

New species in the *Thinodromus ferrugineus* species group (Coleoptera: Staphylinidae: Oxytelinae)

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Abstract

Six new species of the *Thinodromus ferrugineus* species group (Coleoptera: Staphylinidae: Oxytelinae) are described: *T. carltoni* (Belize: Orange Walk District), *T. dryophilus* (USA: Indiana), *T. fractus* (Brazil: Amazonas), *T. minusculus* (Paraguay: Paraguari), *T. rubiginosus* (USA: Arkansas) and *T. vernicatus* (French Guiana: Cayenne); with the description of *T. dryophilus*, the distribution of the *T. ferrugineus* species group is extended northwards to Indiana and Virginia; *T. carltoni* is currently the smallest known species of the genus *Thinodromus* KRAATZ, 1857. The habitus and certain additional morphological details of the new species are illustrated by colour photographs, the terminalia and genitalia by line drawings.

Key words: Coleoptera, Staphylinidae, Oxytelinae, *Thinodromus ferrugineus* group, taxonomy, new species, Nearctic and Neotropical regions, New World.

Introduction

The *Thinodromus ferrugineus* species group is exclusive to the New World, and it has been reviewed by MAKRANCZY (2018). A lot of new species remain unnamed, but the male characters are weak, the aedeagus lacks well sclerotized and easy-to-interpret internal structures, the terminalia lack diagnostic modifications, and the females are without annular sclerites (“ringstructure”). Consequently, there is much less opportunity to double-check taxonomic decisions. The taxonomy of this group will require help from molecular methods in the future. Herein, six doubtlessly distinct species are described because of their significance in terms of distribution and morphology. These new taxa raise the number of described species from eight to 14.

Material and methods

The labels of the primary type specimens are cited verbatim. Text within square brackets “[...]” is explanatory and is not included on the original labels. An effort was made to supplement locality data with geographical coordinates, mostly using internet searches and GoogleEarth, if they were not provided by the collectors. The specimens examined are deposited in the following collections:

AMNH	American Museum of Natural History, New York, USA (Lee H. Herman)
BMNH	Natural History Museum, London, UK (Maxwell V.L. Barclay)
CNCI	Canadian National Collection of Insects, Ottawa, Ontario, Canada (Anthony Davies)
coll. Assing	private collection of Volker Assing, Hannover, Germany
coll. Struyve	private collection of Tim Struyve, Mechelen, Belgium
DEBU	University of Guelph Insect Collection (formerly: Department of Environmental Biology), Guelph, Ontario, Canada (Adam J. Brunke)
DENH	University of New Hampshire Collection of Insects and other Arthropods, Durham, New Hampshire, USA (Donald S. Chandler)
FMNH	Field Museum of Natural History, Chicago, Illinois, USA (Alfred F. Newton)
HNHM	Hungarian Natural History Museum, Budapest, Hungary
LSAM	Louisiana State Arthropod Museum, Louisiana State University, Baton Rouge, Louisiana, USA (Chris E. Carlton)
MHNG	Muséum d’histoire Naturelle, Genève, Switzerland (Giulio Cuccodoro)

NMW Naturhistorisches Museum Wien, Austria (Harald Schillhammer)

SEM Snow Entomological Collection, University of Kansas, Lawrence, Kansas, USA (Zachary F. Falin)

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 midline; 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 MZ 12.5 stereoscopic microscope was used. For the line drawings permanent preparations were made in Euparal mounting medium on plastic cards pinned with the specimens. The techniques of the preparation of genital and terminalia 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, a Nikon D4 camera and a Novoflex bellows were used with Mitutoyo 5/0.14 and 10/0.25 Apo ELWD lenses. Resulting images are focus stacks, aligned and stacked with ZereneStacker. The single scanning electron micrograph (SEM) used herein (Fig. 8) is a leftover from a previous project (MAKRANCZY 2018) when species identities were still confused and scanning electron photographs were taken of uncoated specimens with a Hitachi S-2600 N scanning electron microscope under low vacuum.

Thinodromus dryophilus sp.n.

(Figs. 1, 10–14)

TYPE LOCALITY: USA, Indiana, Monroe County, Hoosier National Forest, Hardin Ridge Campground, 39°1'30"N 86°27'9"W, 230 m a.s.l.

TYPE MATERIAL: **Holotype** ♂: "IN: Monroe Co., Hoosier Natl. For., Hardin Ridge Camp- ground, 39°1'30"N 86°27'9"W, oak forest, sifted leaf litter, 23–25 Jul 2009, Brunke & Cheung debu00317547" (DEBU). **Paratypes** (52): USA: Indiana: Monroe Co., Hoosier National Forest, Hardin Ridge Campground, 39°1'28"N 86°27'15"W, 23.–25.VII.2009, leg. A. Brunke & D.K.B. Cheung, hardwood forest, ex litter in damp streambed (1 ♂, DEBU); USA: Arkansas: Crawford Co., 6–15 miles SSE Winslow (in Washington Co.), Bayou Creek [35°43'30"N 94°4'30"W], 26.V.1987, leg. L. Herman (2282), litter near spring runoff (1, AMNH); same, but [35°43'N 94°7'W], (#2281), mixed hardwood litter in ravine (2, AMNH); Scott Co., Mill Creek Recreation Area [34°43'47.5"N 93°59'46.2"W], 11.II.1992, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); Polk Co., 3.5 miles SW Big Fork [34°26'24"N 94°1'24"W], 10.XII.1992, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); Polk Co., Rich Mountain, intersection 272/88 [34°41'12.0"N 94°21'43.5"W], 18.X.1991, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); same, but N of 88/272 intersection [34°41'30"N 94°21'30"W], 23.VIII.1991 (1, LSAM); Polk Co., Bard Springs Recreational Area [34°23'57"N, 94°0'39"W], 24.IV.1992, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); same, but 6.VI.1992 (1, LSAM); Polk Co., Caney Creek Wilderness [34°24'14"N 94°4'11"W], 3.V.1992, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); Polk Co., Caney Creek Wilderness Area, 3.5 miles N Bard Springs [34°24'15"N 94°4'8"W], 6.VII.1991, leg. C.E. Carlton & H.W. Robison, maple-beech berlesate (4, LSAM, 1, FMNH, 1, BMNH); same, but 25.VII.1991 (4, LSAM, 1, MHNG); same, but 17.VIII.1991 (2, LSAM); same, but 7.III.1992, beech-maple berlesate (1, LSAM); Polk Co., Caney Creek Wilderness Area, 3.0 miles N Bard Springs [34°23'30"N 94°4'0"W], 6.VI.1991, leg. C.E. Carlton & H.W. Robison, maple-beech berlesate (6, LSAM); same, but 25.VII.1991 (5, LSAM); same, but 17.VIII.1991 (2, LSAM); same, but 7.III.1992 (1, LSAM); Polk Co., 14 miles W Mena, Queen Wilhelmina State Park, Rich Mt., south slope, spring on Lovers Leap Trail, 2500 ft. [34°41'20"N 94°22'10"W], 6.VI.1987, leg. L. Herman (#2296) (1, AMNH); Polk Co., 19 miles W Mena, via state highway 88 and Forest Road 514, springs along Road 514, 2000 ft. [34°41'N 94°27'W], 6.VI.1987, leg. L. Herman (#2298) (1, AMNH); Montgomery Co., Crystal Recreational Area [Crystal Mt. Scenic Area, 34°29'41"N 93°34'54"W], slopes S of campground, 24.VIII.1991, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (2, LSAM); Montgomery Co., Little Missouri Falls Recreation Area [34°25'31.667"N 93°55'16.667"W], 6.VI.1992, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); Montgomery Co., 6.5 miles W Little Missouri Falls Recreation Area [34°25'19"N 93°55'10"W], 29.XI.1991, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); Franklin Co., 1–10 miles E Cass, Forest Road 1003 [35°41'30"N 93°45'0"W], 29.V.1987, leg.

