

ISSN 1405-4094 (edición impresa)  
ISSN 2007-9133 (edición online)

# DUGESIANA



Junio 2016

Volumen 23

Número 1

DEPARTAMENTO  
DE BOTÁNICA Y  
ZOOLOGÍA

Disponible en línea  
<http://www.revistascientificas.udg.mx/index.php/DUG/index>  
<http://dugesiana.cucba.udg.mx>

Dugesiana, Año 23, No. 1, Enero-Junio 2016, es una publicación Semestral, editada por la Universidad de Guadalajara, a través del Centro de Estudios en Zoología, por el Centro Universitario de Ciencias Biológicas y Agropecuarias. Camino Ramón Padilla Sánchez # 2100, Nextipac, Zapopan, Jalisco, Tel. 37771150 ext. 33218, <http://www.revistascientificas.udg.mx/index.php/DUG/index>, [glenusmx@gmail.com](mailto:glenusmx@gmail.com). Editor responsable: José Luis Navarrete Heredia. Reserva de Derechos al Uso Exclusivo 04-2009-062310115100-203, ISSN: 2007-9133, otorgados por el Instituto Nacional del Derecho de Autor. Responsable de la última actualización de este número: José Luis Navarrete Heredia, Editor. Fecha de la última modificación 30 de junio 2016, con un tiraje de un ejemplar.

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**A new species of *Anagyrus* Howard (Hymenoptera: Encyrtidae) from Puerto Rico (USA), parasitoid of the *Harrisia* cactus mealybug, *Hypogeococcus* sp. (Hemiptera: Pseudococcidae), on *Pilosocereus royenii* (Cactaceae)**

**Una nueva especie de *Anagyrus* Howard (Hymenoptera: Encyrtidae) de Puerto Rico (EE.UU.), parasitoide del piojo harinoso del cactus *Harrisia*, *Hypogeococcus* sp. (Hemiptera: Pseudococcidae), sobre *Pilosocereus royenii* (Cactaceae)**

**Serguei Vladimirovich Triapitsyn**

Entomology Research Museum, Department of Entomology, University of California, Riverside, California, 92521, USA, [serguei.triapitsyn@ucr.edu](mailto:serguei.triapitsyn@ucr.edu)

**ABSTRACT**

A new species of the genus *Anagyrus* Howard (Hymenoptera: Encyrtidae), *A. ciomperliki* sp. n., is described from Puerto Rico (USA) as a primary parasitoid of the *Harrisia* cactus mealybug, *Hypogeococcus* sp. (Hemiptera: Pseudococcidae), on the native cactus *Pilosocereus royenii* (Cactaceae).

**Key words:** Hymenoptera, Encyrtidae, *Anagyrus*, Puerto Rico, parasitoid, mealybug, *Hypogeococcus*.

**RESUMEN**

Se describe una nueva especie del género *Anagyrus* Howard (Hymenoptera: Encyrtidae), *A. ciomperliki* sp. n. de Puerto Rico (EE.UU.) como un parasitoide primario del piojo harinoso del cactus *Harrisia*, *Hypogeococcus* sp. (Hemiptera: Pseudococcidae), sobre el cactus nativo *Pilosocereus royenii* (Cactaceae).

**Palabras clave:** Hymenoptera, Encyrtidae, *Anagyrus*, Puerto Rico, parasitoide, piojo harinoso, *Hypogeococcus*.

A new species of the genus *Anagyrus* Howard (Hymenoptera: Encyrtidae), *A. ciomperliki* sp. n., is described from Puerto Rico (USA) as a primary parasitoid of *Hypogeococcus* sp. (Hemiptera: Pseudococcidae) on *Pilosocereus royenii* (Cactaceae). It is presumably a native natural enemy of *Hypogeococcus* sp., commonly called the *Harrisia* cactus mealybug which is often misidentified as *H. pungens* Granara de Willink. The latter, according to the unpublished data by Guillermo A. Logarzo (personal communication), attacks only Amaranthaceae and is not conspecific with the gall-like inducing *Hypogeococcus* sp. of yet unknown origin that devastates or threatens the native cacti, including *P. royenii*, in Puerto Rico and also in some other Caribbean islands (Triapitsyn, Aguirre et al. 2014; Carrera-Martínez et al. 2015).

