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A NEW SPECIES OF *UROLEUCON* (HEMIPTERA: APHIDIDAE) LIVING ON *ADESMIA* (FABACEAE)

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Abstract

We describe the apterous and alate viviparous females of a new species of the subgenus *Lambersius* of the genus *Uroleucon* (Hemiptera Aphididae) from Argentina living on *Adesmia* (Fabaceae). *Uroleucon adesmiae* **sp. n.** is the first South American species of this genus exclusively living on a species of Fabaceae. A previous key for the apterous viviparous females of the *Uroleucon* species recorded in South America is modified to include the new species.

Key Words: aphids, Aphididae, *Uroleucon*, Argentina, Fabaceae

Resumen

Se describen las hembras vivíparas ápteras y aladas de una nueva especie del subgénero *Lambersius* del género *Uroleucon* (Hemiptera Aphididae) de Argentina que vive sobre *Adesmia* (Fabaceae). *Uroleucon adesmiae* **sp. n.** es la primera especie del género que vive exclusivamente sobre una especie de Fabaceae. Se modifica una anterior clave de identificación de las hembras vivíparas ápteras de *Uroleucon* citadas de América del Sur para incluir en ella la nueva especie.

Translation provided by the authors.

Uroleucon Mordvilko, 1914, is one of the largest genera of Macrosiphini, which currently includes 224 valid species (Blackman & Eastop 2006; Nieto Nafría et al. 2007). Asteraceae species are habitually cited as the host-plant of *Uroleucon*, but 9 species were described on Campanulaceae species, and another 10 species were described on species belonging to Balsaminaceae, Convolvulaceae, Lamiaceae, Malvaceae, Onagraceae, Polygonaceae, and Scrophulariaceae. Very few *Uroleucon* species have been recorded on plant species that do not belong to Asteraceae. Remaudière et al. (1985) recorded *Uroleucon compositae* Theobald, 1915, from Africa on 77 species belonging to 15 families, including 2 species of Fabaceae, *Albizzia petersiana* Oliv. and *Dalbergia* sp. Blackman & Eastop (2006) recorded this polyphagous aphid also on the Fabaceae *Eriosema psoraleoides* (Lam.) G. Don and with doubts on *Lathyrus sativus* L.

On an unidentified species of *Adesmia* (Fabaceae) in the Chubut province (Argentina) one of the authors (J. Ortego) collected a sample of aphids belonging to tribe Macrosiphini (Aphididae) and to the group of *Macrosiphum* Passerini, 1860, and related genera, which is characterized by the reticulated ornamentation on the distal part of siphunculi. It is an unnamed species of *Uroleucon* and is described below.

Abbreviations used in the text and figure captions are as follows: AntI, AntII, AntIII, AntIV, AntV, AntVIb, AntVIpt are antennal segments I to V plus base and processus terminalis of antennal segment VI, respectively; *D* is the basal diameter of AntIII; Urs is the ultimate rostral segment; Ht2 is the second segment of hind tarsus; AbdI to AbdVIII are abdominal segments I to VIII. Values in parenthesis are exceptional values.

Uroleucon adesmiae **sp. nov.**

Types. Holotype: Apterous viviparous female (ARG-1042, áp. 8), Río Mayo, Chubut, Argentina, 13-XII-2004, on *Adesmia* sp. J. Ortego *leg*. Paratypes: 7 apterous viviparous females and 1 alate viviparous female, same data. Holotype and several paratypes in the collection of the University of León, León, Spain; other paratypes in collections of J. Ortego, the Natural History Museum, London, United Kingdom, and Muséum national d'Histoire naturelle, Paris, France.

Etymology. The specific name is the genitive of *Adesmia*, the name of the plant-host genus.

Apterous Viviparous Females. Fig. 1. Based on 8 specimens. Color in life dark green to brownish green. Body length 2.35-2.95 mm. Mounted specimens more or less pale yellowish, except the most apical part of tibiae, tarsi, 2 last rostral segments,