L. Herman (#2286), springs in ravines (1, AMNH); Madison Co., 3–5 miles S Combs, Forest Road 1003 [35°40'N 93°53'W], 2.V.1986, leg. L. Herman (#2210), from mixed hardwood litter near seep (1, AMNH); USA: Alabama: Clay Co., 19 miles ENE Talladega (in Talladega Co.), Route 42, Talladega Mts. [32°29.0'N 85°53.0'W], 11.IX.1985, leg. L. Herman (#2193), mixed hardwood litter (1, AMNH); USA: Georgia: Rabun Co., Black Rock Mountain State Park, lumbering area [34°54'20"N 83°24'50"W], 5.VI.1981, leg. J. Pakaluk (81–47), oak-maple litter (1, FMNH); USA: Missouri: Harrison Co., 6 miles SE Bethany [40°13'53"N 93°55'00"W, ca. 305 m], 28.VI.1987, leg. D.S. Chandler, sift, forest litter (1, DENH); USA: Kansas: Douglas Co., Breidenthal Biological Reserve, 2 miles N Baldwin [38°48'30"N 95°11'0"W], 6.X.1983, leg. J. Pakaluk, forest litter (64, AMNH); same, but 10.–16.V.1984, window trap (1, AMNH); USA: Oklahoma: Latimer Co., Robbers Cave State Park, Lost Lake [35°00'36.0"N 95°20'24.5"W], 3.VII.1987, leg. D. Chandler & K. Stephan, sift, leaf litter on lake margin (2, DENH); USA: Mississippi: Scott Co., 4 miles S Forest [32°19'N 89°28'W], 10.IX.1985, leg. L. Herman (#2191), mixed hardwood litter (1, AMNH); USA: Virginia: Fauquier Co., 20 miles SSE Warrenton [38°27'30"N 77°39'30"W], 29.IV.1986, leg. L. Herman (2204), mixed hardwood litter, near spring (1, AMNH); same, but (#2205) (4, AMNH); same, but (#2206) (7, AMNH); same, but (#2208), near spring, mixed hardwood litter (1 ♀, 1, AMNH).

DIFFERENTIAL DIAGNOSIS: Most similar to *T. rubiginosus*, but darker (extensively blackish), larger and with more bulging eyes and less widening temples (temple about as long as eye).

DESCRIPTION: Measurements (in mm, $n = 10$): HW = 0.47 (0.44–0.49); TW = 0.49 (0.45–0.51); PW = 0.56 (0.53–0.60); SW = 0.64 (0.59–0.67); AW = 0.66 (0.60–0.70); HL = 0.33 (0.32–0.35); EL = 0.12 (0.11–0.12); TL = 0.12 (0.10–0.13); PL = 0.39 (0.36–0.41); SL = 0.59 (0.54–0.62); SC = 0.55 (0.50–0.58); FB = 1.34 (1.27–1.41); BL = 2.59 (2.39–2.74). Habitus as in Fig. 1. Lustre and colour: Head and pronotum with strong microsculpture and greasy lustre. Elytra and abdomen slightly more lustrous because of shiny puncture interspaces and shallow microsculpture. Main body parts uniformly dark brown with strong reddish tint. Legs, mouthparts and antennae reddish medium (to dark) brown. Shape and sculpture: Head transverse, eyes of moderate size, temples also well-developed, slightly widening after eye, almost straight anteriorly but strongly rounded before meeting neck in almost right-angle. Clypeus projecting forward, epistomal sulcus forming a shinier transverse, somewhat impressed line, vertex convex without impression in middle. Neck delimited by very shallow constriction (almost no groove) and with different microsculpture (transverse coriaceous). Antennae rather short, median articles transverse, antennomeres 5–6 $1.05\text{--}1.20 \times$ as broad as long, antennomeres 10–11 $1.10\text{--}1.20 \times$ as broad as long. Pronotum transverse, anterior corner sharp but obtuse-angled, right behind it a small setigerous tooth and slightly serrate margin strongly arched. Slightly before middle with a larger, antero-laterad directed tooth (Fig. 10) and behind it, with minutely serrate margin (slightly beaded) and almost straight to broadly rounded posterior corners. Posterior margin gently arched. Centre of disc with a pair of longitudinal impressions in the posterior 3/4, lateral parts gently impressed near middle of sides. Elytral sides insignificantly curved (very slightly dilating), with a series of minute tubercles, the only prominent one after shoulders. Posterior corners moderately rounded, hind margin slightly oblique (almost straight) with slight marginal bead, and near outer corners with a small membranous lobe. Sutural corners narrowly rounded. Behind scutellum, at sides of suture, with a pair of elongate impressions (shallowly extending along suture). Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctuation and microsculpture: Head colliculately/coriaceously microsculptured with scattered fine punctures, neck with transverse coriaceous microsculpture. Pronotum with both coriaceous microsculpture and punctuation, both very fine. Rather dull, only elevated parts shinier. Elytra with punctuation dominant over microsculpture, 16–18 punctures per elytron width, interspaces about equal to puncture diameters, with only traces of microsculpture. Abdomen coriaceously microsculptured with very fine isodiametric cells, scattered tiny punctures and slightly torulose (with micro-tubercles). Pubescence: Setation long but not dense or arranged. Frons with long setae directed forward, on vertex antero-medial and shorter, bristles near anterior corner of eye and on vertex near temples. Pronotal setae directed laterad on disc, marginal ones weaker except bristle on tubercle behind anterior corners. Elytra with con-

spicuous, long and silverish, semi-erect and moderately dense setation, predominantly directed postero-laterad but near suture directed posteriad. Abdominal setation rather long, not particularly dense but mostly semi-erect and therefore conspicuous. Terminalia and genitalia: Male sternite IX as in Fig. 11, aedeagus as in Figs. 12–13, spermatheca as in Fig. 14.

ETYMOLOGY: The epithet is a Latin adjective meaning oak- or wood-loving; it refers to the holotype having been collected from oak litter.

DISTRIBUTION AND BIONOMICS: Most of the known specimens are from Arkansas, but the species was also found in other states: Alabama, Georgia, Indiana, Kansas, Mississippi, Missouri, Oklahoma, and Virginia. Known habitats include wet hardwood, deciduous leaf litter at streams or around springs; sampling techniques: sifting and Berlese funnel extraction.



Figs. 1–2: Habitus of 1) *Thinodromus dryophilus* and 2) *T. rubiginosus*.

Thinodromus rubiginosus sp.n.

(Figs. 2, 15–18)

TYPE LOCALITY: USA, Arkansas, Garland County, 3 miles W Crystal Springs, 800 ft. [620 m a.s.l.], approx. 34°31'N 93°23'W.

