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A new species of *Fianoniella* (Hymenoptera: Ichneumonidae) from the Columbretes Islands (Spain), with additional notes on *F. laeviscutum*

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Ichneumonidae, Cryptinae, *Fianoniella*, new species, *F. laeviscutum*, taxonomy, key

Abstract. *Fianoniella stenognatha* sp. n. from the Columbretes Islands (Castellón, Spain) is described and illustrated. The new species is distinguished by its longer and narrower mandibles with parallel or divergent rims in the apical half, wider clypeus, hind ocelli more separated and closer to the eyes, and longer flagellar segments. Additional notes to complete the original description of the closest species, *F. laeviscutum* (Horstmann), are given. A key to the European species of *Fianoniella* is provided.

INTRODUCTION

The genus *Fianoniella* was established by Horstmann (1991) for the Nearctic species described by Townes (1983) in *Fianonia* Seyrig (=*Gelis* Thunberg after Horstmann, 1990) and for the European species: *Odontoneura laeviscutum* Horstmann and *Odontoneura punctiscutum* Horstmann. Moreover, he included *Hemiteles bituberculatus* Schmiedeknecht with some doubt, although this aberrant species has indeed an uncertain taxonomic position and probably does not belong to *Fianoniella*. The genus belongs to the subtribe Mastrina Townes (Ichneumonidae: Cryptinae: Phygadeuontini), that are usually idiobiont parasitoids of small cocoons of Microlepidoptera, but some parasitize cocoons of Braconidae, coleopterous borers in small branches and small sphecids nesting in beetle tunnels.

Fianoniella is a Holarctic genus and is characterised, among other features, by lacking epomia; notauli deep and reaching beyond centre of mesoscutum; second recurrent vein distinctly inclivous with two bullae; clypeus with the apical margin slightly rounded on midline or straight, without any tooth; area superomedia as long as wide; the ovipositor bent downwards; and the antennae without a white ring in the females (Horstmann, 1991).

Almost nothing is known about the distribution of *Fianoniella* species, which are known only from their type localities. The European species *F. laeviscutum* and *F. punctiscutum* are only represented by the holotypes, respectively from Messaure (Sweden) and Leicester (United Kingdom) (Fig. 1). The biology of all species and their hosts are unknown.

In this paper a new species is described from the Columbretes Islands (Spain), the only Palaearctic species of *Fianoniella* for which males have been collected. Additional notes to complete the original description of the closest species, *F. laeviscutum*, are given. A key to the European species of *Fianoniella* is also provided.

The Columbretes Islands are a small volcanic archipelago 52 km off the coast of Castellón (Spain) (Fig. 1), situated between 39°51′ N and 39°55′ N and between 0°40′ E

