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## A new species of *Miroculis* (Ephemeroptera: Leptophlebiidae) from NE Argentina

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### Una nueva especie de *Miroculis* (Ephemeroptera: Leptophlebiidae) del NE de Argentina

■ **RESUMEN.** El género *Miroculis* Edmunds tiene especies registradas en Brasil, Colombia, Perú, Venezuela y Surinam, con registros adicionales de otros países en el norte de América del Sur. En este trabajo se describe la especie *Miroculis (Ommaethus) misionensis* sp. nov. de machos y hembras imago, de la provincia de Misiones, en el Noreste de Argentina, lo que constituye el registro más austral para el género.

**PALABRAS CLAVE.** Sistemática. Taxonomía. Región Neotropical.

■ **ABSTRACT.** The genus *Miroculis* Edmunds has species described from Brazil, Colombia, Peru, Venezuela and Suriname, with additional records from other countries in northern South America. In this paper, *Miroculis (Ommaethus) misionensis* sp. nov. is described from male and female imagos from Misiones Province, NE Argentina. This constitutes the Southernmost record for the genus.

**KEY WORDS.** Systematics. Taxonomy. Neotropical Region.

### INTRODUCTION

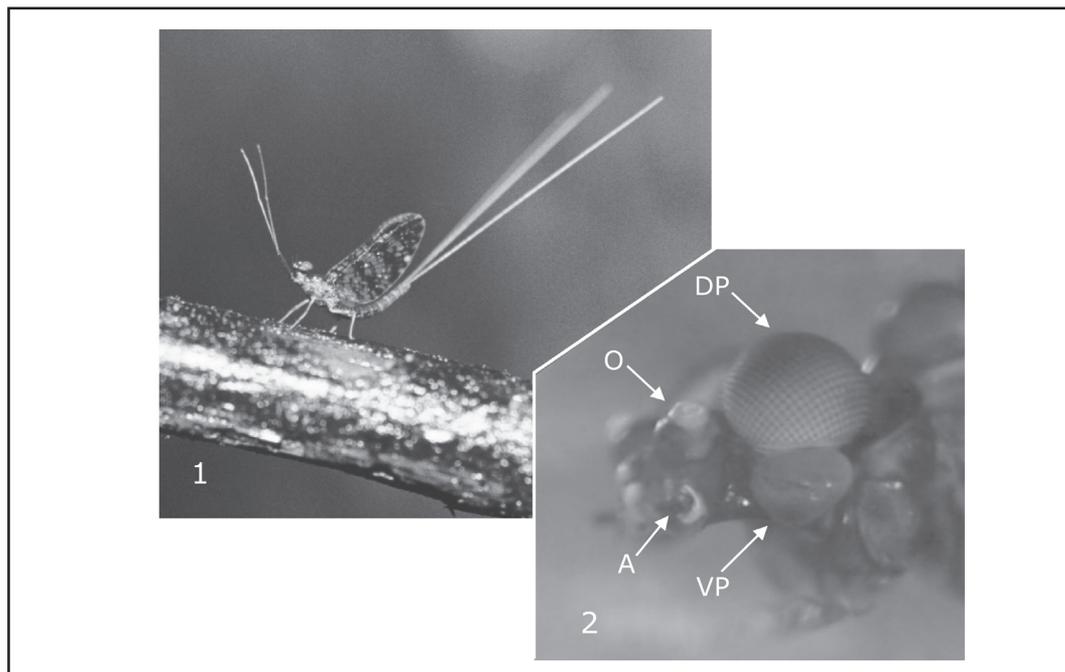
The genus *Miroculis* Edmunds, 1963 includes at the moment 13 described species (Edmunds, 1963; Savage & Peters, 1983; Savage, 1987 and Peters *et al.* in press). An update of the genus and a key to species of the genus is provided in Domínguez *et al.* (2006). Although the species were described from Brazil, Colombia, Suriname, Venezuela and Peru, based on unpublished material, the range of the genus extends to French Guiana, Trinidad and Ecuador. A new species from North Eastern Argentina, belonging to the subgenus (*Ommaethus*) is described here, based on male and female imagos, constituting the southernmost record of the genus. The material is deposited in the

Entomological Collection of Instituto-Fundación Miguel Lillo (IFML), and Florida A & M University, Tallahassee, Florida, USA (FAMU).

