

Generic reassignments of New World species in the *Carpelimus* group of genera (Coleoptera: Staphylinidae: Oxytelinae)

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Abstract

A forthcoming type revision of *Carpelimus* LEACH, 1819 species described from the New World necessitates moving nine nominal taxa to *Thinodromus* KRAATZ, 1857. Lectotypes are designated for *Trogophloeus ferrugineus* ERICHSON, 1840, *T. hiliaris* SHARP, 1876, *T. latifrons* SHARP, 1876, *T. opacellus* BERNHAUER, 1941 and *T. subdenticulatus* BERNHAUER, 1908, and the following are new combinations: *Thinodromus breviceps* (SHARP, 1876) comb.n., *T. darlingtoni* (BLACKWELDER, 1943) comb.n., *T. ferrugineus* (ERICHSON, 1840) comb.n., *T. forsteri* (SCHEERPELTZ, 1960) comb.n., *T. hiliaris* (SHARP, 1876) comb.n., *T. latifrons* (SHARP, 1876) comb.n., *T. phloeoporinus* (LECONTE, 1877) comb.n., *T. subdenticulatus* (BERNHAUER, 1908) comb.n. and *T. vicinus* (SHARP, 1876) comb.n. New synonyms are proposed: *Thinodromus ferrugineus* (ERICHSON, 1840) = *Trogophloeus strandi* BERNHAUER, 1934, syn.n. and *T. velutinus* (SHARP, 1887) = *Trogophloeus opacellus* BERNHAUER, 1841, syn.n. One species is described as new to science: *Thinodromus hermani* sp.n. (Nicaragua: Matagalpa). All type material is studied, documented and the species discussed are illustrated. The generic limits are discussed with particular attention to the species groups involved.

Key words: Coleoptera, Staphylinidae, Oxytelinae, *Carpelimus*, *Thinodromus*, *Mendaxinus*, *Bucephalinus*, *Trogophloeus*, *Thinodromus ferrugineus* species group, *T. circulus* species group, *T. diffusus* species group, new species, Nearctic Region, Neotropical Region, Afrotropical Region.

Introduction

The current article is the result of revisional studies on *Carpelimus* LEACH, 1819 of the New World; some nominal taxa still need to be moved out of this genus for the technical necessity of freeing *Carpelimus* from those groups (currently at the species group or subgeneric level) that are controversial. The generic limits here are rather arbitrary. The present author has made a decision that the species that have a distinct male sternite IX are to be treated under *Thinodromus* KRAATZ, 1857, while the ones without it should remain in *Carpelimus*. It must be stated at this point that this is a temporary solution and hopefully molecular studies will soon come to the rescue and provide some clues on how to treat the problematic groups. As both *Carpelimus* and *Thinodromus* are rather species rich, it would be unfavourable to lump them together as long as this can be avoided somehow. Currently (in the New World) there are three groups, the *Thinodromus diffusus* species group (sensu MAKRANCZY 2006), the *T. circulus* group (sensu MAKRANCZY 2014) and the *T. ferrugineus* group (which is very similar to the African *Mendaxinus* GILDENKOV, 2004) that must be excluded from *Carpelimus*. As far as the *T. ferrugineus* group is concerned the relationship of the African species to those in the New World has not been investigated, their terminalia and genitalia look very similar. A serious reason for trying to keep *Thinodromus* separate is the great disparity experienced in that genus manifesting itself in rather unusual looking members (e.g. the Afrotropical *Thinodromus thoracicus* group sensu MAKRANCZY 2009 (= subgenus *Carpaliaceus* GILDENKOV, 2000) with the same type species, *T. thoracicus*).

Starting from my doctoral (PhD) dissertation (2005, published by MAKRANCZY 2006) a weakly sclerotized, almost membranous feature in the female terminalia was called the “ringstructure”. This structure in some oxyteline groups (e.g. *Anotylus* THOMSON, 1859) does not look like a ring

(e.g. MAKRANCZY 2006: 72, figs. 82–83). Initially, this term was created to avoid assumption of homology with female accessory sclerites in other groups (e.g. Omaliinae, genus *Eusphalerum* KRAATZ, 1857). While homology cannot be ascertained at this point, it seems likely that the function of these features is at least similar across the studied groups. Since within Oxytelinae the structure is either rather ring-like or loop-like, or more similar to the omaliine sclerites, henceforth it shall be called “ring-like sclerite” if it is reminiscent of a loop or a ring, or “accessory sclerites” if it is not. Beyond its phylogenetic importance this sclerite is of great diagnostic significance in some oxytelines (e.g. certain species groups of *Anotylus*) and moderately informative in others (e.g. *Carpelimus* and *Thinodromus*) while inconspicuous or absent in the rest.

Material and methods

The studied material was examined mostly during 2010–2012 as part of the type revision of New World *Carpelimus*. A certain mounting technique must be mentioned here as it has heavy influences on the taxa treated below. David Sharp (1840–1922) early in his career had the habit of “covering and hermetically sealing” unique type specimens (Figs. 30–31). In effect, it means that the large mounting cardboard is covered with a similar sized card with a middle cutout for the specimen and covered with a thin glass; the whole mounting is then glued over with furniture polish that prevents humidity, dust and pests getting to the specimen. As regards preservation this method worked well (apart from a few cases when the glass is slightly “fogged up” inside), but it is quite a challenge to remove the specimen for photography and examination of genitalia which is often unavoidable for small staphylinids; even the pin is glued to the mounting, so the card cannot be moved on it. The complete taking apart (and destruction) of this mounting is undesirable as it has the author’s handwriting (usually on the cutout cardboard piece under the glass and in the glue) and there are often no other labels on the specimen. When removal of the beetle was absolutely unavoidable, a self developed method was used. The specimen was placed upside down on a piece of foam, the head of the pin pushed in letting the glass-covered top sit on the foam. On the backside of the cardboard the furniture polish layer was removed by using forceps and blades. This crust off, a drop of water was added onto the patch and let it become soaking wet; by always waiting ample amount of time and adding more water than the paper would suck in, the softened bits of fibers were step-by-step removed in a U-shaped fashion around the specimen on the other side. Eventually the bottom card was weakened to the point that the “tongue” of paper on which the specimen was glued could be turned out to an extent that safe removal of the specimen was possible.

Abbreviations of the depositories of the material are as follows:

AMNH	American Museum of Natural History (New York, USA)
BMNH	Natural History Museum (London, United Kingdom)
CNCI	Canadian National Collection of Insects (Ottawa, Canada)
CPSC	Private collection of Gregory R. Pohl (Sherwood Park, Alberta, Canada)
DEBU	University of Guelph Insect Collection [formerly Department of Environmental Biology at the University of Guelph] (Guelph, Ontario, Canada)
FMNH	Field Museum of Natural History (Chicago, USA)
HNHM	Hungarian Natural History Museum (Budapest, Hungary)
MCZC	Museum of Comparative Zoology, Harvard University (Cambridge, Massachusetts, USA)
MUNC	Memorial University of Newfoundland (St. John’s, Newfoundland and Labrador, Canada)
NMW	Naturhistorisches Museum Wien (Vienna, Austria)
SEMC	Snow Entomological Collections, University of Kansas, (Lawrence, Kansas, USA)
ZMHB	Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung [formerly Museum für Naturkunde der Humboldt-Universität] (Berlin, Germany)
ZSMC	Zoologische Staatssammlung München (Germany)

Where label data are listed verbatim, “\” separates labels and “;” separates lines. Text within square brackets “[]” is explanatory and was not included in the original labels. Measurements are defined as follows: HW = head width with eyes; TW = head width at temples; PW = maximum width of pronotum; SW = approximate width of shoulders; AW = maximum width of abdomen; HL = head length from front margin of clypeus to the beginning of neck at middle-line; EL = eye length; TL = length of temple; PL = length of pronotum in the middle-line; SL = length of elytra from shoulder; SC = length of elytra from hind apex of scutellum; FB = forebody length (combined length of head, pronotum and elytra); BL = approximate body length. All measured from dorsal view. For descriptions and measurements a Leica MZ12.5 stereoscopic microscope was used. For the line drawings permanent preparations were made in Euparal mounting medium on plastic cards pinned with the specimens. The genital preparation techniques are detailed in MAKRANCZY (2006). Drawing was done with a Jenalab (Carl Zeiss, Jena) compound microscope and drawing tube (camera lucida). For the colour habitus photographs either a Leica DFC490 camera attached to a Leica MZ16 stereoscopic microscope or a Nikon D4 camera with Mitutoyo PlanApo 5 × / 10 × ELDW lens was used and layers combined with ZereneStacker.

Thinodromus ferrugineus species group

Aedeagus laterally flattened and usually with weakly sclerotized (mostly membranous) internal structures in the inner sac, rather unlikely to be useful in species-level diagnosis. Previous treatments of related taxa usually show aedeagi in lateral view. The terminalia show little modification that would allow an easy determination of sex or offer diagnostic differences between closely allied species. Female genitalia with a more or less straight, cylindrical and strongly sclerotized portion of the spermathecal duct (“sclerotized tube” in MAKRANCZY 2006: 95), which is here not illustrated with the spermatheca; characters here are difficult to interpret and variability could not be assessed. The examined specimens suggest that females in this group at least in some cases have a ring-like sclerite, but the available material did not allow their detailed study. Dissections usually distort or damage this sclerite. There was no fresh material or longer series of specimens from the same collecting event that would have been crucial to determine the stability and usefulness of this character. The relationship of these New World species and the Afrotropical taxa is yet to be determined, the here treated group possessing a different lateral pronotal edge (Fig. 35).

***Thinodromus breviceps* (SHARP, 1876) comb.n.**

(Figs. 3, 13, 16, 31, 33)

Trogophloeus breviceps SHARP 1876: 398.

Carpelimus breviceps: HERMAN 1970: 391; HERMAN 2001: 1646.

TYPE MATERIAL: **Holotype** ♀: “Trogophloeus; breviceps; Type; Amazons.; D.S. \ Ega [= Brazil (Amazonas): Tefê] [green disc] \ Type [red bordered disc, curator label] \ Sharp Coll; 1905-313. \ Holotypus; Trogophloeus; breviceps Sharp; ver. [verified] Makranczy, 2012 \ Thinodromus; breviceps (Sharp); det. Makranczy, 2012” (BMNH).

ADDITIONAL MATERIAL:

BRAZIL: Pará, Belém, Utinga, IPEAN [Instituto de Pesquisas Agropecuárias do Norte], 27.XI.1969, leg. J.M. & B.A. Campbell (1 ♀, CNCI).

REDESCRIPTION: Measurements (in mm, n = 2): HW = 0.49 (0.48–0.50); TW = 0.50 (0.49–0.51); PW = 0.59 (0.58–0.60); SW = 0.61 (0.60–0.62); AW = 0.66 (0.63–0.69); HL = 0.29 (0.26–0.31); EL = 0.14 (0.14–0.145); TL = 0.075 (0.07–0.08); PL = 0.40 (0.39–0.40); SL = 0.59 (0.58–0.60); SC = 0.56 (0.55–0.57); FB = 1.31 (1.26–1.36); BL = 2.44 (2.16–2.71). Lustre and colour: Elytra moderately lustrous, rest of body quite dull due to strong and dense microsculpture. Forebody (Fig. 3) and abdomen reddish dark brown, legs, mouthparts and

antennae reddish medium brown. Apices of elytra occasionally more blackish, frontoclypeus often lighter, orangish. Shape and sculpture: Head (Fig. 13) rather transverse, eyes large, temples acute, right-angled a short distance posterior of large eye, then strongly convergent (this hind part quite straight). Frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward. Vertex with tiny longitudinal impression in midline. Neck delimited by constriction and shallow groove plus change of microsculpture to areolate with very transverse cells (anteriorly finer, substrigulate). Antennae as in Fig. 33, middle antennomeres about as long as broad. Pronotum very transverse, anterior corners broadly rounded, only slightly angular at anterior margin, posterior corners narrowly rounded, almost right-angled, anterior and posterior margins only slightly arched; lateral sides appearing spinose, from anterior corners with a series of laterally projecting tubercles along lateral marginal bead, latter only slightly stronger in the posterior half. Centre of disc with a pair of longitudinal impressions in the posterior 3/4, lateral parts gently impressed near middle of sides. Elytral lateral margin insignificantly curved (slightly dilating), also with a series of variably sized (mostly smaller) tubercles, first (and often most prominent) after moderately rounded shoulders. Slightly oblique (almost straight) posterior edge with slight marginal bead, and near outer corners with a membranous lobe. Behind scutellum at sides of suture a pair of oval impressions. Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctuation and microsculpture: Front of clypeus heavily microsculptured, rugulose as well as most of the dorsal surface of head, middle of vertex slightly shinier; between supraantennal tubercles rather broad transverse stripe, almost without microsculpture, shiny. Pronotum with lateral parts (plus those in impressions) rugulose-lacunose microsculptured, central parts of disc rather rugulose with fine punctures. Elytra predominantly punctate, 18–20 punctures per elytron width, interspaces less than half of puncture diameters, shinier, although with slight unevenness (traces of microsculpture). Abdomen with imbricate microsculpture and scattered microtubercles. Pubescence: Setation consisting of erect or semi-erect setae, on head rather short, fine and moderately dense, bristles near anterior corner of eye and on vertex near temples. Conspicuous bristles originate at pronotal lateral tubercles and posterior section of side margin with a bristle, rest of setae similar to those on head. Elytra with regular (uniformly sized and spaced) setae of medium length, on abdomen with longer and more sparse setae somewhat more irregular, longest laterally and apically. Genitalia: Spermatheca as in Fig. 16.

