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THREE APHID SPECIES (HEMIPTERA: APHIDIDAE) RECORDED FOR THE FIRST TIME FROM SOUTH AMERICA

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Abstract

Three aphid species, *Cinara pruinosa* (Hartig), *Acyrthosiphon lactucae* (Passerini) and *Coloradoa bournieri* (Remaudière & Leclant) are recorded for the first time in South America from specimens caught in the Argentinean Patagonia. Data are given on their biology and distribution and characters distinguishing each one, as well as proximate species known in South America.

Key Words: Hemiptera, Aphididae, South America, Neotropical, adventive species

Resumen

Se citan por vez primera en Sudamérica tres especies de pulgones a partir de ejemplares capturados en la Patagonia Argentina: *Cinara pruinosa* (Hartig), *Acyrthosiphon lactucae* (Passerini) y *Coloradoa bournieri* (Remaudière & Leclant). Se aportan datos sobre su biología y distribución, así como los caracteres que permiten separarlas de otras especies próximas conocidas ya en Sudamérica

Translation provided by the authors.

Ortego et al. (2006) reported 6 species of aphids (Hemiptera, Aphididae) for the first time from South America and gave an assessment of aphid diversity in South America and other areas of Godwanic origin. The current work supplements their findings.

In Nov and Dec 2009, three of us (Mier Durante, Nieto Nafría, and Ortego) collected aphids in Argentinean Patagonia. This trove included 3 species not previously recorded from South America. This addition brings the number of aphid species known from Argentina to 234, of which 167 (71.7%) are not considered Neotropical in origin (unpublished data). Specimens were studied from microscope slide mounts and are deposited in the zoological collection of León University, León (Spain) and in the collection of Jaime Ortego (Mendoza, Argentina). In this paper we follow the classification of the family Aphididae used by Remaudière & Remaudière (1997) with the nomenclatural adaptations by Nieto Nafría et al. (1998).

One Species of Eulachnini (Lachninae)

The subfamily Lachninae Herrich-Schaeffer 1854 is one of the oldest family-group taxa of aphids. This subfamily and its genera, *Lachnus* Burmeister 1835 and *Cinara* Curtis 1835, represent some of the earliest genus-group taxa (8 genera of Aphidinae or Eriosomatinae), which had been established by 1835. Distinguishing characters of the Lachninae include: (1) anal plate whole, (2) cauda broadly rounded or arc-shaped, (3) processus terminalis of antennal segment VI noticeably shorter than base of this segment, (4) ultimate rostral segment with 2 clearly differentiated portions, (5) head bearing an epicranial suture is well separated from prothorax, (6) empodial setae short and fine, (7) secondary sensoria subcircular or slightly ovoid, (8) antennae usually shorter than body (slightly longer than the body in some species), and (9) siphunculi troncoconic, short and robust (more or less volcano-like) with associated setae, or small at distal ring (poriform).

Most species in the subfamily (all of those in the sub-tribes, Lachnini and Eulachnini) live on trees or shrubs (those in the Tramini tribe, not found in South America, are radicicolous on herbs). The original distribution of the subfamily is Holarctic, but several species have colonized other regions probably due to human activity, and this is the case in South America.

In South America, the most diversity within Lachninae occurs in Argentina: 1 species of *Tuberolachnus* Mordvilko, 1908 (Lachnini), 2 species of *Eulachnus* Del Guercio, 1909 (Eulachnini), and 15 species of *Cinara* (Eulachnini), including the species mentioned in this article (unpublished data). Such diversity is not only a reflection of the range climatic conditions of Argentina but it also the range of the prospective host plants (crop or naturalized wild species) brought from other regions of the world.

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Cinara (*Cinara*) *pruinosa* Hartig, 1841

Studied material: Junín de los Andes (Neuquén), *Picea abies* (Pinaceae, Norway spruce), 13-XII-2009, 1 alate and 2 apterous viviparous females.

Species in the genus, are stout, round and medium-sized to very long (2.4-5.0 mm) (Blackman & Eastop 1994) with troncoconic siphunculi and setae (Fig. 1A).

Cinara pruinosa lives on *Picea* spp., as do 3 other species already known in Argentina: *C. costata* (Zetterstedt, 1828), *C. piceae* (Panzer, 1800) and *C. pilicornis* (Cholodkovsky, 1896); all probably be well established in Argentina because spruce trees have been grown for industrial or ornamental purposes for some time. As spruce trees are widespread in Argentina, it would be useful to have a reference to identify species of *Cinara* colonizing them. The following key was based on observations and descriptions by Binazzi & Mier Durante (2003) of Ibero-Balearic species of *Cinara*, by Blackman & Eastop (1994) which is a complete key of species living on *Picea* spp. all over the world, and by Binazzi & Scheurer (2009), which includes an excellent collection of photographs and drawings of species living on *Picea* spp. in Europe. The characters in square brackets are additional characters that will contribute to corroborating the identification.

