Bol. S.E.A., nº **24** 1998 (1999): 153-155.

Chalcidoidea (Hymenoptera) of Monegros

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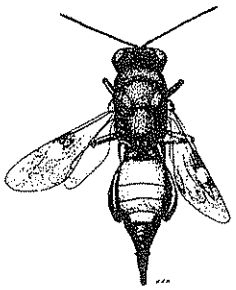

Hockeria vetusta (Dufour)

The arid steppe country of Monegros has an exceptionally rich chalcid (Hymenoptera, Chalcidoidea) fauna. It is not, however, easy to give an objective assessment of the importance of this fauna in a Palaearctic context, this being handicapped by our rather incomplete knowledge of the chalcids of other regions in Spain, the Mediterranean and Asia. Chalcids are not always good subjects for zoogeographical studies; many species have been artificially transported about the world, either intentionally as agents for the biological control of pest insects, or accidentally. Also, many chalcids tend to be more or less polyphagous in their host relations so that often widespread species are able to become established as components of the parasitoid fauna associated with specialised and localised host species. However, not withstanding these limitations, our work on the chalcids of Monegros indicates that a good proportion of the species has a restricted distribution, being so far known either only in this region, or in Monegros and in the steppes of the eastern Mediterranean and/or central Asia. A few species are essentially North African elements; others have a more widespread Mediterranean distribution, or range throughout much of the western Palaearctic or beyond.

A minimum total of 470 species of Chalcidoidea was collected in the Retuerta de Pina by J. Blasco-Zumeta, mostly between 1990 and 1995 (table l), and 353 of these have been identified. Of the identified species, 29 (8.2 per cent) were previously undescribed, and it is probable that an even higher proportion of the 117 so far unnamed species will eventually prove to be new to science. A total of 51 species (14.4 per cent) may be endemic to the Iberian Península. The remaining 302 species (85.6 per cent) occur also outside Spain: 3 (*Eridontomerus alqiricus* Erdös and *Torymus canariensis* Hedqvist in Torymidae, *Clotildiella numidica* Erdös in Eulophidae) only in North Africa, 97 in the Mediterranean region or more extensively in the southern Palaearctic, and 202 range more generally throughout western Europe, the Palaearctic or are cosmopolitan. Of the 299 species in the last two categorías, a minimum of sixteen (table 2) is recognized as having a disjunct distribution, being found (either themselves or their closest allies) in the steppes of Spain and in eastern Europe or south-western to central Asia, but not in between.

In addition to the identified species listed in table 2, another very good example of a disjunct distribution is provided by a species of *Torymoides* (Torymidae) . This, in the past, would have been placed in the genus *Ameromicrus*. *Ameromicrus* species are numerous in the steppes of central Asia (Zerova & Seregina, 1993), but only *T. (A.) violaceus* (Nikol'skaya) has previously been reported as extending westwards into eastern Europe. The material from Monegros is close to *T. violaceus*, but differs from it in a few respects so that firm identification is deferred. The genus *Nikanoria* (Eurytomidae) likewise predominates in the central Palaearctic (Zerova, 1978), and although a species was recently reported from the western littoral of France (Steffan, 1961), the occurrence of two species in Monegros can be viewed as another faunal link with the Asian steppes.

Most of the chalcid species collected in Monegros have been captured by general collecting methods such as sweep-netting or the use of Malaise, Moericke and Wilkening traps, light traps, pitfall traps and coloured water traps. A proportion of the chalcid fauna may remain unsampled by these techniques. This is illustrated by studies on the Joint Pine, *Ephedra nebrodensis* Tineo, which suggest that there may be a considerably higher proportion of undescribed chalcid species inhabiting Monegros than is indicated by the data presented in table 1.

Spherical galls growing at nodes on the stems of *E. nebrodensis* were found to be caused by a species of Eurytomidae, *Eurytoma gallephedrae* Askew (Askew & Blasco-Zumeta, 1998) which was new to science. This phytophagous species is attacked by four species of chalcid, two described as new. Four of the five chalcids associated with galls on *E. nebrodensis* were collected only by rearing adult insects from the galls.

A new species of phytophagous pteromalid, *Blascoa ephedrae* Askew, was found feeding as a larva in seeds of *E. nebrodensis* in the Retuerta de Pina (Askew & Blasco-Zumeta, 1997). This phytophage was attacked by five chalcid species, four described as new. Two of these six species living in seeds of *E. nebrodensis* were captured only by rearing adults from the seeds. Additionally, two new species of *Idiomacromerus* (Torymidae) have been reared respectively from seeds of *E. nebrodensis* and *E. distachya*, that from the latter plant being obtained, as a parasitoid of *Blascoa*, only by rearing. Altogether, a total of twelve chalcid species have been reared from *Ephedra* species in the Retuerta de Pina, ten of these species have been described as new and seven have been obtained only by rearing.

