

SYSTEMATICS, MORPHOLOGY AND PHYSIOLOGY

A New Species of *Impatientinum* Mordvilko (Hemiptera: Aphididae) from Brazil

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Uma Nova Espécie de *Impatientinum* Mordvilko (Hemiptera: Aphididae) no Brasil

RESUMO - *Impatientinum paranaense* sp. nov. é descrita ocorrendo em *Cuphea calophylla* (Lythraceae) no Brasil. Fêmeas ápteras e aladas vivíparas são descritas e ilustradas. A chave de Remaudière (1981) para o gênero *Impatientinum* foi modificada para incluir a espécie nova.

PALAVRAS-CHAVE: Afídeo brasileiro, chave de identificação, *Cuphea*, descrição, Lythraceae

ABSTRACT - *Impatientinum paranaense* sp. nov. on *Cuphea calophylla* (Lythraceae) from Brazil is described. Descriptions and illustrations of apterous and alate viviparous females are given. The new taxon is included into the Remaudière (1981)'s key to *Impatientinum* species.

KEY WORDS: Brazilian aphid, *Cuphea*, description, identification key, Lythraceae

The genus *Impatientinum* Mordvilko includes two subgenera: *Impatientinum sensu stricto* with four species [*Impatientinum americanum* Remaudière, 1981; *Impatientinum asiaticum* Nevsky, 1929; *Impatientinum balsamines* (Kaltenbach, 1862); *Impatientinum impatiens* (Shinji, 1922)] and the subgenus *Neoimpatinentinum* Agarwala, Mondal and Raychaudhuri, 1982 (Remaudière & Remaudière 1997). Except for *I. americanum* on *Cuphea aequipetala* Cav. (Lythraceae) from Mexico, all species of the subgenus *Impatientinum* are Palaearctic restricted to Balsaminaceae (Remaudière 1981), and *Neoimpatinentinum smilaceti* is from North East India on *Smilax macrophylla* (Liliaceae) (Agarwala *et al.* 1982).

The specimens of the new species from Curitiba, Paraná State, Brazil (25°25'S, 49°14'W, 945 m a.s.l.) were first found on spring and summer 1998, on *Cuphea calophylla* (Koehne) Lourt., a small densely hairy Lythraceae, commonly associated with garden grasses. Colonies comprising apterous, alatae viviparous females, and nymphs feed on flower stems.

In this paper a new species of the genus is described and some morphological characters are illustrated. The new taxon is included in Remaudière's key proposed in 1981.

***Impatientinum paranaense* sp. nov.**
(Table 1; Figs. 1 – 12)

Type Material

Holotype. Apterous viviparous female, BRAZIL, Paraná,

Curitiba (Centro Politécnico, Universidade Federal do Paraná), 22.IX.1998, *C. calophylla*, (JT Cardoso, leg.). The holotype is the upper specimen on a slide with another aptera that is one of the paratypes (Coleção de Entomologia Pe. Jesus Santiago Moure, DZUP).

Paratypes. Two apterous viviparous female of the same data of the holotype, on two slides, + 27 apterous viviparous female, BRAZIL, Paraná, Curitiba (Centro Politécnico, Universidade Federal do Paraná), 3.I.2000, *C. calophylla*, (SMN Lazzari, leg.) and 30 alatae viviparous female, BRAZIL, Paraná, Curitiba (Centro Politécnico, Universidade Federal do Paraná), 30.III.2000, *C. calophylla*, (RCZ Carvalho, leg.), on 23 slides (Coleção de Entomologia Pe. Jesus Santiago Moure, DZUP); + two apterous and three alatae viviparous female, the same data of the paratypes collected in 30. III.2000, on two slides (Natural History Museum, London, BMNH collection); + three apterous and two alatae viviparous female, the same data of the paratypes collected in 30.III.2000, on three slides (Muséum National d'Histoire Naturelle, Paris, aphid collection).

Description

Apterous Viviparous Female. Color in life green with abdomen olive green; antennae, legs and siphunculi dark brown, cauda green. Cleared specimens with head, thorax, coxae, trochanters, genital and anal plates, and cauda pale. Antennal segments I, II and base of III as pale as head to light brown, remaining

Table 1. Morphometric data (mm) for *I. paranaense* sp. nov., apterous and alate viviparous females, from *C. calophylla*.