All the specimens had been initially preserved in 80% ethanol; later they were dried using a critical point dryer, point-mounted, and then one female and one male were slide-mounted in Canada balsam. Terms for morphological features in the description are those of Gibson (1997). Measurements are given in micrometers ( $\mu\text{m}$ ) as length or length: width (for the wings). An abbreviation used is: F = antennal funicle segment. Type specimens are deposited in the collections of Museo de Entomología y Biodiversidad Tropical, Universidad de Puerto Rico, Jardín Botánico Norte, San Juan, Puerto Rico (USA) (MEBT) and Entomology Research Museum, University of California, Riverside, California, USA (UCRC).

**RESULTS  
TAXONOMY**

*Anagyrus ciomperliki* Triapitsyn sp. n.

(Figs 1-9)

<http://zoobank.org/0D0A54E0-7E61-4958-8AFC-D48B01177E96>

**Type material.** Holotype female [UCRC] on slide (Fig. 4) labeled: 1. "PUERTO RICO (USA): Cabo Rojo, U. S. Fish and Wildlife Service Cabo Rojo National Wildlife Refuge, 24.iv.2012, A. Francis, from *Hypogeococcus pungens* Granara de Willink on cactus, *Pilosocereus royenii*"; 2. "Mounted by V. V. Berezovskiy 2013 in Canada balsam"; 3. "*Anagyrus* ♀ Det. by S. V. Triapitsyn 2013"; 4. [magenta] "*Anagyrus ciomperliki* Triapitsyn HOLOTYPE ♀"; 5. [barcode database label] "UCRC UCRC\_ENT 00407592". The holotype is in excellent condition, complete, dissected under 4 coverslips. Paratypes (2 females, 2 males), same data as the holotype [1 male on point, MEBT; 1 female, 1 male on points and 1 male on slide, UCRC]. The correct host is the *Harrisia* cactus mealybug, *Hypogeococcus* sp.

**Description.** FEMALE (holotype). Color. Body (as in Fig. 1) including head mostly orange except face between toruli, gena (partially), propodeum, and gaster brown; eyes gray, ocelli pink; radicle dark brown, rest of scape mostly dark brown except for a small basal white spot and a transverse, subapical white band, basal half or so of pedicel dark brown and apical half or so white, F1 and F2 brown, rest of flagellum white except base of F3 brownish; legs mostly dirty whitish.

Sculpture. Head and mesosoma, and also gaster partially, with fine but conspicuous coriaceous-rugose sculpture; scape mostly reticulate.

Pubescence. Head and mesosoma with dark setae, these mostly short except for a pair of longer setae on mesoscutum near its posterior margin and 3 pairs of long setae on scutellum.

Head wider than high. Toruli just below level of lower eye margin. Ocelli in an obtuse triangle; minimum distance between posterior ocelli (POL) 2.2× greater than that between posterior ocellus and eye margin (OOL); distance between posterior ocellus and occipital margin about the same as OOL. Maxillary palpus 4-segmented, labial palpus 3-segmented.

Antenna (Fig. 3) with radicle 2.8× as long as wide, rest of scape strongly broadened, 2.0× as long as wide; pedicel 2.5× as long as wide, longer than F1; funicle segments all longer than wide, F1 the longest, F2-F6 subequal in length (F5 the shortest); clava 3-segmented, 2.6× as long as wide and shorter than combined length of F4-F6; flagellar segments all with several (at least 2) longitudinal sensilla except F1 with 1 short longitudinal sensillum on one antenna (but lacking it on the other).

Mesosoma (Fig. 5). Mesoscutum about 1.7× as wide as long; scutellum a little wider than long, slightly shorter than mesoscutum, scutellar apex narrowly rounded, placoid sensilla close to each other and about in the middle of scutellum.

