

## **SPECIES OF *STELEOPS* (PSOCOPTERA: PSOCIDAE) OF THE TAMBOPATA RESERVED ZONE, MADRE DE DIOS, PERU**

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### **RESUMEN**

Tres de las ocho especies sudamericanas de *Steleops* se han recolectado en la Zona Reservada de Tambopata, en la Amazonia Peruana. Una de ellas se describe en este trabajo; está más relacionada con dos especies mexicanas y con una especie de los Estados Unidos, que con las otras especies sudamericanas. Los ejemplares estudiados están depositados en la Colección de la Smithsonian Institution, en Washington, D.C., Estados Unidos.

Palabras clave: *Steleops*, Psocidae, nueva especie, distribución, Zona Reservada de Tambopata, Perú.

### **ABSTRACT**

Three of the eight known southamerican species of *Steleops* occur in the Tambopata Reserved Zone, in the Peruvian Amazonia. One of these species is here described; it is related to two Mexican and to one U.S. species of the genus. The specimens studied are deposited in the Smithsonian Institution Collection, Washington, D.C., USA.

Key words: *Steleops*, Psocidae, new species, distribution, Tambopata Reserved Zone, Perú.

### **INTRODUCTION**

Southamerican species of *Steleops* are known from Bolivia (one species), Brazil (three species), Paraguay (two species), and Venezuela (two species). Elsewhere, species of this genus occur in Mexico (seven species) and in the United States

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(two species). The genus is defined by having eyes pedunculate or at least slightly stalked; the forewing venation and genital structure of both sexes are similar to those of *Trichadenotecnum*, but the extent of variation in the forewing pattern of pigmentation (shaded and hyaline areas, maculae and colorless lacunae), is much greater than in species of this genus (García Aldrete, in press; Mockford, 1993); the closeness of both genera has already been noted by New (1972).

The purpose of this paper is to record the species of *Steleops* that occur in the Tambopata Reserved Zone, in Madre de Dios, Perú, where the genus was not previously known. For details on the Reserve, cf. Erwin (1985). Four specimens of this genus, representing three species, were collected in 1984 by the Smithsonian Institution Canopy Fogging Project.

The specimens for microscopic study, preserved in 80% alcohol, were dissected in 80% alcohol, and the head, right legs and wings and genitalia were mounted permanently in Euparal. Measurements (given in microns), were taken with a filar micrometer on the parts mounted. The unit of measurement was 1.36 microns for wings, and 0.53 microns for other parts. The following abbreviations are used for lengths of parts measured: FW: forewing; HW: hindwing; F: femur; T: tibia; t1, t2, tarsomeres 1 and 2 of hind leg; P4: fourth segment of maxillary palp, fl...fn: flagellomeres 1...n; ctt1: number of ctenidia on t1; IO: minimum distance between compound eyes; D: antero-posterior diameter of compound eye; PO: d/D. The specimens studied, including types, are deposited in the Smithsonian Institution Collection, Washington, D.C. USA.

*Steleops pedunculata* (Enderlein)  
(Figs. 1-5)

*Pelmatocoria pedunculata* Enderlein, 1910: 63

This species was previously known from Brazil and Paraguay. The species is illustrated and a brief description is provided, to complement the little morphological information available.

*Female.* Color (in 80 % alcohol). Body light brown, with darker areas as indicated below. Compound eyes black, ocelli hyaline, each with an ochre centripetal crescent. Head pattern as illustrated (Fig. 5); postclypeus more pigmented than rest of the head; maxillary palps creamy white, P4 with apex dark brown. Scape and pedicel creamy white (flagellomeres missing). Labrum with small dark brown semicircle on each side. Legs creamy white, first pair of coxae creamy white; second and third pair of coxae dark brown proximally; t1 with both ends brown, t2 brown. Tergal lobes of meso and metathorax dark brown. Thoracic episterna dark brown, epimera creamy white. Wings hyaline, forewing with a small brown spot on cell Cu2. Abdomen creamy white, clunium dark brown. Subgenital plate, ovipositor valvulae, paraprocts and epiproct creamy white.

