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## First record of the pollen wasp *Celonites rugiceps* BISCHOFF 1928 (Hymenoptera, Vespidae, Masarinae) from Central Europe

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**Abstract:** Two specimens, a male and a female, of *Celonites rugiceps* were collected in the Kaiserstuhl in Baden-Württemberg, Germany by R. Gauss in 1966, indicating the existence at that time of a small relict population in this xerothermic area. This is the first record of the species from Central Europe. Massive habitat changes in the Kaiserstuhl area have resulted in the decline of *Heliotropium europaeum*, the preferred forage plant of *C. rugiceps*. This probably accounts for its having become extremely rare or possibly extinct in this area.

**Key words:** Vespidae, Masarinae, *Celonites*, distribution, palaearctic.

### Introduction

Since the mid 19<sup>th</sup> century it has been widely accepted, that only a single species of the pollen wasps (Masarinae), *Celonites abbreviatus* (VILLERS 1789), occurs in Central Europe (SCHENK 1861:10). This view has been supported by BLÜTHGEN (1961: 221), who stated that *Celonites abbreviatus* is the only masarine wasp with a distribution range extending into Central Europe, north of the Alps. In accordance with these findings SCHMID-EGGER & SCHMIDT (2002) listed *C. abbreviatus* as the only pollen wasp species of the German fauna. Recently, an investigation of the distribution of *C. abbreviatus* in Germany revealed some evidence that another species of *Celonites* occurs or used to occur in Central Europe.

### Results and Discussion

Two specimens of *Celonites rugiceps* BISCHOFF 1928 from Southwest Germany were discovered amongst material of *Celonites abbreviatus* within the collection of the SMNS (Staatliches Museum für Naturkunde Stuttgart). These are a male and a female (Fig. 1) that were collected by R. Gauss on the sixth of July 1966 at Kiechlinsbergen at the north-western margin of the Kaiserstuhl (approx. 7.65535 °E, 48.12316 °N) in Baden-Württemberg. Rudolf Gauss was an excellent, meticulous collector of various Hymenoptera in Southwest Germany (KROGMANN pers. com., WESTRICH in litt., TSCHORSNIG & SCHMID-EGGER 1998). Almost certainly he never collected outside this region, and the labels are in his handwriting (Fig. 1). Therefore it is very unlikely that he confused the site or

received material from anywhere else. As he took two specimens, one of each sex, it is probable that at least a small autochthonous population of *C. rugiceps* existed in the mid 1960s at Kiechlinsbergen.

This is the first record of *C. rugiceps* from Central Europe. Hitherto the species was known only from the East Mediterranean and Balkan region where it has been recorded from Jordan (MAUSS unpubl.), Turkey (BISCHOFF 1928, YILDIRIM & ÖZBEK 1997), Cyprus (RICHARDS 1962), Crete (BISCHOFF 1928, GUSENLEITNER 1997), Samos (GUSENLEITNER 1997), Peloponnese (BISCHOFF 1928, GUSENLEITNER 1997, MAUSS unpubl.), the Greek mainland (GUSENLEITNER 1997, MAUSS unpubl.), Bulgaria (GUSENLEITNER 1997), Serbia (BLÜTHGEN 1952) and Croatia (RICHARDS 1962). Thus the geographic range of *C. rugiceps* corresponds well to a typical Pontomediterranean faunal element sensu LATTIN (1967) (Fig. 2).

