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The species of *Megaphragma* Timberlake (Hymenoptera: Trichogrammatidae) from Argentina

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Trichogrammatidae are an almost worldwide family of egg parasitoids that consist of 88 genera (Pinto 2006). Species of *Megaphragma* Timberlake (tribe Oligositini) are egg parasitoids of Thysanoptera. Fifteen species are assigned to *Megaphragma*, but only three have been reported from the Neotropical region (Noyes 2002). *Megaphragma mymaripenne* Timberlake (1924) has been recorded previously from Argentina (De Santis 1970), but *M. striatum* Viggiani (1997) was known only from Mexico, and *M. caribea* Delvare (1993) is known only from Guadeloupe (Noyes 2002; Pinto 2006).

Recently, one of us (E. Luft) reared *Megaphragma* sp. from eggs of Thysanoptera on corn in San Miguel de Tucumán, Argentina, and this record instigated a review of all material of the genus recorded from Argentina. We searched for specimens deposited in the major entomological collections of Argentina: Instituto Fundación Miguel Lillo (San Miguel de Tucumán) (IMLA), Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (Buenos Aires city) (MBA), and Museo de Ciencias Naturales de La Plata (La Plata, Buenos Aires province) (MLPA), but found specimens only in MLPA. In addition, one of us (G. Viggiani) studied material of *Megaphragma* from Argentina preserved in two other collections, that of the University of California Riverside (UCR) and of the Universidad Rómulo Gallegos, Venezuela (URGV). The results of this study are presented here.

Key to females of *Megaphragma* from the Neotropical region

1 Antenna with 1 funicular segment and 2-segmented club after anellus 2
\- Antenna without funicle, but with 2 or 3-segmented club after anellus 4
2 Funicular segment 3x as long as wide ..... *Megaphragma* sp. A
\- Funicular segment less than 2x as long as wide 3
3 Metasoma with first tergite (T1) reticulate (Viggiani, 1997, fig. 9); T2–T4 with a pair of setae shorter than length of each segment ..... *M. mymaripenne* Timberlake
\- Metasoma with a few transversal striations on T2; T2–T4 with a pair of setae longer than length of each segment (Viggiani, 1997, fig. 6)..... *M. amalphitanum* Viggiani
4 Club 3-segmented ..... *M. striatum* Viggiani
\- Club 2-segmented ..... *M. caribea* Delvare

Species of *Megaphragma* known from Argentina

Megaphragma sp. A

We have seen a single female of what probably represents an undescribed species, but prefer not to describe it until more material is available to assess variation. The primary feature that differentiates this female from other Neotropical *Megaphragma* is its long (three times as long as wide) and cylindrical funicle segment, similar to that of *M. polychaetum* Lin (1992, fig. 3B).

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Material examined. ARGENTINA. Salta Pr., Orán rd., to San Andres along Rio Blanco; 399 m, 23.09°S, 63.37°W, sweep; 22.iii.2003; J. Munro coll. [1 ♀, UCR].

Megaphragma amalphitanum Viggiani

Megaphragma amalphitanum Viggiani 1997: 51. Holotype: female on slide. Italia, Campania, Vietri sul Mare (SA), 15-20.ix.1994; coll. G.Viggiani; ex egg of *Heliothrips haemorrhoidalis* on *Viburnum tinus*, deposited in the collection of the Dipartimento di Entomologia e Zoologia Agraria, Università degli Studi di Napoli "Federico II", Napoli.
Megaphragma mymaripenne; Aquino & Molinari 2007: 157 (misidentification).

This species, recorded previously from Italy, France and Portugal (Pintureau *et al*. 1999), parasitizes the same host, *Heliothrips haemorrhoidalis* (Bouché), as *M. mymaripenne* Timberlake (Viggiani & Bernardo 1997, 1998; Viggiani *et al*. 1998). Several specimens obtained in Argentina from eggs of *Caliothrips phaseoli* (Hood) were erroneously cited as *M. mymaripenne* by Aquino & Molinari (2007). This is the first time *M. amalphitanum* is reported for the Neotropical region, and *C. phaseoli* represents a new host association.

