

Two new species of the genus *Centistina* Enderlein (Hymenoptera: Braconidae: Euphorinae) from Costa Rica

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Centistina zitaniae spec. nov. and *C. fusciscapa* spec. nov. (Hymenoptera: Braconidae: Euphorinae) from Costa Rica are described and illustrated. *C. fusciscapa* is considered to belong to a separate species group. A key to the five known species is added.

Introduction

Up to 1985 the genus *Centistina* Enderlein, 1912 (Hymenoptera: Braconidae: Euphorinae) was known from the Afrotropical region only. Shaw (1985) mentioned two undescribed species, one from the Neotropics and one from southern U.S.A., constituting the first report of the genus outside the Afrotropical region; the non-Costa Rican material is not considered in this paper. In this paper we describe two new species from Costa Rica as part of the faunistical survey of Costa Rica. The biology of the members of the genus *Centistina* is unknown. The genus belongs to the tribe Dinocampini Shaw, 1985, and both other genera belonging to this tribe (*Dinocampus* Foerster, 1862 and *Ropalophorus* Curtis, 1837) contain parasitoids of adult Coleoptera (Coccinellidae, and Scolytidae; Shaw, 1985).

For recognition of the subfamily Euphorinae, see van Achterberg (1990, 1993, 1997), for keys to the genera, see Shaw (1985, 1997) or Chen & van Achterberg (1997), and for the terminology used in this paper, see van Achterberg (1988).

Centistina Enderlein, 1912

(figs 1-25)

Centistina Enderlein, 1912: 40; Shaw, 1985: 314-315.

Diagnosis.— See Shaw (1985). The trochantelli have a pair of weak and short crests ventrally. The genus is easily recognized by the elongate scapus (figs. 4, 10, 11, 23), the distinctly petiolate discal cell of the fore wing (figs 1, 20) and the very antefurcal vein m-cu of the fore wing (fig. 1). The genus *Dinocampus* Foerster is considered to be the most closely related out-group (Shaw (1985): “the only other euphorine genus with a similar [derived] venation pattern”) and is used for comparison. The Neotropical species are very similar to the Afrotropical type species except for their less elongate third antennal segments. In general, most of the species are similar to the type

species (= *C. longicornis*-group), but one of the new species differs considerably and is included in its own group (= *C. fusciscapa*-group). This is the most derived group within the genus *Centistina* in having the dorsope laterally situated, the mandible abruptly widened, the first tergite largely smooth and the temple comparatively wide. The members of the *Centistina longicornis*-group are united by the short (= apomorphic) malar space.

Key to species of the genus *Centistina* Enderlein

- 1. Head elongate (fig. 24), length of malar space 0.7-0.8 times basal width of mandible; mandible abruptly widened subbasally (fig. 23); first metasomal tergite largely smooth (fig. 25); temples comparatively wide (fig. 23); dorsope of first tergite very deep and large and laterally situated; base of hind tibia infuscate; scapus, second and third tergites largely dark brown or infuscate; marginal cell of fore wing slender (fig. 22); (Neotropical) *C. fusciscapa* spec. nov.
- Head less elongate (fig. 6), length of malar space about 0.4 times basal width of mandible; mandible gradually widened subbasally (fig. 4); first metasomal tergite distinctly sculptured (fig. 9, 14, 15); temples comparatively narrow (fig. 4); dorsope of first tergite comparatively shallow and rather small and dorsally situated (figs 9, 14) or absent; base of hind tibia yellowish; scapus, second and third tergites brownish-yellow; marginal cell of fore wing comparatively robust (figs 1, 20) 2
- 2. Vein 3-CU1 of fore wing comparatively oblique (fig. 1); tarsal claws slender (fig. 8); mesoscutum without median groove (fig. 3); vein m-cu of fore wing strongly converging to vein 1-M posteriorly (fig. 1); third antennal segment of ♀ about 3 times as long as wide and about 0.4 times as long as scapus (fig. 4); Neotropical *C. zitaniae* spec. nov.
- Vein 3-CU1 of fore wing less oblique (fig. 20); tarsal claws rather robust (fig. 21); mesoscutum with shallow median groove (fig. 93 in de Saeger, 1946); vein m-cu of fore wing subparallel to vein 1-M posteriorly (fig. 20); third antennal segment of ♀ about 7 times as long as wide and 0.6-0.7 times as long as scapus (fig. 94 in de Saeger, 1946); Afrotropical 3
- 3. Vein 2-SR of fore wing about 3.6 times vein 2-SR+M (fig. 94 in de Saeger, 1946); pterostigma pale yellowish; sixth and seventh antennal segments of ♀ elongate (fig. 92 in de Saeger, 1946); vein 2-SR of fore wing about 3 times vein r *C. congoana* de Saeger, 1946
- Vein 2-SR of fore wing 0.8-1.3 times vein 2-SR+M (fig. 20); pterostigma pale brown or brownish-yellow; sixth and seventh antennal segments of ♀ normal (unknown for *C. longicornis*); vein 2-SR of fore wing 1.5-2.5 times vein r 4
- 4. Vein 2-SR of fore wing about 0.8 times vein 2-SR+M and about 1.5 times vein r (fig. 97 in de Saeger, 1946); tegulae, hind tibia (except basally and part of inner side) and tarsus dark brown; vein 1-SR of fore wing 0.1 times vein 1-M *C. afra* de Saeger, 1946
- Vein 2-SR of fore wing about 1.3 times vein 2-SR+M and about 2.5 times vein r (fig. 20); tegulae, hind tibia and tarsus brownish-yellow; vein 1-SR of fore wing 0.2 times vein 1-M *C. longicornis* Enderlein