DISTRIBUTION: Both known specimens are from Brazil.

COMMENT: The holotype was taken out from the original mounting, and is in rather poor condition, the subsequently identified female is also in quite decayed state.

***Thinodromus darlingtoni* (BLACKWELDER, 1943) comb.n.**

(Figs. 1, 15, 17–18)

Carpelimus darlingtoni BLACKWELDER 1943: 65; HERMAN 1970: 391; HERMAN 2001: 1652.

TYPE MATERIAL: **Holotype** ♂: “San José de las Matas, Dom. Rep.; 1,000–2,000 ft.; June [19]38 [leg. P.J.] Darl.[ington] \ TypeNo (red card) \ M.C.Z.; Type; 27477 \ Carpelimus; darlingtoni; Blkw.; REB '41 \ Jan.-Jun. 2003; MCZ Image; Database \ Holotypus; Carpelimus; darlingtoni Blackwelder; ver. Makranczy, 2010 \ Thinodromus; darlingtoni (Blackwelder); det. Makranczy, 2012” (MCZC).

ADDITIONAL MATERIAL:

GRENADE: Mount Gay Estate (Leeward side), leg. H.H. Smith (“252”) (1 ♀, NMW). This specimen from the O. Scheerpeltz collection (via A. Klima) bears an identification label (“*ruficollis* Epp.”, nomen nudum) by E. Eppelsheim.

REDESCRIPTION: Measurements (in mm, n = 2): HW = 0.58 (0.58–0.585); TW = 0.95 (0.58–0.60); PW = 0.73 (0.72–0.73); SW = 0.77 (0.76–0.77); AW = 0.81 (0.79–0.82); HL = 0.36 (0.36–0.36); EL = 0.155 (0.15–0.16); TL = 0.11 (0.10–0.115); PL = 0.51 (0.50–0.51); SL = 0.77

(0.74–0.79); SC = 0.72 (0.70–0.74); FB = 1.69 (1.67–1.70); BL = 3.34 (3.18–3.50). Lustre and colour: Forebody rather dull due to fine punctation and dense microsculpture, abdomen with greasy lustre. Forebody and abdomen reddish dark brown with apices of elytra darker and head sometimes also slightly darker, clypeus and supraantennal tubercles more reddish. Legs, mouthparts and antennae reddish medium brown. Shape and sculpture: Head (Fig. 15) rather transverse, eyes relatively large, temples dilating to about $1/2 \times$ eye length, then narrowly rounded (but not angular) and straight (convergent) to neck. Frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward. Middle of vertex insignificantly elevated. Neck delimited by slight constriction, shallow groove and a change of microsculpture to alveolate with very transverse elements (anteriorly finer, substrigulate). Antennae as in Fig. 1, middle antennomeres very slightly elongate (longer than broad). Pronotum rather transverse, anterior corners angular but obtuse-angled, posterior corners less pronounced, also obtuse-angled, anterior and posterior margins only very slightly arched; sides appearing spinose, from anterior corners with a series of laterally projecting tubercles along lateral marginal bead, latter only slightly stronger in the posterior half. Centre of disc with a pair of moderately deep longitudinal impressions in the posterior $2/3$, but also impressed anteriorly in midline, lateral parts very slightly impressed near middle of sides. Elytra rather straight sided (slightly dilating), also with a series of variably sized (mostly tiny) tubercles, first (and often most prominent) after moderately rounded shoulders. Slightly oblique (almost straight) posterior edge with slight marginal bead, and near outer corners with a membranous lobe. Behind scutellum at sides of suture with a pair of longitudinal impressions. Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctation and microsculpture: Head with rough microsculpture and traces of punctation dissolved in it. Pronotum with rugulose-lacunose microsculpture. Elytra densely punctate with 18–20 punctures per elytron width, interspaces almost half of puncture diameters, lightly microsculptured. Abdominal microsculpture imbricate with more transverse cells at base than at apex and with scattered microtubercles. Pubescence: Setation consisting of erect or semi-erect setae, on head rather short, fine and moderately dense, bristles near anterior corner of eye and on vertex near temples. Conspicuous bristles originate at pronotal lateral tubercles and at posterior section of side margin with a bristle, rest of setae similar to those on head. Elytra with regular (uniformly sized and spaced) setae of medium length, on abdomen with longer and more sparse setae somewhat more irregular, longest laterally and apically. Genitalia: Aedeagus as in Fig. 17, spermatheca as in Fig. 18.

DISTRIBUTION: This species is recorded from the Dominican Republic and Grenada.

Thinodromus ferrugineus (ERICHSON, 1840) comb.n.

(Figs. 12, 19–20, 34–36)

Trogophloeus ferrugineus ERICHSON 1840: 804.

Trogophloeus strandi BERNHAUER 1934: 148, **syn.n.**

Carpelimus ferrugineus: HERMAN 1970: 391; HERMAN 2001: 1660.

TYPE MATERIAL of *Trogophloeus ferrugineus*: **Lectotype** ♂ (by present designation): “6737 \ ferrugineus; Er.; Oronoco [Orinoco] Mor[itz] \ Hist.-Coll. (Coleoptera); Nr. 6737; Trogophloeus ferrugineus; Erichs.; Orinoco, Moritz; Zool. Mus. Berlin \ Lectotypus; Trogophloeus; ferrugineus Erichson; des. Makranczy, 2000 \ Thinodromus; ferrugineus (Erichson); det. Makranczy, 2012” (ZMHB). **Paralectotypes** (3): same data as lectotype (1 ♀, 2, ZMHB). According to the original description the specimens were collected in “Guyana Venezuelensi”.

TYPE MATERIAL of *Trogophloeus strandi*: **Holotype** ♀: “Corumba; Bras. [Brazil: Mato Grosso, Corumba] B. Haas \ denticollis; Brh. Typ. un. \ Strand Brh; Typus unic.; Matto Grosso. \ Chicago NHMus; M. Bernhauer; Collection \ Holotypus; Trogophloeus; strandi Bernhauer; ver. Makranczy, 2010 \ Thinodromus; ferrugineus (Erichson); det. Makranczy, 2018” (FMNH).

ADDITIONAL MATERIAL:

BRAZIL: Amazonas, 20 km SW Itapiranga, 9.XI.1969, leg. J.M. & B.A. Campbell (3, CNCI; 1, HNHM), Amazonas, São Sebastião da Boa Vista, 10.XI.1969, leg. J.M. & B.A. Campbell (1, CNCI); Amazonas, Reserva Florestal Adolpho Ducke, 25 km NNE Manaus, 120 m, 26.VII.1973, leg. R.T. Schuh, incandescent lamp in forest (2, AMNH; 1, NMW); Pará, Fazenda Taperinha [80 km E Santarém, 2°29'S 54°18'W], 23.–24.XI.1969, leg. J.M. & B.A. Campbell (1, CNCI).

REDESCRIPTION: Measurements (in mm, n = 10): HW = 0.60 (0.55–0.63); TW = 0.57 (0.52–0.60); PW = 0.72 (0.66–0.79); SW = 0.75 (0.69–0.80); AW = 0.80 (0.76–0.89); HL = 0.35 (0.33–0.37); EL = 0.20 (0.19–0.21); TL = 0.06 (0.05–0.08); PL = 0.49 (0.47–0.52); SL = 0.79 (0.74–0.85); SC = 0.74 (0.69–0.80); FB = 1.66 (1.60–1.78); BL = 3.44 (3.24–3.65). Lustre and colour: Forebody rather dull due to fine punctation and dense microsculpture, abdomen with greasy lustre. Pronotum, elytra and abdomen orangish medium brown, head reddish dark brown, with clypeus and supraantennal tubercles lighter, orangish, epistomal suture marked by a transverse black stripe. Legs, mouthparts and antennae orangish medium brown. Shape and sculpture: Head (Fig. 12) rather transverse, eyes large, temples narrowly rounded a short distance behind large eye, then strongly convergent (this hind part quite straight). Frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward. Vertex often with small oval or longitudinal impression in midline. Neck delimited by constriction and shallow groove plus change of microsculpture to alveolate with very transverse elements (anteriorly finer, sub-strigulate). Antennae as in Fig. 34, middle antennomeres slightly elongate. Pronotum very transverse, both anterior and posterior corners very narrowly rounded, anterior and posterior margins very parallel; sides appearing spinose, from anterior corners with a series of laterally projecting tubercles along lateral marginal bead, latter most prominent in the posterior half. Centre of disc with a pair of longitudinal impressions in the posterior 3/4, lateral parts gently impressed near middle of sides. Elytra (Fig. 36) rather straight sided (slightly dilating), also with a series of variably sized (mostly smaller) tubercles, first (and often most prominent) after moderately rounded shoulders. Slightly oblique (almost straight) posterior edge with slight marginal bead, and near outer corners with a membranous lobe. Behind scutellum at sides of suture a pair of oval impressions. Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctation and microsculpture: Head with coriaceous microsculpture with only very tiny, scattered punctures mixed in. The coriaceous sculpture not very deep or strong, giving the surface a greasy lustre; same sculpture on pronotum, with stronger coriaceous sculpture in the deeper impressed spots. Elytra finely and densely punctate, 24–26 punctures per elytron width, almost no interspaces with sort of uneven surface, traces of microsculpture. Abdomen with transverse imbricate microsculpture, rather shallow, therefore abdomen quite shiny; also with scattered microtubercles. Pubescence: Setation consisting of erect or semi-erect setae, on head rather short, fine and moderately dense, bristles near anterior corner of eye and on vertex near temples. Conspicuous bristles originate at pronotal lateral tubercles and modified patch of setae on lateral anterior part weakly developed, posterior section of side margin with a bristle, rest of setae similar to those on head. Elytra with regular (uniformly sized and spaced) setae of medium length, on abdomen with longer and more sparse setae somewhat more irregular, longest laterally and apically. Genitalia: Aedeagus as in Fig. 19, spermatheca as in Fig. 20.

DISTRIBUTION: This species is known from Venezuela and Brazil.

COMMENT: The holotype of *Trogophloeus strandi* agrees sufficiently with females of *T. ferrugineus*, although it is slightly larger than an average female.



Figs. 1–2: Habitus of 1) *Thinodromus darlingtoni* and 2) *T. forsteri*.

***Thinodromus forsteri* (SCHEERPELTZ, 1960) comb.n.**

(Figs. 2, 14, 21–22)

Trogophloeus (*Trogophloeus*) *forsteri* SCHEERPELTZ 1960: 66.

Carpelimus forsteri: HERMAN 2001: 1661.

TYPE MATERIAL: **Holotype** ♀: “Bolivia 1954; leg. W. Forster \ Rio Yacuma; Espiritu 250 m; 25.4.[19]54 \ Typus; *Trogophloeus* Forsteri; O. Scheerpeltz [maroon card] \ *Trogophloeus*; (Subg. *Trogophloeus* s.str.); Forsteri; nov. sp. \ Holotypus; *Trogophloeus*; *forsteri* Scheerpeltz; ver. Makranczy, 2010 \ *Carpelimus*; *forsteri* (Scheerpeltz); det. Makranczy, 2010” (ZSMC). **Paratype** ♀: “Bolivia 1954; leg. W. Forster \ Rio Yacuma; Espiritu 250 m; 25.4.54 \ ex coll.; Scheerpeltz \ Cotypus; *Trogophloeus* Forsteri; O. Scheerpeltz \ Forsteri; Scheerp [green bottom card] \ Paratypus; *Trogophloeus*; *forsteri* Scheerpeltz; ver. Makranczy, 2010 \ *Thinodromus*; *forsteri* (Scheerpeltz); det. Makranczy, 2010” (NMW).

