



<http://dx.doi.org/10.11646/zootaxa.3861.2.5>

<http://zoobank.org/urn:lsid:zoobank.org:pub:782DB448-D86E-4BB8-9DB0-3EDB013BED62>

## A new genus and species of Delphacini (Hemiptera: Fulgoroidea: Delphacidae) from Argentina

A.M. MARINO DE REMES LENICOV & G. VARELA

*División Entomología, Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, Paseo del Bosque S/N° (B1900FW) La Plata, Buenos Aires, Argentina. E-mails: amarino@fcnym.unlp.edu.ar; marinoremes@gmail.com*

### Abstract

A new genus of Delphacini is described from Argentina, *Pyrophagus* Remes Lenicov gen. n., with one new species, *P. tigrinus* Remes Lenicov & Varela sp. n. The new species, distributing over a wide cultivated area of Northwestern and Central Argentina and recently confirmed as a vector of MRCV (*Rio Cuarto maize virus*) in experimental conditions, is one of the most frequently found delphacid species on wheat, oat, maize, triticale, rye, barley and wild Gramineae. The main diagnostic features of the new genus and species are described and illustrated, and information on the host plants, geographical distribution and vector capacity of the new species is provided.

**Key words:** Auchenorrhyncha, planthopper, distribution, host plants, MRCV vector, Argentina

### Resumen

Un nuevo género y especie de Delphacini (Hemiptera: Fulgoroidea: Delphacidae) desde la Argentina *Pyrophagus* Remes Lenicov gen. n., con una nueva especie, *P. tigrinus* Remes Lenicov y Varela sp. n. se describe desde la Argentina. El nuevo taxón, recientemente confirmado como vector del MRCV (virus del Mal de Río Cuarto del maíz) en condiciones experimentales, es uno de los más frecuentemente capturados sobre trigo, avena, maíz, triticale, centeno, cebada y gramíneas silvestres en áreas cultivadas de noroeste y el centro de la Argentina. En esta contribución se describen e ilustran las principales características diagnósticas del nuevo género y especie, y se adiciona información acerca de las plantas hospedantes, distribución geográfica e importancia fitosanitaria en la Argentina.

**Palabras Clave:** Auchenorrhyncha, Fulgoroidea, distribución, plantas hospederas, vector MRCV, Argentina

### Introduction

Extensive searches for the insect vectors of the “Mal de Río Cuarto” virus (MRCV) have been conducted since 1995 in the agricultural areas of Argentina because the MRCV is the most important and severe disease affecting the maize crops in Argentina (Lenardon, 1987). Among the collected planthopper specimens, one of the frequently found taxa in the northwestern and central cultivated areas is described here as a new genus and species of delphacid tribe Delphacini (Hemiptera: Fulgoroidea: Delphacidae). Recent experimental studies have demonstrated that this undescribed species can transmit the MRCV to triticale (*X Triticosecale* Wittmack), a winter grain with high forage potential in central Argentina (Velazquez *et al.*, 2006).

The family Delphacidae currently includes over 2000 described species in 268 genera worldwide (Bartlett, 2009). To date, the known diversity of Delphacini in Argentina is 32 species in 15 genera. According to the most recent available classification, the genera are: *Delphacodes* (Fieber) (with about 6 species whose generic limits are being revised) (Fennah, 1955, Muir, 1926, Remes Lenicov & Tesón 1978, 1979), *Caenodelphax* Fennah (1sp.) (Velazquez *et al.*, 2005), *Calbodus* Spinola (2 spp.) (Fennah, 1965), *Chionomus* Fennah (2 spp.) (Fennah, 1971, Tesón & Remes Lenicov, 1983), *Dicranotropis* Fieber (2 spp.) (Remes Lenicov, 1996), *Euides* Fieber (1 sp.)

(Mariani & Remes Lenicov, 2001), *Megamelus* Fieber (6 spp) (Sosa *et al.*, 2004, 2007), *Metadelphax* Wagner (2 spp.) (Gonzon & Bartlett 2008, Remes Lenicov & Tesón, 1989), *Nicetor* Fennah (1 sp.), *Peregrinus* Kirkaldy (1 sp.) (Remes Lenicov & Tesón, 1989), *Pissonotus* Van Duzee (2 spp.) (Bartlett & Deitz, 2000; Bartlett, 2000), *Phrictopyga* Caldwell (1 sp.) (Remes Lenicov *et al.*, 2009), *Sogatella* Fennah (2 spp.) (Remes Lenicov & Virla, 1999, Mariani & Remes Lenicov, 2005), *Toya* Fieber (1 sp.) (Gonzon & Bartlett, 2007) and *Tagosodes* Ashe & Wilson (2 spp.) (Mariani & Remes Lenicov, 2000–2001, 2005).

Recent phylogenetic studies proposed some groupings for delphacids of the New World (Urban *et al.*, 2010). Nevertheless, the relationships among the genera of Neotropical Delphacini are still unclear.

Due to the lack of the coincidence of anatomical features with any of the currently known Delphacini genera, this study establishes a new genus and species: *Pyrophagus tigrinus* gen. & sp. n. The main diagnostic features are described and illustrated, and further information on host plants, geographical distribution and vector capacity of the new species is included.