The newly discovered locality of *C. rugiceps* at the Kaiserstuhl is more than 700 km away from the nearest known locality in Croatia (Fig. 2). The Kaiserstuhl is situated in the climatically favoured Breisgau region in the upper Rhine valley and is one of the warmest areas of Central Europe. It is the habitat of some relict populations of xerothermic species of Ponto- or Holomediterranean origin that had a wider distribution during the Holocene climatic optimum about 6000 years B.P. (WESTRICH 1989: 21, HUNTLEY & PRENTICE 1993). Therefore, it seems to be possible that the recorded specimens of *C. rugiceps* belong to such a relict population. *Celonites rugiceps* appears to be mainly associated with flowers of *Heliotropium europaeum* LINNAEUS 1753 (Boraginaceae) (RICHARDS 1962, MAUSS unpubl. based on label information from specimens collected in Jordan by S. MAZARY). In Baden-Württemberg this plant occurs predominantly in the Breisgau region and it has been recorded several times from the Kaiserstuhl (FLORISTISCHE KARTIERUNG BADEN-WÜRTTEMBERG 2010). This is congruent with the hypothesis that a relict population of *C. rugiceps* survived in the Kaiserstuhl area.

The present status of *Celonites rugiceps* in Central Europe is uncertain. Obviously the species has been collected only very rarely but it may have been overlooked since all entomologists expected only *Celonites abbreviatus* and therefore probably refrained from collecting every specimen of this endangered species that they sighted. Moreover, the extent of sites suited to *C. rugiceps* in the Breisgau region declined, probably dramatically. Between 1968 and 1978 many habitats in the Kaiserstuhl area, including the vicinity of Kiechlinsbergen, were markedly changed due to extensive consolidation of the vineyards and intensification of viticulture (DÜWEKE 1988). This led to a dramatic disappearance of *Heliotropium europaeum* that recently has been recorded only from a single quadrant in the Breisgau region (FLORISTISCHE KARTIERUNG BADEN-WÜRTTEMBERG 2010). The decline of its forage plant probably affected the population of *C. rugiceps*. Therefore, it is quite likely that it has become extremely rare or even extinct in Germany.

*Celonites rugiceps* can be separated with ease from *C. abbreviatus* using the keys of GUSENLEITNER (1997) or of RICHARDS (1962: 215-223). However, R. Gauss misidentified the species as *C. abbreviatus*, probably because he did not expect another species to occur. Therefore, the existing material of *C. abbreviatus* from Central Europe requires critical re-identification. Furthermore, known sites of *Heliotropium europaeum* might profitably be revisited during the flowering season in July and checked for flower visiting imagines of *Celonites rugiceps*.

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## Zusammenfassung

Im Jahr 1966 wurden von R. Gauss im Kaiserstuhl bei Kiechlinsbergen ein Männchen und ein Weibchen der Pollenwespe *Celonites rugiceps* gesammelt. Dies weist auf die Existenz einer kleinen Reliktpopulation dieser pontomediterranen Art hin, die am Kaiserstuhl möglicher Weise aufgrund der wärmebegünstigten Lage des Gebietes und des Vorkommens von *Heliotropium europaeum*, als wichtiger Futterpflanze, seit dem Ende des holozänen Klimaoptimums überdauern konnte. Aufgrund der massiven Lebensraumveränderungen im Kaiserstuhlgebiet durch die Rebflurbereinigung in den 1970er Jahren, die unter anderem auch zu einem sehr starken Rückgang der Bestände von *Heliotropium europaeum* geführt haben, ist das Vorkommen von *C. rugiceps* in Deutschland inzwischen möglicherweise bereits erloschen.