ADDITIONAL MATERIAL:

BOLIVIA: Santa Cruz Prov., Santa Cruz (1 ♀, AMNH); **BRAZIL:** Pará, 8 km E Belém, Ananindéua, 14.V.1973, leg. R.T. Schuh (1, AMNH), same, but 10.VI.1973 (1 ♀, 1, AMNH), same, but 12.VI.1973 (1, AMNH), same, but 23.–24.V.1973, UV light (1, AMNH; 1 ♂, NMW), same, but 16.VI.1973, at light (1, AMNH; 1, HNHM), same, but 17.VI.1973 (2 ♀♀, AMNH), same, but 13.VI.1973 (1 ♀, 1, AMNH), same, but 21.VI.1973 (1, AMNH); Pará, Belém, 28.XII.1960, leg. J. & B. Bechyné (1 ♀, CNCI); **PARAGUAY:** San Pedro, Vaca Jhu, 120 m, 24°34'S 56°37'W, 5.–8.III.1993, leg. U. Drechsel (1 ♀, SEMC); Canindeyú, Maracaná, 24.–30.I.1995, leg. U. Drechsel, primary forest, at light (1 ♀, SEMC).

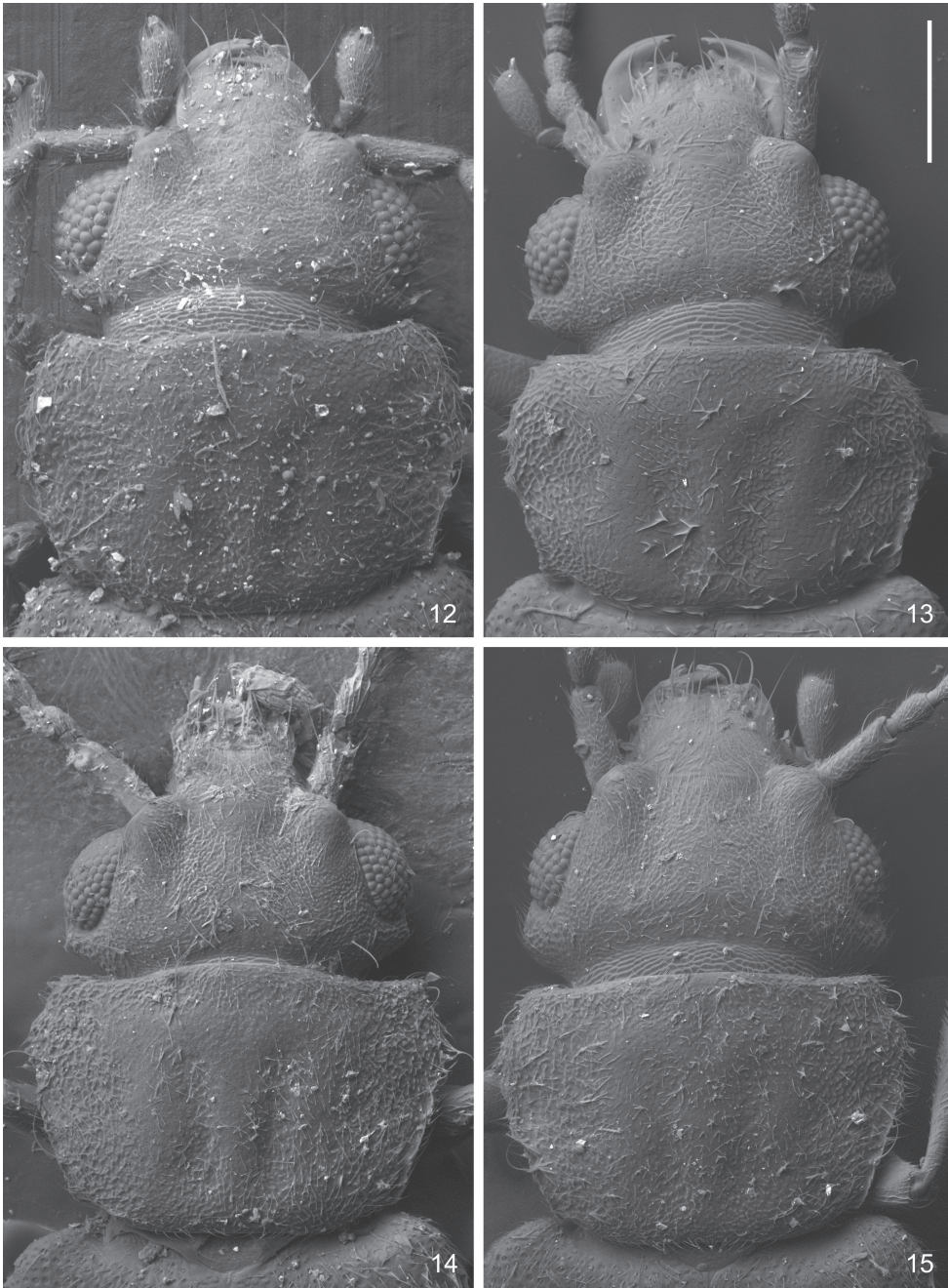
REDESCRIPTION: Measurements (in mm, n = 10): HW = 0.61 (0.59–0.67); TW = 0.63 (0.60–0.68); PW = 0.76 (0.69–0.84); SW = 0.82 (0.76–0.90); AW = 0.86 (0.82–0.93); HL = 0.37 (0.36–0.39); EL = 0.18 (0.17–0.20); TL = 0.09 (0.08–0.11); PL = 0.52 (0.49–0.55); SL = 0.83 (0.78–0.86); SC = 0.79 (0.74–0.82); FB = 1.74 (1.67–1.82); BL = 3.50 (3.25–3.84). Lustre and colour: Head quite dull, only moderate amount of lustre on the whole forebody. Abdomen with greasy lustre. Body blackish dark brown, head being the darkest with anteclypeus and supraantennal tubercles lighter, somewhat orangish. Legs, mouthparts and antennae reddish medium to dark brown. Shape and sculpture: Head (Fig. 14) rather transverse, eyes large, temples dilating to about $1/3 \times$ eye length, then narrowly slightly angled (variously blunt) and straight (convergent) to neck. Frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward. Middle of vertex insignificantly elevated with a small impression in middle. Neck delimited by constriction, a groove and change of microsculpture to alveolate with very transverse elements, almost appearing strigulate. Antennae as in Fig. 2, middle antennomeres about $1/3$ longer than broad. Pronotum very transverse, both anterior and posterior corners rather (obtuse-)angled, variously blunt, sides somewhat angled at about $1/3$ length, almost straight before and after, anterior and posterior margins almost parallel; sides appearing spinose, from anterior corners with laterally projecting (small, usually just two) tubercles along lateral marginal bead. Centre of disc with a pair of shallow longitudinal impressions in the posterior $2/3$, lateral parts very slightly impressed near middle of sides. Elytral sides insignificantly arched but slightly dilating, also with a series of variably sized (mostly tiny) tubercles, first (and often most prominent) after moderately rounded shoulders. Slightly oblique (almost straight) posterior edge with slight marginal bead, and near outer corners with a membranous lobe. Behind scutellum at sides of suture longitudinally impressed. Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctuation and microsculpture: Head with very fine and rather dense punctuation but towards edges dissolving into fine rough microsculpture. Pronotum laterally with a mixture of large shallow punctures meshing with rough microsculpture; centrally, finely and rather densely punctate with coriaceous microsculpture. Elytra densely punctate with 24–26 punctures per elytron width, almost no interspaces. Abdominal microsculpture imbricate, very dense and with very slightly transverse cells and scattered microtubercles. Pubescence: Setation consisting of erect or semi-erect setae, on head rather short, fine and moderately dense, bristles near anterior corner of eye and on vertex near temples. Conspicuous bristles originate at pronotal lateral tubercles and posterior section of side margin with bristles and longer setae, rest of setae similar to those on head. Elytra with regular (uniformly sized and spaced) setae of medium length, on abdomen with longer and more sparse setae somewhat more irregular, longest laterally and apically. Genitalia: Aedeagus as in Fig. 21, spermatheca as in Fig. 22.

DISTRIBUTION: This species is originally described from Bolivia, now recorded also from Brazil and Paraguay.

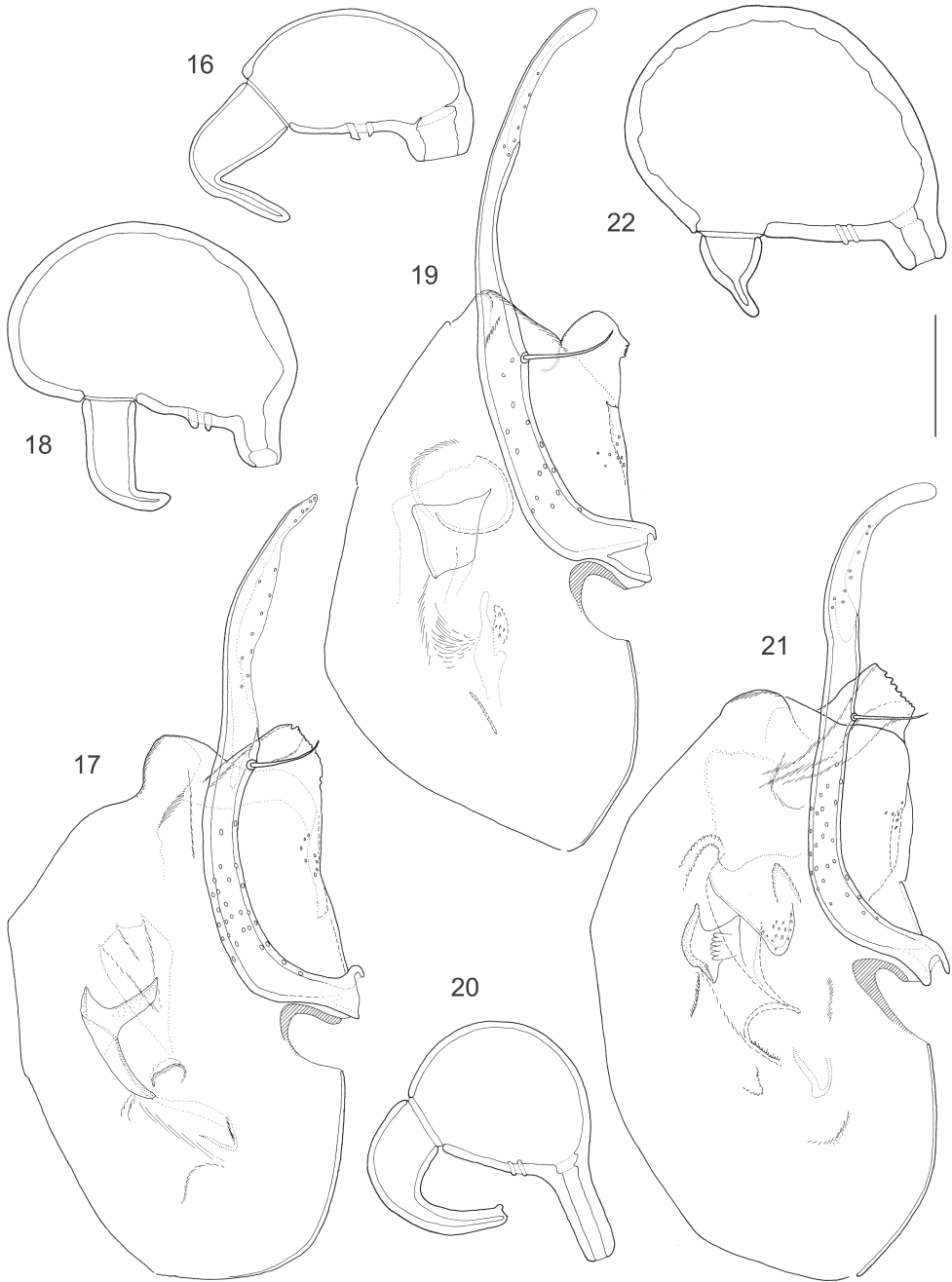
COMMENT: Both the original specimens are females, and the species appears to be rather variable. The female genitalia, however, seem to have a consistent and unique shape across the examined specimens.



