

Gianni ALLEGRO*, Pier Mauro GIACHINO**

Three new *Zuphioides* species from South America (Coleoptera, Carabidae, Zuphiini)

Abstract: *Zuphioides walterrossii* n. sp. and *Zuphioides olaffaegeri* n. sp. are described from Ecuador, *Zuphioides visinonii* n. sp. from Bolivia. Additionally, the holotypes of *Zuphioides columbianum* (Chaudoir, 1872) and *Z. brasiliense* (Chaudoir, 1872), both deposited in MNHN, are illustrated. Finally, an updated key to all *Zuphioides* species so far recorded from South America is provided.

Riassunto: *Tre nuovi Zuphioides del Sud America (Coleoptera, Carabidae, Zuphiini).*

Vengono descritti *Zuphioides walterrossii* n. sp. e *Zuphioides olaffaegeri* n. sp. dell'Ecuador, nonché *Zuphioides visinonii* n. sp. della Bolivia. Vengono inoltre illustrati gli ologotipi di *Zuphioides columbianum* (Chaudoir, 1872) e di *Z. brasiliense* (Chaudoir, 1872), entrambi conservati presso MNHN. Infine, viene fornita una chiave aggiornata per l'identificazione di tutte le specie di *Zuphioides* conosciute fino a oggi in Sudamerica.

Key words: taxonomy, *Zuphioides visinonii* n. sp., *Zuphioides walterrossii* n. sp., *Zuphioides olaffaegeri* n. sp., Dryptinae, identification key.

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INTRODUCTION

The first review of the American species of the genus *Zuphium* was published by Liebke (1933), who added 10 new species to the 11 already known, at that time, from this continent. Almost half a century later, Mateu planned an updated review of the American *Zuphium*: he published a first note concerning the North American species, including Mexico (Mateu, 1981), but the expected second and third notes dealing with the Central and South American species never followed. After this note, Mateu only published an article of taxonomic concern regarding three species described by Liebke (Mateu, 1985), and a second one describing a new species from Argentina (Mateu, 1995).

More recently, a new taxonomic arrangement of the genus *Zuphium* was proposed by Ball & Shpeley (2013), who transferred 23 American *Zuphium* species to *Zuphioides* Ball & Shpeley, 2013, a new genus (type species *Zuphium mexicanum* Chaudoir, 1863), a new genus grouping all the *Zuphium* of authors so far recorded from the Western Hemisphere, based on a morphological gap between the taxa of the New World and the ones of the Eastern Hemisphere. This paper also contains phylogenetic considerations

on the genera *Zuphioides* and *Coarazuphium*, which were considered as adelphotaxa, as well as in-depth details on their morphology.

Later on, *Zuphium juengeri* Mateu, 1995 was also recognized as belonging to the genus *Zuphioides* (Lemaire & Jourdan, 2022; Allegro, 2025), and a further species, *Zuphioides grandisterrae* Lemaire & Jourdan, 2022, was recently described. The genus *Zuphioides* thus currently includes 25 American species, 11 of them recorded from South America (Anichtchenko, 2025). It is worth noting that many species are rare and scarcely represented in collections, and their type series are frequently composed of a single or a few specimens, the oldest ones sometimes lost or damaged.

Our interest in this genus began when we received three specimens collected in Ecuador (Manabí) by Walter Rossi. We provisionally attributed these specimens to *Zuphioides columbianum* (Chaudoir, 1872), based on the key by Liebke (1933), due to their superficial morphological correspondence with this species, in particular with regard to body size and color. Moreover, the only record of *Zuphioides* for Ecuador was that of *Z. columbianum*, based on 8 specimens from

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Guayaquil, doubtfully attributed by Liebke (1933) to this species, originally described from Colombia.

When we examined an excellent photograph of the holotype of *Z. columbianum* by Olivier Montreuil (Muséum National d'Histoire Naturelle) (Fig. 1), despite the poor conservation state of this specimen, a female without head, we realized that the specimens from Manabí actually belong to a different species, which is described herein as *Zuphioides walterrossii* n. sp.

Successively, we could check, thanks to Olaf Jäger (Senckenberg Naturmuseum, Dresden, Germany), 6 specimens from Guayaquil of the series of 8 doubtfully attributed by Liebke (1933) to *Z. columbianum*, and we realized that they undoubtedly belong to a further different species, distinct from *Z. walterrossii* n. sp. too, which is described herein as *Zuphioides olafjaegeri* n. sp. The two remaining specimens of this series were retained by Liebke and successively borrowed by Mateu: they probably went lost, as they were not found either in the Liebke Collection (Warsaw) or in the Mateu Collection (Turin).

Furthermore, we had the opportunity to study three specimens from Bolivia collected by Andrea Visinoni: they also proved to belong to a new species, which is here described as *Zuphioides visinonii* n. sp.

Finally, an updated key to all *Zuphioides* species so far recorded from South America is provided, also including *Z. brasiliense* (Chaudoir, 1872), which was not considered in the key by Liebke (1933), based on the characters of the holotype deposited in MNHN (Fig. 2).

MATERIALS AND METHODS

The specimens studied or mentioned in the text are deposited in the following museums and private working collections:

CAI = Gianni Allegro working Collection (Moncalvo, Asti, Italy).

CGi = Pier Mauro Giachino working Collection (San Martino Canavese, Torino, Italy).

MNHN = Muséum National d'Histoire Naturelle, Paris, France.

MIZ = Museum and Institute of Zoology of the Polish Academy of Sciences, Warsaw, Poland.

SNG = Senckenberg Naturmuseum, Dresden, Germany.

The abbreviations used for the type material are:

HT = holotype.

PT(T) = paratype(s).

The type locality is quoted in the original label form.

Apparent body length (ABL) is measured from apex of labrum to apex of longer elytron; total length (TL) is measured from the apex of mandibles to apex of abdomen. PL: pronotum length from apical to basal margin along midline; PW: pronotum width at the widest point; EL: elytral length from humerus to apex of longer elytron; EW: elytron width at the widest point; HW=head width at eye level.

Digital images of *Z. walterrossii* n. sp., *Z. olafjaegeri* n. sp. and *Z. visinonii* n. sp. were taken by a Leica DFC295 camera mounted on a Leica M205 C stereomicroscope, using Leica Application System V4.0 software. The digital images of the holotypes of *Z. columbianum* and *Z. brasiliense* were taken by Olivier Montreuil (MNHN).

The annexed key to the *Zuphioides* species recorded to-date from South America is mainly based on the one published by Liebke (1933), including the newly described species as well as *Z. brasiliense* (Chaudoir, 1972). As we were not able to examine type material of all *Zuphioides* species currently known, the key has been compiled, when necessary, using characters taken from the original descriptions of authors. Character states of *Z. columbianum* and *Z. brasiliense* were checked on the holotype.

Zuphioides walterrossii n. sp.

LSIDurn:lsid:zoobank.org:act:

CAD6372C-DEE7-4980-8C69-FB58811533BA

TYPE LOCALITY. Ecuador, Manabí, swamp near S. Antonio. [Humedal 'La Segua'] [80°10'15.4"W - 00°43'22.4"S]

TYPE SERIES. Holotype ♂: Ecuador, Manabí, swamp near S. Antonio, 14.VII.2008, W. Rossi legit (CAI). Paratypes: 2 ♂♂: same data as HT (CAI, CGi).

DIFFERENTIAL DIAGNOSIS. A small sized fully winged zuphiine species belonging to the genus *Zuphioides*, pubescent throughout with a short yellowish pubescence. Pronotum and elytra reddish-brown; head a little darker; legs, mouth parts and antennae yellowish-brown, a little paler than upper body; eye diameter about 1/2 of temple length; pronotum about as long as wide, with posterior angles right or sub-acute and laterally scarcely prominent; elytra slender, with striae superficially impressed and intervals scarcely convex, transversally rugulose; elytra obliquely sub-truncate at apex, with apical margin delicately sinuate.