Centistina longicornis-group

Typical species: *Centistina longicornis* Enderlein, 1912.

Diagnosis.— Head comparatively short (fig. 6), length of malar space about 0.4 times basal width of mandible; mandible gradually widened subbasally (fig. 4); temples comparatively narrow (fig. 4); marginal cell of fore wing comparatively robust (figs 1, 20); vein 2-SR of fore wing 0.8-3.6 times vein 2-SR+M (figs 1, 20); tarsal claws slender (fig. 8) or rather robust (fig. 21); first metasomal tergite distinctly sculptured (fig. 9, 14, 15); dorsope of first tergite comparatively shallow and rather small and dorsally situated (figs 9, 14) or absent.

Distribution.— Afrotropical (Madagascar, Congo) and New World (Brazil, Costa Rica, Ecuador, U.S.A.).

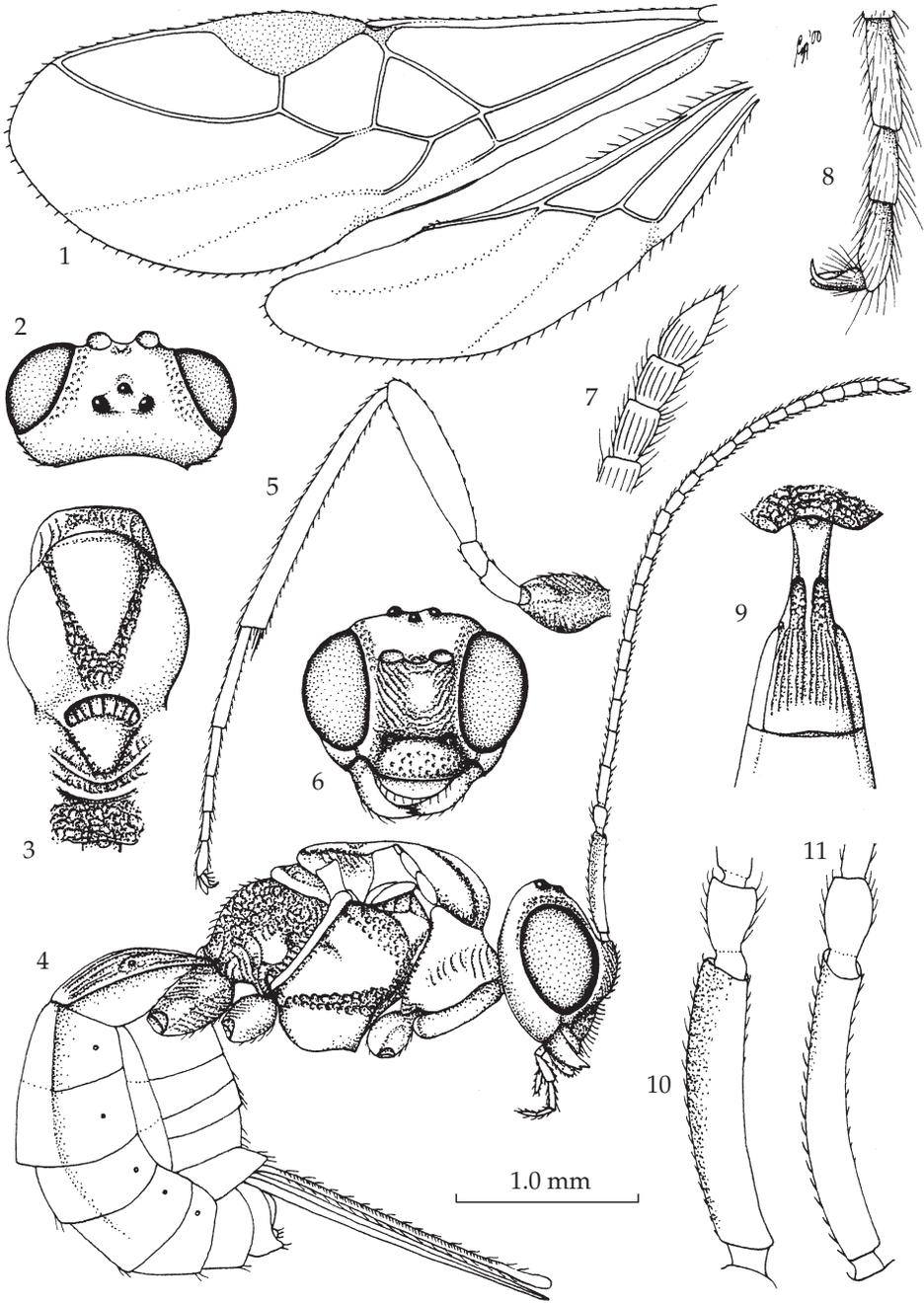
Centistina zitaniae spec. nov.
(figs 1-19)