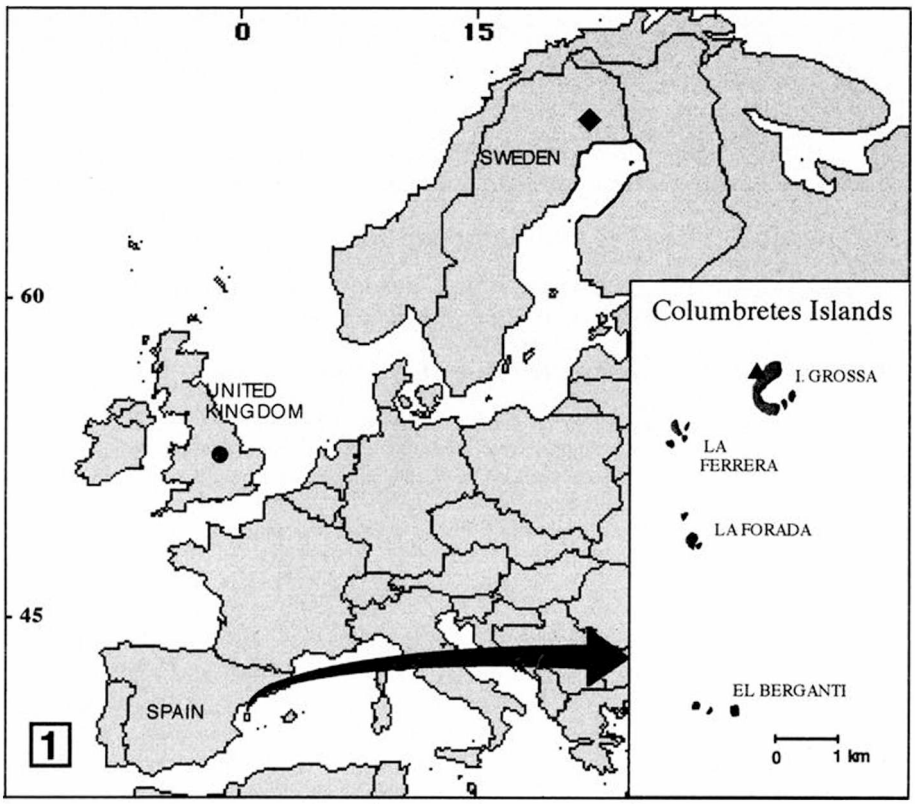


Fig. 1. European distribution of *Fianoniella*. ● – *F. punctiscutum*; ◆ – *F. laeviscutum*; ▲ – *F. stenognatha* sp. n.

and 0°42′ E. The maximum altitude over the mean level of the sea is about 67 m. Their origin is thought to be during the Pliocene-Pleistocene (2,500,000 years ago). The entire archipelago occupies about 19 hectares, which is spread over four principal islands: l'Illa Grossa, La Ferrera, La Foradá and El Carallot or Bergantí. The largest island is l'Illa Grossa, which represents 74% of the total surface, and is the only one permanently inhabited.

The climate is characterised by an irregular distribution of rainfall along the year, with an average of about 265 mm per year distributed on 23 days of rain per year and with a peak of 80.2 mm on 24 h; 50% of rainfall occur in the autumn. Annual mean temperature is 16.8°C. According to the UNESCO-FAO bioclimatic classification, the Columbretes Islands possess a Meso-Mediterranean climate accentuated by a long dry season and a xerothermic index ranging from 75 to 100 (Alonso et al., 1991).

Notable among the vascular flora are *Medicago arborea* subsp. *citrina* (Font Quer) O. Bolòs & Vigo, *Astragalus boeticus* L. (both Fabaceae), *Suaeda vera* Forsk., *Beta patellaris* Moq. (both Chenopodiaceae), *Lavatera mauritanica* subsp. *davaei* (Cout.) Cout., *Lavatera arborea* L. (both Malvaceae), *Lobularia maritima* subsp. *columbretensis* R.

Fern., *Succowia balearica* (L.) Medic. (Brassicaceae), *Lycium intricatum* Boiss., *Withania frutescens* (L.) Pauq. (both Solanaceae), and *Triplachne nitens* Link (Poaceae), most of which are characteristic taxa from more southern thermic and xeric habitats.

MATERIAL AND METHODS

MATERIAL. Within the framework of a Research Project investigating biodiversity and conservation in small islands of Castellón, Valencia, Alicante and Murcia (Spain), several individuals of a species of *Fianoniella* have been collected in the Columbretes Islands Natural Park (Castellón). The specimens were collected in 1994, 1995 and 1996 by means of a Malaise trap placed over various periods in the Illa Grossa. Samplings performed by sweeping in other small islands of the archipelago (e.g., La Ferrera and La Foradá) did not yield any specimens of Ichneumonidae. Other material collected in 1964 and preserved in the Museo Nacional de Ciencias Naturales (MNMS, Madrid) have been studied. All these specimens are the only Ichneumonidae found on these islands until now.

The material has been compared with the holotypes of all known species of *Fianoniella*, which are preserved in the American Entomological Institute (AEIC, Gainesville, USA).

TERMINOLOGY. Terms used for microsculpture of sclerites have been adapted from Eady (1963).