It is distinguished from all other South American *Zuphioides* species by its peculiar character set of body size and color, antennal length, shape of pronotum and elytra (see identification key). In particular, it is distinguished from *Z. columbianum* by shape of pronotum (as long as wide vs. distinctly transverse) (Figs. 3 and 4) and shape of elytra (slender vs. moderately slender). Despite the few specimens available for comparison (and despite the lack of comparison of male genitalia), the striking morphological differences of pronotum and elytra of the new species respect to the holotype of *Z. columbianum* are, in our opinion, highly significant so as to justify the description of a separate species. Moreover, *Z. walterrossii* n. sp. differs from *Z. olafjaegeri* n. sp., the most similar species, mainly by longer antennomeres 5-8 (2.4 times vs. 2 times longer than wide), shape of pronotum (Figs. 4 and 5) and shape of male genitalia.

DESCRIPTION. A small sized *Zuphioides* species: TL: 4.37-4.61 (HT ♂ 4.61 mm); ABL: 4.04-4.26 mm (HT ♂ 4.26 mm).

Habitus and color (Fig. 6): body moderately slender, pubescent throughout with a short reclined yellowish pubescence; elytra delicately dilated backwards; body color reddish-brown, with head a little darker and with mouth parts, antennae and legs yellowish-brown, paler.

Head (Fig. 7): brownish in color (paler anteriorly), sub-triangular, scarcely narrower than pronotum (HW/PW=0.94), dorsally distinctly punctate, but less densely than pronotum; dilated behind eyes and abruptly restricted in a thin neck impunctate, less than 1/3 as wide as head; eyes moderately small, scarcely convex, oval but posteriorly obliquely truncate, with diameter nearly 1/2 of temple length; one pair of supra-orbital setae above eyes; one pair of occipital setae posteriorly; microsculpture superficial, in polygonal meshes; frontal impressions superficial, broad and very short, ending before the anterior edge of eye; temples convex and evenly rounded, densely pubescent with short bristles and almost long two times the diameter of eye; a distinct, narrow supraorbital carina above antennal insertion. Labrum rectangular, with six setigerous punctures on anterior margin, the lateral ones longer than others. Clypeus transverse, trapezoid, reddish, paler than head; a couple of central setae at anterior margin of clypeus and two further setae at each side; a pair of long bristles at sides near base. Antennae yellowish-brown, moderately long and slender, surpassing

elytral base when stretched backwards, densely pubescent; the first antennomere longer than antennomeres 2-4 together, the fifth to eighth ones about 2.4 times longer than wide; the first antennomere with a single long pre-apical seta. Mandibles moderately long, pointed and abruptly curved at apex. Mentum distinctly broader than long, sparsely pubescent, deeply emarginate at anterior margin, with a large, blunt mentum tooth; epilobes rather broad, laterally broad and anteriorly pointed; suture between mentum and submentum present. Maxillary and labial palpi of about equal size and form, with apical margin obliquely truncate; penultimate labial palpomere multisetose.

Thorax (Fig. 8): PL: 0.85-0.89 mm (HT ♂ 0.87 mm); PW: 0.87-0.89 mm (HT ♂ 0.88 mm); PL/PW: 0.98-1.00 (HT ♂ 0.99). Pronotum densely and moderately coarsely punctate throughout (the distance among punctures is longer than their diameter), without any distinct microsculpture, pubescent with moderately long, yellow, semi-erect setae; form about as long as wide, widest at anterior fourth; side margins almost parallel at anterior half and then markedly sinuate backwards up to the basal angles, which are right or sub-acute, moderately sharp at apex and laterally scarcely prominent; post-angular seta present; posterior margin distinctly pedunculate at middle; latero-basal impressions wide and markedly impressed, flattened towards rear angles; front angles broadly rounded; a marginal seta at anterior eighth on each side; lateral margin narrowly darkened, with marginal bead narrow on overall length, at base joining with the basal impressions; anterior and posterior margins unbordered; medial longitudinal sulcus deep, ending before apex and base.

Elytra: EL: 2.40-2.50 mm (HT ♂ 2.46 mm); EW: 0.73-0.76 mm (HT ♂ 0.74 mm); EL/EW: 3.29-3.32 (HT ♂ 3.32). Sub-parallel sided, moderately convex, slightly narrower at base and widest towards apex, with shoulders rounded and moderately prominent forwards; apex obliquely sub-truncate and moderately prominent; apical margin delicately sinuate. Surface punctate, shiny, without any distinct microsculpture, pubescent throughout with short, reclined, yellow setae. Epipleura without distinct external plicae ('uncrossed epipleura'). Intervals scarcely convex, densely punctate and somewhat transversally striated; striae superficially impressed for overall length, distinctly punctate and rugulose. Parascutellar stria absent; scutellar setigerous pore present between striae 1 and 2, adjacent to the second

stria. Basal margin nearly indistinct; apical margin with a translucent border. Each elytron with rounded sutural apex; the outer posterior angle rounded. Discal setigerous punctures absent; punctures of the umbilicate series widely spaced at middle. Hind wings fully developed.

Ventral surface (thorax and abdomen): prosternum punctate and pubescent; proepisterna mostly glabrous. Mesosternum glabrous, rugose. Metepisterna very long, punctate and pubescent, narrowed backwards and nearly four times longer than wide at anterior margin. Prosternal intercoxal process apically rounded and setose. Sterna densely pubescent.

Legs: moderately long and pubescent throughout, solid yellowish-brown. Metatrochanters moderately long, about as long as 1/3 of metafemora. Protibial antennal cleaning organ well developed, with two clip setae. Protibiae and mesotibiae moderately short and robust; metatibiae slender, about as long as tarsi, without spines except the apical ones, with an apical crown of brush-like setae. Tarsomeres dorsally convex; protarsomeres short, the 1st-3rd markedly and symmetrically dilated in males, nearly as long as wide, ventrally with an adhesive vestiture in form of a spongy pad; the 4th antennomere slightly concave at apex; metatarsomeres slender, the first one more than 2 times longer than 2nd and nearly 3 times longer than 3rd; claws smooth.

Male genitalia (Figs. 9-11): median lobe of aedeagus in lateral view stout and thickened at mid-length, moderately bent downwards at apex (Fig. 9); in dorsal view slightly sinuate at the left side and progressively narrowed from base to apex; apical blade short and sub-triangular, blunt at apex (Fig. 10). Ostium long, placed in dorsal position, nearly as long as 2/3 of median lobe, not reaching basal bulb. Right paramere small and narrow, elongate. Male gonosomite (IX invaginated abdominal segment) sub-triangular with proximal apophysis broadly rounded at apex (Fig. 11). **REMARKS.** At the present status of knowledge, any phylogenetic assumption is premature: anyway, the closest relative of *Z. walterrossii* n. sp. seems to be represented by *Z. olaffaegeri* n. sp., which is also geographically close, due to their morphological similarity, even in male genitalia, that makes probable a relatively recent differentiation of the two species.

DISTRIBUTION AND ECOLOGY. Geographical distribution: *Zuphioides walterrossii* n. sp. is currently recorded only from one site of the province of Manabí, Western Ecuador (Fig. 12). It is suspected to have a wider dis-

tribution than the one here reported, as it is fully winged and probably provided with good dispersal abilities. Life habits: the specimens of the type series were captured near a swamp, attracted to artificial light at night, which could lead to hypothesize a preference for low-land hygrophilic habitats.