*Morphology.* Compound eyes pedunculate, so the vertex is strongly concave (Fig. 5). Rs and M in forewing meeting in a point; areola postica forming an irregular pentangle (Fig. 1). Subgenital plate (Fig. 3) with egg guide wide, with a distinct, longitudinal, mesal pigmented bar, and apex projected posteriorly. Spermapore plate broadly triangular (Fig. 2), with many folds as illustrated; spermapore large, surrounded by a wide, pigmented, textured ring, a small pore next to it posteriorly. Ovipositor valvulae (Fig. 2): v1 long, slender, dilated distally, before the apex, v2 broad, stout, without distal process; v3 broad, setose, without a posterior process. Paraprocts (Fig. 4) broad, setose, distally rounded; sensory fields with 19-22 trichobothria, each on a basal rosette, with 5-6 of them smaller. Epiproct (Fig. 4) broad, bell-shaped, rounded posteriorly, with a longitudinal field of setae along midline.

*Measurements.* FW: 4141; HW: 3012; P4: 238; IO: 620; D 401; d: 312; IO/D: 1.54; PO: 0.77

**Material examined.** PERU. Madre de Dios. Tambopata Reserved Zone. 30 km (air) SW Puerto Maldonado, 290 m., 12° 50'S; 69° 17'W. Smithsonian Institution Canopy Fogging Project, T. L. Erwin *et al.* 4 May 1984, 01/02/071, 1 female.

*Comments.* The present record extends the distribution of this species to Peru, within the Amazon Basin.

*Steleops punctipennis* Enderlein  
(Figs. 6-10)

*S. punctipennis* Enderlein, 1910: 65

This species was previously known from Paraguay. A description is given since no genitalic information was known on the species.

*Female.* Color (in 80% alcohol). Creamy white. Head pattern (Fig. 10). Compound eyes black, ocelli hyaline, with dark brown centripetal crescents. Two dark spots between ocellar area and postclypeus. Postclypeus dark brown as illustrated; anteclypeus and labrum dark brown in the middle. Antennae and maxillary palps creamy white. Legs creamy white; t1 with both ends brown, t2 brown. Forewings maculated, pattern (Fig. 6). Veins on the distal half of the wing with a distal brown spot, at the wing margin. Hindwings hyaline. Thorax brown. Abdomen light brown. Genital segments pale brown.

*Morphology.* Forewing with pterostigma wider posteriorly (Fig. 6). Rs and M joined by a small, transverse vein. Areola postica high, irregularly pentagonal. Subgenital plate (Fig. 7) broad, egg guide rounded posteriorly, with four apical macrosetae; base of egg guide distinctly pigmented, pigmented area deeply cleft anteriorly, rounded posteriorly. Spermapore plate broad, pigmented areas as illustrated (Fig. 9). Spermapore small, surrounded by pigmented, concentric rings, inscribed in a broad area, rounded posteriorly, and with lateral and anterior pointed apices. Ovipositor valvulae (Fig. 9): v1 slender, elongate, distally acuminate; v2

broad, with a distal process; v3 broad, setose, with a small, conical, posterior process. Paraprocts (Fig. 8) broad, rounded posteriorly; sensory fields with 21-22 trichobothria, each on a basal rosette. Epiproct (Fig. 8) bell-shaped, with a field of setae anteriorly, along longitudinal midline.

*Measurements.* FW: 3109; HW: 2268; F: 616; T: 1379; t1: 497; t2: 155; ctt1: 25; P4: 132; f1: 630; f2: 678; f3: 583; IO: 376; D: 253; d: 214; IO/D: 1.48; PO: 0.84

**Material examined.** PERU. Madre de Dios. Tambopata Reserved Zone. 30 km (air) SW Puerto Maldonado, 290 m., 12° 50'S; 69° 17'W. Smithsonian Institution Canopy Fogging Project, T. L. Erwin *et al.* 4 May 1984. 01/02/055, 1 female.

*Comments.* This species is close to the Brazilian *S. maculata* New, from which it differs in details of the forewing pattern of pigmentation, in the pigmented areas of the subgenital plates and apical setae of the egg guide; also, *S. maculata* lacks distal spots of the veins in the distal half of the forewing.

