Genus	Vol. 7 (3): 351-378	Wrocław, 30 X 1996

Description of the third larval stage of *Anisotoma orbicularis* (HERBST) and redescription of the third larval stage of *A. castanea* (HERBST) (*Coleoptera*: *Leiodidae*)

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ABSTRACT. A detailed description of the third larval instar of *Anisotoma orbicularis* (HERBST) and a redescription of *Anisotoma castanea* (HERBST) are given, according to WHEELER's standard of description of larval morphology in the tribe *Agathidiini* and RATAJCZAK's redescription of mature larva of *Anisotoma humeralis*.

Key words: Entomology, morphology, larva, *Coleoptera*, *Leiodidae*, *Anisotoma castanea*, *Anisotoma orbicularis*.

INTRODUCTION

The genus *Anisotoma* PANZER, 1797 comprises 35 species (WHEELER, 1979) five of them are known from Europe. Larvae of three of them (*Anisotoma castanea* (HERBST), *A. glabra* KUGEL., *A. humeralis* (F.)) were described in 19th c. but the descriptions are not useful for phylogenetic studies. The first modern description was the one of New World *Anisotoma basalis* (LECONTE) (WHEELER 1990); one of the European species - *Anisotoma humeralis* (F.) was redescribed (RATAJCZAK 1995).

In this paper I give the first description of morphology of the third larval instar of *Anisotoma orbicularis* (HERBST) and redescription of *A. castanea* (HERBST). Larva of *Anisotoma castanea* was described only by PERRIS (1855). VATERNAHM (1917) cited PERRIS (1917); SAALAS (1917) in his "Die Fichtenkäfer Finnlands" stated that the paper of PERRIS was not available and gave only ecological information.

The terminology of setae is based on chaetotaxy by ASHE & WATROUS (1984), WHEELER (1990) and RATAJCZAK (1995). The third larval instars are described as they have the most complete setal pattern.

ACKNOWLEDGMENTS

I would like to express my sincere thanks to Dr. Bolesław BURAKOWSKI for all information about rearing and for sending adults; to Dr. Dariusz IWAN for the loan of larvae and adults and to Dr. Lech BOROWIEC for all his helpful advice and suggestions.

MATERIALS AND METHODS

All the specimens were loaned from the collection of the Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw. They were collected or reared and stored in 75% ethanol by Dr. Bolesław BURAKOWSKI.

Label data:

Anisotoma castanea:

Pobrzeże Bałtyku [Baltic Coast]: Gdańsk-Wrzeszcz, 14 VII 1983 L., 1 ex., in fruiting body of *Ascomycetes* on pine stump.

Puszcza Białowieska [Białowieża Forest]: National Park, forest sector 369, 29 VI 1961 Im., 4 VII 1961 L.cons., 3 exx., fungus on oak stump; National Park, forest sector 390, 29 IX 1968 Im., 28 XI 1968 L., 2 exx.

Beskid Zachodni [W Beskidy Mts]: Stecówka, distr. Cieszyn, 15 VII 1965 Im., 25 VII 1965 L., 5 exx.; Wisła Głębce, 10 VII 1965 Im., 14, 16 VII 1965 L., 1 ex..

Bieszczady [Bieszczady Mts]: mt. Chryszczata, distr. Lesko, 19 VII 1969 Im., 22 VII 1969 ova, 28 VI 1969 L., 7 exx.

Anisotoma orbicularis:

Puszcza Białowieska [Białowieża Forest]: National Park, forest sector 192, 2 VII 1968 Im., 8 VII 1968 L., 8 exx.

Beskid Zachodni [W Beskidy Mts]: Wisła Głębce, 10 VII 1965 Im., 14 and 16 VII 1965 L., 4 exx.

Preparations:

I examined 19 specimens of *A. castanea* and 12 specimens of *A. orbicularis*

All the detailed comparisons were made of slide-mounted larvae, in glycerine-gelatin. Specimens were removed from 75% ethanol, boiled in 10 % KOH solution, cleared in distilled water and mounted in glycerin-gelatin.

The larvae were examined at magnifications up to 840, using Phase Contrast "Jenaval" microscope.

Chaetotaxy system, abbreviations and designations of chaetae positions are given by WHEELER (1990). Additional measures were taken:

length ratio of maxillary segments I/II/III
length ratio of maxillary segments I/II
length ratio of maxillary segments II/III
mandible width and length
labrum width and length
length ratio of labial palps I/II

Anisotoma orbicularis (HERBST,1792)

DIAGNOSIS

Two stemmata. Three solenidia at base of digitiform organ of anntenomere II. Digitiform solenidium large, undivided. Dorsal side of head with Da1, De1 and 1 pair of campaniform sensilla; lack of Dd1, Da*a; asperities on whole dorsal side arranged into honeycomb-like figures; lack of small, additional setae. Antennomere III with 1 apical pointed process, 2 apical peg-like sensilla, 1 subapical setiform sensilla. Labrum with a pair of large setae in the mid; on the margin of labrum a pair of tubercles. Labium: a pair of apical setae and 2 pairs of campaniform sensilla on ligula. Tibia with campaniform sensilla near D1. Dorsal integument of pronotum with asperities (also honeycomb-like). Tergum of pronotum, mesonotum, metanotum and abdominal tergum IX more sclerotized. Mesonotum: median seta D3 very long. Metanotum: median setae D1, D2, long D3 present; lack of Db setae. Abdominal tergum IX undivided. Urogomphus segment I with 8 setae. Setae of whole body generally long. Posterior transverse row of meso- and metanotum outside sclerits.

DESCRIPTION

Body: Cylindrical, narrowed posteriorly, widest at metanotum. Total body length: 3.5-4.0 mm (average: 3.75 mm). Average metanotal width: 1.1 mm.

Head (figs 57-62): Cranium wider than long; HW/HL = 1.34; average head width: 0.57 mm. Chaetotaxy: row Da with Da1 and Da2; row Db with 3 setae (Db1, Db2, Db3); row Dc with 6 setae (Dc1-Dc4, Dc1a, Dc*); row Dd with 5 setae (Dd2-Dd4, Dd2a, Dd*); row De with 3 setae (De1, De2, De*); lateral row with c.7 setae (L); posterior setae also variable in number (3-5); campaniform sensilla include 1-2 pairs; ventral side of head with 3 ventrolateral setae (Vl1, Vl*2, Vl3). Stemmata 2, laterally and lateroventrally. Asperities on whole dorsal side, arranged into honeycomb-like figures (see figs 58,59).

Antenna (figs 67-68): Antennal formula = 1.8:5.7:3.2:1; length ratio of antennomere II/ digitiform solenidium = 5.6; length ratio of antennomere II/III= 1.8; antennomere I asetose with 2 dorsal campaniform sensilla and 2 ventral apical ones; antennomere II with one large, undivided, thumb-like digitiform solenidium on internal, lateral edge; 3 small solenidia at base of digitiform solenidium; 1 dorsal seta, 1 ventral, 1 lateral near digitiform solenidium, 1 dorsal campaniform sensillum; dorsal and ventral asperities arranged into transverse, short rows;

antennomere III: 3 subapical setae, 1 apical pointed process, 2 apical peglike sensilla, 1 subapical, ventral, setiform sensilla.

Mouthparts:

Labrum (figs 65-66): Subquadrate, without apical emargination, rounded marginally; labrum width = 0.19 mm; length = 0.12 mm; epipharynx with median, transverse row of c.11 campaniform sensilla, preceeded by c. 6 ones above; lobes with microtrichiae; laterally to them sparse asperities; dorsal surface of labrum with a pair of large setae in the mid part and 1 pair laterally, 1 pair of campaniform sensilla medially; 8 setae on the margin of labrum: 1 pair of lateral ones, 5 pairs of apical ones, 3 pairs of ventroapical ones and a pair of tubercles.

Mandible (figs 63-64): Apically bidentate with saw-toothed internal edge; prostheca pointed, sclerotized with group of minute spines at its base; mola distinct with c. 140 sclerotized teeth on ventral side. At dorsal surface 1 campaniform sensillum in the mid and 4 ventrolateral setae. Mandible width = 0.19 mm; length = 0.26 mm.

Maxilla (figs 72-73): Lanceolate lacinia with 8 mesal spines and group of small spines below; galea with fimbriate, bibranched apex, 2 setae between branches; maxillary formula[1] = 1.18:0.98:1; length ratio of maxillary segments I/II = 1.32; length ratio of maxillary segments II/III = 1.08

Labium (figs 69-71): Labial palp ratio: LBI/LBII = 0.9; segment I with small subapical peg-like sensilla; 3 campaniform sensilla and group of sensilla at the apex; segment II with 1 subapical campaniform sensillum, 1 small seta nr the base and a few spinules on external apical edge; labial palpiger with 2 setae (large and small), a few spinules apically and 1 campaniform sensillum; ligula: a pair of serrate lobes, a pair of apical setae, 2 pairs of campaniform sensilla in the mid part; dorsal side of labium with 2 pairs of setae and 1 pair of campaniform sensilla; hyphopharyngeal sclerome subquadrate, with complete anterior and posterior bridges.

Leg (fig. 74):

Coxa: Large, chetotaxy: 1 seta anteroventral (Av1), 5 setae anterolateral (Al1-Al5), 2 setae anterodorsal (Ad1, Ad2), 3 basal seta, 1 additional anteroventral seta, 1 campaniform sensillum (s1); 6 posterior setae: 1 posteroventral (Pv1), 2 posterodorsal (Pd2, Pd3), 3 posterolateral (Pl1-Pl3), 1 posterior campaniform sensillum (s).

Trochanter: Triangular; anterior side with 1 anteroventral seta (Av1), 2 anterolateral setae (Al1, Al2), 1 anterodorsal seta (Ad1) and 5 campaniform sensilla, 2 ventral setae (V1, V2); posterior side with 2 posterolateral setae (Pl1, Pl2), 2 posterior campaniform sensilla.

Femur: Short, broad, with single ventral seta (V1), 2 anteroventral setae (Av1, Av2), 5-6 anterolateral setae (Al1-Al5, Al6* not always), 5 posterolateral

[1]-Length ratio of maxillary segments I/II/III

setae (Pl1- Pl5, Pl4* not always), 3 posterodorsal setae (Pd1, D1, D2),1 posterodorsal campaniform sensillum (pds), 1 anterodorsal campaniform sensillum (ads).

Tibia: As long as femur, with 1 anteroventral seta (Av1), 1 anterodorsal (Ad1), 2 anterolateral setae (Al1, Al2), 1 subapical dorsal seta (D1) and campaniform sensillum near, 2 posterodorsal setae (Pd1, Pd2), 1 posterolateral seta (Pl1), 1 posteroventral seta (Pv1).

Tarsungulus: Long, pointed, with single pair of setae (Pv1, Pv2).

