
Argentinean species of the *Faltala* leafhopper group (Hemiptera: Cicadellidae: Deltocephalinae)

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Las especies argentinas del grupo *Faltala* (Hemiptera: Cicadellidae: Deltocephalinae)

■ **RESUMEN.** Se tratan las cuatro especies del grupo *Faltala* Oman, presentes en la Argentina: *Faltala brachyptera* Oman, *F. furcipennis* Cheng, *Clorindaia hecaloides* Linnavuori y *C. brasileira* Zahniser & Webb. Se describe e ilustra por primera vez la hembra de *Faltala furcipennis*, se incluyen algunos caracteres adicionales de la genitalia del macho y de la hembra de *F. brachyptera*, *F. furcipennis* y *Clorindaia brasileira* y se establecen patrones morfológicos en la microescultura de las valvas I de las hembras, para su diferenciación interespecífica. A los efectos de facilitar la identificación de las cuatro especies argentinas, se presenta una clave sobre la base de caracteres morfológicos externos y de la genitalia de ambos sexos. Además, se registran *Faltala furcipennis* y *Clorindaia brasileira* como nuevas para la fauna Argentina y se adiciona información acerca de la distribución geográfica.

PALABRAS CLAVE. Auchenorrhyncha. Grupo *Faltala*. Morfología. Taxonomía. Neotrópico.

■ **ABSTRACT.** All four species of the *Faltala* Oman leafhopper group occurring in Argentina, *Faltala brachyptera* Oman, *F. furcipennis* Cheng, *Clorindaia hecaloides* Linnavuori and *C. brasileira* Zahniser & Webb, are reviewed. The female of *Faltala furcipennis* is described for the first time and some additional traits for the male and female genitalia of *F. brachyptera*, *F. furcipennis* and *Clorindaia brasileira* are included. A key to identify the four Argentinean species, based on male and female genitalia - including the specific differences in microsculpturing of the first valvulae- and the external morphology is presented. Further information on the geographical distribution of these grass-specialists is reported and *Faltala furcipennis* and *Clorindaia brasileira* are recorded as new in Argentina.

KEY WORDS. Auchenorrhyncha. *Faltala* group. Morphology. Taxonomy. Neotropic.

INTRODUCTION

The *Faltala* group was established by Linnavuori & De Long (1977) to include brachypterous South American deltocephaline leafhoppers with depressed, broad and short bodies. Other characteristics were also considered: length and shape of the crown, ocelli position, relative length of the pronotum, shape, length and venation of forewing, and the male and female genital segment. The group includes five genera: *Faltala* Oman, *Aequcephalus* De Long & Thambimuttu, *Kramerana* De Long & Thambimuttu, *Virganana* De Long & Thambimuttu and *Clorindaia* Linnavuori. At present, 15 species are known and all of the records indicate that they are grass-specialists. The taxa described are recorded from the South American countries of Peru and Brazil (Zahniser & Webb, 2004), Paraguay (Blocker & Fang, 1992; Cheng 1980), Chile (De Long & Thambimuttu, 1973; Linnavuori & De Long, 1977) and Argentina (Oman, 1936; Linnavuori, 1959, 1975; Paradell & Remes Lenicov, 2005).

Since the original description of *Faltala brachyptera* Oman in 1936 and *Clorindaia hecaloides* Linnavuori in 1975, few studies have been carried out in Argentina. The male of *C. hecaloides* was described and some additional features for the female and the suspected host plants and the geographical distribution were recorded (Paradell & Remes Lenicov, 2005).

In this study, we review four Argentinean species of the *Faltala* group. We describe the unknown females of *F. furcipennis* Cheng and add some new characters of the male and female of *F. brachyptera*, *F. furcipennis* and *Clorindaia brasileira*, and provide a key for the identification of the Argentinean species, based on male and female genitalia - including the specific differences in microsculpturing of the first valvulae- and the external morphology. *Faltala furcipennis* and *Clorindaia brasileira* are recorded for the first time in Argentina; new records for the other species are added.

MATERIAL AND METHODS

Field collected leafhoppers examined in this study were sampled by the authors in different localities of Argentina and were deposited in the Museo de La Plata collection (MLPA). Type materials of the species included in the genera *Aequcephalus*, *Kramerana* and *Virganana* belonging to the *Faltala* group were examined on loan from Ohio State University, Columbus, Ohio (OSUC). However, we failed to find *F. brachyptera* in the collection of the United States National Museum (USNM).