Material.— Holotype, ♀ (IMUW), "Costa Rica: Alajuela Prov., Area de Conservation Arenal, Res. San Ramon, [1000 m], 7.vi.1998, light trap, 9:30-12:00 P.M., N. Zitani, S. Dadelahi, R. Fenoff, K. Krenzelok". Paratypes (3 ♀♀): 1 ♀ (IMUW), same data as holotype.; 2 ♀♀ (INBio, RMNH), id., but 8 or 9.vi.1998, near midnight.

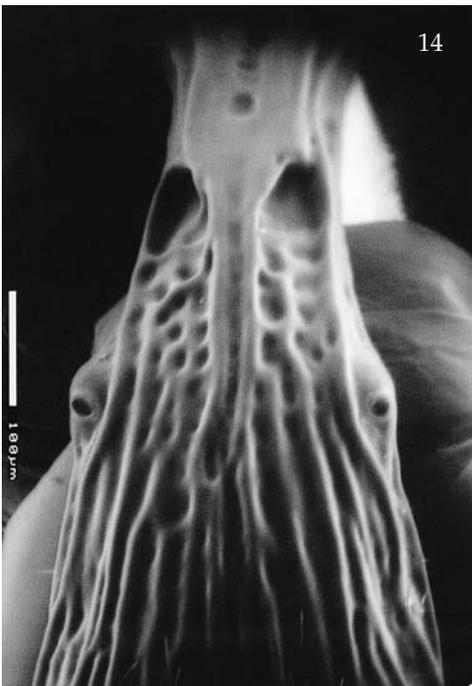
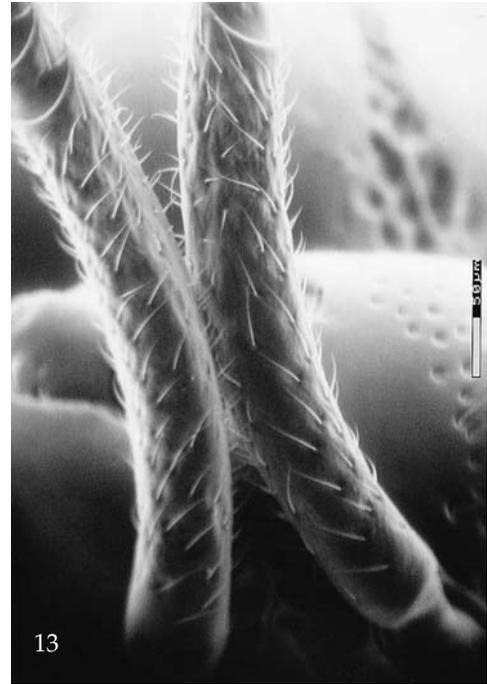
Holotype, ♀, length of body 5.1 mm, of fore wing 3.9 mm.