ETYMOLOGY. This species is dedicated to its collector, Walter Rossi, a world-renowned specialist in entomoparasitic fungi, as a token of our esteem and as a sign of gratitude for the gift to the authors of the specimens of the new species.

***Zuphioides olaffaegeri* n. sp.**

LSID Durn:lsid:zoobank.org:act:

9006CB8D-844E-4508-815A-A8F91D8A09F7

TYPE LOCALITY. Ecuador, Guayaquil.

TYPE SERIES. Holotype ♂: Ecuador, Guayaquil, Gehr. W. Müller Vermächt, 1909 (SNG). Paratypes: 2 ♂♂, 3 ♀♀: same data as HT (SNG, CAI, CGi).

DIFFERENTIAL DIAGNOSIS. A small sized fully winged zuphiine species belonging to the genus *Zuphioides*, pubescent throughout with a short yellowish pubescence. Pronotum and elytra light brown; head a little darker; legs, mouth parts and antennae yellowish-brown, a little paler than upper body; eye diameter about 1/2 of temple length; pronotum a little wider than long, with posterior angles right and blunt, laterally scarcely prominent; elytra moderately slender, with striae superficially impressed and intervals scarcely convex, transversally rugulose; elytra obliquely sub-truncate at apex, with apical margin almost linear.

It is distinguished from all other South American *Zuphioides* species by its peculiar character set of body size and color, antennal length, shape of pronotum and elytra (see identification key). In particular, it is distinguished from *Z. columbianum* by the shape of pronotum (scarcely transverse vs. markedly transverse) (Figs. 3 and 5). Moreover, *Z. olaffaegeri* n. sp. differs from *Z. walterrossii* n. sp., the most similar species, mainly by shorter antennomeres 5-8 (2 times vs. 2.4 times longer than wide), shape of pronotum (Figs. 4 and 5) and shape of male genitalia.

DESCRIPTION. A small sized *Zuphioides* species: TL: 3.98-4.54 (HT ♂ 3.98 mm); ABL: 3.65-4.18 mm (HT ♂ 3.65 mm).

Habitus and colour (Fig. 13): body moderately slender, pubescent throughout with a short re-

clined yellowish pubescence; elytra delicately dilated backwards; body color light brown, with head a little darker and with mouth parts, antennae and legs yellowish-brown, paler.

Head (Fig. 14): brownish in color, sub-triangular, narrower than pronotum ($HW/PW=0.86$), dorsally distinctly punctate, but less densely than pronotum; dilated behind eyes and abruptly restricted in a thin neck impunctate, less than $1/3$ as wide as head; eyes moderately small, scarcely convex, oval but posteriorly obliquely truncate, with diameter nearly $1/2$ of temple length; one pair of supraorbital setae above eyes; one pair of occipital setae posteriorly; microsculpture superficial, in polygonal meshes; frontal impressions superficial, broad and very short, ending before the anterior edge of eye; temples convex and evenly rounded, densely pubescent with short bristles and almost long two times the diameter of eye; a distinct, narrow supraorbital carina above antennal insertion. Labrum rectangular, with six setigerous punctures on anterior margin, the lateral ones longer than others. Clypeus transverse, trapezoid, brownish, a little paler than head; a couple of central setae at anterior margin of clypeus and two further setae at each side; a pair of long bristles at sides near base. Antennae yellowish-brown, moderately long and slender, surpassing elytral base when stretched backwards, densely pubescent; the first antennomere longer than antennomeres 2-4 together, the fifth to eighth ones about 2.0 times longer than wide; the first antennomere with a single long pre-apical seta. Mandibles moderately long, pointed and abruptly curved at apex. Mentum distinctly broader than long, sparsely pubescent, deeply emarginate at anterior margin, with a large, blunt mentum tooth; epilobes rather broad, laterally broad and anteriorly pointed; suture between mentum and submentum present. Maxillary and labial palpi of about equal size and form, with apical margin obliquely truncate; penultimate labial palpomere multisetose.

Thorax (Fig. 15): PL: 0.76-0.86 mm (HT ♂ 0.76 mm); PW: 0.80-0.93 mm (HT ♂ 0.80 mm); PL/PW: 0.92-0.96 (HT ♂ 0.95). Pronotum densely and moderately coarsely punctate throughout (the distance among punctures is longer than their diameter), without any distinct microsculpture, pubescent with moderately long, yellow, semi-erect setae; form slightly transverse, widest at anterior fourth; side margins very weakly rounded at anterior half and then markedly sinuate backwards up to the basal angles, which are right, blunt

at apex and laterally scarcely prominent; post-angular seta present; posterior margin distinctly pedunculate at middle; latero-basal impressions wide and markedly impressed, flattened towards rear angles; front angles broadly rounded; a marginal seta at anterior eighth on each side; lateral margin narrowly darkened, with marginal bead narrow on overall length, at base joining with the basal impressions; anterior and posterior margins unbordered; medial longitudinal sulcus deep, ending before apex and base.

Elytra: EL: 2.10-2.40 mm (HT ♂ 2.10 mm); EW: 0.66-0.81 mm (HT ♂ 0.66 mm); EL/EW: 2.95-3.28 (HT ♂ 3.18). Sub-parallel sided, moderately convex, slightly narrower at base and widest towards apex, with shoulders evenly rounded and almost not prominent forwards; apex obliquely sub-truncate and moderately prominent; apical margin almost rectilinear. Surface punctate, shiny, without any distinct microsculpture, pubescent throughout with short, reclined, yellow setae. Epipleura without distinct external plicae ('uncrossed epipleura'). Intervals scarcely convex, densely punctate and somewhat transversally striated; striae superficially impressed for overall length, distinctly punctate and rugulose. Parascutellar stria absent; scutellar setigerous pore present between striae 1 and 2, adjacent to the second stria. Basal margin nearly indistinct; apical margin without any distinct border. Each elytron with rounded sutural apex; the outer posterior angle rounded. Discal setigerous punctures absent; punctures of the umbilicate series widely spaced at middle. Hind wings fully developed.

Ventral surface (thorax and abdomen): prosternum punctate and pubescent; proepisterna mostly glabrous. Mesosternum glabrous, rugose. Metepisterna very long, punctate and pubescent, narrowed backwards and nearly four times longer than wide at anterior margin. Prosternal intercoxal process apically rounded and setose. Sterna densely pubescent.

Legs: moderately long and pubescent throughout, solid yellowish-brown. Metatrochanters moderately long, about as long as $1/3$ of metafemora. Protibial antennal cleaning organ well developed, with two clip setae. Protibiae and mesotibiae moderately short and robust; metatibiae slender, about as long as tarsi, without spines except the apical ones, with an apical crown of brush-like setae. Tarsomeres dorsally convex; protarsomeres short, the 1st-3rd markedly and symmetrically dilated in males, nearly as long as wide, ventrally with an adhesive vestiture in form of a spongy pad; the 4th

antennomere slightly concave at apex; metatarsomeres slender, the first one more than 2 times longer than 2nd and nearly 3 times longer than 3rd; claws smooth.

Male genitalia (Figs. 16-18): median lobe of aedeagus in lateral view moderately slender and evenly curved throughout length, only scarcely bent downwards at apex (Fig. 16); in dorsal view slightly sinuate at the left side and progressively narrowed from base to apex; apical blade short and sub-triangular, blunt at apex (Fig. 17). Ostium long, placed in dorsal position, nearly as long as 2/3 of median lobe, not reaching basal bulb. Right paramere small and narrow, elongate. Male gonosomite (IX invaginated abdominal segment) sub-triangular with proximal apophysis broadly rounded at apex (Fig. 18).

REMARKS. At the present state of knowledge, any phylogenetic assumption is premature: anyway, the closest relative of *Z. olaffjaegeri* n. sp. seems to be *Z. walterrossii* n. sp., which is also geographically close, due to their morphological similarity, even in male genitalia, which makes probable a relatively recent differentiation of the two species.

