

## Research article

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# Five new species of the genus *Griburius* Haldeman from Central America (Coleoptera: Chrysomelidae, Cryptocephalinae)

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## Abstract

Five new species of *Griburius* Haldeman, 1849 are described from Central America. The new taxa have been named: *Griburius febriculosus* **sp. nov.** from Mexico; *Griburius gracilis* **sp. nov.** from Mexico; *Griburius mokaya* **sp. nov.** from Costa Rica, Guatemala, Honduras, Mexico and Panama; *Griburius puncturatus* **sp. nov.** from Mexico; *Griburius textus* **sp. nov.** from Belize and Mexico. Besides, two further species of the same genus, i. e. *Griburius gamma* (Jacoby, 1889) from Mexico and *Griburius equestris* (Olivier, 1808) from the South of the U.S.A. have been redescribed and revised to make suitable comparisons possible. The lectotype of *Griburius gamma* and a neotype of *Griburius equestris* have been designated.

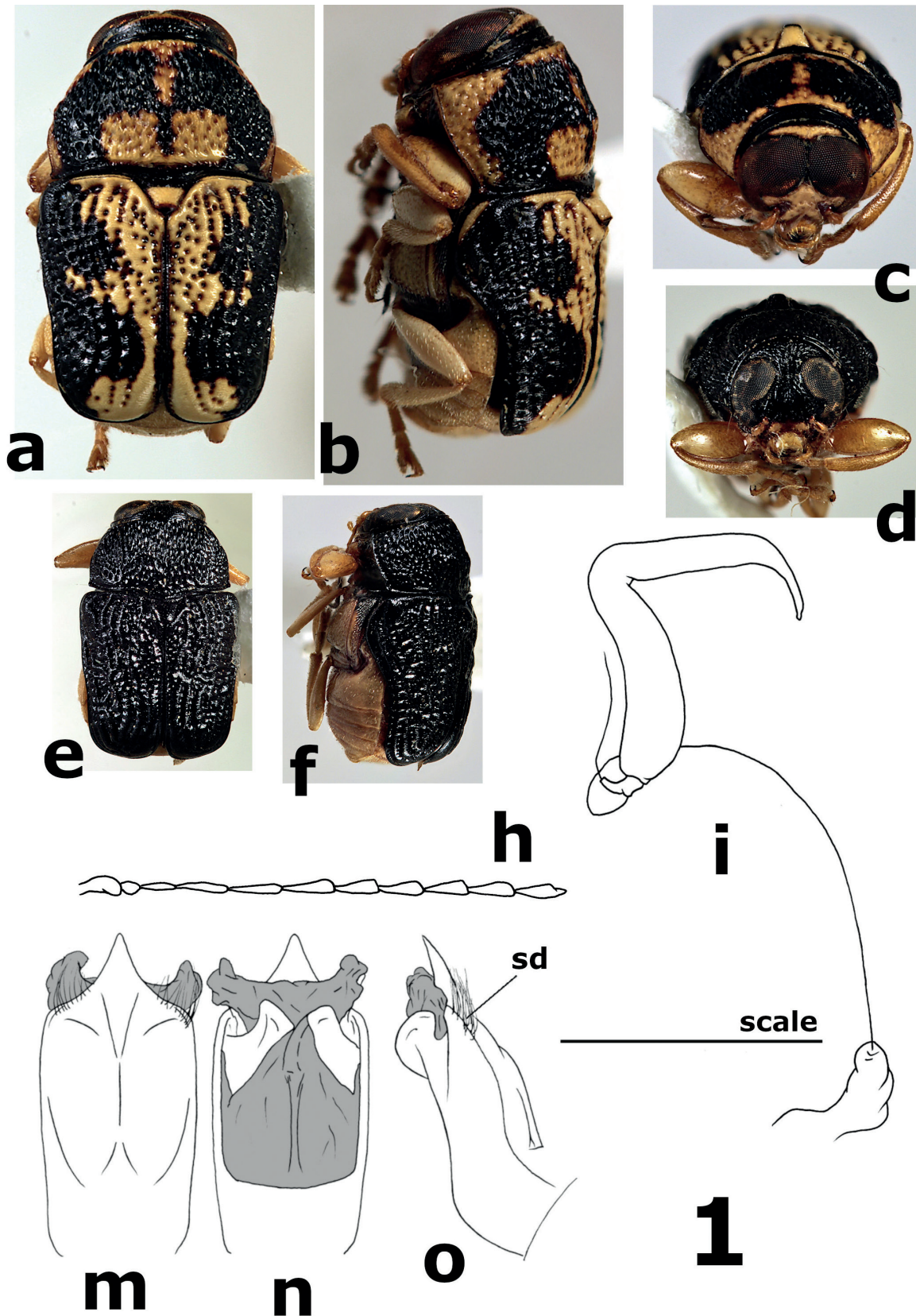
**Key words:** Taxonomy, new species, redescription, Pachybrachina, Neotropical Region, lectotype designation, neotype designation.

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## Introduction

The genus *Griburius* Haldeman, 1849 is a complex, species-rich and poorly known taxon distributed from the South of the United States to the North of Argentina. Among the 130 valid species assigned to this genus so far, 66 are reported from Brazil, but at present it is not possible for many of them to detail precise distribution throughout this vast country, since many of the ancient original descriptions, which almost always constitute the only current source of information, are extremely inaccurate as regards the locality of collection. However, judging by the 14 species known from Mexico, the 6 species from U.S.A., the 17 species from Panama, the 5 species from Guatemala, the 14 species from Colombia and the 7 species from Venezuela, contrasting with the only three species known from Paraguay and the single dubious species from Argentina (currently, no species of *Griburius* have been reported from Chile and Uruguay), it would seem legitimate to hypothesize that there is a substantial impoverishment in species richness at the level of the whole genus, starting from the southern part of the tropical belt, while a greater diversity occurs in the

northern territories of its broad range. This is somehow in contrast with the distributional pattern of the very close genus *Metallactus* Suffrian, 1852, whose center of gravitation, as regards the species distribution, is definitely located much further south (Sassi 2018, 2019, 2022). However, it should be noted that every geographical and natural history remarks about the genus must be considered largely provisional because an acceptable diagnosis, conformed to modern taxonomic standards, is still missing for this taxon. This is due to the long period in which no comprehensive studies have been made since Suffrian and Jacoby's research dating back to the 19th and early 20th centuries (Suffrian 1852, 1866; Jacoby 1880, 1889, 1907). Only recently (Sassi 2023) a group of species including *Griburius scutellaris* (Fabricius, 1801), the type species of the genus, have been revised with the aim of better circumscribing the characteristics useful for a new diagnosis, essential for an effective taxonomic revision. In fact, at the present time many of the species attributed to *Griburius* constitute a questionable cluster, based on vague and insufficiently stable morphological characters. In the present study, five new species attributable to the genus *Griburius* are described based on currently accepted criteria.



**Fig. 1** – *Griburius febriculosus* sp. nov. a–b, habitus, dorsal and lateral view (PT, male); c, frontal view, male; d, frontal view, female; e–f, colour variation, female; m–o, median lobe of aedeagus in ventral (m), dorsal (n) and lateral (o) view [0.7 mm]; h, antenna [1.7 mm]; i spermatheca [0.3 mm]. sd, setose depressions. Square brackets: length of scale segment.

## Materials and Methods

*Measurement and photography of specimens.* Examination, dissection, measurements, and drawings were completed with the use of a stereomicroscope Optika SZM with an ocular micrometer. Given the questionable representativeness of the available specimens for some species, it was not considered appropriate to provide a statistical treatment of the measurements, even in the form of a simple arithmetic average. For that reason, the values are given, for each species and both sexes, as ranges (smallest and largest studied specimen). The total length (BL) of each specimen was measured from the anterior margin of pronotum to the apex of elytron. For each species a drawing of the right antenna of a male specimen is provided. The photos were composed by photomontage with CombineZP Image Stacking Software (Hadley 2010). The plates have been arranged and adjusted using the Free & Open-Source Image Editor GIMP, version 2.99.12 (available at <https://www.gimp.org/>). Photos of types of the species will also be available on the author's website (Sassi & Montagna 2022) at <http://www.chrysomelidae.it/amer-pachy/>.

For each name-bearing type of the new species all label information concerning locality, date and collection depository is given verbatim as it appears on the labels. To save space, only the essential data were generally given for the other specimens of the type series (paratypes). For the name-bearing types, when data were handwritten, they are reported in non-italicized type, disregarding the common use of italics for scientific names. Additional comments and details of labels are given in square brackets.

*Dissections.* The internal structures were studied by dissecting dried specimens after separating the abdomen in water, soaking it in boiling 10 % KOH solution for about 30 seconds, keeping it in the same hot solution for five minutes and then washing it in water. Internal genitalia were kept in microvials in 60 % ethanol for the entire period in which the study was conducted, allowing comparisons, and enabling the observation from any desired angle.

For male genitalia, only the morphology of the median lobe of the aedeagus was considered.

In the female genitalia the morphology of the spermatheca was studied, compared, and figured. The female rectal apparatus was neither figured nor discussed, because no significant diagnostic traits were found neither in comparison of the described species nor for defining any particular species group within the genus.

*Taxonomy.* The syntype of *Griburius gamma* housed in MCZ was not examined directly, but thanks to the excellent high-definition photographs available on the MCZ website it was possible to designate it as paralectotype of the species.

*Terminology.* For terminology of external characters, spermatheca and median lobe of aedeagus see Sassi (2018). The word “turns” (instead of “coils”) is used when the winding of the ductus of the spermatheca are not

tightly thickened coils as observed in other species groups (Sassi, 2018), but rather assumes a merely sinuous and loose condition.

*Abbreviations.* BL: body length; BW: body width; PL: pronotal length; PW: pronotal width; HT: holotype; LT: lectotype, NT: Neotype; PT: paratype; PLT: paralectotype.

*Specimen depositories.* This study was based on adult specimens preserved in museums and collections referred to in the text. In addition, further distribution information was acquired downloading data from the public database Global Biodiversity Information Facility (GBIF, <https://www.gbif.org/>) (GBIF.org 2022). The following acronyms were used:

AMNH – American Museum of Natural History, New York, U.S.A.

BMNH – Natural History Museum, London, United Kingdom

BYU – Insect Collection Monte L. Bean Life Science Museum Brigham Young University, Provo, U.S.A.

CNCI – Canadian National Collection of Insects, Ottawa, Canada

DSPC – Author's Personal Collection

ERPC – Edward Riley Personal Collection, College Station, U.S.A.

FIMU – Field Museum of Natural History, Chicago, U.S.A.

FSCA – Florida State Collection of Arthropods, Gainesville, U.S.A.

GBIF – Global Biodiversity Information Facility, <https://www.gbif.org/>

MCZ – Harvard Museum of Comparative Zoology, Cambridge, U.S.A.

MDPC – Mauro Daccordi Personal Collection, Verona, Italy

MLUH – Suffrian's Collection, Martin Luther University, Halle, Germany

MNHN – Muséum national d'Histoire naturelle, Paris, France

MNHUB – Museum für Naturkunde, Berlin, Germany

MSNM – Museo Civico di Storia Naturale, Milano, Italy

TAMU – Texas A&M University, College Station, U.S.A.

USNMNH – Smithsonian Institution, Washington DC, U.S.A.

ZSM – Zoologische Staatssammlung, München, Germany

## Results

### *Griburius febriculosus* sp. nov.

(Figs 1, 8a)

**Types.** HOLOTYPE: m#, body, aedeagus and detached abdomen glued on the same card, “**MEXICO**, Veracruz Est. Biol. de Los Tuxtlas 18°35'N 95°05'W” [white label, printed] // “4.V.1991 H.A. Hesperheide” [white label, printed, partly handwritten] // “*Griburius febriculosus* sp. nov.

HOLOTYPE D. Sassi des." [red label, printed] // (TAMU). PARATYPES (8 specimens): **MEXICO, CHIAPAS**: Hwy 199 10 km S Palenque San Manuel Rd 30.V.1987 at mercury vapor & blacklight (2m#. ERPC, DSPC); Comitán de Domínguez (2f#, MNHUB). **MEXICO, VERACRUZ**: same data of the HT but 28.IV.1991 (2f#, TAMU, DSPC); ca 15 km N Catemaco 1000 m N 18°32' W 95° 08' 26.IV.1991 (1f#, TAMU). "Mexico..." [remainder of the label is unreadable] (1f#, MNHUB). All paratypes are labelled: // "*Griburius febriculosus* sp. nov. PARATYPUS D. Sassi des." [red label, printed] //.