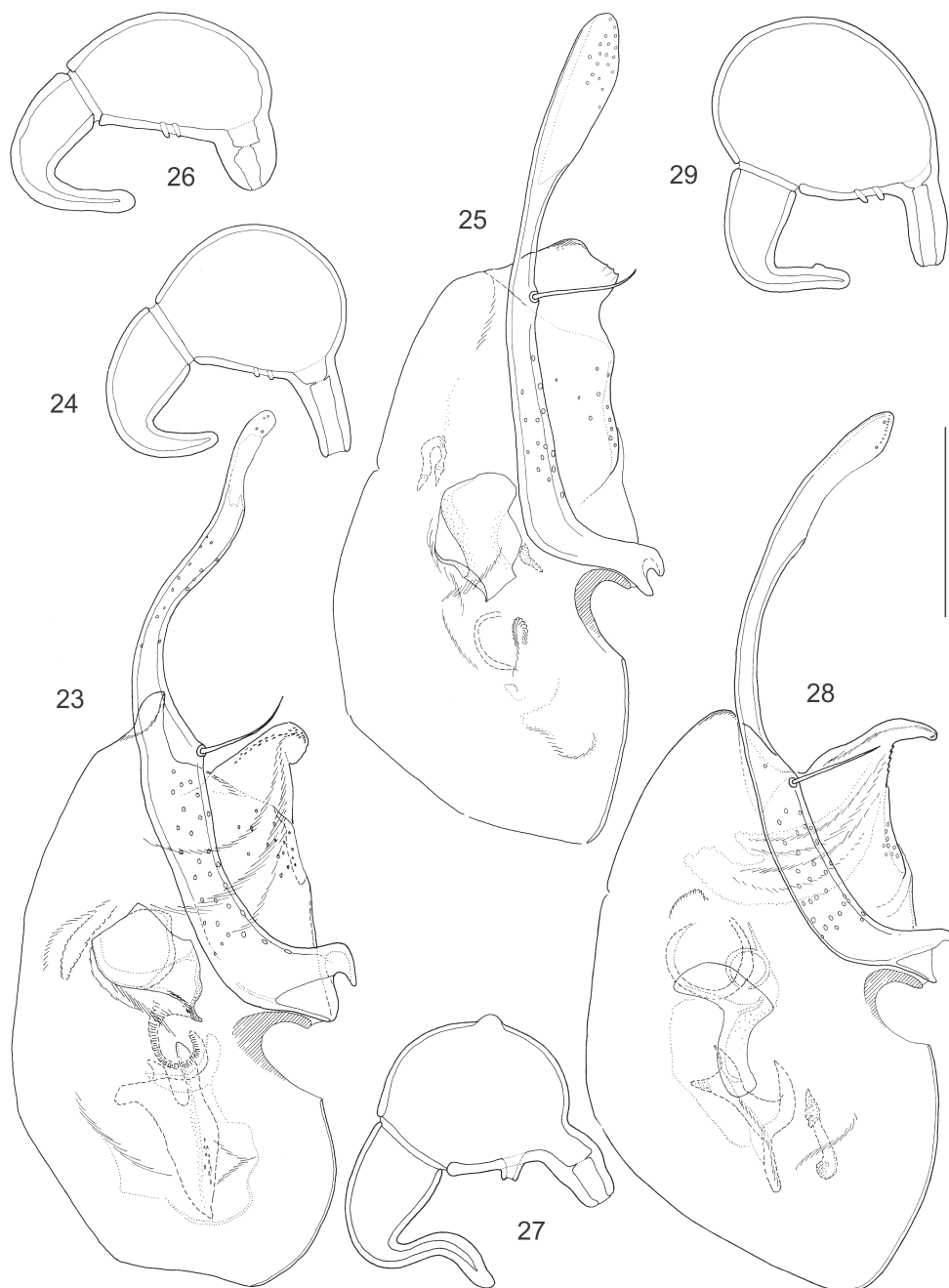
Figs. 3–11: *Thinodromus breviceps* (3), *T. hilaris* (♂) (4, 9), *T. latifrons* (5, 10), *T. subdenticulatus* (6, 11), *T. vicinus* (7–8): 3–7) forebody; 8–11) antenna (2 × magnified compared to Figs. 3–7).



Figs. 12–15: Head and pronotum of 12) *Thinodromus ferrugineus*, 13) *T. breviceps*, 14) *T. forsteri* and 15) *T. darlingtoni*. Scale bar = 0.20 mm (13), 0.25 mm (12, 14–15).



Figs. 16–22: *Thinodromus breviceps* (16), *T. darlingtoni* (17–18), *T. ferrugineus* (19–20), *T. forsteri* (21–22): 17, 19, 21) aedeagus; 16, 18, 20, 22) spermatheca. Scale bar = 0.06 mm (16), 0.07 mm (18), 0.08 mm (20), 0.09 mm (19), 0.1 mm (17, 20–21).



Figs. 23–29: *Thinodromus hilaris* (23–24), *T. latifrons* (25–26), *T. subdenticulatus* (27), *T. vicinus* (28–29): 23, 25, 28) aedeagus; 24, 26–27, 29) spermatheca. Scale bar = 0.09 mm (26–27), 0.1 mm (25), 0.12 mm (24, 29), 0.14 mm (23), 0.15 mm (28).



Figs. 30–32: Original primary type mounting of 30) *Thinodromus vicinus*, and 31) *T. breviceps*, 32) habitus of *T. hermani* (paratype).

***Thinodromus hilaris* (SHARP, 1876) comb.n.**

(Figs. 4, 9, 23–24)

Trogophloeus hilaris SHARP 1876: 399.

Carpelimus hilaris: HERMAN 1970: 392; HERMAN 2001: 1670.

TYPE MATERIAL: **Lectotype** ♂ (by present designation): “Trogophloeus; hilaris; Ind.Type.; Amazons; D.S. \ Ega. [green oval card] \ Syn-; type [light blue bordered disc, curator label] \ Sharp Coll; 1905-313. \ Paralectotypus; Trogophloeus; hilaris Sharp; des. Makranczy, 2012 \ *Thinodromus*; hilaris (Sharp); det. Makranczy, 2012” (BMNH). **Paralectotypes** (4): same data as lectotype (2 ♀♀, 1 (the latter without head and pronotum), BMNH); “Trogophloeus; hilaris; Type; Amazons; D.S. \ Type (red bordered disc, curator label) \ Sharp Coll; 1905-313. \

Paralectotypus; Trogophloeus; hilaris Sharp; des. Makrarczy, 2012 \ Thinodromus; hilaris (Sharp); det. Makrarczy, 2012" (1, BMNH).

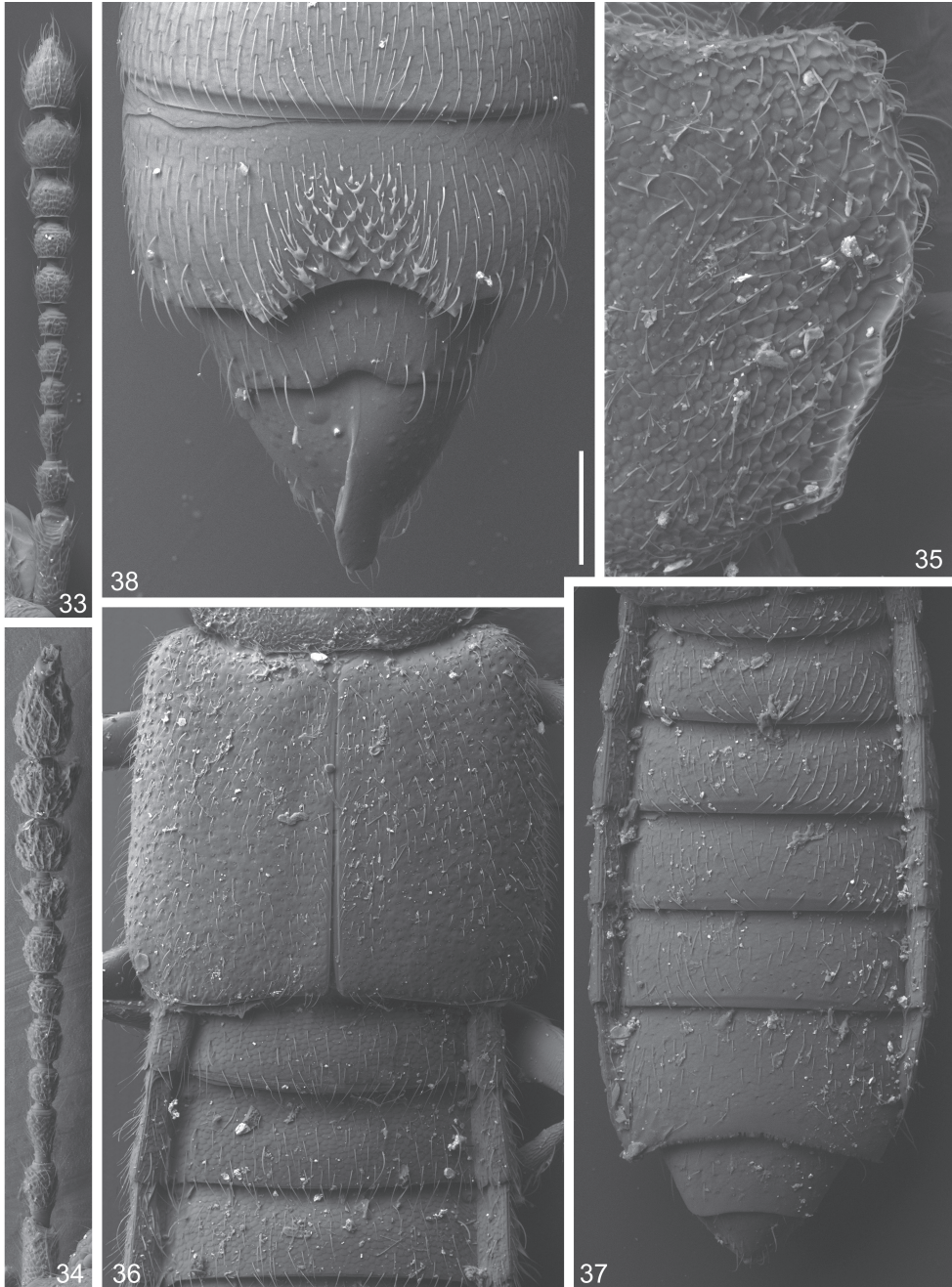
ADDITIONAL MATERIAL:

BRAZIL: Amazonas, Reserva Florestal Adolpho Ducke, 25 km NNE Manaus, 120 m, 26.VII.1973, leg. R.T. Schuh, incandescent lamp in forest (4 ♂♂, 2 ♀♀, AMNH; 1 ♂, HNHM; 1 ♂, NMW); Amazonas, N.S. de Nazare, Paraná da Eva, 8.XI.1969, leg. J.M. & B.A. Campbell (2, CNCI); Pará, 18 km NE Oriximiná, 13.–14.XI.1969, leg. J.M. & B.A. Campbell (1 ♂, CNCI).

REDESCRIPTION: Measurements (in mm, n = 10): HW = 0.60 (0.59–0.62); TW = 0.57 (0.55–0.60); PW = 0.74 (0.71–0.77); SW = 0.77 (0.72–0.80); AW = 0.80 (0.76–0.83); HL = 0.34 (0.32–0.36); EL = 0.20 (0.18–0.21); TL = 0.06 (0.05–0.07); PL = 0.50 (0.48–0.52); SL = 0.79 (0.76–0.83); SC = 0.74 (0.71–0.78); FB = 1.67 (1.62–1.72); BL = 3.36 (3.17–3.60). Lustre and colour: Forebody (Fig. 4) rather dull due to fine punctation and dense microsculpture, abdomen with greasy lustre. Pronotum, elytra and abdomen orangish medium brown, head reddish dark brown, with clypeus and supraantennal tubercles lighter, orangish, epistomal suture marked by a transverse black stripe. Legs, mouthparts and antennae orangish medium brown. Shape and sculpture: Head rather transverse, eyes large, temples narrowly rounded a short distance behind large eye, then strongly convergent (this hind part quite straight). Frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward. Vertex often with small oval or longitudinal impression in midline. Neck delimited by constriction and shallow groove plus change of microsculpture to alveolate with very transverse elements (anteriorly finer, substrigulate). Antennae as in Fig. 9, middle antennomeres slightly elongate. Pronotum very transverse, both anterior and posterior corners very narrowly rounded, anterior and posterior margins almost parallel; sides appearing spinose, from anterior corners with a series of laterally projecting tubercles along lateral marginal bead, latter most prominent in the posterior half. Centre of disc with a pair of longitudinal impressions in the posterior 3/4, lateral parts gently impressed near middle of sides. Elytra rather straight sided (slightly dilating), also with a series of variably sized (mostly smaller) tubercles, first (and often most prominent) after moderately rounded shoulders. Slightly oblique (almost straight) posterior edge with slight marginal bead, and near outer corners with a membranous lobe. Behind scutellum at sides of suture a pair of oval impressions. Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctation and microsculpture: Head with coriaceous microsculpture with only very tiny, scattered punctures mixed in. Microsculpture not very deep or strong, giving the surface a greasy lustre; same microsculpture on pronotum, with stronger coriaceous sculpture in the deeper impressed spots. Elytra finely and densely punctate, 24–26 punctures per elytron width, almost no interspaces with sort of uneven surface, traces of microsculpture. Abdomen with transverse imbricate microsculpture, rather shallow, therefore abdomen quite shiny; also with scattered microtubercles. Pubescence: Setation consisting of erect or semi-erect setae, on head rather short, fine and moderately dense, bristles near anterior corner of eye and on vertex near temples. A remarkable oblique, (variously broad) elliptical patch from near the middle of disc towards anterior corners with larger and longer setae intertwined (anterior ones mostly posterior or postero-lateral, near centre of disc or posteriorly lateral). Conspicuous bristles originate at pronotal lateral tubercles and posterior section of side margin with a bristle, rest of setae similar to those on head. Elytra with regular (uniformly sized and spaced) setae of medium length, on abdomen with longer and more sparse setae somewhat more irregular, longest laterally and apically. Genitalia: Aedeagus as in Fig. 23, spermatheca as in Fig. 24.