Pronotum (fig. 75): Transverse; N1L/N1W= 0.52; chaetotaxy: Row Da with 2 setae (Da1, Da2); row Db with 2 setae (Db1, Db2); row Dc with 2 setae (Dc1, Dc2); row Dd with single seta (Dd1); row De with single seta (De1); row L with 4 setae; posterior transverse row with 4 setae (P1, P2, P3, P4), between P2/P3 2 or 3 setae nearly the same size as P2; 2 pairs of median setae; campaniform sensilla include: 1 between Da1/Db1 (ds1), 1 between Db1/Dc1 (ds2), 1 between Dc1/Dd1 (ds3), 1 between Dd1/De1 (ds4), 1 between P1/P2 (ps1), 1 between P2/P (ps2), 1 between P3/P4 (ps3), 1 between P4/L1 (ls1); c. 8 small setae between and sligthly below Da1/ Db1/Dc1/Dd1 and 1 bigger between Db1/Dc1; setae Da2, Db2, Dc2 arranged into mid transverse row; c.14 small setae in posterior part of tergum; 3 or 4 setae above and between P1/P3, also asymmetrically; dorsal surface with asperities arranged into honeycomb-like figures.

Mesonotum (fig. 76): Transverse; chaetotaxy: Row Da with Da1, Da2; row Db with 1 seta Db1; row Dc with 1 seta (Dc1); row Dd with 1 seta (Dd1); lateral row: L1, L2; posterior row with P1, P3, P4, P5 and 1-2 setae between P1/P3 (the same size as P1, P3); median setae: D, D1, D2, D3 (the longest); campaniform sensilla include:ds1, ps3.

Metanotum (fig. 77): Transverse; N3L/N3W = 0.36; Row Da with Da1, Da2; row Db absent; row Dc with 1 seta (Dc1); row Dd with 1 seta (Dd1); D1, D2, D3 present; lateral row: L1, L2; posterior row with: P1, P2, P3, P4, P5; campaniform sensilla include: ds1, ps1, ps2, ps3, ls1.

Abdominal Segment I (fig. 78): Transverse; A1l/A1W = 0.3; Row Da with 1 seta (Da1); posterior transverse row with: P1, P2, P3, P5, P6, between P3/P5 1 or 2 setae; 1 lateral seta L1; campaniform sensilla include: ds1, ps1, ps2, ls1.

Abdominal Tergum IX (figs 79-80): With 1 pair of small, dorsal setae (D1); 1 pair of campaniform sensilla (dc); 2 dorsolateral setae (Dl2, Dl3); 2 setae in posterior part of segment; tergum undivided with asperities arranged into short transverse rows;

Urogomphus (figs 81-82): Formula URI:URII:URIII = 2.3:5.1:1; length ratio of URI/URII = 0.45; length ratio of URII/URIII = 5.1; urogomphus segment I with c. 8 setae (3 ventral, 3 vetrolateral, 2 dorsal) and 2 dorsal campaniform sensilla;

urogomphus segment II with 1 apical seta; asperities arranged into transverse, short rows on both sides of segment I and minute asperities on apical part of segment II.

Abdominal Sternum IX and Anal Membrane (figs 83-86): With 1 posterior, transverse row of 5 setae (Vp1-Vp5); anal membrane on ventral side with 2 pairs of campaniform sensilla; 5-9 pairs of small setae and c. 5 asymmetrical ones; dorsal side with 2 transverse rows: row I with 2 pairs of campaniform sensilla and 1 or 3 pairs of small setae, row II with 3 pairs of setae (D1, D2, D3).

Anisotoma castanea (HERBST, 1792)

DIAGNOSIS

Two stemmata. Three solenidia at base of digitiform organ of antennomere II. Digitiform solenidium large, undivided. Dd1, De1, 1 pair of campaniform sensilla and numerous additional setae on head (smaller and larger). Antennae and urogomphi comparatively long (see antennal and urogomphal formula). Antennae: 1 apical peg-like sensillum, 2 processes, 1 subapical setiform sensilla. Dorsal integument of pronotum and head without asperities. Dorsal surface of labrum with 3 or 4 pairs of setae in the mid. Labium: a pair of setae and a pair of campaniform sensillum on ligula. Mesonotum: in the middle 6-11 setae of different size; row Da with 3 setae; Db1 present. Metanotum: lack of seta P3; row Db with 1 seta. Coxa with additional setae: Pl4, Pl5. Trochanter: lack of seta Pl1. Femur with additional small postero- and anterolateral setae. Tibia with additional setae Pv2 and Al3. Abdominal tergum IX undivided. Abdominal sternum IX with additional transverse row of setae (Vp1*-Vp5*).

DESCRIPTION

Body: Cylindrical, narrowed posteriorly, widest at metanotum. Total body length: 4.6-5.9 mm (average: 5.1 mm). Average metanotal width: 1.1 mm.

Head (figs 4-6): Cranium wider than long; HW/HL = 1.49; average head width: 0.69 mm. Chaetotaxy as follows: row Da with Da*a and Da2; row Db with 6 setae (Db1, Db2, Db3,Db*a, Db*b, Db*); row Dc with 6 setae (Dc1- Dc4, Dc*, Dc*p); row Dd with 6 setae (Dd1-Dd4, Dd*, Dd*p); row De with 2 setae (De1, De2); small setae varying in their number and position (also asymmetrically, see figs 7-16); lateral row with 3 setae; posterior setae also variable in number; campaniform sensilla include 3-5 pairs; ventral side of head with c. 5 pairs of setae (Vl1-Vl3,Vl*1, Vl*2). Stemmata 2, laterally and lateroventrally.

Antenna (figs 21-23): Antennal formula = 3.6:4.9:2.7:1; length ratio of antennomere II/digitiform solenidium = 4.9; length ratio of antennomere II/III = 1.8; antennomere I asetose with 2 dorsal campaniform sensilla and 2 ventral apical ones; antennomere II with one large, undivided, thumb-like digitiform solenidium on internal, lateral edge; 3 small solenidia at base of digitiform solenidium (one of them is slightly sharp-pointed); 1 dorsal seta, 1 ventral, 1 lateral near digitiform solenidium,

1 dorsal campaniform sensillum; dorsal and ventral asperities arranged into transverse, short rows; antennomere III: 3 subapical setae, 2 apical pointed processes, 1 apical peglike sensillum, 1 subapical, ventral, setiform sensilla; sparse asperities at ventral surface.

Mouthparts:

Labrum (figs 17-18): Subquadrate, without apical emargination, rounded marginally; labrum width = 0.2 mm, length = 0.18 mm; epipharynx with median, transverse row of c.16 campaniform sensilla, preceded by c. 6 ones above; lobes with microtrichiae; laterally to them sparse asperities; dorsal surface of labrum with a pair of large setae in the mid part, 2 or 3 pairs of smaller ones, 1 pair of lateral ones, a pair of campaniform sensilla medially; 8 pairs of setae on the margin of labrum: 4 pairs of apical ones, 4 pairs of ventroapical ones (3 of them minute).

Mandible (figs 24-26): Apically bidentate with saw-toothed internal edge; prostheca pointed, sclerotized with group of minute spines at its base; mola distinct with c. 110 sclerotized teeth on ventral side and c. 70 on dorsal one. At dorsal surface 1 campaniform sensillum in the middle and 1-2 laterally; 5-9 dorsolateral setae; mandible width = 0.25 mm, length = 0.32 mm.

Maxilla (figs 19-20): Lanceolate lacinia with 8 mesal spines and group of small spines below; galea with fimbriate, bibranched apex, 2 setae between branches; maxillary palp as in fig. 20; maxillary formula[1] = 1.2:1.15:1; length ratio of maxillary segments I/II = 0.9; length ratio of of maxillary segments II/III = 1.15 .

Labium (figs 27-29): Labial palp ratio: LBI/LBII = 0.6; segment I with small subapical peg-like sensilla, 3 campaniform sensilla and group of sensilla at the apex; segment II with 1 subapical campaniform sensillum, 1 small seta nr the base and a few spinules on external apical edge; labial palpiger with 2 setae (large and small) and a few spinules apically; ligula: a pair of serrate lobes, a pair of apical setae, 1 pair of campaniform sensilla in the mid part; dorsal side of labium with 3 pair of setae and 1 pair of campaniform sensilla (this arrangement varies, also asymmetrical: lack of 1-2 setae or c.s); hyphopharyngeal sclerome subquadrate, with complete anterior and posterior bridges.

Leg (fig. 30):

Coxa: Large, with 13 anterior setae: 1 seta anteroventral (Av1), 5 setae anterolateral (Al1-Al5), 3 setae anterodorsal (Ad1-Ad3), 3 basal setae, 1 additional anteroventral seta, 1 campaniform sensillum (s1); 7 posterior setae: 1 posteroventral (Pv1), 2 posterodorsal (Pd2, Pd3), 4 posterolateral (Pl2-Pl5), 1 campaniform sensillum (s).

Trochanter: Triangular, with 1 posterolateral seta (Pl2), 2 posterior campaniform sensilla, 1 posterodorsal seta (Pd1); anterior side with 1 anteroventral seta (Av1), 2 anterolateral setae (Al1, Al2), 1 anterodorsal seta (Ad1), 2 ventral setae (V1, V2) and 5 campaniform sensilla.

[1]-Length of maxillary segment I/II/III

Femur: Short, broad, with single ventral seta (V1), 2 posterodorsal setae (Pd1, Pd2), 2 dorsal small setae (D1, D2), 2 anteroventral setae (Av1, Av2), c. 8 anterolateral setae (Al1-Al5, Al6*not always, Al7, Al8* not always), c.9 posterolateral setae (Pl1- Pl5, Pl6* not always, Pl7, Pl8, Pl*9 not always), 1 posterodorsal campaniform sensillum (pds), 2 anterodorsal campaniform sensilla (ads).

Tibia: Shorter than femur, broad, with 1 anteroventral seta (Av1), 1 anterodorsal (Ad1), 3 anterolateral (Al1- Al3), 1 subapical dorsal seta (D1), 2 posterodorsal (Pd1, Pd2), 1 posterolateral (Pl1), 2 posteroventral seta (Pv1, Pv2).

Tarsungulus: Long, pointed, with a single pair of setae (Av1, Pv1).

Pronotum (figs 31-34): Transverse; N1L/N1W = 0.55; chaetotaxy: Row Da with 2 setae (Da1, Da2); row Db with 2 setae (Db1, Db2); row Dc with 2 setae (Dc1, Dc2); row Dd with single seta (Dd1); row De with single seta (De1); row L with 1 seta (L1); posterior transverse row with 4 setae (P1-P4); campaniform sesilla include: 1 between Da1/Db1 (ds1), 1 between Db1/Dc1 (ds2), 1 between Dc1/Dd1 (ds3), 1 between P1/P2 (ps1), 1 between P2/P3 (ps2), 1 between P3/P4 (ps3), 1 between P4/L1 (ls1); c. 15-20 small setae between and sligthly below Da1/Db1/Dc1/Dd1; c.17 small setae above and between setae of posterior transverse row (1 larger between P1/P2, 3 larger between P2/P3 (P)); c. 5-12 small setae above posterior transverse row; dorsal surface without asperities.