**Type locality.** Estación de Biología Tropical Los Tuxtlas (Veracruz, Mexico).

**Etymology.** Latin adjective meaning *feverish*. No specific reference to the taxon, but the evening I was working on it, it turned out that my daughter had just got the COVID-19 disease.

**Distribution.** Mexico.

**Diagnosis.** A species of *Griburius* characterized by unusually strong and dense punctation on the elytra and pronotum. On the latter the punctation tends to become wrinkled. The species seems to show an evident chromatic dimorphism, the males being dorsally yellow with a pattern of black lateral bands, while the females available for the study have entirely black elytra and pronotum. In terms of dorsal colouration, the species vaguely recalls *Pachybrachis forreri* Jacoby 1889 (see <http://www.chrysomelidae.it/amer-pachy/p.-forreri.html>), which however is well distinguished by the shape of the pronotum, much less transverse, by the elytra slimmer and not converging towards the apex, and by the finer punctation.

**Description of male.** Habitus in Fig. 1a-c (PT). BL = 3.7–4.0 mm, BW = 2.4–2.7 mm, PL = 1.4–1.6 mm, PW = 2.2–2.3 mm. Interocular distance = 0.0 % (inner eyes margins are in contact along median line).

Head yellow with vertex and, at times, part of clypeus black. Labrum yellow. Head surface basically devoid of setosity. Surface of frontoclypeal area with few, scattered, shallow-impressed punctation. Upper lobes of eyes in contact along midline, so neither interspace nor mid-cranial suture visible in between. Ocular lines strictly adhering to ocular rim, marked with a line of fine punctures along lower part of upper lobes. Ocular canthus large, angular. Antennae (Fig. 1h) with first six antennomeres yellow, reminders brownish. Antennomeres 3–5 bright, subcylindrical; antennomeres 6–11, dull, flattened and more diffusely setose.

Pronotum black with lateral margins yellow. Two trapezoidal spots in posterior part of disc, close to midline, touching posterior margin and median line raising from anterior margin and reaching middle of disc yellow as well. At times, discal spots fused together giving single trilobate marking. Pronotal shape elliptical, scarcely transverse, regularly convex. Lateral margins narrow, visible from above only along posterior half, angularly curved at middle, with maximum width at about middle. Surface

dull, covered with coarse strongly impressed punctation evenly distributed across whole pronotal surface. Punctures deep, lengthened, partly coalescent at middle of disc to form longitudinal ridges. Posterolateral impressions well marked just up to midline, so that pronotal outline looks slightly raised in lateral view.

Scutellum yellow, triangular with apex truncated in straight line. Surface sparsely micropunctured.

Elytron black with large yellow patch along suture, broadened to reach fifth row of punctures on anterior half, at about middle and on apical clivus. In holotype yellow patch on apical clivus separated from anterior one to form independent spot. Epipleuron yellow along anterior half. Elytral outline with sides almost straight and posteriorly convergent. Lateral margin rather large, simultaneously visible from above from apex to humeral callus. Elytral surface slightly flattened on disc, dull with strong, coarse, deeply impressed punctation, partly coalescent to give rugulose appearance to disc surface. Punctures arranged in almost regular rows above all along inner part of disc. Intervals raised. Postscutellar area perceptibly raised. Humeral callus prominent, impunctate. Epipleuron flat, slightly rugulose.

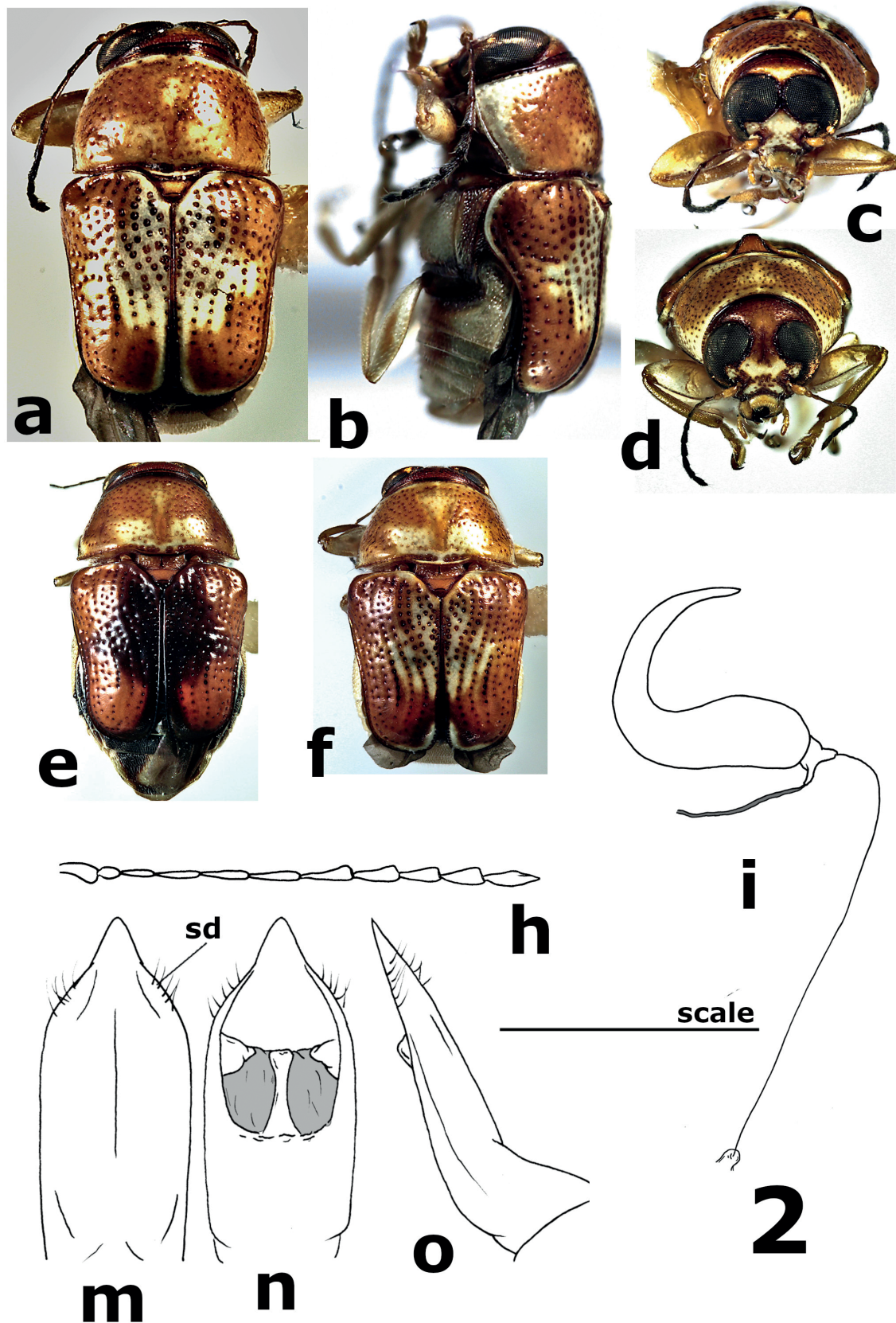
Pygidium totally yellow; surface bright, covered with shallow punctures and short, semi-erect pale setae.

Ventral parts of thorax black, with prosternal process and most of metasternum yellow. Inner part of metaepisterna bordered with yellow as well. Abdominal ventrites yellow with central part of ventrites 1–4 light brown. Medial projection of ventrite 1 yellow. Hypomera almost bare, shiny, covered with dense, strong punctures; mesoepimera and mesoepisterna shiny, with fine, scattered punctation. Remainder of ventral surface matt, covered with thick, short, regularly distributed setae and fine, shallow punctures. Prosternal process large with sides almost straight between anterior coxae; surface almost flat, closely but shallowly punctured, covered with sparse semi-erect setae. Legs totally yellow.

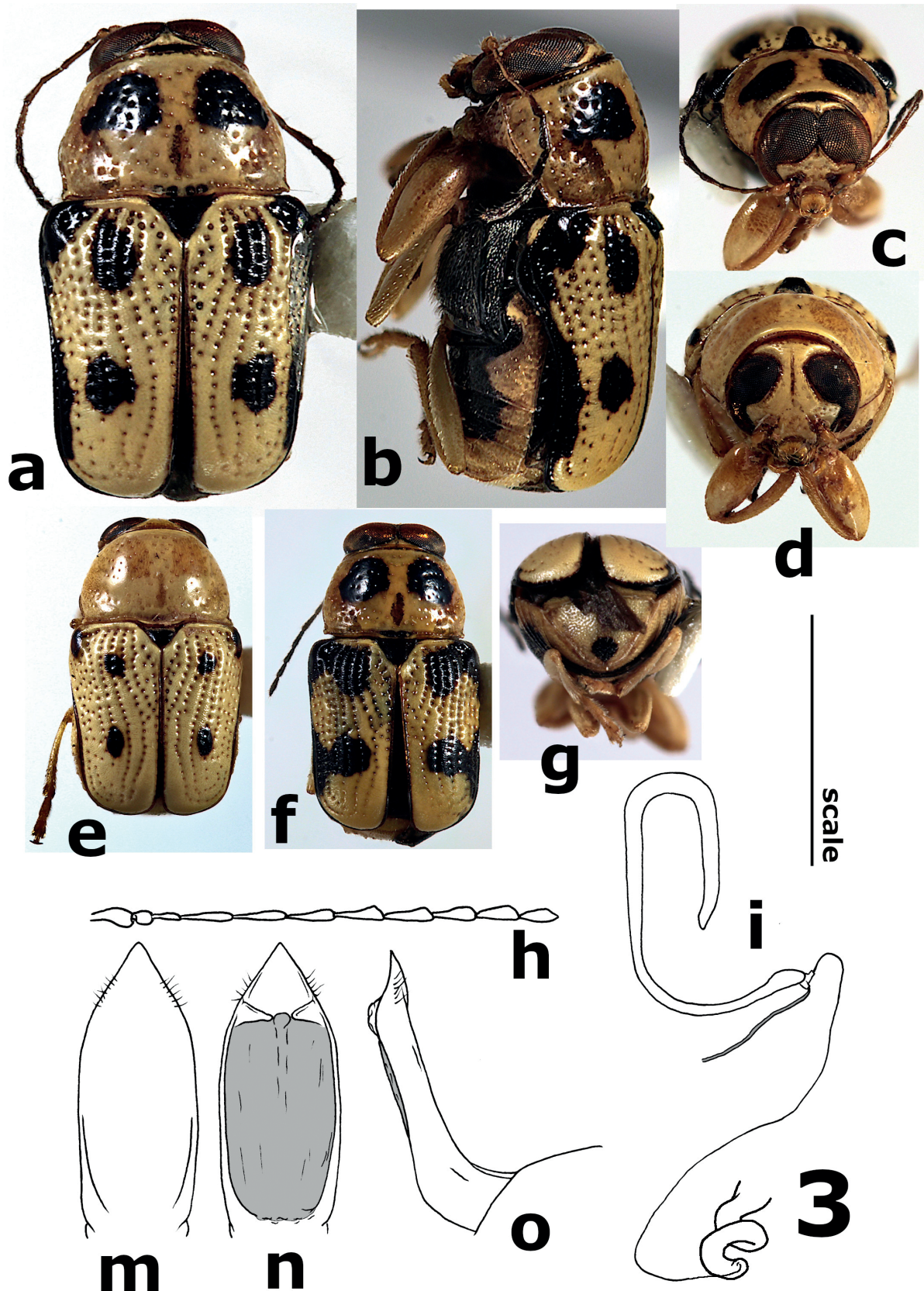
Median depression on fifth abdominal ventrite distinct, narrow. Ventrite posterior margin shallowly but perceptibly notched. Median lobe of aedeagus (Fig. 1m-o) dorsoventrally flattened, terminated by median, long, pointed, apical process, delimited by mildly concave sides. In lateral view apex perfectly straight. Ventral surface marked by median low, linear carina. Setose depressions very shallowly impressed, with few, scattered, very small punctures and long arcuate setae. In dorsal view, in all examined specimens, membranes of endophallus always protruding from apical foramen. Among them, two apical lobes, extending sideways, always well distinguishable.

**Female.** Habitus in Fig. 1d-f (PT). BL = 3.6–4.5 mm, BW = 2.3–2.9 mm, PL = 1.2–1.6 mm, PW = 2.1–2.6 mm. Interocular distance = 8.3–8.9 % of BL.