DISTRIBUTION: This species is known only from Brazil.

COMMENT: In order to avoid conflict with the rather similar *T. ferrugineus*, a male specimen with a pronounced hair tuft on the pronotum is chosen as lectotype. Males of the two species have rather different aedeagi. It appears that the patch of golden setae is strongly developed only in males of this species, female specimens have much weaker modification.



Figs. 33–38: *Thinodromus breviceps* (33), *T. ferrugineus* [holotype of *Trogophloeus strandi*] (34, 36) [paralectotype of *Trogophloeus ferrugineus*, ♀] (35) and *T. phloeoporinus* [holotype] (37–38): 33–34) antenna; 35) right pronotal margin; 36) elytra and abdominal base; 37) abdomen; 38) male terminalia, ventral view. Scale bar = 0.09 mm (35), 0.14 mm (38), 0.16 mm (33), 0.19 mm (34), 0.20 mm (37), 0.25 mm (36).

***Thinodromus latifrons* (SHARP, 1876) comb.n.**
(Figs. 5, 10, 25–26)

Trogophloeus latifrons SHARP 1876: 399.

Carpelimus latifrons: HERMAN 1970: 392; HERMAN 2001: 1674.

TYPE MATERIAL: **Lectotype** ♂ (by present designation): “Trogophloeus; latifrons; Amazons Type; D.S. \ Type [round paper disc, curator label with reddish orange frame] \ Tapajos. [turquoise oval disc] \ Sharp Coll.; 1905-313. \ Lectotypus; Trogophloeus; latifrons Sharp; des. Makranczy, 2012 \ Thinodromus; latifrons (Sharp); det. Makranczy, 2012” (BMNH).

ADDITIONAL MATERIAL:

BOLIVIA: Beni Dept., Ilha Flores, Río Iténez, 7.VIII.1964, leg. J.K. Bouseman & L. Lussenhop (1 ♂, 1 ♀, AMNH, 1 ♀, NMW).

REDESCRIPTION: Measurements (in mm, n = 4): HW = 0.59 (0.57–0.62); TW = 0.57 (0.54–0.60); PW = 0.66 (0.63–0.69); SW = 0.70 (0.67–0.72); AW = 0.75 (0.73–0.79); HL = 0.35 (0.33–0.36); EL = 0.19 (0.17–0.20); TL = 0.08 (0.07–0.09); PL = 0.46 (0.45–0.47); SL = 0.72 (0.70–0.73); SC = 0.69 (0.65–0.68); FB = 1.54 (1.47–1.58); BL = 3.19 (2.97–3.38). Lustre and colour: Head and pronotum (Fig. 5) very dull for very strong and dense microsculpture. Elytra somewhat lustrous for puncture edges indistinct and interspaces uneven but shiny. Abdomen with greasy lustre. Head reddish medium to dark brown, transverse stripe of epistomal suture much darker, almost black. Supraantennal tubercles and surrounding area lighter as well as clypeus (reddish medium brown). Pronotum reddish medium brown only marginal bead appearing a little darker. Elytra very strongly reddish medium brown, as well as abdomen but latter with apical half of tergites darker. Mouthparts, legs and antennae reddish medium brown. Shape and sculpture: Head rather transverse, eyes large, temples blunt right-angled a short distance behind large eye, then strongly convergent (this hind part quite straight). Frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward. Middle of vertex insignificantly elevated with a tiny impression in middle. Neck delimited by constriction, shallow groove and a change of microsculpture to alveolate with very transverse elements (anteriorly finer, substrigulate). Antennae as in Fig. 10, middle antennomeres about as long as broad. Pronotum moderately transverse, anterior corners broadly rounded, only slightly angular at anterior margin, posterior corners narrowly rounded, almost right-angled, anterior and posterior margins only slightly arched; sides appearing spinose, from anterior corners with a series of laterally projecting tubercles along lateral marginal bead, the one at the widest point even curving backwards, marginal bead stronger in the posterior half, posterior spine (before posterior corners) unusually strong. Centre of disc with a pair of shallow longitudinal impressions in the posterior 2/3, lateral parts very slightly impressed near middle of sides. Elytral sides insignificantly arched but slightly dilating, also with a series of variably sized (mostly tiny) tubercles, first (and often most prominent) after moderately rounded shoulders. Slightly oblique (almost straight) posterior edge with slight marginal bead, and near outer corners with a membranous lobe. Behind scutellum at sides of suture with a pair of longitudinal impressions. Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctuation and microsculpture: Head with rough microsculpture and traces of punctuation dissolved in it. Pronotum with rugulose-lacunose microsculpture. Elytra densely punctate with 14–16 punctures per elytron width, interspaces almost half of puncture diameters, lightly microsculptured. Abdominal microsculpture coriaceous with much more transverse cells at base than at apex and with scattered microtubercles. Pubescence: Setation consisting of erect or semi-erect setae, on head rather short, fine and moderately dense, bristles near anterior corner of eye and on vertex near temples. Conspicuous bristles originate at pronotal lateral tubercles and posterior section of side margin with bristles and longer setae, rest of setae similar to those on head. Elytra with regular (uniformly sized and spaced) setae of medium length, on abdomen with longer and more

sparse setae somewhat more irregular, longest laterally and apically. Genitalia: Aedeagus as in Fig. 25, spermatheca as in Fig. 26.

DISTRIBUTION: This species is known from Brazil and Bolivia.

COMMENT: The original description mentioned two specimens, the depository of the second specimen remains unknown.

***Thinodromus subdenticulatus* (BERNHAEUER, 1908) comb.n.**

(Figs. 6, 11, 27)

Trogophloeus subdenticulatus BERNHAEUER 1908: 289.

Carpelimus subdenticulatus: HERMAN 1970: 393; HERMAN 2001: 1703.

TYPE MATERIAL: **Lectotype** ♀ (by present designation): “Paraguay [1884–1886 (acc. to HORN et al. 1990), leg. F. Drake (acc. to BERNHAEUER 1908)]; [via G.] Kraatz \ subdenticulatus; Brh. Typus.; det. Bernhauer \ subdenticulatus; Bernh. Typus. \ Chicago NHMus; M. Bernhauer; Collection \ Lectotypus; Trogophloeus; subdenticulatus Bernhauer; des. Makranczy, 2010 \ Thinodromus; subdenticulatus (Bernhauer); det. Makranczy, 2012” (FMNH).

ADDITIONAL MATERIAL:

BRAZIL: Santa Catarina, Nova Teutonia, 300–500 m, 27°11'S 52°23'W, I.1971, leg. F. Plaumann (1 ♀, MCZC; 1 ♀, CNCI).

REDESCRIPTION: Measurements (in mm, n = 3): HW = 0.49 (0.48–0.50); TW = 0.50 (0.49–0.50); PW = 0.55 (0.54–0.56); SW = 0.60 (0.59–0.61); AW = 0.63 (0.62–0.65); HL = 0.33 (0.33–0.34); EL = 0.15 (0.15–0.15); TL = 0.10 (0.10–0.10); PL = 0.41 (0.40–0.41); SL = 0.64 (0.62–0.65); SC = 0.60 (0.58–0.61); FB = 1.41 (1.39–1.42); BL = 2.95 (2.85–3.05). Lustre and colour: Head and pronotum (Fig. 6) very dull for very strong and dense microsculpture. Elytra rather lustrous for puncture edges indistinct, interspaces significant and only slightly uneven. Abdomen with greasy lustre. Head blackish dark brown, pronotum and abdomen reddish dark brown, elytra distinctly reddish medium brown. Supraantennal tubercles lighter (reddish) as well as anteclypeus. If pronotum reddish a thin marginal bead appearing darker. Mouthparts, legs and antennae reddish medium brown. Shape and sculpture: Head rather transverse, eyes large, temples anteriorly almost straight, then very broadly rounded and strongly convergent. Frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward. Middle of vertex slightly elevated with a tiny impression in middle. Neck delimited by slight constriction and almost no groove but a change of microsculpture to alveolate with very transverse elements (anteriorly finer, substrigulate). Antennae as in Fig. 11, middle antennomeres very slightly transverse. Pronotum moderately transverse, both anterior and posterior corners very narrowly rounded, anterior and posterior margins nearly parallel; sides appearing spinose, from anterior corners with a series of laterally projecting tubercles along lateral marginal bead, latter most prominent in the posterior half. Centre of disc with a pair of very shallow longitudinal impressions in the posterior 2/3 (difficult to observe for strong microsculpture), lateral parts somewhat impressed near middle of sides. Elytra rather straight sided (slightly dilating), also with a series of variably sized (mostly smaller) tubercles, first (and often most prominent) after moderately rounded shoulders. Slightly oblique (almost straight) posterior edge with slight marginal bead, and near outer corners with a membranous lobe. Behind scutellum at sides of suture a pair of oval impressions. Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctuation and microsculpture: Head with rough microsculpture and traces of punctuation dissolved in it. Pronotum with rugulose-lacunose microsculpture. Elytra densely punctate with 14–16 punctures per elytron width, interspaces almost half of puncture diameters, lightly microsculptured. Abdominal microsculpture imbricate with more transverse cells at base than at apex and with scattered microtubercles. Pubescence: Setation consisting of erect or semi-erect setae, on head rather short, fine and moderately dense, bristles near anterior corner of eye and on vertex near temples. Conspicuous bristles originate at

pronotal lateral tubercles and posterior section of side margin with bristles and longer setae, rest of setae similar to those on head. Elytra with regular (uniformly sized and spaced) setae of medium length, on abdomen with longer and more sparse setae somewhat more irregular, longest laterally and apically. Genitalia: Spermatheca as in Fig. 27.

DISTRIBUTION: Described from Paraguay without other details, but at the time when the specimen was collected Paraguay did not include the Gran Chaco area. The two additional specimens are from Brazil.

COMMENT: The three examined specimens exhibit a great colour variation and unfortunately all are females so there is a chance that more than one species are involved.

***Thinodromus vicinus* (SHARP, 1876) comb.n.**

(Figs. 7–8, 28–30)

Trogophloeus vicinus SHARP 1876: 400.

Carpelimus vicinus: HERMAN 1970: 394; HERMAN 2001: 1709.

TYPE MATERIAL: **Holotype** (sealed, sex unknown): “Trogophloeus; vicinus; Type; Amazons; D.S. \ Type [red bordered disc, curator label] \ Sharp Coll; 1905-313. \ Holotypus; Trogophloeus; vicinus Sharp; ver. Makranczy, 2012 \ Thinodromus; vicinus (Sharp); det. Makranczy, 2012” (BMNH).

ADDITIONAL MATERIAL:

BOLIVIA: Beni, Guayaramerin, Rio Mamoré, 24.VIII.1964, leg. J.K. Bouseman & L. Lussenhop (1 ♂, 1 ♀, 1, AMNH; 1, HNHM; 1, CNCI); Bolivia, 1891 [no other details known, it should be noted that the territory of Bolivia was much larger in 1891 than today], leg. Balzan (1, coll. O. Scheerpeltz ex coll. A. Klima, NMW).

