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Some prey records for *Cerceris* Latreille, 1802, from the Iberian Peninsula (Hymenoptera: Apoidea: Crabronidae)

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ABSTRACT

New data on prey records are presented for six species of Iberian *Cerceri*s wasps.

Keywords: *Cerceris arenaria*, *C. bicincta*, *C. bupresticida*, *C. circularis*, *C. ibericella*, *C. quinquefasciata*, *Gonipterus platensis*, biological control, Portugal, Spain

INTRODUCTION

With more than 850 species, the genus *Cerceris* Latreille, 1802, is the largest among the apoid wasps (Schmidt 2000). They are generally relatively large, attractive species that frequently draw attention by nesting in the ground in extensive aggregations. Despite this, little or nothing is known about the biology of many species – often including the important question of what their prey consists of. Thirty species of *Cerceris* are recorded from the Iberian Peninsula. Their prey records largely fall into two broad categories, with female *Cerceris* focussing on either beetles (Coleoptera) belonging to a range of families or bees (Hymenoptera: Apidae *s.l.*).

In his monograph on the Spanish fauna, Giner Mari was able to sum up much of what was known about the prey of the Iberian fauna within ten lines of the 'biology' section. Knowledge at that stage was obviously such that it was felt unnecessary to deal with the subject at greater length under each individual species heading (Giner Mari 1941). Knowledge has progressed, though remains sketchy, with many prey records widely scattered in the literature. Useful summaries are provided in various papers and monographs such as: Bitsch *et al.* 1997; Cross, Baldock & Wood 2021; Evans 1971 (dealing with the North American fauna but with much useful comparative material) and Pagliano & Negrisolo 2005.

The following notes include some observations made on the Iberian Peninsula in the past few years. Some of the information presented reinforces observations made by other hymenopterists or sheds light on previous, disputed records. For some *Cerceris*, the prey information appears to be the first published for the relevant species.

OBSERVATIONS

Cerceris arenaria (Linnaeus, 1758) (Fig. 1)

This is one of the larger Iberian species and is almost exclusively a predator of large weevils from a number of subfamilies (Coleoptera: Curculionidae). In a summary of literature records, Polidori *et al*. 2007 list 23 genera of weevils (and one

