Papéis Avulsos de Zoologia

MUSEU DE ZOOLOGIA DA UNIVERSIDADE DE SÃO PAULO

ISSN 0031-1049

PAPÉIS AVULSOS ZOOL., S. PAULO 41(24): 427-463 02.III.2001

THE *ADELOPSIS* OF COLOMBIA (COLEOPTERA, LEIODIDAE, CHOLEVINAE, PTOMAPHAGINI)

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ABSTRACT

We here describe the following 16 new species from Colombia: A. anceps, A. capitanea, A. calarcensis, A. dumbo, A. jarmilae, *and* A. procera, *from Calarcá, Quindío,* A. bifida *and* A. soacha, *from Soacha, Cundinamarca,* A. longipalpus, A. sanlorenzo, *and* A. santamarta, *from San Lorenzo, Magdalena,* A. crassiflagellata *and* A. palata, *from Chinácota, Norte de Santander,* A. leticia, *from Leticia, Amazonas,* A. camella, *from Villavicencio, Meta, and* A. pichinde, *from Pichindé, Valle del Cauca.* A. coronaria *Gnaspini & Peck, 1996 is reported from Colombia for the first time.* A. brunnea brunnea *Jeannel, 1936, was described from Colombia, being the only species reported so far from this country; however it will be treated in a future paper about other species of the same group.*

Keywords: Coleoptera, Cholevinae, Colombia, *Adelopsis*.

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Trabalho recebido para publicação em 15.VI.1998 e aceito em 07.VIII.2000.

Introduction

As stressed by Gnaspini & Peck (1996) and Gnaspini (1996), the Neotropical genus *Adelopsis* of earlier authors was found to be a non-monophyletic genus, and a revision was therefore needed. Because of the very large Neotropical collections of one of us (SBP), which included around 100 new species of "*Adelopsis*", this group was selected as the start of a revision of Ptomaphagini. We begun the revision by describing new species from Costa Rica and Panama (Gnaspini & Peck, 1996), making a phylogenetic study of the genera of Ptomaphagini, and redefining and describing new genera and species (Gnaspini, 1996). This paper is the third in a proposed series dealing with a revision of "*Adelopsis*" and focuses on the review of the species of *Adelopsis* (sensu Gnaspini, 1996) of Colombia. The only species previously cited from Colombia is *Adelopsis brunnea brunnea* Jeannel, 1936. We herein include one new species record from Colombia, and the description of 16 new species from SBP's collection.

Methods and Materials

The specimens used in this study were either preserved in 70% alcohol or as dried specimens mounted on cards fixed on entomological pins. To dissect the genitalia, the specimens were relaxed in boiling water. Some structures with much adhered tissue were cleaned for a few minutes in hot 10% KOH. The dissected specimens were afterwards mounted as previously cited, and the genitalia were mounted in PVA on a microslide, attached to the same pin. Drawings were made with a camera lucida microscope and measurements were taken from these drawings. Proportions of antenomeres were taken based on the length of the 9th segment, both because proportions of club segments are somewhat conservative, and because measurements of the 1st segment are sometimes imprecise due to breakage when detaching it from the head.

The types or representatives of the species studied herein are deposited in the following collections: Field Museum of Natural History, Chicago (FMNH), Museu de Zoologia da Universidade de São Paulo, São Paulo (MZSP), Muséum National d'Histoire Naturelle, Paris (MNHN), and Stewart B. Peck collection, Ottawa (SBPC).

In the lists of studied material, when not otherwise noted, data such as locality and collector are the same as for the previously cited specimen(s). When not noted, the specimens are deposited in the SBPC collection.

For distributional notes, geographical coordinates and altitudes of the

collecting localities were taken from Paynter & Traylor (1991) and given as follows: Magdalena: San Lorenzo de Santa Marta (~11°10'N 74°07'W, ~2600m); Cesar: San Sebastian de Rábago (10°34'N 73°36'W, 2040m); Norte de Santander: Cúcuta (07°54'N 72°31'W, 215m), Chinácota (07°37'N 72°36'W, 1330m); Valle del Cauca: Pichindé (03°26'N 76°37'W, 1800m), Buenaventura (03°53'N 77°04'W, 0m); Quindío: Calarcá (04°31'N 75°38'W, ~1500m); Cundinamarca: Soacha (04°35'N 74°13'W, 2817m), Bogotá (04°36'N 74°05'W, 2590m); Meta: Villavicencio (04°09'N 73°37'W, 498m); Amazonas: Leticia (04°09'S 69°57'W, ~100m).

Systematics

In the following descriptions, only the specific characters will be listed. For the generic diagnosis of *Adelopsis* Portevin 1907, see Gnaspini & Peck (1996). Some characters are not described (e.g., the maxillary palp) because their illustrations are given and are enough to characterize them.

The sequence of the species follows the resemblance of their aedeagus, which we understood as being a close relationship among them. Therefore, the species have been clustered in groups of species. We have created names for some of these groups of species, and tentatively assigned previously described species to these groups. However, because of the large number of species yet to be described and the lack of a specific phylogenetic study, we decided not to name all groups yet, and we should stress that the named group are still tentative. Therefore, the last species described herein is not assigned to a group.

group **ascutellaris** nov.

The species of this group are characterized by the tip of the aedeagus flattened, generally rectangular when seen frontally; a generally short flagellum of the aedeagus; the spiculum gastrale short and straight; and a 2-turns spermatheca, in general. Most of the species are difficult to tell apart. Characters both of the aedeagus and external morphology show slight variation, although different patterns can be recognized, especially when the aedeagus is analyzed from as much views as possible. Because of this, we preferred to describe all recognizable patterns as different species. The following species belong to this group (see discussion below): *A. ascutellaris* (Murray, 1856), *A. brunnea* Jeannel, 1936 (including all its subspecies), *A. ovalis* Jeannel, 1936, *A. ruficollis* (Portevin, 1903), *A. chapadaensis* Salgado, 1999, and, tentatively (based only on the figures from the descriptions), *A. brasiliensis* Jeannel, 1936 and *A. peruviensis* Blas, 1980, as well as the five new species that follow.

Adelopsis brunnea brunnea Jeannel, 1936

Adelopsis brunneus Jeannel, 1936
Adelopsis brunneus brunneus, Szymczakowski, 1975
Adelopsis brunnea brunnea, Gnaspini, 1996

This species was described based on one type male from "Colombie" deposited in the British Museum (Jeannel, 1936). Szymczakowski (1975) studied its type and assigned five more subspecies (four of them being new taxa) to the species, with four from Venezuela and one from Trinidad. Most of these subspecies will probably receive specific status after analysis of types (as stressed by Gnaspini, 1996). However, the species belong to the same group of *Adelopsis ascutellaris* (Murray, 1856) and *Adelopsis ovalis* Jeannel, 1936, which resemble each other, when the aedeagus is analyzed. Synonyms will probably arise after an analysis of the group is made. Because we did not have access to all types, we preferred not to treat this species here, and will prepare another paper in the near future dealing with these taxa, when the proper nomenclatural changes will be made.

Adelopsis coronaria Gnaspini & Peck, 1996

This species was described from Costa Rica and Panama (Gnaspini & Peck, 1996). At that time, it was not assigned to any group of species. It is here reported from Colombia based on the following records:
Colombia: Norte de Santander: 3mi N of Chinácota, 3000', 08-10.V.1974, Coffee forest, T1, 2D (dung traps), S.B. Peck, 1M 2F. Quindío: 1km S of Calarcá, 5000', 08-10.III.1974, forest, DT990-2 (dung traps), S.B. Peck & J. Kukalová-Peck, 1M 3F.

Adelopsis leticia, sp. n.
(figs. 1-9)

Holotype, male (SBPC). Type locality and data: Colombia: Amazonas: 7km N of Leticia, 20-25.II.1972, forest litter, Ber230, S.B. Peck & J. Kukalová-Peck.

Paratype: Colombia: Amazonas: Leticia, 25.II.1974, road end, T5D, S.B. Peck, 1M.

Other material (females) tentatively assigned to the species: Colombia: Amazonas: Leticia, 24-28.II.1974, forest litter, B276, S.B. Peck & J. Kukalová-Peck, 1F; Leticia, Los Alpes, 27.II.1974, T1C, S.B. Peck & J. Kukalová-Peck, 1F; 50km N of Leticia, Isla Santa Sophia II, 28.II.1974, S.B. Peck & J. Kukalová-Peck, 2F.

Diagnosis and Description. Length: 1.8 mm; width: 0.95 mm. General

characteristics as listed above, differing in the following characters: Color light yellowish brown. Antenna (fig. 1) 1.65 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 1.75, 1.8, 1.3, 0.85, 0.85, 0.55, 1.0, 0.45, 1.0, 1.05, 2.0; proportions of length and width of each segment of the club, from 7th to 11th: 0.85, 0.4, 0.8, 0.85, 1.5. Elytra together 1.35 times as long as wide. First segment of male protarsus (fig. 3) 0.7 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 1.2, 1.35, 1.35, 1.25, 4.2. Spiculum gastrale (fig. 5) short and straight, with base slightly widened. Aedeagus (figs. 6-8) with apex transversely produced; flagellum slightly sinuate and long. Spermatheca (fig. 9) coiled with 1-turn.

Etymology. The name is given in aposition, referring to the type locality.

Remarks. The species differs from all others so far described in the group because of the long and sinuate flagellum of the aedeagus.

Adelopsis longipalpus, sp. n.
(figs. 10-20)

Holotype, male (SBPC). Type locality and data: Colombia: Magdalena: San Lorenzo, 41km S of Santa Marta, 7000', 09.V.1973, H.F. Howden. 3M 5F (SBPC), 2M 3F (MZSP) paratypes with the same data.

Diagnosis and Description. Length: 2.0-2.5 mm; width: 0.95-1.2 mm; males somewhat larger than females. General characteristics as listed above, differing in the following characters: Color dark brown, last two antennal segments pale. Antenna (figs. 10-11) 1.65 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 1.95, 1.5, 1.35, 1.05, 1.05, 0.9, 1.0, 0.55, 1.0, 0.95, 1.45; proportions of length and width of each segment of the club, from 7th to 11th: 0.8, 0.45, 0.7, 0.7, 1.25. Elytra together 1.45 times as long as wide. First segment of male protarsus (fig. 13) 0.8 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 0.8, 0.95, 1.05, 1.2, 4.7. Spiculum gastrale (fig. 15) short and straight. Aedeagus (figs. 16-18) flat, with apex transversely produced; flagellum short and slightly sinuate. Spermatheca (figs. 19-20) coiled with 2-turns, bearing a "twisted"-turn near the attachment of the duct.

Etymology. The name is derived from Latin for "long palp", referring to the long, longer than the usual in the genus.

Remarks. The species differs from all others so far described in the genus because of the long last palpal segment. In addition, although the tip of the aedeagus is not as widened as the other species of the group (compare with

other species described herein), it seems to fit in this group because of the spermatheca, which resembles that of, for instance, *A. palata* and *A. sanlorenzo*, described below.

Adelopsis palata, sp. n.
(figs. 21-30)

Holotype, male (SBPC). Type locality and data: Colombia: Norte de Santander: 30km S of Chinácota, 8000', 14.V.1974, S.B. Peck. 2F paratypes with the same data.

Other paratype: Colombia: Norte de Santander: 30-35km S of Chinácota, 8-9000', 24.V.1974, B297, S.B. Peck, 1M.

Diagnosis and Description. Length: 2.7-3.0 mm; width: 1.35-1.4 mm; male somewhat larger than females. General characteristics as listed above, differing in the following characters: Color dark brown. Antenna (fig. 21) 1.4 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 2.1, 1.65, 1.45, 1.0, 1.05, 0.75, 1.05, 0.5, 1.0, 1.1, 1.6; proportions of length and width of each segment of the club, from 7th to 11th: 0.85, 0.4, 0.7, 0.8, 1.35. Elytra together 1.45 times as long as wide. First segment of male protarsus (fig. 23) 0.9 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 0.85, 0.85, 0.95, 1.35, 4.4. Spiculum gastrale (fig. 25) short and straight. Aedeagus (figs. 26-29) with apex transversely produced; flagellum short and slightly sinuate. Spermatheca (fig. 30) coiled with 2-turns, bearing a "twisted"-turn near the attachment of the duct.

Etymology. The name is derived from Latin for "bearing a shovel" ("pala" = shovel), referring to the tip of aedeagus, which resembles a shovel, in posterior (frontal) view.

Adelopsis sanlorenzo, sp. n.
(figs. 31-41)

Holotype, male (SBPC). Type locality and data: Colombia: Magdalena: San Lorenzo, 41km S of Santa Marta, 7000', 09.V.1973, H.F. Howden. 11F paratypes with the same data.

Diagnosis and Description. Length: 2.15-2.5 mm; width: 1.0-1.25 mm; males somewhat larger than females. General characteristics as listed above, differing in the following characters: Color dark brown, last two antennal segments pale. Antenna (figs. 31-32) 1.55 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 1.9, 1.7, 1.4,

1.05, 0.9, 0.8, 1.05, 0.5, 1.0, 1.0, 1.4; proportions of length and width of each segment of the club, from 7th to 11th: 1.05, 0.45, 0.8, 0.8, 1.2. Elytra together 1.6 times as long as wide. First segment of male protarsus (fig. 34) 0.8 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 0.85, 1.0, 1.1, 1.4, 5.6. Spiculum gastrale (fig. 36) short and straight. Aedeagus (figs. 37-40) with apex transversely produced; flagellum short and straight. Spermatheca (fig. 41) coiled with 2-turns, bearing a "twisted"-turn near the attachment of the duct.