TYPE MATERIAL: **Holotype** ♂: "USA, Arkansas: Garland Co., 3 Mi. W. Crystal Springs, 800 ft. [34°31'N 93°23'W], June 1.1984 [leg.] J. Pakaluk hardwood litter" (AMNH). **Paratypes** (12): same data as holotype (1 ♀, AMNH, 1 ♂, NMW); **USA: Arkansas**: Scott Co., N slope Dutch Creek Mt. [34°56.7'N 93°34.6'W], 25.IV.1992, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); Scott Co., Hogan Mt., Walk-In Turkey Area [34°59'44"N, 93°45'23"W], 27.VII.1991, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); Polk Co., Caney Creek Wilderness Area, 3.5 miles N Bard Springs [34°24'15"N 94°4'8"W], 6.VII.1991, leg. C.E. Carlton & H.W. Robison, maple-beech berlesate (1, LSAM, 1, BMNH, 1, FMNH); same, but 23.VIII.1991 (1, LSAM); Montgomery Co., Crystal Recreational Area, S of campground [34°28'43"N 93°38'19"W], 25.IV.1992, leg. C.E. Carlton & H.W. Robison, berlesate near bog (1, LSAM); Yell Co., Dry Creek Wilderness Area [35°1.5'N 93°44'20"W], 6.III.1992, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); Yell Co., 4 miles S Blue Mt. Lake [35°1'16"N 93°41'10"W], 3.IV.1992, leg. C.E. Carlton & H.W. Robison, deciduous forest berlesate (1, LSAM); same, but 18.VI.1992 (1, LSAM).

DIFFERENTIAL DIAGNOSIS: Somewhat similar to *T. dryophilus* but smaller (head width with eyes less than 0.44 mm), lighter (rusty) coloured, with more flat eyes and more widening temples (temple length slightly exceeds eye length).

DESCRIPTION: Measurements (in mm, n = 10): HW = 0.41 (0.385–0.43); TW = 0.44 (0.42–0.46); PW = 0.47 (0.44–0.49); SW = 0.50 (0.47–0.52); AW = 0.55 (0.53–0.60); HL = 0.32 (0.30–0.33); EL = 0.10 (0.09–0.11); TL = 0.11 (0.105–0.12); PL = 0.34 (0.32–0.36); SL = 0.47 (0.44–0.49); SC = 0.45 (0.42–0.47); FB = 1.15 (1.11–1.18); BL = 2.25 (2.12–2.39). Habitus as in Fig. 2. Lustre and colour: Head and pronotum with strong microsculpture and greasy lustre. Elytra and abdomen very slightly more lustrous because of somewhat shinier puncture interspaces and the shallow abdominal microsculpture. Main body parts reddish medium (to dark) brown, legs, mouthparts and antennae reddish medium brown. Between supraantennal tubercles with transverse dark brown line (epistomal sulcus), clypeus somewhat yellowish. Shape and sculpture: Head transverse, eyes rather small and flat, temples very large, widening behind eye, gently arched anteriorly but strongly rounded before meeting neck at almost right-angle. Clypeus projecting forward, epistomal sulcus forming a transverse carved-in line, vertex convex except a very tiny impression in middle. Neck delimited by very shallow constriction (almost no groove) and different microsculpture. Antennae short, median articles transverse, antennomeres 5–6 1.30–1.40 × as broad as long, antennomeres 10–11 1.25–1.45 × as broad as long. Pronotum transverse, anterior corner sharp but obtuse-angled, right behind it a small setigerous tooth and slightly serrate margin strongly arched. Slightly before middle a larger tooth directed antero-laterad and behind it small concavity and indistinctly serrate margin (slightly beaded) almost straight to broadly rounded posterior corners. Posterior margin gently arched. Centre of disc with a pair of longitudinal impressions in the posterior 3/4, lateral parts gently impressed near middle of sides. Elytral sides insignificantly curved (slightly dilating), with the only visible tubercle after shoulders. Posterior corners moderately rounded, hind margin slightly oblique (almost straight) with slight marginal bead and near outer corners a small membranous lobe. Sutural corners narrowly rounded. Behind scutellum, at sides of suture, with a pair of elongate impressions (shallowly extending along suture). Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctuation and microsculpture: Head with very dense isodiametric coriaceous microsculpture and scattered, shallow and fine punctuation, obscured by microsculpture. Neck with transverse coriaceous microsculpture, shinier than head. Pronotum with similar microsculpture to that of head (although appearing more rugulose in places) but with finer and denser punctures. Elytra rather shallowly punctate, with 12–14 punctures per elytron width, average interspaces slightly less than puncture diameters, only traces of microsculpture or

unevenness between punctures. Abdomen with fine, slightly transverse, coriaceous micro-sculpture, scattered minute punctures and micro-tubercles. Pubescence: Head with short, moderately dense setae (on frons antero-medial, on vertex mostly medial), bristles near anterior corner of eye and on vertex near temples somewhat larger than normal setae. Pronotum with short, moderately dense setae, direction mostly mediad except at margins, bristle behind anterior corner larger. Elytra with short, moderately dense, rather depressed setae directed posteriad. Abdomen with sparse, rather short setae, only tergal apices with longer setae. Terminalia and genitalia: Male sternite IX as in Fig. 15, aedeagus as in Figs. 16–17, spermatheca as in Fig. 18.

ETYMOLOGY: The name is a Latin adjective meaning rusted; it refers to the uniformly reddish brown colouration of the species.



Figs. 3–4: Habitus of 3) *Thinodromus carltoni* and 4) *T. minusculus*.

DISTRIBUTION AND BIONOMICS: This species is solely known from Arkansas (USA); it appears to have a much more restricted distribution than the previous species. The specimens were collected by sifting or extracting hardwood forest litter at wet locations.

***Thinodromus carltoni* sp.n.**

(Figs. 3, 7, 19–22)

TYPE LOCALITY: Belize, Orange Walk District, Río Bravo Conservation Area, Hill Bank, Irish Creek, 17°37'6"N 88°42'30"W, 10 m a.s.l.

TYPE MATERIAL: **Holotype** ♂: "BELISE: Orange Walk Dist. Río Bravo Conserv. Area Hill Bank, Irish Creek 17°37'6"N, 88°42'30"W 1-V-1996, [leg.] C. Carlton #083 ex: riparian litter berlese" (SEMC). **Paratypes** (20): **BELIZE:** Orange Walk Distr., Río Bravo Conservation Area (Medicinal Trail), 17°50'27"N 89°1'8"W, 21.IV.1996, leg. C. Carlton & V. Moseley (#017), berlesate leaves/logs (2, SEMC, 1, NMW); Orange Walk Distr., Río Bravo Conservation Area (road to archaeological site), 17°50'41"N 89°1'58"W, 25.IV.1996, leg. C. Carlton (#036a) (1 ♀, 7, SEMC, 1, BMNH, 1, FMNH, 1, LSAM, 1 ♀, MHNG); Orange Walk Distr., Río Bravo Conservation Area (along Lagonita Trail), 17°50'27"N 89°1'8"W, 25.IV.1996, leg. C. Carlton & V. Moseley (#036), berlese (3, SEMC); **MEXICO:** San Luis Potosí, Sierra del Abra, Sótano de la Tinaja (cave 10.5 km NNE Ciudad Valles) [22°4'33"N 98°58'40"W], 1500 ft. from entrance, 18.II.1970, leg. J.A.L. Cooke, flood debris on mud slope (1 ♂, 1 ♀, AMNH).

DIFFERENTIAL DIAGNOSIS: The species probably has reduced flying capacity (though possibly to a varying degree), the lighter colouration and the pronotum with arcuate side margin makes it similar to *T. minusculus* despite its generally slightly larger body size.

