

# NOTES ON SOME SOUTH AMERICAN SPECIES OF *SCIRTES* ILLIGER, 1807 (COLEOPTERA: SCIRTIDAE)

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**Abstract.**— The species of the genus *Scirtes* Illiger, 1807 (Coleoptera: Scirtidae) from Argentina are revised. Seven species are recognized: *S. adustus* Boheman, 1858, *S. caraguata* sp. nov., *S. dentatus* sp. nov., *S. diversenotatus* Pic, 1930, *S. gallus* sp. nov., *S. helicoidalis* sp. nov., and *S. rufobinotatus* Pic, 1922. *S. postimpessus* Pic, 1922 is proposed as a junior synonym of *Scirtes rufobinotatus*. Illustrations of dorsal habitus, male and female genitalia, and other diagnostic features are provided along with a key to the species.



**Key words.**— Marsh beetles, taxonomy, redescription, Neotropical region, Argentina.

## INTRODUCTION

The genus *Scirtes* Illiger, 1807, with over 350 species worldwide, is the most speciose among the seven saltatorial genera of Scirtidae presently recognized i.e. *Curtoscirtes* Pic, 1924, *Erochomosirtes* Pic, 1916, *Mescirtes* Motschulsky, 1863, *Ora* Clark, 1865, *Prionoscirtes* Champion, 1897, *Scirtes* Illiger, 1807 and *Sulcatoscirtes* Pic, 1952. The genus has long been studied and is fairly well known in the Australian (Watts 2004, Ruta 2014a), Nearctic (Young 2002, Epler 2010), Oriental (Yoshitomi 2005, Ruta 2007, Yoshitomi and Ruta 2010, Ruta *et al.* 2014), and Palearctic regions (Klausnitzer 2009). In the Neotropical region, however, it has never been treated comprehensively, and most of the 81 species and subspecies inhabiting this area are poorly known from the brief original descriptions (Boheman 1858, Guérin-Ménéville 1861, Champion 1897a, 1897b, 1918, Chevrolat 1870, Pic 1913, 1915, 1916, 1918, 1922, 1930a, 1930b, 1932, Picado 1913), except five species recently redescribed (Ruta 2013, Ruta and Libonatti 2016). In particular, the genus has been understudied in Argentina, from where only two species, *S. adustus* Boheman, 1858 and

*S. diversenotatus* Pic, 1930, have been recorded so far (Ruta and Libonatti 2016). This paper aims to revise the Argentine species of *Scirtes*.

## MATERIALS AND METHODS

Specimens were obtained during several field trips undertaken in seven provinces of Argentina (Buenos Aires, Chaco, Corrientes, Entre Ríos, Formosa, Jujuy and Salta) between 1994 and 2015. Adults were caught by beating and sweeping riparian vegetation, and by using mercury light traps. Moreover, two additional species (*S. caraguata* sp. nov. and *S. gallus* sp. nov.) were obtained from larvae reared in the laboratory. Larvae were collected using aquatic nets or sucking out the water accumulated within a phytotelma, which was accomplished either by using a turkey baster or by extracting the plant and examining the leaves thoroughly.

Taxonomic identifications, recognition of new species and comparison to previously described species were possible through the examination of type material deposited in:

MACN – Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires, Argentina;

BR – Carlos Bruch Collection (presently held in MACN);

MNHN – Museum national d'Histoire naturelle, Paris, France;

NHM – Natural History Museum, London, United Kingdom.

In order to perform a further comparison between some species or subspecies through the study of genitalia, the following specimens were loaned: 2 ♀ ♀ of *Scirtes angustatus* Champion, 1897 (NHM): “♀” [white label, printed], “David, / Panama. / Champion.” [white label, printed], “B. C. A. Col. III. (1). / Scirtes / angustatus / Ch.” [white label, printed except “angustatus”, which is handwritten by Champion]; 1 ♂ and 2 ♀ ♀ of *Scirtes helvolus* Champion, 1918: “Fry / Rio Jan<sup>o</sup>.” [white label, printed], “Fry Coll. / 1905.100.” [white label, printed], “Scirtes / helvolus / Ch” [white label, handwritten by Champion]; the holotype of *Scirtes rufobinotatus* v. *rufobinotatus* Pic, 1922: ♂ (MNHN), “Corumba / Matt Grosso” [white label, print], “rufobinotatus / n sp” [white label, handwritten by Pic], “HOLOTYPUS / Scirtes rufobinotatus / Pic, 1922” [red label, print]; the holotype of *Scirtes rufobinotatus* v. *innotatus* Pic, 1922: ♂ (MNHN), “Corumba / Matt Grosso” [white label, print], “v. innotatus / Pic” [white label, handwritten by Pic], “HOLOTYPUS / Scirtes rufobinotatus / var. innotatus / Pic 22-6” [red label, print]; the holotype of *Scirtes rufobinotatus* v. *uninotatus* Pic, 1922: ♂ (MNHN), “Corumba / Matt Grosso” [white label, print], “v. uninotatus / Pic” [white label, handwritten by Pic], “HOLOTYPUS / Scirtes rufobinotatus / var. uninotatus / Pic 22-6” [red label, print]; and the holotype of *Scirtes postimpessus* Pic, 1922: ♀ (MNHN), “Corumba / Matt Grosso” [white label, print], “postimpessus / n sp” [white label, handwritten by Pic]. Label data are cited *in extenso* for historical specimens. Each label is cited with quotation marks, lines are delimited by a forward slash.

Dissection techniques were the same as those employed in previous studies (e.g. Libonatti 2014). In brief, dried material was relaxed in boiling water, then heads, thoraxes and abdomens were removed, cleared in cold 10% sodium hydroxide solution overnight, rinsed in distilled water, dissected, and mounted in glycerine (abdomens, terminalia and genitalia) or polyvinyl-lacto-glycerol (mouthparts, thoracic ventrites and hind wings) on temporary glass slides.

Photographs were taken using a Sony DSC-W530 camera attached to a Leica MZ6 stereomicroscope or to an Olympus CX41 compound microscope, and an AxioCam ERc5s camera attached to a Zeiss Stemi 2000-C stereomicroscope. Final images were generated using a photomontage program (Helicon Focus or CombineZP) and enhanced digitally. Line drawings were

made using an Olympus CX41 compound microscope equipped with a camera lucida, digitized using a Genius Gpen F610 digitizer board (following Coleman 2003) and colored in three shades of grey, which represent different degrees of pigmentation and/or sclerotization. SEM micrographs were taken using a Zeiss SUPRA 40 field-emission scanning electron microscope in the Centro de Microscopías Avanzadas (Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires). The material examined with SEM was previously cleaned in a 96% ethanol solution in a sonicator for a couple of minutes.

Measurements were taken using a micrometer eyepiece mounted on a Leica MZ6 stereoscopic microscope or an Olympus CX41 compound microscope. The following abbreviations were used:

TL – (total length) is the combined body length from the front margin of pronotum to the apex of elytra, excluding the deflexed head,

EW – (elytral width) is the widest part of both elytra combined,

EL – (elytral length) is the length from the front margin of scutellum to the apex of elytra,

PW – (pronotal width) is the widest part of pronotum,

PL – (pronotal length) is the length of pronotum along its median axis,

HW – (head width) is the widest part of head including eyes.

Measurements of historical specimens are shown in square brackets. When available, 10 males and 10 females were measured at random from all available collection localities. When less than 10 specimens of a given sex were available, all were measured.

Terms follow Nyholm (1972) with the subsequent simplification proposed by Yoshitomi (2005) (trigonium + zentem = trigonium) for male genitalia, Nyholm (2002) for female genitalia, and Kukalová-Peck & Lawrence (1993, 2004) for wing venation. The terms ‘mesoventrite’ and ‘metaventrite’ are used to refer to the ventral sclerites of meso- and metathorax, respectively, according to Lawrence (1999).

## TAXONOMY

### *Scirtes* Illiger, 1807

*Scirtes* Illiger, 1807: 301. Type species: *Chrysomela haemisphaerica* Linnaeus, 1767 by subsequent designation of Thomson (1859: 108).

**Diagnosis.** The genus *Scirtes* is distinguished from other Scirtidae by the following combination of characters: subgenal ridges arcuate, without button-hole configuration (Fig. 2C); antennae filiform, antennomere 1 not enlarged (Fig. 3D); mandibles symmetrical, lacking denticles on inner margin, dorsal surface covered with

setae (Figs 2G–2H); maxillary palpi not widened; labium with third palpomere arising from inner margin of second palpomere (Figs 2K–2L), ligula undivided (Fig. 2M); pronotal disc distinctly transverse (Fig. 3A); excitators (if present) not large and transverse; hind wings well-developed, vein  $MP_4$  connected to posterior part of vein  $CuA+AA_{1+2}$ , the vein  $CuA+AA_{1+2}$  continues posteriorly to point of union, vein AP simple (form 2 sensu Yoshitomi 2005) (Fig. 3J); prosternal process laminar (Fig. 3B); mesoventral process long, separating mesocoxae, apical portion somewhat broadened and subtly bilobed (Figs 3C, 3E, 3G); metendosternite without ventral process (Fig. 3H); metacoxae forming square plates, meeting along full length of median line (Figs 3F, 3I); metafemora enlarged; metatibiae with a pair of long spurs at the tip; tegmen with well-developed parameres; bursal sclerite present (Yoshitomi 2005, Klausnitzer 2009, Ruta and Yoshitomi 2010, Zwick 2013).

### *Scirtes adustus* Boheman, 1858

*Scirtes adustus* Boheman, 1858: 72 [Montevideo]; Gemminger & Harold, 1869: 1621 [catalogue]; Pic, 1914: 40 [catalogue]; Bruch, 1914: 236 [catalogue: Buenos Aires]; Ruta & Libonatti, 2016: 209 [re-description].

*Scirtes adusta*: Blackwelder, 1944: 267 [catalogue].

**Material examined.** 1♂ (MACN), “Riachuelo / Colonia Uru / A. Stévenin” [white label, printed]; 1♂ and 1♀ (MACN), “S. Fernando”, “*Scirtes* / sp.” [both white labels, handwritten]; 1♀ (MACN), “ARGENTINA / S. Fernando / BS AIRES” [white label, printed except “S. Fernando”, which is handwritten], “35815” [white label with red edge, handwritten]; 1♂ (MACN), “ARGENTINA / M Garcia / BS AIRES” [white label, printed except “M Garcia”, which is handwritten]; 1♂ (MLLC): “ARGENTINA: Ciudad Autónoma de Buenos Aires: / Reserva Ecológica Costanera Sur / Laguna de los Patos 10.xi.2014 SA Mazzucconi” [white label, printed].

**Remarks.** The species was recently redescribed (Ruta and Libonatti 2016).

### *Scirtes caraguata* sp. nov.

**Type material.** **Holotype:** ♂ (MACN), “ARGENTINA: Jujuy / PN Calilegua, ex. Bromeliaceae / as larva 8.xii.2011, em. 14.xii.2011 / ML Libonatti” [white label, printed], “HOLOTYPUS / *Scirtes caraguata* / Libonatti, 2017” [red label, printed]. **Paratypes** (all bearing yellow, printed label “PARATYPUS / *Scirtes caraguata* / Libonatti, 2017”): 3♀♀ (MACN), same locality label as holotype; 1♀ (NHM), same locality label as holotype except em. 15.xii.2011; 1♂ (NHM), same locality

label as holotype except em. 19.xii.2011; 1♂ (MACN), same locality label as holotype except em. 3.i.2012.

**Diagnosis.** Body small, elongate oval, dark brown, almost black (Figs 1A–1B). Male tergites 8 and 9 with very long apodemes (Figs 4D, 4F). Tegmen symmetrical, parameres broadened apically (Fig. 4G). Penis elongate, asymmetrical, basal piece laminar, apical piece hook-like (Fig. 4G). Bursal sclerite with anterior part laminar, anterior margin concave, and middle part with a pair of divergent denticles (Fig. 4I).

**Description.** Measurements. Males (n = 3): TL 2.69–2.82 (mean 2.73) mm, PL 0.49–0.52 (mean 0.50) mm, PW 1.26–1.38 (mean 1.30) mm, EL 2.23–2.44 (mean 2.32) mm, EW 1.74–1.87 (mean 1.79) mm. Females (n = 4): TL 2.97–3.43 (mean 3.21) mm, PL 0.55–0.58 (mean 0.56) mm, PW 1.35–1.53 (mean 1.44) mm, EL 2.51–2.91 (mean 2.73) mm, EW 1.74–2.10 (mean 1.93) mm. Body elongate oval, depressed, maximum width at middle of elytra, closely covered with white setae. Body dark brown, almost black, pronotum with reddish lateral edges, antennomeres 1–2, trochanters and tarsi testaceous (Figs 1A–1B).

