

SOME DIPTERANS COLLECTED ON PIG CARCASSES IN PORTUGAL (DIPTERA: CARNIDAE, HELEOMYZIDAE, LAUXANIIDAE AND SPHAEROCERIDAE)

Miguel Carles-Tolrá¹ & Catarina Prado e Castro²

¹Avda. Príncipe de Asturias 30, ático 1, E-08012 Barcelona, Spain. – mcarlestolra@terra.es

²Centro de Biología Ambiental, Departamento de Biología Animal, Faculdade de Ciências da Universidade de Lisboa, Ed. C2, Campo Grande, 1749-016 Lisboa, Portugal. – cbcastro@fc.ul.pt

Abstract: Faunistic information obtained from the study of a part of the dipterous fauna attracted by dead piglets in Lisbon (Portugal) is presented. A total of 770 specimens, belonging to 4 families (Carnidae, Heleomyzidae, Lauxaniidae and Sphaeroceridae), have been studied and 42 species identified. Among the results we would like to highlight the following new records: a) 1 species (*Telomerina levifrons* Spuler) new to the Iberian Peninsula, b) 5 genera and 28 species new to Portugal, and c) 3 families, 13 genera and 12 species new to the Lisbon district. The paper makes a significant contribution to the dipterological knowledge of Portugal.

Key words: Diptera, Carnidae, Heleomyzidae, Lauxaniidae, Sphaeroceridae, pig carcass, faunistics, Portugal, Lisbon.

Algunos dípteros recogidos sobre cadáveres de cerdo en Portugal (Diptera: Carnidae, Heleomyzidae, Lauxaniidae and Sphaeroceridae)

Resumen: Se presentan los resultados faunísticos obtenidos tras el estudio de parte del material dipterológico capturado sobre cerdos muertos en Lisboa. Se han estudiado 770 ejemplares pertenecientes a 4 familias (Carnidae, Heleomyzidae, Lauxaniidae y Sphaeroceridae) y se han identificado 42 especies. Entre los resultados destacamos las siguientes citas nuevas: a) 1 especie (*Telomerina levifrons* Spuler) nueva para la Península Ibérica, b) 5 géneros y 28 especies nuevos para Portugal, y c) 3 familias, 13 géneros y 12 especies nuevos para el distrito de Lisboa. Con todo ello se aumenta notablemente el conocimiento dipterológico de Portugal.

Palabras clave: Diptera, Carnidae, Heleomyzidae, Lauxaniidae, Sphaeroceridae, cadáveres de cerdo, faunística, Portugal, Lisboa.

Introduction

Insect succession studies on animal carcasses were started a few years ago in Portugal. The fundamental objective was to obtain ecological information (community structure, seasonality and successional patterns) concerning cadaver colonizers, essentially Diptera and Coleoptera, in order to develop a database to be used for forensic purposes. During the course of works, there was the opportunity to study a large amount of specimens collected and several faunistic novelties were obtained for Portugal, especially regarding Diptera (Prado e Castro & García, 2009, 2010; Prado e Castro *et al.*, 2010a, 2010b). Many forensic important species of flies were not recorded for the country (Carles-Tolrá & Hørbth-Andersen, 2002), as the local knowledge on Diptera fauna, in general, is poor.

The aim of this paper is to provide faunistic information about Carnidae, Heleomyzidae, Lauxaniidae and Sphaeroceridae species collected on pig carrion and thus contributing to a better knowledge of these Diptera families in Portugal.

Material and Methods

The experimental study was conducted at the Instituto Superior de Agronomia, Tapada da Ajuda, Lisboa (UTM 29SMC88), a small patchy woodland park inside urban perimeter, mainly composed of *Ailanthus altissima* (Mill.) Swingle, *Fraxinus angustifolia* Vahl and *Ulmus minor* Miller, at an altitude of 80 m a.s.l. Four field experiments, one in each season, were performed from October 2006 to August 2007, in the following periods: Autumn, from

18.10.2006 to 2.01.2007; Winter, from 17.01 to 3.04.2007; Spring, from 16.04 to 16.06.2007; and Summer, from 27.06 to 27.08.2007. In each season, a new freshly killed domestic piglet (*Sus scrofa* L.) of approximately 8 kg weight was used. A modified version of the trap designed by Schoenly (Prado e Castro *et al.*, 2009) was used to collect the entomofauna along the decomposition process. During the first 23 days the captures were performed daily, and afterwards in alternate days. A 40% ethylene glycol solution was used to kill and preserve the arthropods in the trap, after which they were moved to 70% ethanol.