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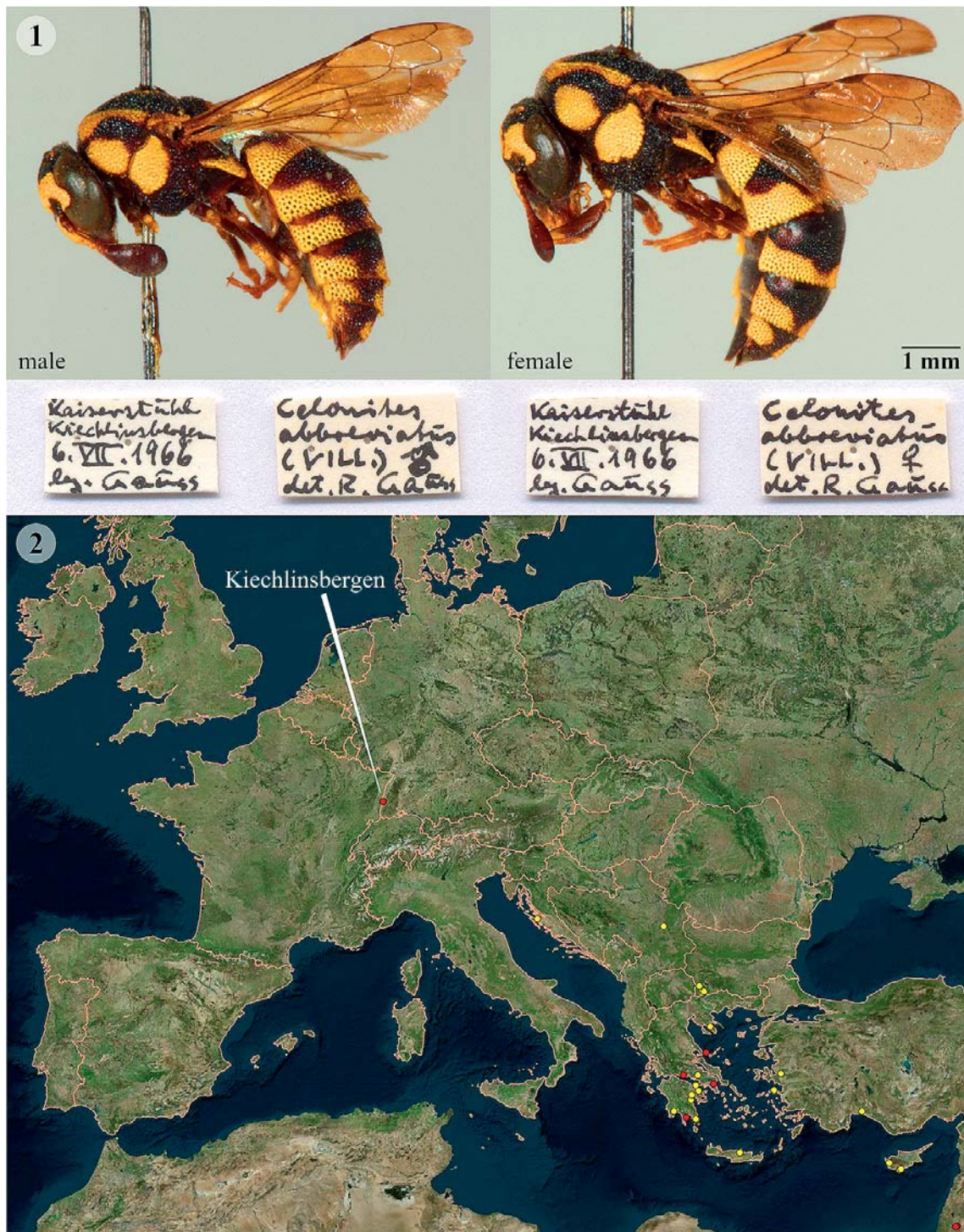
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**Fig. 1-2:** (1) Male (dbM No. 4114) and female (dbM No. 4115) of *Celonites rugiceps* collected by R. Gauss at Kiechlinsbergen in lateral view (dbM = databaseMauss). The labels of each specimen are figured below. Note that the specimens were wrongly identified by R. Gauss as *Celonites abbreviatus*, so that the significance of his record went unrecognized. (2) Distribution of *Celonites rugiceps* in the West-Palaeartic based on published records by BISCHOFF 1928, BLÜTHGEN 1952, GUSENLEITNER 1997, YILDIRIM & ÖZBEK 1997 (yellow circles) and hitherto unpublished records (red circles; dbM No. 2523, 2524, 2525, 2526, 2527, 2528, 2764, 2831, 2832, 2833, 2834, 2835, 3600, 4092, 4113). [map: bing™ Image courtesy of NASA © 2013 Microsoft Corporation]

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