## Materials and Methods

Male and female genitalia of the adult specimens were prepared for microscopic examination according to standard taxonomic techniques (Remes Lenicov & Virla, 1993). Morphological terminology follows Ashe (1985), except for the head, carination and wing venation, which follow Yang & Yang (1986). Measurements were taken from 10 winged specimens of each sex and are given in millimeters. Drawings were made with a stereoscopic microscope with a camera lucida and also from photographs using a Cyber-shot DSC-P73 Sony digital camera.

Abbreviations are as follows: L., total length with fore wing in repose; B.L., body length; W., maximum body width; t.l., tegmina length and t.n., number of teeth on metatibial spur.

Total length was measured from the anterior margin of the vertex to the abdominal apex in brachypters or to the apex of the wings in macropters. Body width was measured between the external margins of the tegulae. For macropters, body length from apex of vertex to tip of abdomen is given as an additional measurement. Averages are expressed as means  $\pm$  SE. The length : width (L: W) ratio of the vertex was measured along the mid line and near mid length respectively.

Specimens studied were from the Museo de La Plata (MLP), Buenos Aires, Argentina. One male and one female paratypes of the new species are deposited in the Museo Argentino de Ciencias Naturales (MACN), Argentina.

## *Pyrophagus* Remes Lenicov, new genus

Type species. *Pyrophagus tigrinus* Remes Lenicov & Varela, sp. n.

**Description.** Blackish, yellow-cream marked delphacids. Vertex as long as wide, lateral margins subparallel but expanded laterally before and behind eyes, basal compartment twice as wide at hind margin at its greatest length, about 0.4 times length of vertex. Fastigium not or scarcely projected before eyes, evenly rounded to frons in profile. Arms of submedian carina meeting acuminate just anterior to fastigium; submedian frontal carina simple, rather thick at base; frons twice longer than wide, slightly constricted between eyes, lateral margins slightly convex; post- and anteclypeus together slightly shorter than frons, rostrum extending to metacoxa; antennal segments cylindrical, slender, surpassing frontoclypeal suture.

Pronotum at midlength shorter than vertex, lateral carinae distinct, posterolaterally directed, slightly curved, not reaching posterior margin. Disc of mesoscutum 3 times longer than scutellum; mesonotal lateral and median carinae short, subparallel, becoming obsolete at middle of mesonotum. Tegulae conspicuous. Post-tibial spur slender, narrowing distally, bearing many black-tipped teeth on outer margin (22 in holotype) plus apical tooth. Postbasitarsus as long as post-tarsal segments II and III together, spinal formula of hind leg 5-7-4.

*Male genitalia.* Pygofer dorsally short, ventrally long, ovate in caudal view, nearly twice higher than its maximum width; dorsolateral margins expanded in subquadrate angle, ventrolateral margins distinctly sinuous in profile; medioventral process strong, subquadrate and protruding dorsocaudally; diaphragma uniformly

sclerotized, wider at middle of genital segment, dorsal margin with medial protuberance slightly rounded and caudally protruded. Aedeagus short and tubular, broader and slightly compressed in basal 1/3; in lateral view slightly dorsocaudally directed, ending in strongly bent, laterobasally directed spinose process; phallosome subapical and elongate. Parameres S-shaped, dorsolaterad directed, tips moderately convergent apically. Connective elongate and slightly sinuate, joined ventrally at base of aedeagus. Suspensorium forming short, rectangular plate, ventrally embracing base of aedeagal shaft. Anal segment short, ringlike, ventro-caudal margin armed with two ventrocaudally directed, basally separated processes.

*Female genitalia.* Ovipositor short, not surpassing anal segment; valvifers VIII expanded basally to form inner lobe; without visible genital scale; gonapophyses IX slender, dorsally finely denticulated, anal style moderately short.

This new genus includes a single species, *P. tigrinus* Remes Lenicov & Varela, sp. n., the type species by original designation.

**Etymology.** The generic name is derived from the Greek *pyro-*, combining *pyr*, meaning "fire", plus *phagus*, also from the Greek, referring to feeding. The gender is masculine. This name was chosen in reference to the strong preference of the type species which feed on cultivated gramineous plants in the warm regions of Argentina.

**Remarks.** *Pyrophagus* shares a few features with other Neotropical Delphacini. It resembles *Euides* Fieber, 1866 and *Tarophagus* Zimmerman, 1948 in the following characters: the pygofer bearing ventral median process; the aedeagus with parallelled sides and ending in spinose process; and the anal segment armed. *Pyrophagus* can be distinguished from *Euides* by the vertex comparatively shorter, with the submedian carina meeting acuminate just anterior to the fastigium; carination on frons distinctive and noticeably contrasting in color; the male genitalia with well-developed diaphragm; suspensorium short and the anal segment with the processes basally separated. Females of *Pyrophagus* resemble those of *Tarophagus* species in the basal inner projection of valvifer VIII but can be separated from latter by the lack of the distinctive longitudinal pale stripe on the vertex and thorax; the frontal median carina simple and the fastigium rounded and shorter.