Head.— Antennal segments 25, antenna as long as fore wing, third segment 1.1 times as long as fourth segment, length of third, fourth and penultimate segments 3.0, 2.8 and 1.2 times their width, respectively (figs 4, 7); scapus very long, curved in dorsal view, partly rugulose (figs 4, 10, 11, 13); length of maxillary palp 0.6 times height of head, with 5 segments; labial palp 2-segmented; occipital carina joining hypostomal carina above level of mandibular base; occipital carina complete, rather strong, not arched and weaker and irregular dorsally; frons smooth and slightly convex, glabrous; OOL:diameter of posterior ocellus:POL = 10:7:10; length of eye in dorsal view 3.0 times temple (fig. 2), temples narrow (figs 2, 4); face distinctly convex, smooth medially and remainder coarsely obliquely rugose (figs 6, 19) anterior tentorial pits large (fig. 6); clypeus convex and coarsely punctate, but dorsally largely smooth (figs 6, 19); malar suture short (fig. 4); occipital flange vertical; length of malar space 0.4 times basal width of mandible and 0.1 times height of eye; mandible distinctly twisted, outer tooth much longer than inner tooth.

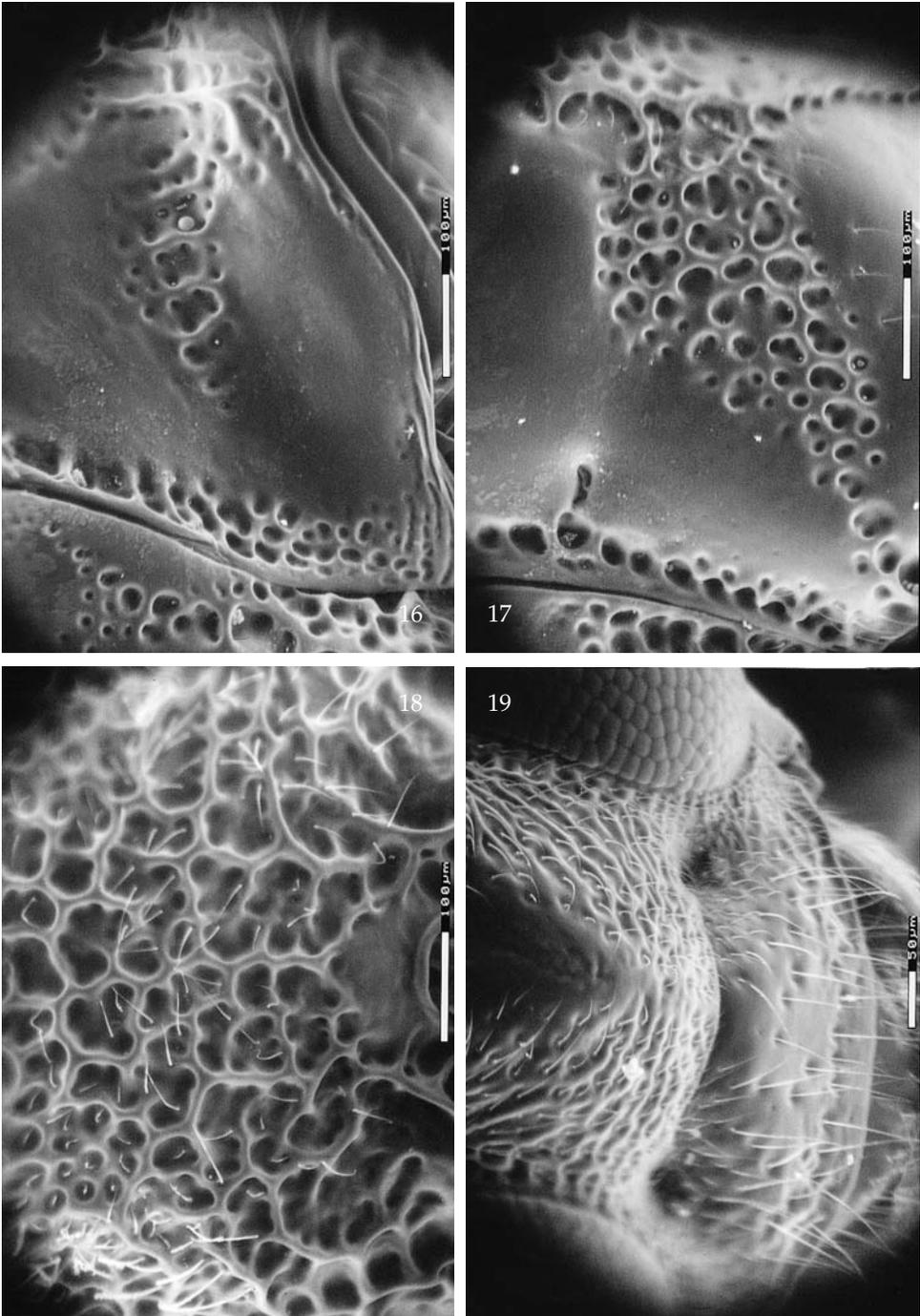
Mesosoma.— Length of mesosoma 1.4 times its height; pronope absent; side of pronotum largely smooth, but anteriorly crenulate-rugose and posteriorly narrowly crenulate-punctate (figs 4, 16); prepectal carina complete, strong and just reaching anterior margin of mesopleuron; postpectal carina absent; precoxal sulcus completely coarsely punctate-reticulate (figs 4, 17); remainder of mesopleuron smooth; metapleuron smooth medially and remainder crenulate-rugose; mesosternal suture deep, wide and finely crenulate; notauli completely impressed, coarsely reticulate-punctate, anteriorly narrow (fig. 3); mesoscutal lobes glabrous, smooth; scutellar sulcus coarsely crenulate (fig. 3); scutellum flat, largely smooth but with some punctures near the rather distinct lateral carina (fig. 3); surface of propodeum coarsely-reticulate, rather depressed medio-anteriorly and posteriorly flat and oblique (figs 4, 18).