DESCRIPTION: Measurements (in mm, n = 10): HW = 0.30 (0.27–0.33); TW = 0.32 (0.30–0.35); PW = 0.34 (0.30–0.37); SW = 0.35 (0.32–0.38); AW = 0.43 (0.40–0.48); HL = 0.25 (0.23–0.28); EL = 0.07 (0.06–0.08); TL = 0.10 (0.09–0.11); PL = 0.26 (0.24–0.29); SL = 0.33 (0.30–0.36); SC = 0.31 (0.28–0.34); FB = 0.87 (0.80–0.95); BL = 1.81 (1.63–1.95). Habitus as in Fig. 3. Lustre and colour: Head and pronotum with strong microsculpture and greasy lustre. Elytra and abdomen very slightly more lustrous because of somewhat shinier puncture interspaces and on abdomen shallow microsculpture. Main body parts reddish medium (to dark) brown, legs, mouthparts and antennae reddish medium brown. Between supraantennal tubercles with transverse dark brown line (epistomal sulcus), clypeus somewhat yellowish. Shape and sculpture: Head slightly transverse, eyes rather small and flat, temples well-developed, anteriorly much less curved than posteriorly, slightly widening after eye. Frons longitudinally impressed besides elevated supraantennal tubercles, clypeus projecting forward, separated by shinier line (epistomal sulcus). Head convex but middle of vertex somewhat depressed. Neck weakly delimited, almost no constriction (no or minimal groove on dorsal side) but with different microsculpture. Antennae short, median articles very transverse, antennomeres 5–6 1.25–1.60 × as broad as long, antennomeres 10–11 1.30–1.55 × as broad as long, but antennomere 8 as much as 1.70 ×. Pronotum transverse, anterior corner narrowly rounded, sides more strongly arched anteriorly than posteriorly (where almost straight), margin without the tiniest visible unevenness, slightly darker and thinly beaded to broadly rounded posterior corners. Anterior margin almost straight, posterior margin gently arched. Centre of disc with large but shallow impression in the posterior 3/4, divided by a shinier elevated midline ridge in its posterior half. Elytral sides almost straight (slightly dilating), with only a tiny trace of a visible tubercle after moderately rounded shoulders. Posterior corners moderately rounded, hind margin slightly oblique (almost straight) with slight marginal bead, and near outer corner with a tiny membranous lobe. Sutural corners narrowly rounded. Behind scutellum, at sides of suture, with a pair of elongate impressions (sometimes extending along suture). Abdomen rather parallel-sided. Apex of tergite VII with very thin palisade fringe. Punctuation and microsculpture: Head with dense coriaceous microsculpture and in between loosely punctate, vertex with more scattered punctures, even missing in spots, neck with transverse coriaceous microsculpture, shinier than vertex. Pronotum

with colliculate/coriaceous microsculpture, central depressed butterfly-shaped area filled with rough sculpture (dull), punctation much less apparent, more elevated areas shinier (Fig. 7). Elytra with occasional traces of microsculpture, rather shiny, medium strong punctures (10–12 punctures per elytron width), interspaces slightly larger than puncture diameters. Abdomen with finely coriaceous microsculpture (slightly transverse cells) and scattered minute punctures. Pubescence: Head with short and not very conspicuous, moderately dense setae (on frons more or less medial, on vertex postero-medial), bristles near anterior corner of eye and on vertex near temples somewhat larger than normal setae. Pronotum with short, moderately dense setae, direction mostly mediad except at margins, bristle behind anterior corner larger. Elytra with only slightly longer, moderately dense, rather depressed setae directed posteriad. Abdomen with sparse, rather short setae, only tergal apices with longer setae. Terminalia and genitalia: Male sternite IX as in Fig. 19, aedeagus as in Figs. 20–21, spermatheca as in Fig. 22.

ETYMOLOGY: The species is named after Christopher E. Carlton (Louisiana State University), who collected a lot of interesting oxyteline specimens in Belize.

DISTRIBUTION AND BIONOMICS: This brachypterous species is known from Belize and southern Mexico; in Belize it was collected from riparian litter, leaves and logs by Berlese extraction; the Mexican specimens were collected from flood debris on a mud slope.

***Thinodromus vernicatus* sp.n.**

(Figs. 6, 23–26)

TYPE LOCALITY: French Guiana, Cayenne, Montsinéry, Emerald Jungle Village, Carrefour du Gallion, 4°47'3"N 52°25'20"W, 10 m a.s.l.

TYPE MATERIAL: **Holotype** ♂: "FRENCH GUIANA: Cayenne, Montsinéry, Emerald Jungle Vill., Carrefour du Gallion (4.783889, -52.421944), VII.2003, [leg.] W. Rossi" (NMW). **Paratypes** (6): same data as holotype (1 ♂, 1 ♀, 2, coll. Assing, 1 ♀, NMW); **FRENCH GUIANA: Cayenne:** Caussade, ca. 5°5'N 52°34'W, 7.XI.2011, leg. T. Struyve, car-net (1, coll. Struyve).

DIFFERENTIAL DIAGNOSIS: The shiny central area of the dorsal side of the head and most of the pronotum makes it totally unique. It almost reaches the size of *T. breviceps* (SHARP, 1876), but it is very different in sculpture, temple shape (extending less widely laterad than in *T. breviceps*), and elytral colour (in *T. breviceps* as dark as the rest of the body).

DESCRIPTION: Measurements (in mm, n = 7): HW = 0.43 (0.40–0.455); TW = 0.41 (0.385–0.44); PW = 0.43 (0.395–0.45); SW = 0.54 (0.51–0.56); AW = 0.58 (0.55–0.60); HL = 0.29 (0.27–0.31); EL = 0.14 (0.13–0.16); TL = 0.06 (0.05–0.07); PL = 0.33 (0.31–0.35); SL = 0.53 (0.50–0.55); SC = 0.050 (0.47–0.52); FB = 1.18 (1.11–1.24); BL = 2.34 (2.21–2.43). Habitus as in Fig. 6. Lustre and colour: Whole body rather lustrous in large puncture interspaces, superficially inconspicuous setation and faded microsculpture on elevated parts of head and pronotum and hind part of abdomen. Head and abdomen blackish dark brown, pronotum slightly reddish dark brown. Elytra contrastingly yellowish light to medium brown (around scutellum darker). Legs, mouthparts and antennae medium brown. Frontoclypeus occasionally slightly lighter. Shape and sculpture: Head transverse, eyes large, temples well developed, almost parallel along a short distance behind eye, then somewhat angulately rounded. Frons longitudinally impressed beside elevated but poorly developed (not projecting much before eye) supraantennal tubercles, clypeus projecting much forward, epistomal suture forming an extremely fine, transverse wrinkle. Middle of vertex somewhat elevated, unimpressed. Neck delimited by constriction and sharp but shallow groove. Antennae short, median articles slightly transverse, antennomeres 5–6 1.05–1.15 × as broad as long, antennomeres 10–11 1.10–1.30 × as broad as long. Pronotum transverse, anterior corners sharp but obtuse-angled, right behind it a small setigerous tooth and margin only very slightly arcuate to a slightly sticking out but rounded angle, behind its margin