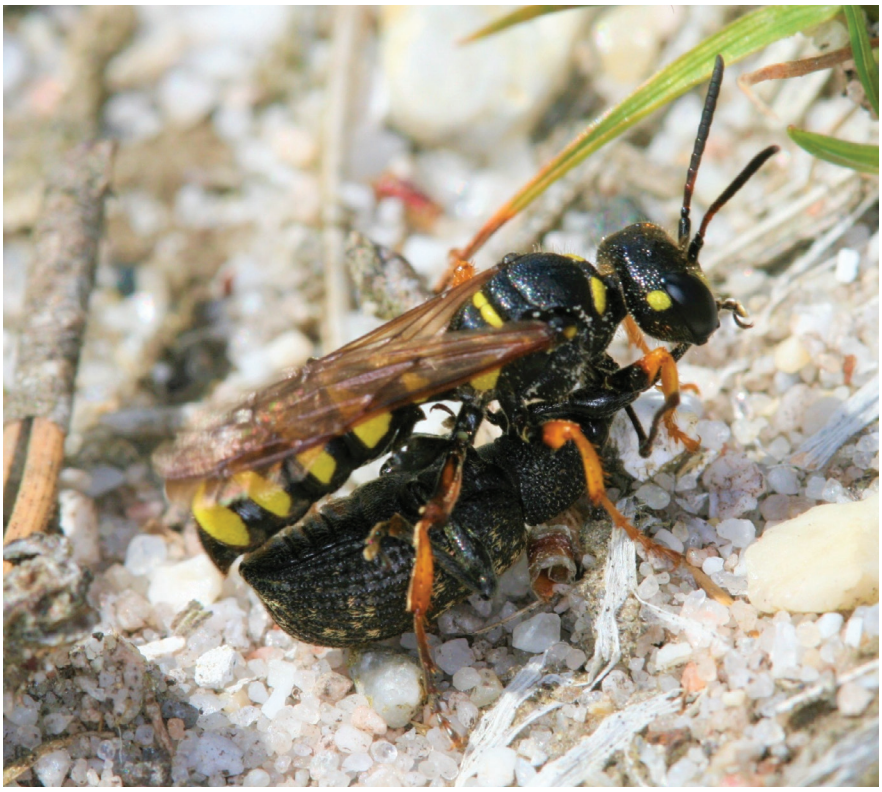

Fig. 1. — Female *Cerceris arenaria* with typical prey – a large weevil. This image is actually of an English example but prey carriage is identical across the wasp's entire European range.

of Chrysomelidae) as prey collected by this species. To these can be added *Gonipterus platensis* Marelli, 1926, based on observations from an aggregation at Codeçoso in northern Portugal, UTM 29T NF 87 (Cross, Baldock & Wood 2021). This weevil is a noted pest of *Eucalyptus globulus* Labill., 1800, plantations in Portugal and causes severe economic damage. To date, biological control has focussed on the use of hymenopteran parasitoids (Valente 2018). At the Codeçoso site, wasps were concentrating their efforts on hunting this weevil to the extent that *C. arenaria* was suggested as a potential biological control.

It has subsequently been found that this habit is more widespread and extends to northern Spain. At a site near La Iglesia, Cantabria, Spain, UTM 30T UP 90, *C. arenaria* was found to be abundant. Two nesting aggregations were examined. One in an erosion gully held in excess of 270 nests, whilst another, forming a large circular patch of roughly 27m diameter among dense turf, contained an estimated 500 to 1,000 nests. All the recorded prey consisted of *G. platensis* caught in the extensive *Eucalyptus* plantations that clothe the undulating hills in this area. Given the number of nests and the exclusive use of one prey species, *C. arenaria* must have a significant local effect on the pest's population.

Fig. 1 shows a female *Cerceris arenaria* carrying weevil prey at a UK aggregation.

Cerceris bicincta Klug, 1835
(Fig. 2)

The following observations were made at a small aggregation near Bolnuevo, Murcia, Spain on the 14 May 2019, UTM 30S XG 45. Females were seen to approach the nests carrying the prey in flight. Prey-carrying females could be picked-out from some distance by the little speck of orange-red formed by their prey. They dropped straight into the nest burrow without alighting nearby first. Prey was entirely of a small, red leaf beetle *Cryptocephalus infirmior* Kroatz, 1876 (Coleoptera: Chrysomelidae). This supports the prey records in Asís, Gayubo & Tormos 1991, which lists five beetle species including three other species of *Cryptocephalus*. The wasps were nesting in a small aggregation in a strip of level, compacted, hard clay with a 'corrugation' of low ridges.

Fig. 2. shows a female at this nest site.

Cerceris buprestícida Dufour, 1841
(Fig. 3)

An interesting species, focussing entirely on jewel beetles of the family Buprestidae (Giner Mari 1941). Bitsch *et al*. (1997) sum up previous publications, listing eight genera of buprestids. Pagliano & Negrisolo (2005) state that *C. buprestícida* is renowned among coleopterists for capturing rare species. A parallel situation exists in North America where the related *Cerceris fumipennis* Say, 1837, has often proved to be an efficient means of generating records of Buprestidae, including new state records. Furthermore, it can be a useful biosurveillance tool for buprestid pest species (Swink, Palero & Nalepa 2013; Swink, Nalepa & Basham 2014). Despite the wasp working within such a narrow taxonomic framework – one beetle family – many hymenoptera observers have commented on how, across its range, *C. buprestícida* nevertheless utilises a wide range of species. There may be local specialisations at certain sites at certain times of year. For example, *C. buprestícida* at a colony on the coastal grazing marsh near Pêra, Algarve, Portugal, UTM 29S NB 50 were found to be almost exclusively hunting *Cyphosoma lausoniae* (Chevrolat, 1838) (Fig. 3). This jewel beetle feeds in the rhizomes of *Bolboschoenus maritimus* (Linnaeus) Palla, 1905: a herbaceous, rush-like plant of coastal situations.

