

A NEW SUBGENUS AND SPECIES OF THE GENUS *BRACHYUNGUIS* DAS
(HEMIPTERA: APHIDIDAE) FROM ARGENTINA

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Abstract.—*Brachyunguis (Andinaphis) paradoxus*, new Argentinean subgenus and species are described. The new subgenus and new species are characterized by the absence of marginal papillae, processus terminalis of the antennal segment VI longer than the base of segment, tarsal formula 3.3.3 and its host-plant, *Senecio* (Asteraceae). These characters are very atypical among *Brachyunguis* and even Aphidini. Apterous and alate viviparous females and oviparous females are described. The subgenus and species are keyed in two modified previous keys.

Key Words: aphid, *Brachyunguis*, *Andinaphis*, new subgenus, new species, *Senecio*, Argentina

Resumen.—“Nuevos subgénero y especie del género *Brachyunguis* Das (Hemiptera Aphididae) de Argentina”. Se describen las hembras vivíparas ápteras y aladas y las ovíparas de *Brachyunguis (Andinaphis) paradoxus* n. subgen., n. sp., a partir de material recogido sobre *Senecio subumbellatus* (Asteraceae) en la provincia de Mendoza (Argentina). La completa ausencia de papilas marginales en el protórax y en el abdomen (carácter atípico en *Brachyunguis* y muy infrecuente en Aphidini), la longitud del filamento terminal del VI artejo antenal: más largo que la base del mismo, la fórmula tarsal: 3.3.3, y la planta hospedadora, caracterizan tanto el subgénero como la especie. Ambos nuevos taxones se incluyen en conocidas claves anteriores, que se modifican convenientemente.

Palabras clave: pulgón, *Brachyunguis*, *Andinaphis*, subgénero nuevo, especie nueva, *Senecio*, Argentina

Two species of *Brachyunguis* Das, 1918 are known in South America: *B. (Xerophilaphis) blanchardi* Remaudière and Bahamondes, 1987, and *B. (B.) bahamondesi* Remaudière and Halbert, 1996. Both were described recently from Mendoza province, Argentina, and live on Chenopodiaceae, on *Allenrolfea vaginata* and on *Atriplex lampa* plus *Chenopodium soanum*, respectively.

In North America (Remaudière and Halbert 1996) three other species of the genus are known, all of them on Chenopodiaceae: *B. (B.) bonnevillensis* (Knowlton, 1928) on *Atriplex* and *Sarcobatus*, *B. (X.) tetrapteralis* (Cockerell, 1902) on *Atriplex* and *Suaeda*, and *B. (B.) bishopi* Remaudière and Halbert, 1996 on *Sarcobatus*.

The plant hosts of the *Brachyunguis* spe-

cies of the Old World are Chenopodiaceae (mainly), Tamaricaceae, Asclepiadaceae, Zygophyllaceae and Sapindaceae, never Asteraceae.

The genus *Brachyunguis* is included in the subtribe Aphidina. Marginal papillae are present normally on the prothorax and abdominal segments I and VII, and frequently also on abdominal segments II to VI in this subtribe. However, there are some exceptions (Eastop 1979): *Cryptosiphum* Buckton, 1879 (on *Artemisia*, Asteraceae, palearctic), *Indiaphis* Basu, 1969 (on *Rhododendron*, Ericaceae, oriental) but this genus may be included in Macrosiphini (Remaudière and Remaudière 1997), *Misturaphis* Robinson, 1967 (on *Artemisia*, Asteraceae, nearctic), *Polytrichaphis* Miyazaki, 1971 (on *Illicium*, Illiciaceae, palearctic from Japan, also included in Macrosiphini by Remaudière and Remaudière 1997) and *Sanbornia* Baker, 1920 (on *Juniperus*, Cupressaceae, nearctic).