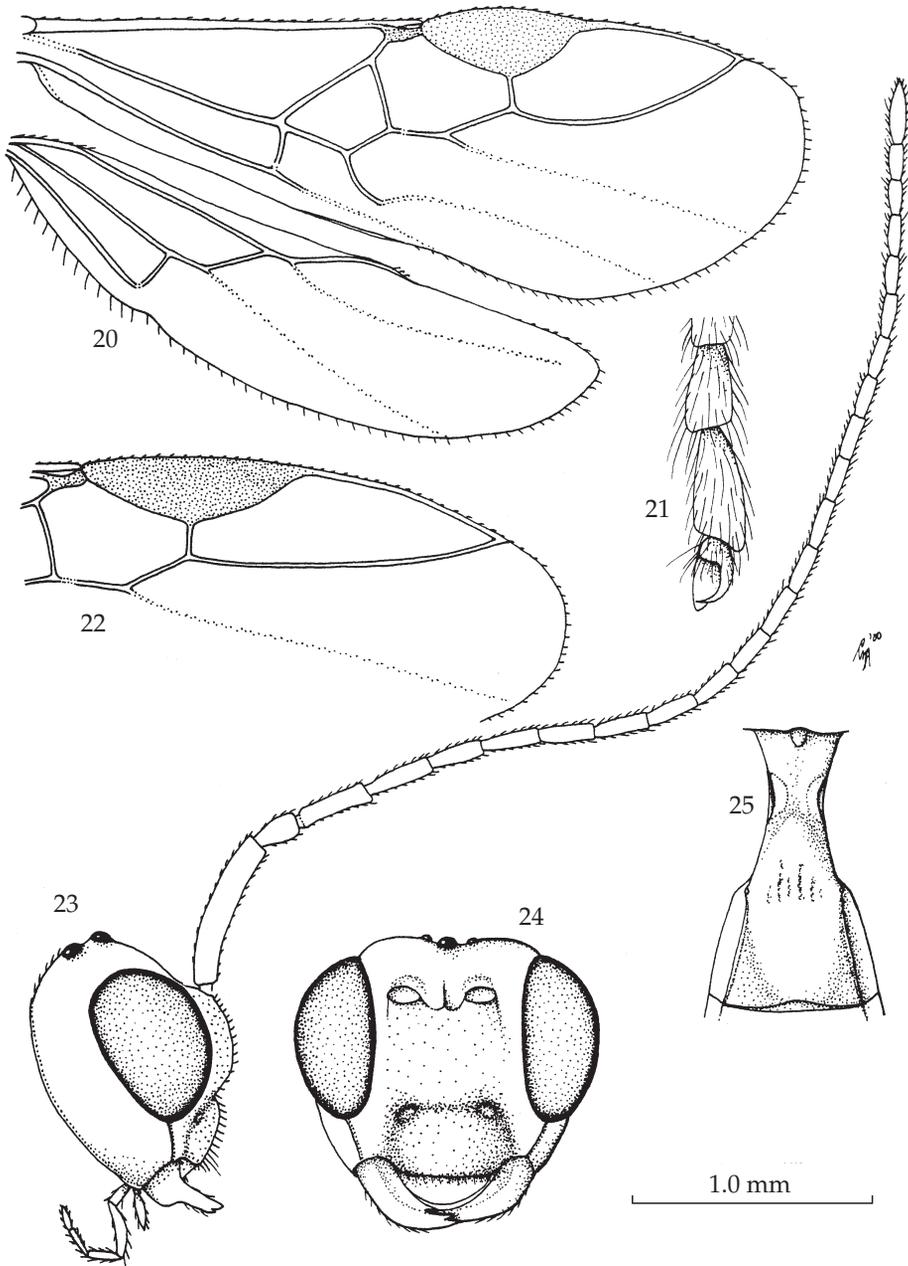
Figs 1-11, *Centistina zitaniae* spec. nov., ♀, holotype. 1, wings; 2, head, dorsal aspect; 3, mesosoma, dorsal aspect; 4, habitus, lateral aspect; 5, hind leg; 6, head, frontal aspect; 7, apex of antenna; 8, outer hind claw; 9, first metasomal tergite, dorsal aspect; 10, scapus and pedicellus, lateral aspect; 11, scapus and pedicellus, dorsal aspect. 1, 4, 5: 1 × scale-line; 2, 3, 6, 9: 1.2 ×; 7, 8, 10, 11: 2.7 ×.