Head relatively wide, approximately  $1.9 \times$  as wide as interocular space, frons with a pair of very shallow foveae, frontoclypeus slightly to moderately projecting anteriorly, with side margins slightly converging anteriorly, anterior angles very narrowly rounded, and front margin slightly concave (Figs 2A–2C); punctation very fine, punctures separated by  $1 \times$  puncture diameter. Antennae slightly serrate, broad, antennomere 1 about  $2 \times$  as long as wide, antennomere 2 subspherical, about  $\frac{2}{3} \times$  as long as antennomere 1, antennomere 3 very short, approximately  $\frac{1}{3}$ – $\frac{1}{2} \times$  as long as antennomere 2, antennomeres 4–11 elongate, flattened dorsoventrally, antennomeres 4–7 equally long, twice as long as antennomeres 1–2 combined, antennomeres 8–11 progressively slightly shorter, apical antennomere as long as antennomere 8. Labrum with front margin arcuate, convex (Fig. 2E). Mandibles apically acute, with a well-developed incisivus, inner margin and molar area with microtrichia (Figs 2G–2H).

Pronotum about  $2.5 \times$  as wide as long, anterolateral corners  $90^\circ$ -angled, not projecting anteriorly, lateral margins rounded; punctures on pronotum and scutellum similar to those on head but sparser, separated by  $2 \times$  puncture diameter. Elytra elongate, almost parallel-sided in anterior  $\frac{2}{3}$ , humerus slightly marked; punctation uniform, coarser than on head, pronotum and scutellum, punctures separated by  $1$ – $2 \times$  puncture diameter.

Mesoventral cavity ending posteriorly in a V-shaped edge (Fig. 3C). Approximate length ratio of metatarsomere 1, dorsal metatibial spur, and ventral metatibial spur: 4.8: 1.6: 1.0. Abdomen completely covered with yellowish setae except for a pair of anterolateral glabrous areas on ventrites 2–5 (Fig. 4A); ventrite

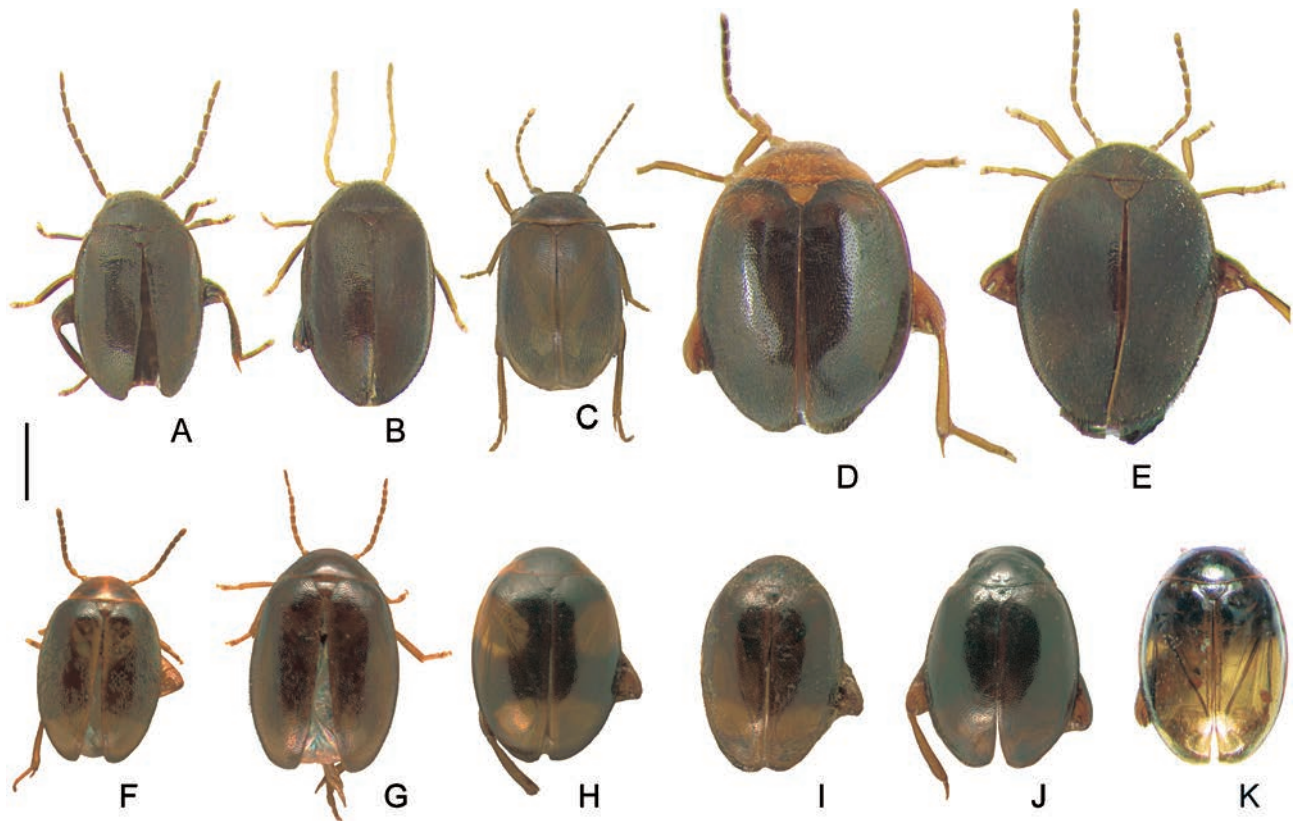


Figure 1. Argentine species of *Scirtes*, dorsal habitus: (A) *Scirtes caraguata* sp. nov. holotype, male; (B) *S. caraguata* sp. nov. paratype, female; (C) *S. dentatus* sp. nov. paratype, female; (D) *S. gallus* sp. nov. holotype, male; (E) *S. gallus* sp. nov. paratype, female; (F) *S. helicoidalis* sp. nov. holotype, male; (G) *S. helicoidalis* sp. nov. paratype, female; (H) *S. rufobinotatus rufobinotatus* Pic, 1922 holotype, male; (I) *S. rufobinotatus innotatus* Pic, 1922 holotype, male; (J) *S. rufobinotatus uninotatus* Pic, 1922 holotype, male; (K) *S. postimpessus* Pic, 1922 holotype, female. Scale bar = 1 mm.

2 bearing an anterior row of setae with dark alveoli (Fig. 4B); tergite 7 with a pecten of microtrichia along posterior margin (Fig. 4C).

Male terminalia and genitalia. Tergite 8 with a pair of very long apodemes, converging posteriorly, and a subtrapezoidal apical plate, covered with pores and minute setae on central part, posterior margin concave (Fig. 4D). Sternite 8 V-shaped (Fig. 4E). Tergite 9 with a pair of very long apodemes, converging posteriorly, and a square-shaped apical plate, apically covered with rows of short microtrichia (Fig. 4F). Sternite 9 absent. Tegmen symmetrical, parameres broad at base, narrowing posteriorly, apex broadened (Fig. 4G). Penis asymmetrical, elongate, with laminar basal part and hook-like apical part (Fig. 4G).

Female terminalia and genitalia. Branchlets absent. Bursal sclerite with anterior part laminar, anterior margin concave; middle part with a pair of divergent denticles (Fig. 4I). Prehensor absent.

Sexual dimorphism. Body size smaller in males (Fig. 1A) than in females (Fig. 1B). Antennae longer and slightly broader in males than in females. Antennomeres

4–11 dark brown in males, testaceous in females. Abdominal ventrite 5 with posterior margin deeply concave in males (Fig. 4A), truncate in females (Fig. 4H).

**Distribution.** Argentina: Jujuy Province.

**Etymology.** The epithet *caraguata* is a noun in apposition, comes from the Guarani language, and is used by the local population to refer to the plants of the family Bromeliaceae, where the species was found.

**Remarks.** *Scirtes caraguata*, *S. longicornis* Champion, 1897 (Panama), and *S. forticornis* Champion, 1918 (Brazil) are presumably related species due to a similar body size (2.2–3.4), long and broad antennae, minute antennomere 3, and anterolateral angles of pronotum not projecting anteriorly. *Scirtes caraguata* differs from *S. longicornis* and *S. forticornis* in the presence of frontal foveae and shorter antennae. Furthermore, a more depressed body, broadened apices of parameres, a longer hook-like projection of penis, and a straight rather than curved basal piece of penis distinguish *S. caraguata* from *S. longicornis*. A more elongate rather than elliptical body shape and

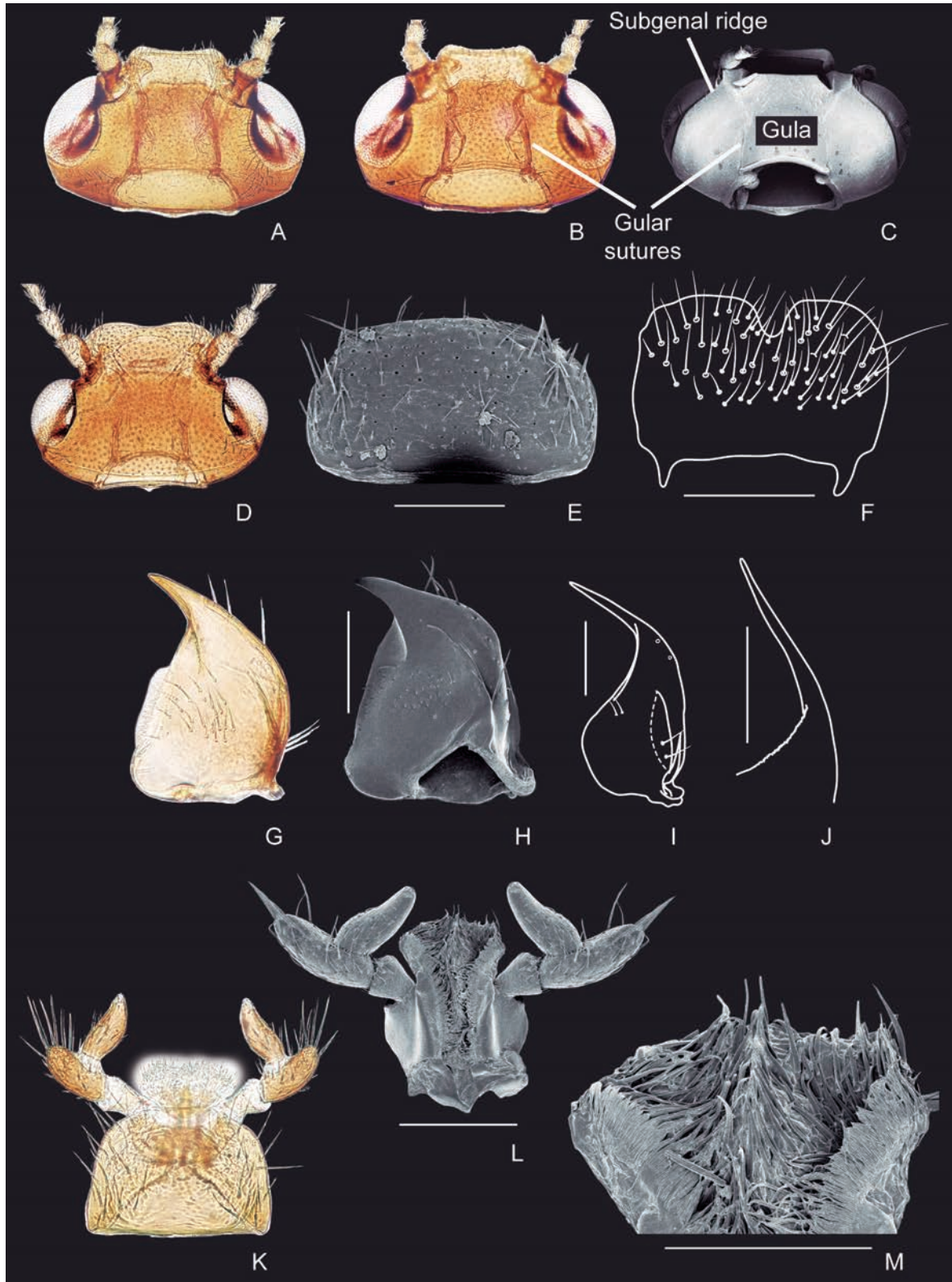


Figure 2. Argentine species of *Scirtes*, head morphology: (A) *S. diversenotatus*, head, dorsal view; (B) *S. diversenotatus*, head, ventral view; (C) *S. adustus*, head, ventral view; (D) *S. dentatus*, head, dorsal view; (E) *S. adustus*, labrum, dorsal view; (F) *S. dentatus*, labrum, dorsal view; (G) *S. diversenotatus*, right mandible, dorsal view; (H) *S. adustus*, right mandible, dorsal view; (I) *S. dentatus*, right mandible, dorsal view; (J) *S. dentatus*, apical half of left mandible, ventral view; (K) *S. diversenotatus*, labium, ventral view; (L) *S. adustus*, labium, dorsal view; (M) *S. adustus*, close-up of ligula, dorsal view. Scale bars = 0.1 mm for E–F, H–J; and 0.05 for L–M. A–D, G and K not scaled.

dark brown rather than testaceous body distinguish *S. caraguata* from *S. forticornis*.