Mesonotum (figs 35, 38-40): Transverse; chaetotaxy: Row Da with 3 setae (Da1-Da3); row Db with 1 seta Db1; row Dc with 1 seta Dc1; row Dd with 1 seta Dd1; posterior transverse row with 3 setae (P1, P4, P5); 1 lateral seta L1; campaniform sensilla include: ds1, ps1, ps3; asperities in anterior part of mesonotum (arranged into short transverse rows); in the mid c. 6-11 larger setae and c. 4-6 small, arranged asymmetrically.

Metanotum (figs 36, 41-42): Transverse; N3L/N3W = 0.42; chaetotaxy: Row Da with 3 setae (Da1-Da3); row Db with 1 seta Db1; row Dc with 1 seta Dc1; row Dd with 1 seta Dd1; posterior transverse row with 4 setae (P1, P2, P4, P5); 1 lateral seta L1; campaniform sensilla include: ds1, ps1, ps2, ps3, ls1; asperities of the same appearance as on mesonotum.

Abdominal Segment I (figs 37, 44-47):Transverse; A1l/A1W = 0.33; chaetotaxy: Row Da with Da1; posterior transverse row: P1-P6; campaniform sensilla: ds1, ps1, ps2, ls1; c. 13-16 small setae; asperities: see fig. 43.

Abdominal Tergum IX (fig. 49): With 1 pair of small, dorsal setae (D1); 1 pair of campaniform sensilla (dc); 2 dorsolateral setae (Dl1, Dl2, Dl3); 3 setae in posterior part of segment; asperities arranged into transverse rows; tergum undivided.

Urogomphus (figs 52-53): Comparatively very long; formula URI:URII:URIII = 7.1: 11.8: 1; length ratio of URI/URII = 0.6; length ratio of URII/URIII = 11.8;

urogomphus segment I with c. 11 setae (3 ventral, 3 vetrolateral, 3 dorsal, 2 dorsolateral) and 5 dorsal campaniform sensilla; urogomphus segment II with 1 apical seta; asperities arranged into transverse, short rows on both sides of segment I and minute asperities on apical part of segment II.

Abdominal Sternum IX and Anal Membrane (figs 48-51): With 2 rows: Posterior, transverse row of 5 setae (Vp1-Vp5); row Vp* with 4-5 smaller setae (Vp1*-Vp5*); anal membrane on ventral side with 2 pairs of campaniform sensilla; 12-13 pairs of small setae and c. 5 asymmetrical ones; dorsal side of anal membrane with 3 transverse rows: row I with 2 pairs of campaniform sensilla and 1 pair of small setae, row II with c. 5 small setae, row III with 3 pairs of setae (D1, D2, D3).

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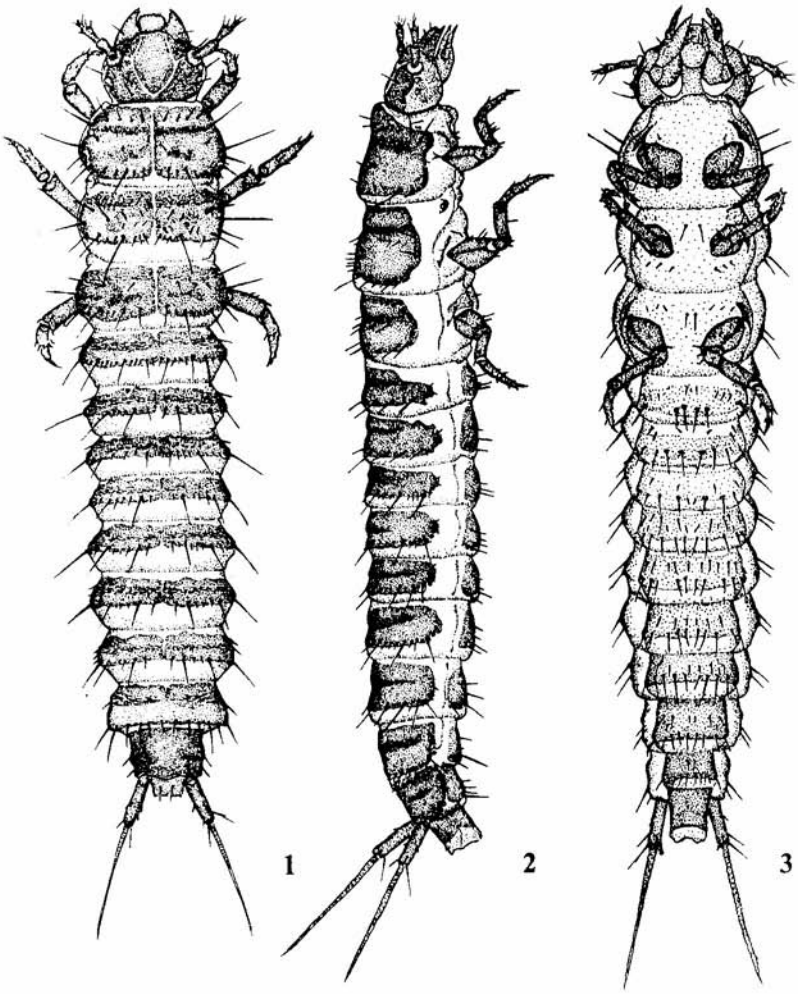
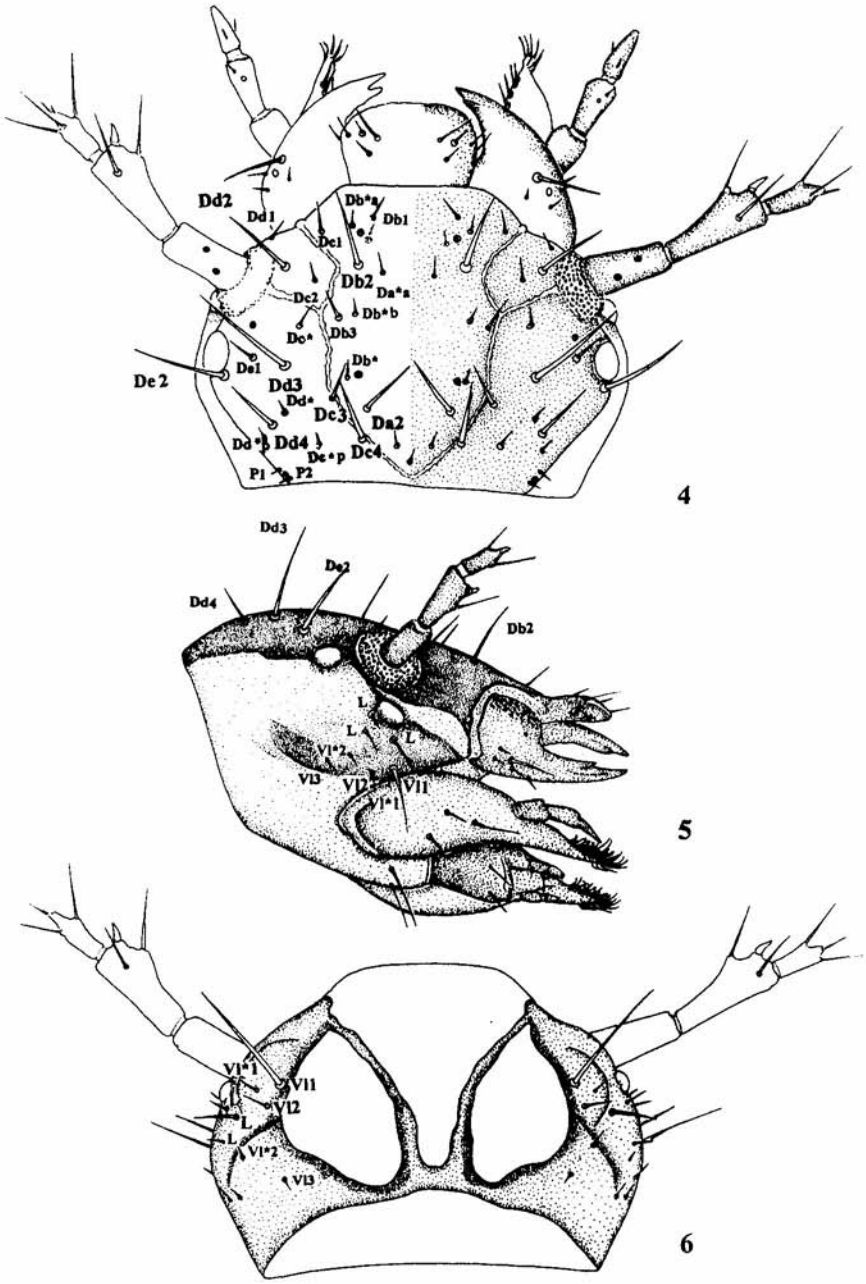
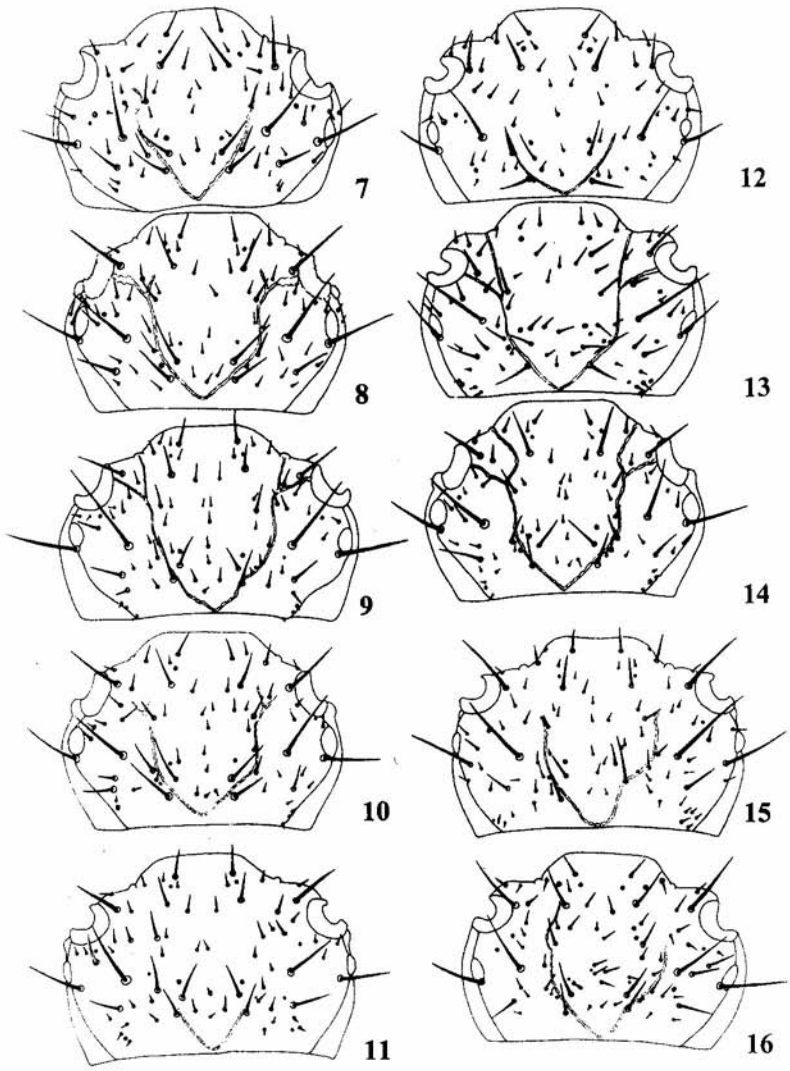


