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# ON THE OCCURRENCE OF *CALOPTERYX VIRGO MERIDIONALIS* (SELYS, 1873) (ODONATA: CALOPTERYGIDAE) IN THE MALTESE ISLANDS.

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## ABSTRACT

During the 1987-1988 period, a dead *Calopteryx* specimen was found in a rock pool at Marsascala. This was the first record of this genus in the Maltese Islands. In this paper, we discuss the possible causes behind such an occurrence and the methodology employed in the identification of the specimen as *Calopteryx virgo meridionalis*.

**Keywords**: *Calopteryx virgo meridionalis*, occurrence, Maltese Islands

## INTRODUCTION

During the last 20 years, there has been a significant increase in the study of local Odonata populations. This has yielded several new Odonata records for the Maltese Islands. Past studies, including four works (Mclachlan, 1899; Cowley, 1940; Valletta, 1949, 1957) list eleven species of Odonata occurring in the Maltese Islands. More recent studies have added new species to the previous list. Two of these, *Orthetrum trinacria* and *Trithemis annulata,* seem to have established themselves and their population trends suggest that both are on the increase. The other two, *Aeshna mixta* and *Trithemis arteriosa*, are only represented by a single record (Ebejer *et al.*, 2008).

Of the sixteen species of Odonata previously recorded in the Maltese Islands, only one species belongs to the Zygoptera (damselflies), *Iscnura genei.* This species is endemic to Corsica, Sardinia, Sicily, Capraia, and Malta (Dijkstra & Lewington, 2006).

### History and identification of the locally-recorded specimen

A new, species, *Calopteryx virgo meridionalis,* was recorded from a single dead specimen, which was found in 1987-1988 by one of the authors (MS). The same specimen was shown to the late Anthony Valletta, who mounted it and took some photos, before returning it to (MS). Unfortunately, Mr. Valletta passed away before he could confirm the identity of the species, and thus, the specimen remained untagged and un-named.

In 2005, (MS) showed (AS) the poorly-preserved specimen (ravaged by *Anthrenus* sp.) for further examination. Initially, there seemed to have been a divergence of opinions regarding the identity of the specimen. Whilst (MS) was of the impression that the specimen belonged to the species *Calopteryx virgo meridionalis,* (AS) identified the specimen as a male *Calopteryx haemorrhoidalis.* This was because the morphological features and colouration of the same specimen seemed to vary from those of typical *C. virgo meridionalis* specimens. The behavioral characteristics and geographical distribution of *Calopteryx haemorrhoidalis* also made it the more likely species to occur. It was

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thus decided to consult Bernd Kunz, an Odonata expert. Measurements and photos of the specimen were sent for further study. He in turn confirmed that the specimen in question was in fact a male *C. virgo meridionalis.*

*Calopteryx virgo* is the largest European *Calopteryx* species. The wing ratio distinguishes this species from *Calopteryx virgo haemorrhoidalis*. This wing ratio is calculated by comparing the width and length of the wing. The wing ratio for *C. virgo is* 1:2.7 whereas in other similar species it is 1:3.3. This exercise was carried out by Mr Kunz and also (repeatedly) by the authours on twelve photo specimens of both *C. haemorrhoidalis* and *C. virgo,* along with a number of specimens collected abroad.

Three main forms of *C. virgo* can be distinguished on the basis of the wing pigmentation patterns, and are normally treated as subspecies (Dijkstra & Lewington, 2006). These are *C. virgo virgo*, *C. virgo meridionalis* and *C. virgo festiva. C. virgo meridionalis* is distinguished from *C. virgo festiva,* which occurs in Albania, Greece and Turkey, by a much more well defined clear basal area of the wings.

Moreover, various intermediate forms exist. For instance, intermediates between *C. meridionalis* and *C. festiva* occur in Italy. Such areas are known as "hybrid" zones. Since the wings of the specimen collected from Malta are darker than those of a typical *C. virgo meridionalis* specimen, but have a basal area which is too clear for it to be identified as *C. virgo festiva,* it is suggested that the specimen found in Malta belongs to an intermediate form between these two species.