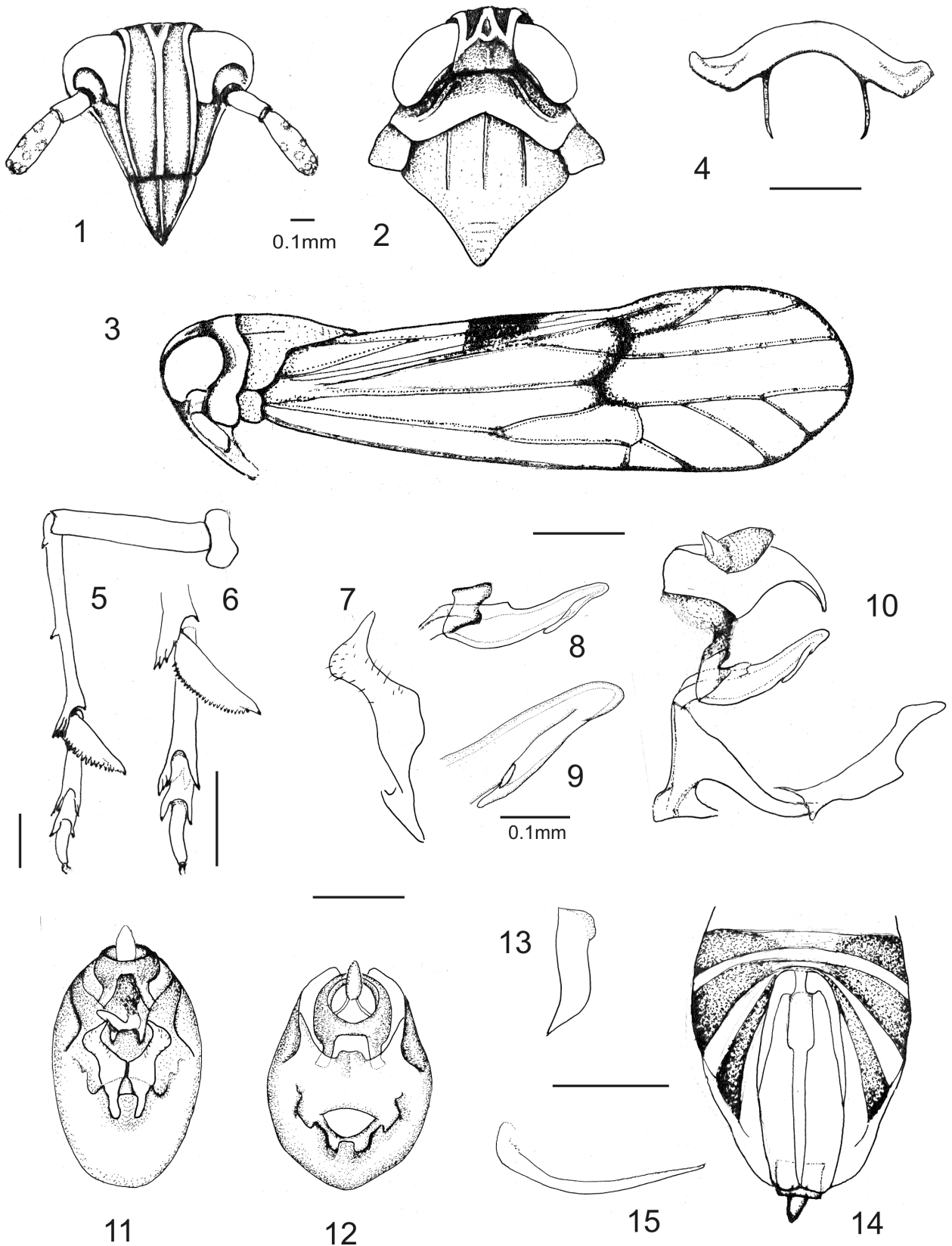
### ***Pyrophagus tigrinus* Remes Lenicov & Varela, sp. n.**

(Figs 1–14)

**Description. Male.** Small to medium-sized, predominantly macropterous forms. Length of macropterous form: 3.0 mm in male, 3.5 mm in female; brachypterous form: 2.0 mm in male, 2.4 mm in female.

Macropterous form: Ground colour shiny dark brown; black on front and lateral parts of head including anterior 1/2 of genae, basal 1/3 of pronotum between lateral carinae, mesonotum, pleural areas of meso- and metathorax and coxae; distinctive creamy-white to yellowish on carinae of head, pronotum (except basal 1/3) and abdominal segments II (drumming organ), VII and VIII; light brown to yellowish on basal vertex, clypeus and legs, except basal segment. Wings semi-hyaline with pale brownish veins; fore wing with prominent black spot at apex of clavus along apical 1/2 of common stem of anal veins extending laterally toward commissural vein and with broad infuscate transverse stripe from inner tip of tegmina to middle of nodal line; distal veins darkened.