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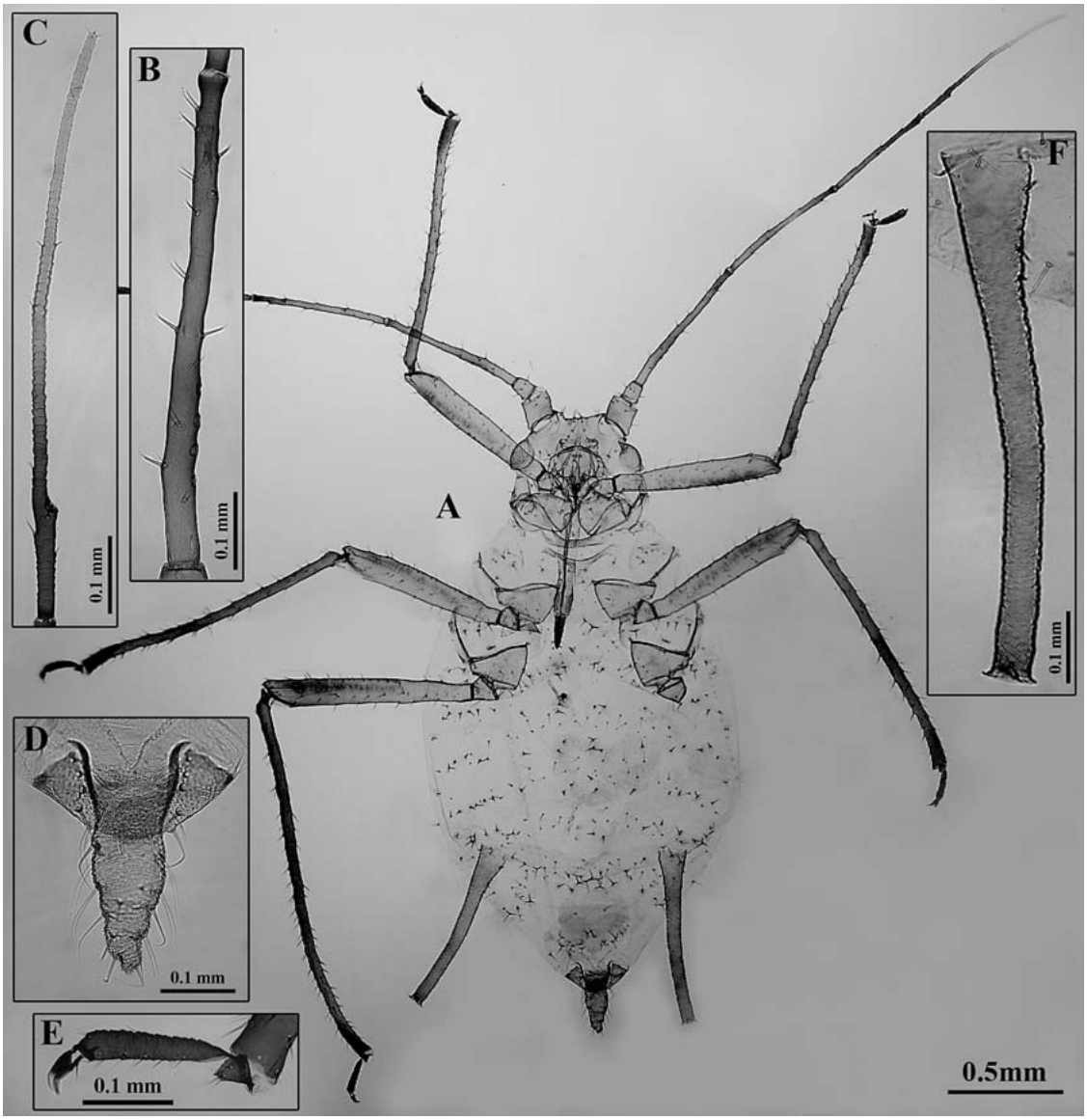


Fig. 1. *Uroleucon (Lambersius) adesmiae* Mier Durante and Ortego **sp. nov.**, apterous viviparous female. A, habitus. B, AntIII. C, AntVI. D, cauda. E, Ht2. F, siphunculus.

AntVIpt and apices of AntIII-AntVIb. Dorso-cephalic setae numerous (7-11 setae present behind the 2 discal setae), pale, 45-50 µm, 1.1-1.7 times *D*, thick with apex blurred or slightly clavate, similar in shape to antennal, femoral, tibial, dorsal-thoracic and dorsal-abdominal ones. Antennae 2.62-2.96 mm and 0.9-1.1 times body length; AntI-AntIII smooth; AntIII 0.60-0.75 mm, with 4-11 small circular secondary sensoria, ventrally aligned on proximal 30-58% of its length; setae 30-45 µm, 0.9-1.4 times *D*; AntIV and AntV, respectively, 0.55-0.69 and 0.43-0.53 mm. AntVIpt 0.58-0.64 mm, 0.9-1.0 times AntIII and 3.8-4.1 times AntVIb, which is 0.15-0.18 mm. Rostrum almost reaching hind coxae. Urs 0.15-0.18 mm, 2.7-3.4 its basal width, 0.9-1.1 times both AntVIb and Ht2; with 10-13 secondary setae. Pale coxae. Hind femur and tibia, respectively, 0.81-0.99 and 1.50-1.70 mm. First tarsal segments with (4) 5 setae. Ht2 0.15-0.17 mm. Marginal papillae and setiferous sclerites absent; intersegmental and stigmatic sclerites unpigmented. Dorsal setae on AbdI-AbdV abundant (19-30 in all, 3-6 marginal each side, 7-20 spinal-pleural), the spinal ones are 40-45 µm long, 1.0-1.5 times *D*. Ventral-abdominal setae thin and pointed, 24-50 per segment.