Figs 12-15, *Centistina zitaniae* spec. nov., ♀, paratype. 12, mandible, lateral aspect; 13, scapus, frontal aspect; 14, first metasomal tergite medially and basally, dorsal aspect; 15, id., but apically.



Figs 16-19, *Centistina zitaniae* spec. nov., ♀, paratype. 16, pronotal side, lateral aspect; 17, precoxal sulcus; 18, propodeum, dorso-posterior aspect; 19, face and clypeus, dorso-frontal aspect.



Figs 20-21, *Centistina longicornis* Enderlein, ♂, holotype; figs 22-25, *C. fusciscapa* spec. nov., ♂, holotype. 20, wings; 21, inner fore claw; 22, apex of fore wing; 23, head and antenna, lateral aspect; 24, head, frontal aspect; 25, first metasomal tergite, dorsal aspect. 20, 22: 1 × scale-line; 21: 3.3 ×; 23-25: 1.4 ×.

Wings.— Fore wing: 1-CU1:2-CU1 = 1:14; 1-SR medium-sized (fig. 1); 2-M present; SR1 evenly curved (fig. 1); 2-SR 1.7 times 2-SR+M; 2-R1 absent; r:3-SR+SR1:2-SR = 6:44:12. Hind wing: M+CU:1-M = 31:5; SC+R1 long (fig. 1); 1r-m twice as long as 1-M.

Legs.— Hind coxa punctate dorsally, laterally densely rugulose (fig. 4); tarsal claws (very) slender (fig. 8); fore tibia very bristly setose; length of femur, tibia and basitarsus of hind leg 4.8, 11.6, and 9.0 times their width, respectively; outer and inner hind tibial spurs 0.35 and 0.40 times hind basitarsus, respectively.

Metasoma.— Length of first tergite 2.3 times its apical width, distinctly petiolate (fig. 9), its surface coarsely costate-rugose and near dorsope punctate-rugose, but basally and apically smooth (figs 9, 14, 15), dorsope shallow, dorsal carinae indistinct; length of ovipositor sheath 0.45 times fore wing, sheath comparatively wide apically, obtuse (fig. 4); ovipositor straight, ribbon-like compressed.

Colour.— Brownish-yellow; stemmaticum black; apical half of ovipositor sheath largely dark brown; palpi, face and clypeus pale yellowish; fourth-eighth antennal segments, parastigma and most veins brown; wing membrane subhyaline.

Variation.— Length of fore wing 3.8-3.9 mm, of body 4.2-5.1 mm; antennal segments of ♀ 25(2) or 26(1); length of first tergite 2.0-2.3 times its apical width; length of ovipositor sheath 0.45-0.50 times fore wing; vein 2-SR of fore wing 1.7-2.0 times vein 2-SR+M; lateral carina of scutellum may be distinctly developed posteriorly and its surroundings rugose.