Characters	Holotype	Apterae n = 29	Alatae n = 30
Body length	1.83	(1.53) 1.68 – 1.97	1.62 – 1.94
Width head (included eyes)	0.47	0.42 – 0.49	0.40 – 0.47
Antenna	2.36	1.91 – 2.32	2.24 – 2.61
Antennal segment III	0.59	0.46 – 0.64	0.55 – 0.65
Base of antennal segment III	0.032	0.027 – 0.033	0.027 – 0.032
Antennal segment IV	0.38	0.30 – 0.55	0.40 – 0.53
Antennal segment V	0.37	0.27 – 0.45	0.36 – 0.42
Base of antennal segment VI	0.134	0.115 – 0.158	0.123 – 0.142
Processus terminalis	0.65	0.53 – 0.66	0.59 – 0.78
Ultimate rostral segment (IV+V)	0.161	0.144 – 0.166	0.155 – 0.166
Base of ultimate rostral segment	0.059	0.048 – 0.059	0.048 – 0.059
Longest hair on antennal segment III	0.024	0.022 – 0.027	0.021
Longest cephalic hair	0.032	0.027 – 0.037	0.021 – 0.027
Longest hair on hind tibia	0.032	0.029 – 0.040	0.029 – 0.037
Hind femur	0.74	0.67 – 0.88	0.66 – 0.81
Hind tibia	1.45	1.28 – 1.68	1.37 – 1.62
Width tibia at the middle	0.037	0.032 – 0.043	0.029 – 0.032
Hind tarsus	0.107	0.102 – 0.112	0.102 – 0.118
Siphunculi	0.41	0.37 – 0.52	0.35 – 0.44
Cauda	0.24	0.22 – 0.26	0.18 – 0.25
Basal width cauda	0.12	0.10 – 0.13	0.11 – 0.12

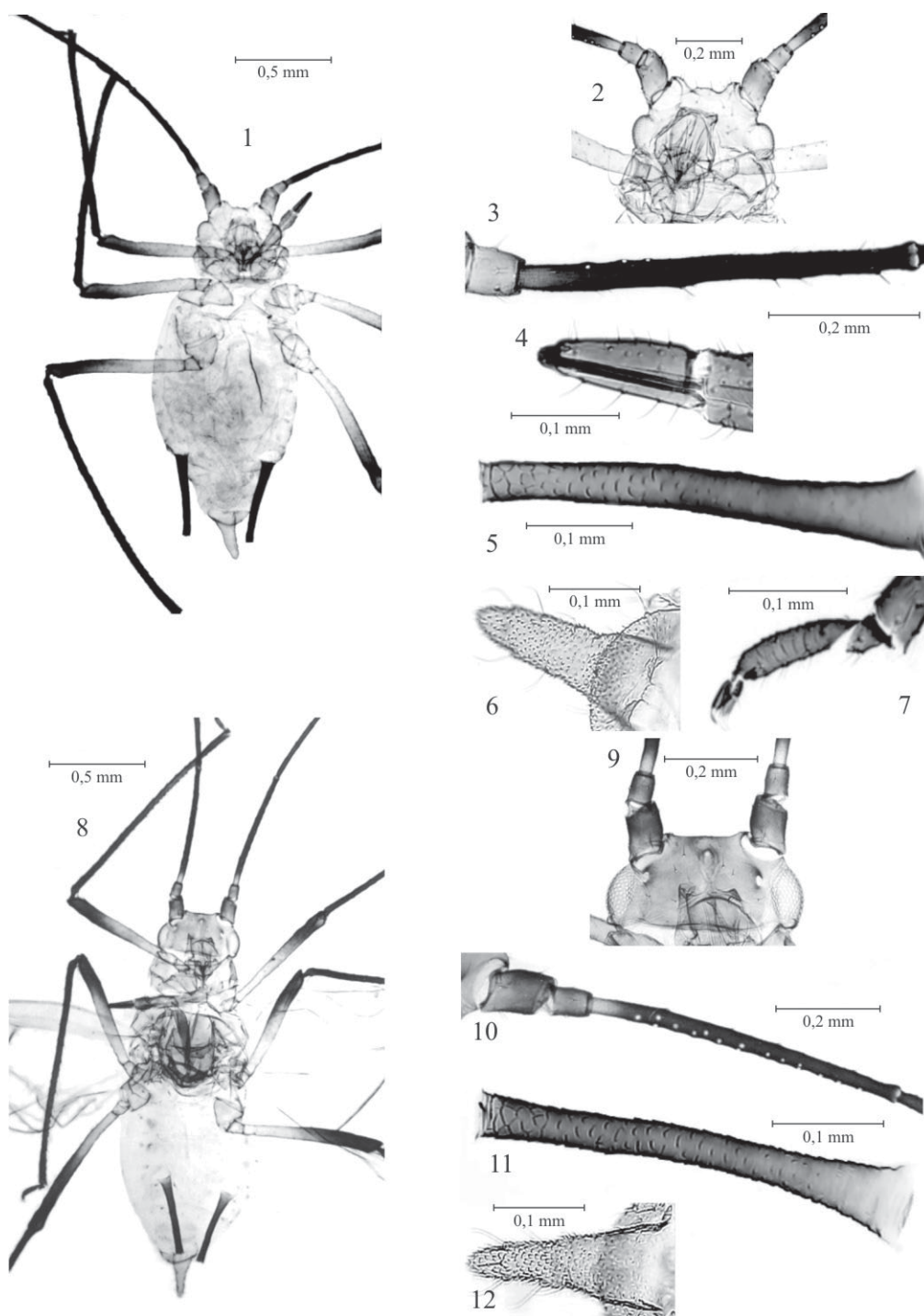
antennal segments dark brown. Rostrum brown especially segments III, IV+V. Femora light brown to brown at apices. Siphunculi, tibiae and tarsus dark brown like antennal segments III (except base) - VI. Strongly sclerotized specimens have light brown plate from metathorax to abdominal segment VI forming a convex carapace or protective shield.