Cerceris buprestícida is the only species of the '*buprestícida*' group found in the Iberian Peninsula. Evans (1971) suggested that a related jewel beetle specialist, *C. fumipennis* in North America, could utilise a huge prey range precisely because it was the only member of its group over much of north-east America: without competition it was not forced to specialise. A similar situation possibly applies to *C. buprestícida* in much of its range in Western Europe.

Cerceris circularis (Fabricius, 1804) subsp. *dacica* Schletterer, 1887
(Figs 4 & 5)

Nothing seems to be known of the biology of this species in Iberia. According to Bitsch *et al*. (1997), prey includes a species of *Tiphia* – a parasitoid wasp of the Tiphiidae – in Eastern Europe and bees of the genera *Andrena* and *Halictus* in Corsica. This seems quite a wide spectrum of aculeate prey from distant, unrelated insect groups and it would be useful to have further records, particularly of the latter.

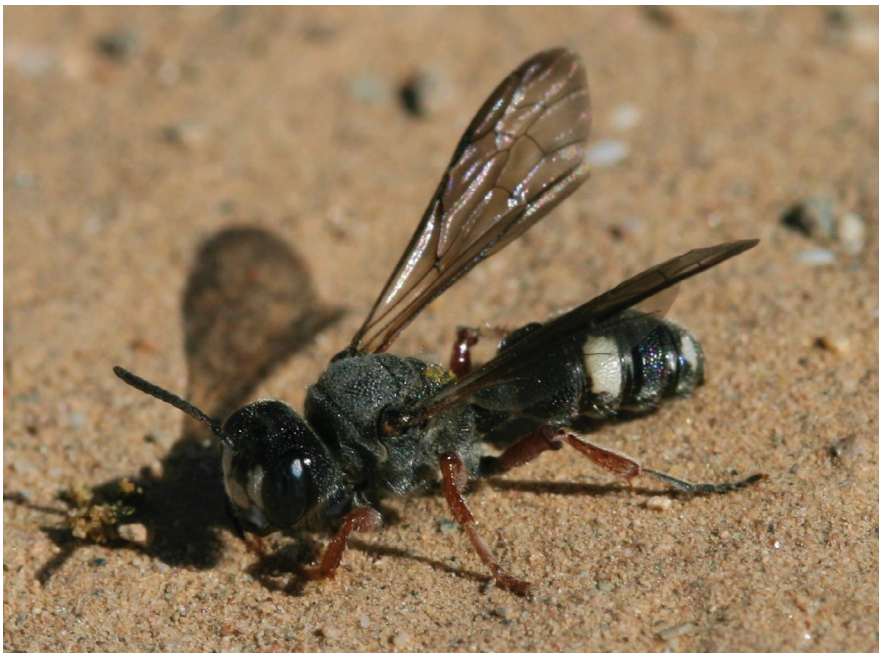

Fig. 2. — A *Cerceris bicincta* female at a typical nest site.