*Scirtes dentatus* sp. nov.

**Type material.** **Holotype:** ♂ (MACN), “ARGENTINA: Buenos Aires / Magdalena: Reserva El Destino / path to Río de la Plata estuary / 26.xi.2012, beating near ditch / ML Libonatti” [white label, printed], “HOLOTYPUS / *Scirtes dentatus* / Libonatti, 2017” [red label, printed]. **Paratypes** (all bearing yellow, printed label “PARATYPUS / *Scirtes dentatus* / Libonatti, 2017”): 1 ♂ (BR), “R<sup>EP</sup> ARGENTINA / Prov. Buenos Aires / XI. 1896 / C. Bruch” [white label, print], “*Scyrtes / piceonotatus / var. o sp. près Pic*” [white label, handwritten by Bruch], “*Scyrtes / piceonotatus / var ou sp. près*” [white label, handwritten by Pic]; 7 ♂ ♂ and 11 ♀ ♀ (NHM), same locality label as holotype; 21 ♂ ♂ and 7 ♀ ♀ (MACN), same locality label as holotype except 25.xi.2012.

**Diagnosis.** Body small, oval, reddish-brown (Fig. 1C). Tegmen with relatively narrow basal part, parameres straight, converging posteriorly, broader at base, gradually narrowing posteriorly, each bearing a basal denticle (Fig. 5G). Penis with rectangular pala and elongate apical part bearing a dorsal denticle, left margin finely serrate (Figs 5H–5I). Bursal sclerite conical (Fig. 5M). Prehensor composed of a pair of dentate sclerites (Fig. 5N).

**Description.** Measurements. Males (n = 10): TL 2.31–2.58 (mean 2.49) mm, PL 0.49–0.56 (mean 0.50) mm, PW 1.14–1.24 (mean 1.19) mm, EL 1.94–2.19 (mean 2.09) mm, EW 1.51–1.65 (mean 1.56) mm. Females (n = 10): TL 2.42–2.63 (mean 2.50) mm, PL 0.49–0.52 (mean 0.50) mm, PW 1.13–1.25 (mean 1.19) mm, EL 2.02–2.30 (mean 2.16) mm, EW 1.53–1.71 (mean 1.60) mm. Body oval, depressed, closely covered with long yellowish setae. Body reddish-brown, pronotum with darker central region and lighter sides, antennae and legs testaceous to brown (Fig. 1C).

Head wide, approximately 1.6 × as wide as interocular space, eyes very protuberant, frontoclypeal surface convex, frontoclypeus strongly projecting anteriorly and laterally, with side margins diverging anteriorly, anterior angles broadly rounded, and front margin strongly concave (Fig. 2D); punctation very fine, granular, punctures separated by 1–2 × puncture diameter. Antenna relatively narrow, antennomere 1 about 2 × as long as wide, antennomere 2 slightly shorter than antennomere 1, antennomere 3 slightly longer than 2 and approximately as long as antennomere 1, antennomeres 4–11 subcylindrical, narrow, antennomere 4 approximately 1.2 × as long as antennomere 1, antennomeres 5–10 progressively slightly shorter, apical antennomere as long as antennomere 4.

Labrum with front margin concave (Fig. 2F). Mandibles with well-developed, long and narrow incisivus, the dorsal surface exhibiting a well-developed ridge and a deep furrow adjacent to the ridge, and bearing a group of two setae (in right mandible) or five setae (in left mandible) (Fig. 2I), inner margin very finely dentate, lacking microtrichia (Fig. 2J).

Pronotum about 2.3 × as wide as long, anterolateral corners 90°-angled, very slightly projected anteriorly, lateral margins rounded; punctation on pronotum and scutellum slightly coarser than on head, punctures separated by 1 × puncture diameter. Elytra oblong, humerus slightly marked, lateral margins slightly rounded; punctation uniform, coarser than on head, pronotum and scutellum, punctures separated by 1–2 × puncture diameter.

Mesoventral cavity ending posteriorly in a truncate edge (Figs 3F–3G). Approximate length ratio of metatarsomere 1, dorsal metatibial spur, and ventral metatibial spur: 3.3: 1.8: 1.0. Abdomen completely covered with yellowish setae except for a pair of anterolateral glabrous areas on ventrites 2–5; ventrite 1 less densely setose than ventrites 2–5 and with a short longitudinal anteromedial keel, ventrites 2–4 with dark alveoli, ventrite 5 very subtly concave (Figs 5A–5B, 5J); tergite 7 with a pecten of microtrichia along posterior margin (Fig. 5C).

Male terminalia and genitalia. Tergite 8 with a pair of subtly sinuous apodemes and a rectangular apical plate bearing small combs of minute microtrichia on central and lateral regions, long microtrichia on posterior margin, and long setae and pores near posterior margin, posterior margin arcuate (Fig. 5D). Sternite 8 absent. Tergite 9 with a pair of straight apodemes and a rectangular apical plate bearing numerous small combs of microtrichia near posterior margin (Fig. 5E). Sternite 9 oblong, broadened in posterior portion, apex bilobed, with short setae and pores on apical third (Fig. 5F). Tegmen with relatively narrow basal piece, parameres straight, converging posteriorly, broad basally and gradually narrowing to the apex, each with a basal denticle, both parameres covered with pores and short setae (Fig. 5G). Penis with more or less rectangular pala, forming an angle of about 135° with apical piece (in ventral aspect); apical piece elongate, narrow basally, gradually widening to the apex, apex rounded, dorsal surface with a pair of sclerotized longitudinal rods, left-handed margin serrate (Figs 5H–5I). A triangular, flattened denticle, originates from the left-handed rod and goes to the right-hand.

Female genitalia. Bursal sclerite conical (Figs 5L–5M). Prehensor composed of a pair of dentate sclerites (Figs 5L, 5N).

Sexual dimorphism. Anteromedial keel of ventrite 1 longer in males (Fig. 5A) than in females (Fig. 5J). Tergite 7 with much shorter apodemes in males (Fig. 5C)

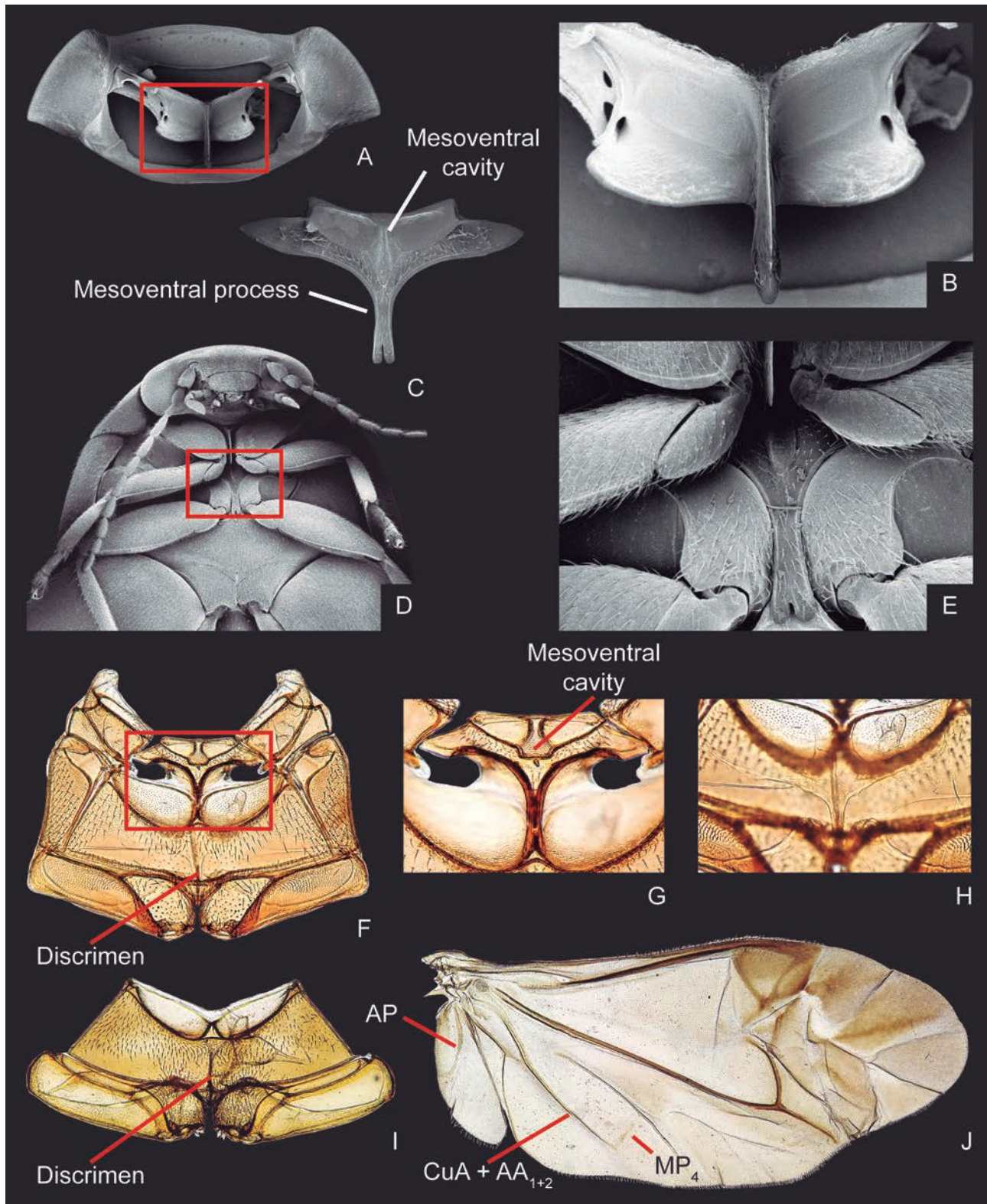


Figure 3. Argentine species of *Scirtes*, thorax morphology: (A) *S. adustus*, prothorax, ventral view; (B) *S. adustus*, detail of the area indicated in A; (C) *S. adustus*, mesoventrite, ventral view; (D) *S. rufobinotatus*, head and thorax, ventral view; (E) *S. rufobinotatus*, detail of the area indicated in D; (F) *S. dentatus*, meso- and metathorax, ventral view; (G) *S. dentatus*, mesoventrite, ventral view; (H) *S. dentatus*, metendosternite, dorsal view; (I) *S. diversenotatus*, metaventrite and metacoxae, ventral view; (J) *S. diversenotatus*, right metathoracic wing, dorsal view.

than in females (Fig. 5K); and posterior margin straight in males (Fig. 5C), parabolic in females (Fig. 5K).

Intraspecific variation. Males vary slightly in the coloration of pronotum and elytra; some males have light brown elytra with darkened lateral margins.

**Distribution.** Argentina: Buenos Aires Province.

**Etymology.** This species is named *dentatus*, Latin adjective for “toothed”, in reference to the teeth or denticles found both in male and female genital organs.