Head (Figs 1, 2) including compound eyes 2.6x wider than vertex at base, and slightly narrower than pronotum (0.8–0.9:1); vertex subquadrate, lateral margins subparallelled, expanded laterally before and behind eye, in midline slightly longer than width at base (1,1:1); basal compartment at hind margin twice as wide as greatest length, about 0.4x length of vertex; stem of Y-shaped carina slender, delimiting shallow depressed areas on both sides; other carinae of head rounded and pronounced. Vertex evenly rounded to frons in profile, fastigium not projecting before eyes; arms of submedian carina meeting acuminate just anterior to apex. Frons in middle line longer than wide (2.2:1), widest part at level or slightly below level of ocelli, lateral margins slightly convex, submedian carina simple, broadly rounded and prominent; frontal area on each side of carinae shallowly concave. Genal carina arising from lateral edge of frontoclypeal suture and ending before base of antenna. Postclypeal disc longer than width at base (1.5:1); median and lateral carinae prominent, submedian carinae continuing onto anteclypeus. Post- and anteclypeus together little shorter than frons, in profile shallowly convex. Rostrum reaching anterior margin of metacoxa, apical segment slightly shorter than sub-apical segment (0.8:1). Antennal segments cylindrical, slender, surpassing base of postclypeus; basal segment length nearly 2x width, second segment longer than first segment (2.2:1); number and arrangement of sensory fields of pedicel: 14 in 7 rows.



**FIGURES 1–14.** *Pyrophagus tigrinus* sp. n. 1, head, frontal view; 2, head and thorax, dorsal view; 3, habitus, lateral view; 4, 2nd sternal apodemes; 5, hind leg; 6, metatibial spur; 7, left paramere, posterior view; 8, aedeagus, lateral view (left side); 9 tip of aedeagus; 10, genitalia without pygofer, lateral view (left side); 11, genitalia, ventrocaudal view; 12, pygofer and anal segment, caudal view; 13, valvifer VIII, ventral view (left side); 14, tip of abdomen, ventral view; 15, gonapophysis IX, left lateral view. (scale bars in Figs 1, 2 and 9, = 0.1 mm; scale bars in other figures = 0.5 mm).

Pronotum wider than head (1.1:1), in midline slightly shorter than vertex; lateral carinae distinct, curved laterally behind eye, not reaching hind margin. Mesonotum medially 4x length of pronotum, carinae distinct, straight, lateral and median carinae becoming obsolete prior to scutellum, which is lightly depressed and slightly transversally ribbed. Total length of mesoscutum disc 3x that of scutellum. Tegmina (Fig. 3) rounded at apex, longer than abdomen, extending nearly 1/2 their length beyond abdomen, Sc + R branching before Cu branch, Sc cell shorter than Cu1b. Post-tibial spur (Figs 5, 6) tectiform, slender, slightly shorter than basitarsus (08:1) with about 22 slender black-tipped teeth on posterior margin plus apical tooth; inner and outer margins slightly convex. Postbasitarsus as long as post-tarsal segments II and III together; spinal formula of hind leg: 5 (grouped 2 + 3) - 7 (grouped 2 + 5) - 4.

Drumming organ distinctive, with second abdominal tergite differentiated into prominent plate system readily visible externally; medially convex subquadrate central plate laterocaudally closed by sclerotized furrows; apodemes of 2nd abdominal sternite (Fig. 4) long, slender, erected dorsad.

Brachypterous form: Coloration similar to macropterous form but with tegmina coriaceous, uniformly dark-brown with obscure veins; posterior margin subtruncate to slightly rounded, not surpassing 7th abdominal tergite. Hind wing reduced to scale.

*Male genitalia.* Genital segment (Figs 11, 12) dorsally short, ventrally 3x longer than dorsally; ovate in caudal aspect, nearly twice as high as maximum width; dorsal margin V-shaped, deeply excavated to receive anal segment; in lateral view, dorsocaudal margins expanded in subquadrate lobe; ventrolaterally distinctly sinuous in profile, diafragma uniformly high and sclerotized, dorsal margin slightly medially produced in caudally protruded lobe; ventrocaudal margin trilobate, medioventral process strong, subquadrate and dorsocaudally produced, marginated with a small tooth, angular in profile. Parameres (Fig. 7) short, S-shaped, dorsolaterally directed, apposed near middle, sides on apical half sinuous, apex with outer angle fairly well produced and rounded, inner angle acute with tip moderately convergent. Aedeagus (Figs 8, 9) tubular, short, dorsocaudally directed, in lateral view, broader at base with small subbasal angular process arising on dorsal surface, shaft tapering, strongly reflexed ventrally in distal 1/3 forming spinelike process ventrally directed on right side; oval, subapical phallotreme on dorsal side. Connective (Fig. 10) large, slightly curved cephalad, strongly compressed, dorsally fused with ventral side of aedeagus chamber. Suspensorium forming short, rectangular plate, dorsally embracing base of aedeagus. Anal segment (Fig. 12) short, ringlike on caudal view, with two slightly flat ventrally directed processes on ventrocaudal angles with bases well separated and apically slightly diverging.

Measurements of macropterous forms: L.T:  $3 \pm 0.02$ ; B.L:  $1.8 \pm 0.01$ ; W.: 0.9; t.l.: 2.8; t.n: 20–23.

Measurements of brachypterous forms: L.T:  $2.2 \pm 0.02$ ; W.: 0.9; t.l.: 1.4; t.n: 20–23.