Etymology. The name is given in aposition, referring to the type-locality.

Adelopsis santamarta, sp. n.
(figs. 42-49)

Holotype, male (SBPC). Type locality and data: Colombia: Magdalena: San Lorenzo, 41km S of Santa Marta, 7000', 09.V.1973, H.F. Howden. 1M paratype with the same data.

Diagnosis and Description. Length: 2.4 mm; width: 1.15 mm. General characteristics as listed above, differing in the following characters: Color dark brown, last two antennal segments pale. Antenna (fig. 42) 1.45 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 1.85, 1.6, 1.35, 0.95, 0.95, 0.65, 0.95, 0.45, 1.0, 0.95, 1.45; proportions of length and width of each segment of the club, from 7th to 11th: 0.9, 0.4, 0.75, 0.7, 1.2. Elytra together 1.65 times as long as wide. First segment of male protarsus (fig. 44) 0.8 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 0.75, 1.05, 1.05, 1.45, 4.6. Spiculum gastrale (fig. 46) short and straight. Aedeagus (figs. 47-49) with apex transversely produced; flagellum short and straight.

Etymology. The name is given in aposition, referring to the mountain it inhabits.

Remarks. A. sanlorenzo and *A. santamarta* were collected at the same time and place. All females dissected show the same type of spermatheca. Because we are unable to tell them apart from external characters, we decided to figure them as belonging to a single species (*A. sanlorenzo*), although we are not certain about this.

group **camella** nov.

The species of this group are characterized by the triangular tip of the aedeagus; the spiculum gastrale short and straight, and widening towards its apex; and, especially, a spermatheca with a large and globose bulb. The following

two new species belong to this group. *A. triangulifera* Szymczakowski, 1961 also seems to belong to this group. However, there is no available female, so far, to check for its peculiar spermatheca.

Adelopsis camella, sp. n.

(figs. 50-60)

Holotype, male (SBPC). Type locality and data: Colombia: Meta: 23km NW of Villavicencio, Quebrada Susumuco, 1000m, 05.III.1972, forest litter, S.B. Peck & J. Kukalová-Peck. 2M 2F (SBPC), 1M 1F (MZSP) paratypes with the same data.

Other paratypes: Colombia: Meta: Villavicencio, Quebrada Susumuco, 4000', 03-05.III.1972, traps, S.B. Peck & J. Kukalová-Peck, 2F.

Diagnosis and Description. Length: 1.9-2.1 mm; width: 0.95-1.1 mm. General characteristics as listed above, differing in the following characters: Color dark brown. Antenna (fig. 50) 1.15 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 2.05, 1.8, 1.3, 0.8, 0.85, 0.65, 1.0, 0.4, 1.0, 1.0, 1.8; proportions of length and width of each segment of the club, from 7th to 11th: 0.8, 0.25, 0.65, 0.6, 1.2. Elytra together 1.3 times as long as wide. First segment of male protarsus (fig. 52) 0.55 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 1.1, 1.05, 1.1, 1.2, 5.0. Spiculum gastrale (fig. 54) short and straight. Aedeagus (figs. 55-58) with apex triangular; flagellum straight and thick. Spermatheca (figs. 59-60) coiled with 3-turns, bearing a very globose bulb.

Etymology. The name is derived from Latin for "cup, goblet", referring to the tip of the flagellum, which seems to bear a cup.

Adelopsis crassiflagellata, sp. n.

(figs. 61-71)

Holotype, male (SBPC). Type locality and data: Colombia: Norte de Santander: 25km S of Chinácota, 7000', 10-14.V.1974, S.B. Peck. 2M 4F (SBPC), 2M 3F (MZSP) paratypes with the same data.

Diagnosis and Description. Length: 1.9-2.2 mm; width: 0.95-1.1 mm. General characteristics as listed above, differing in the following characters: Color reddish brown. Antenna (figs. 61-62) 1.35 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 2.0, 1.7, 1.25, 0.85, 0.85, 0.6, 1.0, 0.45, 1.0, 1.1, 1.8; proportions of length and width of each segment of the club, from 7th to 11th: 0.9, 0.4, 0.75, 0.85, 1.35. Elytra together 1.4 times as long as wide. First segment of male protarsus (fig.

64) 0.6 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 1.2, 1.15, 1.2, 1.35, 4.3. Spiculum gastrale (fig. 66) short and straight. Aedeagus (figs. 67-70) with apex triangular; flagellum thick and slightly sinuate at apex. Spermatheca (fig. 71) coiled with 3-turns, bearing a very globose bulb.

Etymology. The name is derived from Latin for "thick flagellum", referring to the thick flagellum of the aedeagus.

group **capitanea** nov.

The species of this group are characterized by their large size (more than 3mm) when compared to other species of the genus; the very globose aedeagus, with a bifid tip; and the spiculum gastrale short and straight, with a widened, almost bifid, tip. The following three new species belong to this group. No previously described species seems to belong to this group.

Adelopsis anceps, sp. n.

(figs. 72-80)

Holotype, male (SBPC). Type locality and data: Colombia: Quindío: 11-23km E of Calarcá, 7-10000', 05-10.III.1974, Ber274, S.B. Peck & J. Kukalová-Peck.

Paratypes: Colombia: Quindío: 15km E of Calarcá, 8000', 07-10.III.1974, DT993, S.B. Peck & J. Kukalová-Peck, 2M 7F (SBPC), 2M 3F (MZSP).

Diagnosis and Description. Length: 2.95-3.7 mm; width: 1.5-2.0 mm; males somewhat larger than females. General characteristics as listed above, differing in the following characters: Color dark brown. Antenna (fig. 72) 1.85 times as long as pronotum and bearing external keel on segments 5th to 11th; proportions of length of each segment and that of the 9th from 1st to 11th: 1.55, 1.55, 1.55, 1.2, 1.0, 0.8, 1.0, 0.55, 1.0, 1.0, 1.45; proportions of length and width of each segment of the club, from 7th to 11th: 0.95, 0.55, 0.8, 0.8, 1.2. Elytra together 1.45 times as long as wide. First segment of male protarsus (fig. 74) 0.75 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 1.05, 1.1, 1.0, 1.2, 6.0. Spiculum gastrale (fig. 76) slightly saddle-shaped. Aedeagus (figs. 77-79) with apex bifid, like an emarginate disc; flagellum short and slightly sinuate. Spermatheca (fig. 80) coiled with 16-turns.

Etymology. The name is derived from Latin for "two headed", referring to the tip of aedeagus, which bears a large divided tip.

Remarks. The species differs from all others so far described in the

genus because of the large number of turns of the spermatheca. The spermatheca of some species of the *elephas* group (e.g., *A. albipinna*, *A. howdenorum*, *A. rostrata* - see Gnaspini & Peck, 1996) also show a large number of turns. However, the part of the duct of the spermatheca where the large number of turns occurs is thinner than the rest of the duct, in the *elephas* group, whereas it keeps the same diameter in *A. anceps*. Probably because of that, the spermatheca of *A. anceps* is very large, when compared to other species.

Adelopsis bifida, sp. n.
(figs. 81-91)

Holotype, male (SBPC). Type locality and data: Colombia: Cundinamarca: Soacha, below Tecandama Falls, 7000', 27.II-06.III.1972, traps, S.B. Peck & J. Kukalová-Peck. 4M 6F (SBPC), 3M 3F (MZSP), 2M 2F (FMNH), 2M 2F (MNHN) paratypes with the same data.

Diagnosis and Description. Length: 3.2-4.25 mm; width: 1.55-2.05 mm. General characteristics as listed above, differing in the following characters: Color dark brown. Antenna (fig. 81) 1.3 times as long as pronotum and bearing external keel on segments 5th to 11th; proportions of length of each segment and that of the 9th from 1st to 11th: 2.25, 1.65, 1.5, 1.2, 1.15, 0.95, 1.15, 0.7, 1.0, 1.0, 1.45; proportions of length and width of each segment of the club, from 7th to 11th: 1.05, 0.65, 0.8, 0.8, 1.25. Elytra together 1.65 times as long as wide. First segment of male protarsus (fig. 83) 1.1 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 0.95, 1.05, 1.0, 1.1, 5.5. Metatibia sinuate near base (fig. 84). Spiculum gastrale (fig. 86) saddle-shaped. Aedeagus (figs. 87-90) globose, with apex bifid. Spermatheca (fig. 91) coiled with 3-turns.

Etymology. The name is derived from Latin for "bifid", referring to the tip of the aedeagus.

Adelopsis capitanea, sp. n.
(figs. 92-101)

Holotype, male (SBPC). Type locality and data: Colombia: Quindío: 11-23km E of Calarcá, 7-10000', 05-10.III.1974, Ber274, S.B. Peck & J. Kukalová-Peck.

Paratypes: Colombia: Quindío: 21km E of Calarcá, 10000', 06-11.III.1974, DT987, S.B. Peck & J. Kukalová-Peck, 2M 2F (SBPC), 2M 2F (MZSP); 21km E of Calarcá, 10000', 06-11.III.1974, Sardines (bait), S.B. Peck, 2M (SBPC) 2M 1F (FMNH).

Diagnosis and Description. Length: 3.1-4.45 mm; width: 1.3-2.0 mm; males somewhat larger than females. General characteristics as listed above, differing in the following characters: Color dark brown. Antenna (fig. 92) 1.4 times as long as pronotum and bearing external keel on segments 5th to 11th; proportions of length of each segment and that of the 9th from 1st to 11th: 2.1, 1.7, 1.55, 1.3, 0.95, 0.8, 1.05, 0.6, 1.0, 1.0, 1.2; proportions of length and width of each segment of the club, from 7th to 11th: 1.05, 0.6, 0.9, 0.95, 1.1. Elytra together 1.6 times as long as wide. First segment of male protarsus (fig. 94) 0.9 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 0.95, 1.0, 0.85, 1.1, 4.9. Spiculum gastrale (fig. 96) saddle-shaped. Aedeagus (figs. 97-100) globose, with apex bifid; flagellum short and slightly sinuate. Spermatheca (fig. 101) coiled with 5-turns.

Etymology. The name is derived from Latin for "large", referring to its very big size when compared to other species of the genus.

Remarks. A. capitanea and *A. bifida* are very similar and it is very difficult to tell them apart using external and male genitalia characters. However, they distinctly differ in the shape of the spermatheca. In addition, the latter has slightly reduced eyes when compared to the first species.

group **elephas** Gnaspini & Peck, 1996

The species of this group are characterized by the pointed tip of the aedeagus bent ventrally, giving a beaked impression in lateral view; 1-2 lateral setae at the right side of the tip, and 2-3 at the left side, facing posteriorly; the spiculum gastrale divided at the apex. Most of them have the last antenna segment concave ventrally; projections on male ventrite III and an emargination on the last three ventrites; and female spermatheca with a globose bulb before the coil (which is generally narrowly coiled) in addition to the typical apical bulb. The following species belong to this group, and will be described by giving only the specific characters.

Adelopsis calarcensis, sp. n.
(figs. 102-113)

Holotype, male (SBPC). Type locality and data: Colombia: Quindío: 11-23km E of Calarcá, 7-10000', 05-10.III.1974, Ber274, S.B. Peck & J. Kukalová-Peck. 4M 3F paratypes with the same data.

Other paratypes: Colombia: Quindío: 21km E of Calarcá, 10000', 06-11.III.1974, Sardines, S.B. Peck, 2M 8F (SBPC), 4M 4F (MZSP), 2M 2F (FMNH), 2M 2F (MNHN); 23km E of Calarcá, 10000', 06-11.III.1974, T987, S.B. Peck & J. Kukalová-Peck, 1M 2F.

Diagnosis and Description. Length: 2.85-3.65 mm; width: 1.35-1.75 mm. General characteristics as listed above, differing in the following characters: Color dark brown, last antennal segment slightly pale. Antenna (fig. 102) 1.5 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 1.85, 1.35, 1.6, 1.1, 1.05, 0.8, 1.05, 0.6, 1.0, 1.0, 1.55; proportions of length and width of each segment of the club, from 7th to 11th: 1.4, 0.75, 1.15, 1.15, 1.7. Elytra together 1.5 times as long as wide. First segment of male protarsus (fig. 104) 0.7 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 1.2, 1.2, 1.15, 1.1, 4.8. Posterior margins of male ventrites (figs. 105-108): 3rd to 6th emarginate at middle; 3rd with one low round projection posteriad on each side of the emargination, and bearing one row of short setae along the posterior margin, from one projection to the other, and several additional rows of short setae extending anteriorly on the surface of the ventrite reaching half of its length. Spiculum gastrale (fig. 109) saddle-shaped. Aedeagus (figs. 110-112) with apex strongly downward produced; flagellum strong. Spermatheca (fig. 113) coiled with 3 loose turns.

Etymology. The name is given in reference to the type locality.

Remarks. The species differs from all others so far described in the group, except for *A. rostrata* Gnaspini & Peck, 1996, because of the large number of setae near the emargination of the 3rd ventrite. However, in *A. rostrata*, the projections around the emargination are more pronounced. In addition, the two species promptly differ using other characters, such as the spermatheca.

Adelopsis dumbo, sp. n.

(figs. 114-126)

Holotype, male (SBPC). Type locality and data: Colombia: Quindío: 11-23km E of Calarcá, 7-10000', 05-10.III.1974, Ber274, S.B. Peck & J. Kukalová-Peck. 4M 5F paratypes with the same data.