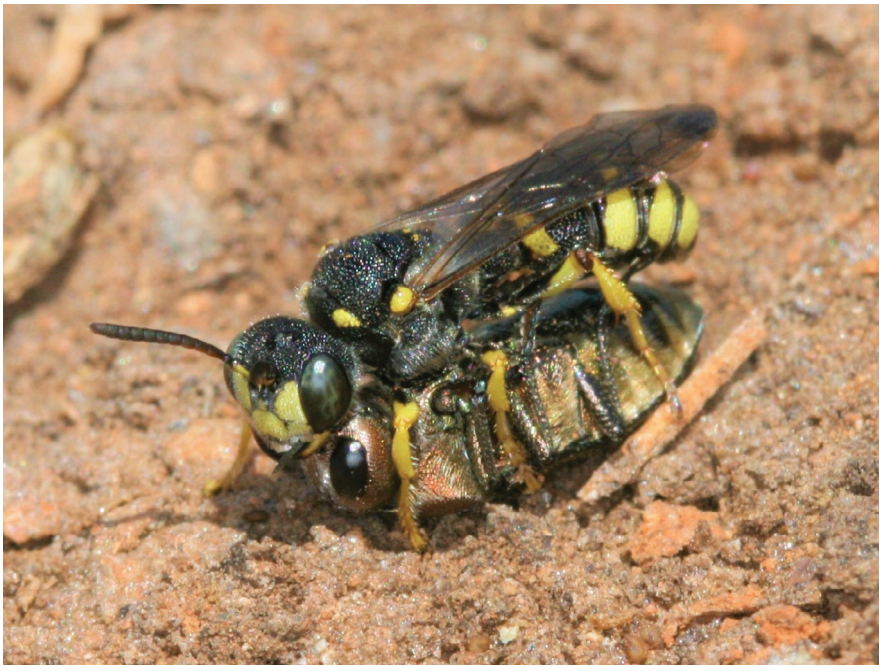

Fig. 3. — *Cerceris bupresticida* female with *Cyphosoma lausoniae*. Her prey is carried upside down, facing forward and slung underneath the wasp's body whilst the wasp holds an antenna in her mandibles.

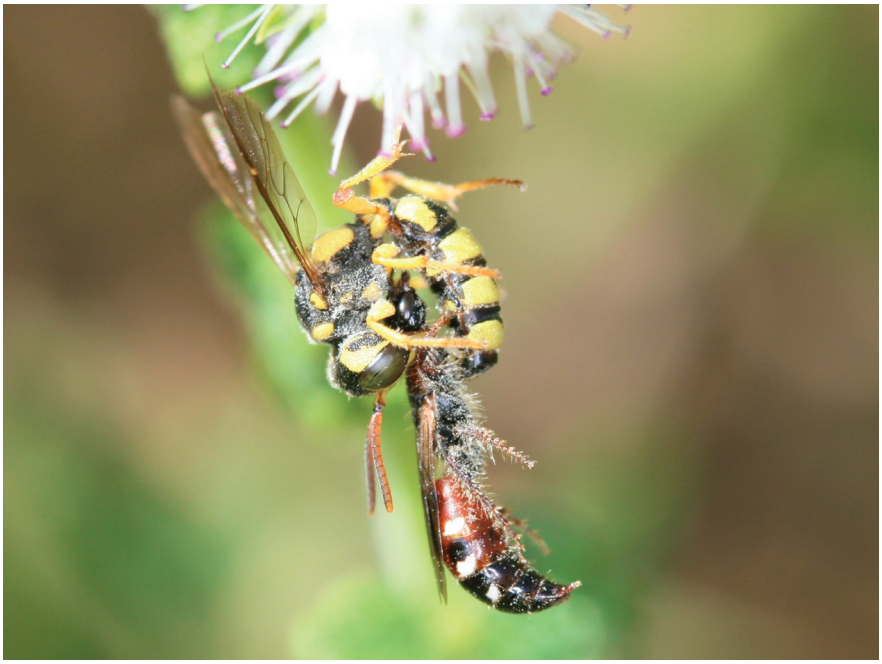

Fig. 4. — With surgical precision a female *Cerceris circularis* stings a thoracic ganglion of its prey, an adult female *Meria tripunctata*. She inserts her sting into the relatively poorly-armoured underside of the mesosoma.