Wings (Fig. 6) not abbreviated. Fore wing about 2.4× as long as wide, with disc hyaline; linea calva interrupted by 2 rows of setae; costal cell about 17× as long as wide; marginal vein longer than wide, postmarginal vein a little shorter than stigmal vein. Hind wing 4.1× as long as wide, with disc hyaline.

Legs. Mesotibial spur slightly longer than mesobasitarsus.

Gaster (Fig. 5) longer than mesosoma. Ovipositor occupying a little more than half length of gaster, exerted a little beyond its apex (by about one-tenth of total length of ovipositor), and 1.4× as long as metatibia.

Measurements (µm) of the holotype. Mesosoma 566; metasoma 836; ovipositor 523. Antenna: radicle 61; rest of scape 239; pedicel 91; F1 75; F2 67; F3 65; F4 67; F5 61; F6 67; clava 179. Fore wing 1009; 424; longest marginal seta 30. Hind wing 683; 167; longest marginal seta 36.

Variation (dry-mounted, critical point-dried paratype, Fig. 1). Body length 1255 µm.

MALE (paratypes). Body length 860 µm (dry-mounted, critical point-dried specimens). Body (Fig. 2) including head mostly brown (face, axillae, and gaster) to dark brown except mesopleuron light brown with some orange; antenna with radicle dark brown, rest of scape mostly white except for a large subapical brown spot dorsally, pedicel light brown ventrally and brown dorsally, F1 brown and rest of flagellum grayish or dirty whitish; legs mostly dirty white except protibia and protarsus a little darker. Antenna (Fig. 7) with scape minus short radicle 2.6× as long as wide; funicle segments all longer than wide (F1 the longest); clava entire, 5.4× as long as wide; flagellar segments all with longitudinal sensilla and numerous long setae, F6 with 4 and base of clava with 2 or 3 scale-like structures ventrally. Fore wing (Fig. 8) 2.2× as long

as wide; hind wing about 3.7× as long as wide. Gaster shorter than mesosoma; genitalia (Fig. 9; length 369 µm) occupying about 0.3 length of gaster, markedly exerted beyond gastral apex.

**Diagnosis.** The new species is somewhat similar to some (those with only F1 and F2 of the female antenna dark) *A. quilmes* Triapitsyn, Logarzo and Aguirre from Argentina, reared there from the true *H. pungens* on Amaranthaceae (Triapitsyn, Logarzo et al. 2014), and then further illustrated by Triapitsyn, Aguirre et al. (2014). The female of *A. ciomperliki* differs from that of *A. quilmes* in having F1 shorter than pedicel (F1 conspicuously longer than pedicel in the latter).

In Noyes (2000), *A. ciomperliki* keys to couplet 42 together with *A. aega* Noyes from Costa Rica, so it is modified below to separate females of these two species.

42. Both F1 and F2 brown ..... 42a  
–Only F1 brown ..... 43

42a. Basal two-thirds or so of pedicel dark brown, its apex dirty white; fore wing with linea calva interrupted by 4 lines of setae ..... *A. aega* Noyes  
–Basal half or so of pedicel dark brown, its entire apical half or so white (Fig. 3); fore wing with linea calva interrupted by 2 lines of setae (Fig. 6) . *A. ciomperliki* sp. n.

In addition, *A. ciomperliki* differs from other similar Neotropical species (described from Costa Rica), *A. eudora* Noyes and Menezes and *A. villalobosi* Noyes and Menezes (Noyes 2000), in having the fore wing with linea calva interrupted by 2 lines of setae (at least by 4 lines in the latter two species).

**Etymology.** This species is named after Matthew A. Ciomperlik, Director of the USDA APHIS PPQ CPHST Mission Laboratory in Edinburg, Texas, USA, who sent me this series of specimens for identification.

#### ACKNOWLEDGMENT

I thank Vladimir V. Berezovskiy (UCRC) for mounting specimens.