REDESCRIPTION: Measurements (in mm, n = 7): HW = 0.61 (0.59–0.64); TW = 0.59 (0.57–0.62); PW = 0.76 (0.73–0.79); SW = 0.81 (0.75–0.86); AW = 0.84 (0.82–0.88); HL = 0.35 (0.34–0.37); EL = 0.20 (0.18–0.21); TL = 0.06 (0.05–0.07); PL = 0.51 (0.49–0.54); SL = 0.83 (0.74–0.88); SC = 0.78 (0.70–0.83); FB = 1.73 (1.60–1.83); BL = 3.43 (3.25–3.73). Lustre and colour: Head and pronotum (Fig. 7) rather dull due to rough and dense microsculpture. Elytra and abdomen with greasy lustre. Head medium to dark brown, epistomal suture as a dark line, supraantennal tubercles lighter. Pronotum reddish light brown with thin medium brown margin, elytra reddish light brown except scutellar area to the posterior end of suture darker (medium brown), along suture dark brown. Abdomen reddish medium brown, bases darker, middle of tergites somewhat lighter. Legs, antennae and mouthparts yellowish light brown. Shape and sculpture: Head rather transverse, eyes large, temples inconspicuous, just slightly sticking out at posterior edge of eye, narrowly rounded then convergent to neck (this hind part quite straight). Frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward. Middle of vertex insignificantly elevated with a tiny impression in middle. Neck delimited by constriction, shallow groove and a change of microsculpture to alveolate with very transverse elements. Antennae as in Fig. 8, middle antennomeres only very slightly longer than broad. Pronotum very transverse, unusually cordiform (strongly arched at anterior third then convergent, straight or even concave) anterior corners broadly rounded, only slightly angular at anterior margin, posterior corners narrowly rounded, almost right-angled, sides strongly spinose, from anterior corners with a series of laterally projecting tubercles along lateral marginal bead, marginal bead stronger in the posterior half. Centre of disc with a pair of shallow, but broad longitudinal impressions in the posterior 3/4, lateral parts very slightly impressed near middle of sides. Elytral sides insignificantly arched but slightly dilating, also with a series of variably sized (mostly tiny) tubercles, first (and often most prominent) after moderately rounded shoulders. Slightly oblique (almost straight) posterior edge with slight marginal bead, and near outer corners with a membranous lobe. Behind scutellum at sides of suture a pair of oval impressions, longitudinally continuing. Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctuation and microsculpture: Head with very fine and rather dense punctuation but

towards edges dissolving into fine rough microsculpture. Pronotum laterally with a mixture of large shallow punctures meshing with rough microsculpture; centrally, finely and rather densely punctate with coriaceous microsculpture. Elytra densely punctate with 22–24 punctures per elytron width, interspaces very small and microsculptured. Abdominal microsculpture imbricate, very dense and with very slightly transverse cells and scattered microtubercles. Pubescence: Setation consisting of erect or semi-erect setae, on head rather short, fine and moderately dense, bristles near anterior corner of eye and on vertex near temples. Conspicuous bristles originate at pronotal lateral tubercles and posterior section of side margin with bristles and longer setae, rest of setae similar to those on head. Elytra with regular (uniformly sized and spaced) setae of medium length, on abdomen with longer and more sparse setae somewhat more irregular, longest laterally and apically. Genitalia: Aedeagus as in Fig. 28, spermatheca as in Fig. 29.

DISTRIBUTION: If Sharp's Amazonian material comes from present-day Brazil, then the species is known from that country and Bolivia.

COMMENT: The holotype still remains in its original mounting, as a supplementary series was available it was not crucially important to remove it.

Thinodromus circulus species group

Males of the so far examined Neotropical members of this species group possess a sternite IX, but usually (to a varying extent) weakly developed, making this plate in the terminalia important to study. Aedeagi are rather similar to those in the genus *Carpelimus*, usually with a few strong (diagnostically useful) sclerites in the internal sac. The females have a well-developed ring-like sclerite (generally more similar to those in *Thinodromus* rather than the ones in *Carpelimus*, also because they do not form a closed "ring"). Spermathecal shape varies and could be used in determination, often of the *Carpelimus* type, in a few cases exactly like in that genus.

***Thinodromus velutinus* (SHARP, 1887)**

(Figs. 39–40, 44–46, 50–52)

Trogophloeus velutinus SHARP 1887: 700.

Trogophloeus opacellus BERNHAUER 1941: 280; BERNHAUER 1951: 269, **syn.n.**

Carpelimus velutinus: HERMAN 1970: 159; HERMAN 2001: 1377.

TYPE MATERIAL of *Trogophloeus opacellus*: **Lectotype** ♀ (by present designation): "Süd-Peru; Aina, 1400 m [approx. 12°40'26"S 73°53'40"W]; 8.5[V].1936. [green label] \ Hbg.[Hamburg]-Süd-Peru; Sammelreise 1936.; Eing. Nr. 1, 1937. \ Gekl.[opft] i.[n] den Schirm \ opacellus; Brh. Cotypus [white] \ opacellus Brnh. Typus; Taenosoma [dark orange] \ Chicago NHMus; M. Bernhauer; Collection \ Lectotypus; Trogophloeus; opacellus Bernhauer; des. Makranczy, 2012 \ *Thinodromus*; *velutinus* (Sharp); det. Makranczy, 2018" (FMNH).

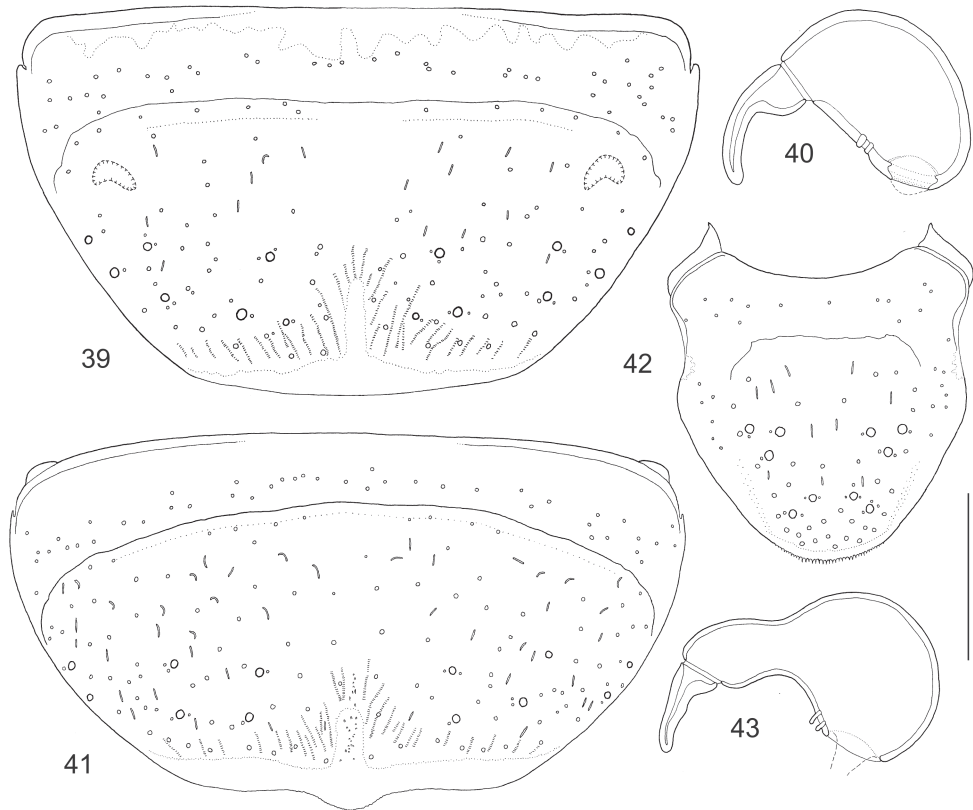
For type material of *Trogophloeus velutinus* see MAKRANCZY (2014).

ADDITIONAL MATERIAL:

COSTA RICA: Puntarenas Prov., above Ciudad Neily, road Ciudad Neily > San Vito, 8°39'–42'N 82°56'W, 100–1000 m, 8.XII.2012, leg. M. Schülke & B. Grünberg ("CR2012-16"), devastated forest & plantations, car-net 18:15–18:45 (2 ♀♀, 4 coll. Schülke, ZMHB; 1, AMNH; 1, FMNH; 1, CNCI; 1 ♂, BMNH; 1 ♂, NMW); Puntarenas Prov., road San Vito > Paso Real, 8°50'–9°00'N 83°02'–13'W, 100–900 m, 8.XII.2012, leg. M. Schülke & B. Grünberg ("CR2012-17"), car-net, devastated forest & farmland (3, coll. Schülke, ZMHB); Puntarenas Prov., road Rincón de Osa > Chacarita, 8°42'–48'N 83°15'–29'W, 0–250 m, 9.XII.2012, leg. M. Schülke & B. Grünberg ("CR2012-19"), devastated forest & plantations, car-net 17:00–18:30 (1, coll. Schülke, ZMHB); Puntarenas Prov., road Barrigones (Osa) > Chacarita, 8°36'–48'N 83°15'–26'W, 0–250m, 11.XII.2012, leg. M. Schülke & B. Grünberg ("CR2012-20"), pastures, plantations, devastated forest, car-net 16:30–18:15 (7, coll. Schülke, ZMHB; 1 ♂, 1 ♀, HNHM); Puntarenas Prov., Osa Peninsula, road Rincón de Osa > Chacarita, 8°42'–48'N 83°15'–29'W, 0–250 m, 10.XII.2012, leg. M. Schülke & B. Grünberg ("CR2013-21"), devastated forest & plantations, car-net 16:30–18:30 (2, coll. Schülke, ZMHB); Alajuela Prov., road Río Cuarto>Sarchí, N-

side, 10°12'25"N 84°18'26"W, 1558 m, 29.XI.2013, leg. M. Schülke ("CR2013-07"), dead wood and litter sifted along road (1, coll. Schülke, ZMHB).

ADDITIONAL CHARACTERS: Measurements (in mm, n = 10): HW = 0.36 (0.33–0.38); TW = 0.37 (0.34–0.40); PW = 0.42 (0.38–0.46); SW = 0.45 (0.41–0.49); AW = 0.50 (0.46–0.54); HL = 0.24 (0.23–0.25); EL = 0.11 (0.10–0.12); TL = 0.05 (0.04–0.06); PL = 0.30 (0.27–0.32); SL = 0.42 (0.39–0.45); SC = 0.40 (0.37–0.43); FB = 0.98 (0.92–1.04); BL = 1.87 (1.77–2.06). Terminalia and genitalia: Male sternite VIII as in Fig. 39, male sternite IX as in Fig. 44, aedeagus as in Fig. 45. Female ring-like sclerite as in Fig. 46, spermatheca as in Fig. 40.



Figs. 39–43: *Thinodromus velutinus* (39–40), *T. hermani* (41–43): 39, 41) male sternite VIII; 42) male tergite X; 40, 43) spermatheca. Scale bar = 0.06 mm (40, 43), 0.075 mm (42), 0.09 mm (39), 0.1 mm (41).

DISTRIBUTION AND BIONOMICS: According to the original publication *Trogophloeus opacellus* was collected at the river bed of the Tieni ("Pieni" in the 1951 edition), beaten into a sheet, from the edge (escarpment) of the river bed. This species is now known from Costa Rica, Panama (type locality of *Trogophloeus velutinus*) and Peru.

COMMENT: Other specimens from the original series of *Trogophloeus opacellus* became destroyed in the bombing of Hamburg during WWII. The only surviving specimen is designated as lectotype. The external features of the lectotype (head and pronotum as in Fig. 50, antenna as

in Fig. 51 and elytron as in Fig. 52) match closely those of the holotype of *Trogophloeus velutinus*, both are based on a single female specimen, and these are well within the variability range of the now known material, so the two names are considered synonyms at the current state of knowledge (in the absence of a male specimen from Peru). Thanks to Michael Schülke's recent collecting in Costa Rica, additional specimens are now available and the male characters can be published. It must be noted that during examination of this larger material, the tarsal segmentation was found to be a bit variable and difficult to interpret. A similar situation is expected in the other species of this group, so it is perhaps more appropriate to state that the number of tarsomeres can vary from three to five with varying development and separation of segments (tarsomeres may appear fused in dorsal view, while in ventral view they may appear quite distinct). A very similar species is described below as new.

***Thinodromus hermani* sp.n.**

(Figs. 32, 41–43, 47–49)

TYPE LOCALITY: Nicaragua, Matagalpa, Selva Negra Hotel, Cody Trail, 12°59.99'N 85°54.55'W, 1300 m.

TYPE MATERIAL: **Holotype** ♂: "NICARAGUA: Matagalpa Dept., 6km N Matagalpa, Selva Negra Hotel, 1300 m, 12°59.99'N, 85°54.53'W, 18-21.V.2002, leg. R. Brooks, Z. Falin & S. Chatzimanolis, ex flight intercept trap, Cody Trail" (SEMC). **Paratypes** (13): Matagalpa, 10 km NW [actually N] Matagalpa, Selva Negra, 1230–1280 m, 12°59'58"N 85°54'35"W, 19.XII.2002, leg. L. Herman, litter near stream (4, AMNH); Matagalpa, 10 km NW [N] Matagalpa, Selva Negra, 1240–1380 m, 13°00'N 85°55'W, 16.–22.V.2002, leg. L. Herman, leaf litter, stream (1 ♀, 5, AMNH; 1 ♂, FMNH; 1 ♂, CNCI; 1 ♂, NMW).

DIFFERENTIAL DIAGNOSIS: Externally similar to *Thinodromus velutinus*, but the widest point of the pronotum is slightly obtuse-angled. Elytral punctures much more rough than pronotal ones, so although it appears shinier than the pronotum, it is less shiny than in *T. circulus* because of the smaller interspaces. Genital differences are numerous, most remarkable is the shape of the spermatheca and the somewhat reduced male sternite IX.