**Female.** Macropterous form: Structure and color pattern similar to male but abdomen and tegmina lighter and uniformly coloured, abdominal segments sometimes with darkish marks on each side of tergites and sternites. Drumming organ inconspicuous, without major morphological alterations.

Brachypterous form: Structurally similar to brachypterous males with color pattern varying from darkish to uniformly yellowish, with intercarinal frontal region, gena and tegmina brownish with some dark spots on apical margin.

*Female genitalia* (Fig. 14): Sternite V to VII membranous between sclerotized lateral plates. Ovipositor not surpassing anal segment; valvifers VIII (Fig. 13) expanded basally in inner lobe, covering anterolaterally ca. 1/3 of tergite IX; gonapophyses IX (Fig. 14) slender, dorsally finely denticulated, strongly curved in basal 1/2, with ca. 20–22 small sharp teeth on dorsal margin in distal 1/2, with distal apex narrow and strongly angled; anal style moderately short.

Measurements of macropterous forms: L.T:  $3.5 \pm 0.03$ ; W: 0.9; t.n: 20–23.

Measurements of brachypterous forms: L.T:  $2.4 \pm 0.02$ ; W: 0.9; t.n: 20–23.

**Etymology.** The specific name is taken from the Greek word *tigris* “tiger”, in reference to the contrasting pattern of coloration. The name was emended with ‘-nus’ to make it masculine in gender.

**Remarks.** This new species can be easily recognized by the following characters: prothorax and abdomen blackish with yellow-cream marks; mesonotum uniformly dark; vertex subquadrate, rounded to frons in profile; male genitalia with pygofer with medioventral process strong, diaphragm uniformly wide and caudally produced, suspensorium short and aedeagus dorsocaudally directed and ending in a strongly reflexed, spinose process; and valvifers VIII in female basally expanded.

*Pyrophagus tigrinus* resembles *Delphacodes puella* (Van Duzee, 1897) in the carination on head, color of

pronotum and abdomen, and the markings and venation of fore wings, but differs from the latter in its vertex subquadrate, not projecting beyond the level of the eyes; antennae and legs longer; tegulae and mesonotum uniformly dark; and the shape of genitalia.

**Distribution.** Argentina (Jujuy, Salta, Tucumán, Catamarca, La Rioja, San Juan, Mendoza, San Luis, Santiago del Estero, Chaco, Misiones, Corrientes, Entre Ríos, Santa Fe, Córdoba and Buenos Aires). Brazil (Paraná and Goias).

**Biology.** *Pyrophagus tigrinus* is widely distributed in northern Argentina. It represents one of the most common species on forage Gramineae, including oat (*Avena sativa* L.), oat associated with rye and *Melilotus* sp., barley (*Hordeum vulgare* L.), maize (*Zea mays* L.), alepo sorghum (*Sorghum halepense* L.), triticale (X *Triticosecale* Wittmack), wheat (*Triticum aestivum* L.), Grama Rhodes (*Chloris gayana* Kunth), Gatton Panic (*Panicum máximum* L. cv. *Gatton panic*), weeping lovegrass (*Eragrostis curvula* (Schrad.) Ness), and hairy crabgrass (*Digitaria sanguinalis* (L.) Scop. Most of these plants have been demonstrated as host reservoirs of MRCV (Lenardón *et al.*, 1997; Truol *et al.*, 2001; Laguna *et al.* 2002; Arneodo *et al.*, 2002; Velazquez *et al.*, 2006). Field studies have shown that its populations abruptly increase during summer on wheat and also on several wild grasses in cultivated maize areas affected by MRCV (Remes Lenicov, unpubl. data).

**Sanitary Importance.** *Pyrophagus tigrinus* was first captured in 1997 in Jesús María (Córdoba) in triticale crops infected by MRCV. Recently, Velazquez *et al.* (2006) demonstrated its capacity to transmit the MRCV to triticale under experimental conditions. They found similarities in the symptoms and the viral dsRNA electrophoretic pattern with the MRCV using *D. kuscheli* as vector. They also observed MRCV-like particles in phloem tissue cells and highlighted the possible role of *P. tigrinus* as vector and reservoir of virus in nature as well as its implication in the spread of this disease.

**Natural Enemies.** Nymphs and adults were found parasitized by one unidentified species of Elenchidae (Strepsiptera).

**Type Material.** Holotype ♂ (macropter): ARGENTINA, Córdoba, Jesús María, on wheat, 10.xi.1988, Velázquez col. Paratypes: 3♂♂ (brachypters), 3♀♀ (macropters), 2♀♀ (brachypters), same data as holotype; 2♂♂ (macropters), 2♀♀ (brachypters), Tucumán, La Virginia, 11.xii.2008, Virla col.; 1♂ (macropter), 1♀ (brachypter), Buenos Aires, La Plata, on maize, xii.1989, Remes Lenicov col. (MLP); 1♂ (macropter), 1♀ (brachypter), Buenos Aires, La Plata, on maize, xii.1987, Remes Lenicov col. (MBR).