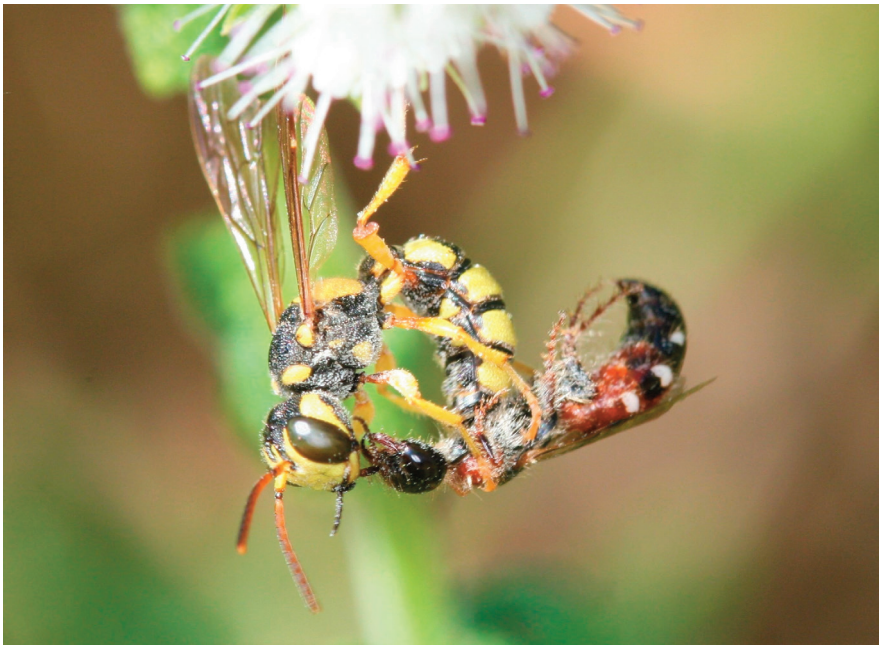

Fig. 5. — Like many other *Cerceris* the female *Cerceris circularis* holds an antenna of its victim whilst handling it.

Near Aznalcázar, Sevilla province, Spain, UTM 29S QB 42 I have watched female *C. circularis* of the Iberian subspecies *dacica* hunting females of the tiphiid wasp *Meria tripunctata* (Rossi, 1790), (Figs 4 & 5). This supports the observations from Eastern Europe rather than those from Corsica and it is possible that *C. circularis* is unusual (possibly unique) amongst the European fauna as a specialised predator of Tiphiidae.

Cerceris ibericella Leclercq, 1979
(Figs 6 & 7)

Cerceris ibericella (Fig. 6) is an Ibero-Maghrebian species recorded from the Iberian Peninsula, Morocco and Algeria (Bitsch *et al*. 1997). Until recently, there has been no information regarding its prey choices. However tantalising fragments of information have begun to build up. Near Hinojos in the Spanish province of Huelva, UTM 29S QB 32, I took a rather poor photograph that shows a female stinging a chalcid wasp (Hymenoptera: Chalcididae). Then at Pêra, Algarve, Portugal, UTM 29S NB 50 a female was photographed stinging a *Glyptomorpha* sp. (Hymenoptera: Braconidae) (Fig. 7). This led to speculation that the prey of this little-known species might consist mainly of Hymenoptera: Parasitica (Cross, Baldock & Wood 2021).

In 2021, further support for this hypothesis was provided by a record of a female wasp catching a braconid wasp (Hymenoptera: Braconidae) at La Venta de Aledo in the Spanish region of Murcia, UTM 30S XG 48. Until further information becomes available it does seem that *C. ibericella* is confirmed as a specialist predator of Hymenoptera: Parasitica. Bohart & Menke 1976 refer to a record of *C. stratiotes* Schletterer, 1887 as a predator of the chalcid *Stilbula cyniformis* (Rossi, 1792). *Cerceris stratiotes* belongs to the '*bicincta*' group of the genus (Bitsch *et al*. 1997), the Iberian species of which is a predator of beetles. By contrast, *C. ibericella* belongs to the '*rybyensis*' species group, most of whose species hunt bees. Therefore, if there is any taxonomic pattern in prey choice, the use of chalcids by *C. stratiotes* would be an unlikely prey item. It would be useful to have more observations of hunting in this species.