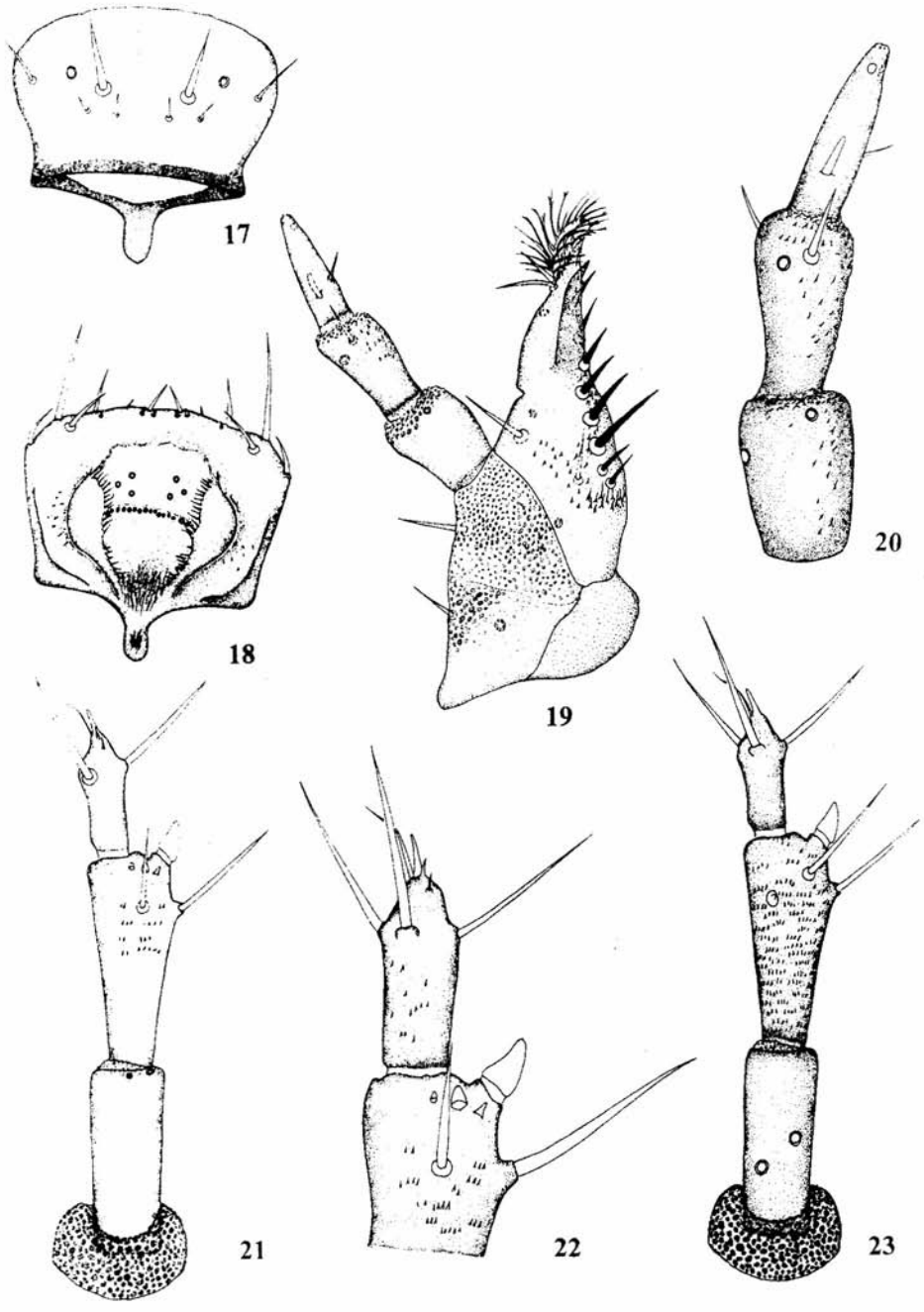
1-3. *Anisotoma castanea*, larval habitus: 1 - dorsal, 2 - lateral, 3 - ventral



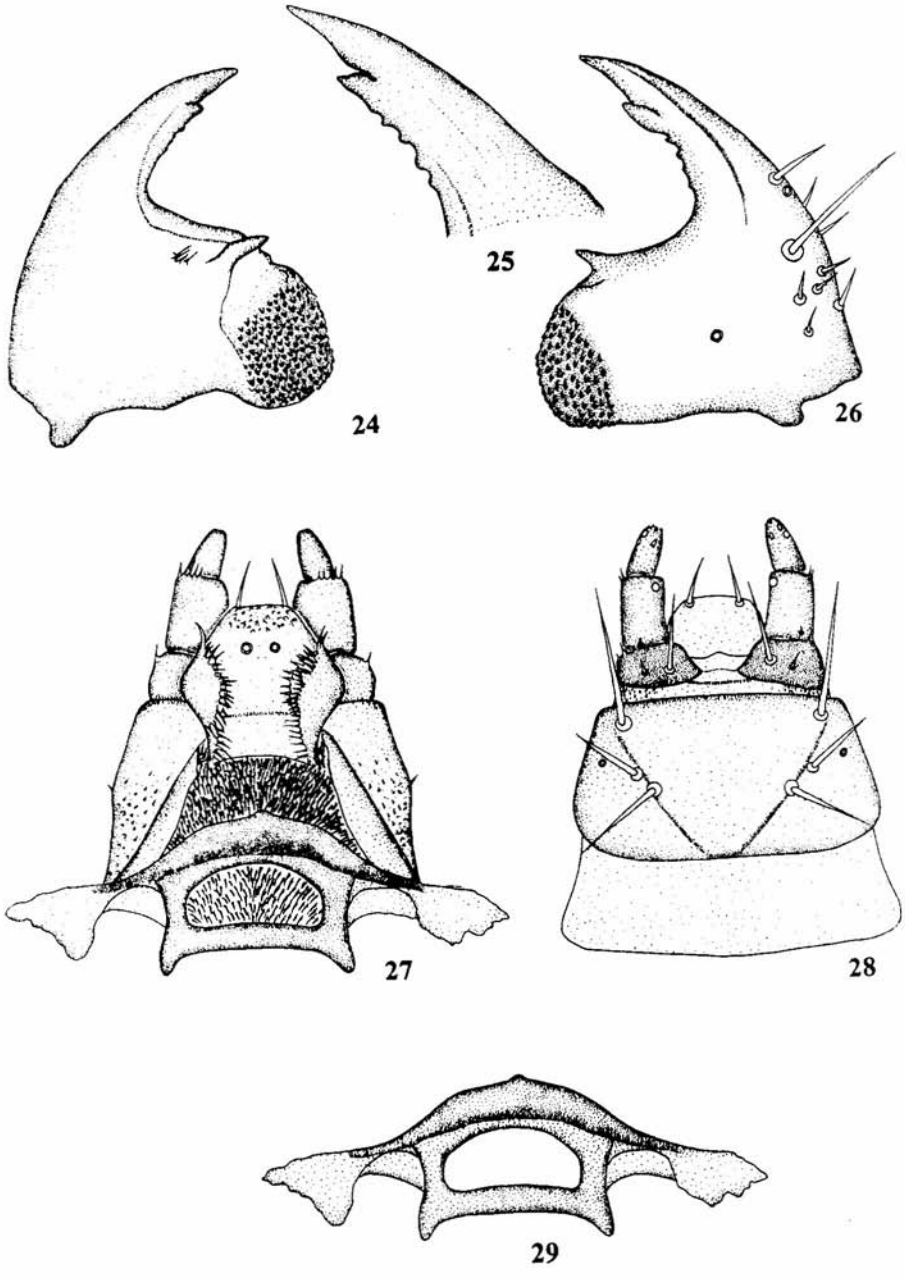
4-6. *Anisotoma castanea*, head: 4 - dorsal, 5 - lateral, 6 - ventral



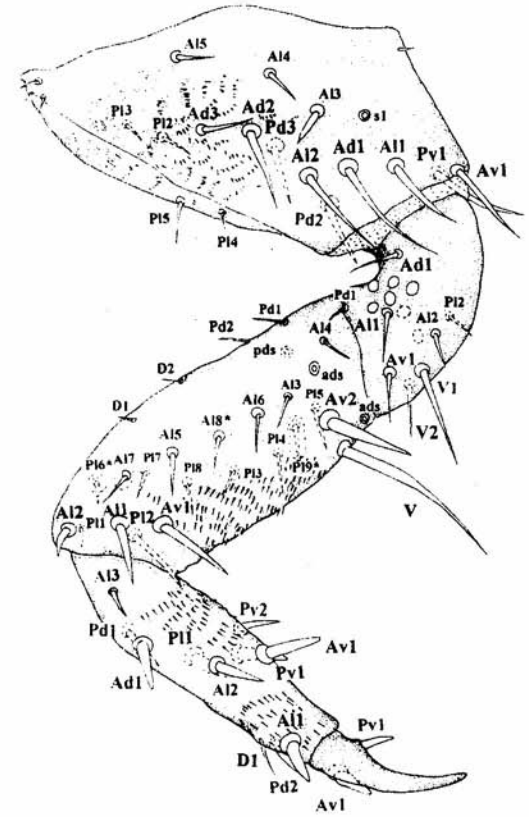
7-16. *Anisotoma castanea*, head, dorsal