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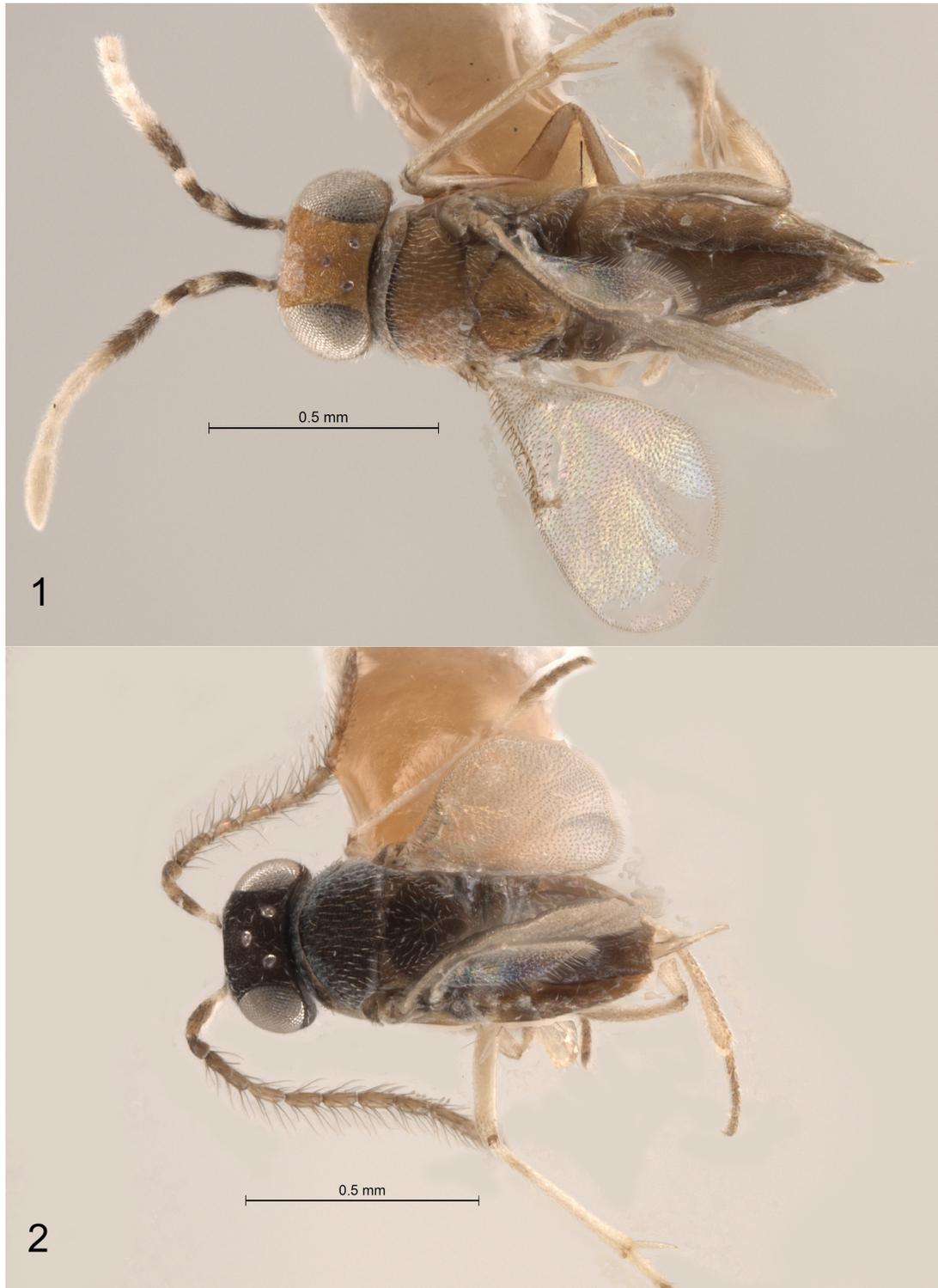
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