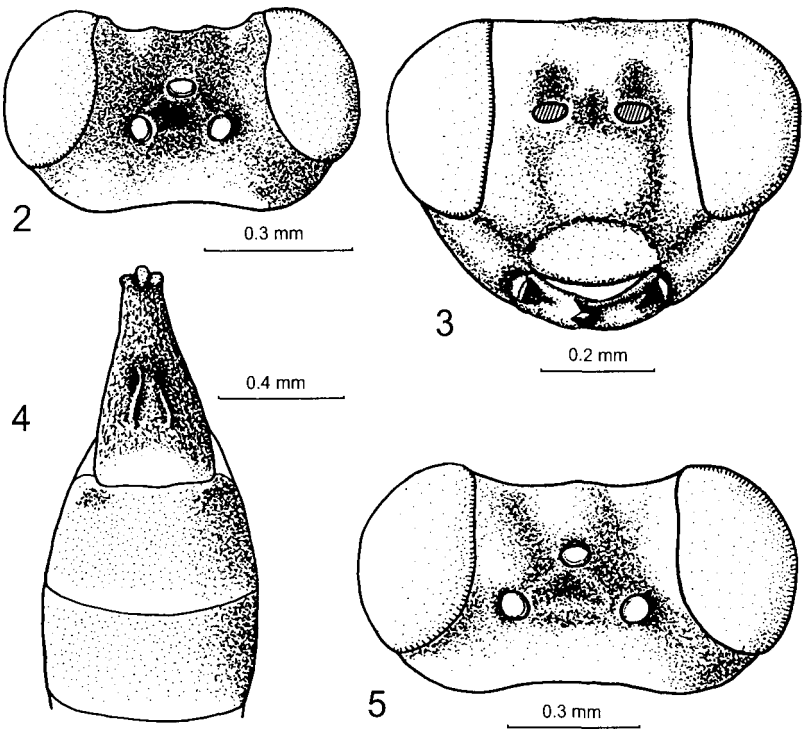
Fianoniella stenognatha sp. n.
(Figs 5, 6–11)

FEMALE. Body length (without ovipositor) 3.78–4.47 mm. Head 0.45–0.51 mm long and 0.91–1.01 mm wide. Thorax 1.43–1.62 mm long, 0.70–0.80 mm wide (mesoscutum). Front wings 3.03–3.56 mm long. Petiolus 0.32–0.39 mm long. Postpetiole 0.30–0.40 mm long and 0.36–0.44 mm wide. Second segment 0.45–0.52 mm long. Ovipositor sheaths 1.40–1.43 mm long.

Coloration. Black. Mandibles dark red, base and apex fuscous. Palpi, labrum, apex of coxae and first trochanter, the second entirely, femora and hind margin of terga 2–3 yellow to light brown; sometimes the half basal part of femora dorsally dark brown to black. Tibiae, tarsi and pterostigma light brown, sometimes partially fuscous. Gastral terga dark brown to black. Annulus, basal 0.2 of first flagellar segment and tegula yellow. Wings hyaline.

Description. Head (Figs 5, 8, 9): Transverse, 1.9–2.0 times as wide as long, strongly constricted behind the eyes. Temple about 0.2–0.3 times as long as eye (as viewed from above); vertex, front, cheeks and temples with small, shallow and dense setiferous punctures on a smooth background; face hairy, punctures moderately deep and very dense. Malar space about 1.4–1.5 times as wide as basal width of mandible; clypeus polished and smooth, with a line of a few long hairs on the basal part, about 2.4–2.6 times as wide as long, its profile somewhat convex, apical margin slightly rounded on midline or almost truncate; mandibles long and narrow, twice as long as basal width and 4 times as long as wide at the base of teeth; apical half with parallel or slightly divergent rims towards the end; antennae with 23–24 segments; apical truncation of scape 45° from the transverse; first flagellar segment 4.9–5.3 times (Fig. 9), fourth 3.5–3.9 times and penultimate 1.0 times as long as wide; genal carina joining oral carina above base of mandible by 0.5–0.7 times the basal with of the latter. Hind ocelli separated from eye by about 1.1 times their diameter. Space between hind ocelli 2.7 times their diameter.