Morphological Characters. Head smooth to slightly wrinkled; antennal tubercles developed and median frontal tubercle flattened but conspicuous. Longest cephalic hairs 0.95-1.35 times as long as basal diameter of antennal segment III. Antennae 1.1-1.3 times as long as body, smooth on segments I, II and III, faintly imbricated on IV and more strongly so on segments V and VI. Longest hair on antennal segments III 0.75-1.00 times as long as basal diameter of antennal segment III. Secondary rhinaria 2-5 (one specimen has only one big secondary rhinarium), circular, variable in size, distributed on basal 1/3 of antennal segment III. Processus terminalis 4.5-5.3 and 1.0-1.2 times as long as base of antennal segment VI and antennal segment III, respectively. Rostrum extends to the third coxae, ultimate rostral segment with (18) 19-23 accessory hairs, 2.6-3.2 times as long as basal length, 1.4-1.6 and 1.1-1.3 and times as long as hind tarsus segment II, the base of antennal segment VI, respectively. Hind tibiae long and with stout setae, particularly hairy on apices. Longest hairs on hind tibiae 0.75-1.25 and 1.1-1.3 times as long as medium diameter of tibia and basal diameter of antennal segment III, respectively. First tarsal segments with 4-5 hairs. Metathorax and abdominal terga I-VI can be fused to form a sclerotic shield, with one semi-circular perforation anterior to the siphunculi. Abdominal tergite VI posterior to siphunculi and tergites VII-VIII spinulose. Hairs on abdominal tergites VI-VIII longer than hairs on abdominal

tergites I-V. Longest hairs on tergite VIII 2.0-2.8 times as long as longer hair on tergite III. Lateral abdominal tubercles small like the base of lateral hairs and usually present on abdominal segments II-V. Eighth abdominal tergite with 5-6 hairs. Siphunculi subcylindrical 1.6-2.0 times as long as cauda with base 1.8-2.3 and 1.4-1.7 times as long as smallest diameter and flange, respectively. Reticulated area with (1)2-4 rows of poorly defined cells, with imbrications on basal 2/3 of reticulation; basal 1/3 of siphunculi smooth to slightly wrinkled. Genital plate rounded with two long hairs on anterior margin, unusually 1-2 on medium region and (10) 11-13 shorter on hind margin. With three gonapophyses bearing 4-5 hairs each. Cauda 0.5-0.6 times as long as siphunculi, 1.95-2.55 (2.68) basal width with 7-8 (9) hairs; 6-8 caudal hairs are lateral, long and pointed, one is dorsal and usually is shorter and blunt.

Alate Viviparous Female. Colour in life green with abdomen olive green; antennae, legs and siphunculi black, cauda green. Cleared specimens with head, thorax, antennal segments I, II and base of III light brown, remaining antennal segments dark brown. Rostrum brown especially segments III and IV+V. Abdomen pale with marginal abdominal, ante-siphuncular and post-siphuncular sclerites light brown. Coxae, trochanters, genital and anal plates, and cauda pale. Half apices of femora brown. Tibiae, tarsus and siphunculi brown to dark brown like antennal segment III (except base).