In females the head surface is black with the lower margin of clypeus and labrum yellow. The eyes are smaller



**Fig. 2** – *Griburius gracilis* sp. nov. a–b, habitus, dorsal and lateral view (PT, male); c, frontal view, male; d, frontal view, female; e–f, colour variation, females; m–o, median lobe of aedeagus in ventral (m), dorsal (n) and lateral (o) view [0.6 mm]; h, antenna [1.2 mm]; i, spermatheca [0.3 mm]. sd, setose depressions. Square brackets: length of scale segment.



**Fig. 3** – *Griburius mokaya* sp. nov. a–b, habitus, dorsal and lateral view (HT, male); c, frontal view, male; d, frontal view, female; e–f, colour variation, female (e) and male (f); g, posterior view, male; m–o, median lobe of aedeagus in ventral (m), dorsal (n) and lateral (o) view [0.5 mm]; h, antenna [1.5 mm]; i, spermatheca [0.6 mm]. Square brackets: length of scale segment.

and more separated along midline, and the head surface is evenly covered with coarse punctation. Additionally, upper parts are totally black, while yellow pattern on ventral parts is more extended, being the abdominal tergites and ventrites totally yellow.

The fifth abdominal ventrite in females has a quite large, subelliptical, and deep pit. The bottom of the pit is glabrous, matt, slightly darkened in respect to the surrounding surface, impunctate but covered by tiny wrinkles. The vasculum of the spermatheca (Fig. 1i) is not pigmented, slender, sickle shaped with slightly curved, not swollen proximal lobe. The distal lobe is slender, almost straight in the first trait and then abruptly curved at apex. The ampulla is not pigmented, short. The duct insertion on the ampulla is short, neither thickened nor pigmented. The sperm gland insertion is rather long and slightly curved. The duct is uniform in size, slender, short, quite rigid, forming a single turn near the vasculum, then straight, devoid of further coils and turns. The insertion on the bursa copulatrix is simple, neither swollen nor pigmented.

**Remarks.** The single male from Comitán de Domínguez is dorsally totally black apart from two triangular yellow spots on the anterior angles of the pronotum, and the scutellum, which is yellow as well. The single female from the same locality also differs from the others in the yellow lateral sides of pronotum and lower part of frontoclypeal surface, up to ocular lobes, yellow as well. Besides, the proximal lobe of the vasculum is fairly swollen at base. However, because of the small number of the available specimens, it is impossible to give any taxonomic significance to this variability.

***Griburius gracilis* sp. nov.**

(Figs 2, 8b)

**Types.** HOLOTYPE: m#, body, aedeagus and detached abdomen glued on the same card, // “MEXICO Quintana Roo” [white label, printed] // “Celarain Point Cozumel Island 21-IV-1960 J.F.C. Clarke” [white label, printed, partly handwritten] // “*Griburius gracilis* sp. nov. HOLOTYPE D. Sassi des.” [red label, printed] // (USNMNH). PARATYPES (26 specimens): MEXICO, QUINTANA ROO: same data of the HT (14m#12f#, USNMNH, DSPC, MSNM). All paratypes are labelled: // “*Griburius gracilis* sp. nov. PARATYPE D. Sassi des.” [red label, printed] //.

**Type locality.** Celarain Point on Cozumel Island (Quintana Roo, Mexico).

**Etymology.** Latin adjective meaning “frail”, stressing the relatively small size and the poor contrast of the dorsal colouring.

**Distribution.** Mexico. This taxon is likely to be endemic to Cozumel Island (Quintana Roo), which is well known for hosting several endemic animal species (see for instance Cuarón et al. 2004).

**Diagnosis.** The dorsal colouration, with a weak contrast between the whitish-yellow light areas and reddish-brown dark ones, characterizes the species quite well, even if, quite rarely, a darker pattern is shown on the central part of the elytra (Fig. 2e). The most similar species is *G. textus*, which however differs in the wider and more angular outline of the aedeagal median lobe, in the larger size and the more robust dorsal punctation.

**Description of male.** Habitus in Fig. 2a-c (PT). BL = 2.8–3.0 mm, BW = 1.8 mm, PL = 1.1–1.6 mm, PW = 1.6–1.7 mm. Interocular distance = 0.0–3.6 % of BL.

Head yellow with vertex, ocular perimeter, lower clypeal margin and antennal insertions brownish. Labrum yellow. Head surface basically devoid of setosity. Vertex shallowly but closely punctured. Surface of frontoclypeal area with scattered, well-impressed punctation above all on ocular canthi and between antennal insertions. Mid-cranial suture shallow, barely detectable between upper lobes of eyes. Upper lobes of eyes close to each other along midline but not really in contact. More rarely, upper ocular lobes touching each other for short distance. Ocular lines usually distinct above all along lower part of upper lobes, marked by row of punctures, strictly adhering to ocular rim. Ocular canthus large, angular. Antennae (Fig. 2h) with first two antennomeres yellow, reminders brownish. Antennomeres 3-5 bright, subcylindrical; antennomeres 6-11, dull, more flattened and more diffusely setose.

Pronotum light brown with lateral and anterior margins yellow. Two trapezoidal spots in posterior part of disc, close to midline, touching posterior margin and median line raising from anterior margin and reaching middle of disc yellow as well. Pronotal shape elliptical, scarcely transverse, regularly convex. Lateral margins narrow, visible from above only along posterior third, regularly curved, with maximum width at about middle. Surface moderately shiny with strongly impressed punctation evenly distributed across whole pronotal surface. Posterolateral impressions weakly impressed but still detectable.

Scutellum brownish, triangular with apex truncated in straight line. Surface sparsely micropunctured.

Elytron light brownish with large yellow patch at center of disc, broadened at middle and reduced to simple stripe along apical clivus. Apical margin yellow as well. Bottom of punctures brown also in lighter areas. Epipleuron yellow. Elytral outline with sides almost straight and convergent posteriorly. Lateral margins narrow, simultaneously visible from above only along posterior half. Elytral surface slightly flattened on disc, moderately shiny with strong, well-impressed punctation distinct up to posterior clivus, arranged in almost regular rows along inner half of elytron, more confused elsewhere. Intervals flat. Post-scutellar area slightly raised. Humeral callus prominent, impunctate. Epipleuron smooth, impunctate, with slightly convex surface.

Pygidium totally yellow Surface bright, covered with shallow punctures and short, semi-erect pale setae.

Ventral parts of thorax light brown, only metasternum almost completely yellow. Abdominal ventrites yellow with central part of ventrites 1-4 light brown. Medial projection of ventrite 1 yellow. Hypomera, almost bare, shiny, covered with dense, strong punctures; mesoepimera and mesoepisterna shiny, almost devoid of punctation. Remainder of ventral surface of thorax matt, covered with thick, short, regularly distributed setae and fine, shallow punctures. Prosternal process large with sides almost straight between anterior coxae, terminated with a round apex; surface almost flat, shallowly punctured, covered with long, semi-erect setae. Legs totally yellow.

Median depression on fifth abdominal ventrite indistinct, hardly detectable. Ventrite posterior margin shallowly notched. Median lobe of aedeagus (Fig. 2m-o) dorsoventrally flattened, terminated by triangular apex. In lateral view apex perfectly straight. Ventral surface almost smooth. Setose depressions very shallowly impressed, with surface covered by small punctures and few short setae

*Female.* Habitus in Fig. 2d-f (PT). BL = 3.6–3.8 mm, BW = 2.4–2.6 mm, PL = 1.3–1.4 mm, PW = 2.1–2.3 mm. Interocular distance = 8.3–10.5 % of BL.

In females the head surface is brownish with a transverse yellow band between the ocular canthi. Two further yellow spots just below the antennal insertions. The eyes are smaller and more separated along midline, and the head surface is evenly covered with coarse punctation and sparse short setae. Sometimes, the yellow patch on elytron tends to change into dark brown shades (Fig. 2e).

The fifth abdominal ventrite in females has a quite large, rounded, and deep pit. The bottom of the pit is glabrous, matt, impunctate but covered by tiny wrinkles. The vasculum of the spermatheca (Fig. 2i) is scarcely pigmented, sickle shaped with straight, slightly swollen proximal lobe. The distal lobe is slender, regularly curved, distally tapered, and terminated with a slender apex. The ampulla is not pigmented, almost square. The duct insertion is short and slightly thickened. The sperm gland insertion is rather long, slender and curved. The duct is uniform in size, short, slender, quite rigid, straight, devoid of coils and turns. The insertion on the bursa copulatrix is simple, neither swollen nor pigmented.

### *Griburius mokaya* sp. nov.

(Figs 3, 8c)

**Types.** HOLOTYPE: m#, body, aedeagus and detached abdomen glued on the same card, // “MEX, Chiapas, Parque Laguna Belgica 27-V-1987 D A Rider E. G. & T. J. Riley” [white label, printed] // “collected at mercury vapor & blacklight” [white label, printed] // “*Griburius mokaya* sp. nov. HOLOTYPE D. Sassi des.” [red label, printed] // (TAMU). PARATYPES (42 specimens): MEXICO, CHIAPAS: same data of the

holotype (13m#3f#, ERPC, DSPC, TAMU); hwy 195 4.5 km N Ixtapa 3000' 24.V.1987 D. A. Rider, E. G. & T. J. Riley at mercury vapor and blacklight (8m#8f#, ERPC); Mpio Villa Flores rd. to Agronomos Mexicanos 1200m (1f#, ERPC). MEXICO, VERACRUZ: 8 km N Fortin 20.IV.1978 (1f#, TAMU). COSTA RICA, GUANACASTE: Finca Jenny 31 km N of Liberia 300m VI.1989 (3m#2f#, BMNH, DSPC); 3 km SE R. Naranjo 11.IV.1993 (1f#, BYU). HONDURAS, FRANCISCO MORAZÁN: 5 km E Escuela Agrícola Panamericana 2.VI.1993 (1f#, FSCA). PANAMA, CHIRIQUI: vic Hornito 42” 14-18.V.1996 (1f#, TAMU). All paratypes are labelled: // “*Griburius mokaya* sp. nov. PARATYPUS D. Sassi des.” [red label, printed] //.

**Type locality.** Parque educativo Laguna Bélgica (Ocozacoautla, Tuxtla Gutiérrez, Chiapas, Mexico).

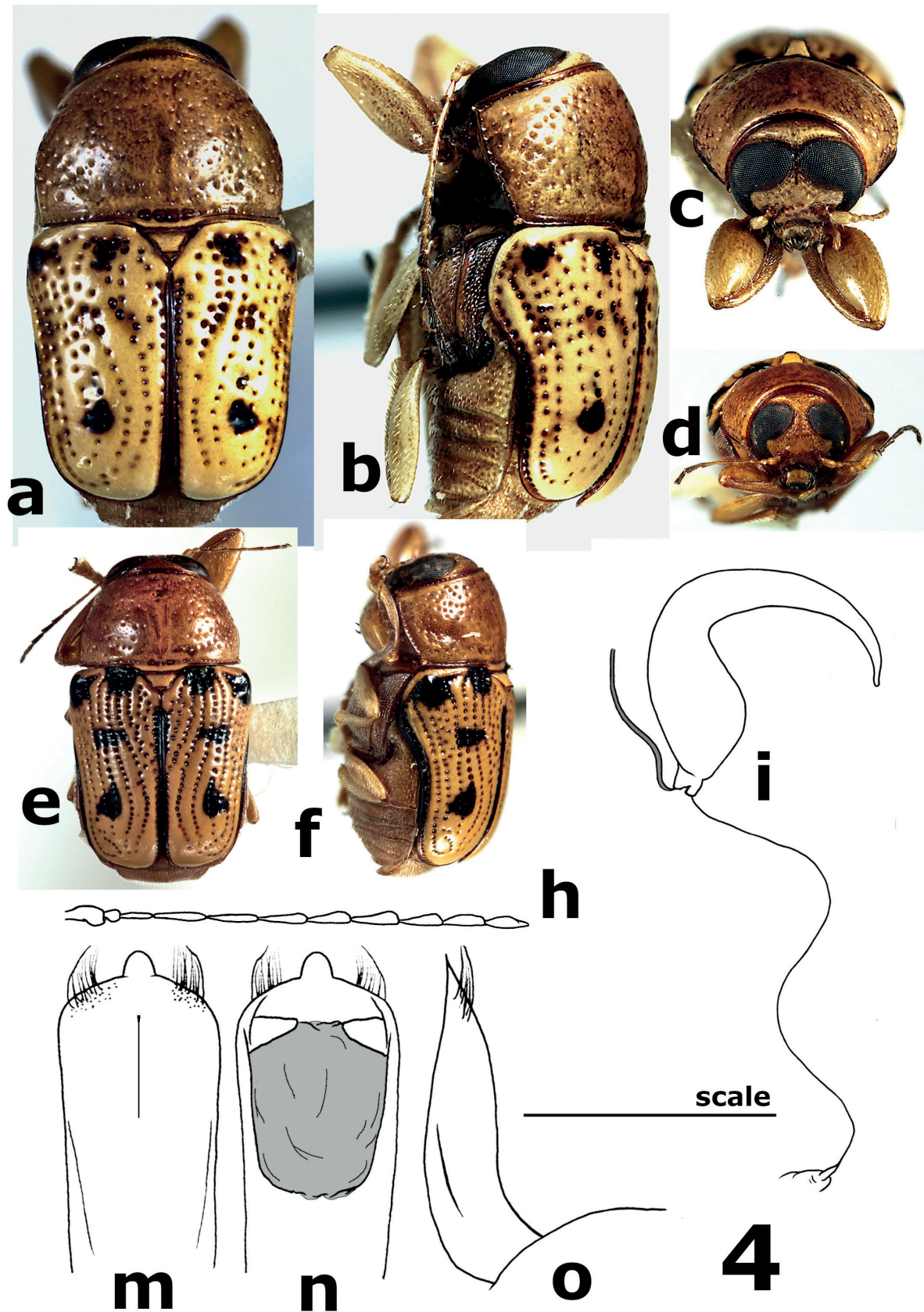
**Etymology.** Mokaya is the name given to some ancient Mesoamerica's cultures located in particular along the Pacific Coast of today's Chiapas, Mexico. The word Mokaya is a noun in the nominative singular, standing in apposition to the generic name (art. 11.9.1.2. I.C.Z.N., 4th edition).