Other paratypes: Colombia: Quindío: 21km E of Calarcá, 10000', 06-11.III.1974, Sardines, S.B. Peck, 3M 2F (MZSP).

Diagnosis and Description. Length: 2.35-2.5 mm; width: 1.05-1.35 mm. General characteristics as listed above, differing in the following characters: Color dark brown, last three antennal segments pale. Antenna (fig. 114) 1.25 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 2.1, 1.55, 1.4, 1.15, 1.05, 0.8, 1.1, 0.5, 1.0, 1.05, 1.5; proportions of length and width of each segment of the club, from 7th to 11th: 1.15, 0.5, 0.95, 1.0, 1.4. Elytra together 1.3 times as long as wide. First segment of male protarsus (fig. 116) 0.7 times as wide as the maximum width of tibia;

proportions of length and width of each segment, from 1st to 5th: 1.2, 1.15, 1.15, 1.3, 4.6. Posterior margins of male ventrites (figs. 117-121): 2nd to 6th emarginate at middle; 2nd with one low round projection posteriad on each side of the emargination, and bearing one row of large setae along the posterior margin of each projection; 3rd with one high round projection posteriad on each side of the emargination, and bearing a tuft of large setae on each projection; 4th with one low round projection posteriad on each side of the emargination, and bearing one row of large setae along the posterior margin, from one projection to the other. Spiculum gastrale (fig. 122) saddle-shaped. Aedeagus (figs. 123-125) with apex strongly downward produced; flagellum short. Spermatheca (fig. 126) coiled with 3-turns.

Etymology. The name is derived from the name of the famous elephant of children tales, which had very large ears, referring to the tip of aedeagus, which resembles an elephant proboscis, in lateral view, and has a very large lateral projection, resembling an ear.

Remarks. The species differs from all others so far described in the group because of the presence of an emargination and setae on the 2nd ventrite.

Adelopsis jarmilae, sp. n.
(figs. 127-138)

Holotype, male (SBPC). Type locality and data: Colombia: Quindío: 11-23km E of Calarcá, 7-10000', 05-10.III.1974, Ber274, S.B. Peck & J. Kukalová-Peck. 1M 6F paratypes with the same data.

Diagnosis and Description. Length: 2.05-2.5 mm; width: 1.0-1.1 mm. General characteristics as listed above, differing in the following characters: Color dark brown. Antenna (fig. 127) 1.25 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 2.05, 1.6, 1.4, 1.0, 1.1, 0.75, 1.05, 0.45, 1.0, 0.95, 1.6; proportions of length and width of each segment of the club, from 7th to 11th: 1.05, 0.5, 0.95, 0.9, 1.45. Elytra together 1.35 times as long as wide. First segment of male protarsus (fig. 129) 0.8 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 0.9, 1.15, 1.2, 1.3, 4.3. Posterior margins of male ventrites (figs. 130-133): 3rd to 6th emarginate at middle; 3rd with one relatively high round projection posteriad on each side of the emargination, and bearing one row of large setae along the posterior margin, from one projection to the other, and a loose tuft of large setae on each projection; 4th with one relatively low round projection posteriad on each side of the emargination, and bearing one row of large setae along the posterior margin, from one projection to the other; 5th bearing one row of large setae along the posterior margin, close to the

emargination, and one or two additional rows of large setae extending anteriorly on the surface of the ventrite. Spiculum gastrale (fig. 134) saddle-shaped, with an round light area medially. Aedeagus (figs. 135-137) with apex strongly downward produced; flagellum thin. Spermatheca (fig. 138) coiled with 3-turns.

Etymology. The species is named for Jarmila Kukalová-Peck, in recognition of her extensive field work in Latin America, and large contribution to the knowledge of Coleoptera.

Adelopsis pichinde, sp. n.
(figs. 139-149)

Holotype, male (SBPC). Type locality and data: Colombia: Valle del Cauca: near Pichindé, 5000', 18.VII.1970, H.F. & A.T. Howden. 1M paratype with the same data.

Diagnosis and Description. Length: 1.85 mm; width: 0.95 mm. General characteristics as listed above, differing in the following characters: Color yellowish brown, last three antennal segments slightly pale. Antenna (fig. 139) 1.4 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 2.05, 1.6, 1.25, 1.0, 0.85, 0.6, 1.05, 0.4, 1.0, 0.95, 1.45; proportions of length and width of each segment of the club, from 7th to 11th: 1.1, 0.4, 0.8, 0.8, 1.25. Elytra together 1.25 times as long as wide. First segment of male protarsus (fig. 141) 0.65 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 1.1, 1.25, 1.2, 1.5, 6.0. Posterior margins of male ventrites (figs. 142-145): 3rd and 6th emarginate at middle, 4th and 5th slightly concave at middle; 3rd with one relatively low and narrow round projection posteriad on each side of the emargination, and bearing a tuft of large setae on each projection; 5th bearing one row of large setae along the posterior margin, on each side of the emargination, and one or two additional rows of short setae extending anteriorly on the surface of the ventrite. Spiculum gastrale (fig. 146) saddle-shaped. Aedeagus (figs. 147-149) with apex strongly downward produced; flagellum thin.

Etymology. The name is given in aposition, referring to the type locality.

Adelopsis procera, sp. n.
(figs. 150-159)

Holotype, male (SBPC). Type locality and data: Colombia: Quindío: 11km E of Calarcá, 7000', 07-11.III.1974, DT988-9, S.B. Peck & J. Kukalová-Peck. 2F paratypes with the same data.

Diagnosis and Description. Length: 2.15-2.7 mm; width: 1.05-1.4 mm; male somewhat larger than females. General characteristics as listed above,

differing in the following characters: Color dark brown. Antenna (fig. 150) 1.45 times as long as pronotum and bearing external keel on segments 6th to 11th; proportions of length of each segment and that of the 9th from 1st to 11th: 2.2, 1.7, 1.35, 1.05, 1.0, 0.85, 0.95, 0.55, 1.0, 0.9, 1.4; proportions of length and width of each segment of the club, from 7th to 11th: 1.0, 0.55, 0.95, 0.75, 1.3. Elytra together 1.5 times as long as wide. First segment of male protarsus (fig. 152) 0.7 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 1.2, 1.2, 1.25, 1.45, 6.9. Posterior margins of male ventrites (figs. 153-154): 3rd and 6th emarginate at middle; 3rd with one relatively low round projection posteriad on each side of the emargination, and bearing one row of large setae along the posterior margin, from one projection to the other, being the setae shorter near the emargination. Spiculum gastrale (fig. 155) saddle-shaped. Aedeagus (figs. 156-158) with apex strongly downward produced; flagellum short and strong. Spermatheca (fig. 159) coiled with 1-turn.

Etymology. The name is derived from Latin for "tall", referring to the tip of aedeagus, which resembles having a tall face above the nose.

Species not assigned to a group

Adelopsis soacha, sp. n.
(figs. 160-168)

Holotype, male (SBPC). Type locality and data: Colombia: Cundinamarca: Soacha, below Tecandama Falls, 7000', 27.II-06.III.1972, traps, S.B. Peck & J. Kukalová-Peck. 1F paratype with the same data.

Diagnosis and Description. Length: 1.7-2.15 mm; width: 0.95-1.1 mm. General characteristics as listed above, differing in the following characters: Color reddish brown. Antenna (fig. 160) 2.1 times as long as pronotum; proportions of length of each segment and that of the 9th from 1st to 11th: 1.95, 1.95, 1.25, 0.95, 0.8, 0.65, 1.05, 0.55, 1.0, 1.1, 1.75; proportions of length and width of each segment of the club, from 7th to 11th: 0.9, 0.45, 0.65, 0.75, 1.15. Elytra together 1.3 times as long as wide. First segment of male protarsus (fig. 162) 0.65 times as wide as the maximum width of tibia; proportions of length and width of each segment, from 1st to 5th: 1.2, 1.3, 1.2, 1.15, 9.5. Spiculum gastrale (fig. 164) saddle-shaped. Aedeagus (figs. 165-167) flat, with a very broad bifid apex; flagellum short and slightly sinuate. Spermatheca (fig. 168) coiled with 3 loose turns.

Etymology. The name is given in aposition, referring to the type locality.

Remarks. The species probably belongs to a group which would include *A. heterocera* Portevin, 1907, because of their similar flat (not bent as in most other species) aedeagus.

Discussion

Systematic remarks

All species can be recognized by a combination of characters in the shape of the aedeagus, genital segment and spermathecae.

Although most species of the *elephas* group collected from Costa Rica and Panama show a concavity in the first antennomere, those from Colombia lack this feature. *A. dumbo* is the only species so far in the group in which, among males, the 2nd ventrite is emarginate at the middle and bears rows of setae following the emargination; in other species, modification of ventrites only occurs from the 3rd onwards. There is a large variation in the characteristics of the emargination of the ventrites, the projections near it, and the setae around them, and the ventrites where they occur in the species studied from the group (see also Gnaspini & Peck, 1996); and the combination of these characteristics seems to be diagnostic for each species.

A. capitanea, *A. bifida*, and *A. anceps* can be recognized as a group of species because they share a very similar shape in the aedeagus, especially the tip, which is bifid. Moreover, the first two have an undistinguishable aedeagus, and can be told from each other by the quite different spermathecae.

The *A. ascutellaris* group of species (which includes the subspecies of *A. brunnea*, and the presently described *A. sanlorenzo*, *A. santamarta*, *A. palata*, *A. leticia*, besides some other species still to be described, especially in Venezuela) are all very difficult to tell apart. Characters both of the aedeagus and external morphology show slight variation, although different patterns can be recognized. Because of this, we have preferred to describe all recognizable patterns as different species.

Geographical and altitudinal distribution

We here summarize the distributional data, to try to understand the ranges of the species. With few exceptions, all studied species were collected in only one locality. Only one of the species is exclusively from the tropical lowlands (in the Amazon basin - ~100m) and all others are from tropical highlands (above 1200m). Among the highland species, some of them were collected at different altitudes. A maximum vertical range of 1000m was detected for these highland species.

Among the species which were collected over a large geographical range, *A. coronaria* ranges from 400m to 1500m in altitude in Costa Rica and Panama, and reaches 1700m in Colombia (where it follows the Andes mountain range going both east to Venezuela and south to Ecuador).

The number of species at one locality varied generally in relation with the number of specimens collected. In some places the number of specimens

1

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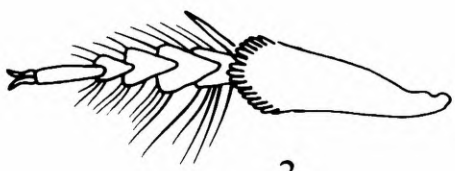

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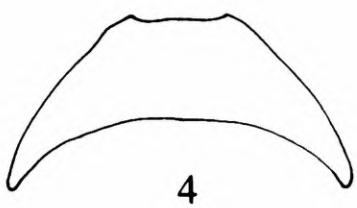

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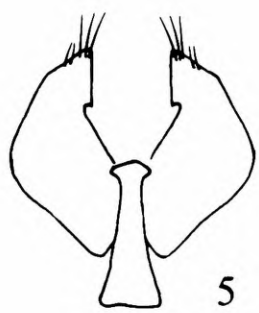

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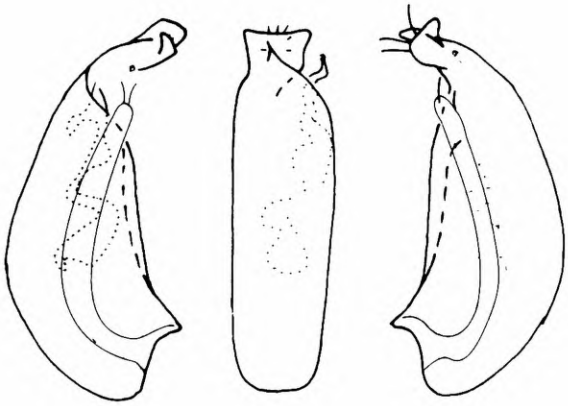

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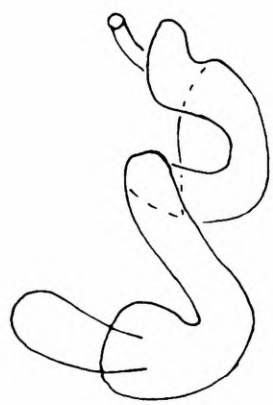