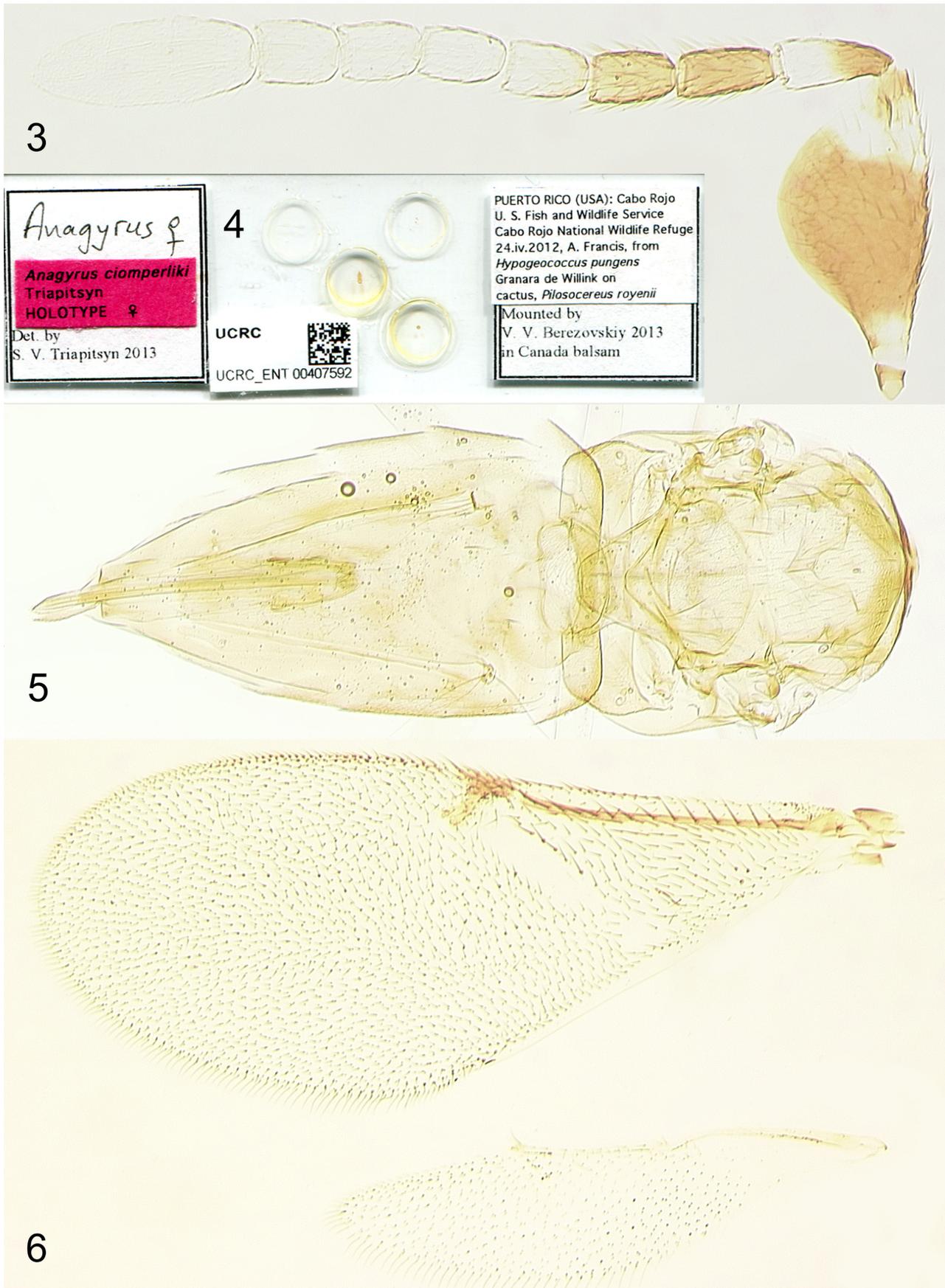
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Recibido: 22 de marzo 2016