DISTRIBUTION AND ECOLOGY. Geographical distribution: *Zuphioides olaffjaegeri* n. sp. is currently recorded only from Guayaquil, Central-Western Ecuador (Fig. 12). It could have a wider distribution than the one here reported, as it is fully winged and probably provided with good dispersal abilities. Life habits: no information is given in the collection labels regarding the life habitat; as the area of Guayaquil is rich in humid habitats and ponds formed by the river Guayas flowing into the Pacific Ocean through the Gulf of Guayaquil, a preference for hygrophilic habitats could be hypothesized.

ETYMOLOGY. This species is dedicated to Olaf Jäger, a world-renowned specialist in Coleoptera and Collection Manager of the Senckenberg Naturmuseum in Dresden, as a token of our esteem and as a sign of gratitude for allowing us to check the type specimens deposited in SNG and describe this new species.

***Zuphioides visinonii* n. sp.**

LSIDurn:lsid:zoobank.org:act:

84A9B9C1-5CA9-46E8-92A4-997EE576AF44

TYPE LOCALITY. Bolivia, Dip. Santa Cruz, Prov. Ichilo, munic. Buena Vista, Rio Surutú, Cruce Bella Unión. [17°28'53.64"S - 63°43'31.93"W]

TYPE SERIES. Holotype ♂: Bolivia, Dip. Santa Cruz,

Prov. Ichilo, munic. Buena Vista, Rio Surutú, Cruce Bella Unión, 17.IX.2024, A. Visinoni legit (CAI). Paratypes: 2 ♂♂: same data as HT (Museum of Natural History 'Noel Kempff Mercado' in Santa Cruz de la Sierra Bolivia, CGi).

DIFFERENTIAL DIAGNOSIS. A medium-small sized fully winged zuphiine species belonging to the genus *Zuphioides*, pubescent throughout with a short yellowish pubescence. Head, pronotum and elytra dark brown; legs, mouth parts and antennae light brown, distinctly paler than upper body; eye diameter almost equal to temple length; pronotum wider than long, with posterior angles acute and laterally prominent; elytral striae markedly impressed for overall length, rugulose, with intervals convex and densely punctate; elytra obliquely sub-truncate at apex, with apical margin delicately sinuate.

It is distinguished from all other South American *Zuphioides* species by its peculiar character set of body size and color, antennal length and shape of pronotum (see identification key); referring to the species already known from Bolivia, it is easily distinguished from *Z. batesii* (Chaudoir, 1862) by smaller size (5.1-5.5 vs. 8 mm), and from *Z. lizeri* (Liebke, 1933) mainly by body colour (solid dark brown vs. reddish-brown with head black and elytra partly darkened) and shape of posterior angles of pronotum (acute and markedly laterally prominent vs. right and moderately prominent).

DESCRIPTION. A medium-small sized *Zuphioides* species: TL: 5.08-5.53 (HT ♂ 5.36 mm); ABL: 4.83-5.20 mm (HT ♂ 4.97 mm).

Habitus and colour (Fig. 19): body moderately short, pubescent throughout with a short reclined yellowish pubescence, longer and sparser on pronotum; elytra delicately dilated backwards; body colour solid dark brown, with mouth parts, antennae and legs light brown, paler.

Head (Fig. 20): dark brown in color, sub-triangular, distinctly narrower than pronotum (HW/PW=0.86), dorsally distinctly punctate, but less densely and less coarsely than pronotum; dilated behind eyes and abruptly restricted in a thin neck punctate only at sides, nearly 1/3 as wide as head; eyes large, convex, oval but posteriorly obliquely truncate, nearly as long as temples; one pair of supraorbital setae above eyes; one pair of occipital setae posteriorly; microsculpture very superficial, nearly indistinct; frontal impressions superficial, broad and very short, ending before the an-

terior edge of eye; temples convex and evenly rounded, densely pubescent with short bristles and nearly as long as diameter of eye; a distinct, narrow supraorbital carina above antennal insertion. Labrum rectangular, with six setigerous punctures on anterior margin, the lateral ones longer than others. Clypeus transverse, trapezoid, reddish, paler than head; a couple of central setae at anterior margin of clypeus and two further setae at each side; a pair of long bristles at sides near base. Antennae yellowish-brown, moderately long and slender, surpassing elytral base when stretched backwards, densely pubescent; the first antennomere longer than antennomeres 2-4 together, the fifth to eight ones about 2.4 times longer than wide; the first antennomere with a single long pre-apical seta. Mandibles moderately long, pointed and abruptly curved at apex. Mentum distinctly broader than long, sparsely pubescent, deeply emarginate at anterior margin, with a large, blunt mentum tooth; epilobes rather broad, laterally broad and anteriorly pointed; suture between mentum and submentum present. Maxillary and labial palpi of about equal size and form, with apical margin obliquely truncate; penultimate labial palpomere multisetose.

Thorax (Fig. 21): PL: 1.02-1.10 mm (HT ♂ 1.02 mm); PW: 1.15-1.20 mm (HT ♂ 1.15 mm); PL/PW: 0.89-0.92 (HT ♂ 0.89). Pronotum very densely and coarsely punctate throughout (the distance among punctures is shorter than their diameter), without any distinct microsculpture, pubescent with moderately long, yellow, semi-erect setae; form transverse, slightly wider than long, widest at anterior fourth; side margins gently curved at anterior third and then markedly sinuate backwards up to the basal angles, which are acute and laterally distinctly prominent; post-angular seta present; posterior margin distinctly pedunculate at middle; latero-basal impressions wide and markedly impressed, flattened towards rear angles; front angles broadly rounded; a marginal seta at anterior fourth on each side; lateral margin narrowly darkened, with marginal bead narrow on overall length, at base joining with the basal impressions; anterior and posterior margins unbordered; medial longitudinal sulcus deep, ending before apex and base.

Elytra: EL: 2.90-3.02 mm (HT ♂ 2.99 mm); EW: 0.93-0.97 mm (HT ♂ 0.97 mm); EL/EW: 3.05-3.25 (HT ♂ 3.13). Sub-parallel sided, moderately convex, slightly narrower at base and widest towards apex, with shoulders rounded and moderately prominent forwards; apex obliquely sub-truncate and moderately

prominent; apical margin delicately sinuate. Surface punctate, shiny, without any distinct microsculpture, pubescent throughout with short, reclined, yellow setae. Epipleura without distinct external plicae ('uncrossed epipleura'). Intervals convex, densely punctate and somewhat transversally striated; striae markedly impressed for overall length, distinctly punctate and rugulose. Parascutellar stria absent; scutellar setigerous pore present between striae 1 and 2, adjacent to the second stria. Basal margin nearly indistinct; apical margin distinctly bordered. Each elytron with rounded sutural apex; the outer posterior angle rounded. Discal setigerous punctures absent; punctures of the umbilicate series widely spaced at middle. Hind wings fully developed.

Ventral surface (thorax and abdomen): prosternum punctate and pubescent; proepisterna mostly glabrous. Mesosternum glabrous, rugose. Metepisterna very long, punctate and pubescent, narrowed backwards and nearly four times longer than wide at anterior margin. Prosternal intercoxal process apically rounded and setose. Sterna densely pubescent.

Legs: moderately long and pubescent throughout, solid yellowish-brown. Metatrochanters short, as long as 1/4 of metafemora. Protibial antennal cleaning organ well developed, with two clip setae. Protibiae and mesotibiae moderately short and robust; metatibiae slender, about as long as tarsi, without spines except the apical ones, with an apical crown of brush-like setae. Tarsomeres dorsally convex; protarsomeres short, the 1st-3rd markedly and symmetrically dilated in males, nearly as long as wide, ventrally with an adhesive vestiture in form of a spongy pad; the 4th antennomere slightly concave at apex; metatarsomeres slender, the first one more than 2 times longer than 2nd and nearly 3 times longer than 3rd; claws smooth.