Specimens were collected with insect nets and preserved in 70 % ethyl alcohol. Both male and female genitalia of the species were prepared for microscopic examination. The drawings were made by using a camera lucida attached to a stereoscopic and light microscope.

RESULTS

Faltala Oman, 1936

Faltala Oman, 1936: 385.

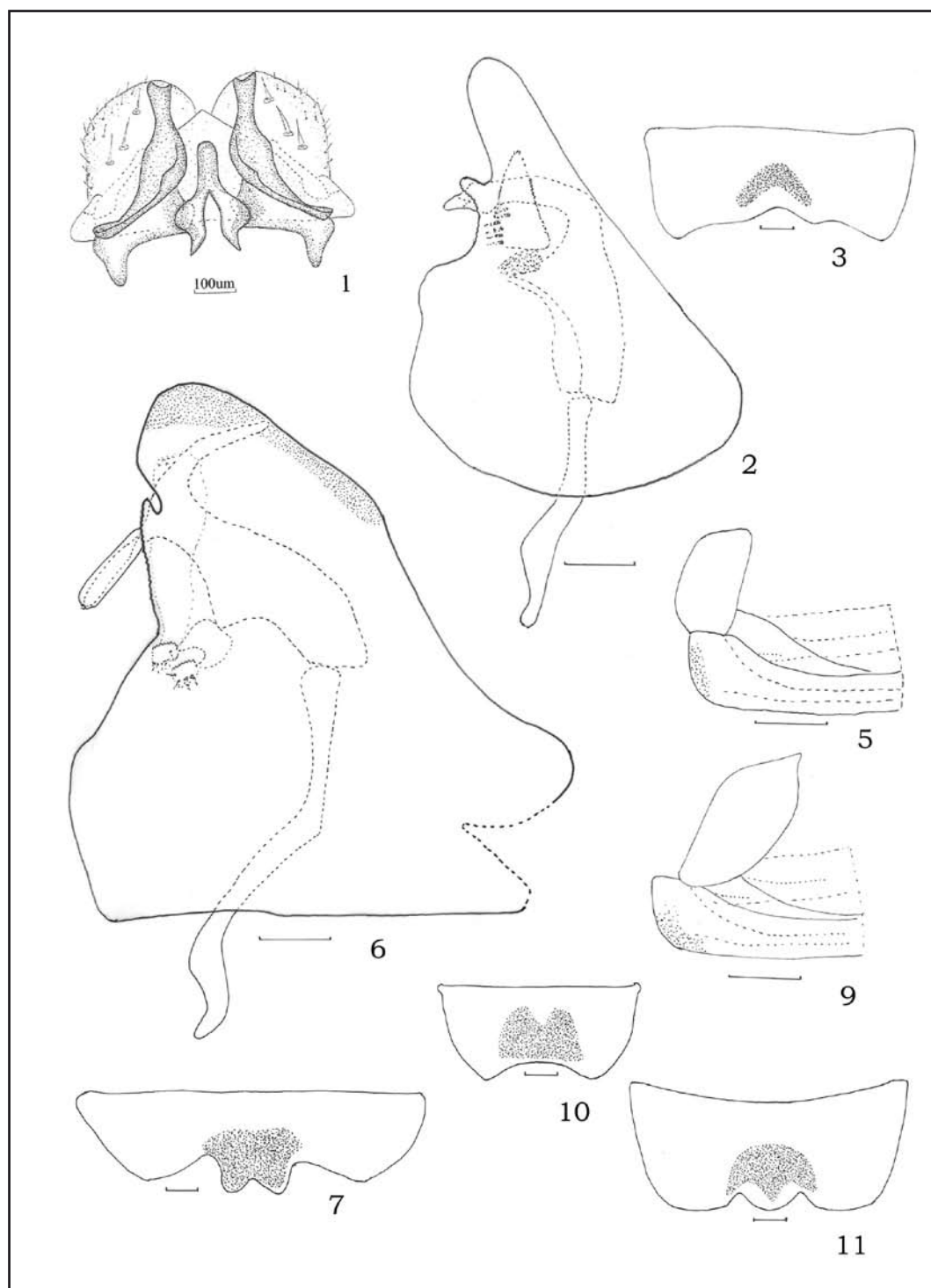
Type species: *Faltala brachyptera* Oman, 1936: 385; by monotypy.

The genus *Faltala* Oman, 1936, was described from northern Argentina (Loreto, Misiones) based on one species, *F. brachyptera*, and later re-described by Linnavuori (1959). It includes two species: *F. brachyptera* Oman, 1936 and *F. furcipennis* Cheng, 1980.