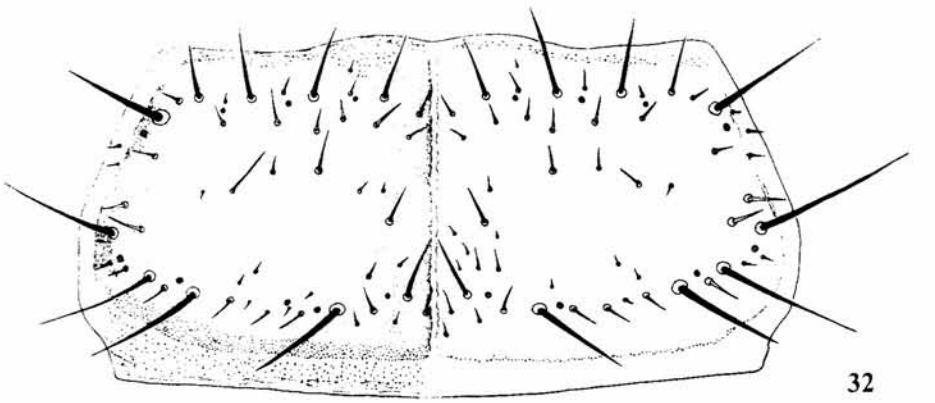
17-23. *Anisotoma castanea*, 17-18 - labrum: 17 - dorsal, 18 - ventral; 19 - maxilla; 20 - maxillary palp; 21-23 - antenna: 21 - ventral, 22 - II and III segment, 23 - dorsal

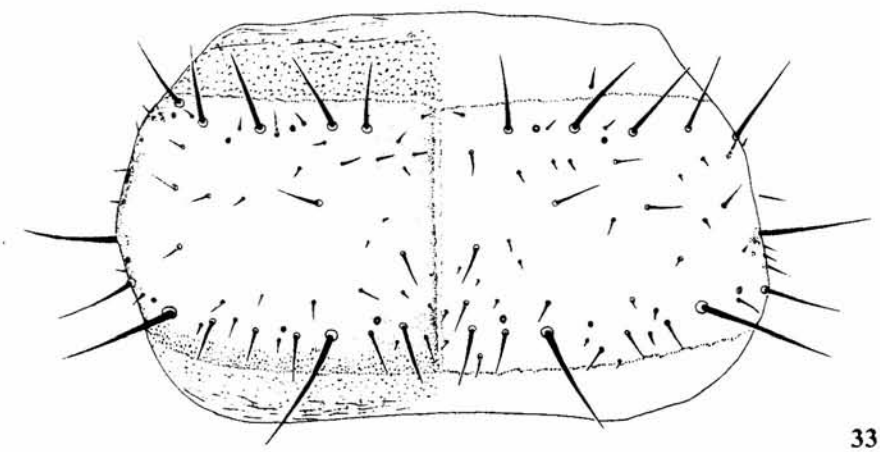


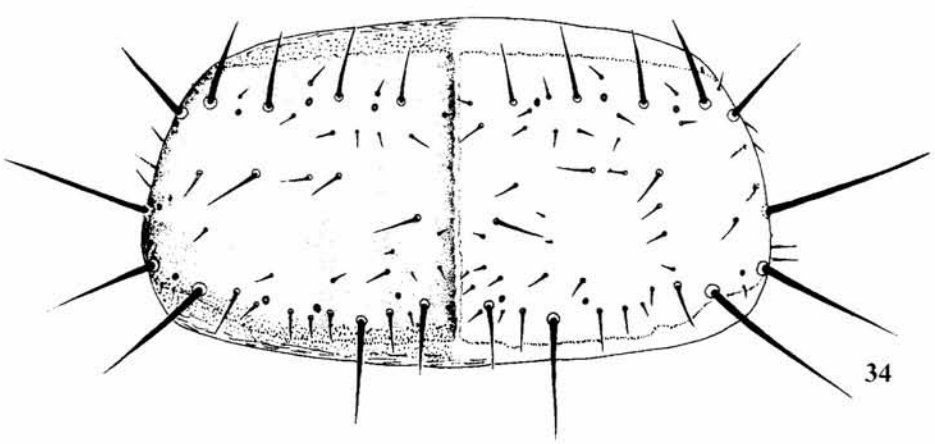
24-29. *Anisotoma castanea*, 24-26 - mandible: 24 - ventral, 25 - apex, 26 - dorsal; 27-29 - labium: 27 - ventral, 28 - dorsal, 29 - hyphopharyngeal sclerome



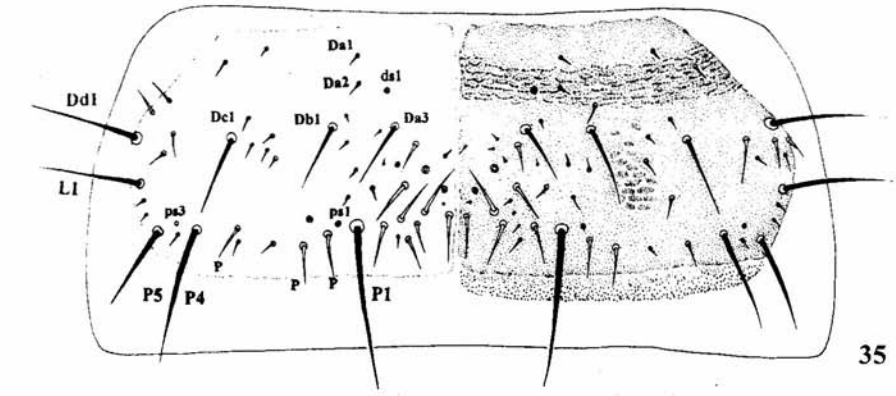
30-31. *Anisotoma castanea*, 30 - leg; 31 - pronotum







32-34. *Anisotoma castanea*, pronotum



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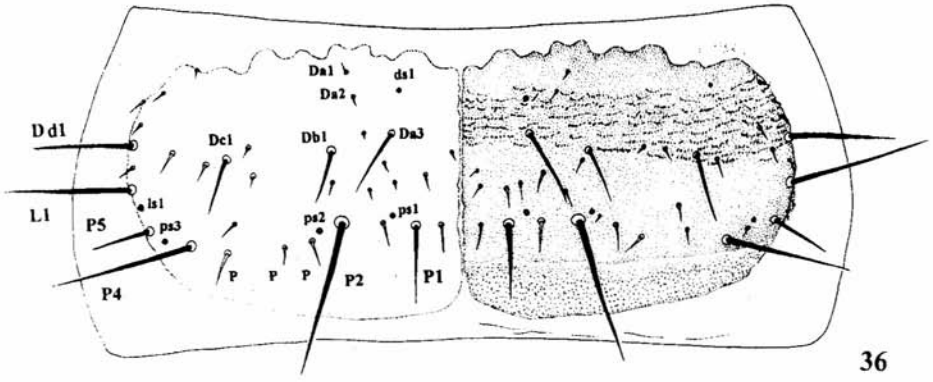

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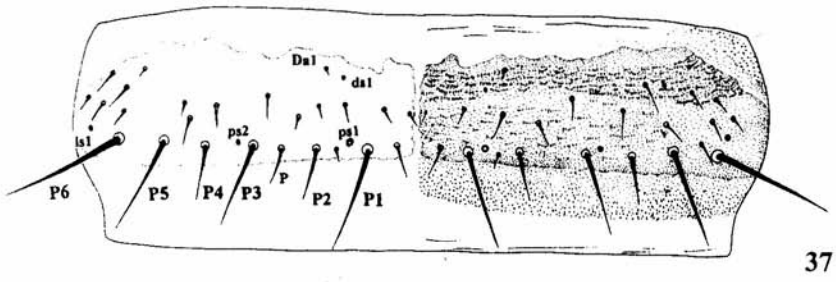

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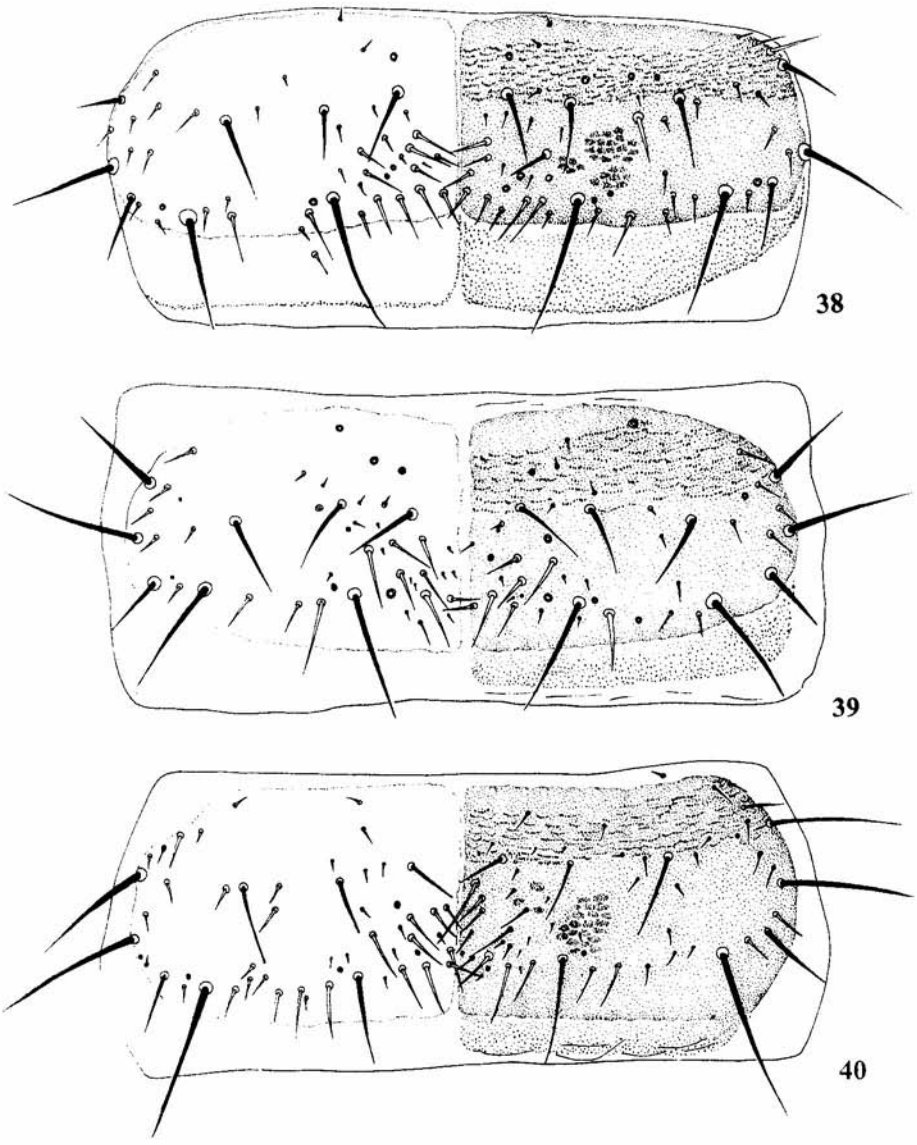
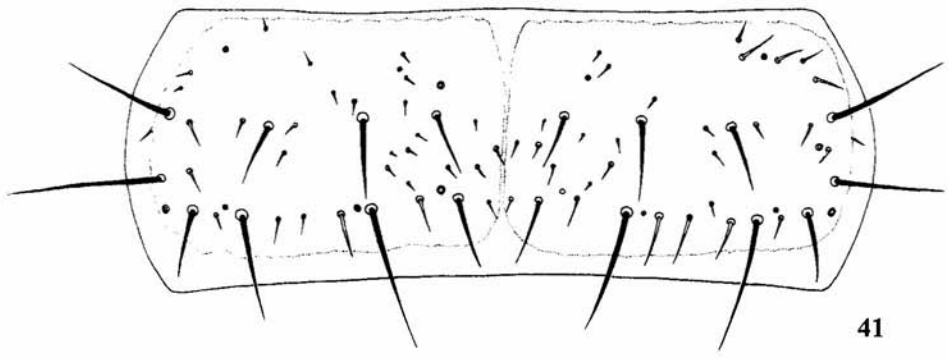
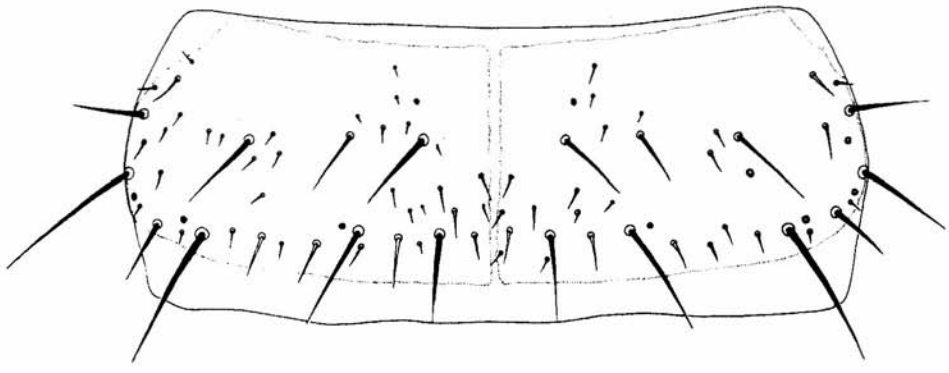
35-37. *Anisotoma castanea*, 35 - mesonotum; 36 - metanotum; 37 - abdominal segment I