(slightly beaded) minutely concave or almost straight to broadly rounded posterior corners. Anterior and posterior margins appearing truncate or very gently arched. Centre of disc with a pair of longitudinal impressions in the posterior 2/3, lateral parts gently impressed near middle of sides. Elytral sides straight (slightly dilating), with the only visible tubercle behind moderately rounded shoulders. Posterior corners moderately rounded, hind margin oblique (almost straight) with slight marginal bead, and near outer corners with a small membranous lobe. Sutural corners narrowly rounded. Behind scutellum, at sides of suture, with a pair of elongate impressions (shallowly extending along suture). Abdomen rather parallel-sided. Apex of tergite VII with thin palisade fringe. Punctuation and microsculpture: Head shiny, punctate, with superficial coriaceous microsculpture, vertex with impressed parts more strongly sculptured, more dull, elevated parts shiny and only punctate. Neck with transverse coriaceous microsculpture, more dull than vertex. Pronotum with very obscured microsculpture, strongly punctate, dense and strong in impressed areas, loose and strong on elevated spots. Elytra with punctuation dominant over microsculpture, 10–12 punctures per elytron width, average interspaces $1.5 \times$ puncture diameters. Abdomen with very superficial, transverse coriaceous microsculpture (almost smooth) and scattered minute punctures. Pubescence: Head with short and moderately sparse setae (on frons antero-medial, on vertex medial) but frontoclypeus with longer and denser setae directed anteriad, bristles near anterior corner of eye inconspicuous, on vertex near temples larger. Pronotum with short and rather sparse setae on disc directed mostly mediad, darker bristle on tubercle behind anterior corner but another one behind middle of pronotal margin longer. Elytra with moderately long and sparse setae, depressed to semi-erect, mostly directed postero-laterad. Abdomen with rather sparse setae, mostly moderately long but longer towards tergal apices. Terminalia and genitalia: Male sternite IX as in Fig. 23, aedeagus as in Figs. 24–25, spermatheca as in Fig. 26.

ETYMOLOGY: The name of the species is a Latin adjective meaning lacquered, varnished, referring to the unusually shiny, almost lacquered head and pronotum, unique in this species group.

DISTRIBUTION AND BIONOMICS: The species is known from French Guiana, collected at two localities, once by car-net. The habitat and collecting method of the other specimens are unknown.

***Thinodromus fractus* sp.n.**

(Figs. 5, 8–9, 27–30)

TYPE LOCALITY: Brazil, Amazonas, 20 km SW Itapiranga, approx. 2°53'30"S 58°8'30"W, 20 m a.s.l.

TYPE MATERIAL: **Holotype** ♂: "BRAZIL, 20 km. SW Itapiranga [2°53'30"S 58°8'30"W], AMA. XI-9-1969 [leg.] JM & BA Campbell" (CNCI). **Paratypes** (8): same data as holotype (1, CNCI, 1 NMW); **BRAZIL:** Amazonas: Paraná da Eva [3°13'S 59°5'W], 8.XI.1969, leg. J.M. & B.A. Campbell (2, CNCI); 25 km NNE Manaus, Reserva Florestal Adolpho Ducke, 120 m [2°58'30"S 59°56'0"W], 26.VII.1973, leg. R.T. Schuh, incandescent lamp in forest (2, AMNH); **PERU:** Loreto: Río Yarapa, Puerto Miguel, 200 m [110 m, 4°29'0"S 73°22'30"W], 16.–23.XII.1994, leg. T. Hác & G. Holzinger (1 ♂, 1 ♀, HHNM).

DIFFERENTIAL DIAGNOSIS: The species is very similar to *T. ferrugineus* (ERICHSON, 1840) and *T. hilaris* (SHARP, 1876). Different from both in the pronotal shape, from the former in the presence of the conspicuous tufts on the male pronotum, the latter by a different tuft. Slightly similar to *T. vicinus* (SHARP, 1876), but the anterior pronotal corner is approximately right-angled.

DESCRIPTION: Measurements (in mm, n = 9): HW = 0.57 (0.54–0.59); TW = 0.55 (0.52–0.57); PW = 0.69 (0.64–0.72); SW = 0.74 (0.69–0.78); AW = 0.77 (0.71–0.81); HL = 0.33 (0.30–0.34); EL = 0.17 (0.16–0.18); TL = 0.07 (0.06–0.08); PL = 0.48 (0.45–0.51); SL = 0.75 (0.70–0.79);

SC = 0.70 (0.66–0.73); FB = 1.59 (1.48–1.66); BL = 3.21 (2.89–3.50). Habitus as in Fig. 5 (female). Lustre and colour: Greasy lustre; all body parts with dense microsculpture except often unexposed tergite VIII with more superficial microsculpture, therefore shiny. Whole body rust-coloured, except head dark brown with black epistomal sulcus and reddish medium brown clypeus. Middle of vertex and tips of supraantennal tubercles also often lighter, extensively reddish. Shape and sculpture: Head transverse, frons longitudinally impressed beside elevated and broad supraantennal tubercles, clypeus projecting forward, epistomal sulcus forming a slightly shinier transverse stripe. Eyes large and prominent, temples moderately developed, anteriorly sticking out from sideline of head but not sharply, then narrowly rounded and strongly convergent to neck, latter delimited by constriction and sharp but shallow groove. Antennae moderately long, median articles slightly elongate, antennomeres 5–6 $1.05\text{--}1.20 \times$ as long as broad, antennomeres 10–11 $1.05\text{--}1.15 \times$ as long as broad. Pronotum transverse, anterior corners appearing rounded and obtuse-angled with a tiny tooth directed laterad; lateral margin with at least two major, equally distant, setigerous tubercles; just before the middle, margin interrupted in backwards z-shape, from there straight and beaded (Fig. 8) to rounded posterior corners, latter broken by a small concavity. Anterior margin slightly concave (especially laterally, because medially almost straight), posterior margin slightly arcuate. Elytral sides almost straight (slightly dilating), with only one setigerous tubercle after shoulders. Posterior corners moderately rounded, hind margin slightly oblique (almost straight) with slight marginal bead and near outer corner a thin but rather extended membranous lobe (almost half the elytron width). Sutural corners narrowly rounded. Behind scutellum, at sides of suture, with a pair of elongate impressions (sometimes extending along suture). Abdomen with sides very gently curved. Apex of tergite VII with very thin palisade fringe. Punctuation and microsculpture: Head extremely finely and shallowly isodiametric, coriaceously microsculptured with minute punctures but also tiny, elevated micro-granules. Pronotum extremely finely and densely coriaceously microsculptured, obscuring shallow punctuation. Elytra finely and densely but also deeply punctate, 20–22 punctures per elytron width, average interspaces about half of puncture diameters, punctuation confluent with microsculpture. Abdomen very finely isodiametric, coriaceously microsculptured, slightly torulose (with scattered micro-tubercles) and minutely punctate but more densely than with other species. Pubescence: Setation (except that of pronotum) consisting of depressed to semi-erect setae, on head moderately long, fine and dense, darker bristles near anterior corner of eye and on vertex near temples. On pronotum stronger (darker) setae originate from minor marginal protuberances; in midline these setae are directed anteriorad, in central third antero-medial to anteriorad in the hind part, laterally various. Males (Fig. 9) with dense tufts of golden setae (directed laterad) from the anterior margin next to corners to centre of pronotal half in a slightly curved fashion (from diagonal to parallel with midline). Pubescence on elytra rather short, uniformly sized and with setae mostly directed posteriorad, abdomen with less arranged, variously sized (but on average rather sort) setae directed posteriorad. Terminalia and genitalia: Male sternite IX as in Fig. 27, aedeagus as in Figs. 28–29, spermatheca as in Fig. 30.

ETYMOLOGY: The name is a Latin adjective meaning interrupted; it refers to the pronotal sideline of this species being fractured in z-fashion, unlike to the zigzagged or rather alatifform pronotal sides of the two other closely related species.

DISTRIBUTION AND BIONOMICS: This species is known from the Amazonas River and its tributaries in Peru and Brazil. No habitat is recorded and a collecting method is specified only for one event, but as the Peruvian specimens were collected by Tamás Háczy, a lepidopterist, and it can be assumed that these specimens were also collected at light.