Male genitalia (Figs. 22-24): median lobe of aedeagus in lateral view stout and thickened at mid-length, markedly bent downwards at apex (Fig. 22); in dorsal view slightly sinuate at the right side and delicately narrowed from base to apex; apical blade short and sub-triangular, blunt at apex (Fig. 23). Ostium long, placed in dorsal position, nearly as long as 2/3 of median lobe, not reaching basal bulb. Right paramere small and narrow, elongate. Male gonosomite (IX invaginated abdominal segment) sub-triangular with proximal apophysis broadly rounded at apex (Fig. 24). **DISTRIBUTION AND ECOLOGY.** Geographical distribution: *Zuphioides visinonii* n. sp. is currently recorded only from a single site of the province of Ichilo, Cen-

tral Bolivia (Fig. 25), a lowland area (about 330 m a.s.l.) crossed by Surutú river. It is suspected to have a wider distribution, as it is fully winged and probably provided with good dispersal abilities. Life habits: the specimens of the type series were captured along the Surutú river, attracted to artificial light at night, which could lead to hypothesize a preference for lowland hygrophilic habitats.

ETYMOLOGY. This species is dedicated to its collector, Andrea Visinoni, a researcher specialist in biodiversity at the Museum of Natural History 'Noel Kempff Mercado', University UAGRM in Santa Cruz de la Sierra, Bolivia.

CONCLUSIONS

With the three new species here described, 28 species of the genus *Zuphioides* are currently recorded from the New World and 14 from South America. Due to rarity of findings and their scarce presence in collections, the knowledge of this fauna is still limited, and it is likely that future research in the field, as well as in private or museum collections, will lead to the discovery of further new species.

At the present state of knowledge, *Z. columbianum* has to be excluded from the fauna of Ecuador, where only *Z. walterrossii* n. sp. and *Z. olaffjaegeri* n. sp. are currently recorded from. A third *Zuphioides* species (*Z. visinonii* n. sp.), in addition to the already known *Z. batesii* (Chaudoir, 1862) and *Z. lizeri* (Liebke, 1933), is now recorded from Bolivia.

The following key only concerns the species recorded to-date from South America; it has been compiled in the simplest possible way in order to make it, hopefully, easy to use; it is intended to facilitate and make possible future studies on this genus.

Key to the species of *Zuphioides* from South America (modified from Liebke, 1933)

1. Total length (TL) not exceeding 5 mm > **2**
 - Total length (TL) exceeding 5 mm > **7**
2. Smaller body size (TL 3.5 mm). Entirely rufo-testaceous. Colombia > *Z. exiguum* (Putzeys, 1878)
 - Larger body size (TL at least 4 mm) > **3**
3. TL not exceeding 4.3 mm. Brown with elytral base and suture reddish. Brazil (Amazonas) > *Z. pusillum* (Chaudoir, 1863)
 - TL at least equal to 4.5 mm > **4**
4. Antennal segments 5-8 at most 1.5 times longer than wide. Head black, elytra predominantly blackish, with base and suture lighter. TL 4.8 mm. Argentina > *Z. bruchi* (Liebke, 1933)
 - Antennal segments 5-8 at least 2 times longer than wide. Body entirely reddish-brown with head slightly darker. TL 4.5 mm > **5**
5. Pronotum markedly transverse (PL/PW=0.85). Colombia > *Z. columbianum* (Chaudoir, 1872)
 - Pronotum at most slightly transverse (PL/PW > 0.95) or almost as wide as long. Species from Ecuador > **6**
6. Antennal segments 2.4 times longer than wide. Pronotum almost as wide as long. TL 4.4-4.6 mm > *Z. walterrossii* n. sp.
 - Antennal segments only 2 times longer than wide. Pronotum slightly wider than long (PL/PW=0.95). TL 4.0-4.5 mm > *Z. olaffjaegeri* n. sp.
7. Antennae longer, segments 5-8 about 3 times longer than wide. Pronotum markedly narrower towards base. TL 6-7 mm. Venezuela > *Z. salivanum* (Liebke, 1933)
 - Antennae shorter, segments 5-8 only 2.0-2.5 times longer than wide > **8**
8. Larger body size (TL 8 mm). Dorsum entirely dark brown to black. Brazil, Bolivia > *Z. batesii* (Chaudoir, 1862)
 - Smaller body size (TL at most 7 mm). Dorsum yellow-brown to dark brown, with or without darker spots or bands > **9**
9. Pronotum not or scarcely transverse, as wide as head. TL 6-7 mm > **10**
 - Pronotum more transverse, distinctly wider than head. TL 5.3-6.0 mm > **12**
10. Dorsum yellow-brown to reddish, elytra with a vague blackish spot near apex; head only a little darker. TL 6.2-6.5 mm. Argentina > *Z. argentinicum* (Liebke, 1933)
 - Dorsum solid brown-black; head black > **11**
11. Larger body size (TL 7 mm). Colombia > *Z. capitum* (Liebke, 1933)
 - Smaller body size (TL 6 mm). Brazil (Santa Catarina) > *Z. brasiliense* (Chaudoir, 1872)

12. Dorsum solid dark brown. Rear angles of pronotum acute and laterally prominent. TL 5.1-5.6. Bolivia > *Z. visinonii* n. sp.
- Dorsum reddish-brown with pronotum and elytra partly darkened. Rear angles of pronotum right, not or scarcely prominent > **13**
13. Pronotum strongly transverse, coarsely punctate, with sides very scarcely sinuate backwards. TL 5.8-6.0 mm. Brazil (Amazonas) > *Z. aequinoctiale* (Chaudoir, 1862)
- Pronotum less transverse, more finely punctate, with sides markedly sinuate backwards. TL 5.3-5.6 mm. Bolivia > *Z. lizeri* (Liebke, 1933)