***Steleops tambopata* n. sp. (female)**  
(Figs. 11-16)

*Female.* Color (in 80% alcohol). Compound eyes and ocellar field black. Head and thorax creamy white, with complex pattern of medium, dark brown spots. Head pattern (Fig. 13). P1-P3 dark brown with apices white; P4 dark brown at both ends, white in the middle. Antennae: scape and pedicel dark brown; f1 with a dark brown band near each end, white in the middle, apices white; other flagellomeres with a brown band in the middle and apices white. Thorax pale brown, with tergal lobes of meso and metathorax dark brown; pleural sulci dark brown. Legs creamy white, with brown areas and patches as illustrated (Fig. 16). Abdomen creamy white, genital segments dark brown.

*Morphology.* Forewings (Fig. 11) with distinct, transverse dark band on proximal halves. Shaded areas, clear areas and colorless lacunae as illustrated. Rs and M joining in a point. Areola postica high, irregularly pentagonal. 1A with a large triangular flap proximally and an elongated, smaller flap distally. Subgenital plate (Fig. 14) with basal arms well pigmented; a strongly pigmented spindle mesally on each side, at the base of the egg guide; apex of the egg guide rounded, unpigmented, with a field of small setae and four marginal macrosetae. Spermapore plate membranous, smooth, straight anteriorly; spermapore surrounded by wide pigmented ring. Ovipositor valvulae (Fig. 12): v1 slender, elongate; v2 broad, with an elongate distal process; v3 broad, with the normal row of macrosetae, and a large posterior lobe. Epiproct (Fig. 15) bell-shaped. Paraprocts (Fig. 15) approximately triangular, broad; sensory fields with 11-12 trichobothria on basal rosettes and 8-10 trichobothria without basal rosettes.

*Measurements.* FW: 2570; HW: 1762; F: 455; T: 836; t1: 305; t2: 110; ctt1: 18; P4: 108; f1: 192; f2: 116; f3: 120; IO: 424; D: 186; d: 159; IO/D: 2.27; PO: 0.85

**Type locality.** PERU. Madre de Dios. Tambopata Reserved Zone. 30 km (air) SW Puerto Maldonado, 290m., 12°50'S: 69° 17'W. Smithsonian Institution Canopy Fogging Project, T. L. Erwin et al. 2.III.1984, 03/02/059, 1 female, Holotype. 2.V.1984, 02/02/077, 1 female, Paratype. Deposited at the Smithsonian Institution Collection, Washington, D. C., USA.