Results

A total of 20.144 adult Diptera, belonging to 39 families, were collected during the four experiments. The identification of this material has brought interesting new records, some already published in Prado e Castro & García (2009, 2010) and Prado e Castro *et al.* (2010a). Now, in this paper, we include data regarding 4 more families: Carnidae, Heleomyzidae, Lauxaniidae and Sphaeroceridae. Among 770 specimens, 42 (+ 1 unidentified) species were identified and are listed below.

For each capture, the date and number of specimens (in brackets) caught are shown. The material has been collected by the second author (CPC) and identified by the first one (MC-T) and it is deposited in the collection of the Department of Animal Biology of the University of Lisboa, a few specimens are deposited in the private collection of the first author.

List of species

CARNIDAE

This family mainly includes species related to decaying organic matter, i.e. coprophagous, saprophagous and necrophagous species, although it is usually collected in small quantities. Three species have been collected, one of them very interesting. New family for the district of Lisboa.

Meoneura exigua Collin, 1930

Material studied: 2.7.2007 (1), 3.7.2007 (4), 4.7.2007 (10), 5.7.2007 (2).

New genus for the district of Lisboa and new species for Portugal.

Meoneura granadensis Lynneborg, 1969

Material studied: 6.8.2007 (1).

Very interesting capture, as only one specimen (holotype) was known up to now. Consequently, it is the second specimen collected since its description. The holotype was collected in 1960, at 700 m a.s.l., in the Granada province, in Spain, and now only at 80 m. Therefore, it is now recorded for the first time from Portugal.

Meoneura neottiophila Collin, 1930

Material studied: 26.4.2007 (1).

New species for Portugal.

Meoneura sp.

Material studied: 28.10.2006 (1), 18.4.2007 (1), 27.4.2007 (1), 2.7.2007 (4), 3.7.2007 (7), 4.7.2007 (10), 5.7.2007 (8), 6.7.2007 (6), 7.7.2007 (1).

The females of this genus can not be identified, unless they can be associated with males.

HELEOMYZIDAE

This family has a wide and varied biology, although it is mainly associated to decaying organic matter. The larvae are mycetophagous, saprophagous, coprophagous and necrophagous. Only 4 species were collected, but one of them was the most abundant, from the group of families treated in this paper. New family for the district of Lisboa.

Oecothia fenestralis (Fallén, 1820)

Material studied: 12.7.2007 (1).

New genus and species for the district of Lisboa.

Suillia flagripes (Czerny, 1904)

Material studied: 8.7.2007 (1), 9.7.2007 (1), 24.7.2007 (1).

New genus and species for the district of Lisboa.

Suillia notata (Meigen, 1830)

Material studied: 1.6.2007 (1).

New species for the district of Lisboa.

Suillia variegata (Loew, 1862)

Material studied: 20.10.2006 (2), 26.10.2006 (1), 2.11.2006 (2), 4.11.2006 (1), 6.11.2006 (1), 7.11.2006 (1), 8.11.2006 (7), 9.11.2006 (2), 10.11.2006 (10), 12.11.2006 (4), 14.11.2006 (2), 16.11.2006 (9), 18.11.2006 (4), 20.11.2006 (5), 22.11.2006 (1), 24.11.2006 (2), 27.11.2006 (3), 30.11.2006 (3), 6.12.2006 (5), 9.12.2006 (2), 12.12.2006 (2), 18.12.2006 (1), 23.12.2006 (2), 28.12.2006 (3), 2.1.2007 (10), 26.1.2007 (1), 30.1.2007 (2), 9.2.2007 (2), 13.2.2007 (3), 15.2.2007 (2), 17.2.2007 (1), 4.3.2007 (1), 7.3.2007 (2), 10.3.2007 (2), 16.3.2007 (1), 3.4.2007 (4), 19.4.2007 (1), 21.4.2007 (1), 23.4.2007 (1), 27.4.2007 (1), 28.4.2007 (1), 29.4.2007 (2), 30.4.2007 (1), 2.5.2007 (4), 3.5.2007 (1), 4.5.2007 (4), 5.5.2007 (2), 6.5.2007 (1), 23.5.2007 (1), 29.5.2007 (4), 1.6.2007 (1), 15.6.2007 (1), 3.7.2007 (2), 4.7.2007 (1), 5.7.2007 (1), 11.7.2007 (1), 27.8.2007 (2).