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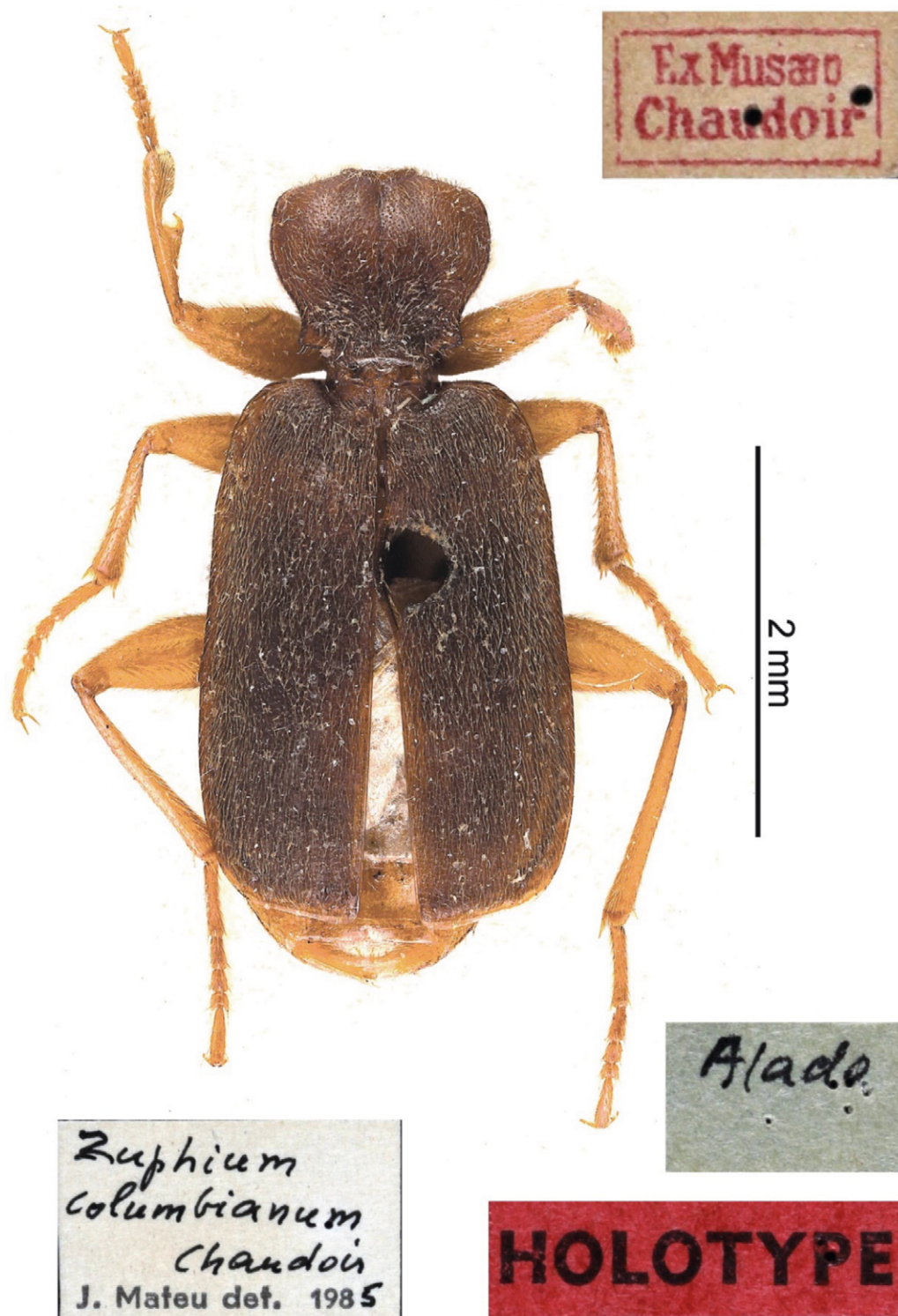
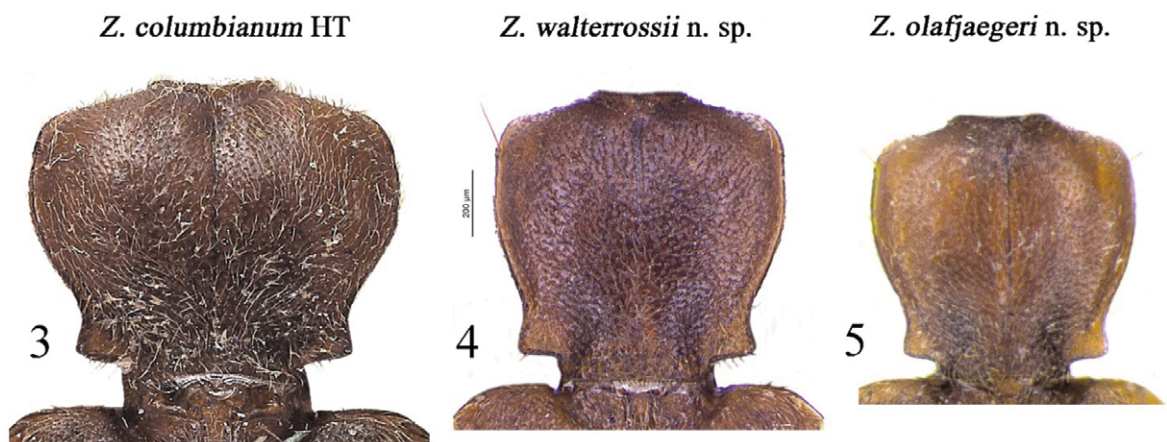


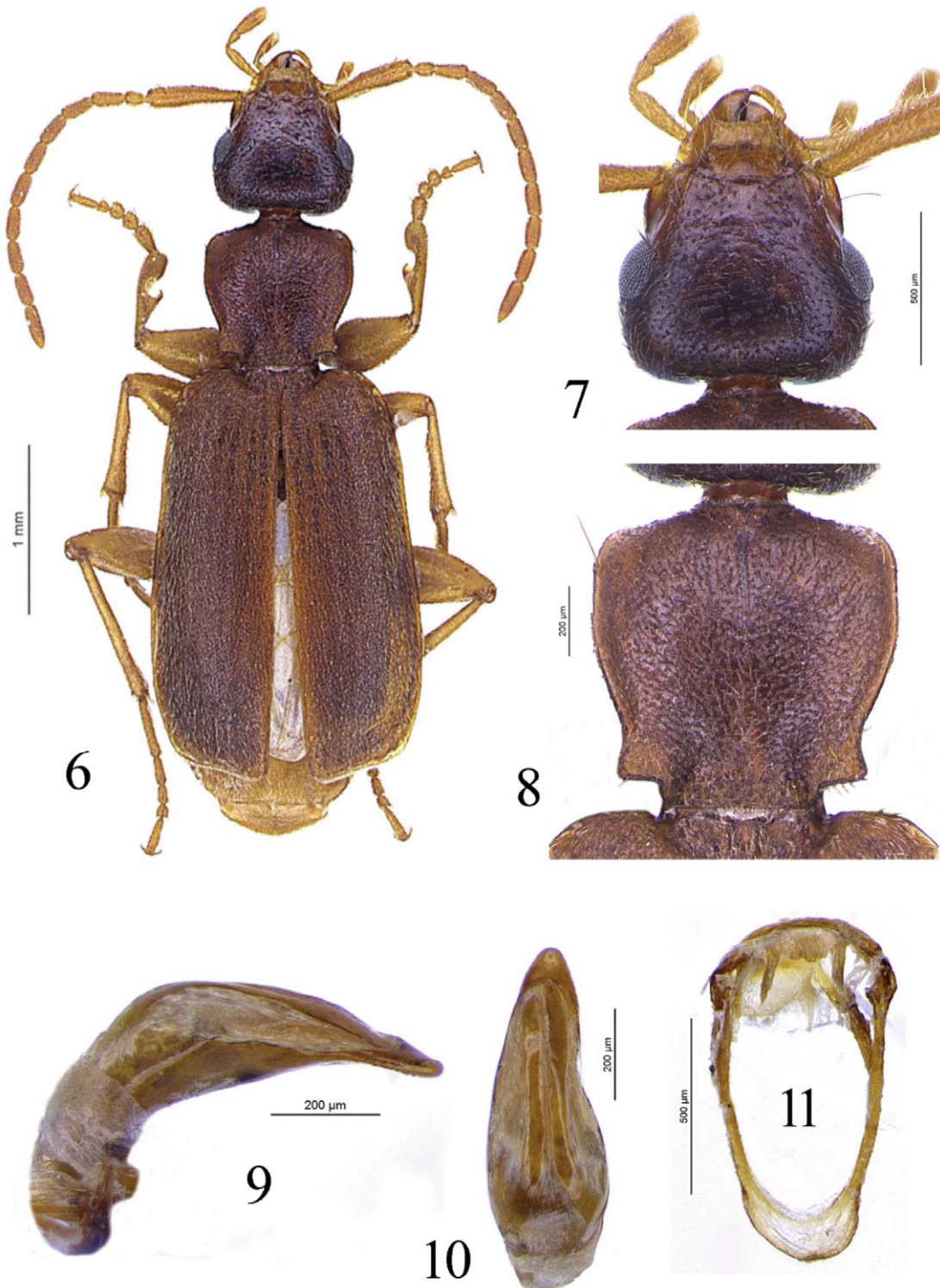
Fig. 1. *Zuphioides columbianum* (Chaudoir): holotype habitus with labels from Chaudoir Collection (MHNH) (photo Olivier Montreuil).