Brachyunguis is divided in two subgenera *Brachyunguis* s. str. (present in Asia, Europe, North [Mediterranean] Africa and America, and *Xerophilaphis* Nevsky, 1928 (Asia and America). Also from Mendoza province (Argentina), the second author found some aphids which can be ascribed to the genus *Brachyunguis*. However, they belong to a new subgenus, *Andinaphis*, characterized by the absence of marginal papillae (an atypical characteristic in Aphidini) and three atypical characteristics among *Brachyunguis*: a) processus terminalis of the antennal segment VI longer than the base of segment, b) tarsal formula 3.3.3, and c) unusual host-plant, *Senecio* (Asteraceae).

Abbreviations used in the text are as follows: ant.III, IV, V = antennal segments III, IV, V; ant.VIb = base of antennal segment VI; ant.VIpt = processus terminalis of antennal segment VI; b.d.III = basal diameter of antennal segment III; BL = body length; h.t.II = second segment of hind tarsus; u.r.s. = ultimate rostral segment.

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Type species.—*Brachyunguis* (*Andinaphis*) *paradoxus* n. sp.

Etymology.—The name *Andinaphis* is taken from the Neo-Latin words "andinus" and "aphis", Andean and aphid, respectively. The gender is feminine as *Aphis*.

Description.—Light green or yellow when alive, poorly pigmented, without segmental sclerites on abdomen. Frontal profile convex, antennae shorter than body length, processus terminalis of antennal segment VI longer than 1.3 times base of this segment, secondary rhinaria normally present on antennal segment III of apterous viviparous females and on antennal segments III and IV of alatae, also sometimes present on III on oviparous females, tarsal formula 3.3.3 with exceptions (2 setae on front and middle legs), siphunculi truncated-cone shape and shorter and darker than cauda, which is more or less long triangular or fingerlike with 8 setae at most, without marginal papillae on prothorax and abdominal segments, including I and VII. Monecious holocyclic on *Senecio* (Asteraceae), on aerial parts of the plants.

Discussion.—*Andinaphis* can be distinguished from other subgenera of *Brachyunguis* (*Brachyunguis* s. str. and *Xerophilaphis*) by: 1, the total absence of marginal papillae (marginal papillae are present on prothorax and abdominal segments I and VII in both other subgenera); 2, the processus terminalis of VI antennal segment is 1.3–1.9 times as longer as base of the segment (this ratio is normally smaller in other subgenera); 3, the tarsal formula is 3(2).3(2).3, in the other subgenera it is 2.2.2 or 2(3).2(3).2; and 4, Asteraceae, not Chenopodiaceae, is the host-plant.

Andinaphis can not be confused with *Protaphis* (subgenus of *Aphis*) which also lives on Asteraceae and has small processus terminalis ($0.9-1.5 \times$ base), because of five important characters (see the respective

characters on *Andinaphis* in the description). *Protaphis* has mainly tarsal formula 3.3.2, is dark brown to black alive with black or very dark cauda, has some segmental sclerites on abdomen of apterous females, has 7–16 caudal setae, and often lives on the subterranean parts of the plants.

The subgenus can be identified by modifying Eastop's (1979) key as follows.

- 1–4. [without modification]
5. Lateral tubercles [papillae] absent from both first and seventh and usually also the other abdominal segments. Processus terminalis 1.3–5.5 times as long as the base of the sixth antennal segment 6
- Lateral tubercles present on the first and usually also on the seventh abdominal segments 8
6. Triommatidion inconspicuous. Siphunculi wider than and about 2½ times as long as the cauda. On *Rhododendron* (Ericaceae), India [in Macrosiphini, by Remaudière and Remaudière 1997] *Indinaphis*
- Triommatidion evident at hind margin of eye 6b
- 6b. All first tarsal segments bearing only 2 hairs. Processus terminalis 3.0–5.5 times as long as the base of antennal VI 7
- Normally first tarsal segments bearing 3 hairs, sometimes some tarsus of the front and medium legs with 2 hairs. Processus terminalis 1.3–1.9 times as long as the base of antennal VI. On *Senecio* (Asteraceae), South America *Brachyunguis* (*Andinaphis*)
7. (and the following disjunctives) [without variation]

Brachyunguis* (*Andinaphis*) *paradoxus

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(Figs. 1, 2)