The record of *T. ferrugineus* from the “Reserva Florestal Adolpho Ducke” in MAKRANCZY (2018) actually refers to *T. fractus*; both specimens are here designated as paratypes (see above).



Figs. 5–6: Habitus of 5) *Thinodromus fractus* ♀ and 6) *T. vernicatus*.

***Thinodromus minusculus* sp.n.**

(Figs. 4, 31–34)

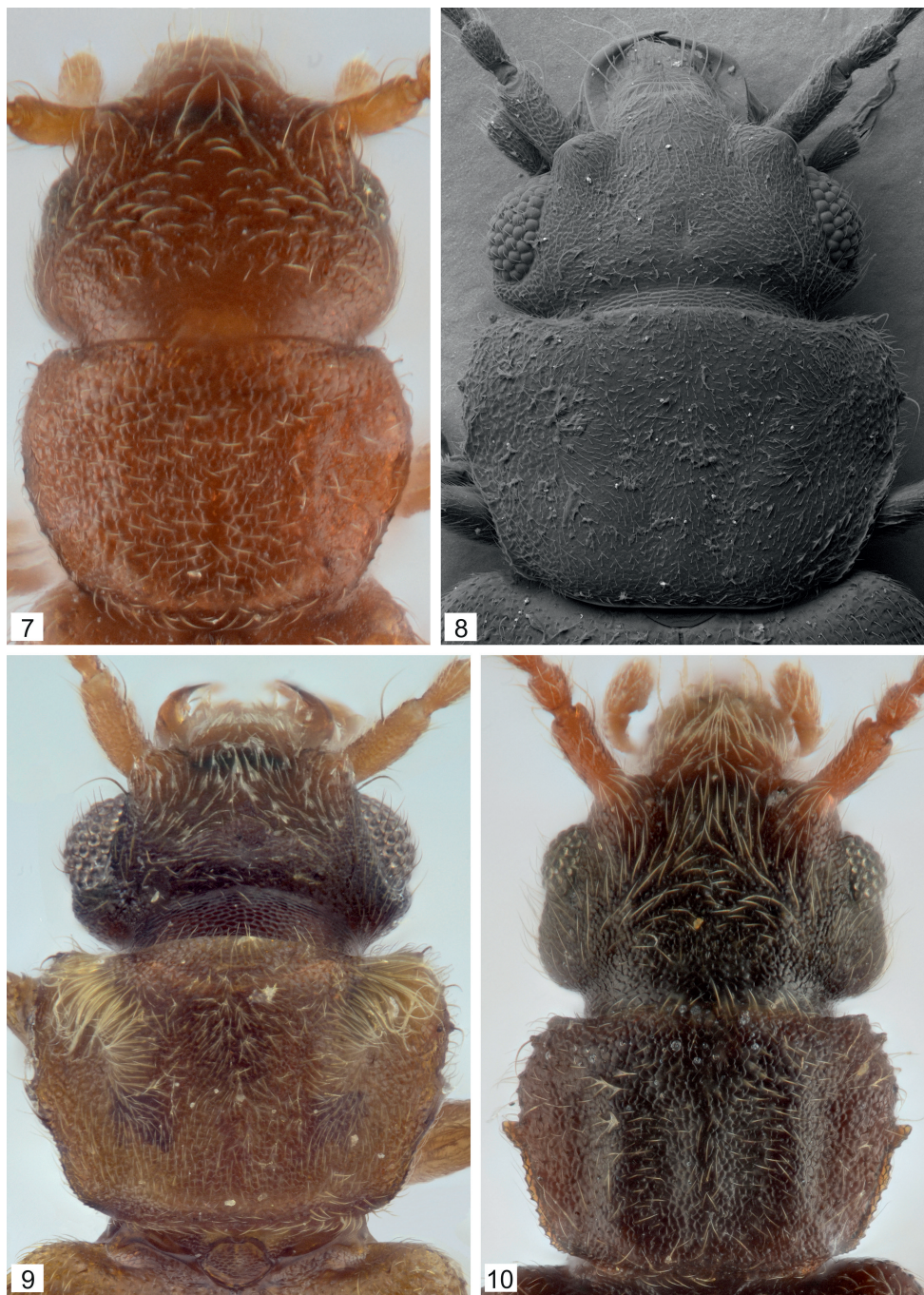
TYPE LOCALITY: Paraguay, Paraguari, Sapucaí, 25°40'S 56°55'W, 190 m a.s.l.

TYPE MATERIAL: **Holotype** ♂: “PARAGUAY: Paraguari, Sapucaí 190m 25°40'S, 56°55'W 18-VI-1994 coll. U. Drechsel, [at] light” (SEMC). **Paratypes** (7): same data as holotype (1 ♀, SEMC, 1 ♂, NMW); same, but 8.I.1994 (1, SEMC); **PARAGUAY: Canindeyú:** Maracaná [24°12'S 56°4'W], 24.–30.I.1995, leg. U. Drechsel, primary forest, at light (1, SEMC); **ARGENTINA:** Misiones: Puerto Iguazú, I.1988, leg. R. Förster, à la lumière [at light] (1 ♀, MHNG); same but 4.–5.I.1991, riverside forest, leg. S & J. Peck (1, FMNH); **BRAZIL:** **São Paulo:** Fazenda Campininas, Mogi Guaçu [22°22'12"S 46°55'12"W], 1.–8.I.1970, leg. J.M. & B.A. Campbell (1, CNCI).

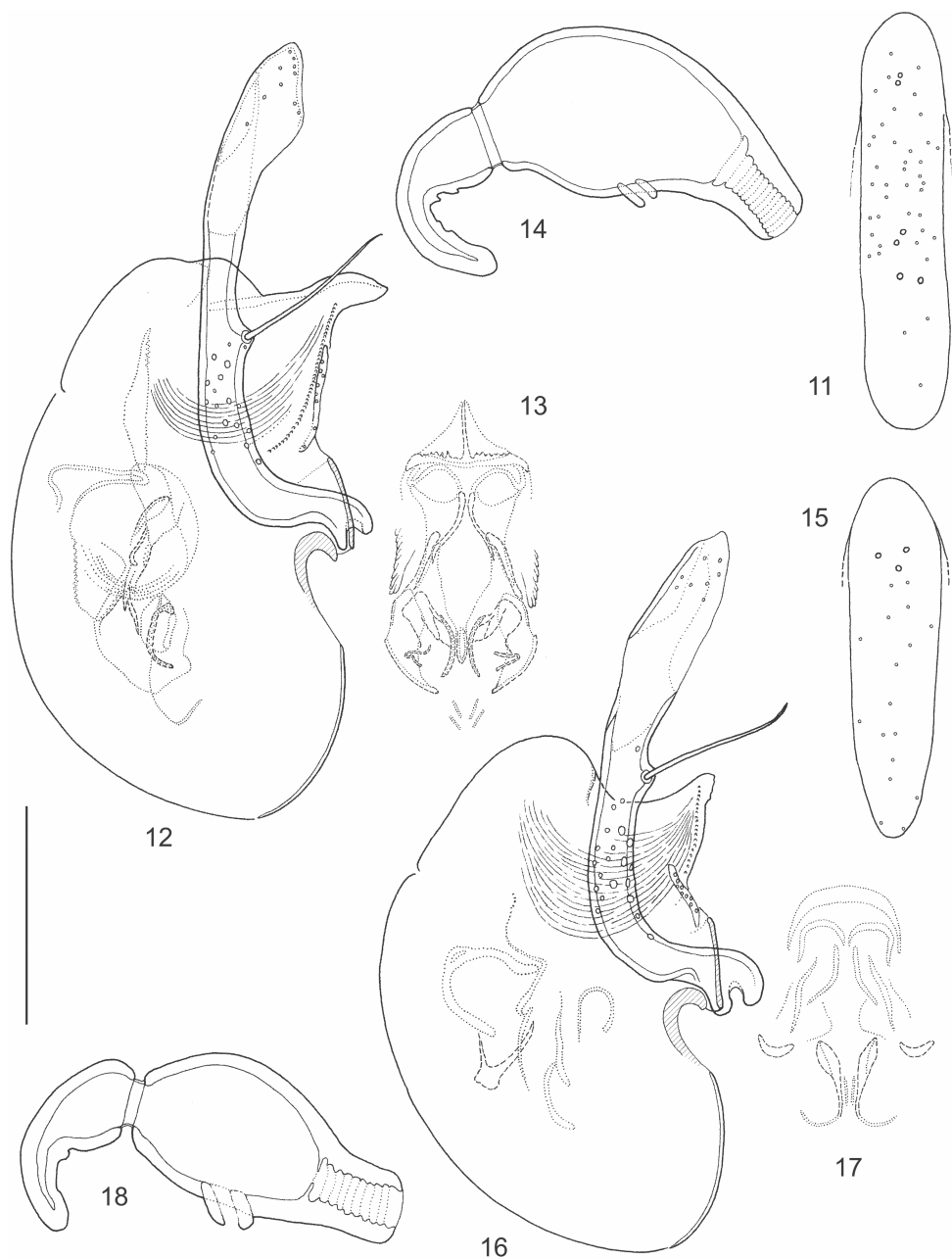
DIFFERENTIAL DIAGNOSIS: Somewhat reminiscent of *T. carltoni* (similar size and pronotal shape), but generally slightly smaller, except for the elytra, which are smaller in *T. carltoni* due to its strong brachyptery. The colour of *T. carltoni* is more uniformly reddish (rusty), the temples longer relative to the eye and more evenly arched than in *T. minusculus*.