Faltala brachyptera Oman, 1936 (Figs.1-5)

Faltala brachyptera Oman, 1936: 387;
Linnavuori, 1959: 160.

Additional characters of the male genitalia: Valve broad and short, triangular; genital plates slightly rounded and short, apex curved, numerous microsetae on external



Figs. 1-3, 5-7, 9-11. *Faltala brachyptera*. 1, male valve, genital plates, stylus; 2, pygofer, aedeagus, phragma, lateral view; 3, female VII sternite; 5, first valvifer. *Faltala furcipennis*. 6, Male pygofer, aedeagus, phragma, lateral view; 7, Female VII sternite; 9, First valvifer. *Clorindaia hecaloides*. 10, Female VII sternite. *Clorindaia brasileira*. 11, Female VII sternite (scale bar = 1 mm).

margin and 2-3 uniseriate macrosetae on disk. Stylus short, reaching genital plate apex, broad basally, apophysis thick, laterally slightly curved, apex obliquely concave; rounded and little pronounced preapical angle (Fig. 1); aedeagus with subquadrate broad socle in ventral view, stem slender, elongate and strongly curved upward, slightly expanded laterally on both sides below gonopore, which is oval and apical; dorsal apodeme prominent; phragma bearing a pair of longitudinal membranous leaf-like processes, more sclerotized and bordered with microteeth on posterior margin and small and marginal microsetae along anterior margin (Fig. 2).

Additional characters of the female genitalia: posterior margin of VII sternite with median shallow notch, sinuous on both sides; relatively pronounced lateral angles with small median U-shaped brownish spot near posterior margin (Fig. 3). Sculpturing pattern of first valvulae with well delimited maculae joined (Fig. 4). First valvifer subrectangular, anterior margin slightly curved (Fig. 5).

Remarks: This species is distinguished from the other species, *F. furcipennis*, by its smaller body size (♂: 3,00 mm; ♀: 3,75 mm), uniform coloration and some genitalia traits: male with the aedeagus with a wider socle and strongly curved expanded laterally stem and the longer phragma with marginal anterior microsetae; female with VII sternite with a median shallow notch on posterior margin and the brownish spot U-shaped, first valvulae with maculae bigger and more separated on the apicoventral sculpturing area, and the subrectangular first valvifer with the anterior margin slightly curved.

Geographical distribution: Argentina: Misiones (Oman, 1936), Corrientes and Entre Ríos provinces.

Hosts: grass growing within corn crops and surrounding rice crops.

Material examined. MLPA. ARGENTINA. **Corrientes:** Alvear, 02-III-

2001, on vegetation with 80% Gramineae, Paradell col., 2 males. **Santa Fe:** San Javier, 4-I-1999, on *Cynodon* sp., 8 males. **Entre Ríos:** Gualaguaychú, 29-II-1996, on *Cynodon* sp.; Crespo, 29-II-1996, on *Cynodon* sp., 4 males, 2 females; Victoria, 28-II-1996, on *Cynodon* sp. associated with corn, 1 male; Larroque, 29-II-1996, on *Cynodon* sp., 2 males; Villa Elisa, 24-X-2005, 08-XI-05, on grass surrounding rice crops, Bonnot col., 6 males, 1 female; Pueblo Cazés, 19-XI-05, on grass surrounding rice crops, Bonnot col., 5 males.

Faltala furcipennis Cheng, 1980
(Figs. 6-9)

Faltala furcipennis Cheng, 1980: 100.

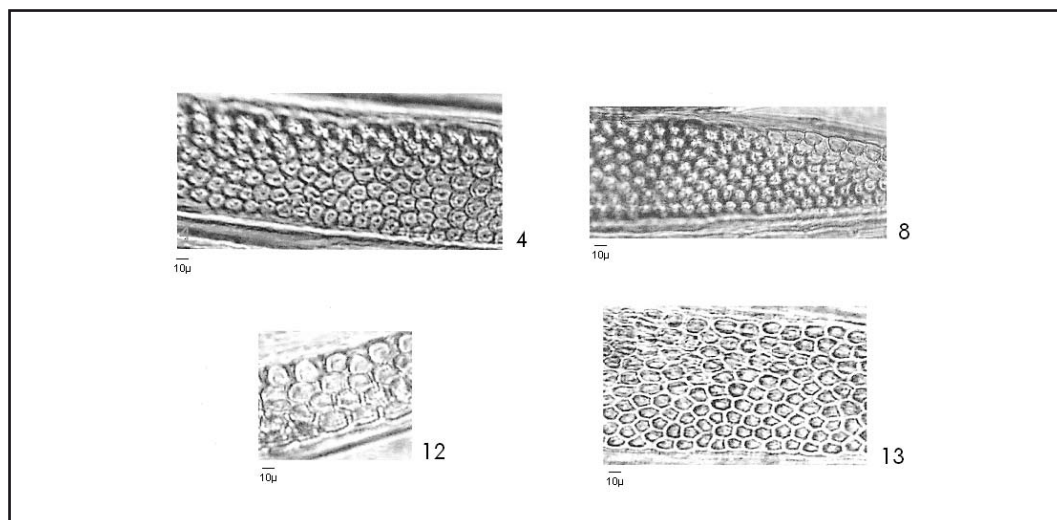
Measurements: Male's total length: 5,00 mm; female's total length: 5,50 mm.