Apterous viviparous female (n = 192; 31 measured) (Figs. 1, 2).—Body 1.11 to 2 mm long. Light green when alive, exceptionally yellow greenish, with white waxy powder; pale specimens with only tarsi, knees, apex of siphunculi and ultimate rostral segment light brown and more pigmented specimens with a part of femora, knees, apex of tibiae, tarsi, ultimate rostral segment, siphunculi and anal plate brown

and cauda light brown. Prepared specimens light yellow in general with head, distal rostral segments, legs (apex of tibiae and tarsi browner), siphunculi, cauda and genital and anal plates more or less light brown and intersegmental (sometimes inconspicuous) and stigmatic sclerites smoky.

Cuticle more or less smooth. Setae (table 1) pale and acute in general. Without papillae on prothorax and abdominal segments I and VII. Frontal profile convex. Setae on vertex usually shorter than b.d.III and longer than antennal setae. Clypeus more or less as wide as interantennal space but never exceeding front. Antenna 6 segmented, (0.58)0.7 to 1.03 mm long, 0.45 to 0.67 times body length (BL); ant.III with (0)1–6(8) widely irregular and flanged secondary rhinaria; antennal segment lengths (in mm): ant.III = (0.13)0.16 to 0.29; ant.IV = (0.09)0.11 to 0.19; ant.V = 0.09 to 0.18; ant.VIb = 0.07 to 0.10; ant.VIpt = (0.10)0.12 to 0.17; ant.III 1.20 to 2.13 times longer than ant.VIpt, which is 1.33 to 1.88 times longer than ant.VIb; antennal setae few (2 to 6 on ant.III and 1 to 3 on ant.VI.b) and short. Rostrum (0.38 to 0.47 mm long) reaching third coxa; BL 2.54 to 4.65 times length of rostrum; u.r.s pointed, with sides straight or slightly concave, 0.08 to 0.11 mm long, 1.54 to 2.11 times as long as its basal width, 0.70 to 0.80(0.95) longer than h.t.II, 0.90 to 1.12 times ant.VIb., with 2 accessory lateral setae. Posterior seta on trochanter of hind leg shorter than the basal diameter of femur; dorsal and ventral setae on femora few (2 to 6 ventral ones) and short; hind tibia 0.34 to 0.55 times BL; first tarsal segments with 3.3.3 setae, exceptionally 2 setae on meso- and meta-thoracic legs; h.t.II 0.10 to 0.14 mm long, 0.15 to 0.25 times hind tibia. Abdominal setae short; presiphuncular abdominal segments with 2 marginal setae each side and normally with 2 spinal setae; abdominal segment VIII with 2 setae, exceptionally 4, longer than anterior ones. Siphunculi truncated-cone shape, 0.05 to 0.10 mm long, 0.95 to 1.54(1.73) times its basal width and