**Additional material examined.** GUATEMALA: Ciudad de Guatemala 1.V.2022 (1, GBIF). HONDURAS: Francisco Morazán San Antonio de Oriente, El Zamorano 22.IV.2020 & 14.V.2020 (2, GBFI).

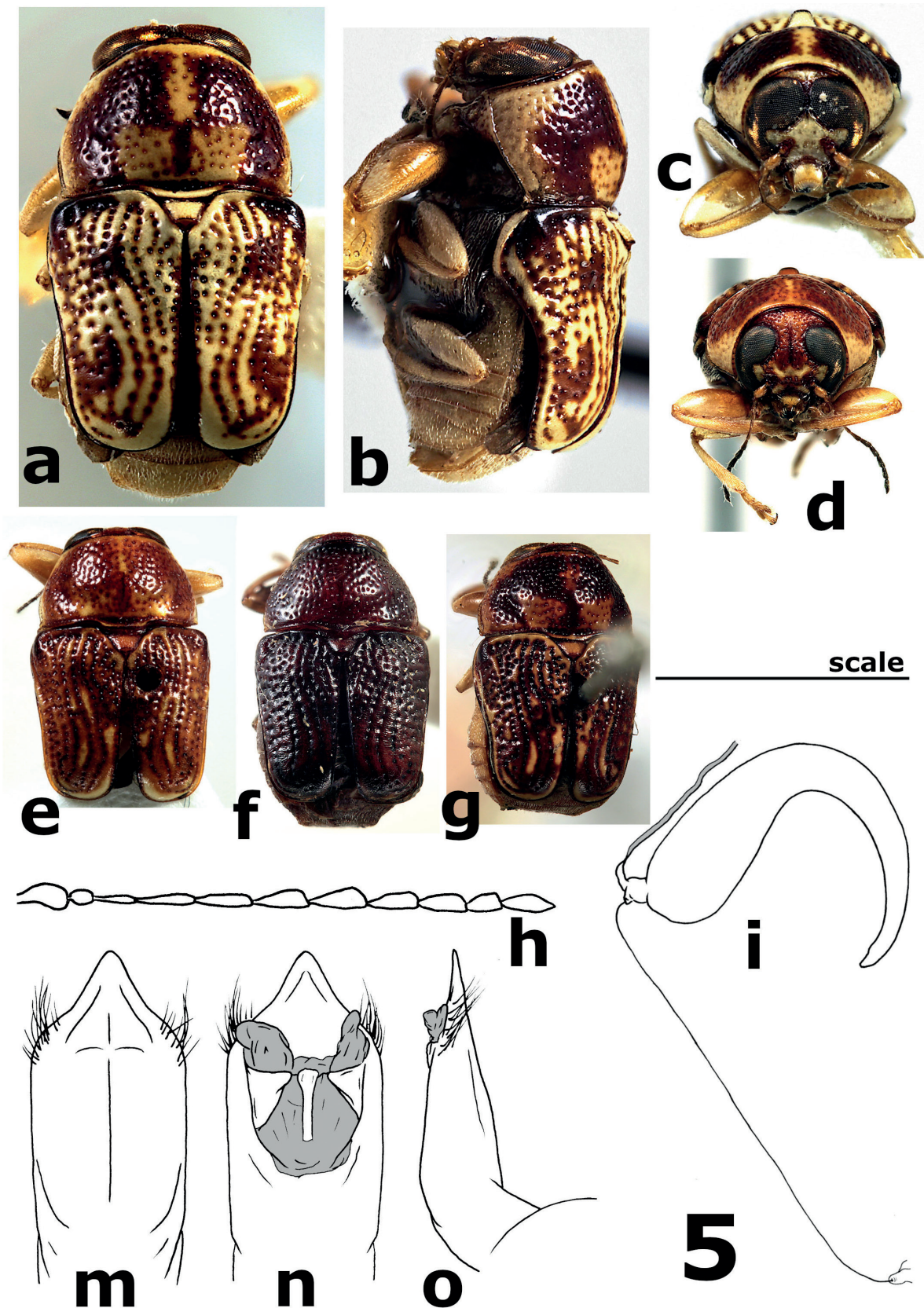
**Further checked data from literature.** Jacoby (1889) reported and shortly described a specimen from Guatemala, attributing it to *Griburius equestris* (Olivier, 1808), which should be considered as belonging to the new species. The datum was also mentioned in Riley et al. (2001) and correctly believed to belong to a taxon distinct from *G. equestris*. Additionally, this species is reported in Ordóñez-Reséndiz & López-Pérez (2021) for the Mexican States of Puebla, Oaxaca, Veracruz and Yucatan on the basis of material housed in the collections of the Museo de Historia natural de la Ciudad de México. These specimens have probably to be assigned to the new species but, given the difficulty until now to correctly identify the Mexican *Griburius* species, not comprehensively revised since the late 19<sup>th</sup> century, the presence of the new species in the aforementioned Mexican states requires, in my opinion, further confirmation.

**Distribution.** Costa Rica, Guatemala, Honduras, Mexico, Panama.

**Diagnosis.** The species is similar in morphology to *G. equestris*, from which it can be easily distinguished by the different shape of the aedeagal median lobe. Despite the variability of both species in the colouration, some remarkable differences can be pointed out on ventral surface. In males, median projection of the first abdominal ventrite is always yellow (black in *G. equestris*). Usually, the black spot on the pygidium is smaller, and the fifth abdominal ventrite is totally yellow (central part of it is the same usually black in *G. equestris*). In females (and in light coloured males) the distinction is easier, being the ventral surface usually almost totally yellow.



**Fig. 4** – *Griburius puncturatus* sp. nov. **a–b**, habitus, dorsal and lateral view (HT, male); **d**, frontal view, male; **d**, frontal view, female; **e–f**, colour variation, female; **m–o**, median lobe of aedeagus in ventral (**m**), dorsal (**n**) and lateral (**o**) view [0.5 mm]; **h**, antenna [1.6 mm]; **i**, spermatheca [0.3 mm]. Square brackets: length of scale segment.



**Fig. 5** – *Griburius textus* sp. nov. **a–b**, habitus, dorsal and lateral view (PT, male); **c**, frontal view, male; **d**, frontal view, female; **e–g**, colour variation, females; **m–o**, median lobe of aedeagus in ventral (**m**), dorsal (**n**) and lateral (**o**) view [0.6 mm]; **h**, antenna [1.1 mm]; **i**, spermatheca [0.3 mm]. Square brackets: length of scale segment.

**Description of male.** Habitus in Fig. 3a-c (HT), 3f-g (PT). BL = 2.9–3.3 mm, BW = 1.7–2.0 mm, PL = 1.0–1.2 mm, PW = 1.4–1.7 mm. Interocular distance = 0.0–2.0%.

Head totally yellow, at times vertex and antennal insertions darkened. Labrum yellow as well. Head surface with sparse, very fine punctures and almost devoid of setosity. Mid-cranial suture shallow, but clearly detectable above and below the upper lobes of eyes. Upper lobes of eyes usually in contact along midline, so neither interspace nor mid-cranial suture visible in between. Ocular lines strictly adhering to ocular rim, sometimes marked with line of fine punctures along lower part of upper lobes. Ocular canthus large, angular. Antennae (Fig. 3h) with first 5 antennomeres yellow, 3–5 bright, subcylindrical; 6–11 darker, dull, more flattened and more diffusely setose.

Pronotum yellow with two drop-shaped black spots on central part of disc, at sides of midline. Such spots at times smaller and rounded, or angulate, or even completely missing. Sometimes a hint of longitudinal brownish line near posterior margin, in front of scutellum. Pronotal shape elliptical, scarcely transverse, slightly flattened, clearly narrower than elytra. Lateral margins narrow, visible from above only along posterior half, slightly angulate just behind middle, where maximum width occurs. Surface moderately shiny with sparse, strongly impressed punctation evenly distributed across whole pronotal surface. Posterolateral impressions weakly impressed but still detectable.

Scutellum black or yellow, regularly rounded at apex or shortly truncated in almost straight line. Surface sparsely micropunctured.

Elytron yellow with three rounded black spots on disc, first one near basal margin between first and fifth rows of punctures, second one on humeral callus, third one just behind midline at about same distance from suture and lateral margin. Lateral margin and posterior part of suture black as well. Postmedian spot at times laterally extended to merge into marginal black pattern. Besides, anterior spots can coalesce to form a large transverse black band along basal margin (Fig. 3f). Again, size of elytral black markings sometimes more or less reduced. Epipleuron totally yellow or, more often, black along posterior half. Elytral outline lengthened, with sides almost straight and slightly convergent posteriorly. Lateral margins narrow, simultaneously visible up to humeral calli when seen from above. Elytral surface moderately shiny with strong, well-impressed punctation distinct up to posterior clivus, arranged in almost regular rows. Intervals flat. Postscutellar area perceptibly raised. Humeral callus prominent, impunctate. Epipleuron, impunctate, slightly rugulose with flat surface.

Pygidium totally yellow or with rounded black spot at apex. Surface bright, covered with shallow punctures and short, semi-erect pale setae.

Ventral parts of thorax black except for prosternal process and outer part of hypomera, being yellow. Abdominal ventrites yellow with central part of ventrites 1–4 light

brown. Medial projection of ventrite 1 yellow. At times, in light coloured specimens, ventral parts totally yellow. Hypomera, mesoepimera and mesoepisterna shiny, with few, well-impressed punctures, almost devoid of setosity. Remainder of ventral surface matt, covered with short, regularly distributed setae and fine, shallow punctures. Prosternal process large, with sides fairly salient, almost straight between anterior coxae; surface almost flat, shallowly punctured, covered with semi-erect setae. Legs totally yellow.

Median depression on fifth abdominal ventrite indistinct, hardly detectable. Posterior margin of ventrite straight. Median lobe of aedeagus (Fig. 3m-o) dorsoventrally flattened, terminated by triangular apex with slightly concave sides. In lateral view apex slightly bent dorsally. Ventral surface weakly convex towards apex. Setose depressions barely delimited, with few arcuate setae.

**Female.** Habitus in Fig. 3d-e (PT). BL = 3.4–3.9 mm, BW = 2.1–2.4 mm, PL = 1.3–1.4 mm, PW = 1.8–2.1 mm. Interocular distance = 7.7–8.8 % of BL.

In females the eyes are smaller and more separated along midline, and mid-frontal suture clearly visible. In addition, dorsal black pattern is generally reduced, and black spots never tend to coalesce. Lastly, ventral parts are often completely yellow.

The fifth abdominal ventrite in females has a quite large, rounded, and deep pit. The bottom of the pit is glabrous, matt, usually yellow, but sometimes frankly black, impunctate but covered by tiny wrinkles. The vasculum of the spermatheca (Fig. 3i) is quite unusual. It is asymmetrical, with no clear-cut separation between a distal and a proximal lobe, hook-shaped, with proximal lobe gradually tapered but terminated with a slightly swollen end. The ampulla is brief, not pigmented. The duct and sperm gland insertions are short and straight. The duct is uniform in size, slender, quite rigid, straight, with a single turn near the vasculum. At the insertion of the ductus, the bursa copulatrix is shaped in a couple of membranous coils.