Fig. 2. *Zuphioides brasiliense* (Chaudoir): holotype habitus with labels from Chaudoir Collection (MHNH) (photo Olivier Montreuil).



Figs. 3-5. Pronota of: *Zuphioides columbianum* HT (3); *Z. walterrossii* n. sp. HT (4); *Z. olafjaegeri* n. sp. HT (5).



Figs. 6-11. *Zuphioides walterrossii* n. sp.: holotype habitus (6); head in dorsal view (7); pronotum (8); median lobe of aedeagus in lateral view (9); median lobe of aedeagus in dorsal view (10); male gonosomite (IX invaginated abdominal segment) (11).

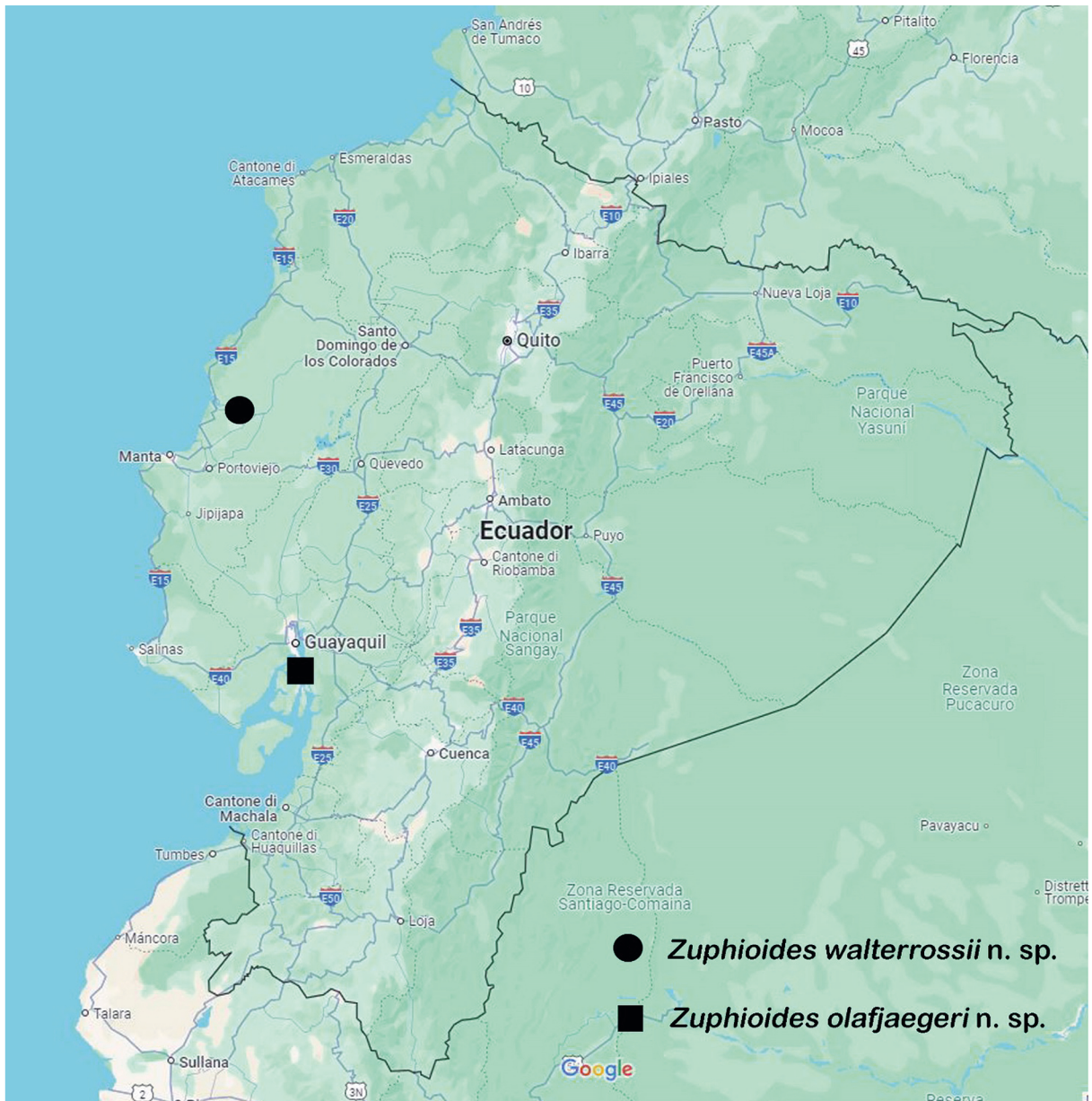
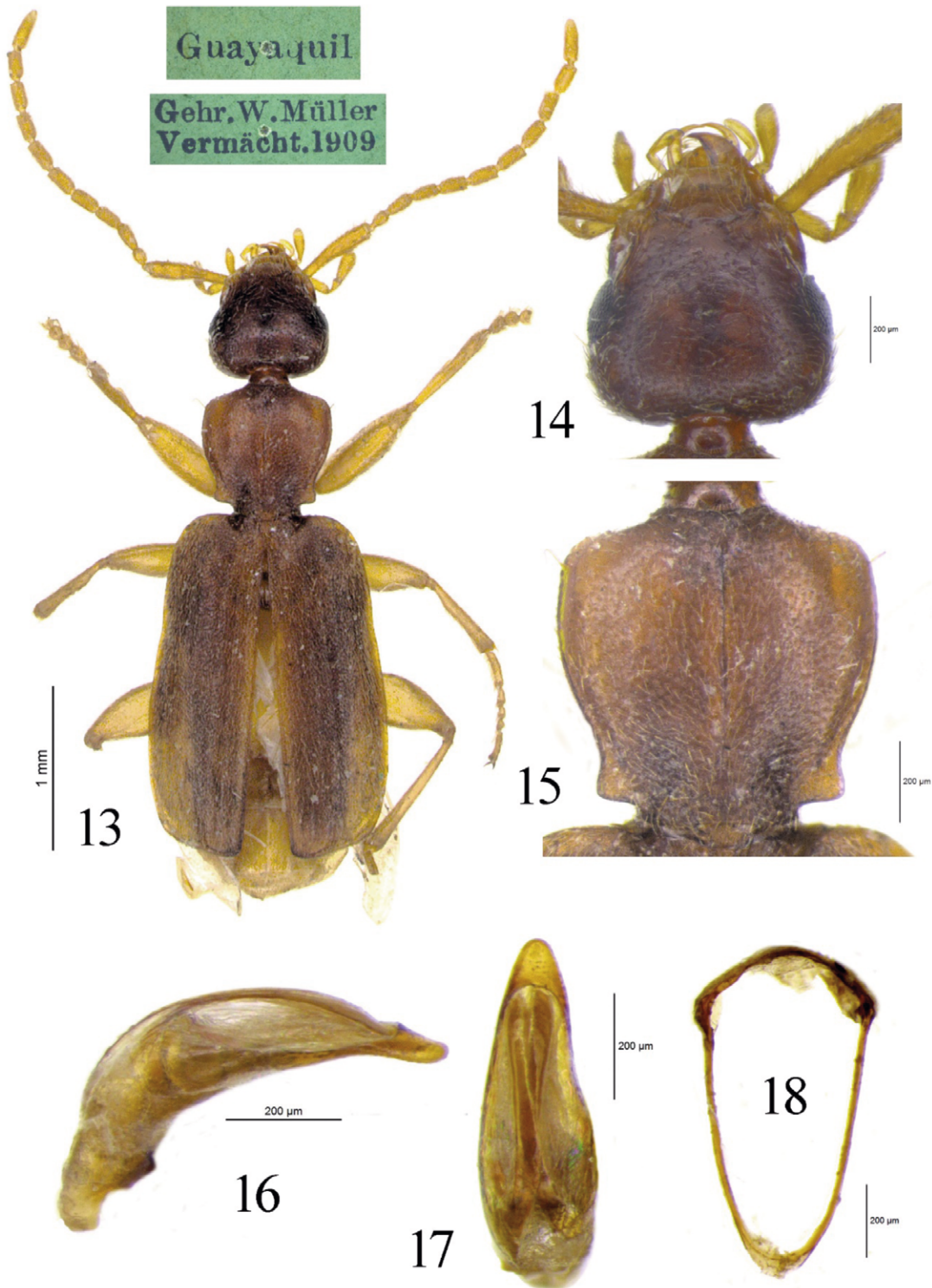
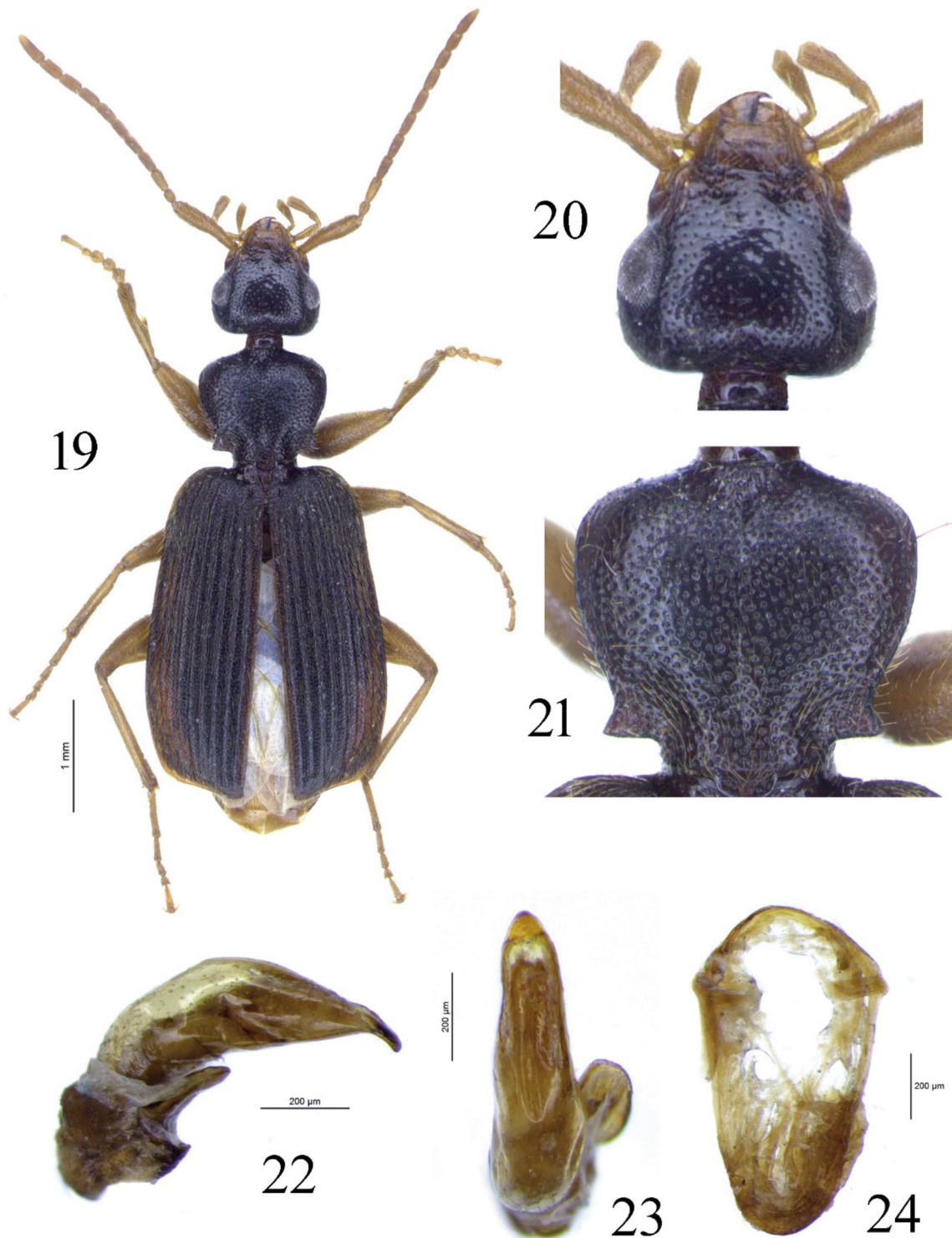