KEY TO *CINARA* SPP. COLONIZING *PICEA* SPP. IN ARGENTINA

1a. Body (from the front line to the apex of cauda) usually more than 4.5 mm long at least (exceptionally 3.2-4.4 mm). Coxae dark brown to black. [Dorsal length of first tarsal segment of hind legs longer than basal diameter of this segment; second tarsal segment of hind legs little curved; dorsal setae on anterior abdominal segments short, 50 µm at most. Proximal portion of ultimate rostral segment usually 300 µm long at least; ultimate rostral segment with 13-20 accessory setae. On trunks and old branches] . . . . . *C. piceae*

1b. Body 5.0 mm long at most, frequently less than 4.0 mm. Coxae light brown. 3

2a. First tarsal segment of hind legs dorsal length shorter than basal diameter of this segment. [Ultimate rostral segment (rostral segments IV and V of authors) 300 µm long at least and longer than second tarsal segment of hind legs, which are little curved; dorsal setae on abdominal segment V; body 2.7-3.8 mm long. Alatae: forewings with fuscous marks and once-branched media. Living on old branches] . . . . . *C. costata*

2b. First tarsal segment of hind legs dorsal length as long as basal diameter of this segment at least, but if shorter, then the second one is falciform. [Dorsal setae on anterior abdominal segment longer than 80 µm (in *C. pi-*

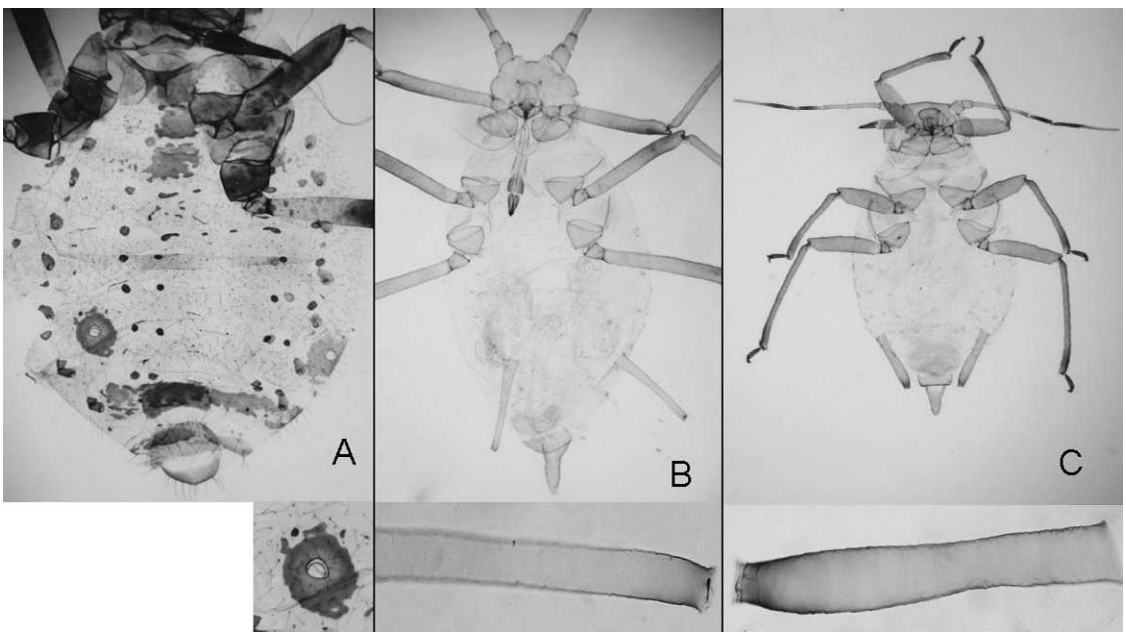


Fig. 1. Apterous viviparous female with detail of siphunculi of *Cinara pruinosa* (A), *Acyrthosiphon lactucae* (B) and *Coloradoa bournieri* (C).

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ceicola, also living on *Picea* spp., the dorso-abdominal setae are shorter than 80 µm). Alatae: forewings with two-branched media] 3

3a. Second tarsal segment of hind legs falciform; abdominal segments I to VII without sclerotization or with small setiferous sclerites; basal diameter of siphunculus 400 µm at most and usually shorter than second tarsal segment of hind legs; ultimate rostral segment with 6 accessory setae at most. [Body 2.1-4.7 mm long; on shoots and young twigs] . . . . . *C. pilicornis*

3b. Second tarsal segment straight or little curved; abdominal segments I, II, VII and VIII with large sclerites; basal diameter of siphunculus more than 400 µm and longer than second tarsal segment of hind legs; ultimate rostral segment with 9-11 accessory setae. [Body 2.4-5.0 mm long; on older twigs] . . . . . *C. pruinosa*

Two Species Of Macrosiphini (Aphidinae)

Aphidinae Latreille, 1802 is the largest of the Aphididae subfamilies. It also has the largest overall area of distribution with autochthonous species on all continents; the same is true of the subtribe Macrosiphini. In Argentina 234 species of Aphidinae have been recorded, 119 of which are Macrosiphini, including the 2 species mentioned in this article (unpublished data).

