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New species of the genus *Tannea* BLACKWELDER, 1952 from Central and South America (Coleoptera: Staphylinidae: Osoriinae)

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Abstract

Fifteen new species of the genus *Tannea* BLACKWELDER, 1952 are described from Central and South America: *T. andersonii*, *T. brightii*, *T. campbellii*, *T. ecuadoriensis*, *T. fortunata*, *T. laticeps*, *T. schoedli*, *T. leticiae*, *T. longula*, *T. magna*, *T. mexicana*, *T. punctinota*, *T. punctipennis*, *T. reflecta*, and *T. reticulata*. Important morphological and anatomical details are illustrated.

Key words: Coleoptera, Staphylinidae, Osoriinae, Neotropical Region, new species, systematics, taxonomy.

Introduction

The genus *Tannea* BLACKWELDER, 1952 is widely distributed in the Neotropical Region. Actually, 24 species are known from Mexico to Argentina (IRMLER 2003). The genus is differentiated from the related genus *Nacaeus* BLACKWELDER, 1942 by the straight ductus of the spermatheca. The species are living in the litter layer and in rotten logs and seem to feed on fungi.

After the revision of the Neotropical species of *Tannea* and *Nacaeus* (IRMLER 2003), an additional 15 new species of *Tannea* were found in material of various institutes, partly originating from recent expeditions to several Neotropical countries. The high number of new species even from relatively well investigated Central America documents that we are far away from a complete inventory of the genus. The type specimens of the newly described species are deposited in the Canadian National Collection, Ottawa (CNC), the Snow Entomological Collections of the Natural History Museum of the University of Kansas, Lawrence, Kansas (SEC), the Field Museum of Natural History, Chicago, U.S.A. (FMNH), and in my own collection (UIC). I thank the curators Prof. Dr. J. Ashe (SEC), Dr. A. Davies (CNC), and Dr. A. Newton (FMNH) for their kind support and for allowing me to keep duplicate specimens.

Tannea amazonica species group

Three species, *T. amazonica* IRMLER, 2003, *T. leticiae* sp.n., and *T. laticeps* sp.n. form a relatively well defined group, which is characterised by the antennae being not sexually dimorphic, i.e. male antennae stout, as long as those of the female. Furthermore, the punctuation of the pronotum is relatively coarse and the punctures are elongate. The group seems to be restricted to the Amazon basin with *T. laticeps* in the entire region, *T. amazonica* in the central region, and *T. leticiae* in the western region (see Fig. 19).

Tannea leticiae sp.n.

TYPE MATERIAL: **Holotype** ♂: Colombia, “Amazonas, Leticia, 9.-11. July, 1970, by a Malaise trap, leg. J.M. Campbell” (CNC). **Paratypes**: 3 ♂♂ and 1 ♀ with same data as holotype (CNC, UIC); Ecuador, 1 ♂, “Napo, Limoncocha, 250 m elevation, 22 June, 1976, by Berlese extraction of woody fungi, # 256, leg. S. & J. Peck” (CNC); 1 ♂, “21 km E. Puerto Napo, Jatun Biol. Station, 20.7.1994, leg. Genier collected in lowland rain forest by flight intercept trap” (SEC).

DESCRIPTION (Figs. 1; 16: P1, E2): Length: 2.5 mm. Colour: piceous, pronotum red, elytra slightly darker red than pronotum, antennae and legs yellow, abdominal tergites posteriorly yellow. Head: 0.3 mm long, 0.45 mm wide; distinctly and sparsely punctate, distance between punctures wider than diameter of punctures; microsculpture transversely reticulate on clypeus, isodiametrically reticulate on disc; ground sculpture fine, surface shiny; on a supraocular line and laterally behind eyes a more distinct net-like reticulation; several setae at anterior and lateral edge, between posterior supraocular puncture and neck two larger punctures with setae, on clypeus two further punctures with setae. Antennae: antennomeres 2–4 longer than wide, 5th quadrate, remaining segments slightly wider than long. Pronotum: 0.45 mm long, 0.65 mm wide; punctation much deeper and denser than on head, punctures longitudinal, adjacent to midline nearly coriaceous; with fine, longitudinally reticulate microsculpture, surface shiny; some smoother parts at inner edge of posterior depressions; widest near middle, scarcely narrowed to anterior angles and with distinct emargination in front of posterior angles; depressions at posterior angles indistinct; several setae along anterior edge and a transverse row of four setae near middle. Elytra: 0.65 mm long, 0.65 mm wide; punctation nearly as dense and deep as on pronotum, punctures longitudinal, micro-sculpture distinct, longitudinally reticulate, surface shiny, a row of three setae on disc, beginning at depressions of the shoulders and ending at posterior edge.

DIAGNOSIS: The species is distinctly smaller than *T. laticeps* and as long as *T. amazonica*. Compared to *T. amazonica*, the pronotal punctation is less coarse.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The epithet refers to the city of Leticia at the upper Amazon in the state of Columbia, where the holotype was collected.

Tannea laticeps sp.n.

TYPE MATERIAL: **Holotype** ♂: Brazil, “Pará, Belem, Fazenda Pirelli, Mars 27, 1970, leg. J.M. & B.A. Campbell” (CNC). **Paratypes**: Brazil, 2 ♂♂ and 1 ♀, “Pará, Belem, Utinga, Mars 27 – 28, 1970, leg. J.M. & B.A. Campbell” (CNC, UIC); 1 ♂ and 1 ♀, “Brasilia, 30 km SW, Mars 6, 1970, leg. J.M. & B.A. Campbell” (CNC); French Guyana: 3 ♂♂ and 2 ♀♀, “Cayenne, 33.5 km S and 8.4 km NW of Hwy. N2 on Hwy. N5, 30 m elevation, 4°48'18"N, 52°28'41"W, 29.5.-9.6.1997, leg. J.S. Ashe & R. Brooks, FG1AB97 171 ex: flight intercept trap” (SEC, UIC); 1 ♂ and 3 ♀♀, “Roura, 8.4 km SSE, 200 m elevation, 4°40'41"N, 52°13'25"W, 23.5.1997, leg. J.S. Ashe & R. Brooks, FG1AB97 008, collected under bark” (SEC, UIC); Peru: 2 ♂♂, “Dept. Loreto, Campamiento San Jacinto (2°18.75'S, 76°51.77'W), 11 July 1993, 175 – 215 m elevation, leg. R. Leschen, #86, ex. Flowerfall berlese” (SEC).

DESCRIPTION (Figs. 2; 16: P2, E2): Length: 3.1 mm. Colour: piceous; pronotum, elytra and antennae reddish; posterior edge of abdominal tergites light red, legs yellow. Head: 0.4 mm long, 0.65 mm wide; head with distinct, but moderately sparse punctation; on disc, distance between punctures wider than diameter of punctures, but at lateral sides distance between punctures partly as wide and partly shorter than diameter of punctures; anterior margin laterally continuing to prominent eyes; on each side with two setae at diagonal part of anterior margin, two setae in front of eyes, one supraocular seta, and two setae on a diagonal line between eyes and central part of neck; microsculpture transversely reticulate, surface slightly shiny. Antennae: short, also in males shorter than head and pronotum, antennomeres 2 and 3 of same length, scarcely longer

than wide, 4 and 5 quadrate, following antennomeres wider than long. Pronotum: 0.5 mm long, 0.7 mm wide; widest shortly behind anterior angles, more or less parallel in anterior two third and distinctly emarginate in front of posterior angles; at anterior and lateral margin with several setae; oblong punctures deep and dense, partly coriaceous; punctation particularly dense in front of posterior margin and at lateral sides; with a smooth midline and a further smooth part between disc and indistinct depressions at posterior angles; microsculpture longitudinally reticulate, surface scarcely shiny. Elytra: 0.7 mm long, 0.7 mm wide; punctures distinctly sparser than on pronotum, but as deep as on pronotum; a nearly coriaceous irregular row of punctures at lateral part of disc; dense microsculpture longitudinally reticulate, surface scarcely shiny; lateral sides with several setae. Abdomen: without punctures, laterally with several long yellow setae.

DIAGNOSIS: The species is conspicuously larger than *T. amazonica* and *T. leticiae*, the head seems wider, the colour of the antennae is darker than in *T. leticiae* and *T. amazonica*.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific epithet is a combination of the Latin word *latus* meaning wide and the latinized Greek word *kephale* meaning head and refers to the large head.

Key to the *Tannea amazonica* species group

- 1 Longer than 3 mm..... *laticeps* sp.n.
- Smaller, 2.5–2.7 mm long 2
- 2 Darker, with dense and deeper microsculpture on pronotum and elytra *amazonica* IRMLER, 2003
- Lighter, with dense, but weaker microsculpture on pronotum and elytra *leticiae* sp.n.

Tannea bierigii species group

The dark red coloured species of the *T. bierigii* group are characterised by moderately longer antennae in males. The surface of pronotum and elytra is distinctly reticulate, but very shiny, the punctures are moderately coarse, but not coriaceous. The sides of the pronotum are distinctly narrowed from the middle to the anterior angles and deeply emarginate in front of the posterior angles, posterior angles thus rectangular. With exception of *T. andersonii*, the pronotum is not dorsally depressed. Actually, four species are included: *T. bierigi* IRMLER, 2003, *T. ecuadoriensis* sp.n., *T. campbellii* sp.n., and *T. andersonii* sp.n. The species group seems to be distributed from northern Central America to Ecuador (see Fig. 19).

Tannea ecuadoriensis sp.n.

TYPE MATERIAL: **Holotype** ♂: Ecuador: “Pichincha, 19 km NW Nono, 2700 m elevation, 1.3.1976, leg. J.M. Campbell” (CNC). **Paratypes**: 1 ♂, 4 ♀♀, same data as holotype (CNC, UIC); 1 male, “Pichincha, 15 km E. Tandapi, 2300 m elevation, 7.6.1976, leg. J. Peck, collected from moss litter by Berlese extraction” (CNC).

