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The shoofly fauna (Diptera, Chloropidae) from a dry steppe region (Monegros) in Spain

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Abstract: 1681 Chloropid flies, collected in the Monegros region (Retuerda de Pina, Spain) were identified. The collection contained 17 species. Several species have a wide distribution in Europe. The distribution of four species (*Camarota curvipennis, Polyodaspis sulcicollis, Thaumatomya sulcifrons, Tricimba humeralis*) is restricted to the Southern parts of the Palaearctic. *Calamoncosis stylifera* was formerly only known from Mongolia.

The family Chloropidae, or shootflies, represents a rather common but usually overlooked group of minute flies. The larvae of most species develop in the stems, leafsheets or panicles of Poaceae, while some also attack cereals. Other species develop in monocotyl families which are closely allied to the Poaceae like Liliaceae, Juncaceae, Juncaginaceae or Cyperaceae. Furthermore, some species develop on organic detritus, or are predaceous on cocoons of spiders and praying mantis or nests of locusts.

A survey of the Chloropid fauna of the Monegros region was carried out. The collection site was situated at Retuerda de Pina in the Zaragoza Province, Spain. The study area is a dry, cold desert-like environment with a gypsum-rich soil. The vegetation of the largely eroded hills consists of an open *Juniperus*-woodland (*Juniperus thurifera, J.phoenicea*). The major parts of the usually large open spots are dominated by the shrub *Rosmarinus officinalis*. The habitat is floristically characterised by the presence of numerous gypsophilous species (Braun-Blanquet & Bolos, 1957). Due to agricultural land use, the area is severely threatened (Pedrocchi & Sanz, 1991). Therefore, extensive scientific research is urgently needed to formulate the necessary protection measures.

Chloropid flies were collected from 04/1989 to 02/1992 with coloured plates, Malaise traps, Moericke traps, and additional sweeping and hand collecting from plants and flowers. Malaise traps were active throughout the year. The coloured plates operated 24 hours a week. Moericke traps were used from January to June and from October to December. During the hottest months these traps could not be used due to dessiccation and decaying of the flies.

According to Nartshuk (1984), the Spanish Chloropid fauna comprises 58 species. In the present study we found 17 species of which 7 are recorded for the first time in Spain (Table 1). Four species could not be identified with certainty yet. *Oscinimorpha* sp. and *Trachysiphonella* sp. were caught in high numbers. The male genitalia did not correspond to one of the European species and further research is necessary. For *Thaumatomyia* sp. and *Tricimba* sp., only one female was collected. Because reliable identification is only possible with male genitalia, these species could therefore not be identified.

The major part of the 1681 collected specimen consists of *Thaumatomyia notata* (43.8%). Other abundant species are *Trachysiphonella* sp. (25.2%), *Thaumatomyia sulcifrons* (13.8%) and *Oscinimorpha* sp. (7.8%).

The larvae of both *Thaumatomyia* species are predaceous on root aphids (*Pemphigidae*) (Yarkulov, 1971). *T. notata* is widespread in the Palaearctic region (Nartshuk, 1990), and is also known in the Oriental and Afrotropical regions. *T. sulcifrons* is widespread in the southern Palaearctic, from the Canaries and North Africa to China (Nartshuk, 1984).

The mesoxerophilous genus *Trachysiphonella* includes 5 species in Europe which are found in steppe regions (Beschovski, 1984). Little is known on the life history of *Trachysiphonella* species. Harkness & Ismay (1976) reported that adult *T. Pori* in Greece were kleptoparasites associated with spiders of the genus *Zodarion*. The adult flies fed upon ants killed by the spider. According to Beschovski (1976), *Oscinimorpha* species are also mesoxerophilous steppe species which are mainly found in the western part of the Palaearctic region.

The main part of the remaining species in the collection of the studied area comprises species with a wide distribution in Europe, sometimes extended into Central-Asia, like, *Elachiptera diastema, Fiebrigiella brevibucca, Aphanotrigonum inerme* and *Meromyza variegata*. Species which are associated with the Mediterranean area are *Camarota curvipennis* (Southern European, North Africa - Mediterranean), *Polyodaspis sulcicollis* and *Tricimba humeralis* (Southern Palaearctic - Mediterranean). *Calamoncosis stylifera* was formerly only known from the type locality in Mongolia.

Although the number of species seems rather low, the present survey reveals that the Chloropid fauna includes

various interesting species. Indeed, several species (e.g. *Trachysiphonella* spp., *Oscinomorpha* spp., *Polyodaspis sulcicollis*) are linked to dry steppe areas. Especially *Calamoncosis stylifera* takes a special position because it was formerly only known from the Mongolian steppe. The male genitalia of the *Trachysiphonella* and *Oscinomorpha* specimen did not agree with the those of the species presently known from the Palaearctic region. The latter indicates that they may belong to non-European species or may even be new to science. The latter would not be very surprising because also in other fly families, several endemic species were discovered (e.g. Sciaridae: Mohrig & Blasco-Zumeta, 1992; Empidoidea: Grootaert, 1995; Pipunculidae: De Meyer, 1997).

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Table 1

Species caught during the present study
(L=sweep net, light trap; K=Moericke trap; P=coloured plates; M=Malaise trap).
Species marked with ▸ recorded for the first time in Spain

	Name	♂♂	♀♀	L	K	P	M
▸	*Aphanotrigonum inerme* Collin	9	9	*		*	*
▸	*Calamoncosis stylifera* Nartshuk	7	4	*		*	
	Camarota curvipennis (Latreil.)	4	2		*	*	*
▸	*Conioscinella frontella* (Fallén)	1	—				*
▸	*Elachiptera diastema* Collin	10	4	*	*	*	*
▸	*Fiebrigiella brevibucca* (Duda)	—	2			*	
	Melanocheta pubescens (Thalh.)	—	2		*		
▸	*Meromyza variegata* Meigen	1	—	*			
▸	*Oscinimorpha minutissima* (Str.)	10	12	*		*	*
	Oscinimorpha sp.	59	72	*	*	*	*
	Polyodaspis sulcicollis (Meigen)	3	2		*	*	
	Thaumatomyia notata (Meigen)	269	468	*	*	*	*
	Thaumatomyia sulcifrons (Beck)	96	136	*	*	*	*
	Thaumatomyia sp.	—	1			*	
	Trachisiphonella sp.	225	198	*	*	*	*
	Tricimba humeralis (Loew)	46	27			*	
	Tricimba sp.	—	1			*	
	Total	**741**	**940**				