### RESULTS

*Miroculis (Ommaethus) misionensis*  
sp. nov.  
(Figs 1-9)

**Male imago** (in alcohol) (Fig. 1). Length of body: 4.5-5.7 mm, forewing: 5.3-5.8 mm, hind wing: 1.2-1.4 mm. Head: brown, with a yellowish W-shaped mark between ocelli. Antennal scape and pedicel brown, flagellum pale. Dorsal portion of eyes not on stalk, with ca. 30 (range 28-32) facets in longest row,

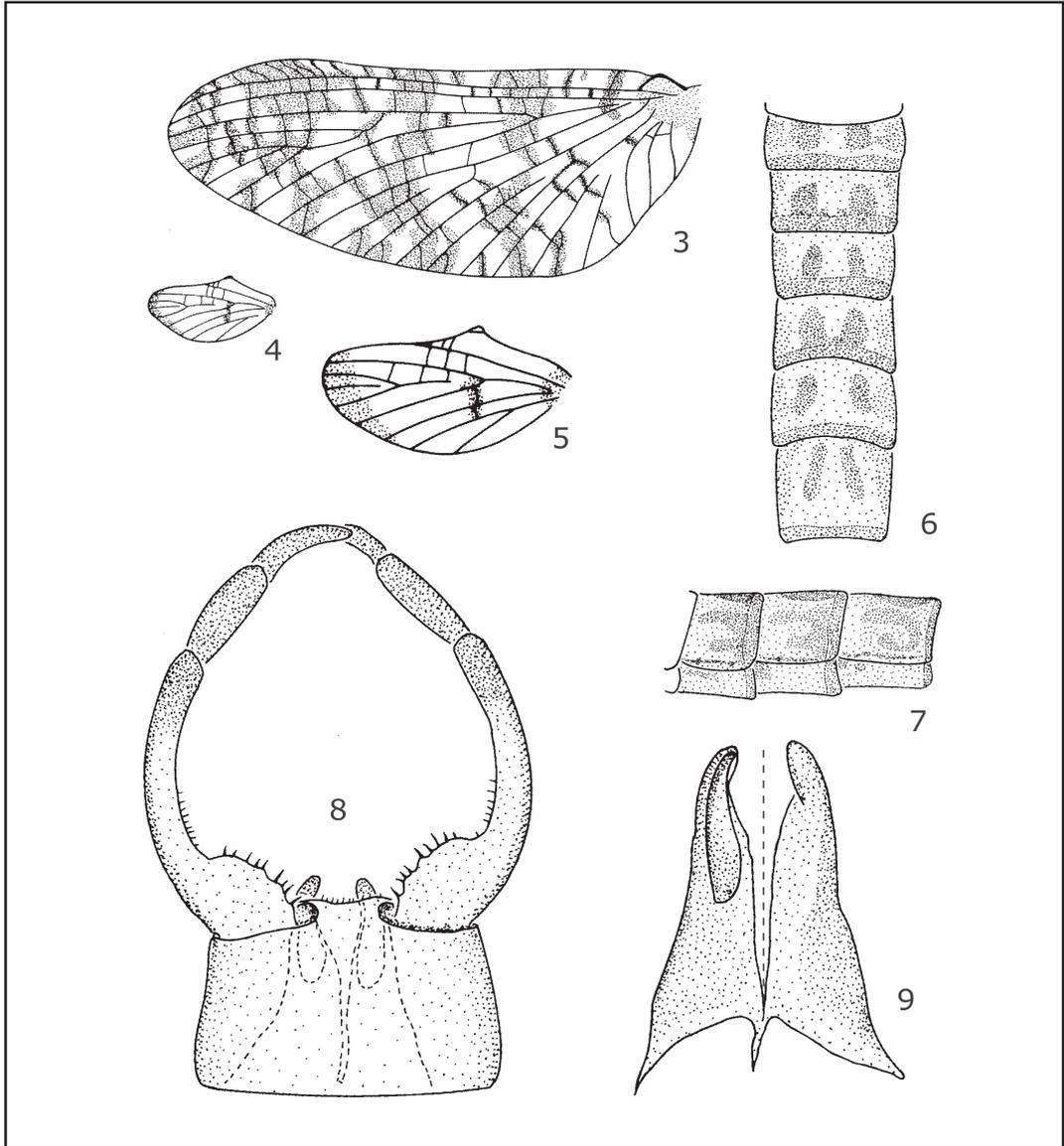


**Figs. 1-2.** *M. (O.) misionensis*, male imago. 1, General view; 2, Head, showing eye division. A = Antenna; O = Ocellus; DP = Eye Dorsal Portion; VP = Eye Ventral Portion.