**Remarks.** In *Griburius equestris* the interocular distance in males is variable, but at least a little gap is always present between the upper lobes of the eyes (Fig. 13c). On the other hand, in *G. mokaya* specimens from Mexico the eyes are clearly in contact for a rather long tract (Fig. 3c). However, it should be noted that in the three Costa Rican males available for study the interocular distance is more similar to that of *G. equestris* than to the Mexican samples of *G. mokaya*. Moreover, the dorsal colouration seems to be rather variable in the new species, according to geographic parameters: in the type locality all the studied specimens show the “typical” pattern of black spots, while in the population from Ixtapa ventral parts are totally yellow in females, elytral spots are smaller and the pronotum is uniformly yellow (apart from a single male), being devoid of the two black rounded discal markings (Fig. 3d-e). At the moment it is not considered opportune to assign the

populations from Ixtapa and Costa Rica to distinct taxa, but it is hoped that additional material will be available to further investigate the matter.

***Griburius puncturatus* sp. nov.**

(Figs 4, 8d)

**Types.** HOLOTYPE: m#, body, aedeagus and detached abdomen glued on the same card, // “MEXICO, Nayarit San Blas July 5 1972 K. Stephan leg.” [white label, printed] // “*Griburius puncturatus* sp. nov. HOLOTYPE D. Sassi des.” [red label, printed] // (FSCA). PARATYPES (28 specimens): MEXICO, JALISCO: Chamela vic. UNAM9-19.VII.1993 (1m#, 1f#, TAMU); 6 km N Chamela 15-17.VII.2002 (1m#, BMNH); Puerto Vallarta airport 15.VII.1987 (1f#, FSCA); Vulcan Colima 1918 (1f#, ZSM). NAYARIT: same data of the holotype (5m#4f#, FSCA, DSPC); San Blas (2f#, MNHUB, ZSM); Navarrete 28.VII.1953 D. Rockefeller Mexican Expedition 1953 (2f#, AMNH); El Cora Tepic (1m#3f#, MNHUB); Compostela 27.VI.1954 (2f#, AMNH); 15 mi SW Compostela 19.VII.1984 (1f#, FSCA); Mecatan NE of Santa Cruz 1.IX.1963 2000-2500ft (1f#, FSCA); Santiago de Ixcuintla (1f#, MNHUB). OAXACA: 2 MI n Candelaria Loxicha 17.VI.1974 at light (1f#, TAMU). All paratypes are labelled: // “*Griburius puncturatus* sp. nov. PARATYPUS D. Sassi des.” [red label, printed] //.

**Type locality.** San Blas (Nayarit, Mexico).

**Etymology.** Named after the black spotted dorsal yellow surface.

**Additional material examined.** JALISCO: Marina Vallarta Puerto Vallarta 26.vii.2021 (1, GBIF). SINALOA: Mazatlán 26.VI.2015 & 27.VI.2016 & 23.VI-19.VII.2017 & 19.VI-18.VII.2018 & 26.VI-1.VII.2019 & 12.VI.2020 & 14.VI-13.VII.2021 (17, GBIF); Cerritos Mazatlán 8.VII.2022 (1, GBIF).

**Distribution.** Mexico.

**Diagnosis.** The new species is similar in morphology to *Griburius gamma*. However, the M-shaped brown marking on pronotal disc is always clearly visible in *G. gamma*, whereas it is missing in the new species. The pronotal punctation is also different, being more closely spaced, more regularly distributed and finer in *G. gamma*. Again, the elytral dark pattern is usually more extended in *G. gamma* and the antennae slightly but perceptibly slenderer and lengthened. Additionally, the shape of the aedeagal median lobe is different, in particular on its apical end.

**Description of male.** Habitus in Fig. 4a-c (HT). BL = 3.3–3.8 mm, BW = 2.0–2.3 mm, PL = 1.3–1.5 mm, PW = 1.8–2.1 mm. Interocular distance = 0.0–2.6 % of BL.

Head totally yellow. Labrum yellow as well. Vertex very shallowly, minutely punctured. Head surface with sparse punctures and scattered, short setosity above all close to ocular lines and between antennal insertions. Mid-cranial suture shallow, but clearly detectable between upper lobes of eyes. Upper lobes of eyes close to each other

along midline usually not really in contact. Ocular lines usually distinct above all along lower part of upper lobes, marked by row of fine but well-impressed punctures, strictly adhering to ocular rim. Ocular canthus large, angular. Antennae (Fig. 4h) with first 5 antennomeres yellow, 3-5 bright, subcylindrical; 6-11 darker, dull, more flattened and more diffusely setose.

Pronotum totally yellow. Pronotal shape elliptical, scarcely transverse, regularly convex. Lateral margins narrow, basically not visible from above, regularly curved, with maximum width at about middle. Surface rather matt covered with strong punctuation mixed with much smaller punctures, irregularly distributed, being denser along sides and posterior margin, sparser at center of disc. More rarely pronotal punctures almost missing. Posterolateral impressions well impressed, narrow, obliquely arranged.

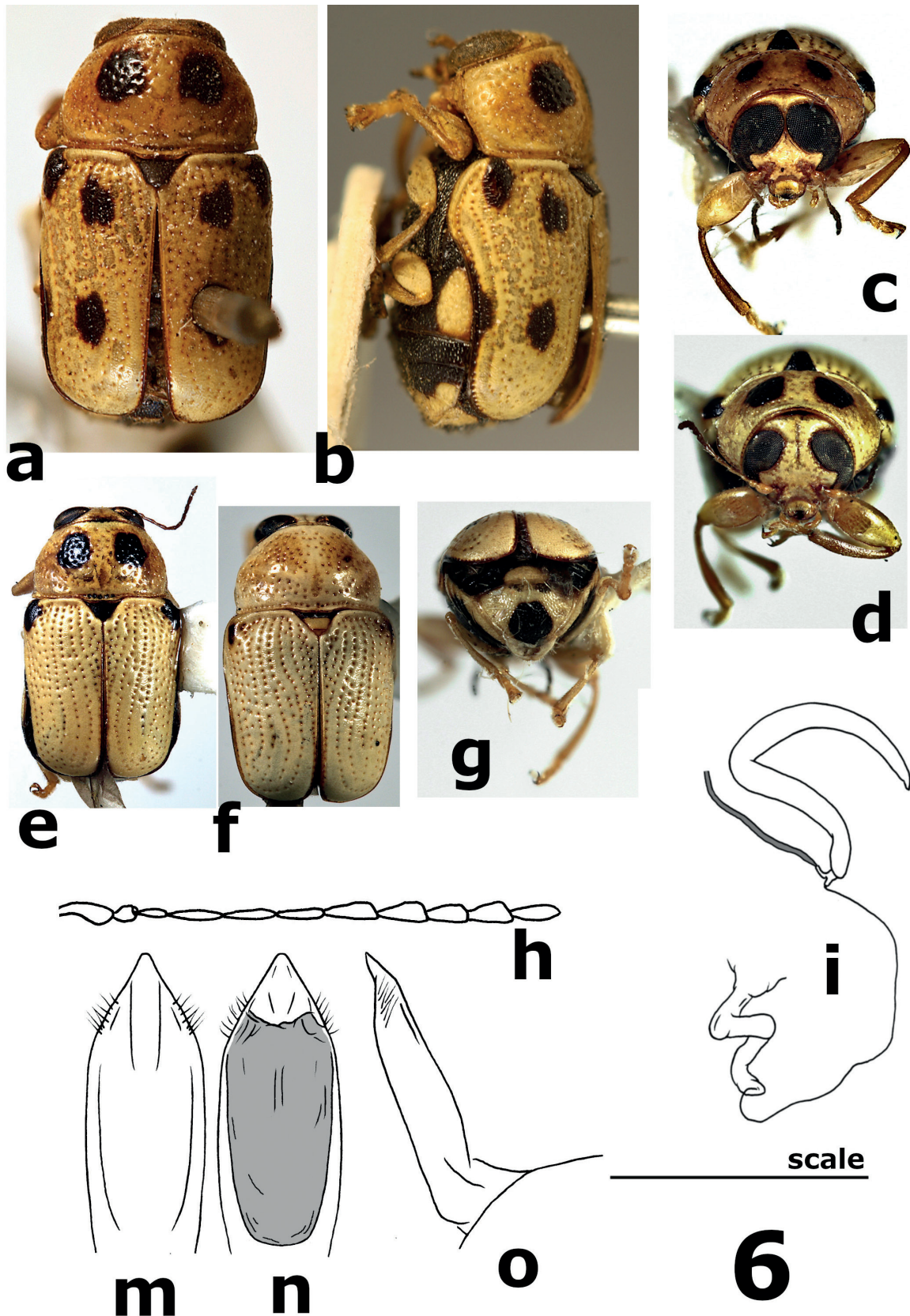
Scutellum yellow, triangular with apex truncated in straight line. Surface sparsely micropunctured.

Elytron yellow with two small, rounded black spots along basal margin, first one between first and second rows of punctures, second one on humeral callus. Further rounded black spot at center of disc, just behind midline. At first third of elytron some punctures larger and deeper, surrounding interstices slightly darkened and perceptibly impressed to give a hint of transverse brownish patch. Apical margin and suture narrowly darkened as well. Bottom of punctures brownish. Epipleuron yellow. Elytral outline with sides almost straight and slightly convergent posteriorly. Lateral margins narrow, simultaneously visible from above only along posterior half. Elytral surface moderately shiny with strong, well-impressed punctuation distinct up to posterior clivus, arranged in almost regular rows. Intervals flat. Postscutellar area perceptibly raised. Humeral callus prominent, impunctate. Epipleuron, impunctate, slightly rugulose with slightly convex surface.

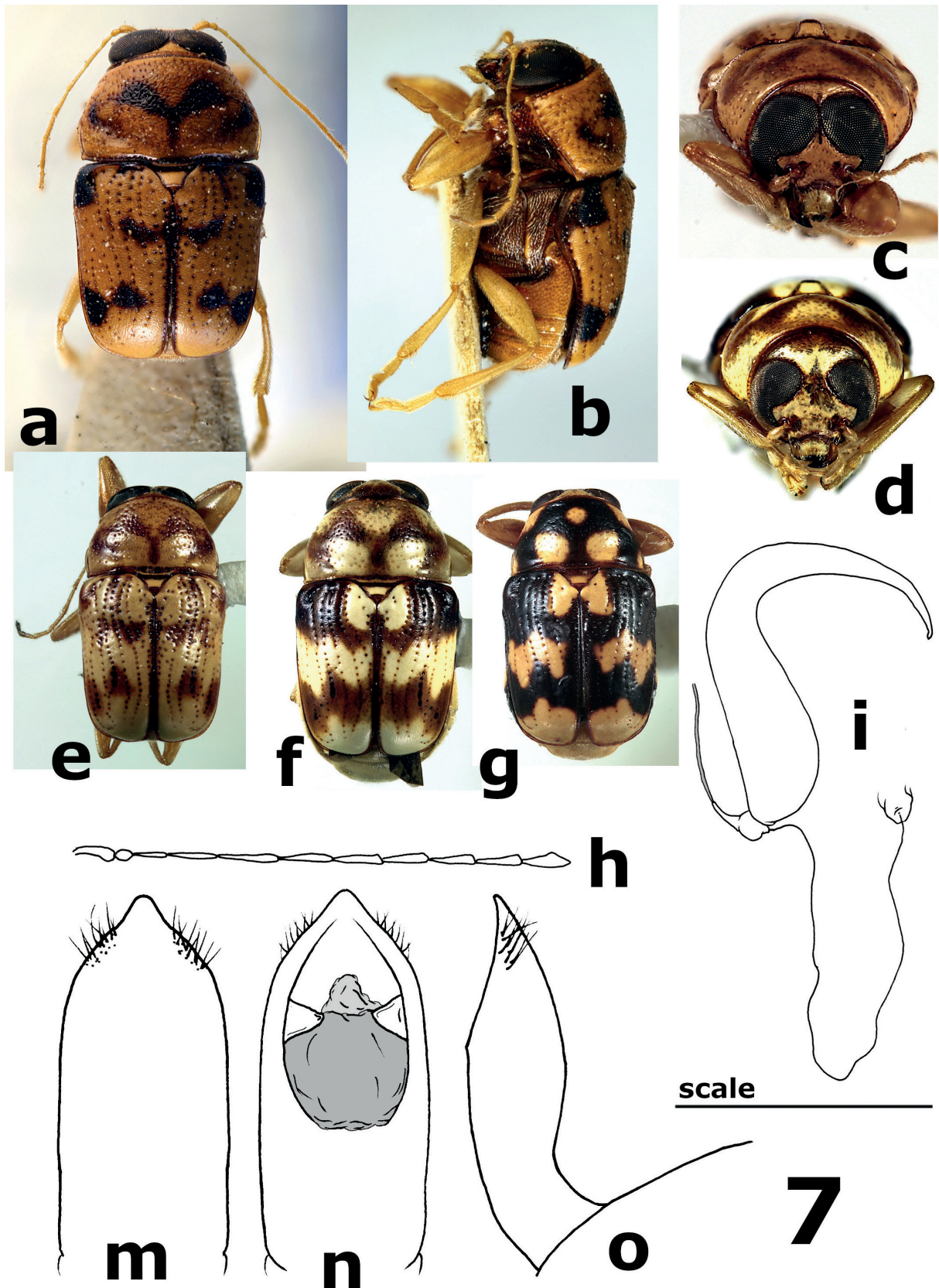
Pygidium totally yellow. Surface bright, covered with shallow punctures and short, semi-erect pale setae.