**Remarks.** Several neotropical species, such as *Scirtes angustatus* Champion, 1897 (Panama), *S. atronotatus* Pic, 1918 and *S. bogotensis* Pic, 1918 (Colombia), *S. goliai* Epler, 2012 (Bahamas, Cayman Islands, and southern Florida), *S. helvolus* Champion, 1918, *S. laevicollis* Champion, 1918 (Brazil), *S. piceonotatus* Pic, 1922 (Brazil), *S. puncticollis* Champion, 1897 (Panama and Guatemala), *S. salicis* Champion, 1897 (Guatemala and Saint Vincent), *S. scymnoides* Champion, 1897 (Panama), *S. strigosus* Champion, 1918 (Brazil), and *S. testaceicornis* Pic, 1916 (Guyana) have the same type of frontoclypeus (Fig. 2D) as *S. dentatus* (unpublished data; except for *S. goliai*). Of all those species, *S. piceonotatus* and *S. helvolus* are superficially the most similar to *S. dentatus*. *Scirtes dentatus* is distinguished from *S. piceonotatus* by the reddish brown elytra (*S. piceonotatus* has a blackish spot on basal and middle regions of elytra),

and from *S. helvolus* by being larger, having the head, pronotum and scutellum brown (yellow in *S. helvolus*), the margins of the scutellum straight (rounded in *S. helvolus*), the penis much broader basally than in *S. helvolus*, with a dorsal denticle (lacking in *S. helvolus*), the prehensor composed of two dentate sclerites (composed of four small conical sclerites in *S. helvolus*), and the bursal sclerite wider basally and narrower apically than in *S. helvolus*.

### *Scirtes diversenotatus* Pic, 1930

*Scirtes adustus* v. *diversenotatus* Pic, 1930a: 43 [Argentina: Córdoba]; Bachmann, 2003: 68 [holotype in MACN].

*Scirtes adusta* v. *diversenotata*: Blackwelder, 1944: 267 [catalogue].

*Scirtes diversenotatus*: Ruta & Libonatti, 2016: 212 [redescription].

**Material examined.** **Holotype** of *Scirtes adustus* v. *diversenotatus* Pic, 1930a: ♂ (BR), “LA PAZ (Dep. San Javier) / Córdoba. / 15–31.XII.1928. C. Bruch” [white label, printed]; “Typus” [green label, handwritten by Bruch]; “Scirtes / adustus var. / diversenotatus Pic” [white label, handwritten by Bruch]; “Scirtes adustus / v. nov. / diversenotatus” [white label, handwritten by Pic]. **Other specimens** (all in MLLC): 1 ♂, “ARGENTINA: Jujuy / PN Calilegua, La Lagunita / 7.xii.2011, sweep netting/ML Libonatti”; 4 ♂ and 1 ♀, “ARGENTINA: Jujuy / PN Calilegua, La Lagunita / as

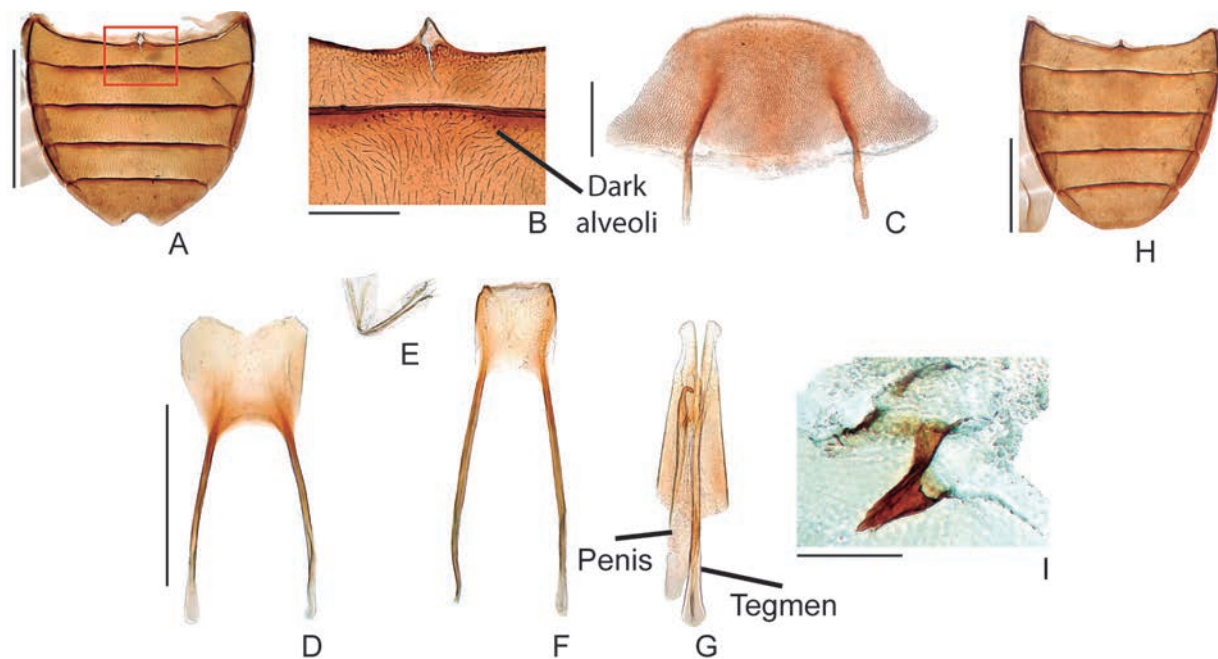


Figure 4. *Scirtes caraguata*: (A) male abdomen, ventral view; (B) detail of the area indicated in A; (C) male tergite 7, dorsal view; (D) male tergite 8, dorsal view; (E) male sternite 8, ventral view; (F) male tergite 9, dorsal view; (G) aedeagus, ventral view; (H) female abdomen, ventral view; (I) bursal sclerite, dorsal view. Scale bars = 1 mm for A and H; 0.2 mm for B–C; 0.5 mm for D–G; and 0.1 mm for I.



larva 7.xii.2011, em. 14.xii.2011 / ML Libonatti"; 1 ♀, same data except em. 15.xii.2011; 2 ♀ ♀, same data except em. 18.xii.2011; 1 ♂, same data except em. 20.xii.2011; 1 ♀, same data except em. 22.xii.2011; 2 ♀ ♀, same data except em. 27.xii.2011; 1 ♀, "ARGENTINA: Jujuy / PN Calilegua, Piletón / as larva 8.xii. 2011, em. 17.xii.2011 / ML Libonatti"; 1 ♂, same data except em. 23.xii.2011; 1 ♂, same data except em. 24.xii.2011; 1 ♀, same data except em. 31.xii.2011.

**Remarks.** The species was recently redescribed (Ruta and Libonatti 2016).

*Scirtes gallus* sp. nov.

**Type material. Holotype:** ♂ (MACN), "ARGENTINA: Jujuy / PN Calilegua, A° Tres Cruces / as larva 7.XII.2011, em. 20.xii.2011 / ML Libonatti" [white label, printed], "HOLOTYPUS / *Scirtes gallus* / Libonatti, 2017" [red label, printed]. **Paratypes** (all bearing yellow, printed label "PARATYPUS / *Scirtes gallus* / Libonatti, 2017"): 2 ♀ ♀ (MACN), same locality label as holotype except em. 21.xii.2011; 1 ♂ (MACN), same locality label as holotype except em. 27.xii.2011; 1 ♂ (MACN), same locality label as holotype except em.

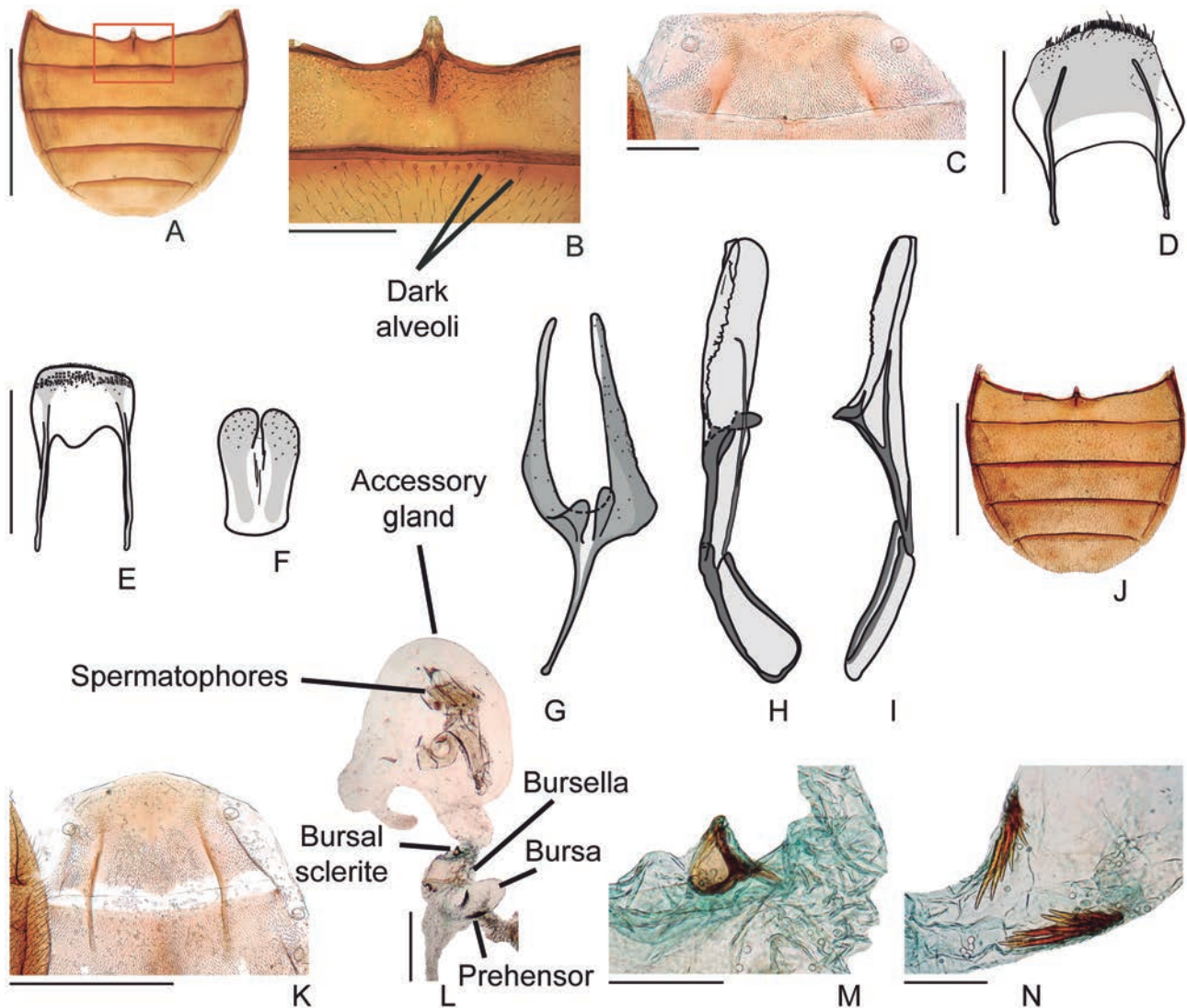


Figure 5. *Scirtes dentatus*: (A) male abdomen, ventral view; (B) detail of the area indicated in A; (C) male tergite 7, dorsal view; (D) male tergite 8, dorsal view; (E) male tergite 9, dorsal view; (F) male sternite 8, ventral view; (G) tegmen, dorsal view; (H) penis, ventral view; (I) penis, left lateral view; (J) female abdomen, ventral view; (K) female tergite 7, ventral view; (L) genital organs (except ovaries), dorsal view; (M) bursal sclerite, dorsal view; (N) prehensor, dorsal view. Scale bars = 1 mm for A and J; 0.2 mm for B–C; 0.25 mm for D–I; 0.5 for K–L; and 0.1 mm for M–N.

28.xii.2011; 1 ♂ (NHM), same locality label as holotype except em. 31.xii.2011; 1 ♀ (NHM), "ARGENTINA: Jujuy / PN Calilegua, Piletón / as larva 8.xii.2011, em. 10.i.2012 / ML Libonatti".

**Diagnosis.** Body broadly oval (Figs 1D–1E); pronotum and scutellum reddish testaceous to brown, elytra dark brown. Tegmen symmetrical, spatulate, parameres triangular (Fig. 6G). Penis strongly asymmetrical, pala oval, trigonium arcuate, with a median row of denticles, only one parameroid present (left-handed one), serrate (Figs 6H–6I). Bursal sclerite with anterior part U-shaped, anterior margin truncate and middle part with a pair of divergent denticles (Fig. 6L). Prehensor composed of a pair of more or less triangular sclerites (Fig. 6M).