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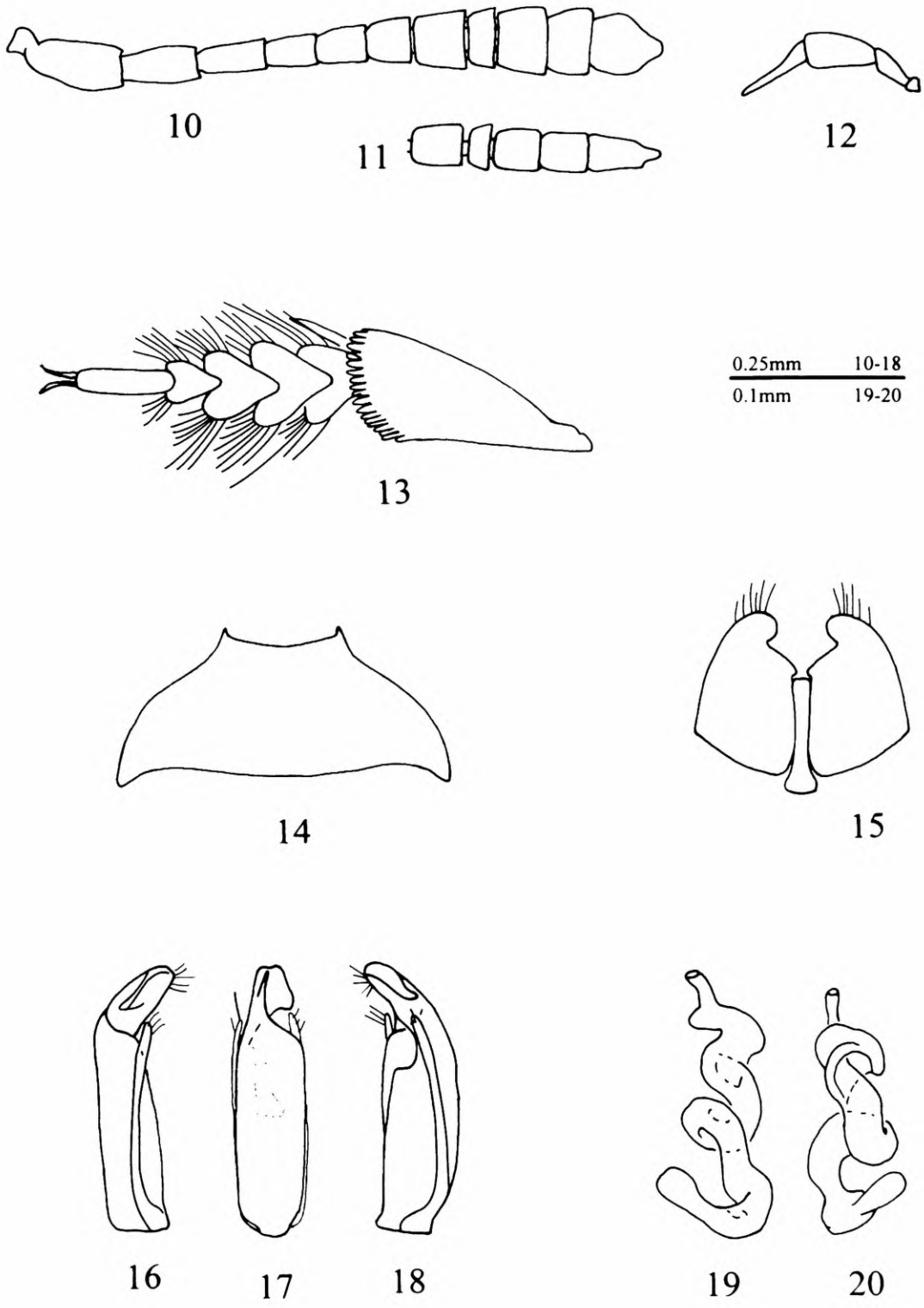
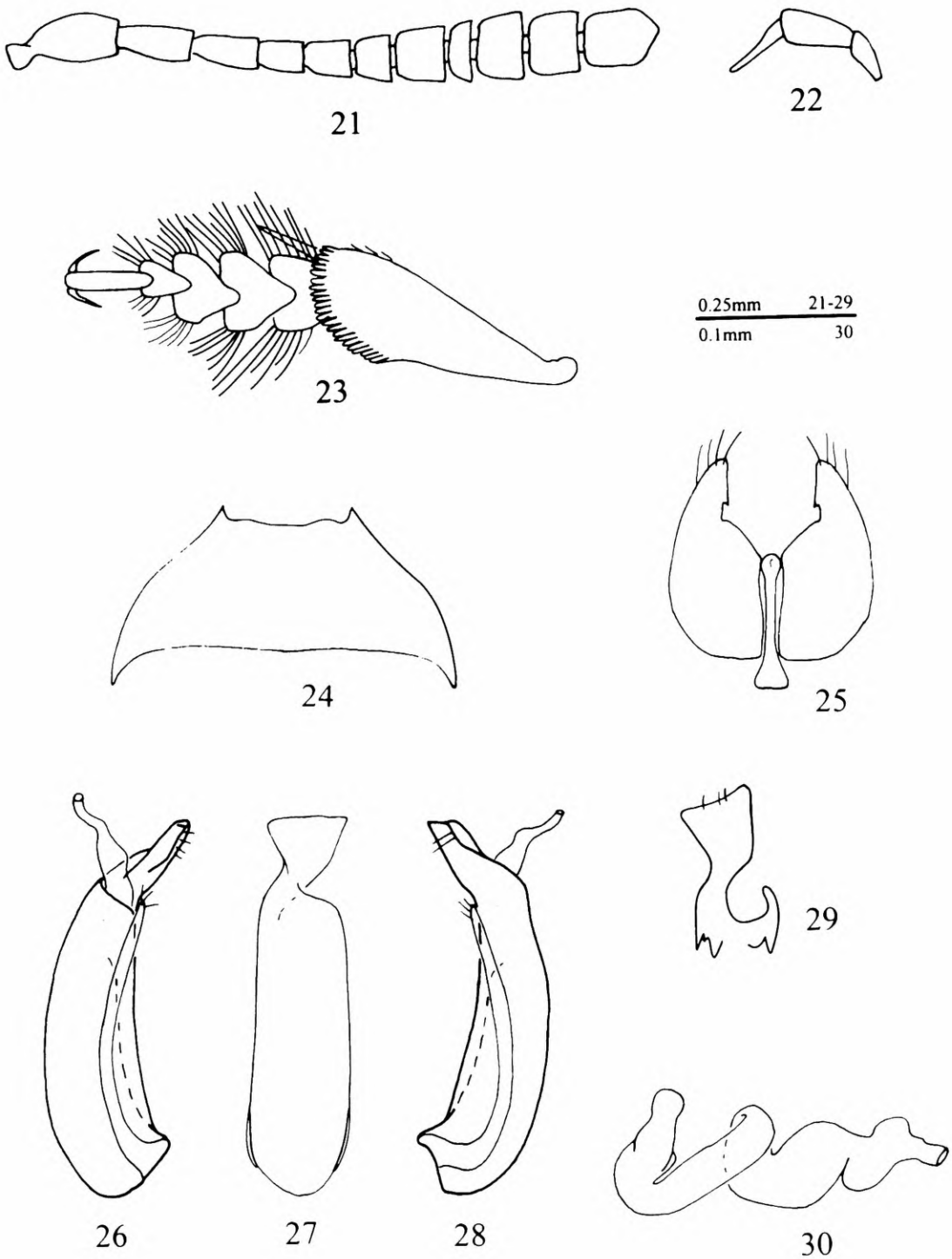
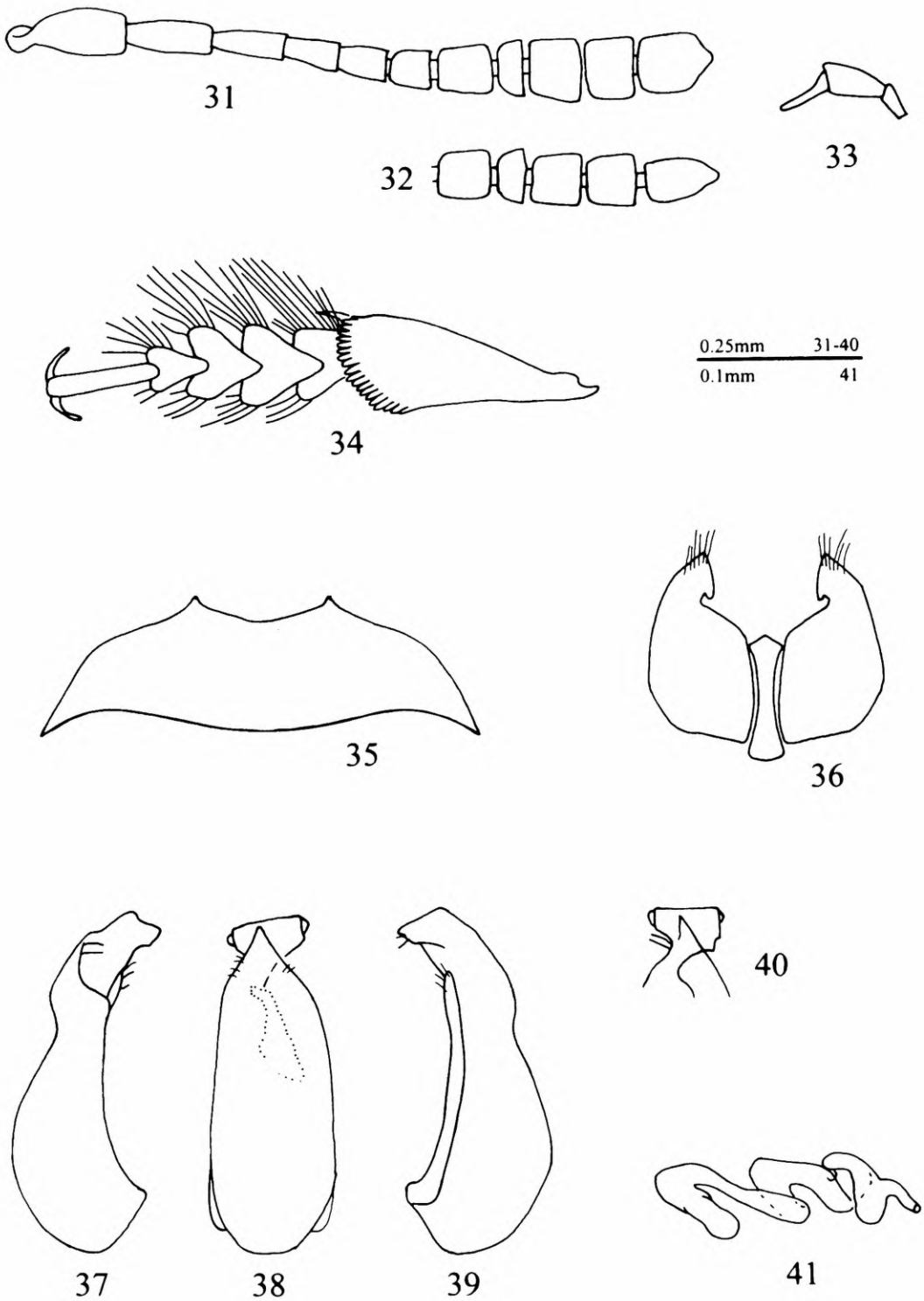
Figures 1-9. *Adelopsis leticia*, sp. n., 1-8, male. 1, antenna, dorsal view; 2, maxillary palp; 3, protarsus and protibia; 4, 6th ventrite; 5, genital segment; 6-8, aedeagus, left lateral, dorsal, and right lateral views; 9, female spermatheca.



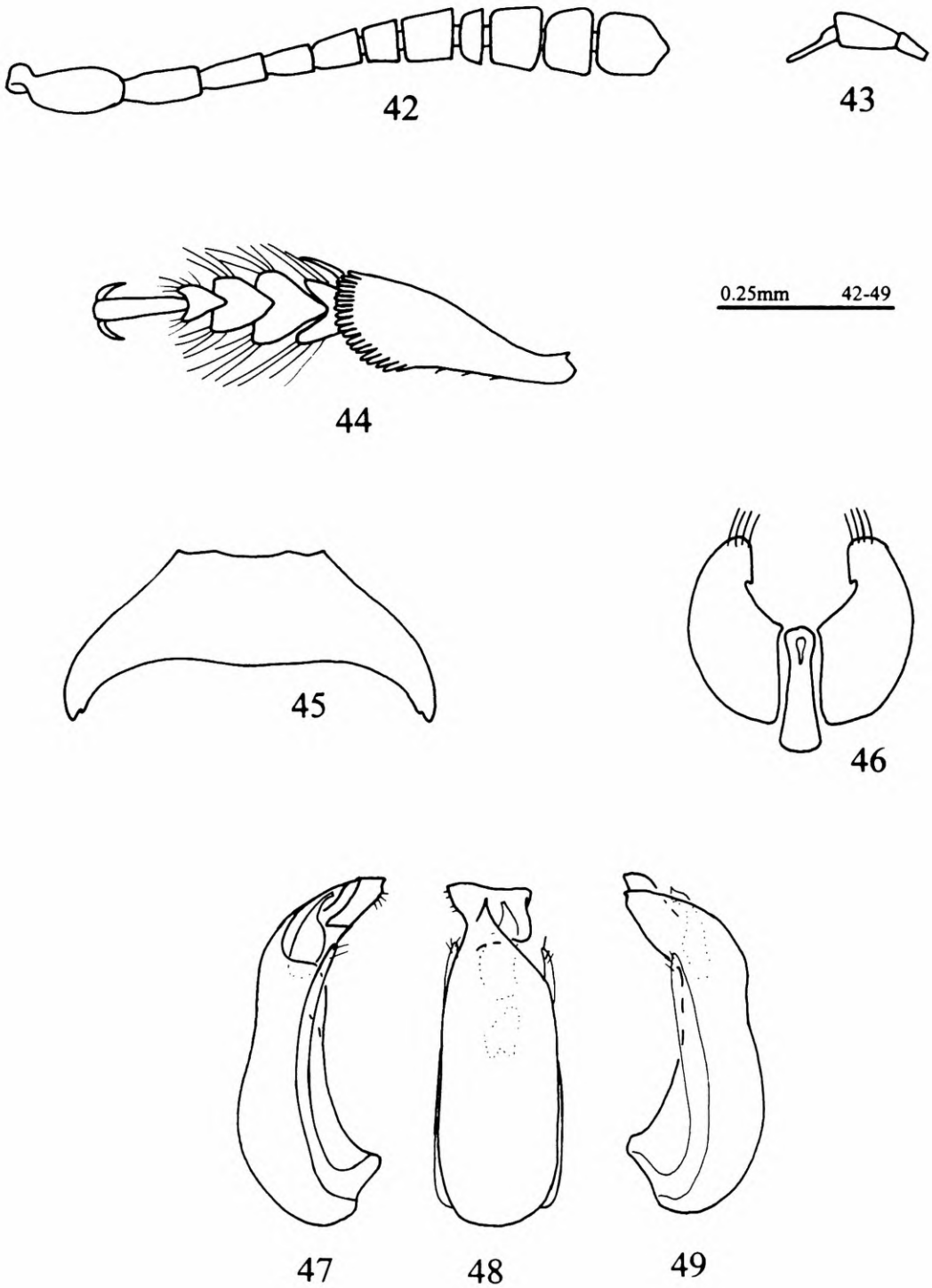
Figures 10-20. *Adelopsis longipalpus*, sp. n., 10-18, male. 10-11, antenna, dorsal and apical lateral views; 12, maxillary palp; 13, protarsus and protibia; 14, 6th ventrite; 15, genital segment; 16-18, aedeagus, left lateral, dorsal, and right lateral views; 19-20, female spermatheca.



