





# First records of *Ctenochares bicolorus* (Linnaeus, 1767) (Hymenoptera: Ichneumonidae) in Germany

## Erste Nachweise von *Ctenochares bicolorus* (Linnaeus, 1767) (Hymenoptera: Ichneumonidae) in Deutschland

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2 Köln

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4 Essen

5 Beernem (Belgium)

6 Oostende (Belgium)

### Schlüsselwörter:

eingeschleppte Art, Faunistik, parasitoide Wespen

### Zusammenfassung

Die Schlupfwespe *Ctenochares bicolorus* (Linnaeus, 1767) wird erstmals in Deutschland nachgewiesen, basierend auf einem im Mai 2023 in einem Kölner Supermarkt fotografierten Weibchen und einem im Dezember 2023 in einem Mönchengladbacher Wohnzimmer gefangenen Männchen.

### Keywords:

Introduced species, faunistics, parasitoid wasps

### Abstract

The ichneumonine Darwin wasp *Ctenochares bicolorus* (Linnaeus, 1767) is reported for the first time from Germany based on a female photographed in May 2023 in a Cologne supermarket and a male caught in December 2023 in a living room in Mönchengladbach.

## 1. Introduction

*Ctenochares bicolorus*, a well-known African species introduced to Southern Europe, has been recorded from Northwest Europe only recently, namely from England (Jones 2001), Belgium and the Netherlands (Verheyde 2019). *Ctenochares* Förster, 1868 is a small genus more or less confined to the African continent (Yu et al. 2016), of which only *C. bicolorus* is a resident of Continental Europe.

In May 2023, a conspicuous female ichneumonid sitting on cauliflower was photographed by NB in a “Rewe” supermarket in Cologne. The image was uploaded to iNaturalist, later determined as ichneumonid

by another user and hence was found by LB while scanning German records of ichneumonids on citizen science platforms.

In December 2023, a male of the same species was found by JT in his living room after returning from a supermarket. It was uploaded to Naturgucker.de and Observation.org, where it was identified by the AI as *Ctenochares bicolorus*. The male specimen was handed over to TH in a container with some sugar water the day after the record where it lived for another 21 days.



**Fig. 1:** Female *Ctenochaeres bicolorus* in a Cologne supermarket, 13th of May 2023, Köln, Germany. Photo (cropped) Niklas Büchel.

## 2. Materials & Methods

The female specimen was photographed in-situ by NB using an iPhone 13 mini. The image was uploaded to iNaturalist.com and can be found here: <https://www.inaturalist.org/observations/161387157> (last accessed December 3, 2024).

The male specimen was photographed in a plastic box by JT using a Panasonic DC-TZ202D and flashlight. The images were uploaded to Naturgucker and observation.org and can be found at <https://naturgucker.de/?bild=-176285818> (last accessed December 3, 2024) and <https://observation.org/observation/294800844/> (last accessed December 3, 2024). The specimen was given to Thomas Hörren and is now deposited in the collection of the Entomologischer Verein Krefeld.

To make sure no records were missed, all unseen German records of ichneumonids on Naturgucker.de and Observation.org and all Central European records of ichneumonids on iNaturalist were checked during the winter of 2023/2024 by LB.

Here, Central Europe is defined in the sense of Jordan's (2005) country-based division of Europe, including Germany, Luxembourg, Switzerland, Liechtenstein, Austria, Slovenia, Croatia, Hungary, Slovakia, Czechia, Poland, Lithuania, Latvia and Estonia.

## 3. Results

The female from Köln was identified as *Ctenochaeres bicolorus* (Linnaeus, 1767) by LB. The male from Mönchengladbach was identified by the app "ObsIdentify" as the same species and was validated by ADK. These are the first records from Germany known to us and at the same time possibly the first from Central Europe.

### Recognition

From photos, the species can be easily recognised on its habitus and colours: with the tricoloured flagellum and black/red mesosoma with orange scutellum, combined with the conspicuously darkened fore wing tip and apical metasomal tergites, *C. bicolorus* is hardly to be mistaken for any other species. Another helpful character is the slender appearance with the metasoma protruding conspicuously beyond the tip of the forewing. The equally conspicuous but larger *Callajoppa exaltatoria* (Panzer, 1804) can be distinguished from *C. bicolorus* by a mainly black mesoscutum, black propodeum, lack of a white antennal ring, less distinct infuscation of the forewing tip and stouter body shape.

With a specimen at hand, the lack of any propodeal carination combined with the pectinate claws are distinctive (Gauld 1984), although Heinrich (1967) points out that the degree of pectination of the claws underlies considerable variation and is not always well visible. Gauld (1984) and Verheyde (2019) describe additional characteristics.