S. variegata was the most abundant heleomyzid collected and the most abundant species in this paper. It is a very common saprophagous, but mainly mycetophagous species, so the large amount of specimens collected on carrion, and through all the study, is surprising. New species for the district of Lisboa.

LAUXANIDAE

The biology of this family is very diverse, as their species may be saprophagous, some are miners in decaying leaves, others develop in decaying substances in bird-nests, etc. Only five species (one of them unidentified) were caught, but two of them were very abundant.

Homoneura notata-group

Material studied: 19.5.2007 (2), 4.6.2007 (1), 30.7.2007 (1). Unfortunately, the females of this group have to be associated to males for their identification.

Minettia fasciata (Fallén, 1826)

Material studied: 19.5.2007 (2), 26.5.2007 (1), 7.6.2007 (2), 29.6.2007 (2), 10.7.2007 (2), 11.7.2007 (8), 12.7.2007 (2), 12.8.2007 (4), 15.8.2007 (1), 18.8.2007 (1), 21.8.2007 (20), 24.8.2007 (48), 27.8.2007 (7).

This is a very common saprophagous species.

Minettia inusta (Meigen, 1826)

Material studied: 19.10.2006 (13), 20.10.2006 (3), 21.10.2006 (3), 22.10.2006 (1), 11.5.2007 (1), 19.5.2007 (2), 26.5.2007 (1), 7.6.2007 (1), 10.6.2007 (4), 13.6.2007 (1), 28.6.2007 (1), 29.6.2007 (1), 30.6.2007 (3), 1.7.2007 (1), 12.7.2007 (1), 13.7.2007 (1), 17.7.2007 (3), 18.7.2007 (1), 19.7.2007 (1), 20.7.2007 (1), 24.7.2007 (2), 26.7.2007 (3), 30.7.2007 (2), 6.8.2007 (3), 9.8.2007 (5), 12.8.2007 (3), 15.8.2007 (7), 18.8.2007 (10), 21.8.2007 (7), 24.8.2007 (9), 27.8.2007 (24). This is a very common saprophagous species. New species for the district of Lisboa.

Minettia tinctiventris (Rondani, 1868)

Material studied: 19.10.2006 (6), 20.10.2006 (3), 21.10.2006 (1), 4.6.2007 (1), 24.7.2007 (1), 28.7.2007 (1), 1.8.2007 (1), 3.8.2007 (3), 6.8.2007 (5), 9.8.2007 (3), 12.8.2007 (5), 15.8.2007 (1), 18.8.2007 (3), 21.8.2007 (4), 24.8.2007 (9), 27.8.2007 (18).

A common saprophagous species. New species for Portugal.

Sapromyza tuberculosa Becker, 1895

Material studied: 19.10.2006 (1), 27.8.2007 (1).

New genus for the district of Lisboa and new species for Portugal.

SPHAEROCERIDAE

This is a very common family, with many species and a very wide range of biology. It includes mycetophagous, saprophagous, coprophagous, necrophagous, etc. species. So its presence on the dead piglets can be considered very normal, as the large number of species (31) found demonstrates. *Coproica* Rondani, 1861 species are mainly coprophagous (dung, excrements), but, in less quantity, they can also be found on cadavers. New family for the district of Lisboa.

Bifronsina bifrons (Stenhammar, 1854)

Material studied: 5.7.2007 (1).

New species for Portugal.

Coproica ferruginata (Stenhammar, 1854)

Material studied: 28.10.2006 (1), 30.10.2006 (1), 19.2.2007 (1), 26.2.2007 (1), 16.3.2007 (1), 3.7.2007 (1), 7.7.2007 (1), 11.7.2007 (2), 14.7.2007 (1), 24.7.2007 (1).

New genus for the district of Lisboa and new species for Portugal.