Figures 21-30. *Adelopsis palata*, sp. n., 21-29, male. 21, antenna, dorsal view; 22, maxillary palp; 23, protarsus and protibia; 24, 6th ventrite; 25, genital segment; 26-29, aedeagus, left lateral, dorsal, right lateral views, and frontal view of apex; 30, female spermatheca.



Figures 31-41. *Adelopsis sanlorenzo*, sp. n., 31-40, male. 31-32, antenna, dorsal and apical lateral views; 33, maxillary palp; 34, protarsus and protibia; 35, 6th ventrite; 36, genital segment; 37-40, aedeagus, left lateral, dorsal, right lateral views, and frontal view of apex; 41, female spermatheca.



Figures 42-49. *Adelopsis santamarta*, sp. n., male. 42, antenna, dorsal view; 43, maxillary palp; 44, protarsus and protibia; 45, 6th ventrite; 46, genital segment; 47-49, aedeagus, left lateral, dorsal, and right lateral views.

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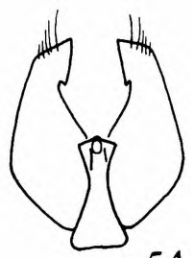
0.1mm 59-60



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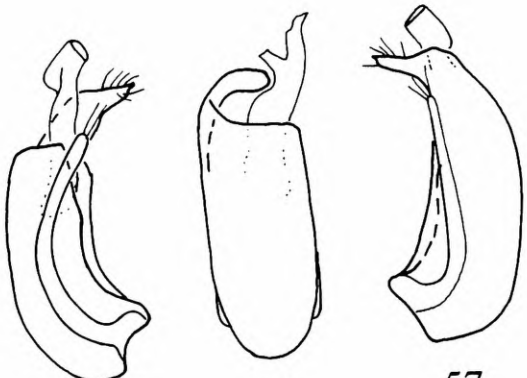

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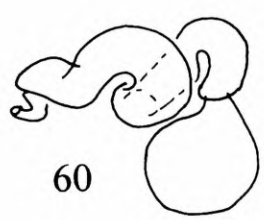

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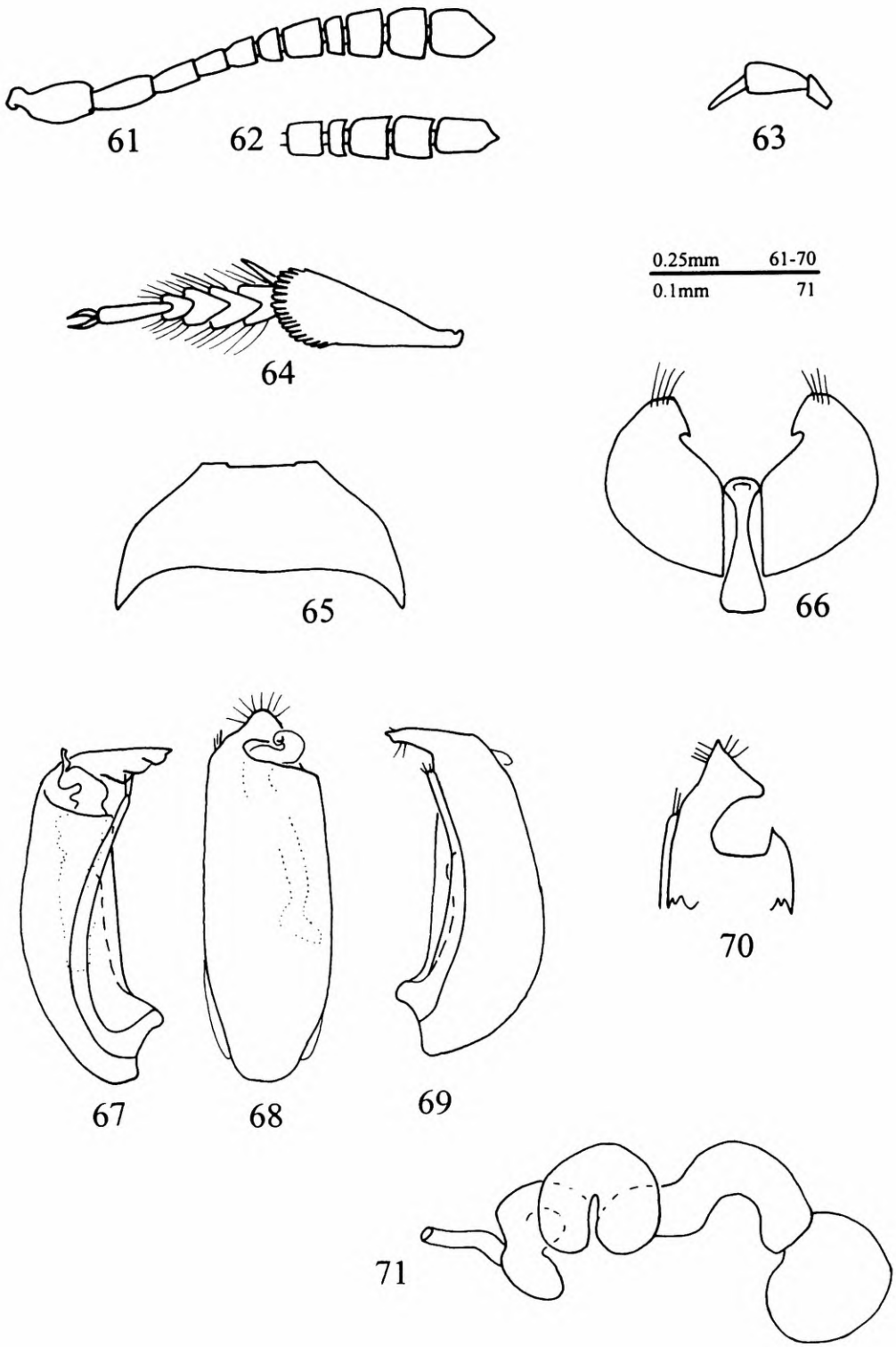
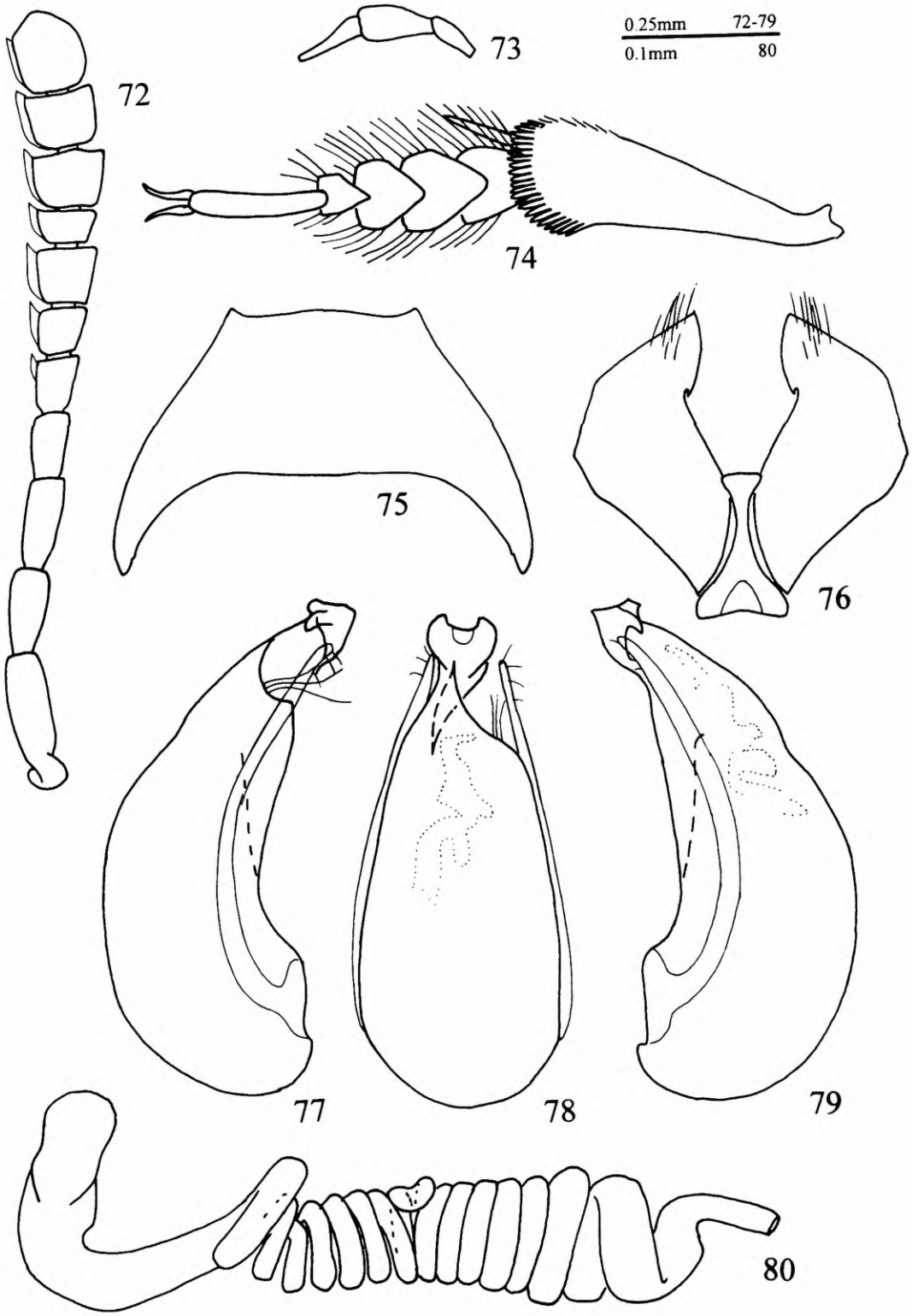
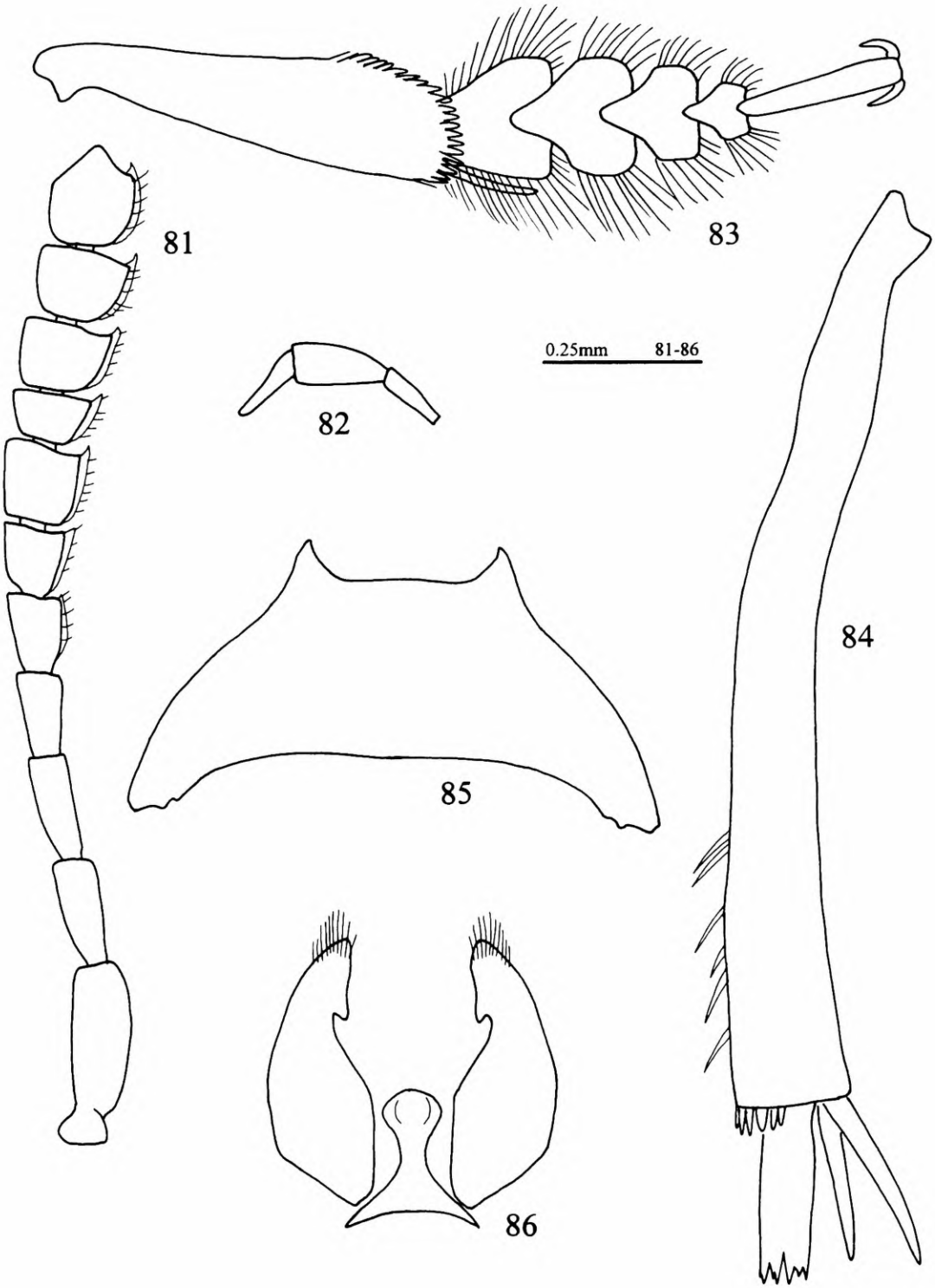
Figures 50-60. *Adelopsis camella*, sp. n., 50-58, male. 50, antenna, dorsal view; 51, maxillary palp; 52, protarsus and protibia; 53, 6th ventrite; 54, genital segment; 55-58, aedeagus, left lateral, dorsal, right lateral views, and frontal view of apex; 59-60, female spermatheca.