Observation.org's AI identified the male specimen discussed here correctly. Concerning ichneumonids, this tool is mainly 'trained' by FV's and ADK's approximately 230.000 Belgian and Dutch validated records (partially available on GBIF). This finding proves the AI works well for many of the more easily recognisable species, even if only few pictures (in this case approx. 10) are available. Because of the automatic labelling, the record of the male *C. bicolorus* could be detected quickly and thus validated without much effort. This approach, of course, involves the risk of overlooking records not identified correctly by the AI or only to family level, as happened to the female uploaded to iNaturalist, which was probably too small in relation to the photo size to be recognised by iNaturalist's AI as *C. bicolorus*.



Fig. 2: Male *Ctenochaeres bicolorus*, 18th of December 2023, Mönchengladbach, Germany. Photo Jörg Tilmans.



Fig. 3: Male *Ctenochaeres bicolorus*, 18th of December 2023, Mönchengladbach, Germany. Photo Jörg Tilmans.

## 4. Discussion

### Biology

The supposed main host of *C. bicolorus* is the polyphagous pluriine moth *Chrysodeixis chalcites* (Esper, 1789) (Lepidoptera: Noctuidae) (Fitton et al. 1983), which is distributed from Southern Europe to Southern Africa. With the help of southerly winds, adults from the Mediterranean occasionally migrate to Central and Northern Europe (Collins et al. 2014) but the species is more often introduced to Germany as larva with its food plants (Steiner et al. 2014). In the Netherlands, *C. chalcites* can be very common in greenhouses where it mainly feeds on Tomato (Verheyde 2019). It is not yet known to reproduce in the wild in Germany but has recently been reported to do so in South Tirol (Eitschberger & Frei 2019). The related pluriine moth *Autographa gamma* (Linnaeus, 1758), a known host of *C. bicolorus* in Malta (Mifsud et al. 2019), however, is one of the commonest moths in Germany. Thus, it is not impossible that *C. bicolorus* will be able to establish populations in Central Europe in the future. In the Netherlands, the species has already been found “in the wild” (although in an urban environment) as early as 2018 (<https://waarneming.nl/observation/157152942/>, last accessed December 3, 2024).

### Distribution

Whilst other members of the genus are largely confined to sub-Saharan Africa, *C. bicolorus* shows an unusually wide distribution from Southern Africa to Southern Europe, which led to several descriptions of the species in various genera (Heinrich 1967). Guérin-Méneville (1848, as *Ichneumon instructor* F.) was already aware of its occurrence in both Cape of Good Hope and Sicily without expressing any doubts that these records refer to the same species. Apart from this, Berthoumieu (1894) was the first to mention occurrences on the European continent, namely in Italy, Greece, France and Spain. Fitton et al. (1983) considered the species migratory, thus, with the potential of reaching Southern Europe by itself. In contrast, Verheyde (2019) regarded it as introduced. So far, it remains unresolved whether *C. bicolorus* has colonised the European Mediterranean with or without human aid in the 19th century. The species is considered introduced to Australia and New Zealand, where it was recorded since 1970 (Gauld 1984) and 1981 (Fitton et al. 1983), respectively.

### Recent expansion in Europe

Although Schmiedeknecht (1930) included the species in his key to the Hymenoptera of North and Central Europe (as *C. instructor* (Fabricius, 1793)), it was probably only known from Greece, Italy, France and Spain at



Fig. 4: Female *Ctenochaeres bicolorus* in a Cologne supermarket, 13th of May 2023, Köln, Germany. Photo Niklas Büchel.

that time (Meyer 1933). More northerly located records stem from London in 2000 (Jones 2001), the Netherlands in 2015 and 2018 and Belgium in 2019 (Verheyde 2019). Since then, more recordings of the species were reported for both countries and it has also been reported in Denmark, Sweden, Norway and Scotland within the last two years ([www.inaturalist.org/observations?place\\_id=any&subview=map&taxon\\_id=343394](https://www.inaturalist.org/observations?place_id=any&subview=map&taxon_id=343394)). This suggests that *C. bicolorus* has been becoming more commonly spread with vegetable transports (cf. Verheyde 2019). This is supported by the fact that most of the specimens were found in vegetables (cauliflower, endive and spinach), and a good share of them late in the year (December) indoors and in bigger cities. However, as the numbers of records from these countries on citizen science portals are generally increasing, it remains uncertain whether human-assisted introductions are the only cause for the species' more frequent observations in Europe.

## 5. Conclusions and prospects

The here reported records of *C. bicolorus* from Germany are strongly believed to result from unintentional introductions with vegetables. Thus, the species is not considered to reproduce in Germany and should con-

sequently neither be regarded as part of the German fauna nor be added to the checklist of German ichneumonids (Riedel et al. 2021). Such an addition of *C. bicolorus* to the checklist may be reconsidered, should its sightings increase, especially in the wild.

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