

New records and behavioral observations for *Grallipeza Rondani* from Guadeloupe and Martinique (Diptera, Micropezidae, Taeniapterinae)

by Eddy DUMBARDON-MARTIAL¹ & Stephen A. MARSHALL²

¹ Association Martinique Entomologie, 32 rue du Fleuri-Noël, Moutte, 97200 Fort-de-France
<eddy.dumbardon@wanadoo.fr>

² School of Environmental Sciences, University of Guelph, Guelph, Ontario, Canada N1G 2W1
<samarsha@uoguelph.ca>

Abstract. – The genus *Grallipeza* Rondani, 1850, is recognized for the first time from French West Indies with the discovery of the Caribbean endemic species *Grallipeza spinuliger* (Cresson, 1926) from Guadeloupe and *G. placidoides* (Cresson, 1926) from Martinique. Males of both species are recorded as holding territories in male aggregation sites on low vegetation, and male-male agonistic interactions are described and illustrated by photographs.

Résumé. – Nouvelles citations et observations comportementales de *Grallipeza Rondani* en Guadeloupe et en Martinique (Diptera, Micropezidae, Taeniapterinae). Le genre *Grallipeza* Rondani, 1850, est signalé pour la première fois aux Antilles françaises suite à la découverte de deux espèces endémiques de la région Caraïbe, *Grallipeza spinuliger* (Cresson, 1926) en Guadeloupe et *G. placidoides* (Cresson, 1926) en Martinique. La délimitation de territoires chez les mâles des deux espèces a été observée au sein de la végétation basse. Les relations agonistiques entre mâles sont décrites et illustrées à l'aide de photographies.

Keywords. – Stilt-legged flies, mating behavior, Lesser Antilles, Caribbean endemics.

The genus *Grallipeza* Rondani, 1850 (Micropezidae, Taeniapterinae) is a mostly Neotropical genus of 38 described species and at least as many undescribed species (MARSHALL, 2010). MARSHALL (2013) recently revised the Nearctic and Caribbean *Grallipeza* as the *G. placida* group, including 18 species endemic to individual Caribbean islands but without any records of the genus from Guadeloupe and Martinique. Since then some 64 specimens have been collected in various localities from these islands, and one earlier specimen was identified in the collection of the *Institut national de la Recherche agronomique* (INRA). These specimens have been identified as *Grallipeza spinuliger* (Cresson, 1926) from Guadeloupe and *G. placidoides* (Cresson, 1926) from Martinique. The first was only known from Dominica whereas the second was formerly treated as endemic to Saint-Lucia (MARSHALL, 2013). Both species thus show a regional endemism including two islands in the Lesser Antilles, in contrast to all other known Caribbean congeners, which seem to be confined to single islands.

MORPHOLOGICAL DESCRIPTION

Members of the *Grallipeza placida* group are distinctive, orange, medium-sized, long-legged flies, that differ from all other Caribbean Micropezidae in having plumose aristaes.

The two *Grallipeza* species found in Guadeloupe and Martinique are similar and closely related, but can be distinguished by following morphological characters (MARSHALL, 2013).

- Wings with a distinct elongate-triangular discal mark *G. placidoides* [Martinique, Saint-Lucia]
- Wings evenly and lightly infuscated *G. spinuliger* [Guadeloupe, Dominique]



Fig. 1-3. – 1, Rainforest: one of typical habitat of *Grallipeza spinuliger* (Cresson) and *G. placidoides* (Cresson). – 2-3, Agonistic behavior among males of *G. placidoides*: 2, rival males facing each other; 3, rival males fighting. [Photographs: Eddy Dumbardon-Martial (1, 3) and Chloé Pierre (2)].

COLLECTION DATA

Grallipeza spinuliger (Cresson, 1926)

GUADELOUPE : 1 ♂, INRA collection (n° 2963), 12.XI.1969, Duclos, *A. Delplanque* ; 4 ♀ and 5 ♂, VII.2014, Basse-Terre, collected on ripe mango fell on the ground in a garden, *C. & P. Guezennec* ; 5 ♀ and 10 ♂, 27.VII.2014, Ravine-chaude, Lamentin, *J. Étienne*.

Grallipeza placidoides (Cresson, 1926)