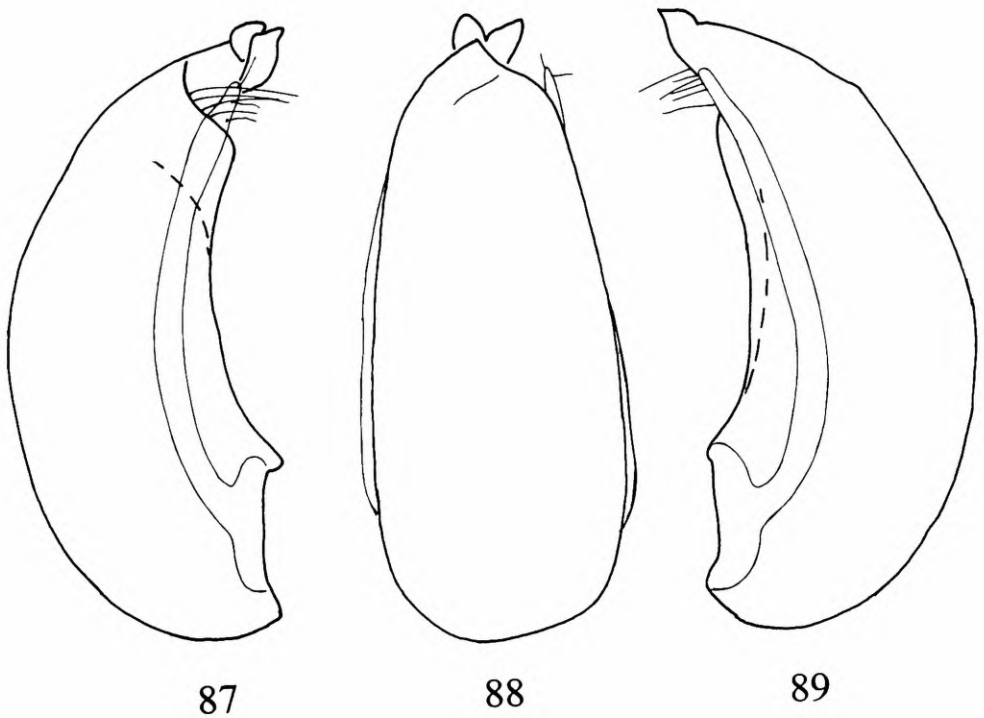
Figures 61-71. *Adelopsis crassiflagellata*, sp. n., 61-70, male. 61-62, antenna, dorsal and apical lateral views; 63, maxillary palp; 64, protarsus and protibia; 65, 6th ventrite; 66, genital segment; 67-70, aedeagus, left lateral, dorsal, right lateral views, and frontal view of apex; 71, female spermatheca.

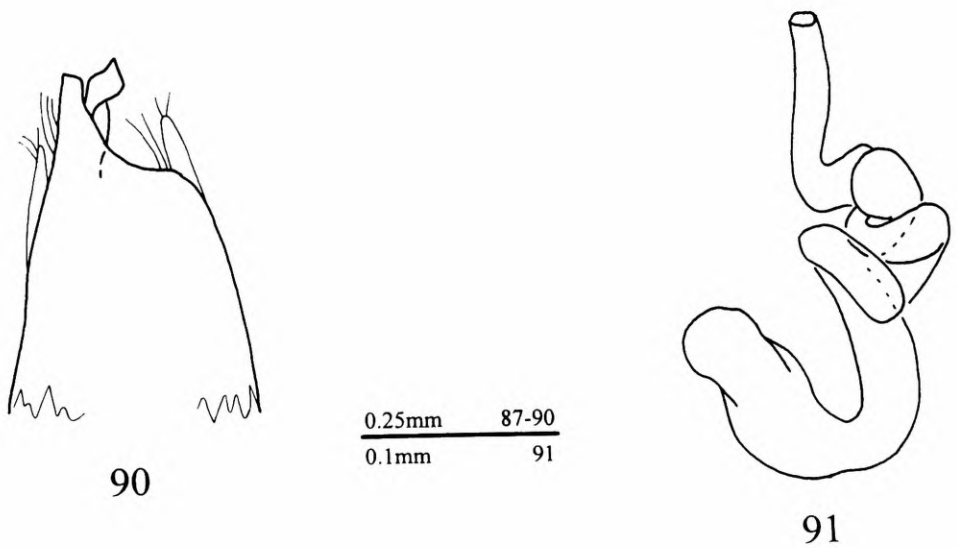


Figures 72-80. *Adelopsis anceps*, sp. n., 72-79, male. 72, antenna, dorsal view; 73, maxillary palp; 74, protarsus and protibia; 75, 6th ventrite; 76, genital segment; 77-79, aedeagus, left lateral, dorsal, and right lateral views; 80, female spermatheca.

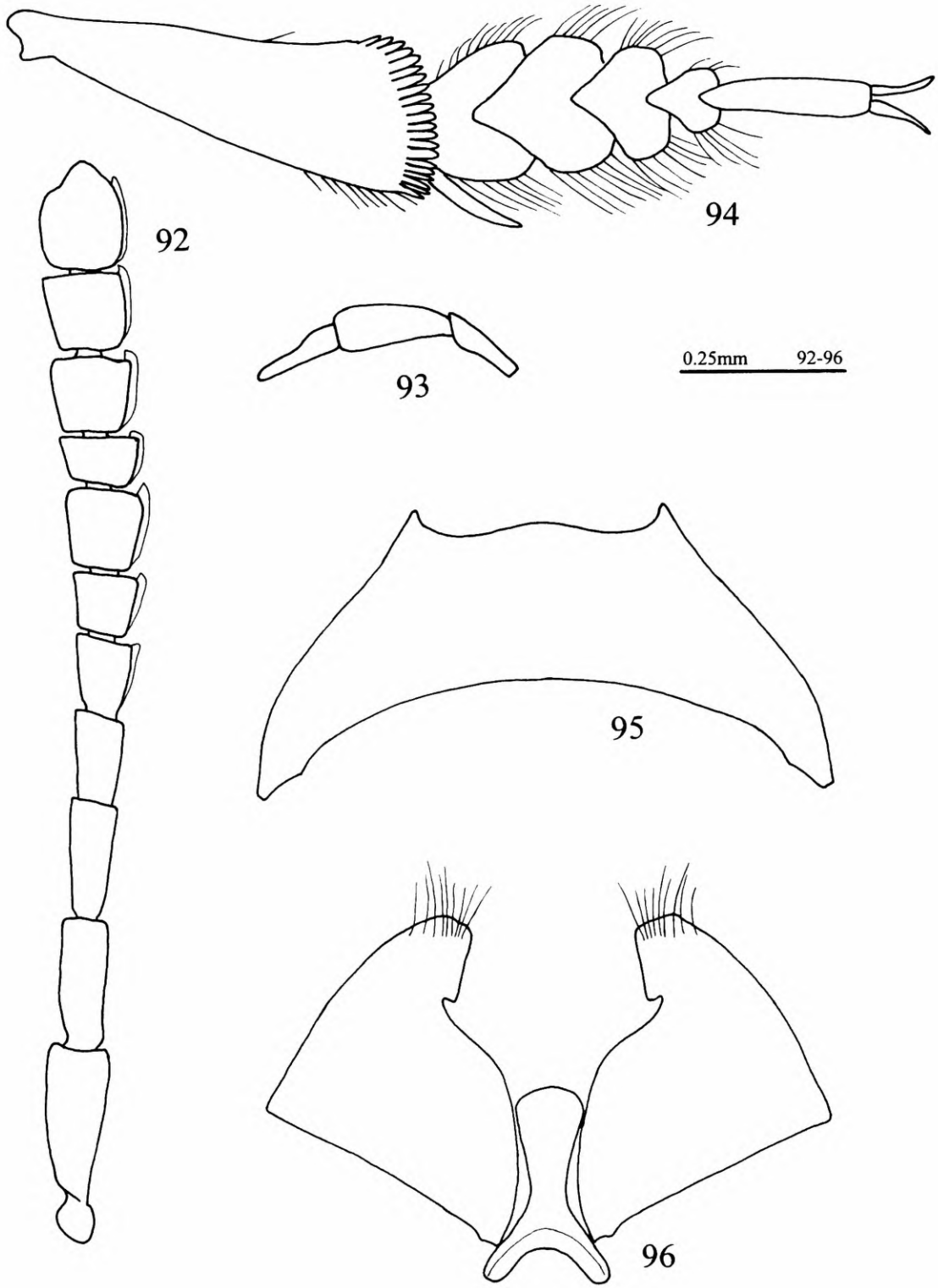


Figures 81-86. *Adelopsis bifida*, sp. n., male. 81, antenna, dorsal view; 82, maxillary palp; 83, protarsus and protibia; 84, metatibia; 85, 6th ventrite; 86, genital segment.