DESCRIPTION: Measurements (in mm, n = 10): HW = 0.39 (0.37–0.41); TW = 0.39 (0.36–0.41); PW = 0.46 (0.43–0.49); SW = 0.51 (0.48–0.55); AW = 0.57 (0.53–0.60); HL = 0.26 (0.25–0.28); EL = 0.12 (0.11–0.13); TL = 0.07 (0.06–0.08); PL = 0.33 (0.31–0.35); SL = 0.51 (0.48–0.54); SC = 0.48 (0.45–0.51); FB = 1.14 (1.08–1.20); BL = 2.24 (2.07–2.34). Lustre and colour: Habitus as in Fig. 32. Body rather dull, especially head and pronotum, due to strong punctation and microsculpture; rest of body with greasy lustre. Main body parts blackish dark brown, almost black. Mouthparts and antennae dark brown, latter almost black. Legs reddish medium to dark brown, tibiae and tarsi somewhat lighter than femora. Shape and sculpture: Head quite transverse, with large eyes and well developed, bulging temples approximately half the size of eyes. Neck well delineated (by different, alveolate microsculpture) but without distinct transverse groove. Antennae rather short, antennomeres 4 and 5 about as long as broad, antennomeres 9–10 1.2–1.3 × as broad as long. Pronotum transverse, anterior corners obtuse-angled, less conspicuous than a knob-like protuberance immediately behind it on the lateral margin; latter slightly angled at the broadest point at about 1/3 length. Posterior half of sides quite straight, posterior corners strongly rounded and obtuse-angled, inconspicuous. Horseshoe-shaped impression strong and rather impressed, middle of disc bearing a pair of shallow depressions. Marginal bead on pronotum from dorsal view seems absent with only traces at slightly curved hind margin and a shiny transverse stripe in middle of anterior margin. Elytra combined slightly broader than long, only gently dilated towards apex, with a pair of small, round impressions posterior of scutellum; depressed area on elytron somewhat extending towards centre of disc. Posterior elytral margin (slightly oblique) with very thin bead and in outer 1/3 with small membranous lobe protruding. Apex of abdominal tergite VII with palisade

fringe. Punctuation and microsculpture: Head and pronotum with dense, deep, more or less umbilicate punctuation with acinose microsculpture in between; in middle of vertex punctuation slightly loosened and more lustrous. Interspaces only a fraction of puncture diameters, without apparent microsculpture. Epistomal suture as shiny transverse line without microsculpture. Elytral punctures about the same size as on pronotum, interspaces vary, on average 1/3 puncture diameters, making it shinier, microsculpture not apparent. Abdomen with very small punctures and interspaces with imbricate microsculpture (more or less isodiametric cells) but not strong, so abdomen almost as lustrous as elytra. Pubescence: Body setation rather short, dense, equally sized and spaced on head and pronotum (rather inconspicuous because of strongly and densely punctate surface), a little longer on elytra, slightly less dense. Setation on abdomen as dense as on elytra but longer, especially near apices of tergites, slightly more irregular. Primary and secondary sexual features: Male: Sternite VIII as in Fig. 41, sternite IX as in Fig. 44, tergite X as in Fig. 42, aedeagus as in Fig. 48. Female: Ring-like sclerite as in Fig. 49, spermatheca as in Fig. 43.

ETYMOLOGY: The species is named after Lee H. Herman (AMNH), who collected all the paratypes.

DISTRIBUTION: The species is known only from three closely situated localities in Nicaragua.

COMMENT: This species is a good example of the confusing genital traits; females have a perfectly *Carpelimus*-like spermatheca and a *Thinodromus*-like ring-like sclerite.

Thinodromus diffusus species group

The known species share a rather characteristic type of punctuation on head and pronotum (Fig. 53), and pointed anterior pronotal corners. The horseshoe-shaped pronotal impression is very similar to that of *Ochtheophilus* MULSANT & REY, 1856. Male sternite VII with a deep and wide arcuate apical emargination bordered by two strong teeth, sternite VIII with a small medio-apical emargination. Male genitalia laterally flattened with at least some sclerites in the internal sac. Males with a fully developed sternite IX. Females without ring-like sclerite. Spermatheca with invagination (tubular portion extending into distal bulb). Females have weak sclerites in the terminalia. The group also includes *T. diffusus* CASEY, 1889 and *T. lapsus* CASEY, 1889, their distinctness from each other has not been investigated; they are not only named on the same page but from the same site, each described from a single specimen which raises a doubt of them being one variable species.

***Thinodromus phloeoporinus* (LECONTE, 1877) comb.n.** (Figs. 53–63)

Trogophloeus phloeoporinus LECONTE 1877: 246.

Carpelimus phloeoporinus: HERMAN 1970: 393; HERMAN 2001: 1687.

TYPE MATERIAL: **Holotype** ♀: “Ill.[inois] \ T. phloeoporinus; LeC. \ Type; 6569 [red card] \ Aug.-Dec. 2004; MCZ Image; Database \ Holotypus; Trogophloeus; phloeoporinus LeConte; ver. Makranczy, 2018 \ Thinodromus; phloeoporinus (LeConte); det. Makranczy, 2018” (MCZC).

ADDITIONAL MATERIAL:

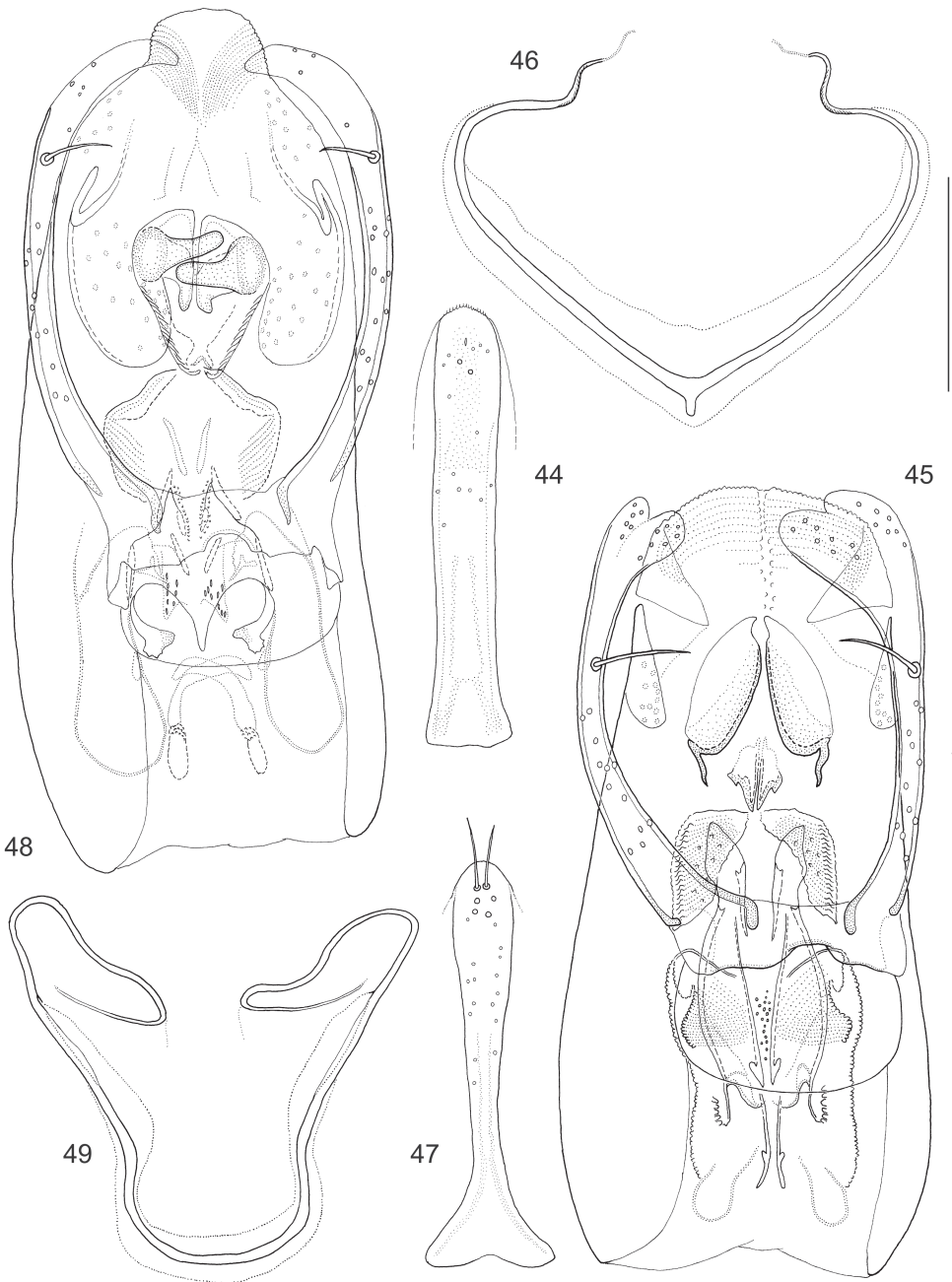
CANADA: Manitoba: Birds Hill Provincial Park [50°01'28"N 96°53'01"W], 29.VIII.1983, (collector unknown, via Darren Pollock), pitfall trap (1 ♂, CPSC); **Ontario:** [Northumberland Co., Brighton], Presqu'île Provincial Park, Beach #2 [44°00'08"N 77°44'08"W], 27.IV.2003, leg. P.D. Careless, pan trap (1 ♀, DEBU); Algoma Co., Lake Superior Provincial Park, Gargantua Bay [47°33'35"N 84°57'00"W], 9.IX.1980, leg. R. Baranowski (“Can 163”), “på sandstrand längst inne i viken bland växtrötter eller under gamla driftränder” [on sandy beach in the innermost part of the bay among plant roots or under old sea drift] (1 ♂, 2 ♀♀, MZLU), same, but “Can 166”, “sällning av förna runt aspar som stod vid stranden längst in i viken” [sifting of detritus around aspens (*Populus*

tremula) standing by the beach in the innermost part of the bay] (1 ♀, MZLU; 1 ♂, HNHM); **Newfoundland:** [Osmond.] J.T. Cheeseman Provincial Park [47°37'52"N 59°14'57"W], 14.VIII.2002, leg. S.A. Pardy, Sand Dune Ecosystem Study, dune vegetation, trap #9 (1 ♂, 1 ♀, MUNC); same, but trap #4 (2 ♂♂, 1 ♀, MUNC; 1 ♂, NMW).