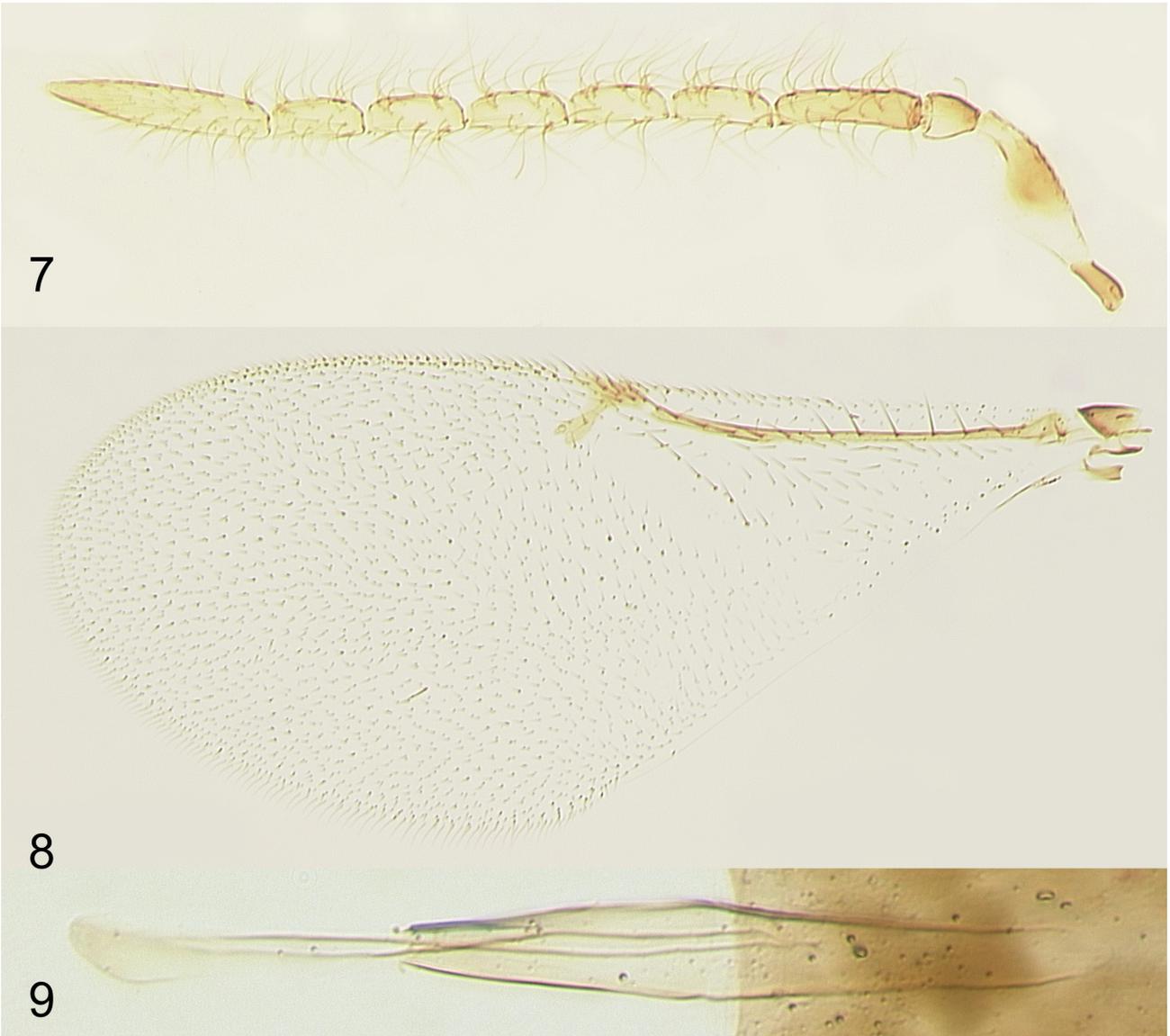
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Figures 1, 2. *Anagyrus ciomperlaki* (paratypes): 1. Female habitus. 2. Male habitus.



Figures 3-6. *Anagyrus ciomperliki* (female holotype): 3. Antenna. 4. Slide. 5. Mesosoma and metasoma. 6. Fore and hind wings.



Figures 7-9. *Anagyrus ciomperliki* (male paratype): 7. Antenna. 8. Fore wing. 9. Genitalia.