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Siphunculus cylindrical with enlarged base (1.6-2.5 times the width at the beginning of the reticulation) and apical flange scarcely developed; 0.66-0.85 mm, 2.1-2.4 (2.8) times cauda and 1.0-1.2 times AntIII; with rather ill-defined reticulation on 8.0-13.4 (14.3)% its length, with approximately 20-40 cells; wrinkly basal to reticulations, but nearly smooth at base. Genital plate with 2-4 discal and 11-17 small posterior setae. AbdVIII with 6-12 setae. Cauda scarcely pigmented; lanceolate, 0.29-0.35 mm, 1.8-2.2 times its basal width; and with 10-15 strong pointed setae, the lateral (2-4 pairs) are longer than the dorsal ones.

Alate Viviparous Females. Fig. 2. Based on 1 specimen. Very similar to apterous ones, but with pterothorax brown, more pigmented head, antennae, prothorax, part of femora and tibiae, tarsi, siphunculi and cauda, and stigmatic and marginal sclerites tenuously pigmented. Medial of fore wings only once-branched. Metric and meristic features like aptera in part, the following ones are different: body length, 2.30 mm; antenna, 2.60 mm; antenna/body, 1.1; body/siphunculi, 3.9-4.0 times; femur of hind legs, 0.77-0.80 mm; AntIII, 0.57-0.58 mm; AntIII with 12-13 secondary sensoria distributed on 74-76% of its length; AntIV, 0.52-0.56 mm; AntVIpt, 1.2 times AntIII; AntVIpt 4.2 times AntVIb; siphunculus, 0.58-0.59 mm; cauda, 0.23 mm and 1.5 times its basal width.

Bionomics. The only known host plant of this aphid is an unidentified species of *Adesmia* (Fabaceae). Aphids feed on the plant stem. Sexuals are unknown, but the species should be holocyclic, because of cold temperate climate.

Geographical Distribution. The new species is known from Río Mayo in the south of Chubut province (Argentina), 45°40'S, 70°16'W, 429 m. It might live on this plant in other Argentinean localities, although it seems to be restricted to southern Patagonia, because on many occasions we have examined specimens of *Adesmia* in several localities situated from Río Negro in the south to Jujuy in the north and we have only caught specimens of an undescribed species of *Aphis* Linnaeus, 1758.

Discussion. The morphological characteristics of the new species indicate that it should be placed in *Uroleucon*, as this genus is considered at present (Heie 1995; Carvalho et al. 1998; Blackman & Eastop 2006), and it presents the pale coxae of all the native South American species of the genus, which are included in subgenus *Lambersius* Olive, 1965 (Nieto Nafría et al. 2007). In addition, phylogenetic analyses of mitochondrial cytochrome oxidase II sequences performed by C. von Dohlen (pers. comm.) found the sample of this species, provided by one of the authors (J. O.), to be nested within other South American species of *Uroleucon* and related species, such as *Blanchardaphis poikila* Ortego, J., J. M. Nieto Nafría, and M. P. Mier Durante, 1997, which also has long and apically enlarged setae but the siphunculi in this genus are not reticulated (Ortego et al. 1997).

Uroleucon adesmiae **sp. nov.** is very close to *Uroleucon payuniense* Ortego & Nieto Nafría, 2007. Viviparous females of both species are slightly pigmented when mounted, they have numerous setae on the posterior part of the head and also on the dorsum of the abdomen and poor siphuncular reticulation; in the alatae (only 1 specimen is known) the medial vein of the forewings only has 2 branches. In spite of this it is not difficult to distinguish them because in the new species the setae are more robust, the pigmentation is less intense and there are other differences that are given in the key.

It is necessary to partly modify the identification key (disjunctives 11 to 16) key for the *Uroleucon* species recorded in South America provided by Nieto Nafría et al. (2007), as follows.