DESCRIPTION (Figs. 3; 16: P3, E3): Length: 3.5 mm. Colour: piceous, posterior margin of both pronotum and abdominal tergites and legs red. Head: 0.4 mm long, 0.55 mm wide; head thick, without bulges above base of antennae, punctation of head distinct, distance between punctures moderately wide, usually as wide as diameter of punctures, clypeus without punctation, microsculpture isodiametrically reticulate, weak, surface slightly shiny, with several setae along lateral and anterior margin, with an additional seta between posterior supraocular seta and neck seta; on disc between eyes two setae inserted in deep and elongate punctures. Antennae: antennomeres 2 and 3 equally long, 4–6 slightly longer than wide, following quadrate, with very

long setae at apical edge of antennomeres that are longer than one antennomere. Pronotum: 0.55 mm long, 0.7 mm wide; widest behind middle, distinctly narrowed toward anterior angles and deeply emarginate in front of posterior angles, punctuation distinct and dense, adjacent to smooth midline distance between punctures shorter than diameter of punctures, partly coarsely punctate, with net-like weakly reticulate microsculpture, surface slightly shiny; with several large setae along anterior and lateral margin, a transverse row of four setae in anterior third. Elytra: 0.8 mm long, 0.8 mm wide; punctures as deep as on pronotum, but sparser, microsculpture weak, longitudinally reticulate, surface shiny, several setae along lateral margin, one seta on disc.

DIAGNOSIS: The species is similar to *T. bierigi* due to the thick head. The male antennae of *T. bierigi* are much longer than head and pronotum combined and the surface of the pronotum is more shiny than in *T. ecuadoriensis* due to the weak longitudinally reticulate microsculpture. The punctuation is also very similar in both species. The pronotum of *T. ecuadoriensis* is more narrowed in the anterior part than in *T. bierigi*.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific name refers to the state of Ecuador, where the species was collected by Dr. J.M. Campbell.

Tannea campbellii sp.n.

TYPE MATERIAL: **Holotype** ♂: Guatemala: "Zacapa, 8 km NE San Lorenzo, 2100 m, Sierra de las Minas, 13.7.1986, leg. J.M. Campbell" (CNC). **Paratypes**: 4 ♀♀, with same data as holotype (CNC, UIC); 1 ♂, "2 km N. Santa Cruz, banks of Rio Passabien, 18.11.1986, leg. M. Sharkey" (CNC).

DESCRIPTION (Figs. 4; 16: P4, E4): Length: 3.8 mm. Colour: black, abdomen and antennae piceous, posterior edge of abdominal tergites and legs red. Head: 0.3 mm long, 0.6 mm wide; punctuation sparse and fine, distance between punctures much wider than diameter, clypeus without punctuation, microsculpture transversely reticulate, posterior portion of head with longitudinally reticulate ground sculpture, surface shiny, with several setae along anterior and lateral margin, with an additional seta between posterior supraocular seta and neck seta. Antennae: antennomere 2 distinctly shorter than 3, following antennomeres twice as long as wide. Pronotum: 0.6 mm long, 0.8 mm wide; with distinct and sparse punctuation, distance between punctures much wider than diameter, microsculpture weak, longitudinally reticulate, surface shiny, sides widest at middle, arcuate toward anterior angles, deeply emarginate in front of posterior angles, with distinct depressions at posterior angles, reaching to middle of pronotum, with a small ridge in midline, several long setae along anterior and lateral margin, one seta at acute top of posterior depression. Elytra: 0.85 mm long, 0.90 mm wide; with deep, but sparse punctuation, distance between punctures slightly wider than puncture diameter, microsculpture weak, longitudinally reticulate, surface shiny, with several setae along lateral margin, one seta on disc.

DIAGNOSIS: The species is conspicuous by its large size. It is as large as *T. brevicollis* and can be easily distinguished from that species by the longitudinally reticulate ground sculpture. The surface of *T. campbellii* is, therefore, much more shiny than that of *T. brevicollis*. In contrast to *T. breviceps* the microsculpture on the clypeus is transversely reticulate, while it is isodiametrically reticulate in *T. breviceps*. Compared to the similar *T. andersonii*, the pronotum is not depressed and the species is slightly smaller and the male antennae are shorter.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The species is dedicated to Dr. J.M. Campbell who collected the species on one of his numerous expeditions to South and Central America.

***Tannea andersonii* sp.n.**

TYPE MATERIAL: **Holotype** ♂: **Honduras**: “Ocotepeque, 17.7 km E & 10.6 km S. Ocotepeque, lower slopes El Pital, 15 VI 1994, 2050 m elevation, 14°25'N, 89°04'W, leg. R. Anderson, #117A, from oak litter by Berlese extraction” (SEC). **Paratypes**: 11 specimens with same data as holotype (SEC, UIC); **Guatemala**: 2 ♂♂, “Baja Verpaz, 7.5 km S. Purulhá (15°11.2'N, 90°12.6'W), 1630 m elevation, 29 June 1993, leg. R. Anderson & J. Ashe, #93-27 A*2, collected by berlesate forest litter” (SEC).

DESCRIPTION (Figs. 5; 16: P5, E5): Length: 3.9 mm. Colour: black, posterior edge of pronotum and last abdominal tergites dark reddish, antennae black, legs piceous. Head: 0.4 mm long, 0.7 mm wide; sparsely punctate, distance between punctures distinctly wider than diameter of punctures; with weak transversely reticulate microsculpture on clypeus and longitudinally reticulate microsculpture on disc, surface shiny; on each side of disc with a depression and a bulge at base of antennae; eyes distinctly prominent; behind eyes distinctly narrowed to a neck, with usual setation. Antennae: antennomere 2 oblong; 3 conical, 1.5 times longer than wide; 4 and 5 as long as 3; following ones distinctly longer, 2.5 times longer than wide; each antennomere with dark setae at apical edge. Pronotum: 0.7 mm long, 0.9 mm wide; with slightly denser and deeper punctation than on head, distance between punctures near smooth midline as wide as diameter of punctures; punctation laterally sparser and at inner side of posterior depressions large parts without punctures; posterior depressions flat and indistinct; microsculpture weak, longitudinally reticulate; surface shiny; sides widest near anterior third, widely arcuate toward anterior angles and deeply emarginate toward posterior angles. Elytra: 0.9 mm long, 0.9 mm wide; with sparse punctation; punctures finer than on pronotum and distance between punctures on average much wider than diameter of punctures; microsculpture weak, net-like reticulate, surface shiny. Abdomen: with very fine punctation, nearly invisible, and with usual rhomboid microsculpture.

DIAGNOSIS: The species resembles *T. brevicollis* and *T. breviceps* in size and colour, but differs in microsculpture on pronotum and elytra. The species is conspicuous by the broad paramera of the aedeagus. Pronotal and elytral microsculpture is very similar as in the other species of the *T. bierigii* group, but *T. andersonii* is comparably large and the pronotum is slightly depressed.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The species is dedicated to Dr. R. Anderson, who collected numerous osoriid specimens in different Neotropical countries, among which were also several new species.

Key to the *Tannea bierigii* species group

- 1 Large species: 3.8–3.9 mm long 2
- Smaller species: up to 3.5 long 3
- 2 Male antennae as long as head, pronotum and elytra combined, pronotum slightly dorsally depressed, 3.9 mm long *andersonii* sp.n.
- Male antennae shorter, only reaching the middle of the elytra, pronotum dorsally not depressed, 3.8 mm long *campbellii* sp.n.
- 3 Larger, 3.5 mm long, male antennae shorter, only as long as head and pronotum combined, microsculpture of pronotum more net-like reticulate *ecuadoriensis* sp.n.
- Smaller, 2.8–3.1 mm, male antennae reaching the middle of elytra, microsculpture on pronotum more longitudinally reticulate *bierigii* IRMLER, 2003

Tannea longicornis species group

The species of the *T. longicornis*-group are yellow to light red and conspicuous by the extremely long male antennae, which are as long as head, pronotum, elytra and half of abdomen combined. There are three species that seem to form this species group, *T. longicornis* SHARP, 1887, *T. parallelonota* IRMLER, 2003, and *T. punctipennis* sp.n., that all occur in southern Central America down to Ecuador.

Tannea punctipennis sp.n.

TYPE MATERIAL: **Holotype** ♂: Panama: “Cerro Campana, 2900’ elevation, 31.7.1970, leg. J.M. Campbell” (CNC). **Paratypes**: 4 ♂♂, 5 ♀♀, same data as holotype (CNC, UIC); 15 specimens, “Cerro Campana, near Capira (8°44.0’N, 79°57.0’W), 900 m elevation, 5 June 1995, leg. R. Anderson, collected by berlesate forest litter” (SEC, UIC); 5 specimens, “Piedras Gordas, 7.2 km NEE Copé, 7.6.1995, leg. R. Anderson, collected by Berlese extraction from forest litter” (SEC).

DESCRIPTION (Figs. 6; 16: P6, E6): Length: 2.2 mm. Colour: red, clypeus, posterior edge of pronotum light red, legs, antennae and posterior edge of abdominal tergites yellow. Head: 0.3 mm long, 0.5 mm wide; clypeus with weak transversely reticulate microsculpture, posterior portion of head without ground sculpture, surface polished, punctation fine and sparse on clypeus, deep and dense on posterior portion of head, distance between punctures usually as wide as puncture diameter; with several setae along anterior and lateral margin, two setae on disc between eyes and two setae at neck, with an additional seta between eyes and neck seta. Antennae: antennomeres 1 and 2 equally long, 3 and 4 slightly longer, following ones much longer, 3 times wider than long. Pronotum: 0.40 mm long, 0.55 mm wide; widest at anterior angles, scarcely narrowed to middle, deeply emarginate in front of posterior angles, punctation as deep as on posterior portion of head, but slightly denser, without smooth midline, microsculpture weak, longitudinally reticulate, surface shiny, several very long setae along anterior and lateral margin, four setae in a transverse row at middle and two setae at posterior edge. Elytra: 0.6 mm long, 0.6 mm wide; with deep punctation, punctures slightly coarser and denser than on pronotum, on disc with indistinct rows of punctures, laterally with long setae, a few setae adjacent to suture and one seta on disc.