**Description.** Measurements. Males ( $n = 4$ ): TL 3.24–3.59 (mean 3.37) mm, PL 0.62–0.70 (mean 0.65) mm, PW 1.54–1.85 (mean 1.67) mm, EL 2.86–3.10 (mean 2.95) mm, EW 2.36–2.78 (mean 2.55) mm. Females ( $n = 2$ ): TL 3.59–3.67 (mean 3.63) mm, PL 0.66 mm, PW 1.66–1.78 (mean 1.72) mm, EL 3.20–3.24 (mean 3.22) mm, EW 2.63–2.86 (mean 2.74) mm. Body oval,

broad, convex, maximum width at middle of elytra, closely covered with white-yellow setae (Figs 1D–1E). Head, pronotum and scutellum reddish-testaceous to brown, labrum and antennomeres 1–3 testaceous, antennomeres 4–11 light brown. Elytra dark brown. Ventral surface testaceous. Legs mainly testaceous with reddish-testaceous hind femora.

Head wide, approximately  $1.8 \times$  as wide as interocular space, frons with a pair of very shallow foveae, clypeal surface convex, frontoclypeus slightly to moderately projecting anteriorly, with side margins slightly converging anteriorly, anterior angles very narrowly rounded, and front margin slightly concave (Figs 2A–2C); punctation fine, punctures separated by  $1.0 \times$  diameter. Antennae relatively broad, antennomere 1  $2 \times$  as long as wide, antennomere 2  $1.5 \times$  as long as wide, half the length of antennomere 1, antennomere 3 almost as long as antennomere 2, antennomere 4–7 subequal in length,  $2 \times$  as long as antennomere 3, antennomeres 8–11 progressively slightly shorter. Labrum with front margin arcuate, convex (Fig. 2E). Mandibles apically acute, with a well-developed

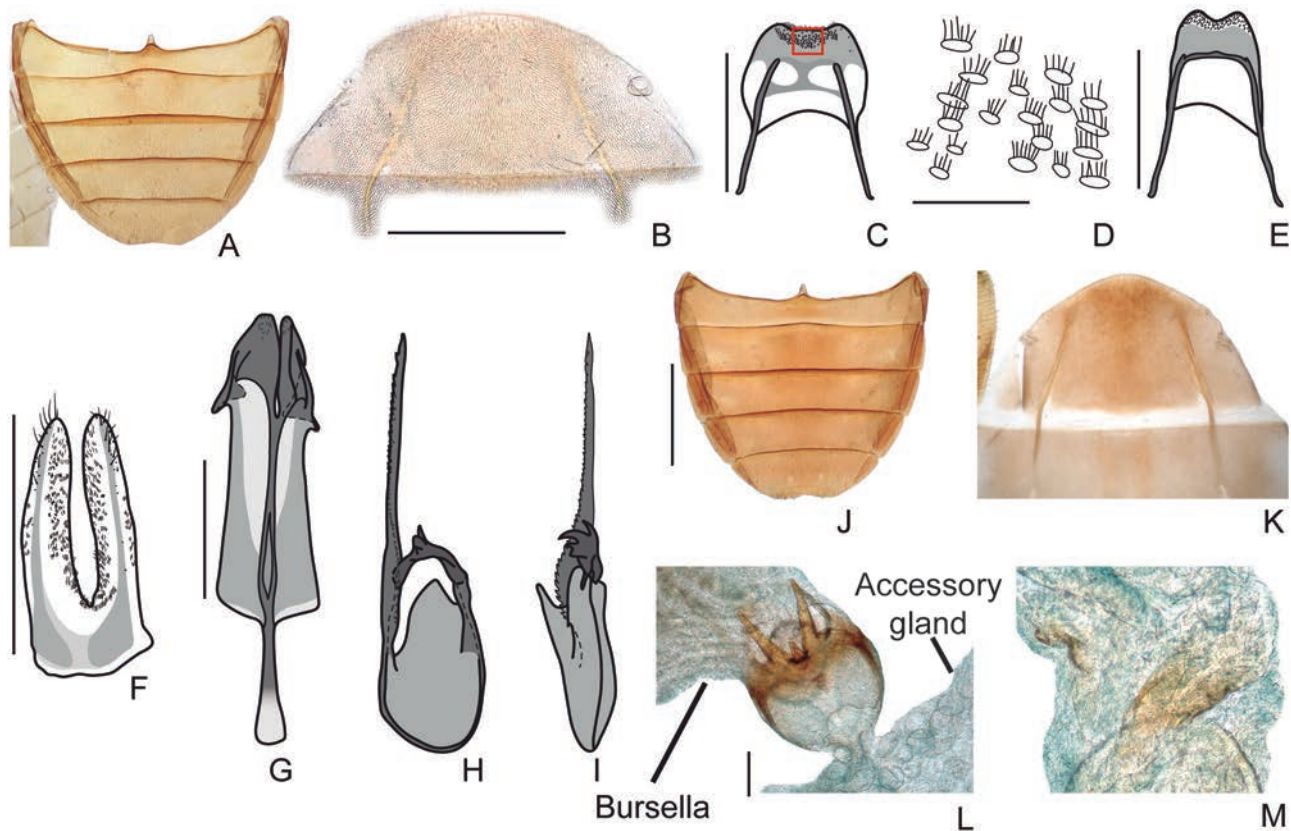


Figure 6. *Scirtes gallus*: (A) male abdomen, ventral view; (B) male tergite 7, dorsal view; (C) male tergite 8, dorsal view; (D) detail of area indicated in B; (E) male tergite 9, dorsal view; (F) male sternite 9, ventral view; (G) tegmen, dorsal view; (H) penis, ventral view; (I) penis, right lateral view; (J) female abdomen, ventral view; (K) female tergite 7, dorsal view; (L) bursal sclerite, posterior view; (M) prehensor, dorsal view.

Scale bars = 0.5 mm for B–C and E–I; 0.025 mm for D; 1 mm for J; and 0.1 mm for L.

incisivus, inner margin and molar area with microtrichia (Figs 2G–2H).

Pronotum approximately  $2.7 \times$  as wide as long, anterolateral angles  $90^\circ$ -angled, slightly projecting anteriorly, lateral margins rounded; punctures on pronotum and scutellum similar to that on head, but sparser, separated by  $2.0 \times$  diameter. Elytra oval, relatively broad, humerus slightly marked, lateral margins fairly rounded; with a row of punctures parallel and adjacent to the suture, punctation uniform, coarser than that on head, pronotum and scutellum, punctures separated by  $2.0$ – $3.0 \times$  diameter.

Mesoventral cavity ending posteriorly in a V-shaped edge (Fig. 3C). Approximate length ratio of metatarsomere 1, dorsal metatibial spur, and ventral metatibial spur: 4.4: 2.4: 1.0. Abdomen completely covered with yellowish setae except for a pair of anterolateral glabrous areas on ventrites 2–5; ventrite 2 bearing an anterior row of setae with dark alveoli (Fig. 6A), ventrite 5 shallowly concave (Figs 6A, 6J); tergite 7 with a pecten of microtrichia along posterior margin (Figs 6B, 6K).

Male terminalia and genitalia. Tergite 8 with a pair of apodemes converging posteriorly and a subtrapezoidal apical plate covered with small combs of short microtrichia on central part and long microtrichia on apical margin (Figs 6C–6D). Sternite 8 absent. Tergite 9 with a pair of apodemes converging posteriorly, connected each other with a sclerotized cross-piece, and a square-shaped apical plate covered with small combs of short microtrichia near apical margin, apical margin concave (Fig. 6E). Sternite 9 bilobate, lobes long, covered with microtrichia and setae (Fig. 6F). Tegmen symmetrical, spatulate, parameres triangular. Penis strongly asymmetrical, pala oval, trigonium arcuate, bearing a median row of denticles, only left-handed parameroid present, serrate.

Female genitalia. Bursal sclerite with anterior part U-shaped, anterior margin truncate; middle part with a pair of diverging denticles (Fig. 6L). Prehensor composed of a pair of more or less triangular sclerites (Fig. 6M).

Sexual dimorphism. Head, labrum and pronotum reddish-testaceous in males (Fig. 1D), brown with reddish-testaceous margins in females (Fig. 1E). Elytra with intermixed longer setae, which are more dense on apical part, in females; elytra covered with equally long setae along its whole length in males. Tergite 7 with a setose area less extended in males than in females; apodemes shorter in males than in females; and posterior margin rounded in males, parabolic in males (Figs 6B, 6K). Ventrite 5 with a pair of foveae in females, without foveae in male; with the concavity deeper in females than in males (Figs 6A, 6J).

Intraspecific variation. Males vary slightly in size and in the presence/absence of a pair of longitudinal

brown spots on pronotal disc. Elytra of three male paratypes are lighter in color than those of the holotype.

**Distribution.** Argentina: Jujuy Province.

**Etymology.** This species is named *gallus*, Latin for “rooster”, after the median row of denticles in the penis resembling the comb or crest at the top of roosters’ head. The epithet is a noun in apposition.

**Remarks.** This species is similar to *S. adustus* Boheman and *S. diversenotatus* in body color, shape of tegmen, and shape of bursal sclerite, but it differs from both in the more rounded body outline and the shape of penis.

### *Scirtes helicoidalis* sp. nov.

**Type material. Holotype:** ♂ (MACN), “ARGENTINA: Chaco / ~200 m PN Chaco entrance / 18.i.2011, light trap / MC Michat” [white label, printed], “HOLO-TYPUS / *Scirtes helicoidalis* / Libonatti, 2017” [red label, printed]. **Paratypes** (all bearing yellow, printed label “PARATYPUS / *Scirtes helicoidalis* / Libonatti, 2017”): 23♂♂ and 8♀♀ (MACN), same locality label as holotype; 1♂ and 3♀♀ (MACN), “ARGENTINA: Salta / Nuestra Señora de Talavera / Finca Tolloche, 3–4.xi.1994 / light trap”; 1♀ (MACN), “ARGENTINA: Corrientes / PN Mburucuyá 14.i.2008 / light trap / MC Michat & PLM Torres”; 5♂♂ and 1♀ (MACN), same data except 17.i.2008; 2♀♀ (MACN), “ARGENTINA: Entre Ríos / PN El Palmar, Mirador La / Glorieta, 25.ii.2004 light trap / MC Michat & PLM Torres”; 13♂♂ and 25♀♀ (NHM), “ARGENTINA: Entre Ríos / PN El Palmar, Cantera / 26.ii.2004 light trap / MC Michat & PLM Torres”; 1♂ and 1♀ (MACN), same data except 29.ii.2004; 1♀ (MACN), “ARGENTINA: Formosa / PN Río Pilcomayo / Estero Poí, 15.i.2011 / light trap, MC Michat”; 7♂♂ (MACN), same data except 16.i.2011; 1♂ (MACN), “ARGENTINA: Entre Ríos / PN Pre-Delta, Laguna Las / Piedras, 22.iii.2012 / sweep netting, ML Libonatti”; 1♂ (MACN), “ARGENTINA: Entre Ríos / PN Pre-Delta 19&21.iii.2012 / light trap, ML Libonatti”; 38♂♂ and 16♀♀ (MACN), “ARGENTINA: Corrientes / RP 86 to PN Mburucuyá / 28°3’39”S 58°9’32”W / 10.xii.2012, light trap / MC Michat & PLM Torres”. **Other specimens:** 1♂ and 1♀ (MACN), “ARGENTINA/Paranacito / E. RIOS” [white label with black edges, print except “Paranacito” which is handwritten], “29891” [white label with red edge, handwritten].

**Diagnosis.** Body oval; varied coloration, testaceous to brown (Figs 1F–1G). Tegmen slightly asymmetrical, basal piece rod-shaped, parameres elongate, broadened at apex, dorsal surface of right paramere spiny, left paramere bearing a curved basal denticle (Fig. 7F). Penis slightly asymmetrical, pala oval, trigonium well sclerotized, triangular, projected posteriorly and bent

90°, parameroids narrow and acute, right-handed parameroid with helicoidal apex (Figs 7G–7H). Bursal sclerite flat, trapezoidal, anterior part laminar, anterior margin arcuate; middle part with a pair of very small denticles (Figs 7N, 7P). Prehensor composed of two laminar sclerites, both covered with conical microtrichia, dorsal sclerite with anterior margin projected acutely and posterior margin folded anteriorly (Figs 7N, 7Q).

**Description.** Measurements. Males (n = 10): TL 2.39–2.69 (mean 2.58) mm, PL 0.49–0.55 (mean 0.53) mm, PW 1.10–1.25 (mean 1.20) mm, EL 1.99–2.30 (mean 2.18) mm, EW 1.53–1.71 (mean 1.63) mm. Females (n = 10): TL 2.54–2.97 (mean 2.72) mm,

PL 0.46–0.58 (mean 0.52) mm, PW 1.10–1.35 (mean 1.25) mm, EL 1.99–2.54 (mean 2.31) mm, EW 1.50–1.84 (mean 1.66) mm. Body oval, basal  $\frac{2}{3}$  of elytra depressed, maximum width at middle part of elytra (Figs 1F–1G). Body testaceous to brown (see “Sexual dimorphism” and “Intraspecific variation”), legs testaceous.