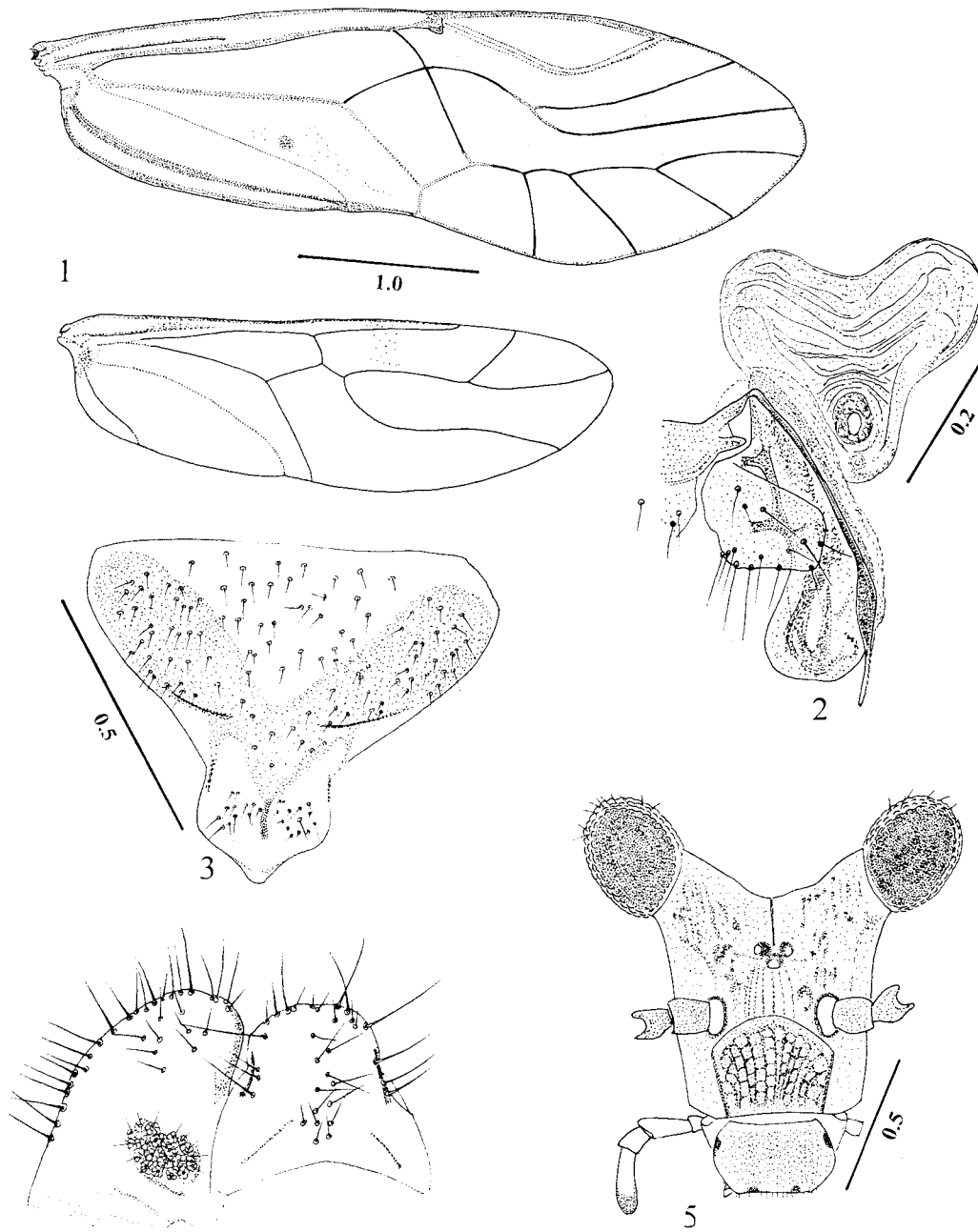
*Comments.* *S. tambopata* n. sp., presents a forewing pattern reminiscent to those of *S. lichenatus* (Walsh) from the United States, and *S. barrerai*, and *S. ortegai* from Mexico (García Aldrete, in press). It differs from these species on details of the forewing pattern, head pattern and genital details (*S. barrerai* is only known from the male sex). None of the other southamerican species of *Steleops* [*S. conipata* García Aldrete & Menchaca, *S. maculata* New, *S. pedunculata* (Enderlein), *S. pulchra* New, *S. punctipennis* Enderlein, *S. pura* Mockford (MS name), and *S. wygodzynski* Mockford (MS name)] present forewing patterns even remotely resembling that of *S. tambopata*. Also, this species seems to be the only one in the genus with a large, triangular and a small, rounded flap on 1A, that give the insect in life a striking appearance, as these flaps rise well above the level of the mesothoracic lobes. The significance of the flaps is unknown; as for the peculiar forewing pattern and the general body color of the insects of the four species with that pattern, it could be speculated that it makes the insects cryptic in their environment, which could be of advantage against avian predators, such as tree-creepers and wrens. *S. lichenatus*, *S. barrerai* and *S. ortegai* live on lichen covered outcrops and tree trunks, and most probably *S. tambopata* lives also on lichen covered tree trunks.