**Other Material Examined.** ARGENTINA: Jujuy, 1♂, San Pedro, s/*Cynodon* sp., 6.iv.1999, Virla col.; 1♀, Humahuaca, 8.iv.1999, Virla col. Salta: 1♂, Tolloche, 6.i.1999, Virla col.; 1♀, Pichanal, 24.iii.2000, Virla col.; 2♂♂, La Estrella, 5.iv.1999, Virla col.; 2♂♂, Tolombon, 21.iii.2000, Virla col.; 2♀♀, Ceibalito, on maize, 5.iv.1999, Virla col.; 2♂♂, Cabeza de Buey, on *Sorghum halepense*, tillered maize, 17.v.1994, Virla col.; 2♂♂, Rosario de Lerma, on oat, 17.v.1994, Virla col.; 1♂, 1♀, Cobos, tillered oat, 18.viii.2001, Virla col.; 2♀♀ (brachypters), Metán, on tillered wheat, 18.viii.2001, Virla, col. Tucumán: 4♂♂, 2♀♀, El Cadillal, on grass, xii.1942, Virla col.; 1♂, Burreyacu, 24.ii.2002, Virla col.; 2♀♀, Gdor. Garmendia, 24.ii.2002, Virla, col.; 1♀, Amaicha del Valle, on tillered barley, 19.viii.2001, Virla col.; 1♂, Chilcas, 25.iv.2000, Virla col.; 1♂, 1♀, Macomitas, 19.x.1999, Virla col.; 2♂♂, Leales, on oat and *Melilotus* sp., 16.ix.1990, Virla col.; 1♂, El Mollar, 3.v.1999, Virla col.; 1♂, Ampimpa, 2300 m, on wheat, 21.iii.2000, Virla col.; 1♂, 1♀, El Cadillal, on maize, 7.i.1993, Virla col.; 1♂, Rumi Punco, 20.ii.1999, Virla col. Catamarca: 1♀, El Alamito, 28.ii.1999, Virla col., 1♂, Cnia. del Valle, 25.ii.1999, Virla col.; 1♂, S.F. del Valle, on grass, 27.ii.1999, Virla col.; 2♂♂, Santa María, on barley, 13.vi.2001, Virla col.; 2♀♀, Huillapima, 438 m, 4.xii.2001, Virla col. Santiago del Estero: 2♂♂, Campo Experimental La María, Ruta 9 km.1109, Virla col.; 1♂, Santiago del Estero, 27.ii.1998, Virla col.; 1♂, 1♀, Las Romanos, on maize, 27.ii.1998, Virla col.; 2♀♀ (brachypters), Loreto, on oat in flowering stage, 11.ix.2001, Virla col.; 1♀, Isca Yacu (Pozo Hondo and Las Cejas), on oat in flowering stage, 11.ix.2001, Virla col. Chaco: 2♀♀, Charata, on oat in vegetative stages, 27.viii.2000, Virla col.; 1♂, Resistencia, 4.i.1999, light trap, Virla col. La Rioja: 1♂, San Blas, on maize V5–8 stage, 30.xi.2001, Virla col.; 1♂, Villa Mazán, 4.xii.2000, Virla col.; 1♀, Nonogasta, 3.xii.2001, Virla col. San Juan: 2♂♂, Villa Media Agua, 560 m, on grass, 1.xii.2001, Virla col.; 1♂, Jachal, on oat, 20.iii.2002, Virla col. San Luis: 1♂, Merlo, on grass, xi.1999, Remes lenicov col.; 1♂, Villa Mercedes, xii.1999, Virla col. Mendoza: 2♂♂, 1♀, Uspallata, on potatoe, iv.1945, Lanatti col. Misiones: 1♂, Aristóbulo del Valle, on grass, 1.iii.2001, Virla col. Corrientes: 1♂, 1♀, Santo Tomé, ii.1991; 1♀, San Roque, 2.iii.2001, Virla col. Entre Ríos: 3♂♂, 2♀♀, Colón, ii.1991, Remes Lenicov col. Santa Fe: 1♂, Suardi, on maize, 26.ii.2001, Laguna col. Córdoba: 1♂, 1♀, Piquillin, on *sorghum*, 25.xi.2003; 2♂♂, 3♀♀, Manfredi, on *Sorghum*,

xii.1992, Remes Lenicov col.; 2♂♂, 2♀♀, Río Cuarto, on maize, xii.1992, Dagoberto col.; 1♀, Jesús María, on wheat, x.1988, Truol col.; 2♂♂, Las Peñas, on maize, 2.xii.2002, Truol col. **Buenos Aires:** 3♂♂, 2♀♀, Peña, on wheat, iv.1944; 1♂, 1♀, José C. Paz, xii.1947, Martínez-Bezzi, col.; 2♂♂, 2♀♀, Bragado, on *Sorghum*, i.1980, Remes Lenicov col.; 3♂♂, 2♀♀, La Plata, on maize, xii.1987, Remes Lenicov col.; 2♂♂, 1♀, Castelar, on wheat, maize, grass, xii.1980, Dalbo col.; 1♂, 2♀♀, Gorina, on parsley, alfalfa and clover, xii.1981, Dagoberto col. **BRAZIL:** 1♂, Parana, on maize, xii.2006, Martins col.; 1♂, Goias, on maize, xii.2006, Martins de Oliveira col.

