

## SHORT COMMUNICATION

### NEW FAMILIES OF DIPTERA (INSECTA) FROM THE AZORES ISLANDS: OPOMYZIDAE AND AULACIGASTRIDAE

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*Geomyza tripunctata* Fallén, 1820 (Opomyzidae) and *Aulacigaster falcata* Papp, 1997 (Aulacigastriidae) are quoted for the first time for the Azores adding two new families to the Diptera fauna of the Azorean Archipelago.

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#### INTRODUCTION

The Diptera fauna of Azores was first mentioned in the 19th century by DROUET (1861). Then much later, studies were published on the Azores dipterofauna by SÉGUY (1936), FREY (1945), on the family Simuliidae by CARLSSON (1963), on Family Tipulidae by THEOWALD (1977) on Syrphidae by ROHJO et al. 1997) and more recently CARLES-TOLRÁ HJORTH-ANDERSEN (2002). The most updated list of Azorean Diptera was recently published (see DIAZ et al. 2005) with a total of 393 species (52 endemic) recorded for the archipelago. In this contribution we give some emphasis to new records for the archipelago, notably at family level.

#### MATERIAL AND METHODS

This study was performed in the Azores archipelago. The Azorean islands are located in the Atlantic Ocean, in the Macaronesia biogeography subregion, between 36° 55' and 39° 43' N latitude and 24° 46' and 31° 16' W longitude. The archipelago is composed by nine islands with volcanic origin, divided in three groups: western group (Flores and Corvo) central group (Faial, Pico, São Jorge, Graciosa and

Terceira) and the eastern group (São Miguel, Santa Maria and Formigas islet). The total area of Azores is 2304 km<sup>2</sup> and the highest altitude is on Pico (2351 m). The Azorean archipelago has an oceanic climate, high levels of precipitation and high air humidity as a result of the Gulf Stream. The mean annual temperature is about 17.5°C. The annual precipitation is about 1341 mm at sea level, and annual air humidity about 80%.

Four Azorean islands were chosen for this study according to their geological age, from older to younger, and representing the three island groups: São Miguel (Eastern Group), Graciosa - Faial (Central Group) and Flores (Western Group). On each island four habitats were selected, each with about 200m<sup>2</sup> of area: grassland, orchard, public or private garden and native forest area.

The specimens were collected using traps made of plastic bottles with 1.5 L in volume. Two rectangular holes (3 x 7 cm) were made at each side of the bottle, 15 cm above the basis of the bottle. Vinegar and rotten fruit were used as bait, placed on the bottom of the bottle. The traps were placed 1 m above the ground and 10 m apart from each other. The individuals were caught between the months of February and December 2003, in São Miguel, and during a week in July and one in

September, in Graciosa, Faial and Flores. The material was preserved in ethanol (70%) and glycerin (5%).

The taxonomy of the Diptera families and species listed, are according to CARLES-TOLRÁ HJORTH-ANDERSEN (2002) (see also DIAZ et al. 2005).

## RESULTS

In this study a total of 33.828 Diptera individuals

from 36 families were collected, many still awaiting species identification. However, two of these families (Opomyzidae and Aulacigastridae) constitute records not cited previously for the archipelago (Table 1). Some families and/or species are new to specific islands (Table 1), more precisely: nine species and five families new to Graciosa; three families and six species new to Faial, one family and three species new to Flores. The species belonging to Sepsidae and Psychodidae from Graciosa island have not yet been identified. More details are given in Table 1.

Table 1.  
New records of Diptera collected in São Miguel, Graciosa, Faial and Flores islands.