Note.— It is a pleasure to name this species after the hymenopterist Nina Zitani (IMUW), who is one of the collectors. She was in charge of the San Ramon expedition and she spent several months at the remote San Ramon station under very difficult conditions.

Centistina fusciscapa-group

Typical species: *Centistina fusciscapa* spec. nov.

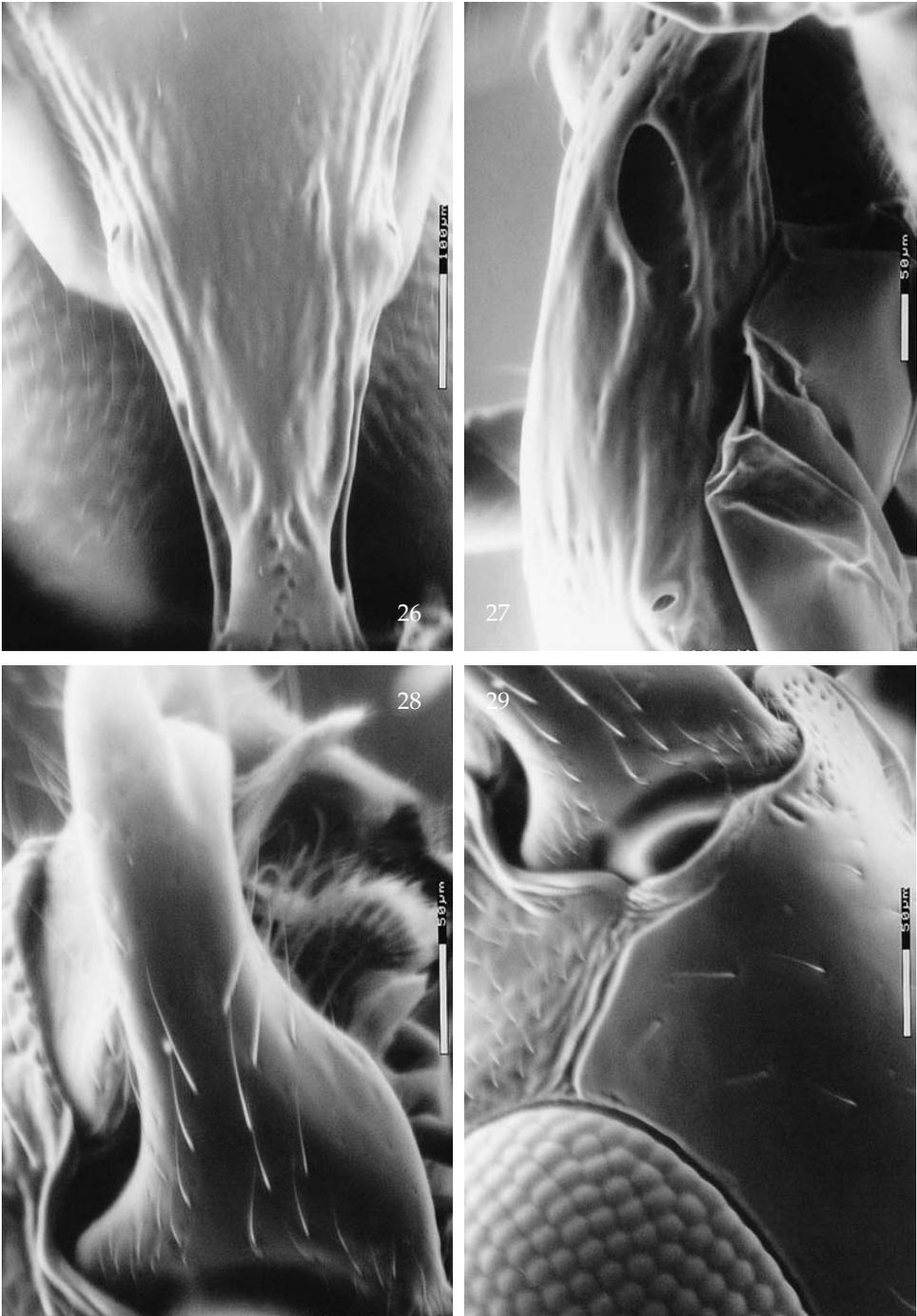
Diagnosis.— Head elongate (fig. 24), length of malar space 0.7-0.8 times basal width of mandible (fig. 29); mandible abruptly widened subbasally (figs 23, 28); temples comparatively wide (fig. 23); marginal cell of fore wing slender (fig. 22); vein 2-SR of fore wing 0.7-0.8 times vein 2-SR+M; tarsal claws slender; first metasomal tergite largely smooth (fig. 25); dorsope of first tergite very deep, large and laterally situated (fig. 27).