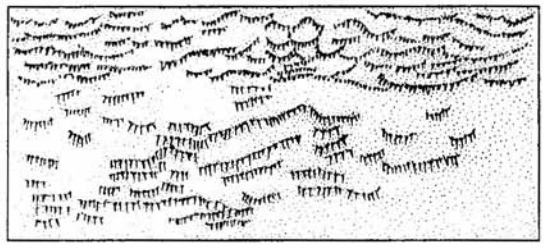
38–40. *Anisotoma castanea*, mesonotum



41

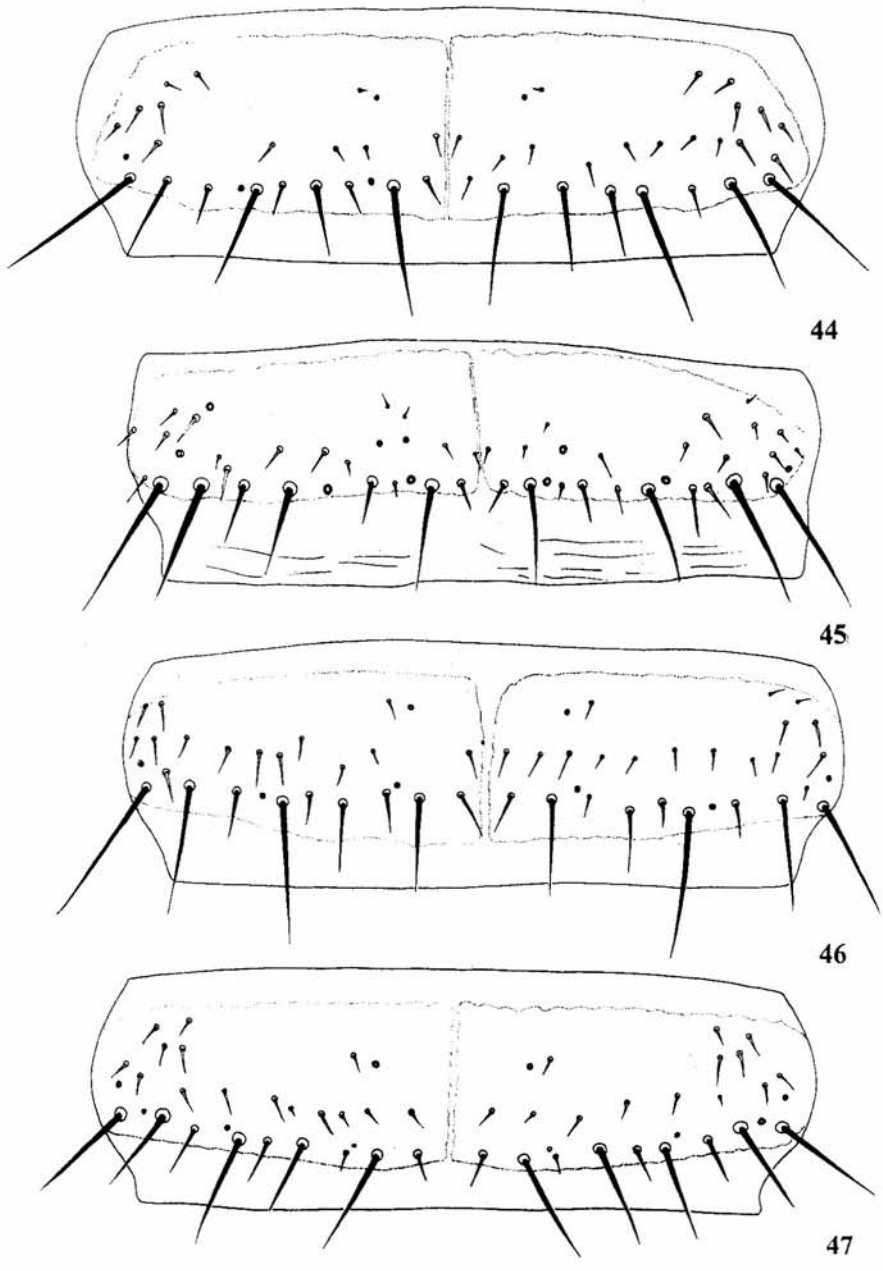


42

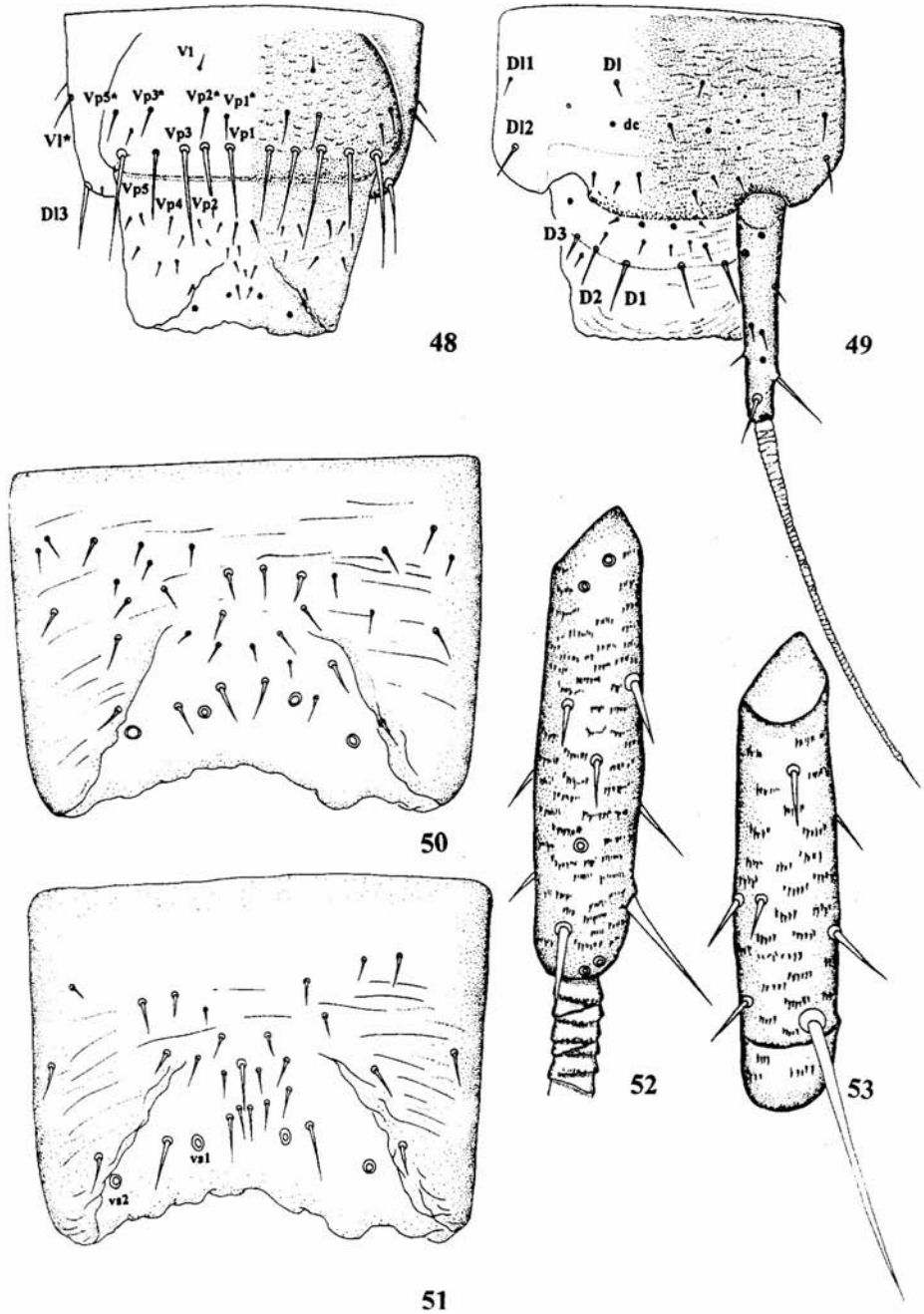


43

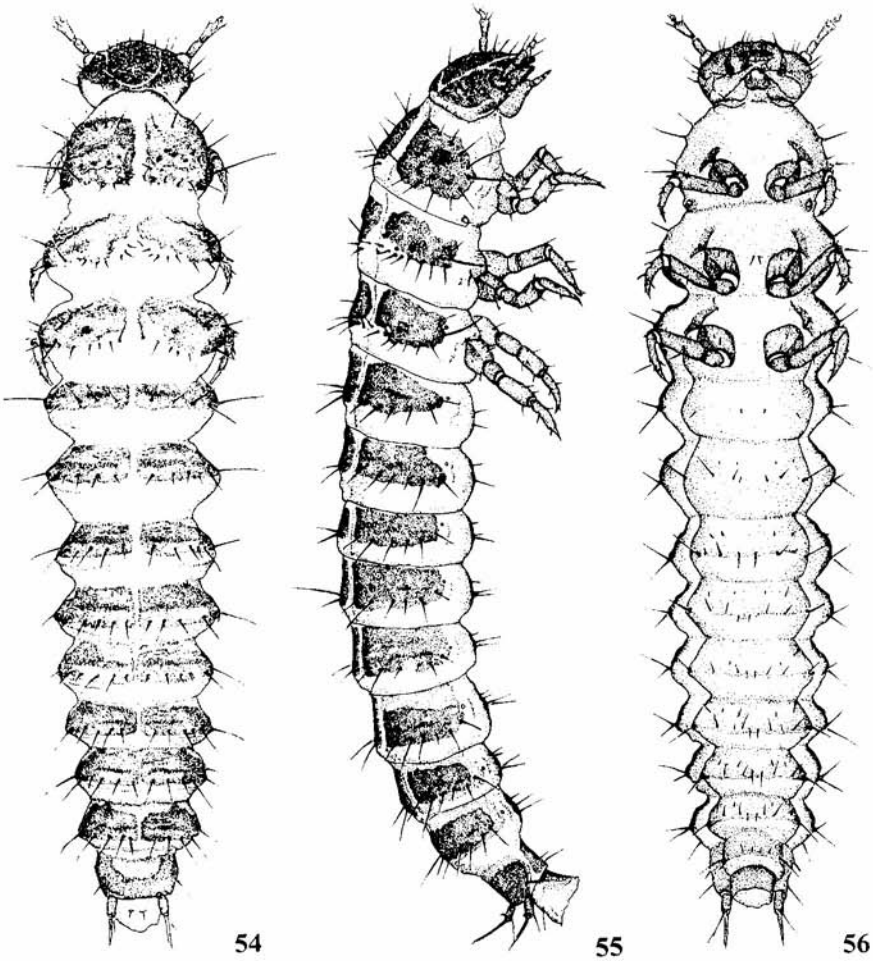
41-43. *Anisotoma castanea*, 41-42 - metanotum; 43 - asperities on abdominal segment I



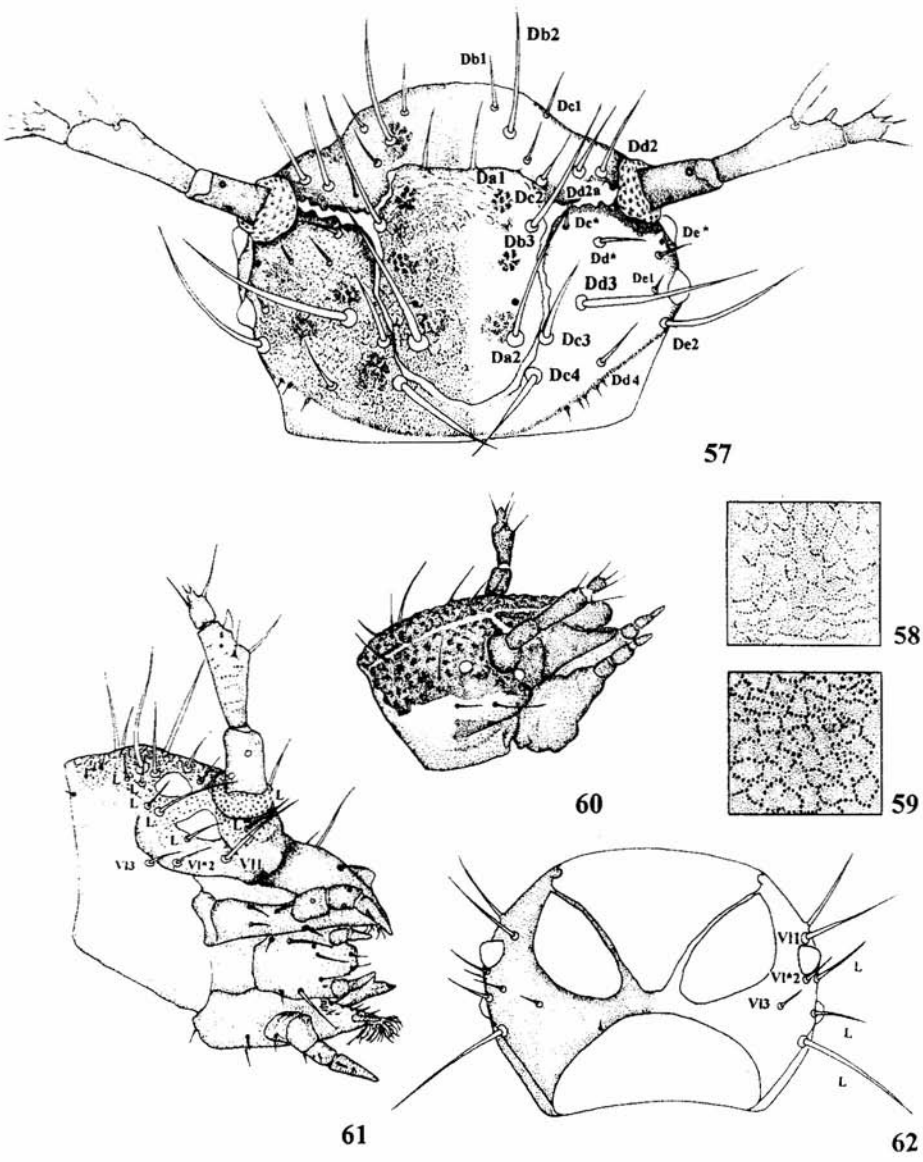
44-47. *Anisotoma castanea*, abdominal segment I



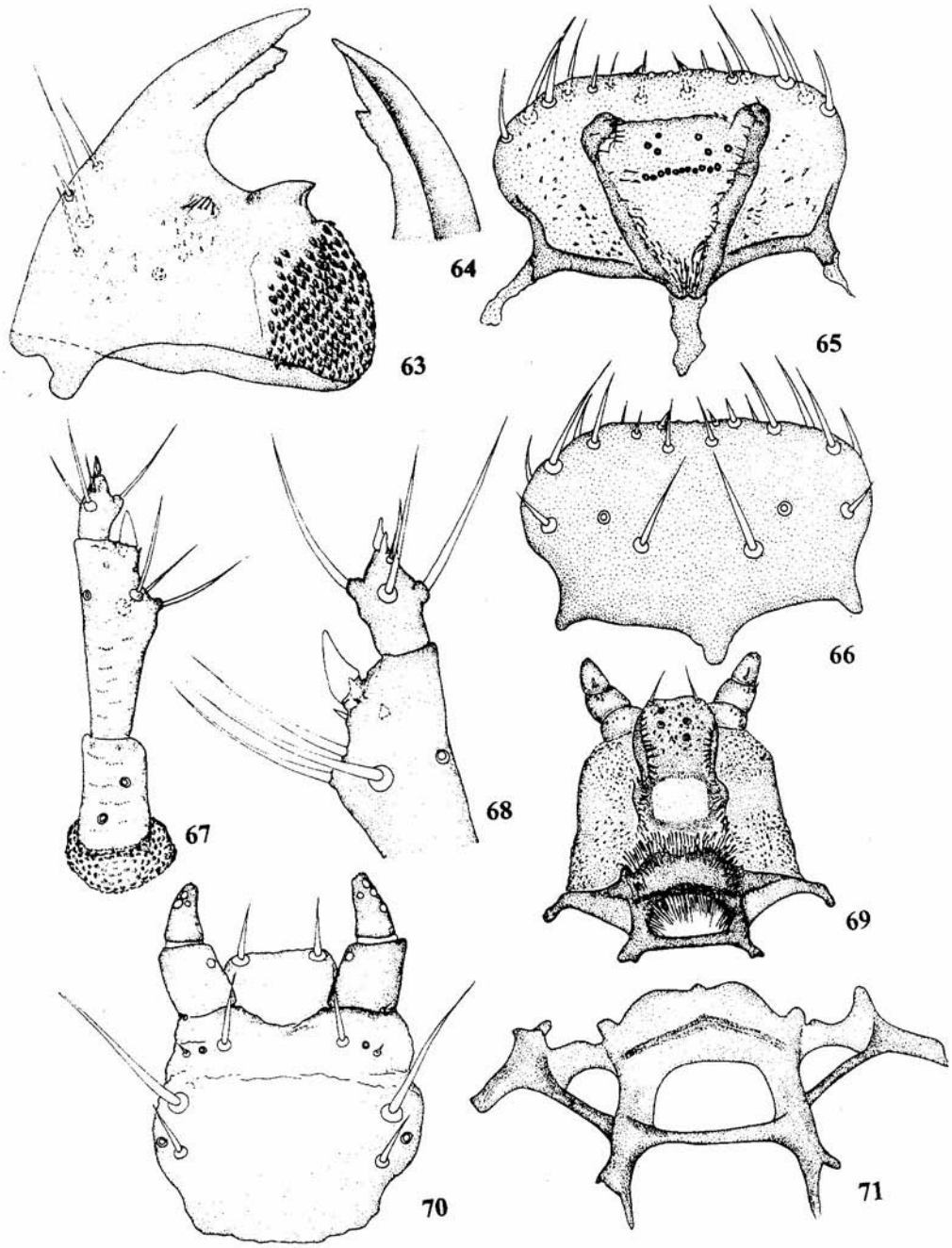
48-53. *Anisotoma castanea*, 48 - abdominal sternum IX, 49 - abdominal tergum IX; 50-51 - anal membrane; 52-53 - urogomphus: 52 - dorsal, 53 - ventral



54-56. *Anisotoma orbicularis*, larval habitus, 54 - dorsal, 55 - lateral, 56 - ventral



57-62. *Anisotoma orbicularis*, head, 57 - dorsal, 58-59 - dorsal sculpture, 60 - lateral, 61 - lateroventral, 62 - ventral



63-71. *Anisotoma orbicularis*, 63-64 - mandible; 65-66 - labrum: 65 - ventral, 66 - dorsal; 67-68 - antenna; 69-71 - labium: 69 - ventral, 70 - dorsal, 71 - hyphopharyngeal sclerome

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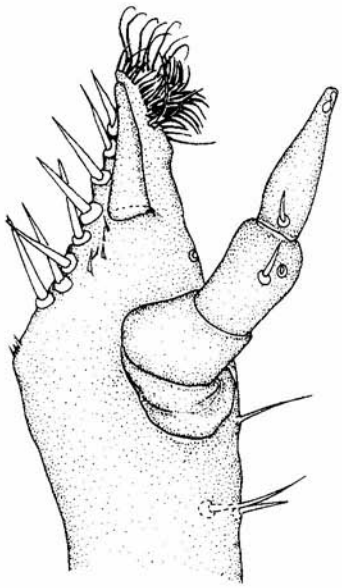

