3)	6	9	7	7

Table II. Standard names of the colors used here, according to the NBS/IBCC Color System with correspondence to traditional Latin names of colors used in many zoological descriptions.

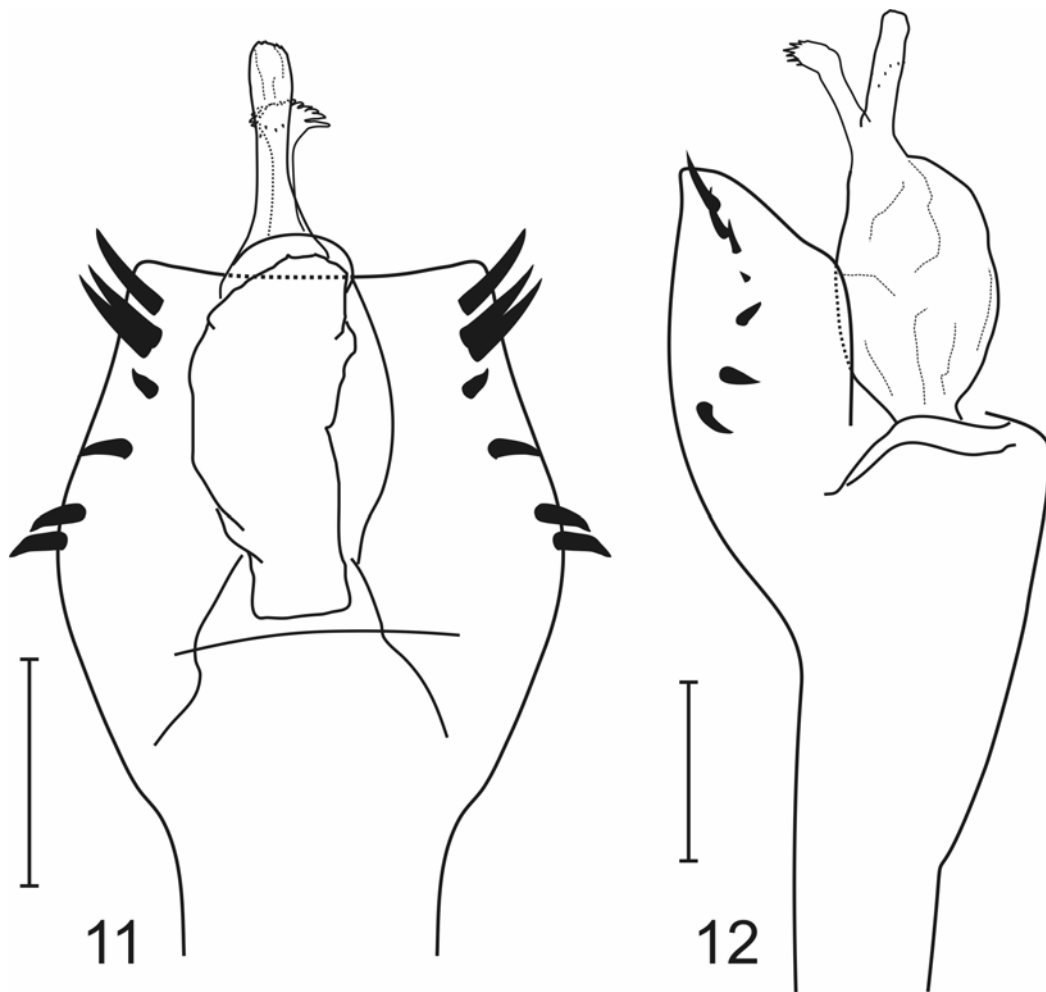
Centroid #	Standard Name	Latin Zoological name
50	Strong Orange	ochraceus
51	Deep Orange	senatus
55	Strong Brown	umbrinus
83	Brilliant Yellow	electrinus
84	Strong Yellow	electrinus
85	Deep Yellow	olivaceo-citrinus
89	Pale Yellow	bubalinus
101	Light Greenish Yellow	flavo-virens, griseo-chlorinus



Figs 1-5. *Lacronia ceci* Kury & Orrico sp. nov., male holotype (MNRJ 16189): **1.** Habitus, dorsal view; **2.** Habitus, lateral view; **3.** Eye mound and anterior border of carapace, frontal view. Scale bars = 1 mm.; **4.** Left pedipalpus, mesal view; **5.** Base of legs I-III showing coxal apophyses, dorso-lateral view.



Figs 6-10. *Lacronia ceci* Kury & Orrico sp. nov., male holotype (MNRJ 16189): **6.** Free tergites and sternites and coxa IV, posterior view. Scale bars= 1 mm.; **7.** Right leg III, retrolateral view; **8.** Left trochanter IV, ventral view; **9.** Left femur to tibia IV, prolateral view; **10.** Left patella to tarsus IV, prolateral view. Scale bars = 1 mm.



Figs 11-12. *Lacronia ceci* Kury & Orrico sp. nov., male paratype (MNRJ 16189), distal part of penis; **11.** Dorsal view; **12.** Lateral view. Scale bars = 0.1 mm.

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