Head wide, approximately 1.8 × as wide as interocular space, frons convex, without foveae, frontoclypeus slightly to moderately projecting anteriorly, with side margins slightly converging anteriorly, anterior angles very narrowly rounded, and front margin slightly concave (Figs 2A–2C); punctation fine, punctures separated by 1–2 × puncture diameter. Antennae relatively broad and short, antennomere 1 1.5 × as long as wide,

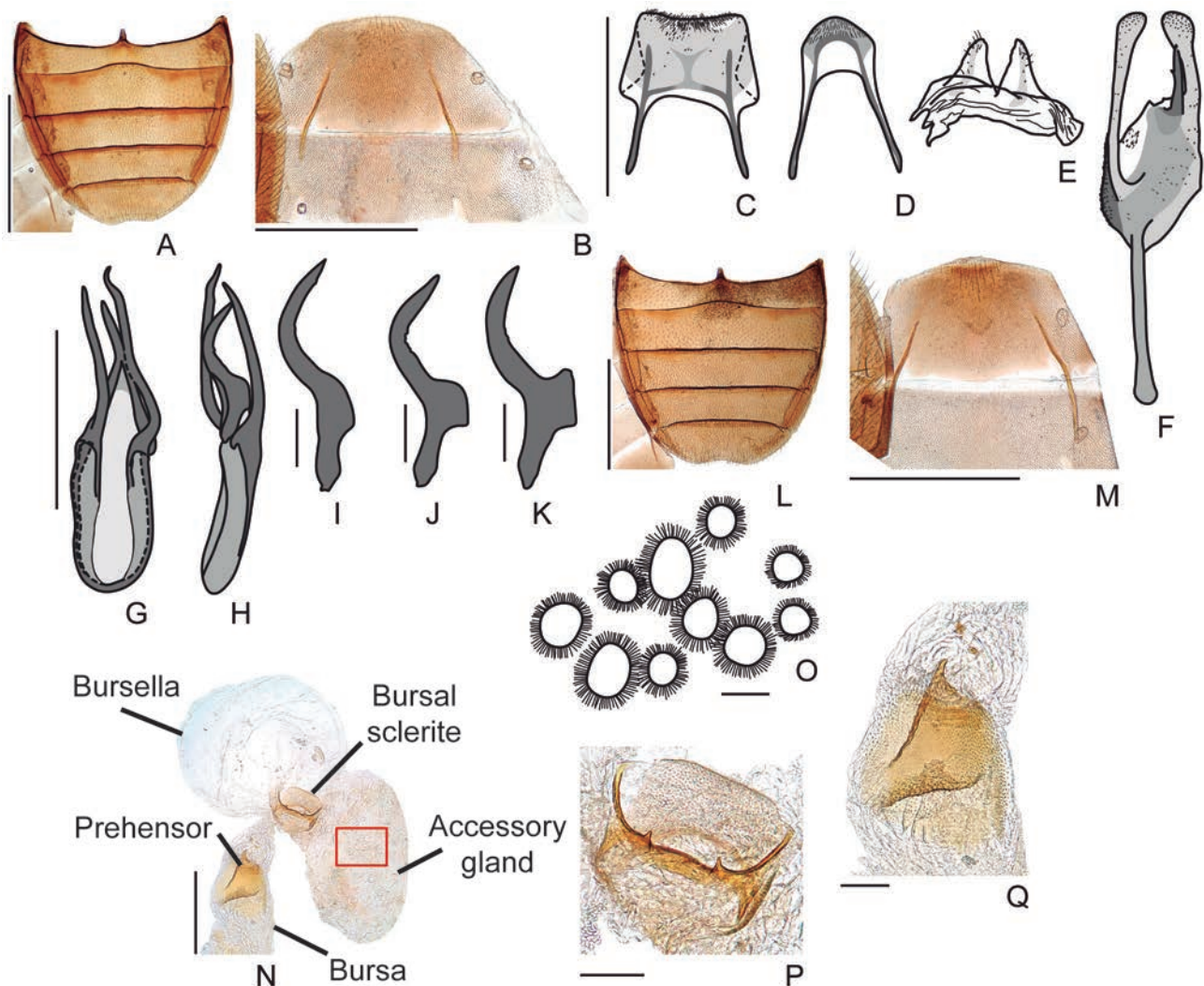


Figure 7. *Scirtes helicoidalis*: (A) male abdomen, ventral view; (B) male tergite 7, dorsal view; (C) male tergite 8, dorsal view; (D) male tergite 9, dorsal view; (E) male sternite 9, ventral view; (F) tegmen, dorsal view; (G) penis, ventral view; (H) penis, left lateral view; (I–K) trigonium, left lateral view: (I) specimen from El Palmar National Park; (J) specimen from Pre-Delta National Park; (K) specimen from Paranacito; (L) female abdomen, ventral view; (M) female tergite 7, dorsal view; (N) genital organs (except ovaries), dorsal view; (O) detail of area indicated in N; (P) bursal sclerite, dorsal view; (Q) prehensor, dorsal view. Scale bars = 1 mm for A and L; 0.5 mm for B–H and M–N; 0.1 mm for I–K; 0.05 mm for O; and 0.1 mm for P–Q.

antennomere 2  $1.5 \times$  as long as wide,  $\frac{1}{2}$ – $\frac{2}{3}$  as long as antennomere 1, antennomere 3  $\frac{2}{3}$  as long as antennomere 2, antennomeres 4–6 as long as antennomere 2, antennomeres 7–10 progressively slightly shorter, antennomere 11 approximately as long as antennomere 4. Labrum with front margin arcuate, convex (Fig. 2E). Mandibles apically acute, with a well-developed incisivus, inner margin and molar area with microtrichia (Figs 2G–2H).

Pronotum approximately  $2.4 \times$  as wide as long, anterolateral angles  $90^\circ$ -angled, slightly projecting anteriorly, lateral margins rounded; punctures on pronotum and scutellum similar to that on head. Elytra oval, humerus slightly marked, lateral margins rounded; punctation uniform, slightly coarser than on head, pronotum and scutellum, punctures separated by  $1$ – $1.5 \times$  puncture diameter.

Mesoventral cavity ending posteriorly in a V-shaped edge (Fig. 3C). Approximate length ratio of metatarsomere 1, dorsal metatibial spur, and ventral metatibial spur: 3.0: 2.0: 1.0. Abdomen completely covered with yellowish setae except for a pair of anterolateral glabrous areas on ventrites 2–5; ventrite 2 bearing an anterior row of setae with dark alveoli (Fig. 7A); ventrite 5 shallowly concave (Figs 7A, 7L); tergite 7 with a pecten of microtrichia along posterior margin (Figs 7B, 7M).

Male terminalia and genitalia. Tergite 8 with a pair of short apodemes, converging posteriorly, connected each other by a sclerotized cross-piece, and a subtrapezoidal apical plate, covered with pores, minute setae and long microtrichia (Fig. 7C). Sternite 8 absent. Tergite 9 with a pair of long apodemes, converging posteriorly, connected each other by a sclerotized cross-piece, and an almost pentagonal apical plate, covered with long microtrichia on apical third (Fig. 7D). Sternite 9 very little sclerotized, markedly bilobed, lobes triangular, covered with pores and long setae (Fig. 7E). Tegmen slightly asymmetrical, diapason-shaped, parameres elongate, broadened at apex, dorsal surface of right-handed paramere spiny, left-handed paramere bearing a curved basal denticle (Fig. 7F). Penis slightly asymmetrical, pala oval, trigonium well sclerotized, triangular, projected posteriorly and bent  $90^\circ$ , parameroids narrow and acute, right-handed parameroid with helicoidal apex (Figs 7G–7H).

Female genitalia. Bursal sclerite flat, trapezoidal, anterior part laminar, anterior margin arcuate; middle part with a pair of very small denticles (Figs 7N, 7P). Prehensor composed of two laminar sclerites, both covered with conical microtrichia, dorsal sclerite with the anterior margin projected acutely and the posterior margin folded anteriorly (Figs 7N, 7Q). Accessory gland covered with disk-shaped cuticular depressions which are surrounded by microtrichia. (Fig. 7O).

Sexual dimorphism. Males usually reddish testaceous, with a central brown spot on pronotum and brown spots on elytra (Fig. 1F). Females usually completely brown (Fig. 1G). A few males and a few females have the body similarly colored as most of the opposite sex. Tergite 7 with posterior margin rounded in males, parabolic in females; apodemes longer in females than in males; with a posteromedial triangular depression in females, absent in males; with a middle part of posterior margin membranous, glabrous, covered with conical microtrichia in females, absent in males; with setae covering a larger apical surface in females than in males (Figs 7B, 7M).

Intraspecific variation. Males vary greatly in elytral coloration pattern as follows: 1) elytra completely testaceous; 2) elytra testaceous with three incipient brown spots, one on the humerus, other in middle part of costal margin, and other in apical part of elytra; 3) (the commonest) elytra testaceous with a brown fascia on basal margin, a brown fascia on middle part of elytra, and an apical spot; 4) elytra testaceous with middle fascia more extended and connected to the basal fascia and the apical spot (Fig. 1F); 5) elytra completely brown. Males also vary in the size of a middle protuberance of the trigonium (seen in lateral view) as follows: 1) little evident in specimens from El Palmar National Park (Fig. 7I); 2) slightly evident in most specimens, including the holotype (Fig. 7H); 3) moderately evident in specimens from Pre-Delta National Park and Finca Tolloche (Fig. 7J); 4) very evident and acute in a specimen from Paranacito (Fig. 7K).

**Distribution.** Argentina: Chaco, Corrientes, Entre Ríos, Formosa and Salta Provinces.

**Etymology.** This species is named *helicoidalis* after the helical apical part of the right-handed parameroid.

**Remarks.** This species is similar in coloration pattern to *S. atronotatus* (Colombia), *S. corumbanus* (Brazil), *S. fasciatus* (Fabricius) (South America) and *S. rufobinotatus* Pic (Argentina and Brazil). *Scirtes helicoidalis* is distinguished from *S. atronotatus* by the type of frontoclypeus (strongly projecting anteriorly and laterally, with front margin strongly concave in *S. atronotatus* while slightly to moderately projecting anteriorly, with front margin slightly concave in *S. helicoidalis*), and from *S. corumbanus* and *S. fasciatus* by the body outline (more elongate in *S. corumbanus* while more acuminate in *S. fasciatus*). *Scirtes helicoidalis* is distinguished from *S. rufobinotatus* by its smaller body and lighter color, lack of excitators in females, and several genitalic characters (male: parameres broadened apically, right-handed paramere with a basal denticle, trigonium well sclerotized, bent, and parameroids present; female: bursal sclerite with two denticles in *S. helicoidalis*, three denticles in *S. rufobinotatus*, and prehensor differently shaped).

*Scirtes rufobinotatus* Pic, 1922

*Scirtes rufobinotatus* v. *rufobinotatus* Pic, 1922: 6 [Brazil].

*Scirtes rufobinotatus* v. *uninotatus* Pic, 1922: 6 [Brazil].

*Scirtes rufobinotatus* v. *innotatus* Pic, 1922: 6 [Brazil].

*Scirtes postimpessus* Pic, 1922: 6 [Brazil; new synonymy].

*Scirtes rufobinotata*: Blackwelder, 1944: 268 [catalogue].