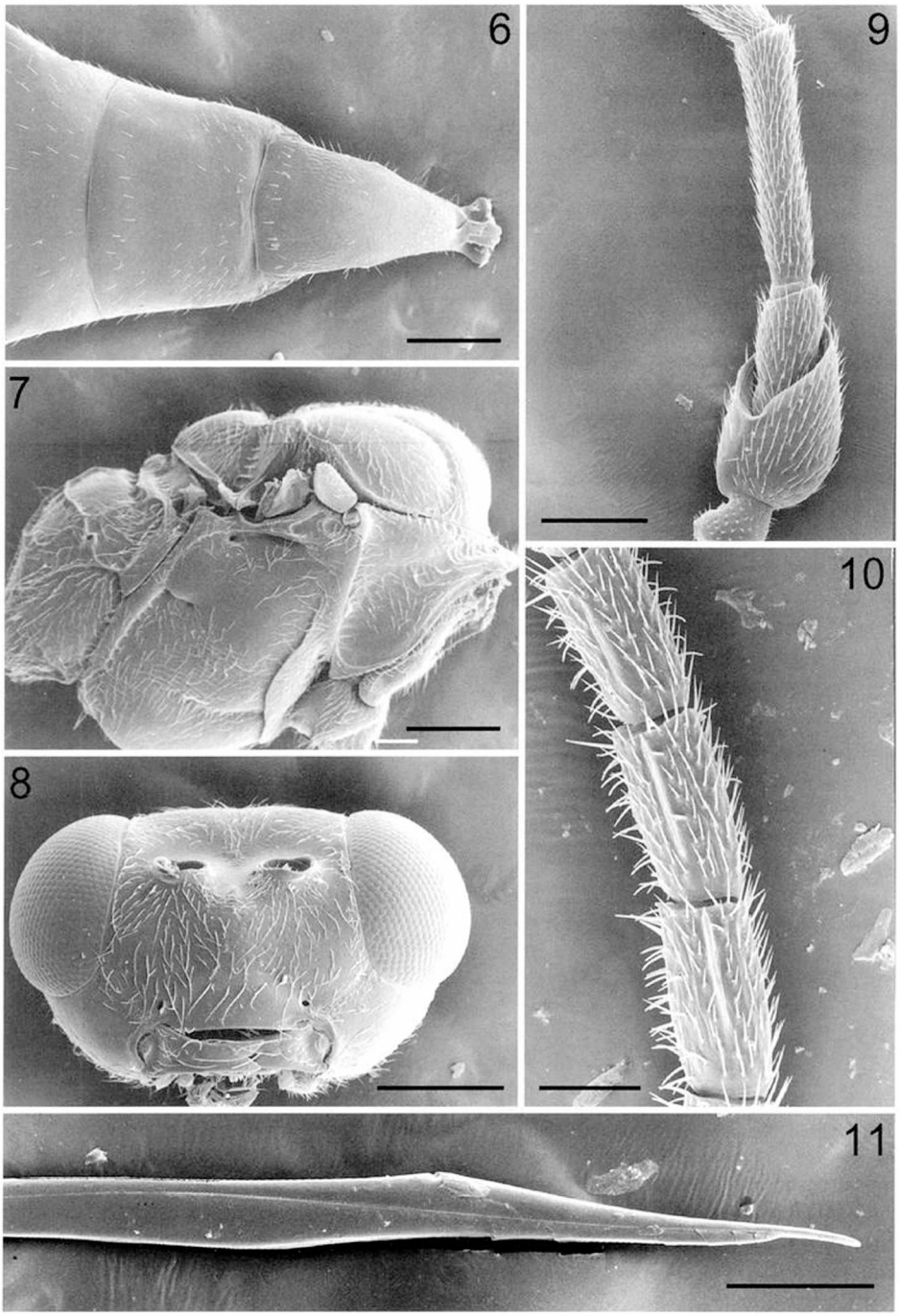
Thorax (Fig. 7). Pronotum with weak longitudinal wrinkles laterally. Epomia absent. Mesoscutum polished, with small, shallow and moderately dense punctures on a smooth



Figs 2–5. Morphology of European *Fianoniella* species. 2 – *F. laeviscutum* ♀, head, dorsal; 3 – *F. laeviscutum* ♀, head, frontal; 4 – *F. punctiscutum* ♀, 1–3 gastral segments, dorsal; 5 – *F. stenognatha* ♀, head, dorsal.

background; punctures are much smaller than their interspaces; notauli deep and reaching about 0.7 the distance to scutellum; area of mesoscutum between apex of notauli with fine longitudinal wrinkles. Scutellar groove with longitudinal wrinkles. Mesopleura with fine longitudinal striae on the upper side of sternaulus, except on and in front of the speculum; the background polished with moderately dense setiferous punctation, sometimes weakly granulate; speculum and the area of the mesopleura in front of speculum smooth, polished and completely hairless; sternauli deep and extending to 0.5 the length of mesopleura. Metapleura weakly granulate, with small and sparse setiferous punctures on a polished background. Ramellus present. Second recurrent vein inclivous and with two separate bullae. Nervellus distinctly inclivous and intercepted. Fore and hind femora 4.3–4.5 and 4.7–5.0 times as long as high respectively. Propodeum completely areolated; area superomedia 1.0–1.1 times as long as wide, smooth and polished.