Taxon	S. Miguel	Graciosa	Faial	Flores
<b>NEMATOCERA</b>				
<b>Anisopodidae</b>				
<i>Sylvicola cinctus</i> (Fabricius, 1787)	x	**	**	x
<b>Psychodidae</b> spp.	x	**		x
<b>Scatopsidae</b>				
<i>Coboldia fuscipes</i> (Meigen, 1830)	x	***	x	x
<b>ORTHORRHAPHA</b>				
<b>Aulacigastridae</b>				
<i>Aulacigaster falcata</i> Papp, 1997	*			
<b>Chloropidae</b>				
<i>Thaumatomyia notata</i> (Meigen, 1830)	x	***		x
<i>Elachiptera bimaculata</i> (Loew, 1845)	x	***	x	
<b>Heleomyzidae</b>				
<i>Suillia variegata</i> (Loew, 1862)	x	**	**	
<b>Opomyzidae</b>				
<i>Geomyza tripunctata</i> Fallén, 1823	*			
<b>Sepsidae</b>				
<i>Sepsis</i> sp.	x	**	x	x
<b>Tephritidae</b>				
<i>Ceratitis capitata</i> (Wiedemann, 1824)	x		***	
<b>Trichoceridae</b>				
<i>Trichocera maculipennis</i> Meigen, 1818	x			**
<b>Ulidiidae</b>				
<i>Euxesta freyi</i> Krivosheina & Krivosheina, 1997	x	**	**	
<b>Calliphoridae</b>				
<i>Calliphora vicina</i> Robineau-Desvoidy, 1830	x	***	***	x
<i>Stomorphina lunata</i> (Fabricius, 1805)	x	x		***
<b>Fannidae</b>				
<i>Fannia canicularis</i> (Linnaeus, 1761)	x	***	x	
<b>Muscidae</b>				
<i>Helina sexmaculata</i> (Preysslser, 1791)	x	***	***	***

Species and families registered in a particular island or in the Azores archipelago: x = species present in each island that have been registered before this study; \* = new families and correspondent species in the Azores archipelago; \*\* = new families in a particular island; \*\*\* = new species in a particular island.

## REMARKS

### Family AULACIGASTRIDAE

Characterized by the presence of two superior orbital bristles; absence of postvertical bristles; anterior ocellus bigger than the others; epistoma projected with a line of peristomal bristles; two big whiskers; antennae with the third segment rounded and with pubescent arista; two lines of acrostichal bristles; two posterior bristles, dorsocentrally located; one humeral; one sternopleural and two pairs of scutelar. Wings with the transversal nerve close to the basis; small anal nerve. The larvae stage is acidophile and develop in liquids in fermentation retained in ulcerations inside of trees and put the posterior stigmas in apex of a tube retractile and bifide. The pupa has two cerci as long as the body, provided with ciliae (PAPP 1997).

The more distinct characteristics of the species *A. falcata* Papp, 1997 are dark brown body with light grey microtomentum. Orange frontal transversal band very broad, broader than half distance of lunule to fore ocellus. Posterior half of frons (beside ocellar triangle) shiny but caudal to orbital bristles with narrow microtomentose orbital margins. Humeral callus yellowish. Anepisternum medially with diffuse light colour (diffuse band) from base of fore coxae to anepisternal bristles. Almost all katepisternum bare to level of humeral bristle. Acrostichals tending to be biserial. No acrostichals between medial rows and dorsocentral lines. Male genitalia with extremely long, straight (and rather dense) setae on epandrium, similarly to that of *A. afghanorum*. Cerci rather long but shorter than in *A. afghanorum*, also caudal part of subepandrial sclerite shorter and less broad than that of *A. afghanorum*. Male surstylus long and sickle-shaped. Caudal (rather membranous) process of aedeagal complex better formed. Details of gonopods, hypandrium, aedeagal apodeme etc. different from those of the closely related *A. afghanorum* (Papp, 1997).

The number of known species of this family in Fauna Europaea (see <http://www.faunaeur.org>)

is four, and only one species is known from the Canary islands (IZQUIERDO et al. 2005).

### Family OPOMYZIDAE

SHTACKELBERG (1989) described these flies as small and slender with relatively narrow wings, normally with dark or light-coloured spots. Head with one pair of backwardly directed or; postvertical bristles (*pvi*) absent or (rarely) present. Tibia without preapical dorsal bristle.  $R_1$  short; posterior basal wing cell and anal wing cell small. Larvae of species in which the cycle of development is known, live in stems of grasses, both wild and cultivated.

The more distinct characteristic of the species *Geomyza tripunctata* Fallén, 1823 are the presence or one well developed pteropleural bristle and one or two well developed hairs. Wings before apex of  $R_1$  with dark spot. Mesonotum reddish yellow, brown or black. Abdomen black. Body 3.0 to 3.5. Distribution: Palaeartic Region, Madeira, Canary Islands. Biology: larvae in stems of cereal grasses, especially *Lolium*, as well as in winter cereals (SHTACKELBERG 1989). The number of known species of this family in Fauna Europaea (see <http://www.faunaeur.org>) is 34, and only one species is known from the Canary islands (IZQUIERDO et al. 2005).

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