**Material examined.** **Holotype** of *Scirtes rufobinotatus* v. *rufobinotatus* Pic, 1922: ♂ (MNHN), “Corumba / Matt Grosso” [white label, print], “rufobinotatus / n sp” [white label, handwritten by Pic], “HOLOTYPUS / *Scirtes rufobinotatus* / Pic, 1922” [red label, print]. **Holotype** of *Scirtes rufobinotatus* v. *innotatus* Pic, 1922: ♂ (MNHN), “Corumba / Matt Grosso” [white label, print], “v. innotatus / Pic” [white label, handwritten by Pic], “HOLOTYPUS / *Scirtes rufobinotatus* / var. innotatus / Pic 22-6” [red label, print]. **Holotype** of *Scirtes rufobinotatus* v. *uninotatus* Pic, 1922: ♂ (MNHN), “Corumba / Matt Grosso” [white label, print], “v. uninotatus / Pic” [white label, handwritten by Pic], “HOLOTYPUS / *Scirtes rufobinotatus* / var. uninotatus / Pic 22-6” [red label, print]. **Holotype** of *Scirtes postimpessus* Pic, 1922: ♀ (MNHN), “Corumba / Matt Grosso” [white label, print], “postimpessus / n sp” [white label, handwritten by Pic]. **Other specimens** (all in MLLC): 3♂♂ and 5♀♀, “ARGENTINA: Corrientes / PN Mburucuyá, 14.i.2008 / light trap / MC Michat & PLM Torres”; 3♂♂ and 5♀♀, same data except 15.i.2008; 18♂♂ and 4♀♀, same data except 17.i.2008; 48♂♂ and 195♀♀, “ARGENTINA: Corrientes / RP 86 to PN Mburucuyá / 28°3'39"S 58°9'32"W / 10.xii.2012, light trap / MC Michat & PLM Torres”; 2♂♂ and 8♀♀, “ARGENTINA: Corrientes / PN Mburucuyá: A° Portillo / 28°2'11"S 58°6'33"W / 11.xii.2012, light trap / MC Michat & PLM Torres”; 1♀, “ARGENTINA: Corrientes / RN del Iberá: Cambyreta / Seccional San Ignacio / 3-4.iii.2015, light trap / SA Mazucconi”; 2♂♂, same data except 5.iii.2015.

**Diagnosis.** Body oval; varied coloration, pronotum testaceous, with or without brown spots, elytra testaceous with brown spots to completely brown (Figs 1H–1K). Tegmen symmetrical, diapason-shaped, parameres curved inwards, apically acute (Fig. 8F). Penis symmetrical, lacking parameroids, pala oval, trigonium slightly sclerotized, ventral surface protruding, covered with small tubercles (Fig. 8G). Bursal sclerite with anterior part laminar, anterior margin bilobed, and middle part with three denticles (Figs 8O–8P). Prehensor very slightly sclerotized, composed of an anterior U-shaped sclerite and a posterior laminar sclerite, covered with minute denticles (Figs 8O, 8Q).

**Redescription.** Measurements. Males (n = 10): TL 2.63–2.94 [2.69] (mean 2.81) mm, PL 0.55–0.61 [0.58] (mean 0.59) mm, PW 1.25–1.44 [1.36] (mean 1.36) mm, EL 2.14–2.51 [2.14] (mean 2.37) mm, EW 1.77–1.93 [1.90] (mean 1.86) mm. Females (n = 10): TL 2.85–3.12

(mean 2.95) mm, PL 0.58–0.64 (mean 0.58) mm, PW 1.32–1.41 (mean 1.36) mm, EL 2.41–2.75 (mean 2.55) mm, EW 1.74–1.96 (mean 1.83) mm. Body oval, convex, maximum width at middle part of elytra (Figs 1H–1K). Head brown, antennae testaceous, antennomeres 6–11 dark brown. Pronotum completely testaceous, testaceous with a brown spot or completely brown. Scutellum testaceous, brownish testaceous or brown. Elytra testaceous with three brown spots, an anterior spot that begins near the humerus, extends along the anterior margin, and continues along the elytral suture up to basal  $\frac{2}{3}$  of elytra, a median costal spot that may be semioval, triangular or a fascia, and a posterior spot that covers the apical  $\frac{1}{5}$  of each elytron. Hypomera testaceous. Epipleura testaceous in basal third, brown in apical  $\frac{2}{3}$ . Remaining ventral surface and legs testaceous to brown.

Head wide, approximately  $1.9 \times$  as wide as interocular space, frons convex, without foveae, frontoclypus slightly to moderately projecting anteriorly, with side margins slightly converging anteriorly, anterior angles very narrowly rounded, and front margin slightly concave (Figs 2A–2C); punctuation very fine, punctures separated by  $1\text{--}2 \times$  puncture diameter. Antennae relatively short, antennomere 1  $2 \times$  as long as wide, antennomere 2  $1.5 \times$  as long as wide,  $\frac{2}{3}$  as long as antennomere 1, antennomere 3 little shorter than antennomere 2, antennomeres 4–6 twice as long as antennomere 2, antennomeres 7–10 progressively slightly shorter, antennomere 11 approximately as long as antennomere 4. Labrum with front margin arcuate, convex (Fig. 2E). Mandibles apically acute, with a well-developed incisivus, inner margin and molar area with microtrichia (Figs 2G–2H).

Pronotum approximately  $2.3 \times$  as wide as long, anterolateral angles  $90^\circ$ -angled, very slightly projecting anteriorly, lateral margins rounded; punctures on pronotum and scutellum similar to that on head. Elytra oval, humerus slightly marked, lateral margins rounded; punctuation uniform, similar to that on head, pronotum and scutellum, but sparser, punctures separated by  $2\text{--}3 \times$  puncture diameter.

Mesoventral cavity ending posteriorly in a V-shaped edge (Fig. 3E). Approximate length ratio of metatarsomere 1, dorsal metatibial spur, and ventral metatibial spur: 3.2: 2.0: 1.0. Abdomen completely covered with yellowish setae except for a pair of anterolateral glabrous areas on ventrites 2–5; ventrite 2 bearing an anterior row of setae with dark alveoli (Fig. 8A); tergite 7 with a pecten of microtrichia along posterior margin (Figs 8B, 8N).

Male terminalia and genitalia. Tergite 8 with a pair of apodemes converging posteriorly, connected each other by a sclerotized cross-piece, and a rectangular apical plate bearing pores and minute setae near posterior margin, and a row of very short microtrichia

along posterior margin (Fig. 8C). Sternite 8 absent. Tergite 9 with a pair of apodemes connected each other by a sclerotized cross-piece, reduced apical plate, covered with setae and short rows of minute micro-

trichia near posterior margin (Fig. 8D). Sternite 9 oval, markedly bilobed, with a sclerotized U-shaped piece, apices of lobes covered with pores and short setae (Fig. 8E). Tegmen symmetrical, diapason-shaped,

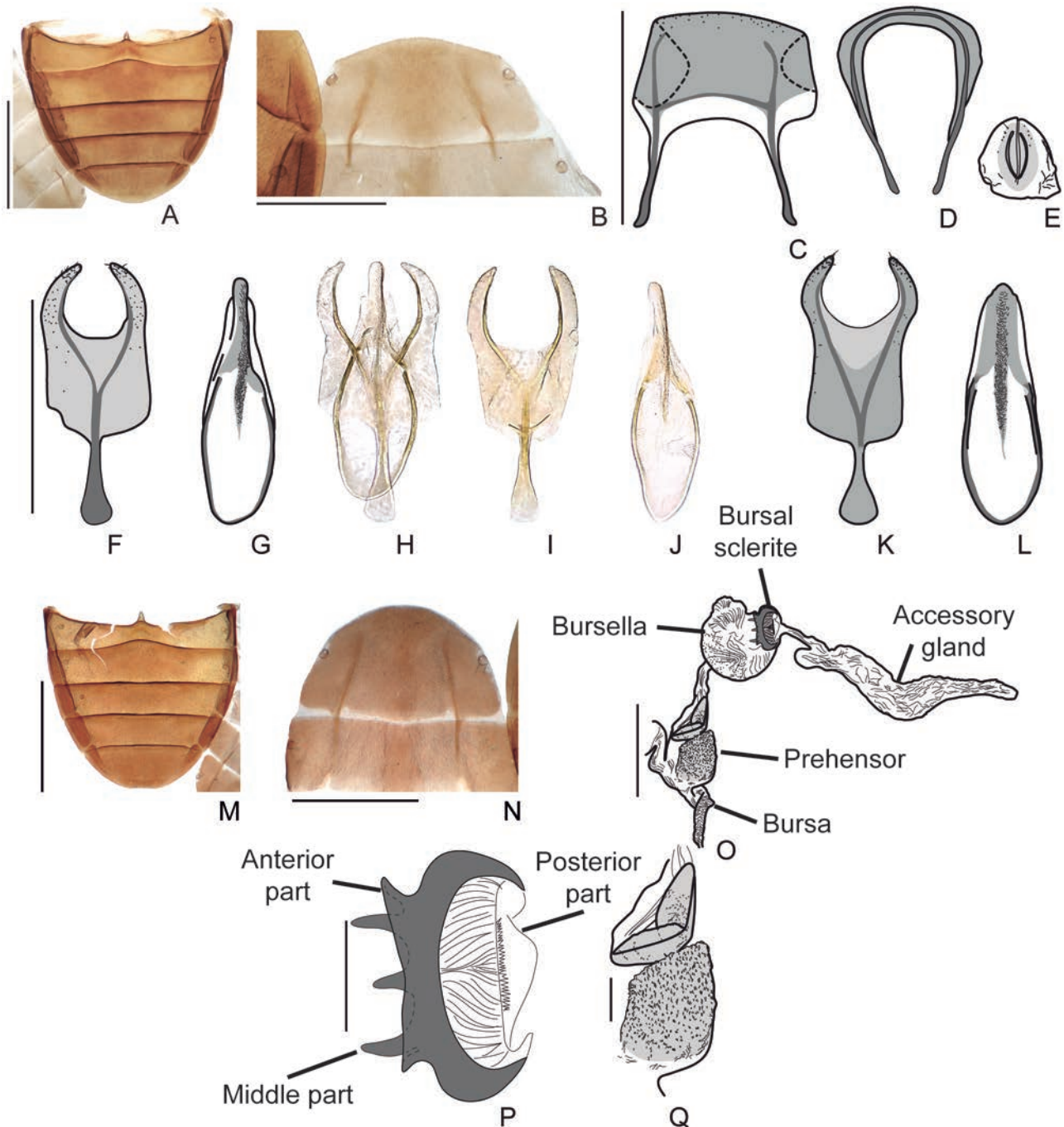


Figure 8. *Scirtes rufobinotatus*: (A–G) *S. rufobinotatus rufobinotatus* holotype: (A) male abdomen, ventral view; (B) male tergite 7, dorsal view; (C) male tergite 8, dorsal view; (D) male tergite 9, dorsal view; (E) male sternite 9, ventral view; (F) tegmen, dorsal view; (G) penis, ventral view; (H) *S. rufobinotatus uninotatus*, aedeagus, ventral view; (I–J) *S. rufobinotatus innotatus*: (I) tegmen, dorsal view; (J) penis, ventral view; (K–L) specimen from PN Mburucuyá: (K) tegmen, dorsal view; (L) penis, ventral view; (M) female abdomen, ventral view; (N) female tergite 7, dorsal view; (O) genital organs (except ovaries), dorsal view; (P) bursal sclerite, posterior view; (Q) prehensor, dorsal view. Scale bars = 1 mm for A and M; 0,5 mm for B–L and N–O; and 0,1 mm for P–Q.

parameres curved inwards, apically acute, covered with pores and setae (Fig. 8F). Penis symmetrical, lacking parameroids, pala oval with sclerotized margin, trigonium slightly sclerotized, ventral surface protruding, and covered with small tubercles (Fig. 8G).

Female genitalia. Bursal sclerite with anterior part laminar, anterior margin bilobed, and middle part with three denticles (Figs 8O–8P). Prehensor very slightly sclerotized, composed by an anterior U-shaped sclerite and a posterior laminar sclerite, covered with minute denticles (Figs 8O, 8Q).

Sexual dimorphism. Most males are brown-spotted (Figs 1H–1J) and most females are completely brown (Fig. 1K), though a few specimens exhibit a coloration pattern similar to that of the opposite sex. Elytra with a subapical oval excitator in females (Figs 9A). Elytra are completely covered with decumbent, equally long setae, in males; while in females the anterior half of elytra is covered with setae similar to those in males, and the posterior half is covered with erect long setae (twice as long as remaining setae). Abdominal ventrite 5 rounded in males (Fig. 8A), very subtly concave in females (Fig. 8M). Tergite 7 with posterior margin rounded in males, parabolic in females; with apodemes

shorter in males than in females; with setae covering a smaller surface in males than in females (Figs 8B, 8N).

The excitators found in females of *Scirtes rufobinotatus* are covered with modified setae and pores (Fig. 9B–9D), similarly to the ones in *S. caledonicus* Bourgeois, 1884 (see Ruta 2014a: Figs 9–13) which could indicate that excitators produce some secretion to attract males (Ruta 2008).