Ventral parts of thorax and abdomen yellow; only metaepisterna partly brownish. Hypomera, mesoepimera and mesoepisterna shiny almost bare, covered with scattered, strong punctures. Remainder of ventral surface of thorax matt, covered with thick, short, regularly distributed setae and fine, shallow punctures. Prosternal process large, short, with sides almost straight between anterior coxae; surface almost flat and closely but shallowly punctured, covered with long, semi-erect setae. Legs totally yellow.

Median depression on fifth abdominal ventrite indistinct, hardly detectable. Ventrite posterior margin very shallowly notched. Median lobe of aedeagus (Fig. 4m-o) dorsoventrally flattened, almost parallel-sided, terminated by small median denticle. Apex straight in lateral view. Ventral surface marked by low, barely distinguishable, longitudinal carina extended along apical half. Setose depressions very shallowly impressed, with few, minute punctures and arcuate setae.



**Fig. 6** – *Griburius equestris*. **a–b**, habitus, dorsal and lateral view (NT, female); **c**, frontal view, male; **d**, frontal view, female; **e–f**, colour variation, females; **g**, posterior view, male; **m–o**, median lobe of aedeagus in ventral (**m**), dorsal (**n**) and lateral (**o**) view [0.6 mm]; **h**, antenna [0.9 mm]; **i**, spermatheca [0.5 mm]. Square brackets: length of scale segment.



**Fig. 7** – *Griburius gamma*. **a–b**, habitus, dorsal and lateral view (HT, male); **c**, frontal view, male; **d**, frontal view, female; **e–f**, colour variation, male (**e**) and females (**f–g**); **m–o**, median lobe of aedeagus in ventral (**m**), dorsal (**n**) and lateral (**o**) view [0.5 mm]; **h**, antenna [1.5 mm]; **i**, spermatheca [0.3 mm]. Square brackets: length of scale segment.

*Female.* Habitus in Fig. 4d-f (PT). BL = 4.4–5.2 mm, BW = 2.7–3.3 mm, PL = 1.6–2.0 mm, PW = 2.4–3.1 mm. Interocular distance = 9.1–9.6 % of BL.

In females the eyes are smaller and more separated along midline, and the head surface is evenly covered with strong punctuation. Additionally, the dark pattern on the anterior third of elytron is often darker, being transformed into a transverse, additional black spot, extended between the first and the fifth rows of punctures, or even broken into two-three separate rounded spots. The suture and the lateral margin, and at times even part of epipleuron, are black as well.

The fifth abdominal ventrite in females has a quite large, rounded, and deep pit. The bottom of the pit is glabrous, matt, slightly darkened in respect to the surrounding surface, impunctate but covered by tiny wrinkles. The vasculum of the spermatheca (Fig. 4i) is weakly pigmented along the basal half of proximal lobe, which is fairly swollen at base. The distal lobe is long, slender, regularly curved and terminated with an acute apex. The ampulla is slightly pigmented, weakly curved. The duct and sperm gland insertions are short and straight. The duct is uniform in size, slender, quite rigid, devoid of coils and turns. The insertion on the bursa copulatrix is slightly swollen and mildly pigmented.

***Griburius textus* sp. nov.**

(Figs 5, 8e)

**Types.** HOLOTYPE: m#, body, aedeagus and detached abdomen glued on the same card, // “MEXICO Quintana Roo” [white label, printed] // “Isla Mujeres 29.iii.1960 J F G Clarke” [white label, printed] // “*Griburius textus* sp. nov. HOLOTYPE D. Sassi des.” [red label, printed] // (USNMNH). PARATYPES (28 specimens): **MEXICO, QUINTANA ROO:** same data of the HT (14m#9f#, USNMNH, DSPC, MSNM); 30km W. Puerto Morelos 23-VI-2009 MV & blacklight (1f#, BYU); Quintana Roo or. Tulum 13-15.VI.1994 (1f#, MDPC); 10.9 km. S Playa del Carmen 1.VI.1990 (1f#, FSCA). **YUCATÁN:** 16 km W Piste, Hwy 180, 19.V.1987 (1f#, ERPC); // “textus m. Yucatan” [white label, handwritten] // “34199” [white label, handwritten] // (1f#, MLUH). **BELIZE, Stann Creek Dist.:** Rum Point Inn 2.5 mi N Placiencia 21-22.VIII.2001 (1f#, FCSA). All paratypes are labelled: // “*Griburius textus* sp. nov. PARATYPE D. Sassi des.” [red label, printed] //.

**Type locality.** Isla Mujeres (Quintana Roo, Mexico).

**Etymology.** This epithet was found handwritten on a label pinned under the single specimen housed in Suffrian’s collection at MLUH. It was undoubtedly appointed by the German entomologist who eventually did not find the time to describe the new taxon.

**Additional material examined.** **BELIZE, Orange Walk:** Indian Church 5.V.2022 (1, GBIF).

**Distribution.** Belize, Mexico.

**Diagnosis.** The species shows a strong punctuation on pronotum and elytra, which is not a common pattern within *Griburius*. For this characteristic it looks rather like *G. febriculosus*, but pronotal punctures are always rounded and well separated and there is no tendency to coalesce, giving a rugose appearance to the surface, as observed in this latter species. Besides, the dorsal dark colouration is chestnut or reddish or dark brown, never frankly black like in *G. febriculosus*. Additionally, males differ in the aedeagal apex (less pointed) and females in the shape of the spermatheca (Figs 1i and 5i). *G. textus* is also similar to *G. gracilis*, but it differs in the darker dorsal colouration, in the stronger dorsal punctuation and in the larger size.

**Description of male.** Habitus in Fig. 5a-c (PT). BL = 3.6–3.7 mm, BW = 2.2–2.3 mm, PL = 1.4–1.5 mm, PW = 2.1 mm. Interocular distance = 2.7–2.8 % of BL.

Head yellow with vertex, antennal insertion, and subtle line between upper lobes of eyes brownish black. Labrum yellow. Whole head surface almost bare, with few, scattered, shallow punctures above all on frontoclypeal surface and ocular canthi. Mid-cranial suture shallow but clearly detectable between upper lobes of eyes. Upper lobes of eyes close to each other along midline, but not in contact (Fig. 5c). Ocular lines narrow, marked by row of fine punctures, strictly adhering to ocular rim. Ocular canthus angular, not differentiated from the remainder of frontoclypeal surface. Antennae (Fig. 5h) with antennomeres 1-2 yellow; 3-5 partly brownish, bright, subcylindrical; 6-11 darker, dull, more flattened and more diffusely setose.

Pronotum light brown with lateral and anterior margins yellow. Two trapezoidal spots on posterior part of disc, close to midline, touching posterior margin and median line raising from anterior margin and reaching middle of disc yellow as well. Pronotal shape elliptical, scarcely transverse, regularly convex. Lateral margins narrow, visible from above only along posterior third, regularly curved, with maximum width just behind middle. Surface moderately shiny with coarse strongly impressed punctuation evenly distributed across whole pronotal surface. Posterolateral impressions weakly impressed but easily detectable.

Scutellum yellow bordered with brown, posteriorly raised, subtriangular with apex truncated in straight line. Surface sparsely micropunctured.

Elytron yellow irregularly patched with brown along lateral half of disc, above all along anterior third and posterior area just before apical clivus. Lateral margin and suture narrowly brown; bottom of punctures brown as well. Epipleuron yellow. Elytral outline rather short with sides almost straight and convergent posteriorly. Lateral margins narrow, simultaneously visible from above only along posterior half. Elytral surface slightly flattened on disc, moderately shiny with strong, well-impressed punctuation

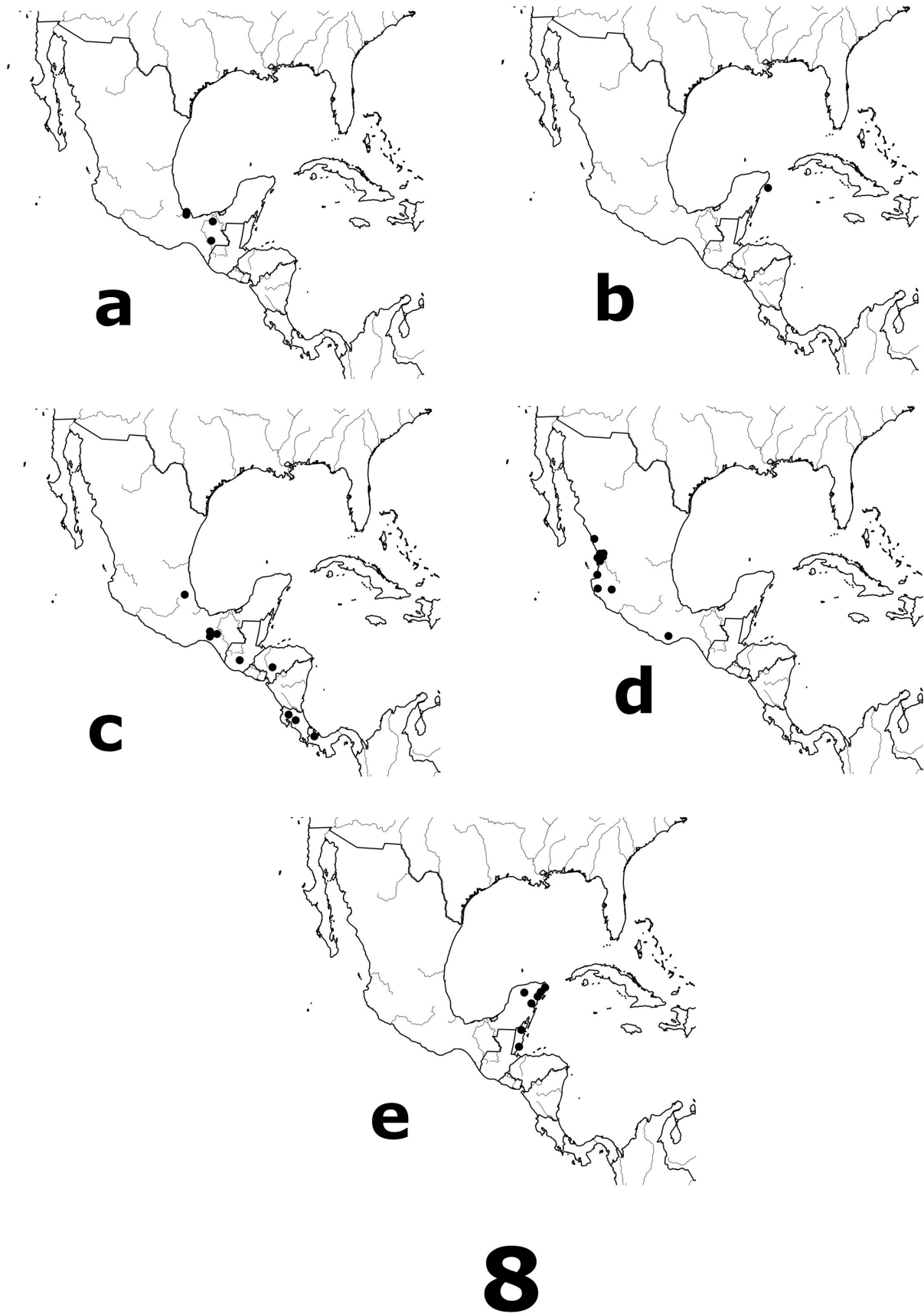


Fig. 8 – Distribution maps. a, *Griburius febriculosus*; b, *G. gracilis*; c, *G. mokaya*; d, *G. puncturatus*; e, *G. textus*.