11. AntVIpt at most 3.8 times AntVIb. Siphunculi thin, reticulated at least on 35% of their length and yellowish brown to light brown, like cauda, which is lanceolate. [Dark-green with dark-brown head. On *Gochnatia glutinosa* and *Hyaloceris cinerea*. Argentina: La Rioja, Mendoza, Tucuman] . . . . . *U. gochnatiae*

— AntVIpt usually at least 3.8 times AntVIb; if 3.1-3.9 times then siphunculi or cauda have different features. 12

12. {without modification} AntIII in apterae with 2-4 small secondary sensoria extended to 33(44)% of the segment length, which is short, 0.49-0.61 mm long (alatae unknown). [Papillae absent. Setiferous and postsiphuncular sclerites present. Coxae more pigmented than trochanters and 1/2-2/3 proximal portion of femora. Tarsi with 5 setae. Siphunculi 1.5-1.7 times cauda, with groups of spinules homogeneously distributed to the reticulated portion, which is 19.6-25.5% of its total length. Cauda light-brown and with 9-14 setae. Brown to red-brown in life. On *Hypochoeris*. Argentina: Mendoza] . . . . . *U. malarguense*

— AntIII of both apterae and alatae usually with 4 or more secondary sensoria [Marginal papillae and marginal and postsiphuncular sclerites present or absent] 13

13. Siphunculi usually at least 1.6 times cauda, which is 0.24-0.45 mm long and gives 7-15 setae; if 13-15 setae are present then more than 4 setae on posterior part of cephalic dorsum 14

— {without modification} Siphunculi usually at most 1.6 times cauda, which is 0.30-0.83 mm long with 9-31 setae 20

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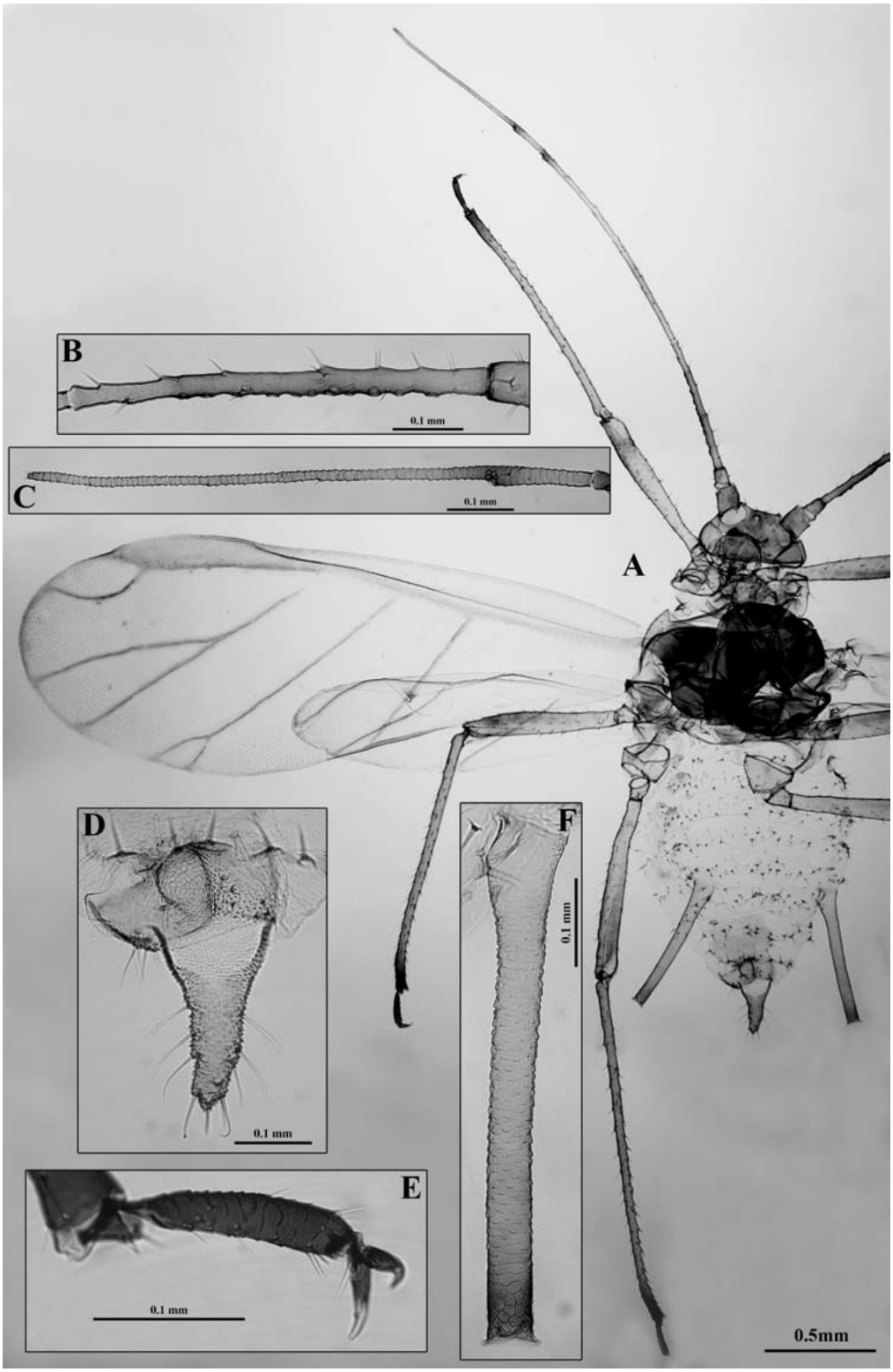