Morphological Characters. Antennae 1.3-1.5 times as long as body. Longest hair on antennal segments III 0.65-0.78 times as long as basal diameter of antennal segment III. Secondary rhinaria 15-24, circular, variable in size, distributed on whole length of antennal segment III. Abdominal tergites I-VI not



Figures 1-12. *Impatientinum paranaense* sp. nov. 1-7) Apterous viviparous female: 1) Body; 2) Head; 3) Antennal segment III; 4) Apical rostral segment; 5) Siphunculus; 6) Cauda; 7) Hind tarsus. 8-12) Alate viviparous female: 8) Body; 9) Head; 10) Antennal segment III; 11) Siphunculus; 12) Cauda.

fused to form a sclerotic carapace. Lateral abdominal tubercles usually present on marginal abdominal sclerites II-V. Reticulated area of the siphunculi with (2) 3-6 rows of poorly defined cells. Cauda bearing seven hairs. Otherwise like apterous viviparous female.

Diagnosis

Impatientinum paranaense somewhat resembles *I. americanum*, but differs mainly by the length of the ultimate rostral segment, which is longer (1.4-1.6 times as long as hind

tarsus II) and bearing more (19-23) accessory hairs, whereas that *I. americanum* has the ultimate rostral segment shorter (1.20-1.35 times as long as hind tarsus II) and with few (14-16) accessory hairs. In addition *I. paranaense* is green in life and cleared specimens have antennal segments III (except base) to VI, apices of femora, tibiae and tarsus pigmented, while *I. americanum* is shiny black in life and cleared specimens have only apices of antennal segments III, IV and V, apices of tibiae and tarsus pigmented, and femora are totally pale.

Etymology. The species is named after Paraná, the State in Southern Brazil where it was first collected.

The key to species of *Impatientinum* s. s. (apterous viviparous female) in Remaudière (1981) was modified as follows to include the new species:

1. [Couplet 1' in Remaudière (1981)]-Ultimate rostral segment with 3-5 accessory hairs, as long as hind tarsus II; apices of tibiae and femora pigmented or pale; siphunculi with flange narrow or null. On *Impatiens*, Old World 2
1'. Ultimate rostral segment with 14-23 accessories hairs, 1.2-1.6 times as long as hind tarsus II; apices of tibiae pigmented or tibiae completely pigmented and apices of femora pale or pigmented; siphunculi with large flange. On *Cuphea*, New World 4
2. [Couplet 2 in Remaudière (1981)] - Apices of tibiae and femora pale; antennae with 8-17 secondary rhinaria in segment III, 1-7 in segment IV and 0-7 in segment V; ultimate segment rostral short, 0.65-0.77 times as long as hind tarsus II; siphunculi short, 0.64-0.77 as long as width of head; sinus frontal large and profound *I. balsamines* (Kaltenbach)
2'. [Couplet 2' in Remaudière (1981)] – Apices of tibiae and femora pigmented; antennae with 1-11 secondary rhinaria in segment III and 0 in segments IV and V; ultimate rostral segment 0.84-1.00 times as long as hind tarsus II; siphunculi more long; sinus frontal profound 3
3. [Couplet 3 in Remaudière (1981)] - One-thirds basal of siphunculi with spicules strongly imbricate and spiculed as is tergite VI and ventral side siphunculi; siphunculi more short than width of head; stigmatic sclerites contiguous or fused *I. asiaticum* Nevsky
3'. [Couplet 3' in Remaudière (1981)] – One-thirds basal of

siphunculi and tergite completely smooth; siphunculi larger or as long as width of head; stigmatic sclerites small and not fused *I. impatiens* (Shinji)

4. [Couplet 1 in Remaudière (1981)] – Ultimate rostral segment with 14-16 accessory hairs, 1.2 times as long as hind tarsus II; apices of tibiae pigmented, apices of femora pale; siphunculi with flange large. On *Cuphea aequipetala*, México *I. americanum* Remaudière
4'. Ultimate rostral segment with (18) 19-23 accessory hairs, 1.4-1.6 times as long as hind tarsus II; tibiae completely pigmented, apices of femora pigmented, flange 1.3-1.4 times as long as smaller diameter of the siphunculi. On *Cuphea calophylla*, Brazil *I. paranaense* sp. nov.

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