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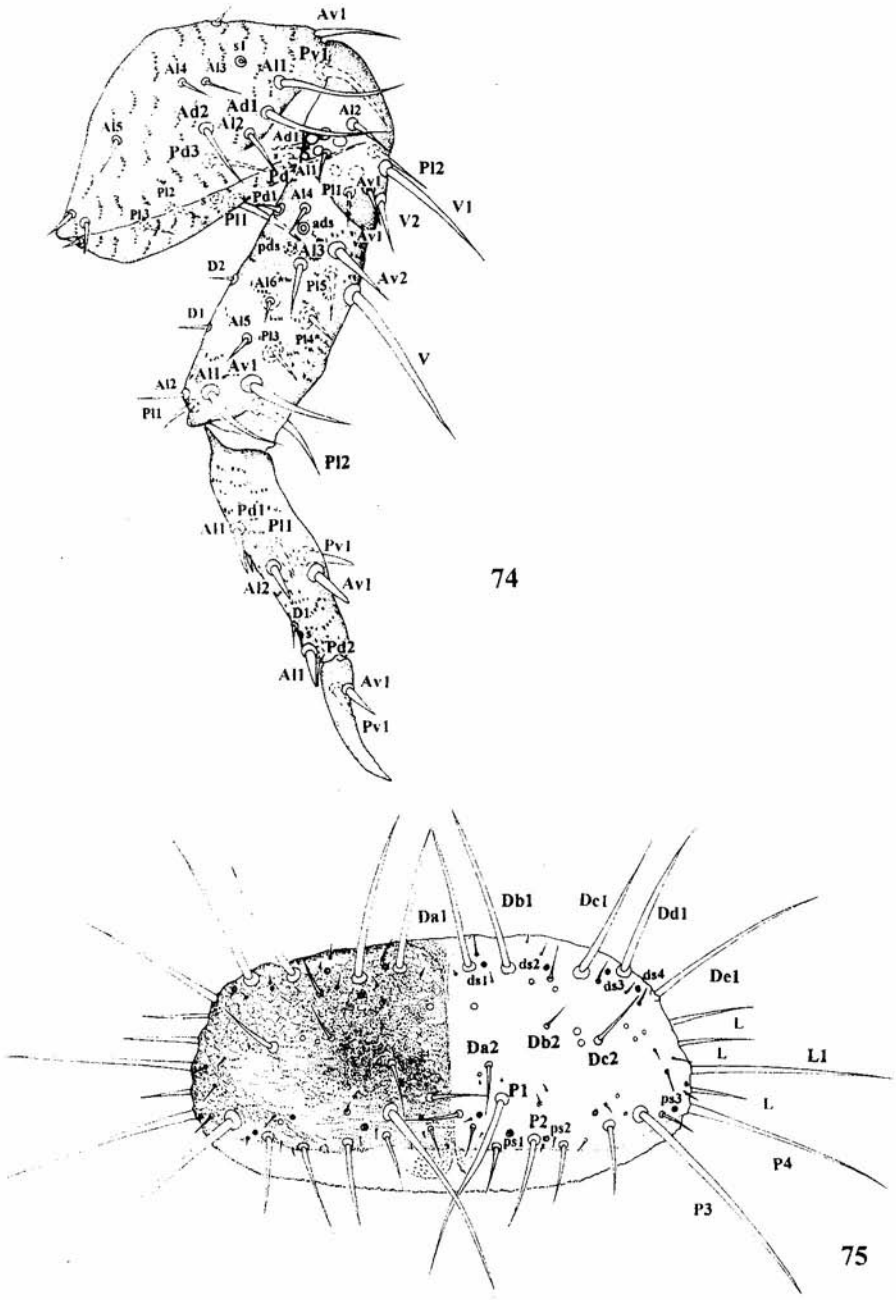
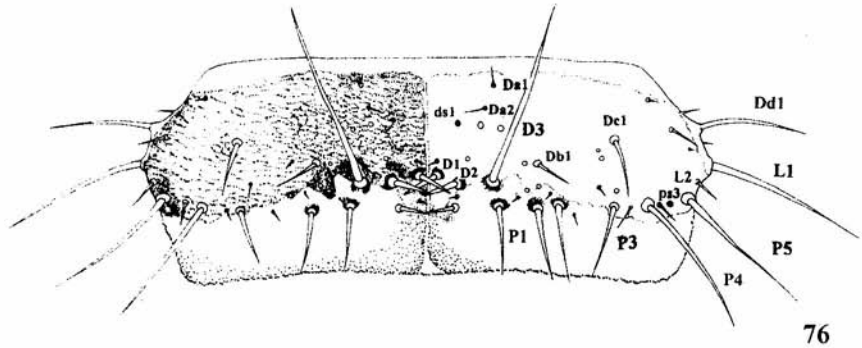
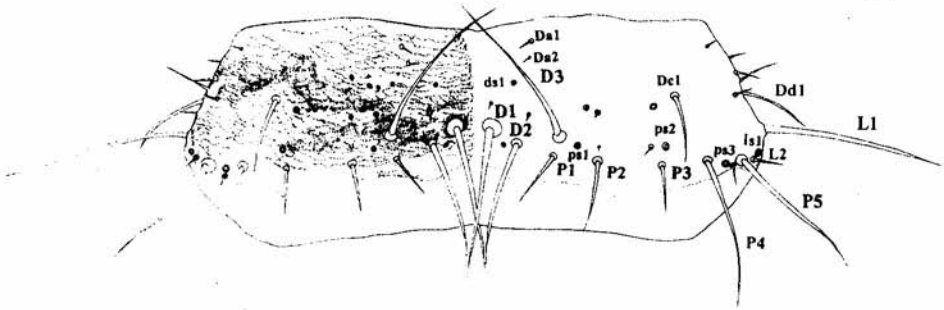
72-73. *Anisotoma orbicularis*, maxilla



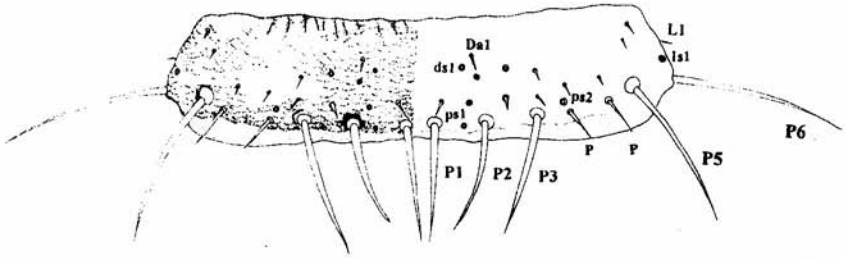
74-75. *Anisotoma orbicularis*, 74 - leg, 75 - pronotum



76



77



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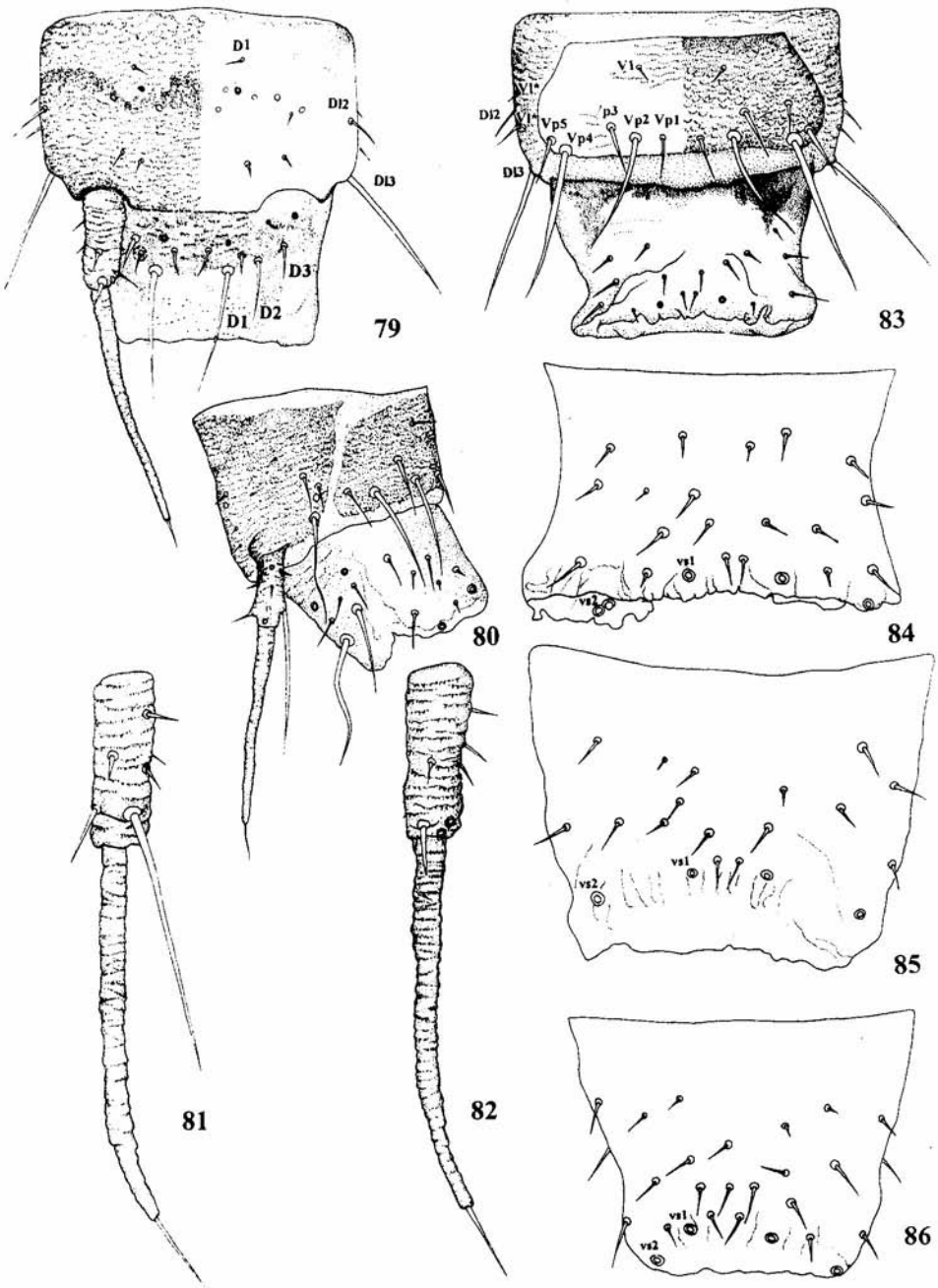
76-78. *Anisotoma orbicularis*, 76 - mesonotum, 77 - metanotum, 78 - abdominal segment I



79-86. *Anisotoma orbicularis*, 79-80 - abdominal tergum IX: 79 - dorsal, 80 - lateral; 81-82 - urogomphus: 81 - ventral, 82 - dorsal; 83-86 - abdominal sternum IX and anal membrane: 84-86 - anal membrane