DIAGNOSIS: The species is conspicuous by the deep punctures of the elytra. It resembles *T. parallelonota* and *T. longicornis* according to the long antennae of the male. Compared to *T. parallelonota* the antennae are proportionally still longer. In *T. punctipennis* the male antennae reach the posterior edge of the 3rd abdominal tergite, while in *T. parallelonota* they reach only the posterior edge of the 2nd tergite.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific epithet is a combination of the Latin word *punctus* meaning point and *penna* meaning wing and refers to the large punctures on the elytra.

Key to the *Tannea longicornis* group

- 1 Elytra quadrate, punctures of pronotum and elytra coarse and dense, distance between punctures smaller than diameter of punctures *punctipennis* sp.n.
- Elytra slightly longer than wide, punctation of pronotum and elytra finer and sparser..... 2
- 2 On average smaller, 3.3–3.5 mm long, female antennae distinctly shorter, scarcely reaching middle of elytra, microsculpture weak, surface shiny *parallelonota* IRMLER, 2003
- On average larger, 3.4–3.7 mm long, female antennae distinctly longer, reaching posterior edge of elytra, microsculpture distinct, surface dull..... *longicornis* SHARP, 1887

Species incertae sedis

Tannea brightii sp.n.

TYPE MATERIAL: **Holotype** ♂: Mexico: “Chiapas, Palenque, 7.5.1969, leg. Bright & Campbell” (CNC). **Paratypes**: Mexico: 4 ♀♀, same data as holotype and 22.-23.6.1969 (CNC, UIC); 1 ♂, 1 ♀, “Chiapas, Palenque ruins, 9.5.1969, leg. Bright” (CNC, UIC); 1 ♀, “Oaxaca, Finca San Carlos, Montepio, Matlas Romero, 28.3.1968, leg. Ryes & Cabrera” (CNC); 2 ♀♀, “Chiapas, 22 km N Ocozocoautla, 1.7.1969, leg. Campbell & Bright” (CNC, UIC); 2 ♀♀, “Veracruz, Fortin de las Flores, 20.12.1963, under bark, leg. C.W.O. Bright” (CNC).

DESCRIPTION (Figs. 7; 17: P7, E7): Length: 3.0 mm. Colour: piceous, legs and posterior edge of abdominal tergites yellow: Head: 0.35 mm long, 0.55 mm wide; with distinct isodiametrically reticulate microsculpture, surface dull, punctation on posterior portion of head distinct, distance between punctures wider than diameter of punctures, clypeus without punctation, with smooth bulges above base of antennae; at inner side of bulges a flat longitudinal depression; several setae along anterior and lateral margin; between eyes two setae inserted in longitudinal depression; adjacent to neck seta with another shorter seta, which is nearer to neck seta than to posterior supraocular seta. Antennae: antennomere 3 slightly longer than 2, following antennomeres twice as long as wide. Pronotum: 0.45 mm long, 0.65 mm wide; widest near middle, arcuate toward anterior angles and emarginate in front of posterior angles; without smooth midline; punctation deeper and denser than on head; distance between punctures as wide or shorter than diameter of punctures, microsculpture distinct, net-like reticulate; surface scarcely shiny; depressions at posterior angles distinct, with a seta at acute anterior angle, several setae along anterior and lateral margin. Elytra: 0.7 mm long, 0.7 mm wide; punctation as deep, but sparser than on pronotum; distance between punctures much wider than diameter of punctures; microsculpture longitudinally reticulate, surface more shiny than pronotum; disc with a deep setiferous puncture, several setae along lateral margin.

DIAGNOSIS: The species resembles *T. salasi* IRMLER, 2003 due to the isodiametrically reticulate ground-sculpture of the head, the antennae with antennomeres of male twice as long as wide, and the smooth bulges at the base of the antennae. It is slightly smaller and the surface is more shiny than in *T. salasi*, but the punctation is denser. In contrast to *T. salasi*, the spermatheca of *T. brightii* is acute and the apical parts of the paramera are pointed centrally.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific name refers to Dr. D. Bright, who collected a number of new osoriine species in the Neotropical Region and also detected this species in the southern Mexican provinces.

Tannea fortunata sp.n.

TYPE MATERIAL: **Holotype** ♂: Panama: “Chiriqui, La Fortuna, 1200 m elevation, Continental Divide Trail, 8°46'0" N, 82°12'0" W, 9 Jun. 1995, leg. R. Anderson, PAN2A95 10F, ex. berlese litter” (SEC). **Paratypes**: 24 specimens with same data as holotype (SEC, UIC); Costa Rica, 1 ♂, “Santa Ana, 17 Jun. 1939, leg. Bierig” (FMNH).

DESCRIPTION (Figs. 8; 17: P8, E8): Length: 2.9 mm. Colour: piceous, pronotum and elytra red, abdominal tergites at posterior edge and legs light red, last tergite yellow, antennae dark red. Head: 0.30 mm long, 0.45 mm wide; with sparse, but distinct punctation; distance between punctures on average as wide as diameter of punctures; microsculpture distinct, transversely reticulate on clypeus and net-like or longitudinally reticulate on disc; surface shiny; at base of antennae a longitudinal bulge, with very weak microsculpture resulting in nearly polished surface; with usual setation; eyes prominent, but with a relatively scarcely narrowed neck.

Antennae: antennomere 2 conical, oblong, antennomere 3 1.5 times longer than 2, antennomeres 4 and 5 scarcely longer than 2, middle antennomeres longer and broader, 1.5 times longer than wide, antennomeres 9 and 10 quadrate. Pronotum: 0.40 mm long, 0.55 mm wide; with moderately dense punctation, on each side of smooth midline with deep and dense punctures in irregular rows; distance between punctures as wide as diameter of punctures or even less; punctation laterally sparser, between normal punctures with several larger punctures and a sparse micro-punctation; in front of posterior edge an indistinct transverse depression; depressions at posterior angles deep and with coarser punctation than on disc; microsculpture weak, longitudinally reticulate; surface shiny, widest near middle, broadly arcuate toward anterior angles and deeply emarginate toward posterior angles. Elytra: 0.55 mm long, 0.65 mm wide; with sparse punctation; distance between punctures on average wider than diameter of punctures and with several larger setiferous punctures; microsculpture weak, partly net-like reticulate, particularly in lateral half of elytra and more longitudinally reticulate near suture. Abdomen with sparse and fine, nearly invisible punctures, microsculpture rhomboidally reticulate, laterally with long yellow setae, which are nearly as long as tergites.

DIAGNOSIS: The species seems to be related to the *Tannea* species with relatively short antennae. The male antenna is only 1.3 times longer than the female antenna. The species can be distinguished from these related species by the deep depressions at the posterior angles of the pronotum and in particular by the typical straight and slender paramera of the aedeagus.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific name is derived from the city La Fortuna in the state of Panama, where the most of the type specimens were collected.

Tannea schoedli sp.n.

TYPE MATERIAL: **Holotype** ♂: **Panama**: "Chiriqui, 20 km N. Gualaca, Finca La Suiza, 1450 – 1600 m elevation, 8°39'0" N, 82°12'0" W, 11 Jun 1995, leg. R. Anderson, PAN2A95 18G, collected in oak forest litter" (SEC). **Paratypes**: 12 specimens with same data as holotype (SEC, UIC).

DESCRIPTION (Figs. 9; 17: P9, E9): Length: 3.0 mm. Colour: rufotestaceous, pronotum slightly lighter red, posterior edge of abdominal tergites, legs, and antennae yellow. Head: 0.35 mm long, 0.50 mm wide; distinctly punctate, distance between punctures moderately wide, on average as wide as diameter of punctures; microsculpture isodiametrically reticulate, surface shiny; on each side of disc a longitudinal depression and a bulge at base of antennae, which is nearly polished; eyes distinctly prominent; usual setation with four setae at anterior margin, three supraocular setae on each side, two setae between eyes and four postocular setae. Antennae: antennomere 2 short, half as long as 3, 4 as long as 3, following antennomeres much longer than wide, antennomere 6 four times longer than wide, last antennomeres slightly shorter than middle antennomeres. Pronotum: 0.45 mm long, 0.60 mm wide; punctation distinct and much coarser than on head, partly coriaceous, in particular on each side of smooth midline; microsculpture longitudinally reticulate, surface shiny; sides widest near anterior edge, shortly arcuate toward anterior angles, more or less parallel in central part, deeply emarginate toward posterior angles; with deep and long depression reaching anterior third. Elytra: 0.70 mm long, 0.65 mm wide; with distinct punctation, punctures as deep and coarse as on pronotum, but without coriaceous parts; distance between punctures moderately wide, partly shorter than diameter of punctures, partly wider; microsculpture indistinctly net-like reticulate, surface shiny. Abdomen very finely punctate, with usual rhomboid microsculpture.

DIAGNOSIS: The species is very similar to *T. humibiota* IRMLER, 2003 due to the microsculpture of the pronotum and elytra. It differs in the length of the female antennae.

Antennomeres of the female antennae of *T. schoedli* are only twice as long as wide, while they are 2.5 times longer in *T. humibiota*. *Tannea schoedli* can scarcely be distinguished from *T. humibiota* without analysis of the aedeagus which is characterised by the broad base of the paramera, which are much more slender in *T. humibiota*.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: This species is dedicated to Stefan Schödl, famous specialist of Coleoptera and Hymenoptera, who died much too early.

Tannea longula sp.n.

TYPE MATERIAL: **Holotype** ♂: Peru: “Tambopata, 15 km NE Puerto Maldonado, 5. July 1989, 200 m elevation, leg. J. Ashe and R. Leschen, under leaves by stream, # 397” (SEC). **Paratype**: Peru: 1 ♀, “Tambopata, Departamento Madre de Dios, 15 km NE Puerto Maldonado, Reserva Cuzco Amazonico (12°33' S, 69°03' W), 200 m elevation, near Z2, 10. July 1989, leg. J. Ashe and R. Leschen from drop leaf litter, # 481” (SEC).