Fig. 2. *Uroleucon (Lambersius) adesmiae* Mier Durante and Ortego **sp. nov.**, alate viviparous female. A, habitus. B, AntIII. C, AntVI. D, cauda. E, Ht2. F, siphunculus.

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14. {without modification} Siphunculi very robust (approximately 2 times larger than hind tibiae and 0.58-0.80 mm long), subcylindrical (somewhat inflated at beginning of reticulation), slightly curved outside, without flange, approximately basal 1/4 as pale as coxae and rest brown to dark-brown (as dark as tibiae or antennae), nearly smooth on pale proximal portion, progressively wrinkly to scaly on dark middle portion, and reticulation extends on 21-41% of its length. On *Gutierrezia iserni*. [Green in life. Argentina: La Rioja] . . . . . *U. riojanum*

— {without modification} Siphunculi with different feature, usually as large as hind tibiae or thinner than them 15

15. Posterior part of cephalic dorsum (behind the discal two setae of vertex) with 6-11 setae 16

— {without modification} Posterior part of cephalic dorsum (behind the two discal setae of vertex) usually with 4 setae (the general feature in the genus). 17

16. AbdII-AbdIV with 3-6 marginal setae each side and 7-27 spinal-pleural setae. Siphunculi yellowish very light-brown homogeneously or with paler proximal 1/4. Cauda lanceolate and 0.27-0.37 mm long . . . . . 16 bis

— {without modification} AbdII-AbdVI with 1-2 marginal setae each side and 5-13 spinal-pleural setae. Siphunculi brown to dark brown in general, often with a middle portion paler than both proximal and distal portions. Cauda triangular or long-pentagonal in shape, 0.22-0.30 mm long. Red in life with siphunculi dark-brown. On *Mutisia spinosa*. [Argentina: Chubut and Rio Negro]. . . . . *U. patagonicum*

16 bis. Siphunculi 2.4-4.3 times its width at the beginning of the reticulation, which is well sculptured and covers 12.2-18.9% the siphunculi length. Dorsal-abdominal setae 50-60 µm and 1.5-1.9 times *D*. Ht2 0.13-0.15 mm. Cauda with 6-9 setae. AntVIpt at least 1.0 times AntIII and 4.0 times AntVIb. Urs 1.9-2.7 times its basal width and with 7-10 secondary setae. Green in life. On *Grindelia chiloensis* [Argentina: Mendoza] . . . . . *U. payuniense*

— Siphunculi 1.6-2.5 times its width at the beginning of the reticulation, which is poorly sculptured and covers 8.0-13.4% the siphunculi length. Dorsal-abdominal setae 40-45 µm and 1.0-1.5 times *D* and relatively thick. Ht2 0.15-0.17 mm. Cauda with 10-15 setae. AntVIpt at most 1.0 times AntIII and 4.1 times AntVIb. Urs 2.7-3.4 times its basal width and with 10-13 secondary setae. Dark green to brownish green in life. On *Adesmia* sp. [Argentina: Chubut] . . . . . *U. adesmiae*

On the other hand it is useful to remake the identification key for the aphids on *Adesmia* by Blackman & Eastop (2006), with an additional first disjunctive as follows (SIPH is siphunculus, ABD TERG is the abdominal tergite, and MTu are marginal tubercles):

0. SIPH with a distal zone of reticulation. ABD TERG 1 and 7 constantly without MTu . . . . *Uroleucon adesmiae*

— SIPH without polygonal reticulation. ABD TERG 1 and 7 constantly with MTu 1

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