MARTINIQUE : 1 ♀ and 1 ♂, 22.II.2013, forêt départementalo-domaniale de Lépinay, Saint-Luce, 14°30'28.8"N - 60°55'26.2"W, alt. 303 m, *D. Romé*; 1 ♀, 23.I.2014, Trois-Ilets, 14°33'02.3"N - 61°03'13.1"W, alt. 3 m, *F. Deknuydt*; 2 ♂, 9.XII.2007, Morne-des-Olives, Saint-Joseph, 14°41'17.4"N - 61°02'39.4"W, alt. 241 m; 1 ♀ and 1 ♂, 21.V.2012, Fond-l'Étang / plateau Courbaril, Fort-de-France, 14°40'34.2"N-61°05'04.6"W, alt. 519 m; 4 ♂, 27.X.2013, forêt Macouba, 14°50'08.4"N-61°09'49.9"W, alt. 611 m; 1 ♀ and 1 ♂, 13.XI.2013, Moutte, Fort-de-France, 14°37.592'N - 61°03.145'W, alt. 163 m; 1 ♀, *idem*, 30.XII.2013; 2 ♀, *idem*, 24.V.2014; 9 ♂, 27.XII.2013, trace des Jésuites, 14°44.426'N - 61°05.946'W, alt. 554 m; 2 ♀, 26.IV.2014, Morne Bellevue, Gros-Morne, 14°44.197'N - 61°03.421'W, alt. 708 m; 4 ♀ and 9 ♂, 7.VIII.2014, Saint-Joseph, 14°39.661'N - 61°03.010'W, alt. 222 m; all from *E. Dumbardon-Martial*.

ECOLOGY, BIOLOGY AND BEHAVIORAL DATA

Grallipeza placidoides and *G. spinuliger* are common flies within their respective ranges, and are found in a variety of habitats: man-made habitats (gardens), wetlands (mangrove swamp), grasslands, mesophilic and hygrophilic wooded areas. They have been recorded from sea level to slightly more 700 m. In Martinique they apparently do not occur at higher altitudes, as they appear to be absent from Montagne Pelée (alt. max. 1397 m). Rainforests with damp and shady situations seem to be the preferred habitat of both species (fig. 1). Flies can often be seen near the moist ground on fallen leaves, stones, pieces of dead wood, and close by watercourses.

The biology of most stilt-legged flies remains unknown, but adult Taeniopterinae often feed on fecal material and larvae often develop in dead wood or other decomposing plant material (MARSHALL, 2012). Larvae of the Caribbean species *Grallipeza spinuliger* have been found in fallen coconuts (*Cocos nucifera* L.) in Dominica (MARSHALL, 2013). Larvae of *G. placidoides* remain unknown.

Males of both species are often seen forming aggregations on low vegetation along shaded rainforest paths. Our own short field observations suggest an agonistic behavior among males. Each male chooses and stays on the upper surface of a large leaf or moves from leaf to leaf by leaping or flying. Aggressive behavior occurs when a male lands on a leaf already guarded by another. The resident fly makes his way towards the newcomer, then the flies face each other lowering their bodies to the upper surface of the leaf and bending their middle and hind legs to a "V" position, making them parallel to surface of leaf (fig. 2). In this position they move in a circular path for a few seconds. Battles usually end when one male leaves and the other stays on the leaf, but in some cases the battles are escalated as males face each other, rise up on their middle and hind legs until their bodies are perpendicular to the leaf, and extend their fore legs to their maximum length (fig. 3). The loser of this battle, presumably the smaller male, departs immediately after his defeat. Similar male-male agonistic interactions are well known in several other fly families but have previously been only briefly noted for the Micropezidae (WHEELER, 1924).

Although male-male agonistic interactions were repeatedly observed in both species, neither *Grallipeza placidoides* nor *G. spinuliger* have been observed *in copula*, nor have we

observed the elaborate male-female courtship behaviors characteristic of other taeniapterine genera such as *Plocoscelus* Enderlein, 1922 (WHEELER, 1924, as *Cardiacephala* Macquart, 1843), *Ptilosphen* Enderlein, 1922 (ORTIZ, 2001) and *Scipopus* Enderlein, 1922 (S. Marshall, pers. obs.). It is assumed that mating takes place as soon as females arrive at a leaf-surface territory held by a successful male, but this remains to be verified.

ACKNOWLEDGEMENTS. – We warmly thank Jean Étienne, Claudine and Pierre Guezennec, Gwenaël David, Chloé Pierre, Daniel Romé and Francis Deknuydt for their useful information about these flies, and for sharing their specimens. We thank again Anne-Marie Toussaint for permission to consult the collection of the *Institut national de la Recherche agronomique* (INRA) of Guadeloupe.

REFERENCES

- MARSHALL S. A., 2010. – “Micropezidae (Slit-legged flies)” (p. 805-813). *In* : Brown B. V., Borkent A., Cumming J. M., Wood D. M., Woodley N. E. and Zumbado (eds), *Manual of Central American Diptera*, Vol. 2. Ottawa: NRC Research Press.
- 2012. – *Flies: The Natural History and Diversity of Diptera*. Firefly Books Ltd., 616 p.
- 2013. – *Grallipeza* Rondani (Diptera: Micropezidae: Taeniapterinae) of the Caribbean and North America. *Zootaxa*, **3682** (1) : 45-84.
- ORTIZ P., 2001. – *Mimicry, Sleep and Sex: The natural history of a micropezid fly*. (A film presented to the Animal Behavior Society Annual Meeting, Corvallis, Oregon, 2001).
- WHEELER W. M., 1924. – Courtship of the Calobatas: the Kelep Ant and the Courtship of Its Mimic, *Cardiacephala myrmex*. *Journal of Heredity*, **15** : 485-495.
-