DESCRIPTION (Figs. 10; 17: P10, E10): Length: 3.4 mm. Colour: brown, legs yellow, antennae red. Head: 0.35 mm long, 0.55 mm wide; densely and deeply punctate; distance between punctures shorter than diameter of punctures; microsculpture transversely reticulate on clypeus, longitudinally reticulate near neck; on disc on each side of middle with a longitudinal depression; a pair of setae on each side of middle along front margin, a supraocular pair of setae, and two pairs of setae on disc between eyes and at neck. Antennae: antennomere 2 quadrate and small, 3 conical and, as following ones, distinctly longer than wide, antennomeres 9 and 10 slightly shorter than preceding ones. Pronotum: 0.50 mm long, 0.65 mm wide; widest in middle, scarcely narrowed toward anterior angles, slightly emarginate toward posterior angles; densely and deeply punctate; punctures elongate; on parts adjacent to midline coriaceous punctate; longitudinally reticulate microsculpture distinct, but weak and surface moderately shiny; a small longitudinal area at inner side of posterior lateral depression without punctures; with several setae along lateral margin and a pair of setae on disc on each side of middle. Elytra: 0.75 mm long, 0.70 mm wide; punctuation deep and moderately dense, partly coriaceous; punctures elongate; microsculpture similar as on pronotum, longitudinally reticulate; several setae along lateral margin and one seta in middle of disc. Abdomen: with usual very fine, nearly invisible punctuation and with rhomboidically reticulate microsculpture.

DIAGNOSIS: In some respect the species resembles those of the *T. amazonica*-group. The punctuation of the pronotum is comparably coarse and dense and the punctures are elongate. However, in *T. longula* the male antennae are 1/4th longer than the female antennae. The spermatheca is extraordinarily small. The longitudinally reticulate microsculpture on pronotum and elytra is similar as in *T. picata*, but the punctuation is much denser and deeper and the male antennae are distinctly shorter than in *T. picata*.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific name is the diminutive of the Latin word *longus* meaning long and refers to the relatively long and small pronotum.

Tannea mexicana sp.n.

TYPE MATERIAL: **Holotype** ♂: Mexico: “Oaxaca, 8 miles S. Valle Nacional, 2000' elevation, 19.5.1971, Ber. 203, leaf litter, leg. S. Peck” (CNC). **Paratypes**: Mexico: 4 ♂♂ and 18 ♀♀, same data as holotype (CNC, UIC); 1 ♀, “Oaxaca, 6 miles S. Valle Nacional, 2000' elevation, 18.5. 1971, leg. Bright” (CNC); 4 ♀♀, “Chiapas, 10 miles S. Malpasos, 24.5.1969, leg. J.M. Campbell” (CNC, UIC); 1 ♀, “Chiapas, Orosingo, 1 – 2.6.1969, leg. Bright & Campbell” (CNC); 3 ♀♀, “Chiapas, 8 miles S. Simojovel, 10.6. 1969, leg. J.M. Campbell” (CNC); 1 ♂ and 1 ♀,

“Chiapas, Palenque ruins, 9.5.1969, leg. Bright and 7-9.5.1969, leg. Bright & Campbell” (CNC, UIC); 2 ♀♀, “Veracruz, Montepio, 8 miles N. Sontecomapan, 20.6.1969 and 19.6.1969, leg. J.M. Campbell” (CNC, UIC); 1 ♀, “Veracruz, 33 km NE Catemaco, Los Tuxtlas, Biol. Station, 160 m elevation, July 1983, leg. S. & J. Peck” (CNC); Belize: 3 ♂♂ and 1 ♀, “6 miles S. Belmopan, 20.8.1972, leg. S. & J. Peck” (CNC, UIC); 2 ♀♀, “27 miles NW. Stann Creek, Hummingbird Camp, 1500' elevation, 19.8.1972, leg. S. & J. Peck” (CNC); 2 ♀♀, “Caves Branch, 29.7.-15.8.1972, leg. S. & J. Peck” (CNC).

DESCRIPTION (Figs. 11; 17: P 11, E 11): Length: 3.0 mm. Colour: red, head slightly darker than pronotum, legs and antennae yellow. Head: 0.3 mm long, 0.5 mm wide; with fine and sparse punctation, distance between punctures wider than diameter of punctures, microsculpture very weak, longitudinally or net-like reticulate, surface shiny; clypeus with slightly more distinct microsculpture, surface less shiny, with a distinct prominence at base of antennae, a transverse row of three setae from posterior edge of eye to neck, two setae in front of eyes and two setae between eyes. Antennae: antennomere 3 twice as long as 2, middle antennomeres approximately 3 times longer than wide, antennomeres 3 to 11 hairy, last antennomere shorter than preceding. Pronotum: 0.4 mm long, 0.6 mm wide; with distinct and large punctures adjacent to smooth midline; a smooth area between disc and depression at posterior angles; punctation at lateral part nearly coriaceous; microsculpture longitudinally reticulate, weak, but more distinct than on head; sides parallel in anterior half and distinctly emarginate in front of posterior angles; several setae at anterior and lateral edge, a transverse row of four setae in middle. Elytra: 0.6 mm long, 0.6 mm wide; with similar punctation as on pronotum, but less dense, an irregular row of dense punctures in lateral part of disc, microsculpture as weak as on pronotum, longitudinally reticulate, surface shiny, a row of three setae on disc, two setae adjacent to suture.

DIAGNOSIS: The species resembles *T. humibiota* and *T. picata* IRMLER, 2003, due to the very long antennae of the male and comparatively short antennae of the female. But the male antennae are smaller as in the species of the *T. longicornis*-group. They are only scarcely longer than head, pronotum and elytra combined. The species differs from *T. humibiota* by the longitudinally reticulate microsculpture of the elytra. Compared to *T. picata* the microsculpture of pronotum and elytra is weaker and the elytra are shorter.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific name refers to the state of Mexico, where most of the specimens were collected in the southern provinces.

Tannea punctinota sp.n.

TYPE MATERIAL: **Holotype** ♂: Columbia: “Anchicaya 1500' elevation, 23.7.1970, leg. J.M. Campbell” (CNC). **Paratypes**: Columbia: 4 ♂♂ and 2 ♀♀, same data as holotype, 22.7.1970. and 26.7.1970 (CNC, UIC); 1 ♀, “Valle Pichinde, 5000' elevation, 19.7.1970, leg. J.M. Campbell” (CNC); 1 ♀, “Magdalena, San Lorenzo, 41 km S. Santa Marta, 1.5.1973, leg. Howden & Campbell” (CNC).

DESCRIPTION (Figs. 12; 17: P12, E 12): Length: 3.9 mm. Colour: head black, pronotum, elytra and abdomen piceous, legs yellow, antennae red. Head: 0.5 mm long, 0.6 mm wide; clypeus without punctation, with distinct roundly reticulate microsculpture, surface dull, head posteriorly distinctly punctate, distance between punctures much wider than diameter of punctures, microsculpture much weaker than on forehead, surface shiny, at apex distinctly margined, margin weaker in central part of apical edge, in centre of apical edge smoothly emarginate; with four setae on disc, between posterior supraocular seta and neck seta another larger setiferous puncture. Antennae: antennomere 2 scarcely shorter than 3, antennomeres 3 – 7 longer than wide, following ones slightly shorter than preceding. Pronotum: 0.55 mm long, 0.80 mm wide; as finely and sparsely punctate as on posterior portion of head, only adjacent to smooth midline with denser and deeper punctation, microsculpture net-like reticulate, surface scarcely shiny;

widest in the middle, scarcely narrowed to anterior angles, deeply emarginate in front of posterior angles, depression at posterior angles indistinct, four deep punctures at widest part of the pronotum, forming a transverse row, several long setae along lateral margin. Elytra: 0.8 mm long, 0.8 mm wide; punctation slightly sparser and finer as on pronotum, microsculpture net-like or longitudinally reticulate, several setae on disc and along lateral margin, a deep puncture on central disc.

DIAGNOSIS: The species may be related to the species of the *tenella*-group due to the small difference between the male and the female antennae. *Tannea punctinota* is much larger than the other species of the *tenella*-group and in this character it resembles *T. salasi*. It is clearly distinguished by the weak microsculpture of the pronotum and the elytra and the isodiametrically reticulate microsculpture of the clypeus. It is also characterised by the anterior margin of the head, that is large at the lateral part and becomes smaller in the central emarginate part.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific epithet is a combination of *punctus* meaning point and *notus* meaning back and refers to the four large punctures on the pronotum.

Tannea reflecta sp.n.