#### ACKNOWLEDGEMENTS

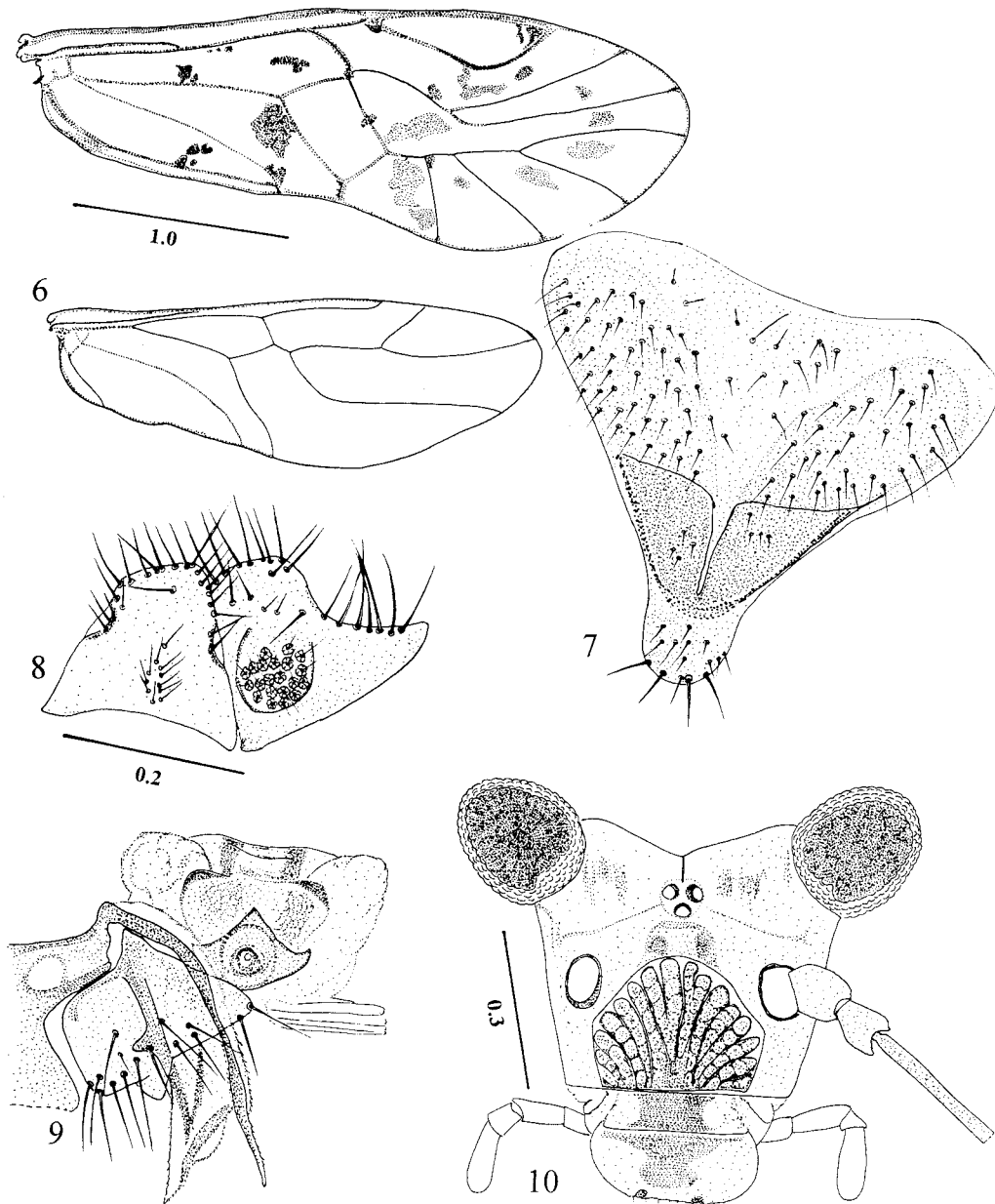
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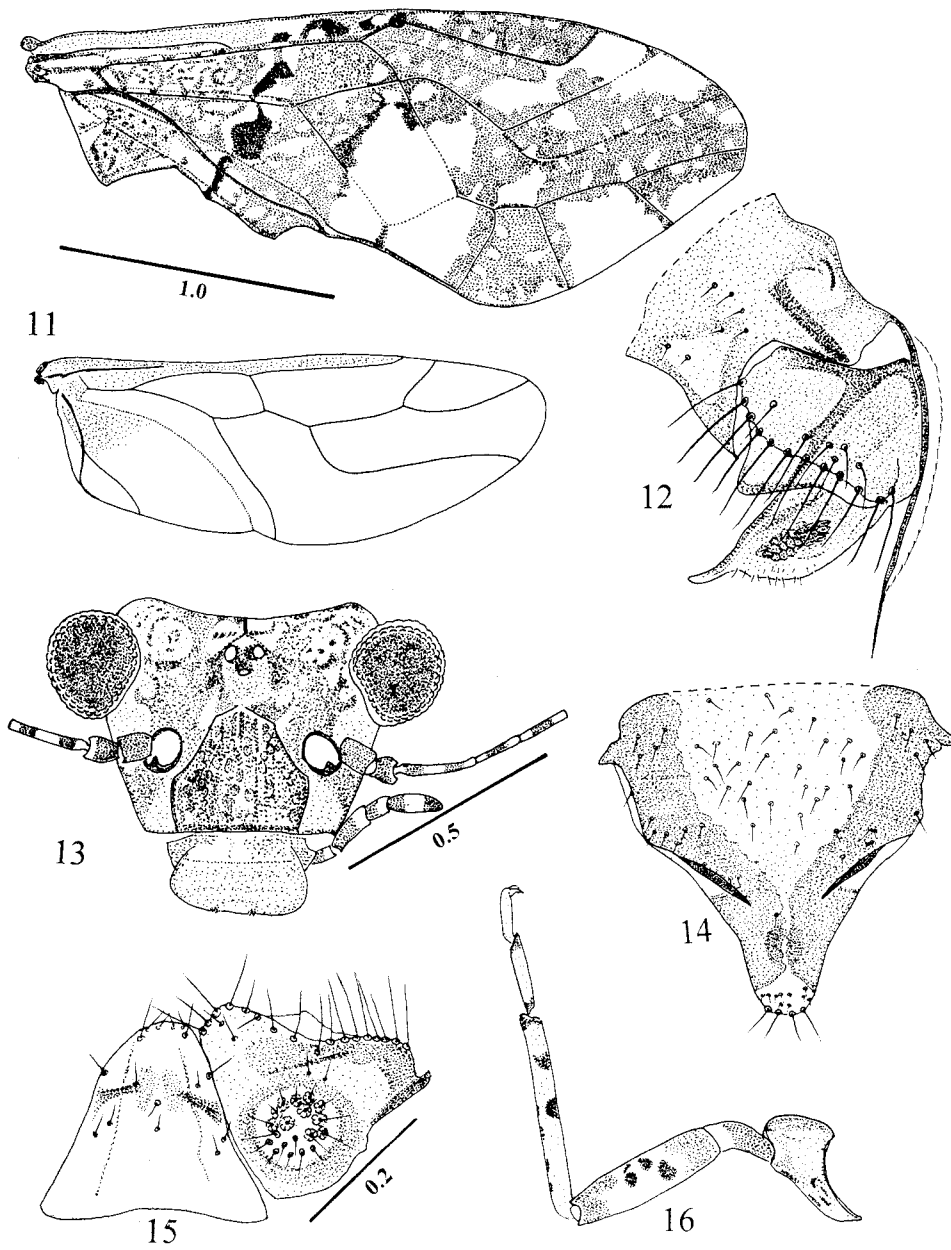
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Figs. 1-5. *Steleops pedunculata* (Enderlein). Female. 1. Fore and hind wings. 2. Spermapore plate and right ovipositor valvulae. 3. Subgenital plate. 4. Right paraproct and epiproct. 5. Front view of head. Scales in mm. Fig. 4 to scale of Fig. 2.



Figs. 6-10. *Steleops punctipennis* Enderlein. Female. 6. Fore and hind wings. 7. Subgenital plate. 8. Left paraproct and epiproct. 9. Right ovipositor valvulae and spermapore plate. 10. Front view of head. Scales in mm. Figs. 7 and 9 to scale of Fig. 8.



Figs. 11- 16. *Steleops tambopata* n. sp. Female. 11. Fore and hind wings. 12. Right ovipositor valvulae. 13. Front view of head. 14. Subgenital plate. 15. Left paraproct and epiproct. 16. Left foreleg. Scales in mm. Figures 12, 14 and 16 to scale of Fig. 15.