There are many additional potential foci of chalcid development in the Monegros, for example those provided by gallicolous Cecidomyiidae (Diptera), but few of these have been investigated in any detail. It is virtually certain that the area will repay further investigation with the discovery of both many new species and additional faunal links between the steppes of Spain and those further east.

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Table 1
Species of Chalcidoidea found in the Retuerta de Pina with their distributions. Numbers in parentheses indicate species with disjunct distributions (table 2)

			Distribution of identified species				
Family —Subfamily	Spp. in Monegros	Species identified	Monegros	Iberia	N. Africa & Iberia	Mediterr. - S.Palaear.	W.Europe/ cosmopol.
Leucospidae	1	1	—	—	—	1	—
Chalcididae	23	23	4 (1)	—	—	16	3
Eurytomidae	13	6	—	1	—	1	4
Torymidae	37	23	5	1	2	8 (2)	7
Ormyridae	7	7	2	1	—	2	2
Eucharitidae	1	1	—	—	—	1 (1)	—
Perilampidae	8	7	1	—	—	2 (1)	4 (1)
Pteromalidae	—	—	—	—	—	—	—
—Spalangiinae	3	3	—	—	—	—	3
—Ceinae	2	2	—	—	—	—	2
—Asaphinae	1	1	—	—	—	—	1
—Colotrechninae	1	1	—	—	—	1	—
—Eunotinae	4	4	—	3	—	—	1
—Miscogastrinae	29	19	3	—	—	2	14
—Pteromalinae	103	81	5	3	—	20 (1)	53
Eupelmidae	28	23	1	6	—	10 (1)	6 (1)
Encyrtidae	62	48	—	4	—	14 (1)	30 (4)
Tetracampidae	3	3	—	—	—	—	3
Eulophidae	—	—	—	—	—	—	—
—Eulophinae	42	37	2	—	1	5	29
—Euderinae	6	4	1	—	—	1	2
—Tetrastichinae	12	9	3	—	—	2 (1)	4 (1)
—Entedoninae	34	21	2	—	—	5	14
Elasmidae	8	7	—	—	—	5	2
Aphelinidae	23	15	—	1	—	1	13
Signiphoridae	4	4	—	2	—	—	2
Trichogrammatidae	1	1	—	—	—	—	1
Mymaridae	13	1	—	—	—	—	1
Mymarommatidae	1	1	—	—	—	—	1
TOTALS	**470**	**353**	**29**	**22**	**3**	**97**	**202**

Table 2
Species with disjunct distributions

Species	Family	Distribution
Psilochalcis frontalis Askew	Chalcididae	Monegros; closest allies in central Asia
Megastigmus amicorum Bouček	Torymidae	Monegros (in fruit of *Juniperus phoenicea*), Balkans & Crimea (in fruit of *J. oxycedrus*)
Pseuderimerus semiaenea (Szelényi)	Torymidae	Monegros & Hungary
Philomides paphius Haliday	Eucharitidae	Spain, Sicily, Balkans, Cyprus, Caucasus, Turkmenistan, Kazakhstan
Brachyelatus viridis Hoffer & Novicky	Perilampidae	Monegros, eastern Europe to Ukraine
Chrysomalla roseri Förster	Perilampidae	Monegros & Germany east to central Asia
Mesopolobus szelenyii Bouček	Pteromalidae	Monegros, Ukraine & Azerbaijan
Eupelmus hungaricus Erdös	Eupelmidae	Monegros & Hungary
Eupelmus rostratus Ruschka	Eupelmidae	Monegros & eastern Europe
Copidosoma abulense Mercet	Encyrtidae	Spain & Hungary
Metaphaenodiscus nemoralis Mercet	Encyrtidae	Spain & Armenia
Monstranusia mirabilissima Trjapitzin	Encyrtidae	Monegros, eastern Europe, central Asia & South Africa
Semen apterum Hoffer	Encyrtidae	Monegros, eastern Europe, Crimea & western Russia
Tetralophisca dimorpha (Mercet)	Encyrtidae	Spain, Asia
Platyplectrus bouceki (Erdös)	Eulophidae	Monegros, eastern Europe & Turkey
Kolopterna kohatensis Graham	Eulophidae	Monegros & Pakistan

Erodium sangui-christi Sennen ssp. *durrieui*.
A: Mericarpo. (Dib. O. Escudero)