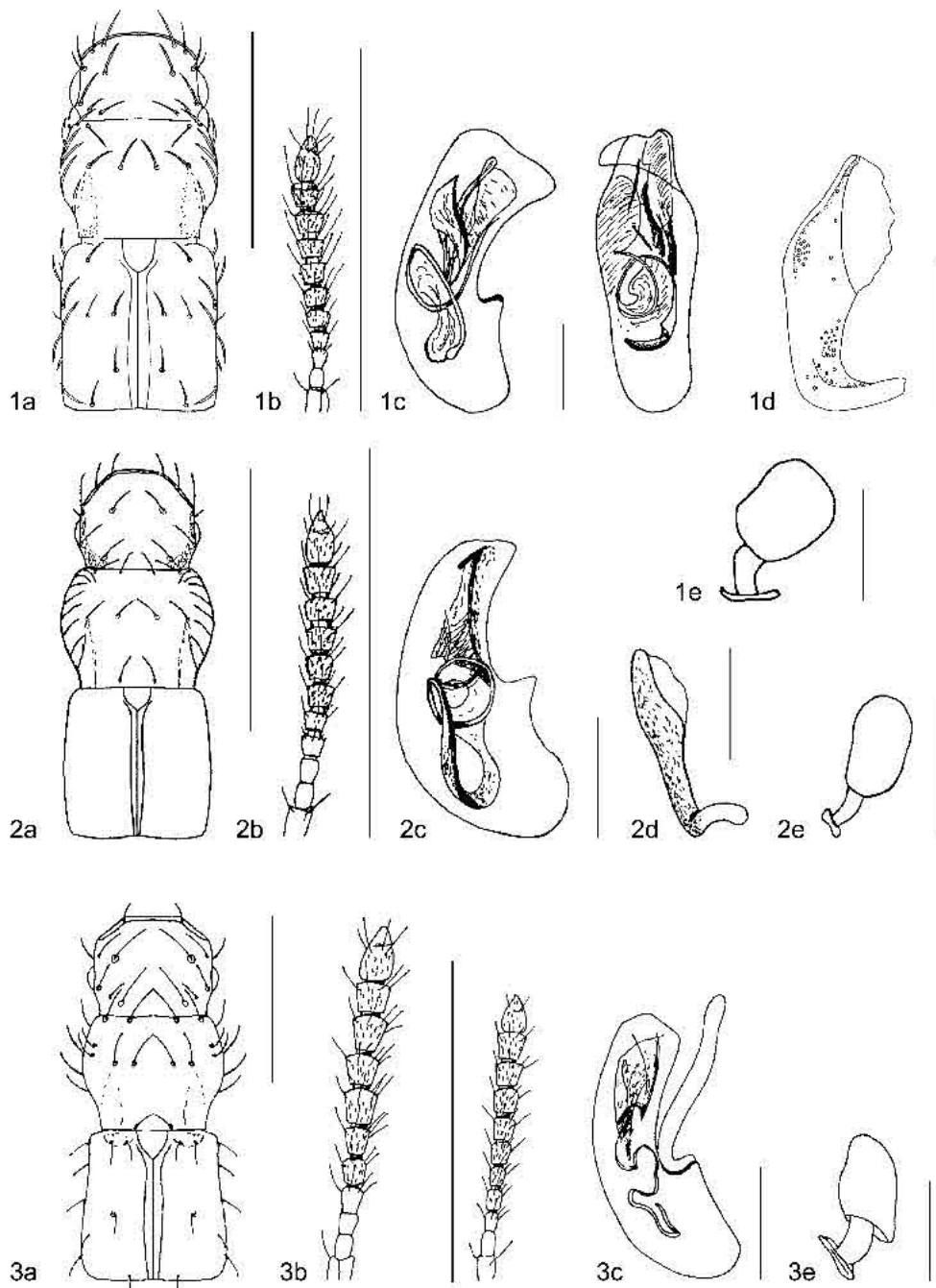
TYPE MATERIAL: **Holotype** ♂: Honduras: "12 km W. Olanchito, in rotten banana pseudostems, 19.7.1949, leg. C. Becker" (CNC). **Paratypes**: Honduras: 3 ♂♂ and 1 ♀, same data as holotype (CNC, UIC); 1 ♂, "La Ceiba, 1.2.1949, leg. Becker" (CNC); Guatemala: 1 ♂ and 1 ♀, "Izabal, Las Escobas, September 1986, leg. Sharkey" (CNC).

DESCRIPTION (Figs. 13; 18: P13, E 13): Length: 3.1 mm. Colour: light piceous, abdominal tergites posteriorly yellow, legs and antennae yellow. Head: 0.3 mm long, 0.5 mm wide; apical edge of head distinctly margined; punctation fine and sparse, distance between punctures much wider than diameter of punctures; microsculpture distinct, isodiametrically reticulate, meshes as large as diameter of punctures, surface scarcely shiny; with two supraocular setae, two setae between eyes, and two setae behind eyes in a transverse row on each side of middle. Antennae: antennomere 3 distinctly longer than 2, as long as 4, middle antennomeres approximately 2.5 times longer than wide, three last antennomeres shorter, only 1.5 times longer than wide. Pronotum: 0.4 mm long, 0.6 mm wide; punctation more distinct than on head, distance between the punctures as wide as diameter of punctures; punctures in irregular longitudinal rows; with an indistinct smooth midline and a very fine micropunctation between large punctures; microsculpture net-like reticulate; depressions at posterior angles flat, at apical angle with a seta and several setae along apical and lateral edge. Elytra: 0.6 mm long, 0.6 mm wide; with similar punctation as on pronotum; microsculpture more longitudinally reticulate; several setae along lateral edge and a large seta on disc.

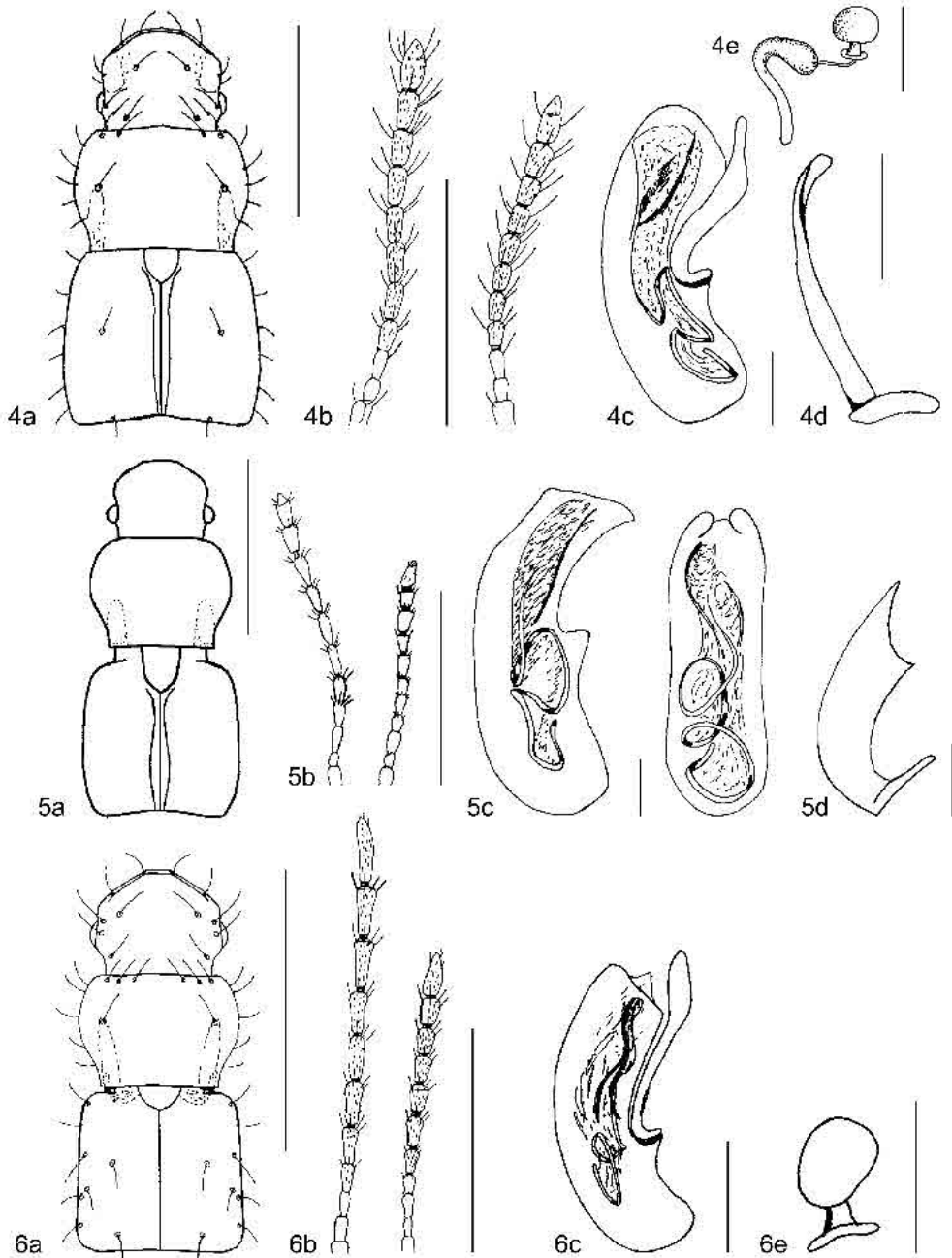
DIAGNOSIS: The species resembles *T. picata* due to the length of antennae and the microsculpture of the elytra. It differs by the isodiametrically reticulate ground sculpture of the head and in particular by the structure of the aedeagus. The structure of the paramera characterises the species. Paramera with an angle at apical third, pointed shortly backwards. Apical part pointed to inner side and widened to a spoon-like apex.

DISTRIBUTION: Fig. 19.