The distinguishing characters of the subfamily include: (1) anal plate whole, (2) shape of cauda variable, even rounded, though this is not frequent, (3) processus terminalis of antennal segment VI of variable length in relation to the base of this segment, but always more than 0.5 times longer, (4) siphunculi conspicuous (in exceptional cases, lacking or very small), (5) head and prothorax well separated; (6) compound eyes large with numerous ommatidia, (7) secondary sensoria rounded or ovoid, etc.

The tribe Macrosiphini can be separated from the tribe Aphidini by the short first abdominal segment, which is visible because the distance between the spiracular openings of abdominal segments I and II is 0.5 times less than that between the spiracular openings of segments II and III; also, there are no marginal papillae on abdominal segments I and VII (in Aphidini, the proportion between both distances is greater than 0.5 and abdominal segments I and VII normally have marginal papillae).

Acyrthosiphon lactucae (Passerini, 1860)

Studied material: Challaco (Neuquén), *Lactuca serriola*, 12-XII-2009, 1 alate and 7 apterous viviparous females plus several nymphs.

The genus *Acyrthosiphon* is Holarctic and contains approximately 70 species (Blackman & Eastop, 2006), including several subspecies. Generally, they have a wide host range. The aphids are relatively large (e.g., the body length of *A. lactucae* is 1.7-2.9 mm (Blackman & Eastop 2006), with long or very long siphunculi and cauda (Fig. 1B), the siphunculi are fine and tubular, and lack apical reticulation. The cauda is lanceolate.

Acyrthosiphon malvae (Mosley, 1841) has already been recorded in Argentina, on species of Malvaceae and Rosaceae, and *A. pisum* (Harris, 1776), *A. loti* (Theobald, 1913) and *A. kondoi* Shinji, 1938 on species of Fabaceae (Seco Fernández et al. 2000; Ortego & Mier Durante 2003; Ortego et al. 2004).

Acyrthosiphon lactucae lives on *Lactuca* spp. and rarely on other hosts. When alive, they are light green or bluish and are covered in a fine but visible whitish film of wax. The 1625 accessory setae on the ultimate rostral segment enable the species to be easily identified; setting aside the controversy about the cryptic species, *Acyrthosiphon scariolae* Nevsky, 1929, which is not recognised as a valid species by some aphid taxonomists. *Acyrthosiphon lactucae* may be found in various parts of Argentina where *Lactuca* spp. have become naturalized.

Coloradoa bournieri Remaudière & Leclant, 1969

Studied material: Junín de los Andes (Neuquén), *Santolina chamaecyparissus* (Asteraceae, lavender cotton), ornamental, 13-XII-2009, several dozen of viviparous female apterae.

The genus *Coloradoa* Wilson, 1910 is Holarctic and includes approximately 30 species (Blackman & Eastop, 2006). They are small and globose (Fig. 1C), with a very convex frons, short antennae, pointed apical segment, siphunculi varying in shape and size and short or very short, blunt claviform or flabelliform setae. They live on plant species of several genera related to Asteraceae. *C. angelicae* (Del Guercio, 1911), *C. artemisiae* (Del Guercio, 1911), *C. rufomaculata* (Wilson, 1908) and *C. tanacetina* (Walker, 1850) have been reported in Argentina (Ortego et al. 2004).

The host plants of *Coloradoa* according to Blackman & Eastop (2006) are as follows: *Artemisa absinthium*, host of *C. angelica*; *Artemisa* spp. hosts of *C. artemisiae*; species of several genera of Asteracea, mainly *Chrysanthemum,* are hosts of *C. rufomaculata*; *Tanacetum vulgare* and infrequently other Asteraceae are hosts of *C. tanacetina,* and *Santolina* spp. are the hosts of *C. bournieri*.

Morphologically, *C. bournieri* can be separated because it has clearly swollen siphunculi (Fig. 1C), processus terminalis of antennal segment VI short (1.2-1.6 times the base of the segment) and ultimate rostral segment long (1.2-1.5 times the second tar-

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sal segment of posterior legs). The species may be found in other locations in Argentina, as long as its host plant is grown in gardens and parks.

Conclusions

The origins of aphids in many parts of the world are actually well summarized: Teulon & Stufkens (2002) in New Zealand, Foottit et al. (2006) in North America, Mondor et al. (2007) in Hawaii, and more recently Coeur d'acier et al. (2010) in Europe. In this context, the aphid fauna of South America consist of 335 aphid species, which comprise about 7% of the world aphid fauna of approximately 4,700 species (Remaudiére & Remaudiére 1997). Of these species 102 are considered as native of South America and the rest are considered adventive. The geographic origins of the adventive aphids are primarily the Palearctic (163) and secondarily the Neartic (51) regions. Nevertheless, the taxonomic status and biogeographic origins of some aphid species are difficult to determine and a very good revision of the adventive aphid fauna in South America is needed.

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