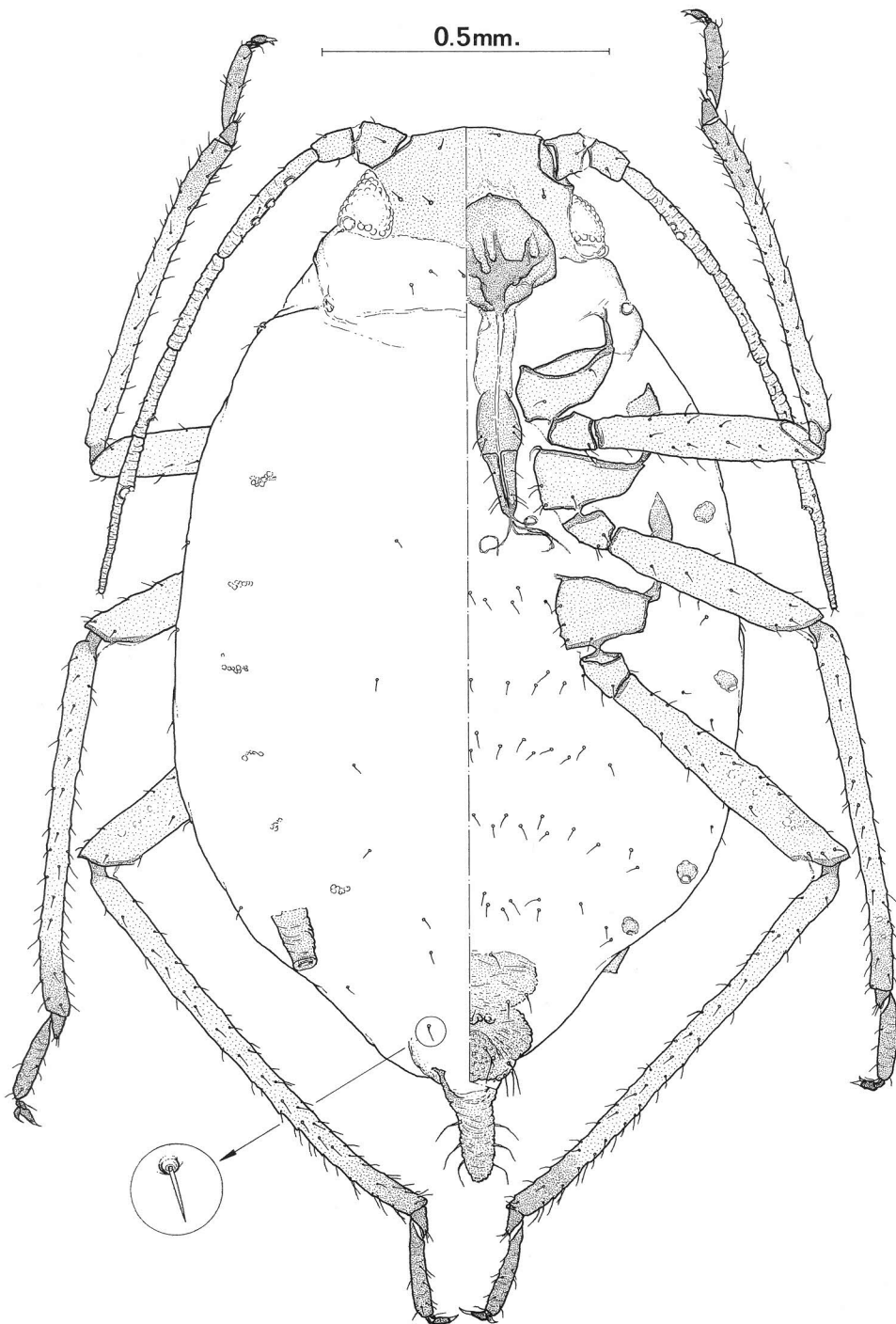


Fig. 1. *Brachyunguis (Andinaphis) paradoxus*, habitus. Illustration by M. Enrique Ortega Lorenzo (León, Spain).