DESCRIPTION: Measurements (in mm, n = 8): HW = 0.31 (0.29–0.33); TW = 0.32 (0.295–0.345); PW = 0.32 (0.30–0.345); SW = 0.35 (0.33–0.38); AW = 0.39 (0.35–0.42); HL = 0.24 (0.23–0.25); EL = 0.08 (0.07–0.08); TL = 0.08 (0.07–0.09); PL = 0.25 (0.23–0.27); SL = 0.37 (0.35–0.40); SC = 0.35 (0.33–0.38); FB = 0.88 (0.85–0.94); BL = 1.64 (1.53–1.76). Habitus as in Fig. 4. Lustre and colour: Head and pronotum dull, covered by dense microsculpture, elytra and abdomen with moderate lustre, former with significant puncture interspaces, latter with somewhat superficial microsculpture. Head and abdomen reddish medium (to dark) brown, pronotum reddish medium brown, elytra yellowish medium brown. Epistomal sulcus blackish, clypeus and tips of supraantennal tubercles reddish medium brown. Legs, mouthparts and antennae medium to light brown. Shape and sculpture: Head transverse, frons longitudinally impressed beside elevated supraantennal tubercles, clypeus projecting forward, epistomal sulcus forming a slightly shinier transverse line. Eyes relatively large and temples also well developed, after eye very slightly widening, anteriorly less, posteriorly more curved, meeting neck in obtuse angle. Neck poorly separated without constriction or groove, only with slightly different microsculpture. Antennae short, median articles transverse, antennomeres 5–6 $1.35\text{--}1.55 \times$ as broad as long, antennomeres 10–11 $1.20\text{--}1.30 \times$ as broad as long, but antennomere 8 as much as $1.6\text{--}1.7 \times$. Pronotum with anterior margin truncate, anterior corners narrowly rounded, side margins almost parallel in anterior half, then line somewhat broken and straight (narrowing) to broadly rounded posterior corners and gently arched posterior margin. Centre of disc with a pair of longitudinal impressions in posterior $3/4$, laterally unimpressed. Elytral sides almost straight (slightly dilating), with only a trace of a visible tubercle after moderately rounded shoulders. Posterior corners moderately rounded, hind margin slightly oblique (almost straight) with slight marginal bead and near outer corner a relatively small, membranous lobe. Sutural corners narrowly rounded. Behind scutellum, at sides of suture, with a pair of elongate oval impressions (shallowly extending along suture). Abdomen with very gently curved sides. Apex of tergite VII with very thin palisade fringe. Punctuation and microsculpture: Head densely (very fine cells) coriaceously (laterally more imbricate) microsculptured and in between loosely punctate, neck delimited by minimal groove, neck with transverse coriaceous microsculpture, shinier than vertex. Pronotal microsculpture similar to that of head but with more rugged sculpture, medially even more rugged and dull, punctuation obscured. Elytra predominantly punctate, about 12 punctures per elytron width, medium strong punctures, interspaces slightly larger than puncture diameters, with minimal traces of microsculpture, rather shiny. Abdomen finely coriaceously microsculptured with slightly transverse cells and very scattered, minute punctures. Pubescence: Head with short, moderately dense setae (on frons more or less medial, on vertex postero-medial), bristles near anterior corner of eye and on vertex near temples barely larger than normal setae, inconspicuous. Pronotum with short, moderately dense setae, direction mostly mediad except at margins, bristle behind anterior corner larger. Elytra with short, moderately sparse, semi-erect, setae directed posteriad, towards posterior corners turning postero-laterad. Abdomen with sparse, rather short setae, only tergal apices with longer setae. Terminalia and genitalia: Male sternite IX as in Fig. 31, aedeagus as in Figs. 32–33, spermatheca as in Fig. 34.