## Acknowledgements

We wish to express our thanks to Eduardo Virla (PROIMI, Tucumán, Argentina) and Graciela Truol (IFFIVE-INTA, Córdoba, Argentina) for sending us the specimens for study and warning us of the abundance of the new species and to Christopher Dietrich for helpful suggestions regarding the manuscript. We also thank Dr. Arnaldo Maciá (CIC: Scientific Research Committee of the Province of Buenos Aires, Argentina) for the technical assistance. This work was partially supported by the National Research Council (CONICET) and La Plata National University (UNLP) from Argentina Project Cód. 623 and FONCYT- PICT 2007 N° 00143–03.

## References

- Arneodo, J.D., Lorenzo, E., Laguna, I.G., Abdala, G. & Truol, G.A. (2002) Cytopatological characterization of Mal de Río Cuarto virus in corn, wheat and barley. *Fitopatologia Brasileira*, 27, 298–302.  
<http://dx.doi.org/10.1590/s0100-41582002000300010>
- Asche, M. (1985) Zur phylogenie der Delphacidae Leach, 1815 (Homoptera Cicadina Fulgoromorpha). *Marburger Entomologische Publikationen*, 2 (1–2), 1–910.
- Bartlett, C.R. (2000) An annotated list of planthoppers (Hemiptera: Fulgoroidea) of Guana Island (British West Indies). *Entomological News*, 111 (2), 120–132.
- Bartlett, C.R. (2009) A new genus of new world Tropidocephalini (Hemiptera: Delphacidae: Delphacinae), with the description of two new species. *Entomological News*, 120 (4), 387–396.  
<http://dx.doi.org/10.3157/021.120.0407>
- Bartlett, C.R. & Deitz, L.L. (2000) *Revision of the New World delphacid planthopper genus Pissonotus (Hemiptera: Fulgoroidea)*. Thomas Say Publications in Entomology, Monographs, 234 pp.
- Fennah, R.G. (1955) Delphacidae from Juan Fernandez (Homoptera-Fulgoroidea). *Proceeding of the Royal Entomological Society of London (B)*, 24, 129–137.  
<http://dx.doi.org/10.1111/j.1365-3113.1955.tb01488.x>
- Fennah, R.G. (1963) New delphacidae (Homoptera Fulgoroidea) from South America and West Africa. *Annals and magazine of Natural History*, 13 (5), 689–700.
- Fennah, R.G. (1965) New species of Fulgoroidea (Homoptera) from the West Indies. *Transactions of the Royal Entomological Society of London*, 117 (4), 95–126.  
<http://dx.doi.org/10.1111/j.1365-2311.1965.tb00048.x>
- Fennah, R.G. (1971) Fulgoroidea from the Cayman Islands. *Journal of Natural History*, 5, 299–342.  
<http://dx.doi.org/10.1080/00222937100770241>
- Gonzon, A.T. & Bartlett, C.R. (2008, dated 2007) Systematics of *Hadropygos* n.g., *Metadelphax* Wagner and New World *Toya* Distant (Hemiptera: Delphacidae) *Transactions of the American Entomological Society*, 133 (3–4), 205–278.
- Laguna, G., Remes Lenicov, A.M.M. de, Virla, E., Avila, A.O., Gimenez Pecci, M.P., Herrera, P., Garay, J., Ploper, D. & Mariani, R. (2002) Difusión del virus del Mal de Río Cuarto (MRCV) del maíz, su vector, delfácidos asociados y huéspedes alternativos en la Argentina. *Revista de la Sociedad Entomológica Argentina*, 61 (1–2), 87–97.
- Lenardon, S. (1987) Mal de Río Cuarto. *Revista CREA*, 1987, 6–15.
- Lenardon, S.L., March, G.J., Beviacqua, J.E., Marinelli, A., Ornaghi, J.A. & Astorga, E.M. (1987) Diferentes épocas de siembra y cultivares de maíz como una alternativa para disminuir la incidencia del maize rough dwarf virus (MRDV) agente causal del "Mal de Río Cuarto". *IDIA, INTA*, 441–444, 78–83.
- Mariani, R. & Remes Lenicov, A.M.M. de (2000/2001) *Tagosodes orizicolus* (Muir, 1926), vector del virus de la hoja blanca del arroz. (HBV) en la República Argentina (Homoptera-Delphacidae). *Revista de la Facultad de Agronomía, La Plata*, 104 (2), 151–156.
- Mariani, R. & Remes Lenicov, A.M.M. de. (2001) El género *Euides* en la República Argentina (Hemiptera-Fulgoromorpha-Delphacidae). *Revista de la Sociedad Entomológica Argentina*, 60 (1–4), 89–92.
- Mariani, R. & Remes Lenicov, A.M.M. de. (2005) El complejo *Sogatella* en Argentina: un problema fitosanitario creciente (Insecta-Hemiptera-Delphacidae). *XIII Congreso Latinoamericano de Fitopatología, III Taller de la Asociación Argentina*

de *Fitopatólogos*. Córdoba, Argentina, 566 pp.