Gaster (Figs 6, 11). First gastral tergum dorsally hairless, finely granulate and polished, without two pits at the base of postpetiole. Apical 0.3 of postpetiole smooth and polished with a transverse line of hairs. Second tergum polished and smooth, sometimes with front 0.6 very weakly granulate and hind 0.4 smooth; dorsally and centrally hairless, frontally and laterally with very sparse setiferous punctation. Third tergum smooth and polished,



Figs 6–11: *F. stenognatha*. 6 – 1–3 gastral segments of female, dorsal; 7 – thorax of female, lateral; 8 – head of female, frontal; 9 – basal antennal segments of female; 10 – tyloids of male; 11 – ovipositor of female. Scale bars: 6–8 – 0.2 mm; 9 – 0.1 mm, 10 – 0.05 mm; 11 – 0.1 mm.

dorsally hairless or with a few setiferous punctures; laterally with sparse or moderately dense setiferous punctation. Second and third gastral terga 0.65–0.75 and 0.5–0.6 times as long (dorsally measured) as its maximum width. Ovipositor downcurved, with a weak nodus and teeth (Fig. 11). Ovipositor sheaths 1.2 times as long as the hind tibiae.

MALE. Body length 2.70–3.96 mm. Head 0.29–0.42 mm long and 0.58–0.83 mm wide. Thorax 0.83–1.30 mm long, 0.43–0.68 mm wide (mesoscutum). Fore wing 2.23–2.99 mm long. Petiolus 0.21–0.39 mm long. Postpetiole 0.18–0.29 mm long and 0.16–0.23 mm wide. Second segment 0.25–0.39 mm long.

Coloration. Black. Mandibles dark redish, base and apex fuscous; sometimes the central part yellow and then the apex is red. Palpi, labrum, annulus, basal 0.2 of first flagellar segment, tegula, second trochanter entirely, base and apex of femora, fore tibiae and hind margin of terga 1–2 yellow to light brown; abdominal terga and sometimes the central part of femora dark brown to black. Hind femur usually dark brown entirely. Middle and hind tibiae, all tarsi and pterostigma light brown, sometimes partially fuscous. Wings hyaline.

Description. Head (Fig. 10). Transverse, 1.9 times as wide as long, less constricted behind compound eyes than in female; temple 0.5–0.6 times as long as eye; malar space about 0.9–1.0 times as wide as basal width of mandible. Clypeus polished and smooth, with small setiferous punctures on the upper groove, 2.9–3.0 times as wide as long, apical margin as in female. Mandibles long and narrow, 1.9–2.0 times as long as basal width and 4.1 times as long as wide in the base of teeth; apical half with parallel or nearly divergent rims. Antennae with 21–22 segments; first flagellar segment 3.7–4.0 times, fourth 3.0–3.3 times and penultimate 1.0–1.1 times as long as wide; tyloids on the 9–11 flagellar segments (Fig. 10). Flagellum with strongly protruding setae. Genal carina joining oral carina above base of mandible by about 0.4 the basal with of the latter. Hind ocelli separated from eye by about 1.1–1.3 times their diameter. Space between hind ocelli about 2.7 times their diameter.

Thorax. Ramellus present. Fore and hind femora 4.4–4.6 and 4.7–5.0 times as long as high respectively. Area superomedia 1.0–1.2 times as long as wide, smooth and polished, sometimes with some lateral wrinkles.

Gaster. Petiolus finely granulate and polished, dorsally hairless, hind 0.3 of postpetiole with sparse setiferous punctures on smooth background. Rest of gastral terga, moderately hairy and punctate. Second and third gastral terga 1.0–1.3 and 0.8–1.2 times as long (seen from above) as its maximum width.