Additional characters of the male genitalia: Aedeagus with slender and rounded socle in ventral view, stem short with a flat and lightly expanded process cephalad on dorsal surface and a ventrally curved sharp apical process; dorsal apodeme little pronounced; round apical gonopore on ventral surface; phragma bearing a pair of short membranous rounded-leaf-like processes, with small slightly sclerotized areas at base with microsetae on anterior margin and microteeth on the opposite margin (Fig. 6).

Female description: Color pattern similar to male but the abdomen is lighter.

Genitalia: posterior margin of VII sternite with a strongly produced median lobe, medially concave, deeply sinuous on both sides; lateral angles rounded and less pronounced, with the median large subquadrate infuscated spot (Fig. 7). Sculpturing pattern of first valvulae with quite small and joined together maculae (Fig. 8). First valvifer oval, anterior margin strongly curved (Fig. 9).

Remarks: According to Cheng (1980), the general coloration of the male of this species resembles that of *F. brachyptera*,



Figs. 4, 8, 12, 13. Females. First valvulae sculpturing pattern. 4, *Faltala brachyptera*; 8, *Faltala furcipennis*; 12, *Clorindaia hecaloides*; 13, *Clorindaia brasileira*.

except being tawny with brown spots on the abdomen and leg. It can also be recognized by the ventral process of the aedeagus.

We distinguish the females from those of *F. brachyptera* by the posterior margin strongly produced in a median lobe and the larger spot of sternite VII; the closer and smaller maculae on apicoventral sculptured area of first valvulae and the oval shape of first valvifer with the anterior margin curved.

We placed the female specimens as *F. furcipennis* because of their morphology, coloration and in particular because they were collected close to the male, sharing the same host plant.

Geographical distribution: Paraguay (Cheng 1980) and Argentina: Corrientes and Buenos Aires provinces. New record in Argentina.

Hosts: grass in meadow where Gramineae prevail.

Material examined. MLPA. ARGENTINA. Corrientes: San Roque, 02-III-2001, Paradell & Virla col., 1 male, 2 females. Buenos Aires: Pinamar, Km.384 (ruta 11), 04-XII-2006, on dunes, Olmi col., 4 males.

Clorindaia Linnavuori, 1975

Clorindaia Linnavuori, 1975: 51.

Type species: *Clorindaia hecaloides* Linnavuori, 1975: 51; by monotypy.

Linnavuori (1975) described the monotypic genus based on a single female specimen named *C. hecaloides* from Clorinda, Formosa Province, Argentina. Subsequently, Paradell & Remes Lenicov (2005) described the male adding some traits for the female and gave the suspected host plants and geographical distribution in Argentina.

This genus is represented in South America by 5 species. Blocker & Fang, 1992, described *Clorindaia adama*, *C. cyphora* and *C. latiabdoma* from Paraguay. Zahniser & Webb, 2004 described *C. brasileira* from Brazil, and we record it for the first time in Argentina.

Clorindaia hecaloides Linnavuori, 1975
(Figs. 10, 12)

Clorindaia hecaloides Linnavuori, 1975: 51; Blocker and Fang, 1992: 342; Paradell and Remes Lenicov, 2005: 134.

Remarks: We add to previous descriptions the colour pattern of the VII sternite, with a medial blackish spot close to posterior margin (Fig. 10), and the first valvulae with the well-delimited sculptured submarginal area, long, maculose with flat and rounded maculae tightly fitting together (Fig. 12).

Geographical distribution: Chile (Linnavuori & De Long, 1977), Paraguay (Blocker & Fang, 1992) and Argentina: Formosa (Linnavuori, 1975), Chaco, Misiones, Corrientes, Córdoba, Santa Fe, Buenos Aires (Paradell & Remes Lenicov, 2005) and Entre Ríos.