- Muir, F. (1926) Contributions to our knowledge of South American Fulgoroidea (Homoptera). Part I. The family Delphacidae. *Bulletin of the Hawaiian Sugar Planter's Association (Entomological Series)*, 18, 1–51.
- Remes Lenicov, A.M.M. de. (1996) El género *Dicranotropis* Fieber, 1866, en la República Argentina y Chile (Insecta-Homoptera-Delphacidae). *Acta Entomológica Chilena*, 20, 123–128.
- Remes Lenicov, A.M.M. de, Olmi, M. & Virla, E. (2009) *Phrictopyga holmgreni* (Muir): new record for Argentina and description of a new parasitoid, *Gonatopus concinnus* (Hemiptera: Delphacidae et Hymenoptera: Dryinidae). *Journal of the Kansas Entomological Society*, 82 (2), 174–182.  
<http://dx.doi.org/10.2317/jkes803.06.1>
- Remes Lenicov, A.M.M. de & Tesón, A. (1978) Contribución al estudio de los fulgóridos argentinos I. (Homoptera-Fulgoroidea-Delphacidae). *Revista de la Sociedad Entomológica Argentina*, 37 (1–4), 17–22.
- Remes Lenicov, A.M.M. de & Tesón, A. (1979) Contribución al estudio de los fulgóridos argentinos II. (Homoptera-Fulgoroidea-Delphacidae). *Neotrópica*, 25 (73), 69–76.
- Remes Lenicov, A.M.M. de & Tesón, A. (1989) Contribución al estudio de los fulgoroideos argentinos IV (Homoptera-Fulgoroidea). Observaciones sobre tres especies halladas en cultivos de maíz (*Zea mays* L.). *Revista de la Sociedad Entomológica Argentina*, 47 (1–4), 101–107.
- Remes Lenicov, A.M.M. de & Virla, E. (1993) Homópteros Auquenorrincos asociados al cultivo de trigo en la República Argentina. I. Análisis preliminar de la importancia relativa de las especies. *Studies on Neotropical Fauna and Environment (Ecology and Systematic)*, 28 (4), 211–222.  
<http://dx.doi.org/10.1080/01650529309360905>
- Remes Lenicov, A.M.M. de & Virla, E. (1999) Delfácidos asociados a cultivos de maíz en la República Argentina. (Insecta-Homoptera-Delphacidae). *Revista de la Facultad de Agronomía, La Plata*, 104 (1), 1–15.
- Sosa, A.J., de Remes Lenicov, A.M.M., Mariani, R. & Cordo, H. (2004) Redescription of *Megamelus scutellaris* Berg (Hemiptera: Delphacidae), a candidate for biological control of waterhyacinth. *Annals of the Entomological Society of America*, 97 (2), 271–275.
- Sosa, A.J., Remes Lenicov, A.M.M. de & Mariani, R. (2007) Species of *Megamelus* (Hemiptera-Delphacidae) associated to Pontedereaceae in South America. *Annals of the Entomological Society of America*, 100 (6), 798–809.  
[http://dx.doi.org/10.1603/0013-8746\(2004\)097\[0271:romsbh\]2.0.co;2](http://dx.doi.org/10.1603/0013-8746(2004)097[0271:romsbh]2.0.co;2)
- Tesón, A. & Remes Lenicov, A.M.M. de. (1983) Contribución al estudio de los Fulgóridos argentinos III (Homoptera-Fulgoroidea-Delphacidae). *Revista de la Sociedad Entomológica Argentina*, 42 (1–4), 313–323.
- Truol, G.A., Usugi, T., Hirao, J., Arneodo, J., Gimenez Pecci, M.P. & Laguna, I. (2001) Transmisión experimental del virus del Mal de Río Cuarto (MRCV) por *Delphacodes kuscheli*. *Fitopatologia Brasileira*, 26, 39–44.  
<http://dx.doi.org/10.1590/s0100-41582001000100007>
- Urban, J.M., Bartlett, C.R. & Cryan, J.R. (2010) Evolution of Delphacidae (Hemiptera: Fulgoroidea): combined-evidence phylogenetics reveals importance of grass host shifts. *Systematic Entomology*, 35 (4), 678–691.  
<http://dx.doi.org/10.1111/j.1365-3113.2010.00539.x>
- Velazquez, P., Guzmán, F.A., Conci, L.R., Remes Lenicov, A.M.M. de & Truol, G.A. (2006) *Pyrophagus tigrinus* Remes Lenicov & Varela (Hemiptera: Delphacidae), nuevo vector del Mal de Río Cuarto virus (MRCV, Fijivirus) en condiciones experimentales. *Agriscientia*, 23 (1), 9–14.
- Velazquez, P.D., Marino de Remes Lenicov, A.M. & Truol, G.A. (2005) *Caenodelphax teapae* Fowler (Hemiptera Delphacidae): nueva especie vectora del Mal de Río Cuarto virus (MRCV) en Argentina. *VI Congreso Argentino de Entomología*. Tucumán, 280.
- Yang, J.-T. & Yang, Ch.-T. (1986) Delphacidae of Taiwan (I). Asiracinae and the tribe Tropidocephalini (Homoptera: Fulgoroidea). *Taiwan Museum Special Publication*, 6, 1–79.