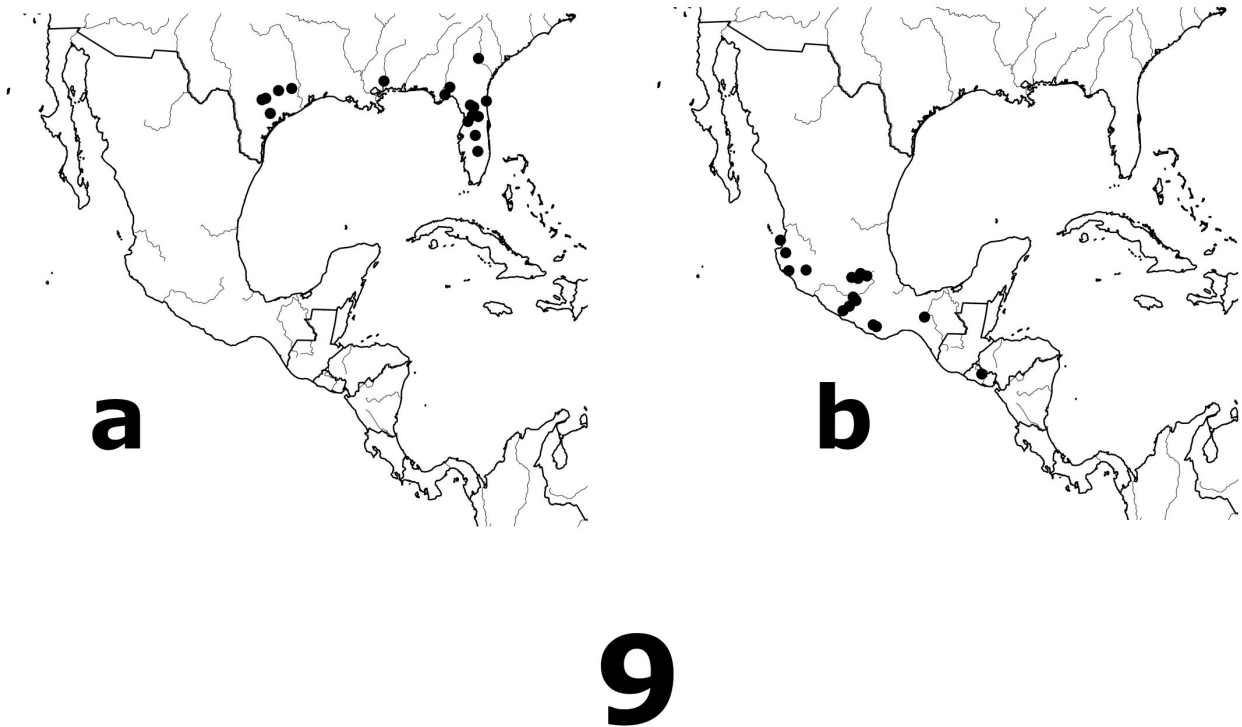


Fig. 9 – Distribution maps. **a**, *Griburius equestris*; **b**, *G. gamma*.

distinct up to posterior clivus, arranged in almost regular rows along inner half of elytron, more confused elsewhere. Intervals slightly raised. Postscutellar area perceptibly raised. Humeral callus prominent, impunctate. Epipleuron smooth, impunctate, with slightly convex surface.

Pygidium totally yellow. Surface bright, covered with shallow punctures and short, semi-erect pale setae.

Ventral parts of thorax light brown, only metasternum almost completely yellow. Abdominal ventrites yellow with central part of ventrites 1-4 light brown. Medial projection of ventrite 1 yellow. Hypomera, almost bare, shiny, covered with dense, strong punctures; mesoepimera and mesoepisterna shiny, almost devoid of punctation. Remainder of ventral surface of thorax matt, covered with thick, short, regularly distributed setae and fine, shallow punctures. Prosternal process large, short, with sides almost straight between anterior coxae; surface almost flat and closely but shallowly punctured, covered with long, semi-erect setae. Legs totally yellow.

Median depression on fifth abdominal ventrite indistinct, hardly detectable. Ventrite posterior margin very shallowly notched. Median lobe of aedeagus (Fig. 5m-o) dorsoventrally flattened, terminated by triangular apex with slightly concave sides. In lateral view apex perfectly straight. Ventral surface marked by very low, linear carina extended from apex to basal foramen. Setose depressions very shallowly impressed, with surface covered by small punctures and long arcuate setae. In dorsal view two flattened membranous lobes almost always protruding from apical foramen.

*Female*. Habitus in Fig. 5d-g (PT). BL = 4.2–4.4 mm, BW = 2.9–3.0 mm, PL = 1.6–1.7 mm, PW = 2.5–2.7 mm. Interocular distance = 9.1–9.5 % of BL.

In females the head surface is brownish with a transverse wavy yellow line, usually discontinuous, between ocular canthi. Lower margin of clypeus and labrum are yellow as well. The eyes are smaller and more separated along midline, and the head surface is evenly covered with coarse punctation. In addition, the brown pattern on the pronotum and elytra is more extended with yellow colour confined to irregular patches along the intervals of the rows of punctures.

The fifth abdominal ventrite in females has a quite large, rounded, and deep pit. The bottom of the pit is glabrous, matt, slightly darkened in respect to the surrounding surface, impunctate but covered by tiny wrinkles. The vasculum of the spermatheca (Fig. 5i) is scarcely pigmented, sickle shaped with straight, swollen proximal lobe. The distal lobe is slender, regularly curved and terminated with a blunt apex. The ampulla is not pigmented, almost square. The duct insertion is short while the sperm gland insertion is rather long, slender and curved. The duct is uniform in size, slender, quite rigid, straight, devoid of coils and turns. The insertion on the bursa copulatrix is simple, neither swollen nor pigmented.

**Remarks.** Male specimens were available for the study only from the type locality (Isla Mujeres). Mainland material consists only in females which differ in slightly larger size and darker colouration.

***Griburius equestris*** (Olivier, 1808)

(Figs 6, 9a)

*Cryptocephalus equestris* Olivier, 1808: 804; Suffrian, 1852: 122 [*Scolochrus*] (taxonomic notes); Suffrian, 1858: 389 [*Scolochrus*] (taxonomic notes); Jacoby, 1889: 134 [*Scolochrus*] (taxonomic notes, misidentification); Clavareau, 1913: 89 [*Griburius*] (catalogue); Blackwelder, 1946: 639 [*Griburius*] (catalogue); Riley et al., 2001: 11 [*Griburius*] (taxonomic notes); Chamorro, 2013: fig. 15 [*Griburius*] (taxonomic notes, misidentification); Ordóñez-Reséndiz & López-Pérez, 2021: 91 [*Griburius*] (catalogue, misidentification).

**Types.** The types of this species were carefully looked for in MNHN in Paris, but unsuccessfully. Unwillingly, they must be considered, as many of Olivier's types, permanently missing. Luckily, Olivier published a small but clear enough drawing of a studied specimen. Probably based on this drawing, Suffrian (1858) was able, correcting a previous misinterpretation (Suffrian 1852), to track down and describe a specimen perfectly corresponding to Olivier's idea in the BMNH collection. Despite this, the species has long been confused (see above in the previous paragraph) in publications and collections, with other similar species, such as *Griburius larvatus* (Newman, 1840) (see for instance Sassi, in press). For this reason, in order to define the meaning of the species in a stable way, the designation of a neotype is proposed here, choosing the specimen studied by Suffrian and still preserved at the BMNH. NEOTYPE: f#, pinned, genitalia not studied, // "Scolochrus equestris Oliv: N: America." [white label, handwritten] // "Type Suffr: Coll: Deyrolle [white label, handwritten] // "Baly Coll." [white label, printed] // "*Griburius equestris* (Olivier, 1808) (*Cryptocephalus equestris*) NEOTYPUS D. Sassi des." [red label, printed] // (BMNH).

**Type locality.** "Nord America"

**Additional material examined.** U.S.A., **FLORIDA**, **Alachua Co.:** Gainesville 14.III.1982 (2, USNMNH); Gainesville 10.X.1985 (1, FIMU); Sugarfoot Gainesville 20.III.2022 (1, GBIF). **Hernando Co.:** Inverness 3.V.1980 (1, USNMNH). **Highlands Co.:** Archbold Biol. Sta. 7.IV.1971 & 13-17.IV.1981(3, USNMNH); Archbold Biol. Sta. 5.IV.1998 (2, BYU); Archbold Biol. Sta. 13-17.IV.1981 & 4.IV.1984 & 12.IV.1986 (3, FIMU); Archbold Biol. Sta. Red Hill Area 31.III.2005 at black light (1, USNMNH); Archbold Biol. Sta. Lk. Placid 7.IV.1983 (1, FIMU). **Leon Co.:** Tallahassee 3.IV.1982 at light (1, ERPC); Tallahassee 11.IV.1976 (1, ERPC). **Levy Co.:** hwy 24 at Alachua Co. line 9.IV.1980 (1, ERPC). **Marion Co.:** 2.5 mi SSE Miccanopy 6-13.III.2001 (1, TAMU); Ocala Nat. For. Hopkins Prairie 29.IV.1988 (1, ERPC); East Silver Springs Shores Malauka Road nr. Meadow Lake 10.IV.1992 (2, ERPC); SR 200 Paddock Mall on *Quercus virginiana* 15.IV.2008 (1, BYU). **Polk Co.:** Lk. Marion Crk. Rd. 25.III.1999 (1, US-

NMNH). **St. Johns Co.:** St. Augustine 29°55.4' N 81°17.9' W 10.IV.2004 (2, BYU). **Wakulla Co.:** Ochlockonee State Park 23.IV.1986 (1, FIMU). **GEORGIA, Johnson Co.:** 1 mi E Kite 7.IV.1977 (1, ERPC). **MISSISSIPPI, Jackson Co.:** Jackson County 25.III.2020 (1, GBIF). **TEXAS, Bastrop Co.:** 7.3 mi S Rosanky 8.V.2005 (1, DSPC); Buescher St. Pk. 22.IV.1973 (1, TAMU). **Brazos Co.:** College Sta. Riley Estate 30°35'18" N 96°15'12" W 17-19.IV.2006 & 13.IV.2007 (5, ERPC); College Station Lick Ck. Pk. 13.IV.1996 (2, ERPC); College Station 21.IV.1933 (2, TAMU). **Burleston Co.:** 7 mi NW jct. Hwy 21 on FM 908 30.V.2004 (1, ERPC). **Tyler Co.:** 4 mi E Spurger 24-25. III.1995 (2, TAMU). **Victoria Co.:** 3 mi S Inez 6.V.1978 (1, FIMU).

**Distribution.** U.S.A.

**Diagnosis.** The species is very similar in size, body outline and colour pattern to *G. mokaya*, but only in a single case the pronotal black spots are missing, while this condition is usual at least in some populations of *G. mokaya*. Additionally, the elytral spots are always rounded and do not seem to have the tendency to coalesce. The major differences, however, are shown by the different ventral profile of the aedeagal median lobe (Figs 3o and 6o) and the different shape of the spermathecal vasculum (Figs 3i and 6i).

**Description of male.** Habitus in Figs 6c, 6g. BL = 3.2–3.4 mm, BW = 1.9–2.1 mm, PL = 1.1–1.2 mm, PW = 1.6–1.9 mm. Interocular distance = 0.0–2.9 % of BL.

Head totally yellow, at times vertex and antennal insertions darkened. Labrum yellow as well. Head surface almost devoid of punctation and setosity. Mid-cranial suture shallow, but clearly detectable above and below the upper lobes of eyes. Upper lobes of eyes very close to each other but usually not really in contact, so that narrow interspace and mid-cranial suture are visible in between. Ocular lines strictly adhering to ocular rim, sometimes marked with hint of very fine punctures aligned along lower part of upper lobes. Ocular canthus large, angular, with surface not differentiated by remainder of frontoclypeus. Antennae (Fig. 6h) with first 5 antennomeres yellow, 3-5 bright, subcylindrical; 6-11 darker, dull, more flattened and more diffusely setose.