Hosts: grass in meadow where Gramineae prevail.

Material examined. MLPA. **ARGENTINA. Entre Ríos:** Gualaguay, 28-II-1996, on *Cynodon* sp., 1 male, 1 female; Victoria, 29-II-1996, on *Cynodon* sp., 2 females; Villa Elisa, 07-XI-2005, on grass surrounding rice crops, Bonnot col., 1 female. **Buenos Aires:** Villa Elisa, 18-XI-2004, on grass, Remes Lenicov & Paradell cols., 2 males, 4 females.

Clorindaia brasileira Zahniser & Webb, 2004 (Figs. 11, 13)

Clorindaia brasileira Zahniser & Webb, 2004: 673.

Remarks: Zahniser & Webb distinguished this species from other *Clorindaia* spp. by the process of the pygofer and the colour pattern of the crown. It is easily distinguishable from *C. hecaloides*-the other Argentinean species- by its robust body shape and bigger size, and the darker coloration with a particular pattern on the vertex, "i.e." testaceous marks taking a human form outlined with dark brown. Differences in the male genitalia are 3-5 macrosetae on the dorsocaudal margin of the pygofer, which has a ventro-caudal hook, more rounded and wider valve, longer plates, less curved and shorter stem of the aedeagus without the long apical

spoon-like process curved downwards, and a bigger sclerotized phragma -wider and rounded basally- tapered to an acute apex. The female genitalia differs in having the posterior margin of the sternite VII produced in a median lobe with a well delimited M-shaped dark spot (Fig. 11), the first valvifer wider with the anterior margin straight, and the apicoventral sculptured area of the first valvulae with maculae smaller, sharp, and clearly separated from each other (Fig. 13).

Geographical distribution: Brazil and Argentina: Corrientes and Entre Ríos provinces. New record in Argentina.

Hosts: grass in meadow where Gramineae prevail.

Material examined. MLPA. **ARGENTINA. Corrientes:** Alvear, 3-III-2001, Paradell & Virla cols., 2 males. **Entre Ríos:** Pueblo Cazés, 19-XI-05, grass surrounding rice crops, Bonnot col., 4 males, 5 females.

Key to genera and species of the *Faltala* group in Argentina

Key to the genera and some other species of this group were proposed by Linnavuori & DeLong (1977), Blocker & Fang (1992) and Zahniser & Webb (2004), based on external morphology and male genitalia; the key presented below helps to identify both males and females of the Argentinean species.

1 - Ocelli near to eyes, with a separation of 3x ocelli diameter *Faltala* Oman-2
1´ - Ocelli distant from eyes, with a separation of 1/3 to 1/2 of distance from each eye to crown apex *Clorindaia* Linnavuori-3

2- Male: *Aedeagus* elongate, stem strongly curved upward, slightly expanded apically; socle broad and subquadrate in ventral view, phragma with elongate leaf-like processes (Fig.2). Female: VII sternite with a shallow notch, with a small U-shaped brownish spot near posterior margin (Fig. 3); first valvulae sculptured with well delimited maculae

joined (Fig. 4) *Faltala brachyptera* Oman
 2'- Male: *Aedeagus* shorter, stem with one dorsal process cephalad directed and a ventrally curved sharp apical process; socle slender and rounded in ventral view; phragma with shorter and rounded leaf-like processes (Fig. 5). Female: VII sternite with a strongly produced median lobe with a large subquadrate infuscated spot (Fig. 7); first valvulae sculptured with quite small and joined together maculae (Fig. 8) *Faltala furcipennis* Cheng

3- Male: *Aedeagus* long, stem strongly curved upwards, with two preapical small teeth-like processes and a broad anterior apical spoon-like process; phragma with a pair of C-like processes cephalad. Female: VII sternite excavate with a blackish spot close to posterior margin (Fig. 10), first valvulae sculptured with flat and rounded maculae tightly fitting together (Fig.12)
 *Clorindaia hecaloides* Linnavuori
 3'- Male: *Aedeagus* short, stem slightly curved upwards, with only small lateral triangular processes at apex; phragma more sclerotized, subtriangular, wider and rounded basally tapered caudally. Female: VII sternite produced in a median lobe with a well delimited M-shaped dark spot (Fig. 11); first valvulae sculptured with smaller, sharp, and clearly separated maculae (Fig.13)
 *Clorindaia brasileira* Zahniser

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