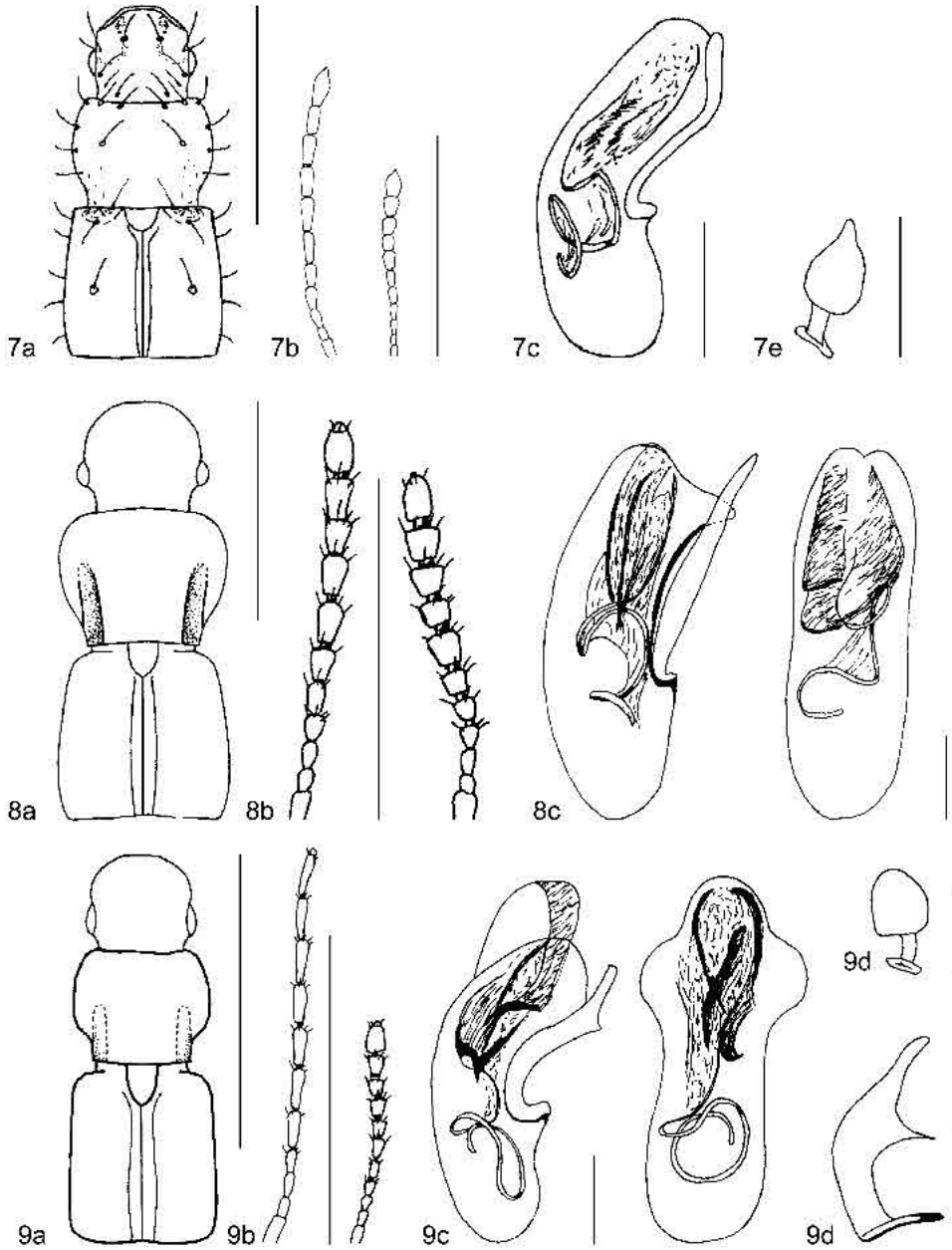
ETYMOLOGY: The specific name is derived from the Latin word *reflexus* meaning pointing backwards and refers to the characteristically curved structure of the parameres.



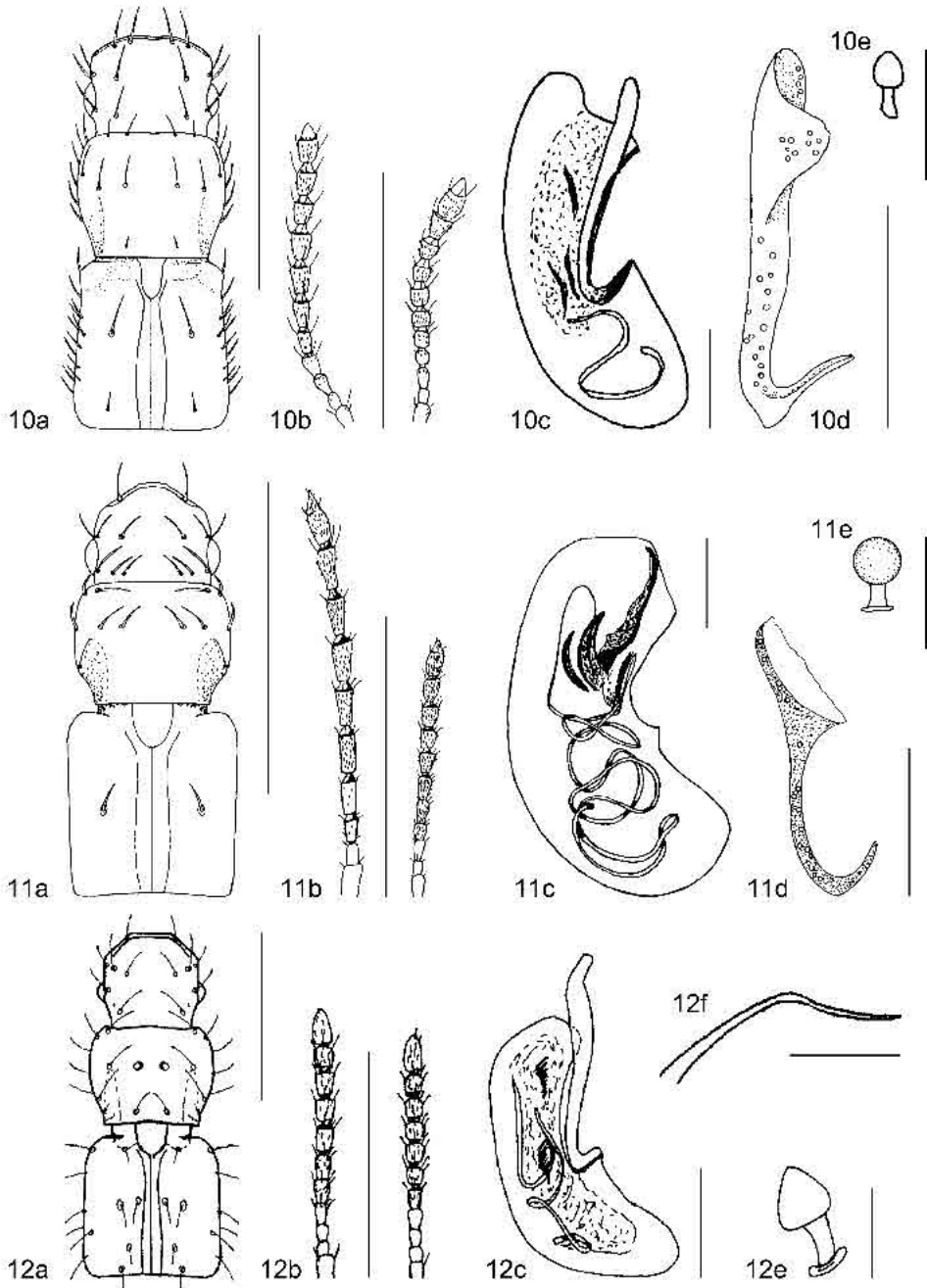
Figs. 1–3: 1) *Tanmea leticiae*; 2) *T. laticeps*; 3) *T. ecuadoriensis*; a) fore body, b) male antenna, or male (left) and female (right) antenna, c) aedeagus, d) paramera, e) spermatheca. Scale bars a, b: 1 mm, c–e: 0.1 mm.



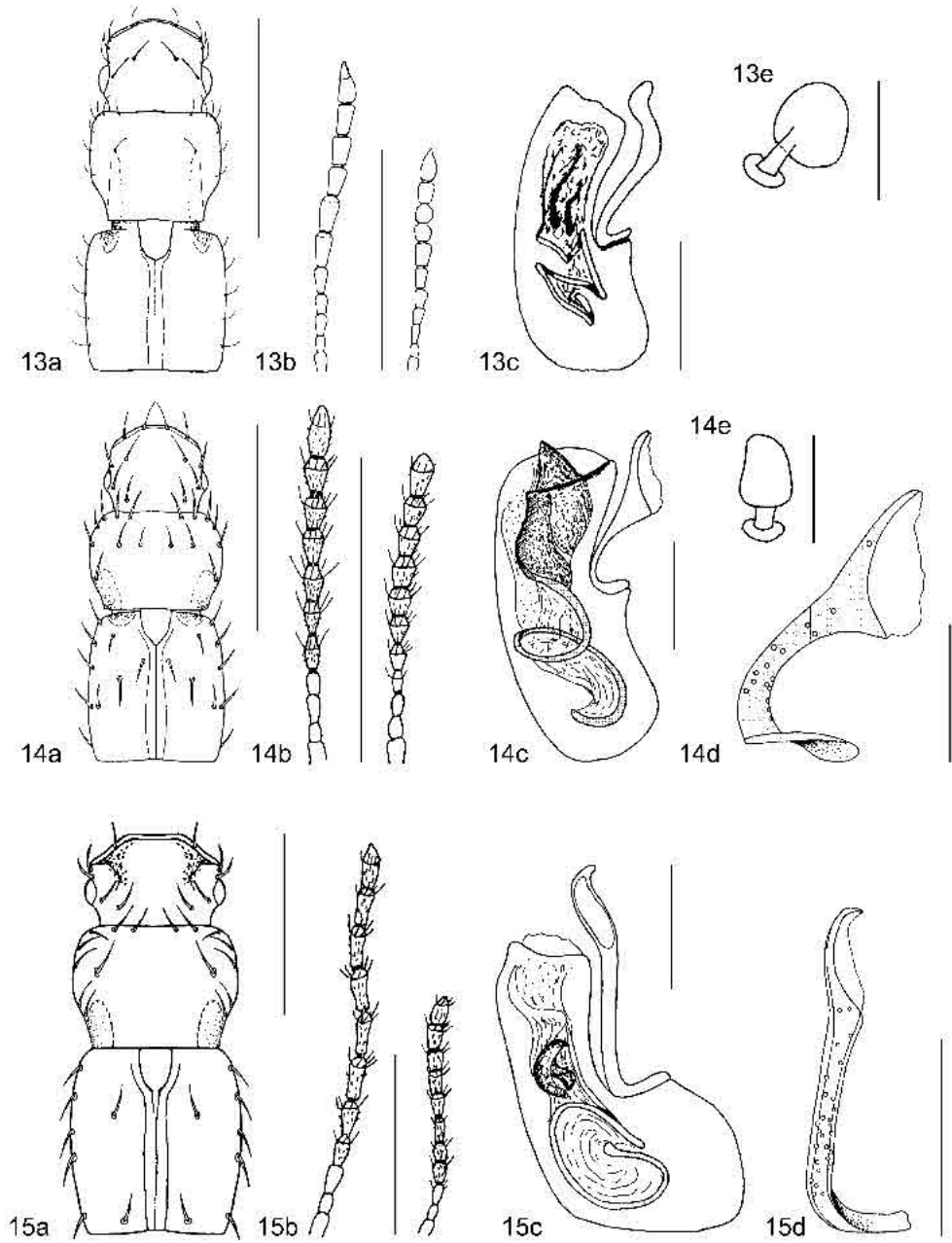
Figs. 4–6: 4) *Tannea campbellii*; 5) *T. andersonii*; 6) *T. punctipennis*; a) fore body, b) male (left) and female (right) antenna, c) aedeagus, d) paramera, e) spermatheca. Scale bars a, b: 1 mm, c–e: 0.1 mm.