Pronotum yellow with two rounded black spots on central part of disc, at sides of midline. Rarely such spots slightly obliquely elongated, or smaller, but never missing. Sometimes a hint of longitudinal brownish line near posterior margin, in front of scutellum. Pronotal shape elliptical, scarcely transverse, slightly flattened. Lateral margins narrow, visible from above only along posterior half, slightly angulate just behind middle, where maximum width occurs. Surface moderately shiny with usually strongly impressed punctation almost evenly distributed across whole pronotal surface. Sometimes punctures thinner on central part of disc. Posterolateral impressions weakly impressed but easily detectable.

Scutellum black, regularly rounded at apex or shortly truncated in almost straight line. Surface sparsely micro-punctured.

Elytron yellow with three rounded black spots on disc, first one near basal margin between first and fifth rows of punctures, second one on humeral callus, third one just behind midline at about same distance from suture and lateral margin. Posterior part of lateral margin black as well. Elytral black pattern sometimes more or less reduced to almost totally missing, but at least brownish marking on humeral callus always present. Elytral outline lengthened, with sides almost straight and slightly convergent posteriorly. Lateral margins narrow, simultaneously visible along posterior half when seen from above. Elytral surface moderately shiny with strong, well-impressed punctation distinct up to posterior clivus, arranged in almost regular rows. Intervals flat. Postscutellar area slightly raised. Humeral callus prominent, impunctate. Epipleuron, impunctate, slightly rugulose with flat surface.

Pygidium yellow with rounded black spot at apex. Surface bright, covered with shallow punctures and short, semi-erect pale setae.

Ventral parts of thorax black with yellow hypomera and prosternal process. Abdominal ventrites black with large yellow margins. Hypomera, mesoepimera and mesoepisterna shiny, with few, well-impressed punctures, almost devoid of setosity. Remainder of ventral surface matt, covered with short, regularly distributed setae and fine, shallow punctures. Prosternal process large, with sides slightly salient, almost straight between anterior coxae; surface almost flat, shallowly punctured, covered with semi-erect setae. Legs totally yellow.

Median depression on fifth abdominal ventrite indistinct, hardly detectable. Ventrite posterior margin straight. Median lobe of aedeagus (Fig. 6m-o) dorsoventrally flattened, terminated by triangular apex with regularly convergent, straight sides. In lateral view apex slightly bent dorsally. Ventral surface weakly convex towards apex. Setose depressions barely delimited, with few short setae.

*Female.* Habitus in Fig. 6a-b (NT), 6d-f. BL = 3.4–3.9 mm, BW = 2.1–2.3 mm, PL = 1.2–1.3 mm, PW = 1.8–2.0 mm. Interocular distance = 7.7–8.8 % of BL.

In females the eyes are smaller and more separated along midline, and mid-frontal suture clearly visible. The colour pattern is similar to the males one, but in a single studied specimen the pronotal black spots are totally missing.

The fifth abdominal ventrite in females has a quite large, rounded, and deep pit. The bottom of the pit is black, glabrous, matt, impunctate but covered by tiny wrinkles. The vasculum of the spermatheca (Fig. 6i) is subangular, hook-shaped, with proximal section twisted, slender and almost uniform in section. The ampulla is brief, with the duct insertion short and straight. The sperm gland insertion is rather long and curved. The duct is uniform in size,

slender, straight. At the insertion of the ductus, the bursa copulatrix shows a couple of membranous coils.

### *Griburius gamma* (Jacoby, 1889)

(Figs 7, 9b)

*Scolochrus gamma* Jacoby, 1889: 132; Clavareau, 1913: 89 [*Griburius*] (catalogue); Blackwelder, 1946: 640 [*Griburius*] (catalogue).

**Types.** Jacoby (1889) reported that nine specimens were available for the study, and he unambiguously identified one of them as type of the species (“I have taken for the type the specimen with the darkest markings”). For this reason, this specimen, kept in BMNH, was here identified as the holotype of the species. HOLOTYPE: m#, glued, // “Acapulco, Guerrero. Höge.” [white label, printed] // “Scolochrus gamma Jac.” [blue label, handwritten] // “B.C.A., Col. VI, 1. Suppl. Scolochrus gamma, Jac.” [white label, printed] // “Sp. figured” [white label, printed] // “Type H. T.” [white label with red margin, printed] // “Syntype” [white label with blue margin, printed] // “*Griburius gamma* (Jacoby, 1889) (*Scolochrus gamma*) HOLOTYPE D. Sassi des.” [red label, printed] // (BMNH). PARATYPES: Four further specimens belonging to the same series are housed in BMNH and therefore they must be considered paratypes: 4 specimens, glued, same data of the holotype (BMNH). In addition, one male specimen belonging to the same series is kept in MCZ and labelled: // “Acapulco, Guerrero. Höge.” [white label, printed] // “S. gamma Jac” [blue label, handwritten] // “1<sup>st</sup> Jacoby coll.” [white label, printed] // “Type 8648” [red label, partly handwritten] // (MCZ). For the same reasons pointed out before, it must as well be considered a paratype of the species. All paratypes are labelled: // “*Griburius gamma* (Jacoby, 1889) (*Scolochrus gamma*) PARATYPE D. Sassi des.” [red label, printed] //.

**Type locality.** Acapulco (Guerrero, Mexico).

**Additional material examined.** **EL SALVADOR, Cuscatlán:** El Rosario 4.VII.1953 & 17-20.VII.1955 (5, USNMNH). **Cabañas:** Tejutepeque 23.VII.2021 (1, GBIF). **MEXICO, CHIAPAS:** 16 km W Ocozacoautla El Aguacero 10.VI.2009 (1, BYU). **COLIMA:** 6 mi w Colima 6.VIII.1978 (1, TAMU); 9.7 km S Colima 335m 4.VIII.1988 (2, TAMU). **GUERRERO:** Acapulco coll. Flohr (3, MNHUB); 38 km W Iguala 18° 31' N 99° 44' W 16.VII.1995 (6, USNMNH); 10.3 mi S Iguala 23.VII.1981 (1, TAMU); 8 km S Mazatlan 1130m 29.VI.1992 (1, ERPC); 4 mi W Chilpancingo 15.VII.1984 (3, TAMU); 12 mi S Chilpancingo 12.VII.1966 (1, TAMU); 3.3 km Cacahuamilpa 1495 m 2.VII.1992 (2, ERPC); Grutas de Cacahuamilpa 30 km N Taxco 27.VIII.1993 (1, MNHUB); 6 km W Teloloapan 20.IX.1989 (1, TAMU); Tierra Colorada 12 mi N Guerrero 2600' 5.VIII.1954 (1, CNCI). **JALISCO:** 4 mi S El Tuito 1200' hwy 20010.VIII.1982 (2, ERPC); Chame-la Vic. ESTC UANM 9-19.VII.1993 (3, TAMU); Chamela

Res. Sta. 13.VII.1986 (1, BYU); 18 mi N Barra de Navidad 23.VIII.1976 (1, BYU). **MORELOS:** Xochicalco Ruins 18° 48' N 99° 16' W 14.VII.1995 (5, USNMNH); Cuernavaca 15.VIII.1954 (1, USNMNH). **OAXACA:** 4.4 mi NE San Pedro Mixtepec 16.VII.1985 (1, TAMU); 2.7 mi NW El Camarón 21-22.VII.1974 (1, TAMU). **NAYARIT:** 2 km E Punta de Mita 30.VII-2.VIII.1991 (4, TAMU). **PUEBLA:** Izúcar de Matamoros-Cautla Rd. Route 160 km 129 24.VII.1997 (1, USNMHN).

**Distribution.** El Salvador, Mexico. New from El Salvador.

**Diagnosis.** The species looks very similar to *G. puncturatus*. It can be distinguished from the latter by the different (more transverse and more flattened) pronotal shape. Besides, punctures on pronotum are usually denser and finer and the “gamma-shaped” dark marking is always visible while in *G. puncturatus* the pronotum is uniformly yellow. Finally, the aedeagal median lobe looks rather different, above all on its apical section.

**Description of male.** Habitus in Fig. 7a-b (HT), 7c, 7e. BL = 3.8–3.9 mm, BW = 2.3–2.4 mm, PL = 1.3–1.4 mm, PW = 2.1–2.2 mm. Interocular distance = 0.0–2.6 % of BL.

Head totally yellow. Labrum yellow as well. Vertex very shallowly, minutely punctured. Head surface with sparse punctures and scattered, short setosity above all between antennal insertions. Mid-cranial suture shallow, but clearly detectable between upper lobes of eyes. Upper lobes of eyes close to each other along midline but usually not really in contact. Ocular lines usually clearly visible above all along lower part of upper lobes, strictly adhering to ocular rim. marked by row of fine, shallowly impressed punctures. Ocular canthus large, angular, with surface not differentiated by remainder of frontoclypeus. Antennae (Fig. 7h) long, yellow with last two antennomeres slightly darkened. Antennomeres 3-5 slender, bright, subcylindrical; 6-11 slender as well, dull, slightly more flattened and more diffusely setose.

Pronotum yellow with large, M-shaped brown marking extended across pronotal disc, leaving free only anterior and lateral margins. Pronotal shape elliptical, transverse, slightly flattened on disc. Lateral margins narrow, only basal half visible when seen from above, regularly curved, with maximum width at about middle. Surface rather matt, covered with fine punctures rather regularly distributed. Posterolateral impressions well impressed, narrow, obliquely arranged.

Scutellum yellow, triangular with apex truncated in straight line. Surface sparsely micropunctured.

Elytron yellow with brown markings of variable appearance: “typical” pattern consists of six brown spots, two of them, usually almost coalescent, forming a curved marking around scutellar area; three spots sitting on oblique line from humeral callus to beginning of apical clivus; one spot, further back than previous ones, close to lateral margin. All spots often coalescing in different

ways giving transversal, more or less discontinued bands. Sometimes part of dark spots missing. Apical margin and suture narrowly darkened as well. Bottom of punctures brownish. Epipleuron yellow. Elytral outline with sides almost straight and slightly convergent posteriorly. Lateral margins narrow, simultaneously visible from above only along posterior half. Elytral surface moderately shiny with fine but well-impressed punctation, distinct up to posterior clivus, arranged in almost regular rows. At about one third of length usually one shallow but well-visible transverse impression, extended from first to fifth rows of punctures. Intervals flat. Postscutellar area slightly raised. Humeral callus prominent, impunctate. Epipleuron impunctate, slightly rugulose with slightly convex surface.

Pygidium totally yellow Surface bright, covered with shallow punctures and short, semi-erect pale setae.

Ventral parts of thorax and abdomen brown. Abdominal ventrites brown with large yellow band along margins; median projection of abdominal ventrite 1 sometimes yellow as well. Hypomera, mesoepimera and mesoepisterna shiny, almost devoid of punctures and setosity. Remainder of ventral surface of thorax and abdomen covered with rather sparse, regularly distributed setae and fine, shallow punctures. Prosternal process large, with sides slightly salient, almost straight between anterior coxae, terminated with rounded apex; surface almost flat and closely punctured, covered with long, semi-erect setae. Legs totally yellow.

Median depression on fifth abdominal ventrite indistinct, hardly detectable. Ventrite posterior margin straight. Median lobe of aedeagus (Fig. 7m-o) dorsoventrally flattened, almost parallel-sided, terminated by triangular apex with slightly concave sides, devoid of true terminal denticle. Apex slightly bent dorsally in lateral view. Ventral surface smooth, slightly convex. Setose depressions very shallowly impressed, with few, minute punctures and almost straight setae.

**Female.** Habitus in Fig. 7d, 7f-g. BL = 4.0–4.7 mm, BW = 2.6–2.9 mm, PL = 1.4–1.5 mm, PW = 2.3–2.6 mm. Interocular distance = 7.5–8.5 % of BL.

In females the eyes are smaller and more separated along midline and antennae are shorter and less distinctive than in males. Additionally, the elytral pattern is darker in some specimens, being blackish instead of brown.

The fifth abdominal ventrite in females has a large, rounded, and deep pit. The bottom of the pit is glabrous, matt, slightly darkened in respect to the surrounding surface, impunctate but covered by tiny wrinkles. The vasculum of the spermatheca (Fig. 7i) is scarcely to fairly pigmented along the base of the proximal lobe, sickle shaped with straight, slightly swollen proximal lobe. The distal lobe is slender, regularly curved and terminated with an acute apex. The ampulla is not pigmented, almost square. The duct insertion is short. The sperm gland insertion is rather long and curved. The duct is uniform in size, quite

robust and rigid, straight, with a single turn close to the vasculum, then straight up to the bursa copulatrix. The insertion on the bursa copulatrix is simple, neither swollen nor pigmented.

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