Material examined (all slide mounted). ARGENTINA. Entre Ríos, Paraná, Formento (EEA INTA Paraná, "*Megaphragma mymaripenne*" Aquino det., ex *Caliothrips phaseoli*) [2 ♀♀, UGRV]. Formosa Prov., RN81; btw. Palo Alto & Pirané; 119 m, 25.60°S, 59.21°W; 25.iii.2003; sweep gallery forest; coll. J. Munro [1 ♀, UCR]. Formosa Prov., RN81; btw. Palo Alto & Pirané; 119 m, 25.60°S, 59.21°W; 25.iii.2003; sweep gallery forest; coll. J. Munro [1 ♀ UCR]. Misiones Prov., Santa Ana, nr. Loreto; 27.34°S, 55.53°W. 77 m. 27.iii.2003; swp. wet for. J. Munro coll. [1 ♀, UCR]. Misiones Prov., S. of Santa Ana near Loreto; 27.42°S, 55.53°W. 175 m. 28.iii.2003; swp. J. Munro coll. [1 ♀, UCR]. Salta Pr., Orán rd., to San Andres along Rio Blanco; 399 m, 23.09°S, 63.37°W, sweep; 22.iii.2003; J. Munro coll. [1 ♀ UCR]. Salta Prov., RN81; 66 km, E. jct. RP 24; 23.24°S, 63.40°W; 260 m; swp dry chaco; 24.iii.2003; coll. J. Munro [2 ♀♀, UCR]. Salta Prov., Aguas Blancas; Ruta 19; 22.72°S, 64.40°W, 447 m. 23.iii.2003; swp. rainforest along Bolivia brdr. J. Munro coll. [1 ♀, UCR]. Salta Prov., Orán; Rd., to San Andres along Rio Blanco; 535 m, 23.11 °S, 64.52 °W, 23.iii.2003; swp scrub & ginger; J. Munro coll. [1 ♀, UCR]. Salta Prov., RN81; 66 km, E. jct. RP 24; 23.24°S, 63.40°W; 260 m; swp dry chaco; 24.iii.2003; coll. J. Munro [1 ♀, UCR]. Salta Prov., RN81; 66 km, E. jct. RP 24; 23.24°S, 63.40°W; 260 m; swp dry chaco; 24.iii-2003; coll. J. Munro [1 ♀ UCR]. Santa Fe, Oliveros, A.M. Molinari (EEA INTA Oliveros, "*Megaphragma mymaripenne*" Aquino det., ex *Caliothrips phaseoli*) [2 ♀♀ & 1♂, MLPA]. Santa Fe, A.M. Molinari (from eggs of *Calliothrips phaseoli*) [2 ♀♀ & 8 ♂♂, MLPA]

Megaphragma mymaripenne Timberlake

Megaphragma mymaripenne Timberlake 1924: 414. Holotype: female on slide; Hawaii, Mountain View, January, 1920; coll. C. E. Pemberton; deposited in the collection of the U. S. National Museum, Washington.
Megaphragma mymaripenne; Viggiani 1997: 118.

Notes on the type of *M. mymaripenne* and characters additional to those given in the key for its discrimination were given by Viggiani (1997) and Viggiani & Bernardo (1997). The species was first reported from Argentina by De Santis (1970) on the basis of two females mounted on slides in the collection of A. A. Ogloblin (MLPA). These specimens, although not in good condition, clearly show the main characters for the discrimination of the species as reported by Viggiani (1997).

Megaphragma mymaripenne is rather widely distributed (Argentina, Chile, Guadeloupe, Italy, USA: California, Louisiana, Hawaii). The populations recorded in USA (Hessein & McMurtry 1988) and Italy are represented mainly by females; males are very rare and reproduction is normally thelytokous (Bernardo & Viggiani 2003). The material reared by one of us is here preliminarily identified as *M. mymaripenne*, but in contrast to the known populations of the species, the reared specimens from corn appear to be normally bisexual. To clarify the taxonomic meaning of this, biological and molecular investigations are needed.

Aquino & Molinari (2007) reported *M. mymaripenne* as a parasitoid of *Caliothrips phaseoli*, but this is erroneous because of misidentification (see under *M. amalphitanum*). *Megaphragma mymaripenne* is an egg parasitoid of several species of Panchaetothripinae (Thripidae). The most common host is the widespread *Heliothrips haemorrhoidalis* (Bouché).

Material examined (all material slide mounted). ARGENTINA. Buenos Aires, 2.v.1961, J.C. Paz (*Megaphragma* sp., A.A. Ogloblin det.) [1 ♀, MLPA]. Misiones, Loreto, 12.iii.1934, A.A. Ogloblin ("*Microgramma minutissima* A O", *Megaphragma mymaripenne* Timberlake L. De Santis det.) [1 ♀, MLPA]. Salta Prov., Orán, to San Andres along Rio Blanco; 535 m, 23.11 °S, 64.52 °W, 23.iii-2003; swp scrub & ginger; J. Munro coll. [2 ♀, UCR]. San Miguel de Tucumán, x−xi.2006, E. Luft Albarracin (ex *Caleothrips* sp. eggs on corn) [5 ♀♀ & 2 ♂♂, MLPA]; San Miguel de Tucumán, ix.2006, E. Luft (ex *Caliothrips* sp. eggs on corn) [3 ♂♂MLPA]. VENEZUELA. Aragua, Cuyagua, 1.xi.1999, J. L. Garcia [1 ♀, URGV].

***Megaphragma striatum* Viggiani**

Megaphragma striatum Viggiani 1997: 119. Holotype: female. Mexico, Chiapas Ocozocoantla (El Aquacero; 1800'-1200' s. sw. 8.8.1990); coll. J. Woolley; in the collection of the University of California, Riverside.

This species was known previously only from Mexico.

Material examined (all material slide mounted). ARGENTINA. Misiones Province; Santa Ana, nr. Loreto; 27.34°S, 55.53°W. 77 m. 27.iii.2003; swp. wet for. J. Munro coll. [1 ♀, UCR]; Misiones Prov.; S. of Santa Ana near Loreto; 27.34°S, 55.53°W. 175 m. 27.iii-2003; swp. wet for. J. Munro coll. [1 ♂, UCR].

Conclusions

Biogeographic and phylogenetic relationships of the Neotropical species of genera of Trichogrammatidae are poorly known, because of the lack of studies and available information. Of the four species we report here from Argentina, one was known previously only from Mexico and another only from Europe. The fourth species, probably undescribed, is new for the Neotropical region. Taking into account the potential importance of *Megaphragma* species as Thysanoptera biocontrol agents, we think that further studies of this genus in the Neotropical region will be very important for solving the agronomic problems produced by them.

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