Figs. 7–9: 7) *Tannea brightii*; 8) *T. fortunata*; 9) *T. schoedli*; a) fore body, b) male (left) and female (right) antenna, c) aedeagus, d) paramera, e) spermatheca. Scale bars a, b: 1 mm, c–e: 0.1 mm.



Figs. 10–12: 10) *Tannea longula*; 11) *T. mexicana*; 12) *T. punctinota*; a) fore body, b) male (left) and female (right) antenna, c) aedeagus, d) paramera, e) spermatheca, f) front margin of head. Scale bars a, b: 1 mm, c–f: 0.1 mm.



Figs. 13–15: 13) *Tannea reflecta*; 14) *T. reticulata*; 15) *T. magna*; a) fore body, b) male (left) and female (right) antenna, c) aedeagus, d) paramera, e) spermatheca. Scale bars a, b: 1 mm, c–e: 0.1 mm.

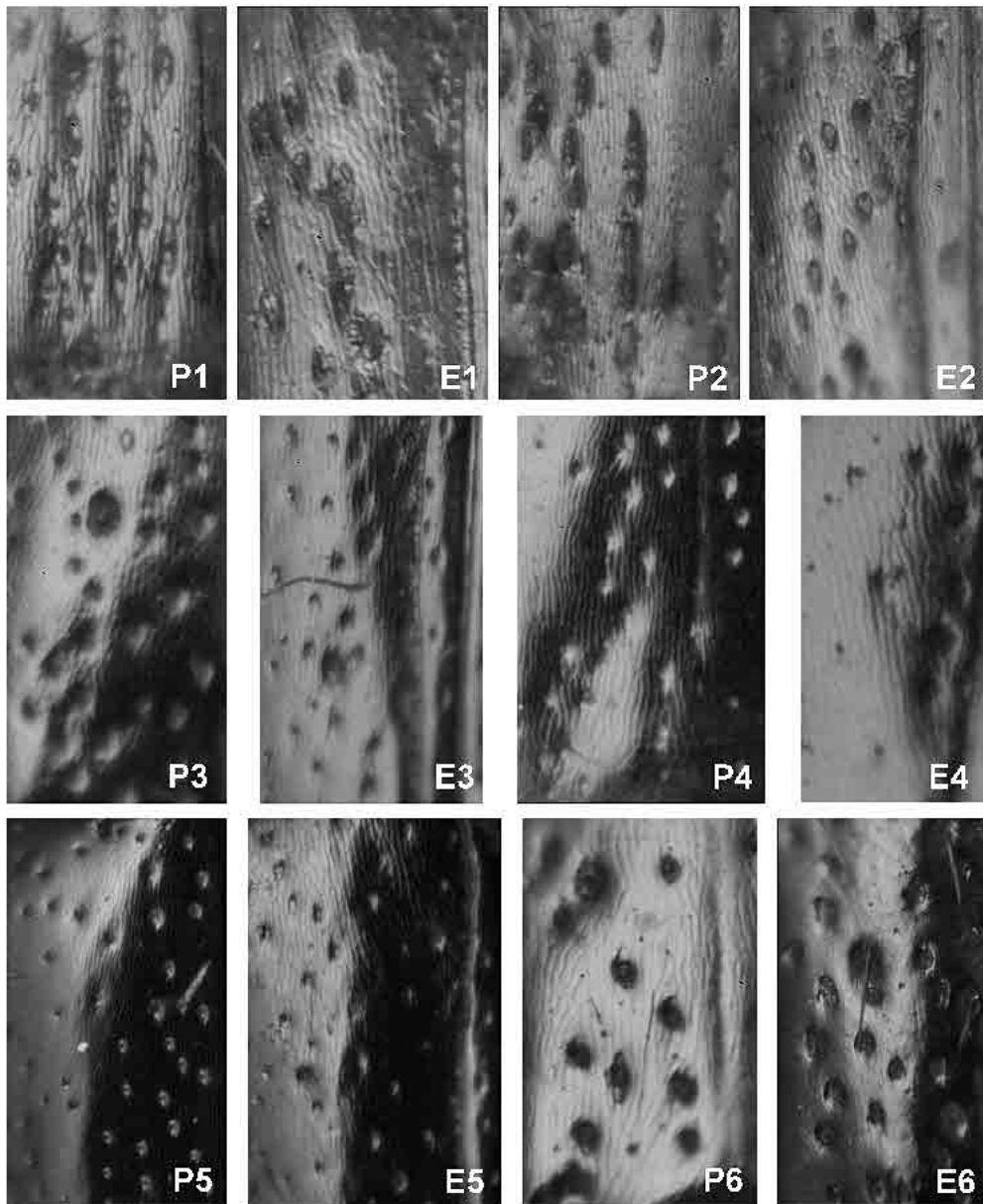


Fig. 16: Surface of pronotum (P) and elytra (E) of 1) *Tannea leticiae*, 2) *T. laticeps*, 3) *T. ecuadoriensis*, 4) *T. campbellii*, 5) *T. andersonii*, 6) *T. punctipennis*.

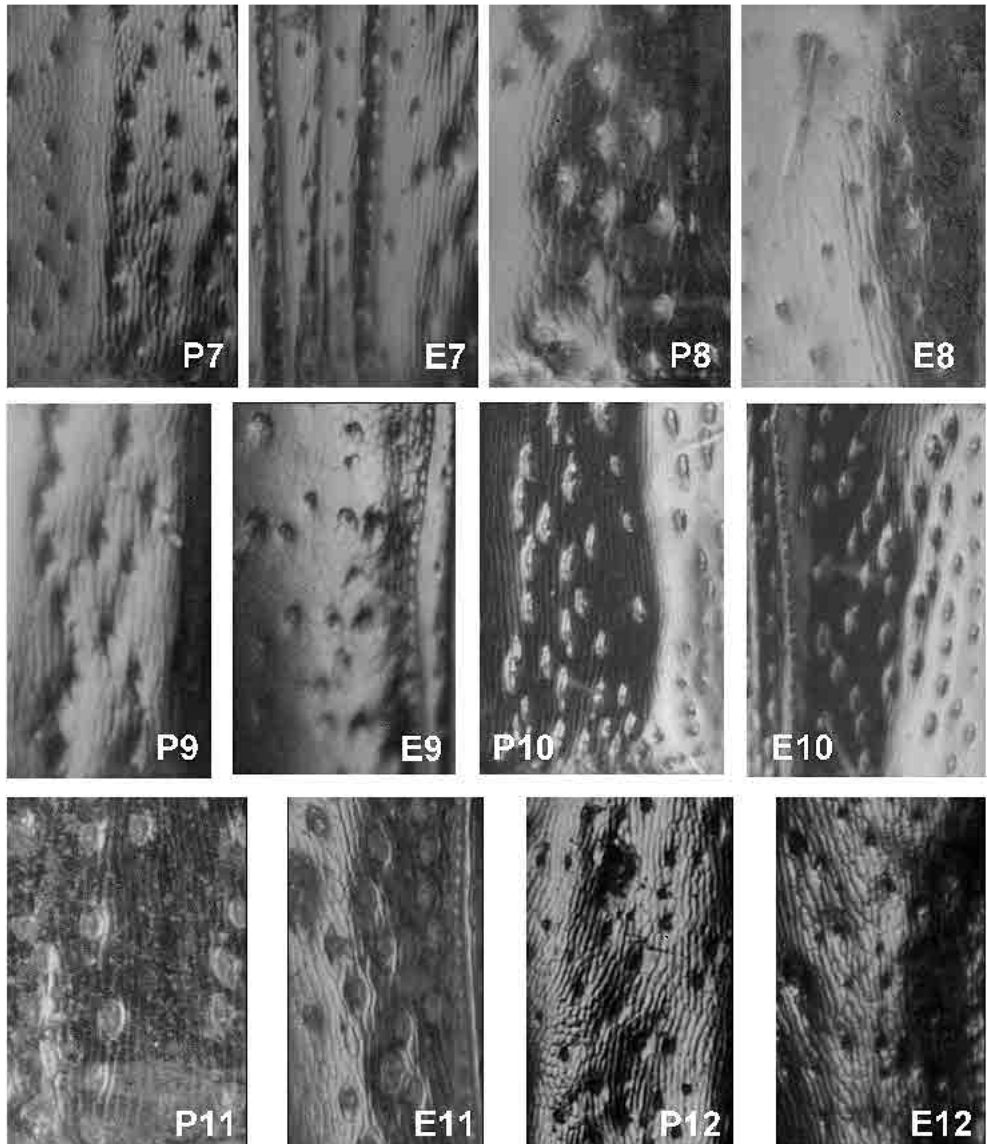


Fig. 17: Surface of pronotum (P) and elytra (E) of 7) *T. brightii*, 8) *T. fortunata*, 9) *T. schoedli*, 10) *T. longula*, 11) *T. mexicana*, 12) *T. punctinota*.