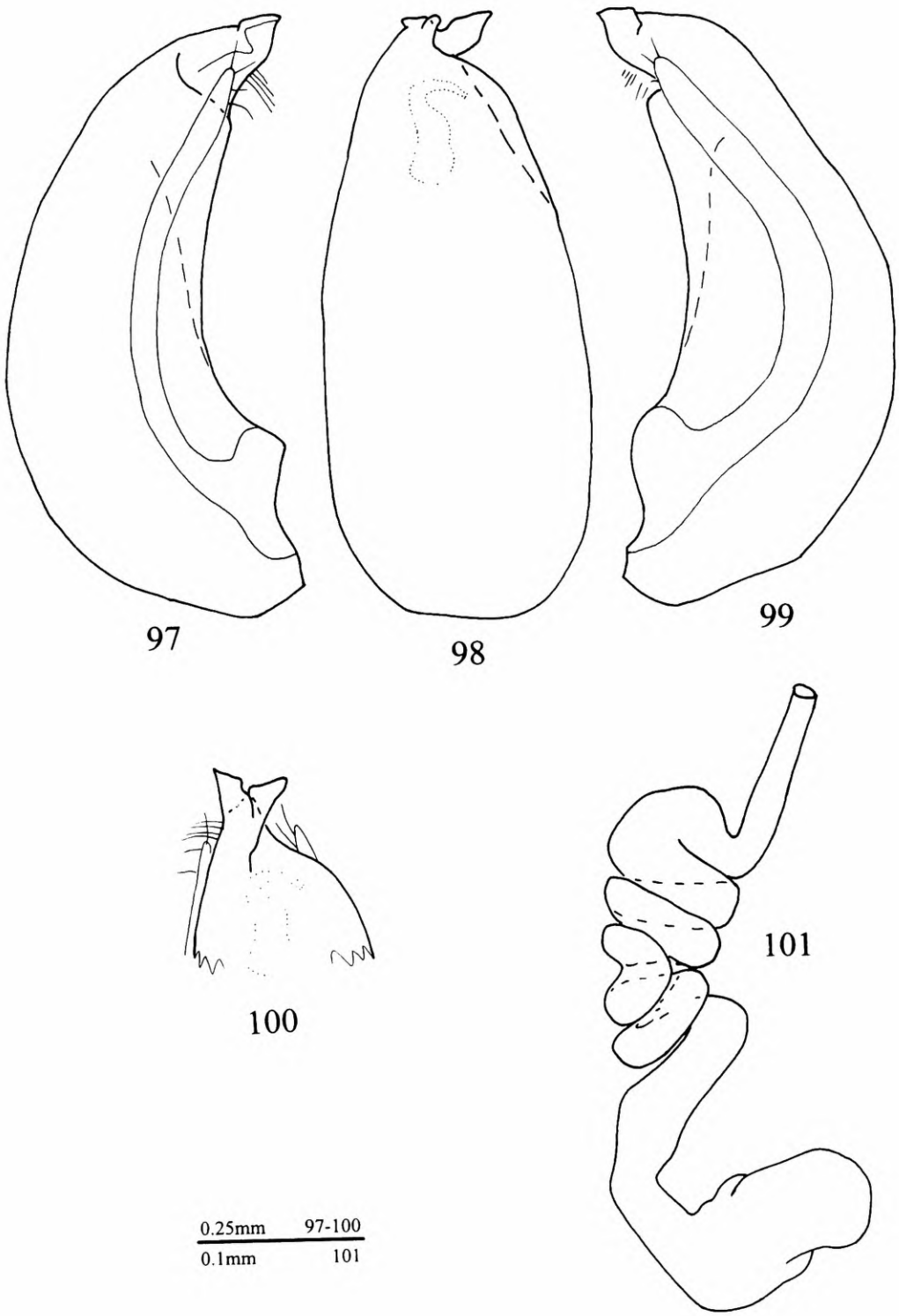




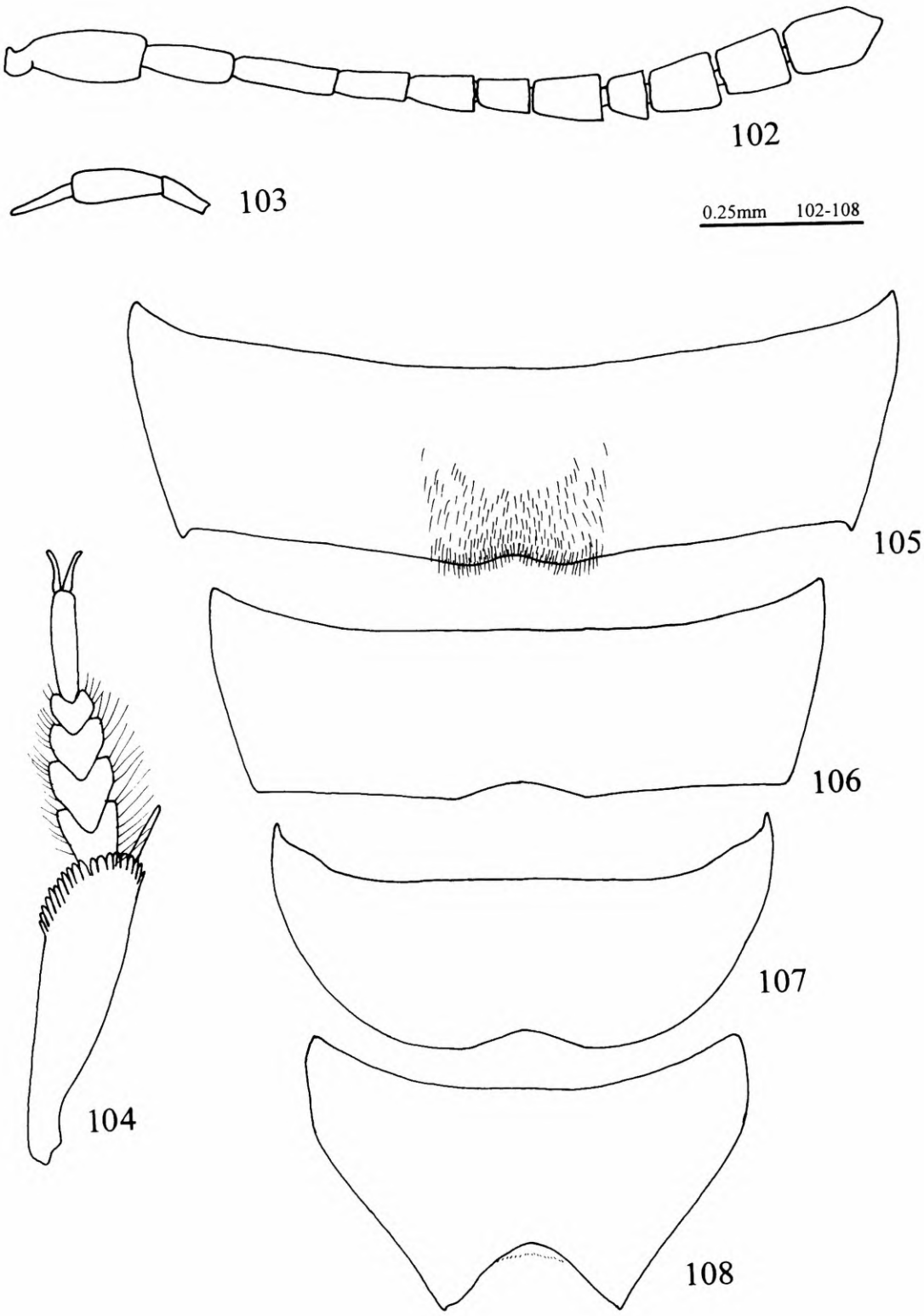
Figures 87-91. *Adelopsis bifida*, sp. n., 87-90, male, aedeagus, left lateral, dorsal, right lateral views, and frontal view of apex; 91, female spermatheca.



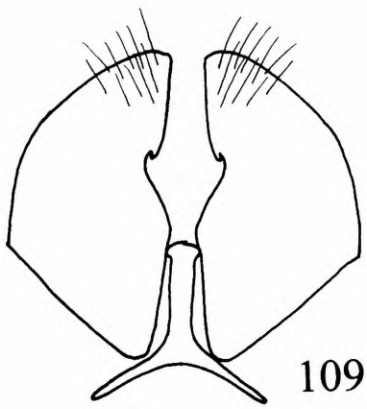
Figures 92-96. *Adelopsis capitanea*, sp. n., male. 92, antenna, dorsal view; 93, maxillary palp; 94, protarsus and protibia; 95, 6th ventrite; 96, genital segment.



Figures 97-101. *Adelopsis capitanea*, sp. n., 97-100, male, aedeagus, left lateral, dorsal, right lateral views, and frontal view of apex; 101, female spermatheca.



Figures 102-108. *Adelopsis calarcensis*, sp. n., male. 102, antenna, dorsal view; 103, maxillary palp; 104, protarsus and protibia; 105-108, 3rd-6th ventrite.



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0.25mm 109-112

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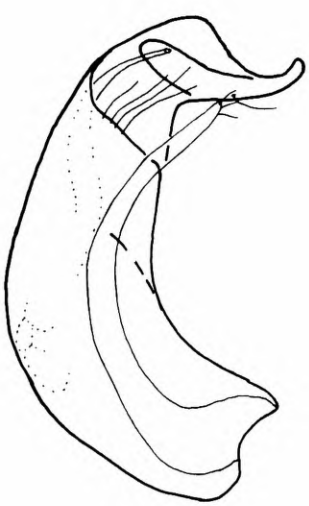

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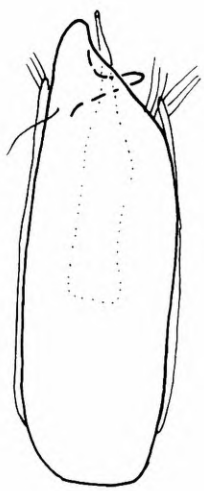

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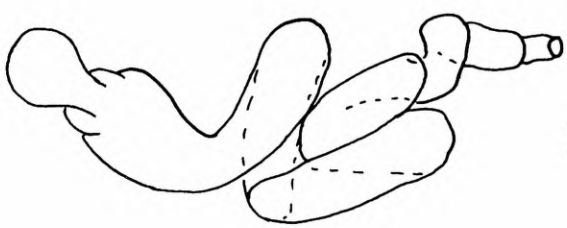
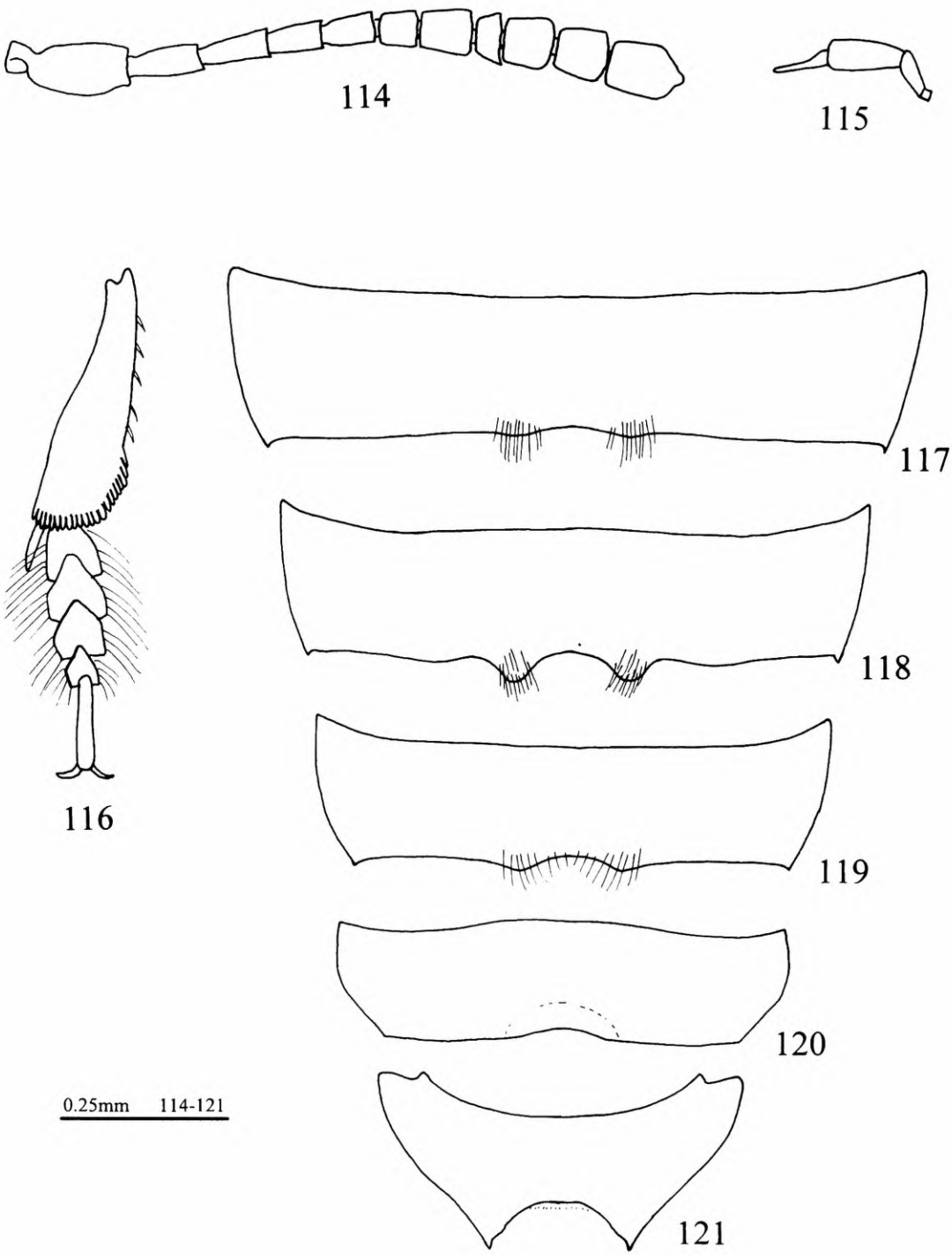
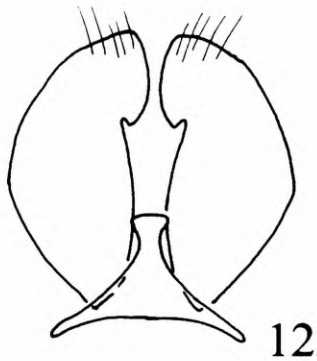


113

Figures 109-113. *Adelopsis calarcensis*, sp. n., 109-112, male. 109, genital segment; 110-112, aedeagus, left lateral and dorsal views, and frontal view of apex; 113, female spermatheca.



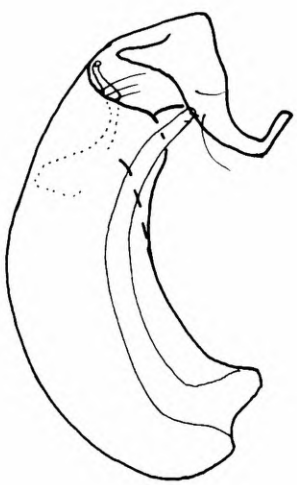
Figures 114-121. *Adelopsis dumbo*, sp. n., male. 114, antenna, dorsal view; 115, maxillary palp; 116, protarsus and protibia; 117-121, 2nd-6th ventrite.