Intraspecific variation. Males vary greatly in the degree of extension and fusion of elytral spots, from almost testaceous specimens with very small spots to completely brown specimens (Figs 10A–10P). The most frequent color variants are the one with three clearly distinguishable spots (Figs 10F–10G) and the one present in the holotype, with the median costal spot extended transversally and fused to the anterior spot (Figs 1H, 10H). Females are usually completely brown (Figs 1K, 10T), but a few brown-spotted females were also found (Figs 10Q–10S). Argentine specimens have the parameres somewhat more curved and the apex of the trigonium less defined and less outstanding than the holotype (Figs 8K–8L).

**Distribution.** Brazil. Argentina: Corrientes Province.

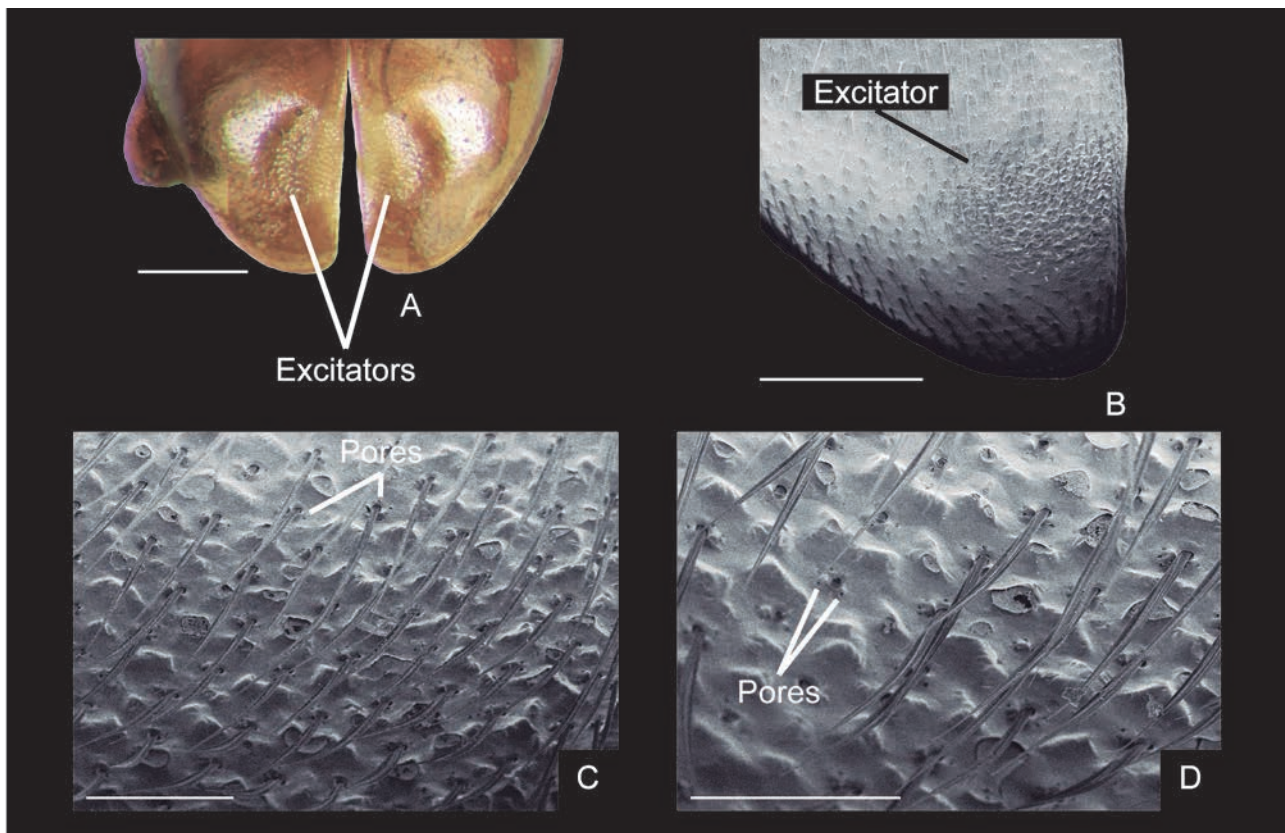


Figure 9. *Scirtes rufobinotatus*, sexual dimorphism: (A) apical portion of female elytra (digital photograph); (B) apical portion of female left elytron (SEM micrograph); (C–D) close-ups of an excitator (SEM micrographs). Scale bars = 0.5 mm for A; 0.3 mm for B; and 0.05 for C–D.



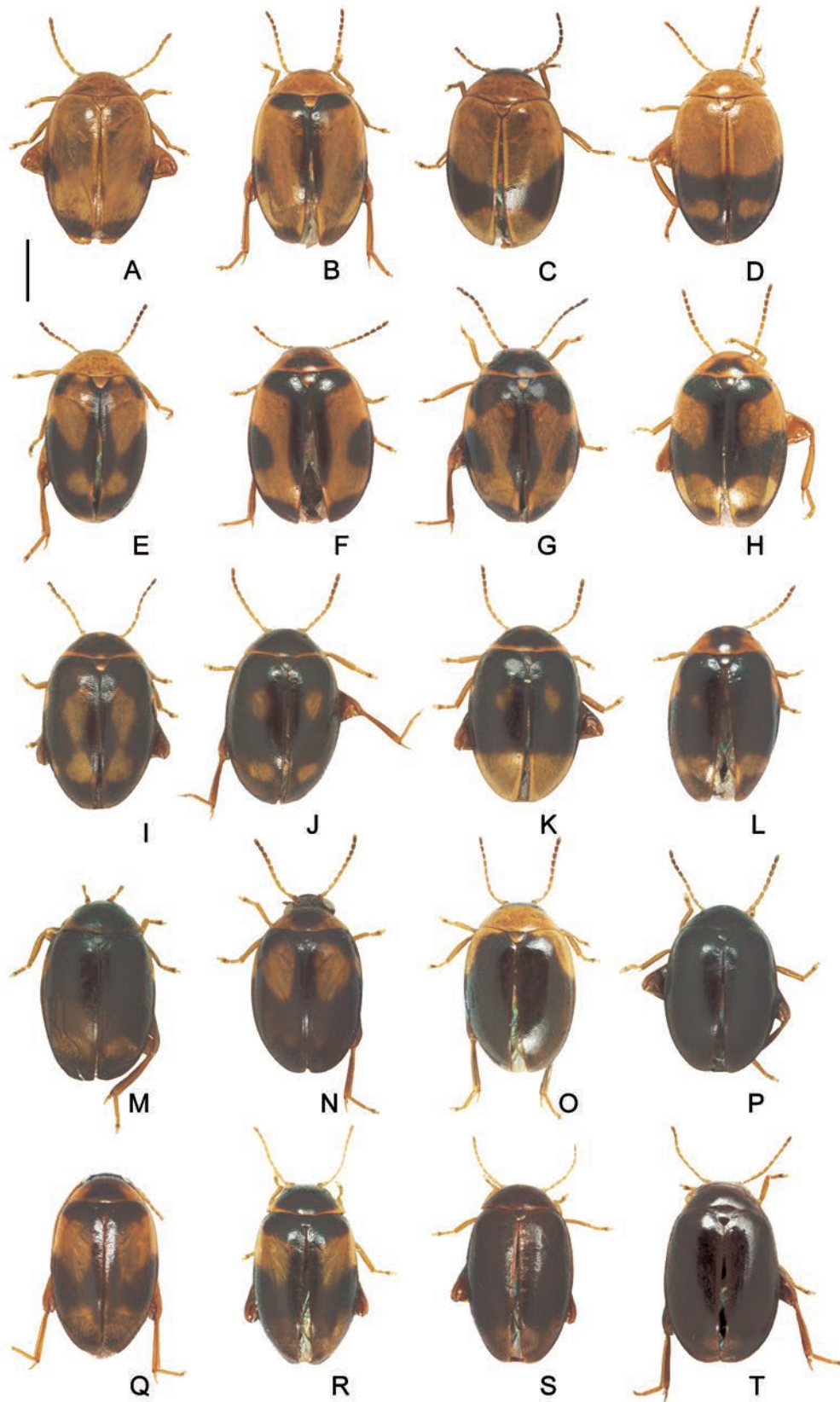


Figure 10. *Scirtes rufobinotatus*, intraspecific variation in color pattern: (A-P) males from PN Mburucuyá (Corrientes province, Argentina); (Q-T) females from PN Mburucuyá (Corrientes province, Argentina).

**Remarks.** Pic's original descriptions (1922) of *Scirtes rufobinotatus* and *S. postimpressus* are brief, based on a few external characters, and lack illustrations, which make identification of newly collected material and comparison to other species practically impossible. For this reason, a proper redescription of type specimens is absolutely necessary.

Based on elytral coloration, Pic (1922) distinguished three subspecies: *rufobinotatus*, *innotatus*, and *uninotatus*. The subspecies *rufobinotatus* differ very subtly from the other two subspecies in terms of genitalic characters, i. e. the parameres are slightly less curved than in *uninotatus* but a little more curved than in *innotatus*, and the pala is slightly narrower than in *uninotatus* whereas it is broader than in *innotatus* (Figs 8H–8J). Since the variation both in elytral color pattern and genitalic characters seems gradual and continuous along the examined material, the recognition of subspecies is not justified.

The existence of brown males of *S. rufobinotatus* (Fig. 10P), namely, males having the same genitalia as *S. rufobinotatus* but colored as the female holotype of *S. postimpressus*, allowed me to conclude that both names refer to the same species. Therefore, *S. postimpressus* is proposed here as a junior synonym of *S. rufobinotatus*.

### Key to the species of *Scirtes* occurring in Argentina

1. Frontoclypeus strongly projecting anteriorly and laterally, with side margins diverging anteriorly, anterior angles broadly rounded, and front margin strongly concave (Fig. 2D). Mesoventral cavity ending posteriorly in a truncate edge (Fig. 3G) ..... ***S. dentatus***
- Frontoclypeus slightly to moderately projecting anteriorly, with side margins slightly converging anteriorly, anterior angles very narrowly rounded, and front margin slightly concave (Fig. 2A). Mesoventral cavity ending posteriorly in a V-shaped edge (Fig. 3C) ..... **2**
2. Pronotum, scutellum and elytra black (Figs 1A–1B) ..... ***S. caraguata***
- Pronotum, scutellum and elytra testaceous to brown (Figs 1D–1K) ..... **3**
3. Body broad, TL/EW 1.3–1.4 (Figs 1D–1E) ..... ***S. gallus***
- Body narrower, TL/EW > 1.5 (Figs 1F–1K) ..... **4**
4. Tegmen with elongate parameres (Figs 7F, 8F). Penis broad, slightly asymmetrical (Fig. 7G) or symmetrical (Fig. 8G). Bursal sclerite broad (Figs 7P, 8P). Elytra brown or testaceous with brown spots (Figs 1F–1K) ..... **5**

- Tegmen with triangular parameres (see Ruta and Libonatti 2016: Figs 8F, 11D). Penis narrow, markedly asymmetrical (see Ruta and Libonatti 2016: Figs 8E, 11B). Bursal sclerite narrow (see Ruta and Libonatti 2016: Figs 9D, 12D). Elytra brown (see Ruta and Libonatti 2016: Figs 7, 10) ..... **6**
5. Tegmen with parameres broadened at apex (Fig. 7F). Penis with well sclerotized, bent trigonium, and with parameroids (Figs 7G–7H). Bursal sclerite with two denticles (Fig. 7P). Female without excitators ..... ***S. helicoidalis***
- Tegmen with acute parameres (Fig. 8F). Penis with very slightly sclerotized, straight trigonium, and without parameroids (Fig. 8G). Bursal sclerite with three denticles (Fig. 8P). Female with an apical excitor on each elytron (Fig. 9) .... ***S. rufobinotatus***
6. Tegmen with curved sides and small parameres (Ruta and Libonatti 2016: Fig. 8F). Penis with a large apical hook-like projection (Ruta and Libonatti 2016: Fig. 8E). Bursal sclerite with three denticles (Ruta and Libonatti 2016: Fig. 9D). Distribution: Buenos Aires Province, in localities near the coast of Río de la Plata estuary ..... ***S. adustus***
- Tegmen almost parallel-sided, with larger parameres (Ruta and Libonatti 2016: Fig. 11D). Penis without apical hook-like projection (Ruta and Libonatti 2016: Fig. 11B). Bursal sclerite with two denticles (Ruta and Libonatti 2016: Fig. 12D). Distribution: Córdoba and Jujuy Provinces ..... ***S. diversenotatus***

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