Distribution.— Neotropical (Costa Rica).

Centistina fusciscapa spec. nov. (figs 22-29)

Material.— Holotype, ♂ (IMUW), "Costa Rica: San José, Cerro de la Muerte, 26 km N San Isidro, 2100 m, ii-v.1992, [Malaise trap], Paul Hanson". Paratypes (2 ♂♂): 1 ♂ (IMUW), same data as holotype, right wings removed; 1 ♂ (RMNH), id., but x-xii.1991, Hanson & Godoy.

Holotype, ♂, length of body 4.4 mm, of fore wing 4.1 mm. Similar to *C. zitaniae*, but differs as follows.



Figs 26-29, *Centistina fusciscapa* spec. nov., ♂, paratype. 26, first metasomal tergite, dorsal aspect; 27, id., lateral aspect; 28, mandible, antero-lateral aspect; 29, malar space, lateral aspect.

Head.— Antennal segments 24, antenna about as long as fore wing, third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 4.3, 3.5 and 2.0 times their width, respectively (fig. 23); length of maxillary palp 0.7 times height of head; occipital carina strong dorsally; with depression behind stemmaticum (absent in paratypes); frons with short median carina anteriorly (fig. 24); OOL:diameter of posterior ocellus:POL = 6:3:5; length of eye in dorsal view 1.3 times temple, temples comparatively wide (fig. 23); face finely punctate; anterior tentorial pits large (fig. 24); clypeus convex and rather sparsely punctate; malar suture long (fig. 23); length of malar space 0.7 times basal width of mandible (fig. 29); outer tooth of mandible even longer compared to inner tooth than in *C. zitaniae*.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum more punctate than in *C. zitaniae*; prepectal carina complete, very strong; metapleuron largely smooth, except for some rugae ventrally and crenulation anteriorly; scutellum distinctly rugose posteriorly.

Wings.— Fore wing: 1-SR 0.1 times 1-M; cu-a subinterstitial; 2-M absent; marginal cell slender and SR1 straight (fig. 22); r:3-SR+SR1:2-SR = 5:44:9; 3-CU1 strongly oblique; 2-SR 0.8 times 2-SR+M. Hind wing: M+CU:1-M = 21:5; 1r-m 1.4 times 1-M.

Legs.— Hind coxa largely smooth, with some oblique striae and punctures; tarsal claws slender; length of femur, tibia and basitarsus of hind leg 6.1, 12.0, and 10.3 times their width, respectively; outer and inner hind tibial spurs 0.30 and 0.35 times hind basitarsus, respectively.

Metasoma.— Length of first tergite 1.8 times its apical width, distinctly petiolate (fig. 25), its surface smooth except for a few short rows of punctures (figs 25, 26), dorsal carinae absent.

Colour.— Brownish-yellow; stemmaticum largely blackish; scapus largely, remainder of antenna (except yellowish pedicellus), second and third tergites dorsally, fourth tergite medially, fifth tergite slightly medially, patch of mesopleuron and mesosternum, base of hind tibia, vein C+SC+R of fore wing and parastigma dark brown; pterostigma and most veins yellowish, but pterostigma weakly infuscate basally.

Variation.— Length of fore wing 4.1-4.3 mm, of body 4.4-4.7 mm; antennal segments of ♂ 24(2); length of 2-SR of fore wing 0.7-0.8 times vein 2-SR+M; length of malar space 0.7-0.8 times basal width of mandible; scapus completely or partly dark brown; mesopleuron and mesosternum, lateral lobes of mesoscutum, side of scutellum, and metanotum may be largely dark brown; no depression behind stemmaticum; one paratype has a shallow round depression near the base of mandible, another has the fourth tergite more extensively dark brown.

Acknowledgements and abbreviations

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IMUW stands for Insect Museum, University of Wyoming, Laramie; INBio for Instituto Nacional de Biodiversidad, Heredia, San José; and RMNH for Nationaal Natuurhistorisch Museum, Leiden.

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