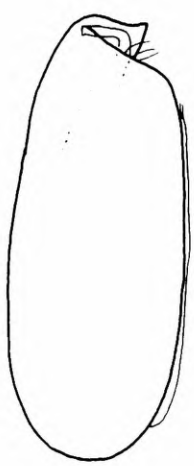
122

0.25mm 122-125

0.1mm 126



123



124

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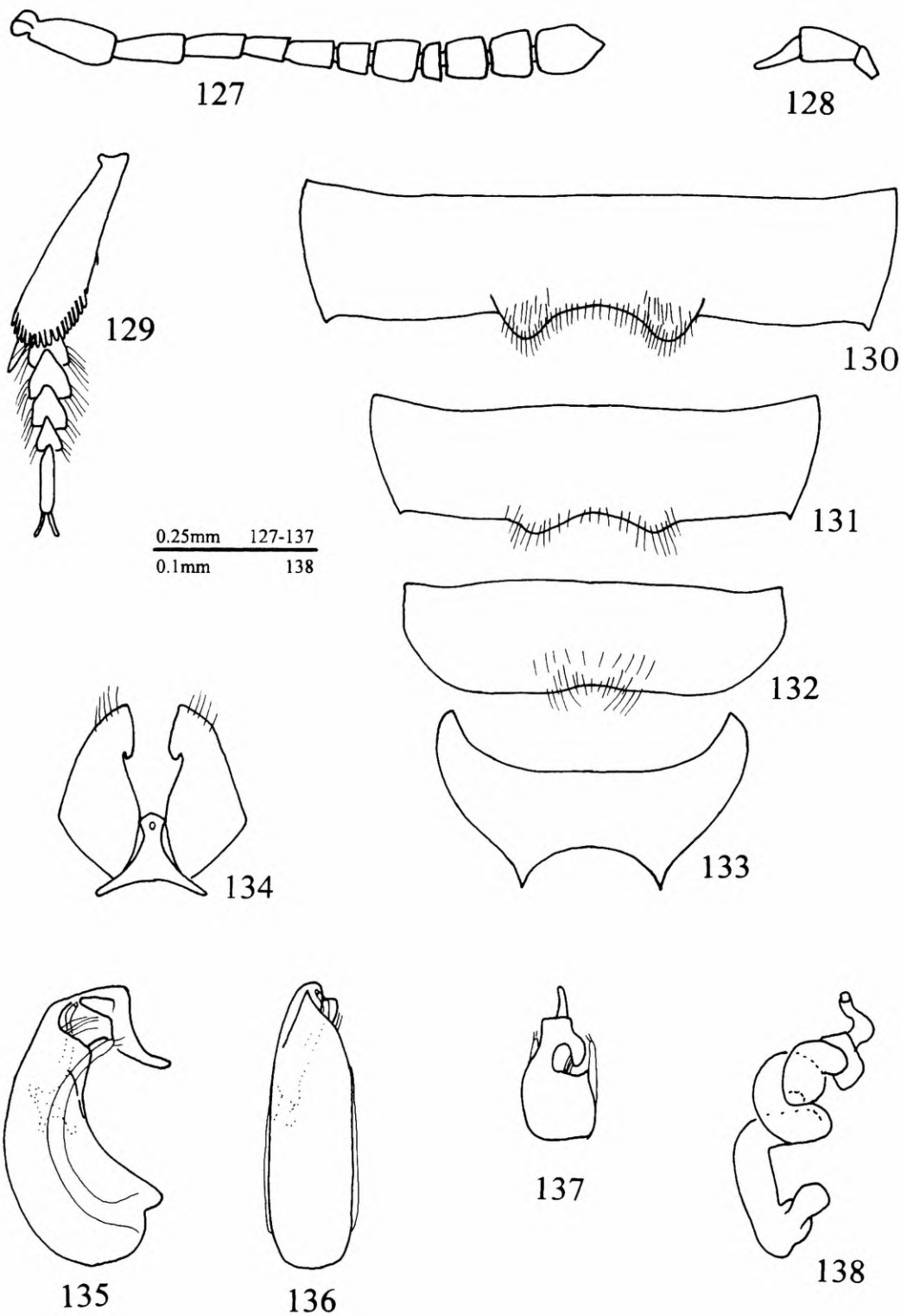
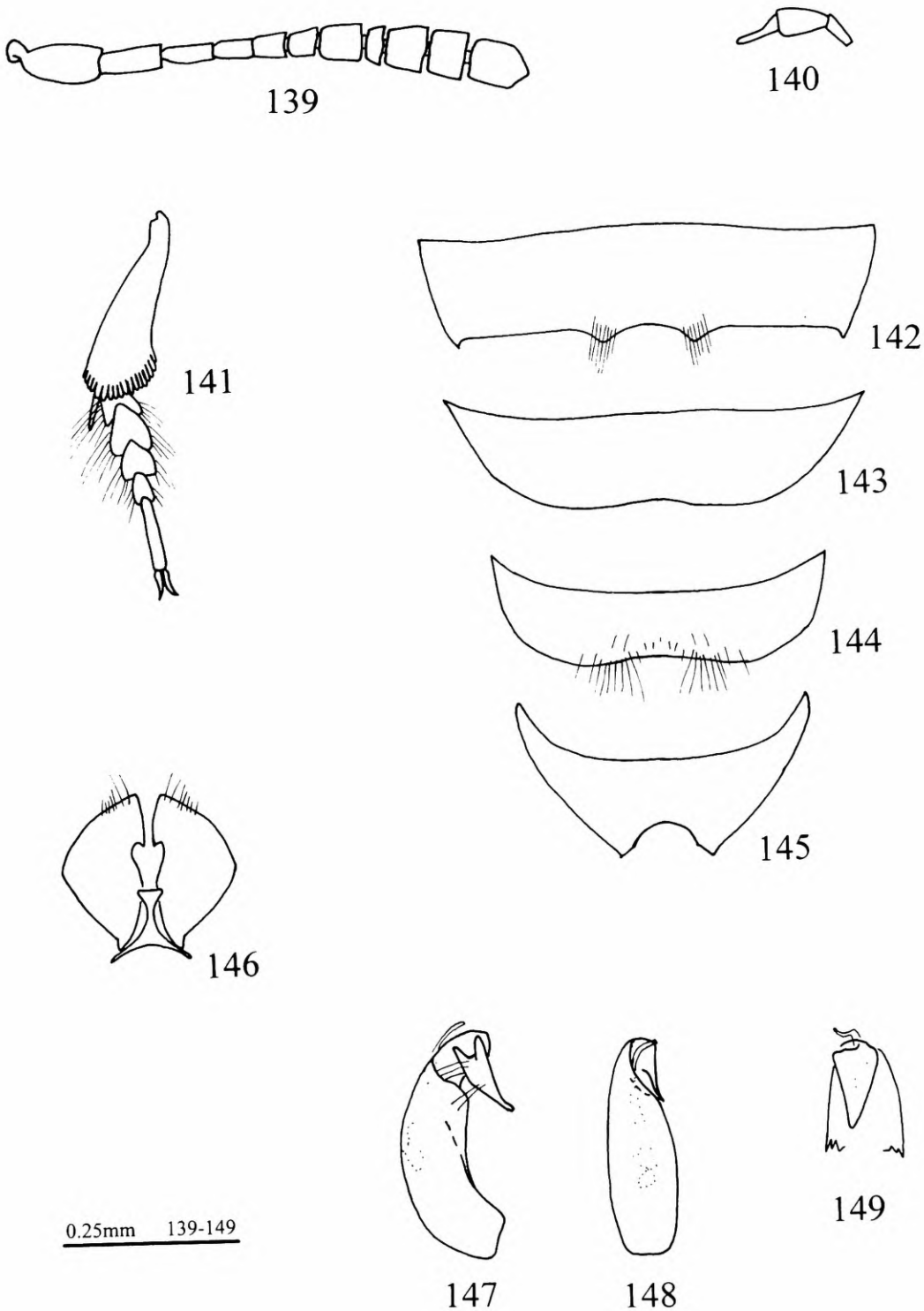
126

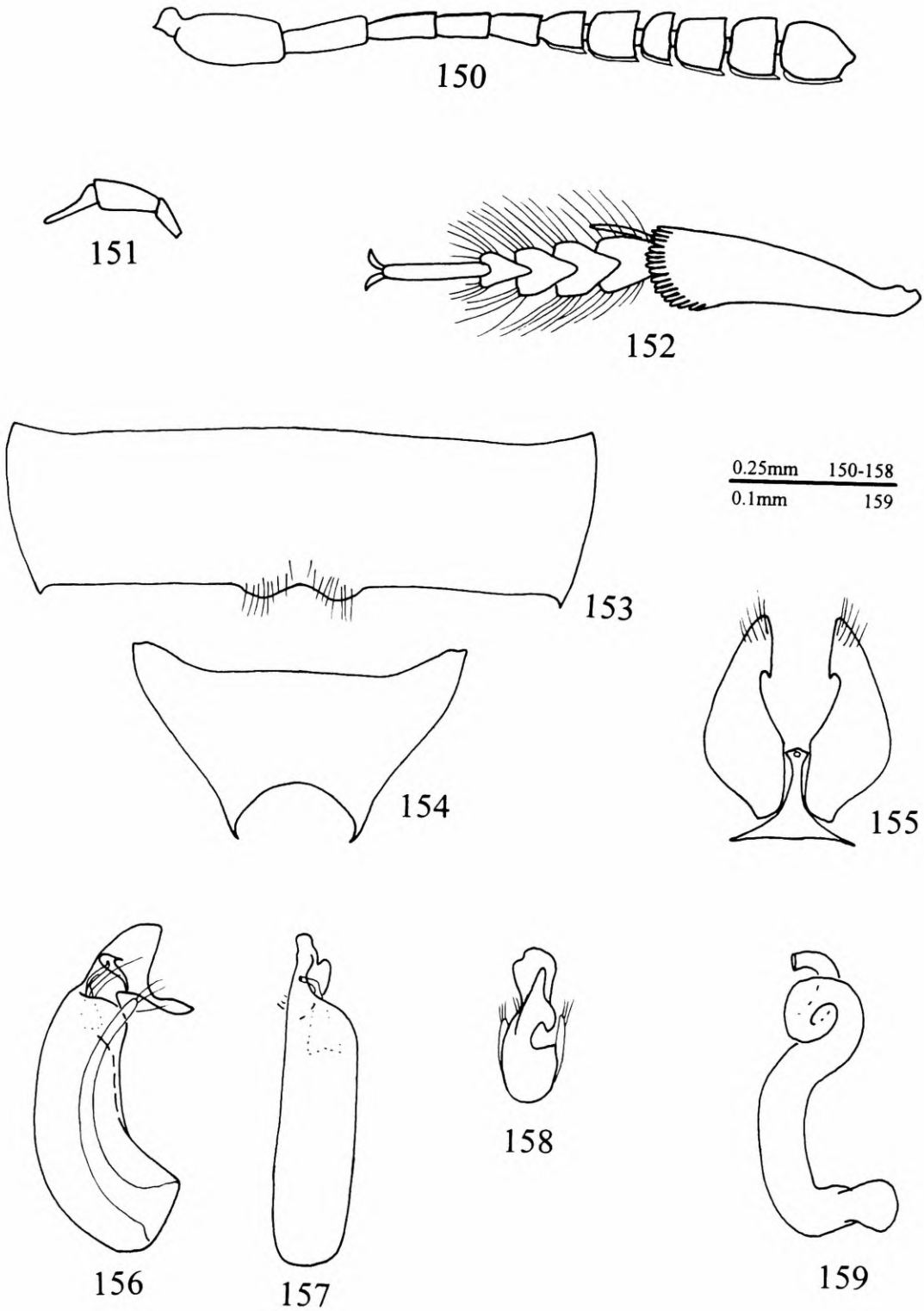
Figures 122-126. *Adelopsis dumbo*, sp. n., 122-125, male. 122, genital segment; 123-125, aedeagus, left lateral and dorsal views, and frontal view of apex; 126, female spermatheca.



Figures 127-138. *Adelopsis jarmilae*, sp. n., 127-137, male. 127, antenna, dorsal view; 128, maxillary palp; 129, protarsus and protibia; 130-133, 3rd-6th ventrite; 134, genital segment; 135-137, aedeagus, left lateral and dorsal views, and frontal view of apex; 138, female spermatheca.



Figures 139-149. *Adelopsis pichinde*, sp. n., male. 139, antenna, dorsal view; 140, maxillary palp; 141, protarsus and protibia; 142-145, 3rd-6th ventrite; 146, genital segment; 147-149, aedeagus, left lateral and dorsal views, and frontal view of apex.



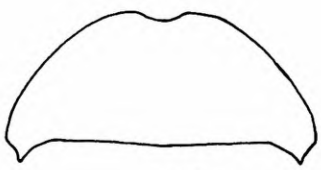
Figures 150-159. *Adelopsis procera*, sp. n., 150-158, male. 150, antenna, dorsal view; 151, maxillary palp; 152, protarsus and protibia; 153-154, 3rd and 6th ventrite; 155, genital segment; 156-158, aedeagus, left lateral and dorsal views, and frontal view of apex; 159, female spermatheca.

160

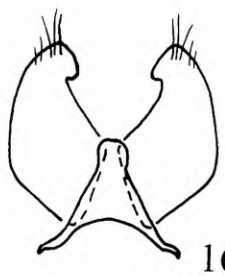
161

162

0.25mm 160-167
0.1mm 168



163



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Figures 160-168. *Adelopsis soacha*, sp. n., 160-167, male. 160, antenna, dorsal view; 161, maxillary palp; 162, protarsus and protibia; 163, 6th ventrite; 164, genital segment; 165-167, aedeagus, left lateral, dorsal, and right lateral views; 168, female spermatheca.

collected is high, in others, only few individuals were collected. However, generally, only one species was found in the same collection series. In only a few cases did the same series include more than one species: two in Chinácota (some collections included specimens of three other species of Ptomaphagini, as will be discussed in another paper), three in San Lorenzo, and five in Calarcá.

In general, we can state that the group is very speciose in Colombia, including many probably geographically restricted species. Undoubtedly, more species remain to be discovered.

Acknowledgements

We would like to thank H.F and A.T. Howden for their collecting efforts in Colombia, and A.F. Newton for his critical review of the manuscript. Field work of SBP was supported by operating grants from Natural Sciences and Engineering Research Council of Canada. Part of the study was supported by a post-doctorate fellowship (# 94/2093-3) from Fundação de Amparo à Pesquisa do Estado de São Paulo, Brazil, for PG. PG also has a research fellowship from CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico).

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