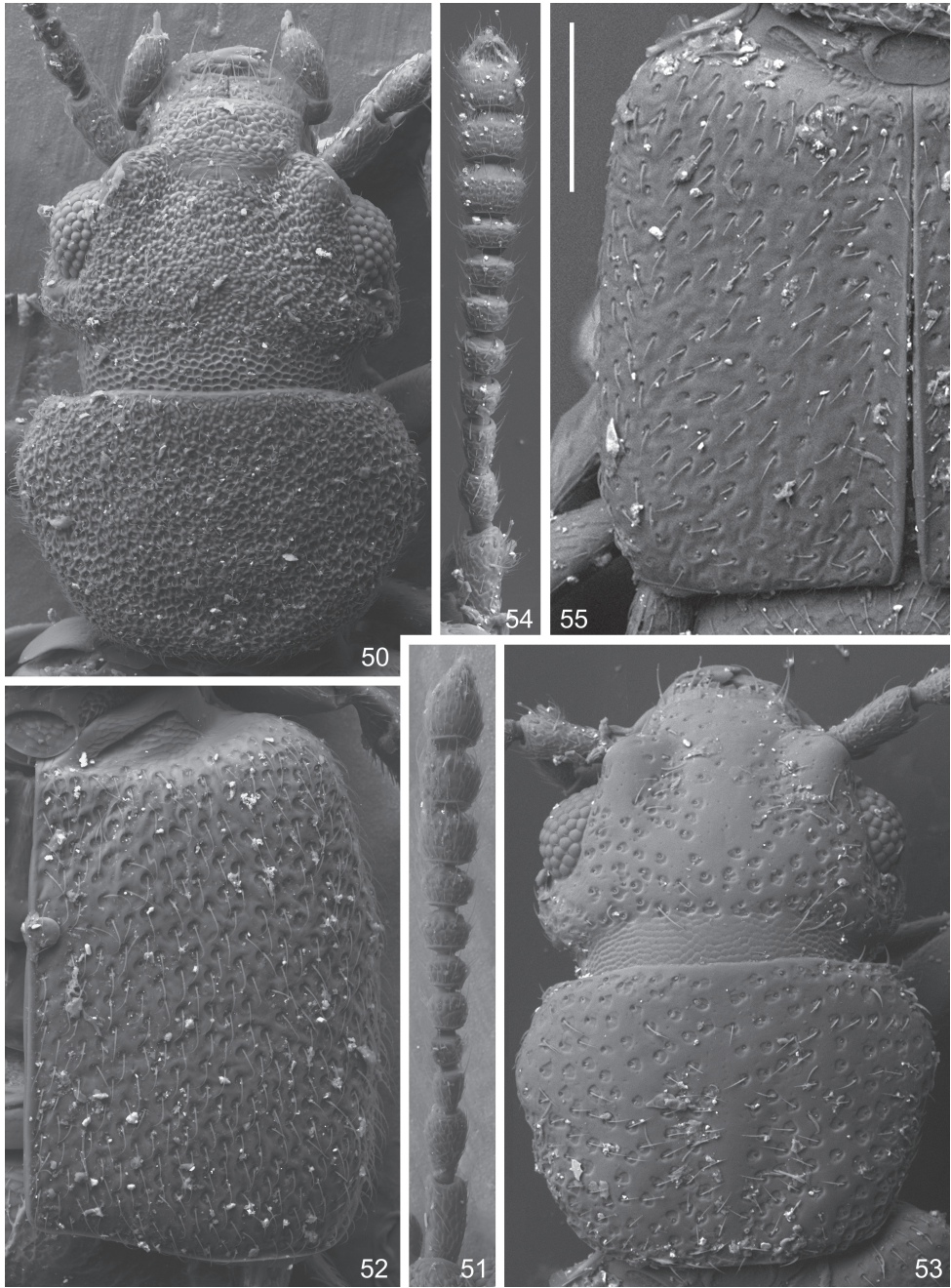
REDESCRIPTION: Measurements (in mm, n = 10): HW = 0.43 (0.40–0.45); TW = 0.44 (0.40–0.47); PW = 0.50 (0.45–0.53); SW = 0.52 (0.47–0.55); AW = 0.60 (0.55–0.62); HL = 0.32 (0.30–0.33); EL = 0.13 (0.12–0.14); TL = 0.10 (0.09–0.11); PL = 0.40 (0.37–0.42); SL = 0.54 (0.50–0.59); SC = 0.51 (0.47–0.56); FB = 1.29 (1.20–1.37); BL = 2.62 (2.52–2.76). Lustre and colour: Body rather lustrous for shiny puncture interspaces, elevated areas and weak microsculpture; abdomen more dull because of slightly stronger microsculpture. Head and abdomen dark brown with occasional reddish tint, pronotum and elytra lighter, slightly reddish medium to dark brown. Legs, mouthparts and antennae reddish medium brown, occasionally apices of antennae (3–4 terminal antennomeres) darker. Shape and sculpture: Both head and pronotum just slightly transverse, eyes not very large, head with slightly bulging, almost evenly rounded temples, almost the length of the eye. Clypeus rather narrow, projecting forward, vertex longitudinally impressed beside supraantennal tubercles, neck delimited by weak constriction (shallow groove) and change of microsculpture to isodiametric imbricate. Antennae as in Fig. 54, antennomeres rather transverse, articles 5–6 1.3 × as broad as long, articles 9–10 1.3–1.4 × as broad as long. Pronotum with sharp anterior corners, lateral margin slightly concave behind it, more strongly rounded at anterior 1/3 length, posteriorly rather straight (convergent), posterior corners rounded, less conspicuous. Anterior margin truncate, posterior margin very slightly arched. Pronotal midline elevated in posterior 3/5 length and impressed on each side of it and with a pair of knobs near posterior corners. Elytra (Fig. 55) almost parallel-sided (very slightly dilating, hind margin very slightly curved with very thin marginal bead and membranous lobe near outer corners. Behind scutellum on both sides of suture impressed, latter vanishing posteriorly. Apex of abdominal tergite VII with evenly thin palisade fringe. Punctuation and microsculpture: Head rather shiny with shallow umbilicate punctures. Clypeus very poorly delimited by shallow and indistinct groove, punctuation same but more sparse. Vertex loosely punctate especially in middle, more dense in longitudinal depressions between supraantennal tubercles, on sides and near border of neck. Neck delimited by shallow groove and change of microsculpture to slightly transverse coriaceous. Pronotum shiny with scattered (unevenly distributed) characteristic shallow umbilicate punctuation, a diagnostic feature of this group. Elytra with traces of microsculpture or slight surface unevenness and regular (evenly spaced) umbilicate punctuation, interspaces about the same as puncture diameters. Abdomen finely punctate with regular (evenly spaced) normal punctures and with transverse coriaceous microsculpture. Pubescence: Setation sparse and short on forebody, but on elytra more regular (equally spaced), on abdomen same density as on elytra but longer, especially near apices of tergites. Direction of setae on most of elytral disc postero-lateral, at apex lateral, at suture and near sides mostly posterior. Primary and secondary sexual features: Male: Sternite VII as in Fig. 56, sternite VIII as in Fig. 57, sternite IX as in Fig. 58, tergite X as in Fig. 59, aedeagus, frontal view as in Fig. 60, median lobe as in Fig. 61, paramere from side view as in Fig. 62. Female: Spermatheca as in Fig. 63.

DISTRIBUTION: This species is known from Canada (Manitoba, Ontario and Newfoundland) and the USA (Illinois and Iowa, the latter being based on a record published by CASEY (1889), specimens not examined).

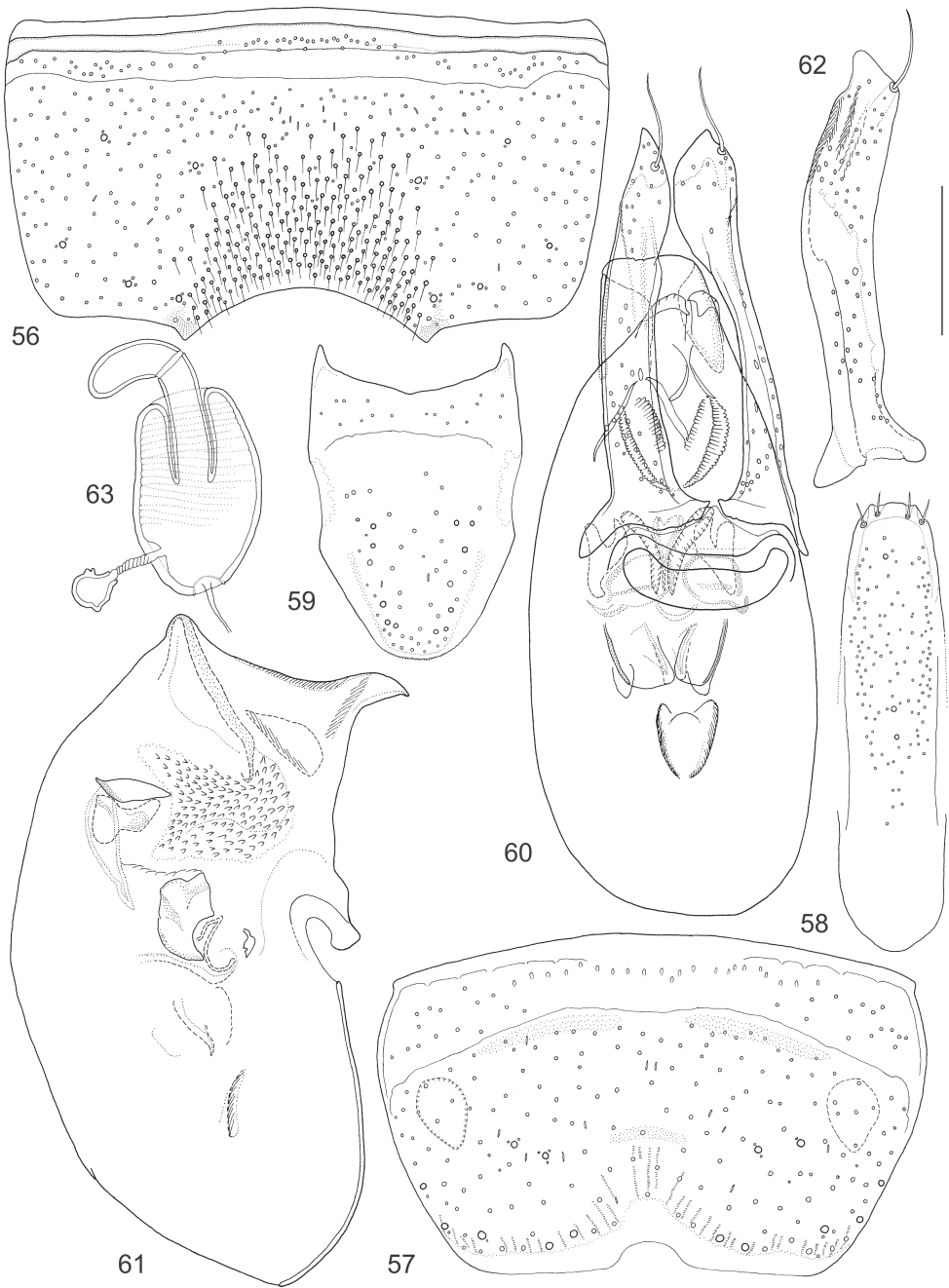
COMMENT: The genitalia and terminalia are very similar to those of *T. diffusus* CASEY, 1889 illustrated in MAKRANCZY (2006).



Figs. 44–49: *Thinodromus velutinus* (44–46), *T. hermani* (47–49): 44, 47) male sternite IX; 45, 48) aedeagus, 46, 49) ring-like sclerite. Scale bar = 0.055 mm (46), 0.07 mm (45, 48), 0.09 mm (44), 0.1 mm (47, 49).



Figs. 50–55: *Thinodromus velutinus* [lectotype of *Trogophloeus opacellus*] (50–52) and *T. phloeoporinus* [holotype] (53–55): 50, 53) head and pronotum; 51, 54) antenna; 52, 55) right elytron. Scale bar = 0.12 mm (52), 0.14 mm (51), 0.16 mm (50, 55), 0.20 mm (53–54).



Figs. 56–63: *Thinodromus phloeoporinus*: 56) male sternite VII; 57) male sternite VIII; 58) male sternite XI; 59) male tergite X; 60) aedeagus, frontal view; 61) aedeagus, median lobe, lateral view; 62) paramere, lateral view; 63) spermatheca. Scale bar = 0.035 mm (56–57), 0.06 mm (58–59), 0.07 mm (63), 0.1 mm (60–62).

Discussion

The present article deals with species apparently belonging to three distinct assemblages of species. In the literature these on the one hand have been variously treated as species groups, subgenera or even genera and on the other hand their diagnoses are given with varying precision. This leads to a confusing situation that requires some clarification at this point even if the statuses of these groups cannot (and should not) be decided until molecular analyses become available. Regarding the species groups in the New World, the *Thinodromus circulus* group was subject of a recent article (MAKRANCZY 2014). The *Thinodromus ferrugineus* group is rather speciose but has only been discussed for its Afrotropical species under the genus group name *Mendaxinus* (originally described as a subgenus of *Thinodromus*). The third involved group has only three published names, all of which occur in the Nearctic Region, its diagnosis is only implied in MAKRANCZY (2006) where one of its species, *T. diffusus*, has been included in a phylogenetic analysis. A fourth group is here only mentioned as an example of the disparity within the genus *Thinodromus*, but its only two Afrotropical species are given a detailed treatment in MAKRANCZY (2009). The genus group names have a complicated history and the *Thinodromus diffusus* species group is the only one for which such a name is currently not available. As research progressed after 2014, the *Thinodromus circulus* species group was found to include a whole bunch of taxa in the Old World currently in *Carpelimus*, and these are not grouped consistently under any subgeneric name in GILDENKOV (2015) but most of them are under the subgenus *Bucephalinus* KOCH, 1934. It is not the subject of the present article to treat these species although a fair amount of work has been done by the present writer to clarify their affinities. At this point not all the Old World species are revised and illustrated sufficiently to determine their affinities, and the percentage of undescribed species is significant. The scientific community is currently divided over these belonging to *Thinodromus* (e.g. MAKRANCZY 2014) or rather *Carpelimus* (e.g. GILDENKOV 2015), sometimes informally mentioning them as transitional group. The possibility that the two large genera must be merged cannot be ruled out completely, but such a decision is premature at this point, as well as the formal transfer of the Old World species to *Thinodromus*. This contribution intends to clarify the current concept (of the writer) and to illustrate these groups in order to enable their recognition.

Acknowledgements

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Autor(en)/Author(s): Makranczy György

Artikel/Article: [Generic reassignments of New World species in the Carpelimus group of genera \(Coleoptera: Staphylinidae: Oxytelinae\) 75-102](#)