Fig. 12. Distribution map of *Zuphioides walterrossii* n. sp. and *Z. olafjaegeri* n. sp. in Ecuador (from Google Maps).



Figs. 13-18. *Zuphioides olaffaegeri* n. sp.: holotype habitus (13); head in dorsal view (14); pronotum (15); median lobe of aedeagus in lateral view (16); median lobe of aedeagus in dorsal view (17); male gonosome (IX invaginated abdominal segment) (18).



Figs. 19-24. *Zuphioides visinonii* n. sp.: holotype habitus (19); head in dorsal view (20); pronotum (21); median lobe of aedeagus in lateral view (22); median lobe of aedeagus in dorsal view (23); male gonosome (IX invaginated abdominal segment) (24).



Fig. 25. Distribution map of *Zuphioides visinonii* n. sp. in Bolivia (from Google Maps).

REFERENCES

- ALLEGRO G., 2025 - *Pseudaptinus (Thalpius) bicolor* new species from Ecuador, with notes on other South American Zuphiini (Coleoptera, Carabidae, Dryptinae). *Annali del Museo Civico di Storia Naturale "G. Doria"*, 118: 15-30.
- ANICHTCHENKO A., 2025 - Genus *Zuphioides* Ball & Shpeley, 2013. In: Anichtchenko A. et al. (eds.), *Carabidae of the world*. Available from: <https://carabidae.org/taxa/zuphioides-ball-and-shpeley-2013>.
- BALL G.E., SPELEY D., 2013 - Western Hemisphere Zuphiini: descriptions of *Coarazuphium whiteheadi*, new species, and *Zuphioides*, new genus, and classification of the genera (Coleoptera, Carabidae). *Zookeys*, 315: 17-54.
- CHAUDIR M. DE, 1872 - Descriptions d'espèces nouvelles de carabiques de la tribu des troncatipennes, et remarques synonymiques. *Revue et Magasin de Zoologie Pure et Appliquée*, 23: 101-107, 138-143, 168-172, 212-221, 241-250.
- LEMAIRE J.M., JORDAN T., 2022 - Les Zuphiini des Antilles françaises 1. Le genre *Zuphioides* : description de *Zuphioides grandisterrae* n. sp. (Carabidae Harpalinae). *Le Coléoptériste*, 25: 9-13.
- LIEBKE M., 1933 - Die amerikanischen Arten der Gattung *Zuphium* (Col. Carab.). *Revista Entomologica*, 3: 461-472.
- MATEU J., 1981 - Revision de los *Zuphium* Latreille del continente Americano (Coleoptera: Carabidae), 1a. Nota. *Folia Entomologica Mexicana*, 47: 111-128.
- MATEU J., 1985 - À propos de trois espèces du genre *Zuphium* d'Amérique du Sud décrites par M. Liebke (Col. Carabidae). *Nouvelle Revue d'Entomologie*, 2: 329-330.
- MATEU J., 1995 - Un nouveau *Zuphium* Latreille de l'Argentine (Col. Carabidae). *Nouvelle Revue d'Entomologie*, 11: 339-340.