ocelli whitish, with black base. Distance between dorsal portion of compound eyes equal to width of dorsal portion, ventral portion almost oval (Fig. 2). Pronotum and mesonotum brownish, sutures a little darker; metanotum yellowish brown, washed with black. Pleura light brown, with posterior margin of each sclerite blackish; prosternum light brown, with darker margins; meso- and metasternum brown, with darker margins. Wings (Figs. 3-5): brownish longitudinal veins, C, Sc, R and M of forewing and bases of C, Sc and R of hind wing darker, most cross veins brown; bulla prominent on Sc and major branches of Rs; membrane of fore and hind wings hyaline with brownish marks as in Figs. 3-5. Legs: coxae and trochanters brown, washed with black; femora of prothoracic legs yellowish brown with subapical blackish brown band, tibiae lighter brown with weak subapical blackish band, and tarsal segments faded light yellowish brown except apical tarsomere washed with gray; meso- and metathoracic legs yellowish-brown to yellowish, mesothoracic femora with subapical blackish mark and metathoracic femora with medial and

subapical blackish mark, tarsal segments paler with apical margins distinct, except apical tarsi and foreclaws washed with gray. Abdomen (Figs. 6-7): yellowish brown with segments II-VII translucent. Posterior margins of all terga blackish; tergum I washed with black, terga II-VII with two U-shaped lateral marks on each segment as in fig. 6, less evident on segment VII due to base color; tergum VIII with submedial longitudinal lines; terga IX and X diffusely washed with black. Sterna yellowish brown, with posterior margins blackish. Genitalia (Figs. 8-9): length of styliger plate about half width, indentation very shallow, grayish brown, darker in medial and lateral areas; forceps and penes as in Figs 8-9, basal segment of forceps yellowish, apical  $\frac{1}{4}$  of segment I and segments II and III blackish. Cerci approximately 3 times length of body, yellowish white with dark bands at annulations, fading apically.

**Female imago** (in alcohol). Length of body: 5.3-6.0 mm, forewing: 5.2-5.9 mm, hind wing: 1.1-1.3 mm. Head: whitish, with brown mark between ocelli, leaving a lighter strip in the central area. Two brown spots



**Figs. 3-9.** *M. (O.) misionensis*, male imago. 3, Forewing; 4, hind wing; 5, hind wing, detail; 6, abdominal terga II-VII; 7, abdominal segments V-VII, lateral view; 8, genitalia, ventral view; 9, detail of penes: left, ventral, right, dorsal.

between lateral ocelli and posterior margin. Eyes brown. Remainder of head as in male imago. Pronotum yellowish-brown, with submedial marks and lateral margins blackish. Remainder of thorax as in male imago, but coloration orange-brown. Wings coloration as in male imagos, except brownish markings more variable, from paler and narrower to darker and more extensive. Legs as in male imago, except black subapical band on prothoracic tibia stronger. Abdomen:

segment I yellowish, completely washed with black, remainder segments yellowish-brown with central and anterolateral areas lighter, posteromedial and lateral areas darker, delimiting a lighter area close to the lateral margins, darker areas more extensive on anterior segments. Sterna yellowish-brown. Sternum VII with a single, broad, posteriorly projecting medial opening. Sternum IX light brown, paler in center and apex. Caudal filaments as in male imago.

**Nymph:** unknown.

**Etymology:** *misionensis*, from the province where the material was collected.

**Type Material.** Holotype male imago (IFML): Argentina, Misiones Prov., Parque Provincial Uruguay-I, Arroyo Uruzú, S 25°51'29"; W 54°10'10", 322 m.a.s.l.; 17/I/2004. E. Domínguez col. Allotype female imago (IFML), same data as holotype. Paratypes: 8 male imagos, 1 female imago, same data as holotype (IFML); 4 male imagos, 9 female imagos, same data as holotype, except 15/I/2004 (IFML); 1 male imago, 19 female imagos, same data as holotype except 18/I/2004 (IFML); 9 male imagos, 30 female imagos, same data as holotype, except 23-24/XI/1998, E. Domínguez, C. Molineri, C. Nieto & F. Romero colls. (IFML); 3 male imagos, 5 female imagos, same data as holotype, except 15/I/2004 (FAMU).

**Other material studied** (IFML): 67 female imagos, same data as given for 23-24/XI/1998.

**Biology:** The adults of this species were collected in the Uruzú river, located in the Uruguay-I reserve (S 23° 51'30"; W 54° 10'10"), in Misiones Province, Argentina. The river is approximately 10 m wide, and between 0.45-0.60 cm deep, with a variable bottom, composed in some areas of clay, in other areas of stones and pebbles and in other areas of huge slabs that cover the whole width of the river. Males started to swarm around 5 PM on sunny days, and around 2 PM under cloudy conditions. Swarming and oviposition behavior will be described in a separate publication.

**Discussion.** *Miroculis (Ommaethus) misionensis* n. sp. may be distinguished from all species of *Miroculis* by the following characters, in the male: 1) eyes of male rounded (Fig. 2), with numerous facets (about

30 in the longest row); 2) wings hyaline, with marks as in Figs 3-5; 3) abdomen yellowish brown with segments II-VII translucent, abdominal pattern as in Figs 6-7; 4) indentation of styliiger plate very shallow. This species would key in Domínguez *et al.* (2006) to *M. (O.) mourei*, but can be distinguished easily from this species by the oval dorsal portion of the eye, and the four narrow lines on abdominal terga IV-VI (two wider ones in *M. (O.) misionensis*).

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