MATERIAL EXAMINED: Holotype: ♀, Columbretes Islands (Illa Grossa), 20.–25.v.1995, leg. S. Bordera. Paratypes: 1♀, same locality, 22.v.1964; 2♀, 23.v.1964, leg. A. Compte & S.V. Peris; 2♀, 4♂, 13.–17.iv.1994; 1♀, 9.–15.iii.1995; 2♀, 10.–17.iv.1996, leg. S. Bordera. Two paratypes, ♂ and ♀ from Illa Grossa, 13.–17.iv.1994, are deposited in the Horstmann's Collection (Würzburg, Germany). 3♀ from v.1964 are preserved in the MNMS and the rest of the material is deposited in the author's collection, Departamento de Ciencias Ambientales y Recursos Naturales, University of Alicante, Spain.

ETYMOLOGY. *Steno* (Gr.), narrow; *gnathos* (Gr.), mandible. The specific name is related to the presence of narrower mandibles than in *F. laeviscutum* (Horstmann).

BIOLOGY. Unknown.

REMARKS. *F. stenognatha* sp. n. is close to *F. laeviscutum* (Horstmann), agreeing in large measure with Horstmann's description of the latter (Horstmann, 1990). Among other features, females of both species have the first, second and third gaster terga smooth (sometimes weakly granulate) and polished, dorsally hairless and laterally with very

sparse setiferous punctation. The new species differs from *F. laeviscutum* in having long and narrower mandibles with parallel or divergent rims in the apical half; a wider clypeus; hind ocelli more separated and closer to the eyes, and longer flagellar segments. None of these features are included in Horstmann's description of *F. laeviscutum*, and consequently, for a satisfactory diagnosis of *F. stenognatha* sp. n. supplementary morphological notes on *F. laeviscutum* are required.

Additional notes on *Fianoniella laeviscutum* (Horstmann)

(Figs 2, 3)

HOLOTYPE. Head (Figs 2, 3). 1.8 times as wide as long, strongly constricted behind the eyes. Temple about 0.3 times as long as eye (seen from above); vertex, front, cheeks and temples with small, shallow and sparse punctures on a smooth background; face with a dense, small and deep punctation; clypeus, about twice as wide as long, its profile somewhat convex, apical margin slightly rounded on midline. Mandibles 1.6 times as long as their basal width and 2.4 times as long as wide at base of teeth, apical half with convergent rims towards the end. First flagellar segment 4.5 times, fourth 2.9 times and penultimate 1.1 times as long as wide. Hind ocelli separated from eye by 1.7 times their diameter. Hind ocelli separated by 2.1 times their diameter. Area of mesoscutum between posterior end of notauli without fine longitudinal wrinkles. Mesopleura with fine longitudinal striae on the upper side of sternaulus, except on and in front of speculum; background polished with moderately dense setiferous punctation; speculum and the area of the mesopleura in front of speculum, completely hairless. Fore femur 4.1 times as long as high. Second and third gastral terga 1.0 and 0.8 times as long (dorsally measured) as their maximum width.

Key to European species of *Fianoniella*

1 Mesoscutum with dense punctures, at some places the punctures as wide as the interspaces. Second tergum of gaster with fine punctures and hairs over its entirety, only a small caudal part without punctures and hairs (Fig. 4) ..... *F. punctiscutum* (Horstmann)

– Mesoscutum with very fine punctures, which are much smaller than their interspaces. Second gastral tergum of female, at least medially, without punctures and hairs 2

2 Mandible 1.6 times as long as its basal width and 2.4 times as long as the width at the base of teeth; apical half with convergent rims. Clypeus twice as wide as long (Fig. 3). Hind ocelli separated from eye by 1.7 times their diameter, space between them 2.1 times their diameter (Fig. 2). First flagellar segment 4.5 times, fourth 2.9 times and penultimate 1.1 times as long as wide ..... *F. laeviscutum* (Horstmann)

– Mandible long and narrow, 1.9–2.0 times as long as its basal width and 4.0–4.1 times as long as the width at the base of teeth; apical half with parallel or divergent rims towards the end. Clypeus 2.4–2.6 times as wide as long (Fig. 8); in males 2.9–3.0. Hind ocelli separated from eye by 1.1–1.3 times their diameter, space between them 2.7 times its diameter (Fig. 5). First flagellar segment of the female 4.9–5.3 times (Fig. 9), fourth 3.5–3.9 times and penultimate 1.0–1.1 times as long as wide ..... *F. stenognatha* sp. n.

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