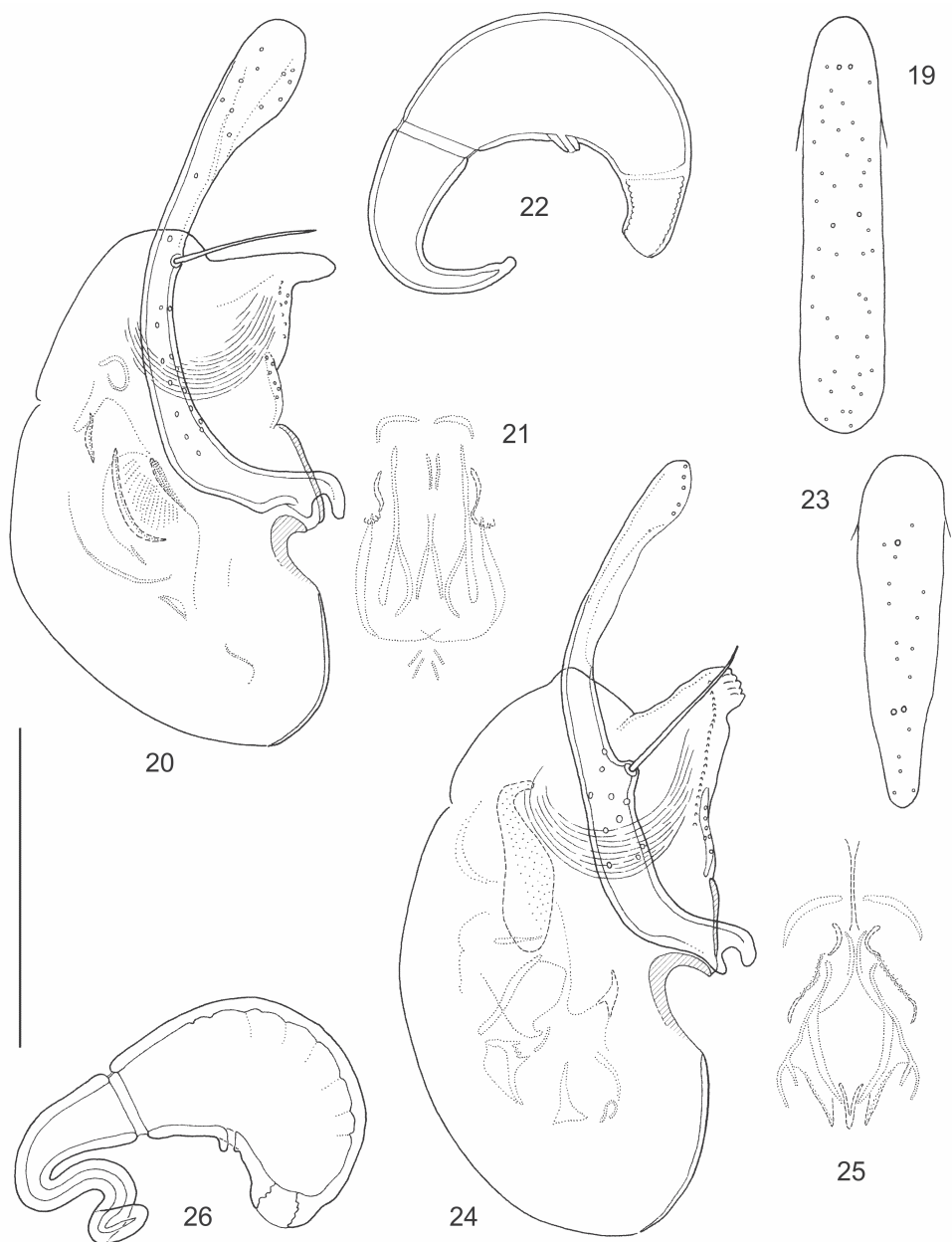
ETYMOLOGY: The name is a Latin adjective meaning rather small; it refers to the fact that this is so far the smallest known *Thinodromus* species.



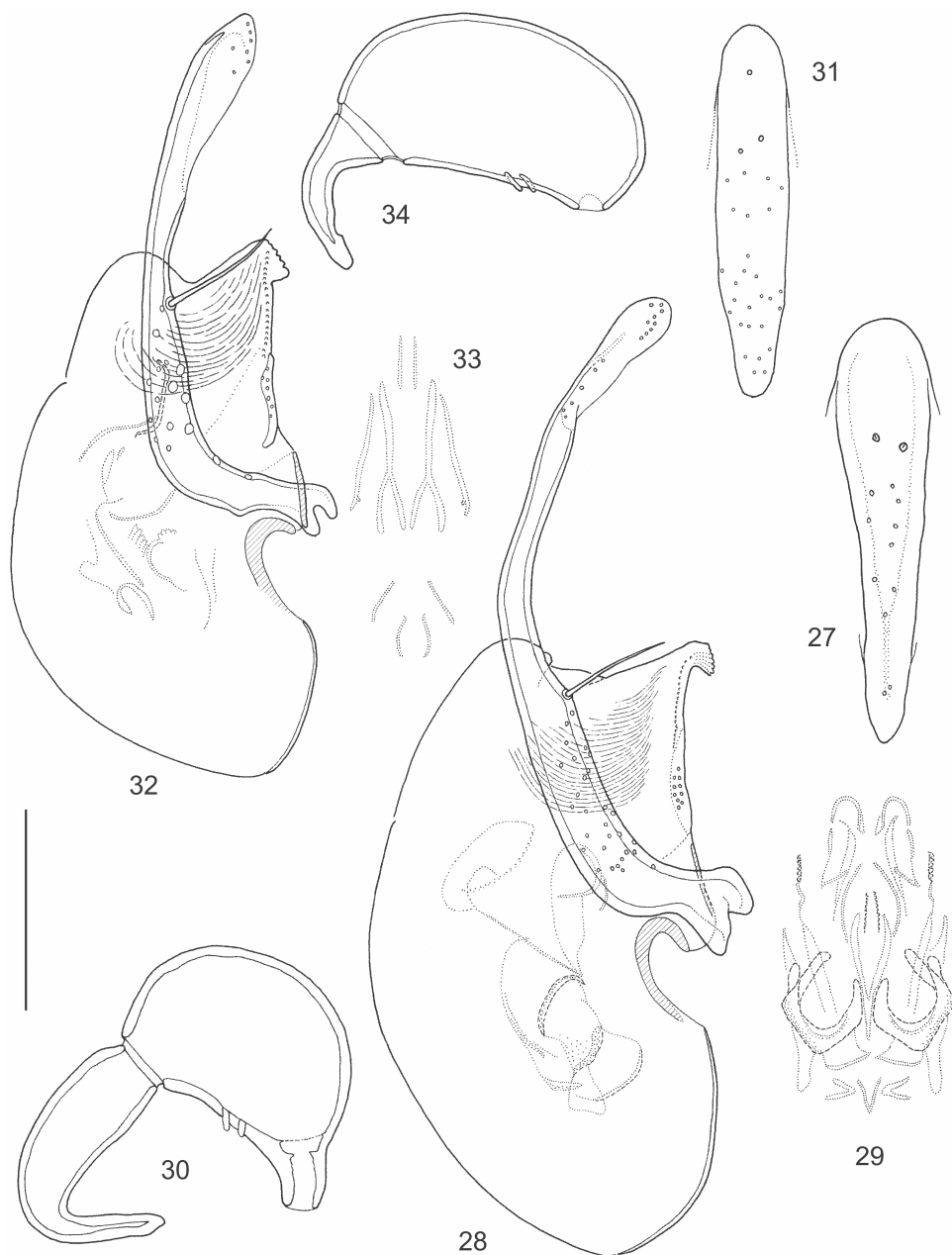
Figs. 7–10: Head and pronotum of 7) *Thinodromus carltoni*, 8) *T. fractus* ♀, SEM, 9) *T. fractus* ♂, 10) *T. dryophilus*.



Figs. 11–18: *Thinodromus dryophilus* (11–14) and *T. rubiginosus* (15–18): 11, 15) male sternite IX; 12, 16) aedeagus in lateral view and 13, 17) inner sclerites in frontal view; 14, 18) spermatheca. Scale bar = 0.08 mm (18), 0.10 mm (14), 0.13 mm (15–17), 0.15 mm (11–13).



Figs. 19–26: *Thinodromus carltoni* (19–22) and *T. vernicatus* (23–26): 19, 23) male sternite IX; 20, 24) aedeagus in lateral view and 21, 25) inner sclerites in frontal view; 22, 26) spermatheca. Scale bar = 0.10 mm (26), 0.11 mm (20–22), 0.13 mm (19, 24–25), 0.18 mm (23).



Figs. 27–34: *Thinodromus fractus* (27–30) and *T. minusculus* (31–34): 27, 31) male sternite IX; 28, 32) aedeagus in lateral view and 29, 33) inner sclerites in frontal view; 30, 34) spermatheca. Scale bar = 0.06 mm (32–34), 0.08 mm (31), 0.10 mm (30), 0.13 mm (27–29).

DISTRIBUTION AND BIONOMICS: This species is currently known from Paraguay, northern Argentina and southern Brazil. No habitat was recorded for any of the specimens. Two of these were collected at light, the same probably also applies to the remaining ones.

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