Cerceris quinquefasciata (Rossi, 1792)
(Fig. 8)

According to Bitsch *et al*. (1997), most observers agree that this species' primary prey is various species of weevils (Coleoptera: Curculionidae). However, in the UK it has been seen hunting and catching pollen beetles of the family Nitidulidae, namely *Meligethes*, and two species of this genus have been listed as prey (Hamm & Richards 1930). More recently, Baldock (2010) – whilst reinforcing the impression that small weevils are the main prey – records and illustrates this species also its feeding on *Meligethes* pollen beetles. Interestingly, Bitsch *et al*. 1997 refer to an old and disputed record of the use of the distinctive and attractive chrysomelid beetle *Crioceris asparagi* (Linnaeus, 1758.) The use of *Crioceris* is such an outlier that it was considered likely that the record was a result of misidentification of the wasp involved. However, in 2014 I observed a female *C. quinquefasciata* approaching a nest site bearing a relatively large and brightly-coloured object at a site in Huelva province, Spain, UTM 29S QB 32. This proved to be an adult

Fig. 6. — Female *Cerceris ibericella*.

Fig. 7. — Female *Cerceris ibericella* stinging her prey, a *Glyptomorpha* sp.

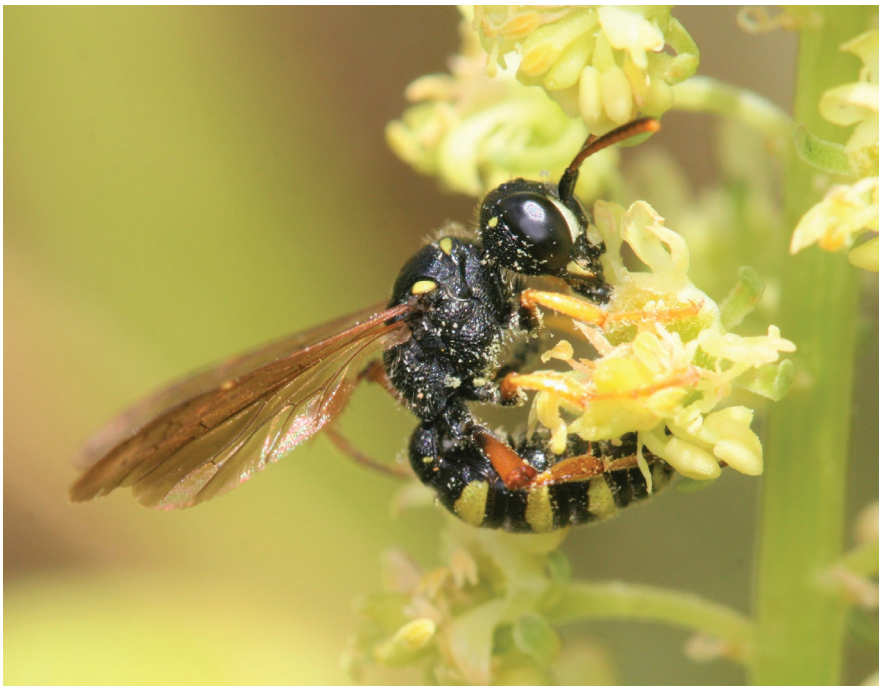

Fig. 8. — Female *Cerceris quinquefasciata* feeding on an unusual nectar source for a crabronid wasp: Wild Mignonette (*Reseda lutea* Linnaeus). This image is actually of an English example.

C. asparagi! Unfortunately, I have been unable to repeat this observation but it supports the likelihood that *C. quinquefasciata* is not just a weevil specialist but will take prey from a broad range of Coleoptera families.

The female in Fig. 8 is of a UK example.

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