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Autor(en): **Bächli, Gerhard / Serra, Luis**

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## On Drosophilidae (Diptera) species collected in Andorra

Gerhard Bächli<sup>1</sup> & Luis Serra<sup>2</sup>

For 16 species of Drosophilidae, records from Andorra are given. The results are discussed in the context of regional distributions.

Keywords: Drosophilidae, distribution, Andorra

### INTRODUCTION

With some exceptions, the fauna of Drosophilidae within Europe is insufficiently known. For most countries, only sporadic records have been published, e.g. of species like *Drosophila melanogaster* or *D. subobscura* used for population genetic purposes. Some more comprehensive species-lists have been published, e.g. by HADORN *et al.* (1952) for some areas of France, Spain, and Portugal, including the western Pyrenees, by MONCLÚS (1972) for the Province of Catalunya, or by ROCHA PITÉ & TSACAS (1979) for France. For many small countries, however, reliable faunistic knowledge is scarce.

One of the till now virtually overlooked countries is Andorra. To our knowledge, only two drosophilid species have been found there (unpubl.). We therefore want to report data on drosophilids collected in this country.

### METHODS

A Malaise trap was operated by Juli Pujade Villar in Santa Coloma, Andorra, 1050 m a.s.l.. The accumulating container was emptied at regular intervals twice a month from January to December, 1993 (Tab. 1); for additional details see PUJADE VILLAR (1996). Drosophilidae were found from January to September. The flies were stored in alcohol and identified, partly by E. SAGARRA.

### RESULTS AND DISCUSSION

A total of 739 flies of 15 species were recorded (Tab. 2). This result seems small, as compared with many other drosophilid collections (e.g., BURLA & BÄCHLI, 1991; BÄCHLI & BURLA, 1992); however, those collections were made using baits of fermenting fruit and it is well known that the recorded species composition is strongly influenced by methodical and behavioral aspects (e.g. BÄCHLI *et al.*, 1991). A direct comparison is therefore not very useful. Whereas by baiting the number of males collected usually exceeds the number of females, the Malaise trap yielded significantly more females than males of *D. subobscura*, but about twice as many males than females of *D. cameraria*. Sex ratios were more even in the other species.

<sup>1</sup> Zoologisches Museum, Universität Zürich-Irchel, Winterthurerstrasse 190, CH-8057 Zürich

<sup>2</sup> Departament de Genètica, Facultat de Biologia, Universitat de Barcelona, Diagonal 645, E-08071 Barcelona

Tab. 1. Collecting periods in 1993.

Period	Month	Days
1/I	January	1-15
1/II	January	16-31
2/I	February	1-15
2/II	February	16-28
3/I	March	1-15
3/II	March	16-31
4/I	April	1-15
4/II	April	16-30
5/I	May	1-15
5/II	May	15-31
6/I	June	1-15
6/II	June	16-30
7/I	July	1-15
7/II	July	16-31
8/I	August	1-15
8/II	August	16-31
9/I	September	1-15
9/II	September	16-30
10/I	October	1-15

The dominant species was *D. subobscura*; *Scaptomyza pallida*, *D. cameraria*, *Amiota alboguttata* and *D. nigrosarsa* were also found in larger numbers. That *A. alboguttata*, *Acletoxenus formosus*, *Cacoxenus indagator*, *Amiota variegata*, and some of the rarer *Drosophila* species were recorded at all is rather uncommon; we are convinced that this is also an effect of the collecting method.

*D. nigrosarsa* is usually found at higher altitudes in central and western European mountains. The species has been collected in the "Massif Central" in France (ROCHA PITÉ & TSACAS, 1979) and in Asturias in Spain (MÁCA & LAŠTOVKA, 1985). *A. alboguttata* is known from Spain (Puerto do Galiz, unpublished) and France (Rhône valley around Lyon, unpublished). *A. formosus*, a parasitoid of white flies (Aleyrodidae) is known from France (e.g. GAUTIER, 1923) but not from Spain. *C. indagator*, associated with solitary bees of the genus *Osmia*, has been found in Spain

Tab. 2. Number of specimens collected.

Period Species	1/I	1/II	2/I	2/II	3/I	3/II	4/I	4/II	5/I	5/II	6/I	6/II	7/I	7/II	8/I	8/II	9/I	9/II	total
<i>D. subobscura</i>	3	2	3	2	-	3	19	101	122	189	44	20	8	2	8	5	-	-	531
<i>S. pallida</i>	-	-	-	-	-	-	3	7	2	12	20	-	1	2	2	-	8	2	59
<i>A. alboguttata</i>	-	-	-	-	-	-	1	-	2	10	3	4	5	9	6	7	3	2	52
<i>D. cameraria</i>	-	-	-	-	-	-	2	8	19	9	3	-	-	-	-	-	-	-	41
<i>D. nigrosarsa</i>	-	1	2	3	13	8	-	-	-	-	-	-	-	-	-	-	-	-	27
<i>C. indagator</i>	-	-	-	-	-	-	-	-	-	6	3	-	-	-	-	-	-	-	9
<i>S. graminum</i>	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	-	5
<i>D. andalusiaca</i>	-	-	1	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	4
<i>L. maculata</i>	-	-	-	-	-	-	-	-	-	1	1	-	1	-	-	-	-	-	3
<i>S. furta</i>	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	3
<i>D. fenestrarum</i>	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>D. phalerata</i>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
<i>D. obscura</i>	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
<i>A. variegata</i>	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
<i>A. formosus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
total	3	3	6	6	13	11	25	116	147	232	77	25	17	13	17	13	11	4	739

(HACKMAN, 1969) and France (e.g. COUTIN & DESMIER DE CHENON, 1983). *A. formosus*, *A. alboguttata*, *A. variegata*, *C. indagator*, and *D. nigrosparsa* are new for the Pyrenees; they are most probably widespread in the area.

Seasonal differences in the numbers of flies collected are obvious. Most of the flies were recorded from mid April to mid June. Numbers for the other months are distinctly smaller. It is known that drosophilids are active and can be collected even during the cold season, as shown by WALTER (1990) and ARGEMÍ *et al.* (1999). We have no explanation why the malaise trap yielded no drosophilids from October to December, but, as shown by PUJADE VILLAR (1996), the total number of flies collected during these months was generally smaller than in the periods before.

One additional species, *Drosophila transversa*, was recorded by B. MERZ in Llorts (1° 32' E, 42° 36' N, 1450–1850 m a.s.l) and in the collection of the Zoological Museum Berlin there are specimens of the widespread *S. pallida* from Andorra and Lago de Egolasters.

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