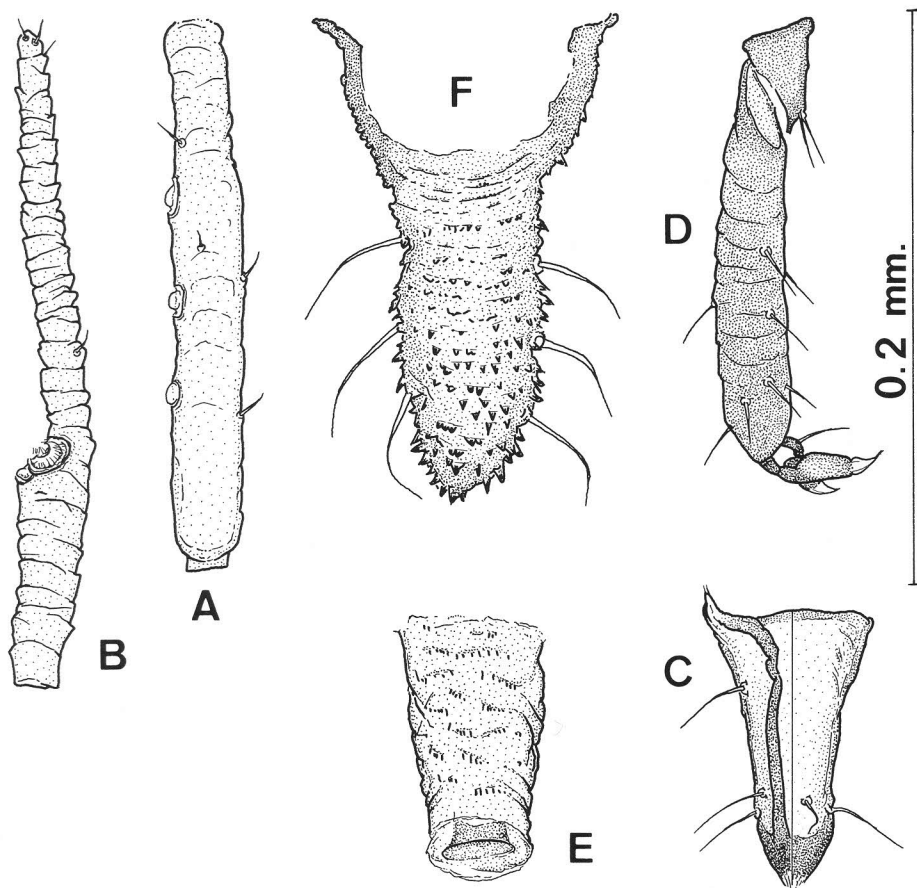


Fig. 2. *Brachyunguis (Andinaphis) paradoxus*. A, III antennal segment. B, VI antennal segment. C, Ultimate rostral segment. D, Hind tarsus. E, Siphunculus. F, Cauda. Illustrations by M. Enrique Ortega Lorenzo (León, Spain).

Table 1. Measurements of setae of *Brachyunguis (Andinaphis) paradoxus*. Abbreviations: D = diameter of trochanter-femoral joint; abd. seg. = abdominal segment; other abbreviations as in text.

		ap. viv. fem.	al. viv. fem.	ovip. fem.
ant. III	μm long	7-13	10-13	7-10
	b.d. III times	0.4-0.8	0.6-1.0	0.4-0.7
Vertex	μm long	10-18	10-20	11-14
	b.d. III times	0.6-1.3	(0.8)1.0-1.6	0.7-1.0
Hind trochanter	μm long	20-30	22-30	22-33
	D times	0.5-0.8	0.5-0.7	0.5-0.8
Dorsal hind femur	μm long	5-18	12-23	7-18
	b.d. III times	0.4-1.3	(0.7)1.0-1.8	0.4-1.2
Ventral hind femur	μm long	12-25	17-28	18-24
	b.d. III times	0.7-1.8	1.3-2.0	1.0-1.6
abd. seg. III: spinal	μm long	10-14	10-18	11-15
abd. seg. III: marginal	μm long	10-18	12-20	8-15
	b.d. III times	0.6-1.1	0.6-1.5	(0.4)0.6-1.0
abd. seg. VIII	μm long	12-25	15-28	15-23
	b.d. III times	0.9-1.6	1.0-2.0	1.0-1.7

0.33 to 0.52(0.62) times the cauda; subgenital plate with 2(4) anterior, 0(2) discal and 5–10 posterior setae; cauda fingerlike, (0.10)0.13 to 0.20 mm long, 1.40–1.78 longer than its basal width, with 5 to 7 lateral and exceptionally 1 dorsal setae.

Alate viviparous female (n = 38; 24 measured).—Body (1.12)1.52–1.89 mm long. Alive and mounted similar to the apterae, but darker on head, antenna (some times the basal art of ant.III), thorax and legs. Metric and meristic characters very similar to aptera, but with following differences. Antenna = 0.80–1.06 mm, 0.51–0.68 times BL; secondary rhinaria: 4–9 on ant.III and 0(most frequent)–2 on ant.IV; antennal segment lengths (in mm): ant.III = 0.21–0.31, ant.IV = 0.17–0.22, ant.V = 0.12–0.24, ant.VIb = 0.8–0.12; ant.VIpt = 0.13–0.18; ant.III 1.33–1.94 times ant.VIpt.; u.r.s. 0.82–1.05 times ant.VIb; u.r.s. 0.64–0.85 times h.t.II; siphunculus 1.16–2 times its basal width; subgenital plate with 2–5 anterior, 0–2 discal and 6–9 posterior setae; cauda 1.17–1.70 times its basal width. Setae (Table 1) similar to those in apterae.