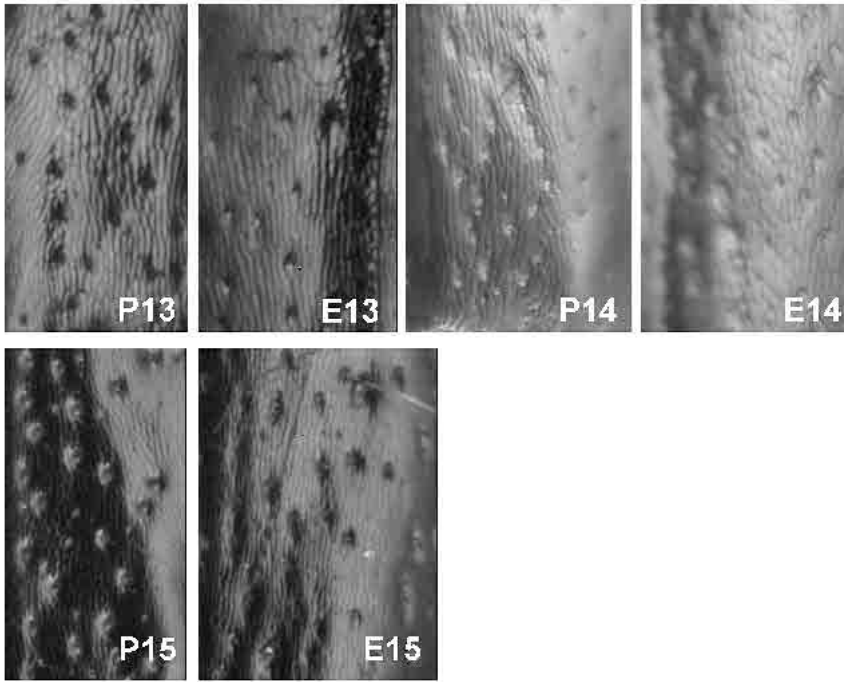


Fig. 18: Surface of pronotum (P) and elytra (E) of 13) *T. reflecta*, 14) *T. reticulata*, 15) *T. magna*.

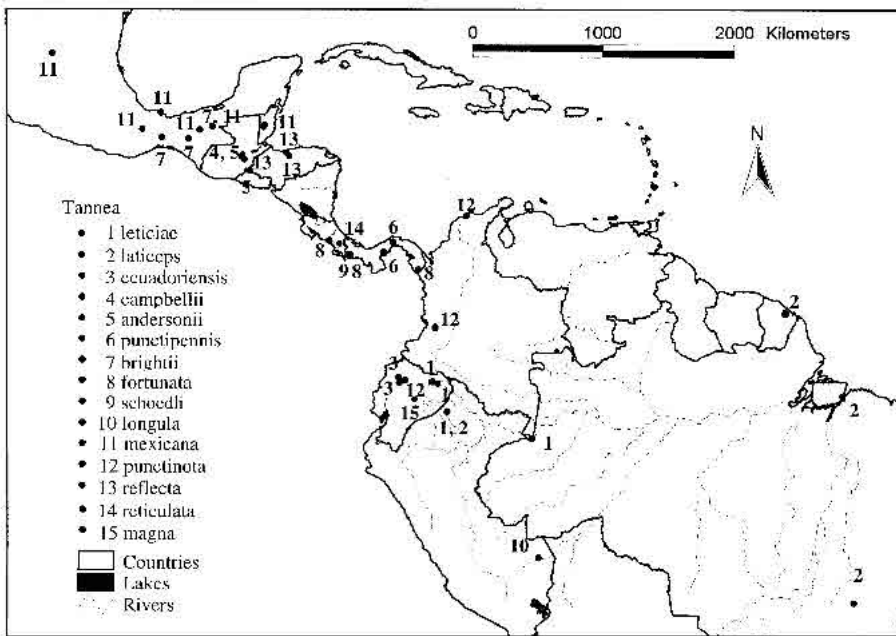


Fig. 19: Geographical distribution of the new species of the genus *Tannea* in Central and South America.

Tannea reticulata sp.n.

TYPE MATERIAL: **Holotype** ♂: Costa Rica: “Puntarenas, 11 km SW Estancia Biologica Las Cruces (8°46'43"N, 83°01'50"W), 1450 m elevation, 9 July, 1999, leg. R. Anderson, collected in wet cloud forest litter (# CR1A99-124B)” (SEC). **Paratypes**: 2 ♂♂ and 2 ♀♀, same data as holotype, # CR1A99-124B, # CR1A99-124A, and # CR1A99-124E (SEC, UIC).

DESCRIPTION (Figs. 14; 18: P 14, E 14): Length: 3.2 mm. Colour: dark red; pronotum and abdominal tergites at posterior edge, elytra at base and along suture, and last abdominal tergite lighter red; legs and antennae yellow. Head: 0.40 mm long, 0.52 mm wide; punctuation fine and sparse; distance between punctures on average twice as wide as diameter of punctures; microsculpture in anterior half transversely reticulate, on disc net-like reticulate, and laterally and on neck more or less longitudinally reticulate; surface moderately shiny; at anterior margin two setae on each side of middle, a transverse row of four setae in front of eyes, a supraocular seta, and a neck seta. Antennae: antennomere 2 oblong, 3 slightly conical and 4 - 6 distinctly longer than wide; antennomere 5 more than twice as long as wide; following antennomeres wider and thicker, 10 one more or less quadrate. Pronotum: 0.50 mm long, 0.67 mm wide; widest near middle, scarcely narrowed toward front angles, emarginate toward posterior angles; punctuation distinctly coarser and denser than on head; adjacent to smooth middle, distance between punctures as wide as diameter of punctures; laterally with sparser punctuation; with distinct longitudinally reticulate microsculpture; surface scarcely shiny; with distinct depressions at posterior angles; along anterior and posterior margin with several setae and a transverse row of four setae in middle. Elytra: 0.67 mm long, 0.70 mm wide; with similar punctuation as on pronotum, but slightly sparser; microsculpture denser and more distinct as on pronotum; with deep net-like reticulate microsculpture; surface scarcely shiny; with several setae along lateral margin and on disc.

DIAGNOSIS: The species is conspicuous by the distinct and net-like reticulate microsculpture of the elytra. In this respect, it is similar to *T. salasi*. But the colour of *T. reticulata* is reddish, whereas the colour of *T. salasi* is more black. Furthermore, the inner structure of the aedeagus is totally different from that of *T. salasi*.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific name is derived from the Latin word *reticulum* meaning a small net and refers to the characteristic microsculpture of the elytra.

Tannea magna sp.n.

TYPE MATERIAL: **Holotype** ♂: Ecuador: “Napó, Cosanga, 4.2 km S on Baeza-Tena Road then 2.9 km W on pipeline access road (0°37'19"S, 77°50'1"W), 2150 m elevation, 7 Nov. 1999, leg. Z.H. Falin” (ECU 1F 99 120), collected on/under bark downed logs (SEC). **Paratype**: 1 ♀, same data as holotype (SEC).

DESCRIPTION (Figs. 15; 18: P 15, E 15): Length: 4.4 mm. Colour: black, antennae and legs light brown. Head: 0.50 mm long, 0.75 mm wide; with distinct and dense punctuation, distance between punctures as wide as or shorter than diameter of punctures; microsculpture densely net-like reticulate; surface slightly shiny; with distinct prominence at base of antennae, eyes semicircularly prominent, front margin slightly emarginate between base of antennae and obtuse angle at front edge; with two setae at front margin, two supraocular setae and one neck seta on each side of middle. Antennae as long as head, pronotum and elytra combined; antennomere 2 oblong, half as long as 3; antennomeres 4 and 5 longer than wide, but scarcely longer than 3; antennomere 6 distinctly longer than preceding ones, twice as long as wide; following ones not longer than antennomere 6. Pronotum: 0.65 mm long, 0.90 mm wide; widest near front edge; posteriorly more or less parallel and abruptly emarginate in front of posterior angles; punctuation

deep and dense; in particular adjacent to smooth midline; a small part at inner side of depressions at posterior angles and a lateral stripe without punctures; microsculpture finely net-like reticulate, in particular on disc; laterally partly with longitudinally reticulate microsculpture; surface moderately shiny; with several setae along front and lateral edge and one seta at outer side of disc. Elytra: 1.00 mm long, 1.00 mm wide; with punctuation slightly finer and sparser than on pronotum; distance between punctures slightly longer than diameter of punctures; microsculpture fine; partly longitudinally, partly net-like reticulate; surface moderately shiny; a large setiferous puncture seta in anterior half of disc and further setae along lateral margin.

DIAGNOSIS: The species is very large and concerning the size it is similar to *T. brevicollis* (FAUVEL, 1865). The microsculpture of *T. brevicollis* is much more distinct and isodiametrically reticulate, whereas the microsculpture of *T. magna* is fine and more longitudinally reticulate. Furthermore, the structure of the aedeagus differs concisely. Concerning size, *T. breviceps* (BERNHAEUER, 1905), *T. varablancae* IRMLER, 2003 and *T. fabacicolor* IRMLER, 2003 are only scarcely smaller with 3.9–4.0 mm length. *Tannea varablancae* is lighter in colour, and the microsculpture of the pronotum is more distinct and longitudinally reticulate in *T. breviceps* and *T. fabacicolor* than in *T. magna*.

DISTRIBUTION: Fig. 19.

ETYMOLOGY: The specific name derives from the Latin word *magnus* meaning large and refers to the large size of the species.

Zusammenfassung

Fünfzehn neue Arten der Gattung *Tannea* BLACKWELDER, 1952 aus Zentral- und Südamerika werden beschrieben: *T. andersonii*, *T. brightii*, *T. campbellii*, *T. ecuadoriensis*, *T. fortunata*, *T. laticeps*, *T. schoedli*, *T. leticiae*, *T. longula*, *T. magna*, *T. mexicana*, *T. punctinota*, *T. punctipennis*, *T. reflecta*, und *T. reticulata*. Diese werden in den folgenden Sammlungen aufbewahrt: Canadian National Collection, Ottawa; Snow Entomological Collections, Lawrence (Kansas); Field Museum of Natural History, Chicago; Sammlung des Autors.

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