Oviparous female (n = 35; 14 measured).—Body 1.4 to 1.8 mm long. Very similar to viviparous female, with metathoracic tibiae enlarged with (40)60 to 110 scent plates. But some characters slightly different: hind tibia 0.28–0.40 times BL; antenna (0.64–0.95 mm long) 0.41–0.67 times BL; ant.III and ant.IV secondary rhinaria 0–1(4) and 0, respectively; ant.III 1.06 to 1.74 times ant.VIpt; u.r.s. 0.67–0.9 times h.t.II; 4 to 10 setae on abdominal tergite VIII; subgenital plate with 11–28 anterior and discal (mixed) and 10–16 posterior setae; cauda 1.05–1.67 longer than its basal width with 4–8 lateral setae. Setae (Table 1) as in apterae ones.

Eggs measured in the females: 0.7 × 0.4 mm.

Male.—Unknown.

Type material.—Holotype: apterous viviparous female (measured specimen number 1) collected on *Senecio subumbellatus*

Phil. at Malargüe “Arroyo El Rezago” (Mendoza province, Argentine), 8-III-96, J. Ortego leg., in collection Universidad de León (Departamento de Biología Animal). Paratypes: apterous, alate viviparous and oviparous females found (J. Ortego leg.) on the same host-plant at the same locality, 8-III-96 and 7-IV-96 and on the same host-plant at Malargüe “Refugio del Club Andino”, 15-V-94, deposited in the authors’ collections and in The Natural History Museum, London, Muséum National d’Histoire Naturelle, Paris, and S. Halbert collection, Gainesville, Florida (USA).

Etymology.—The specific name is taken of classic Greek: παραδοξος, paradoxical, surprising, because the peculiar characters of the species (see discussion of the new subgenus).

Biology and distribution.—*Brachyunguis (Andinaphis) paradoxus* is monoecious holocyclic on *Senecio subumbellatus* and perhaps on other Andean *Senecio* spp. It forms small and dense colonies on the aerial part of the plant, mainly on the floral stems. It is very possible that this new species is restricted in distribution to the Andes Range in Argentinian provinces of Mendoza (Malargüe: “Arroyo El Rezago”, 1905 m, “Refugio del Club Andino”, 2225 m and “El Carrizalito”, 2025 m) and Neuquen plus adjacent localities of Chili, as its plant-host.

Discussion.—*Brachyunguis (Andinaphis) paradoxus* is the only known species of the subgenus. The key established by Remaudière and Halbert (1996) to the American species of *Brachyunguis* can be modified to include the new species as following form:

1. [without variation]; subgenus *Xerophilaphis* 2
- [without variation] 2b
2. [without variation, to *B. (X.) tetrapteralis* and *B. (X.) blanchardi*]
- 2b. Marginal papillae absent on prothorax and abdomen. Ant.VIpt 1.33 times ant.VIb at least and normally more than 1.4; u.r.s. shorter than h.t.II. On *Senecio*. Argentina; subgenus *Andinaphis*: *B. (A.) paradoxus*
- Marginal papillae present on prothorax and

abdominal segments I and VII. Ant.VIpt
1.30 times ant.VIb normally, if 1.4 times,
u.r.s. longer than h.t.II. Not on *Senecio*;

Brachyunguis s. str. 3

3-6. [without variation, to *B. (B.) bishopi* and *B. (B.) bonnevillensis*]

ACKNOWLEDGMENTS

The authors express their gratitude to Prof. Georges Remaudière (Muséum National d'Histoire Naturelle) for his comments and news from his Catalogue then in press, Dr. Susan Halbert (Florida Department of Agriculture and Consumer Services) for her comments and for reviewing the manuscript, and Prof. Gaspar Morocho

for his assistance in the etymology of new taxa names.

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