There seemed to be no other record of this species taken or seen locally. None of the authors have ever encountered in the field or in local collections any other specimen of *C. virgo meridionalis,* until October 2007, when (AS) came across two unconfirmed records from Gozo. The first came from an apiculturist from Żebbuġ in Gozo, who claimed to have spotted a dead specimen in a water reservoir in 1985, but had no tangible proof to substantiate his claim. The second record was from a viticulturist from Nadur, who claimed to have found a wing of a specimen in 1985, and another complete dead specimen in 1997. Both were collected but were consequently devoured by *Lepismatidae sp.* as they were not preserved properly. The 1985 specimen is still extant and it was confirmed by (AS) as being identical to the specimen collected in Marsascala.

## CONCLUSION

The local record of *C. virgo meridionalis* must be treated as an exceptional one. This is because its biology and habitat requirments are not compatible with habitats found in the Maltese Islands. In fact, this species prefers cooler waters than other *Calopteryx* species. The specimen recorded in this study must have been introduced either through human-mediated transport (e.g. accidental introduction with plant shipments) or even through natural phenomena, such as strong wind drifts and storms. Another interesting observation is that all four specimens recorded locally for this species were found dead, and no live specimen for the same species has ever been recorded locally. This could be the direct result of the *C. virgo meridionalis* individuals having been introduced locally with strong winds, thus precluding the individuals' chances of survival, locally.

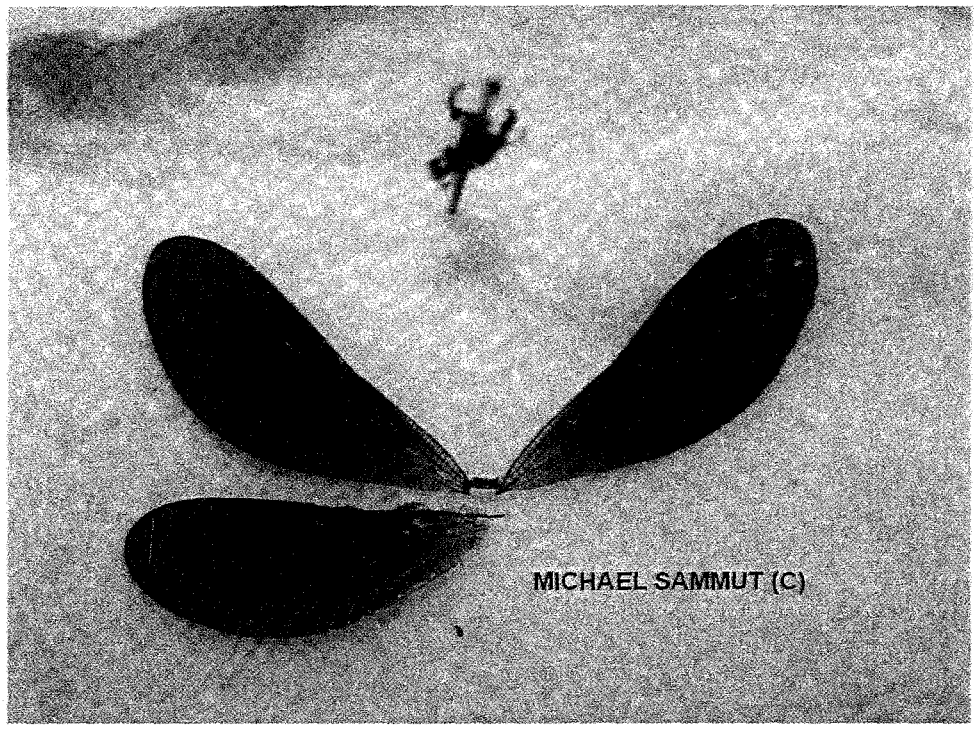


**Figure 1:** Flying appendages of *Calopteryx virgo meridionalis* specimen, recorded in 1985 (photo credits: Michael Sammut).

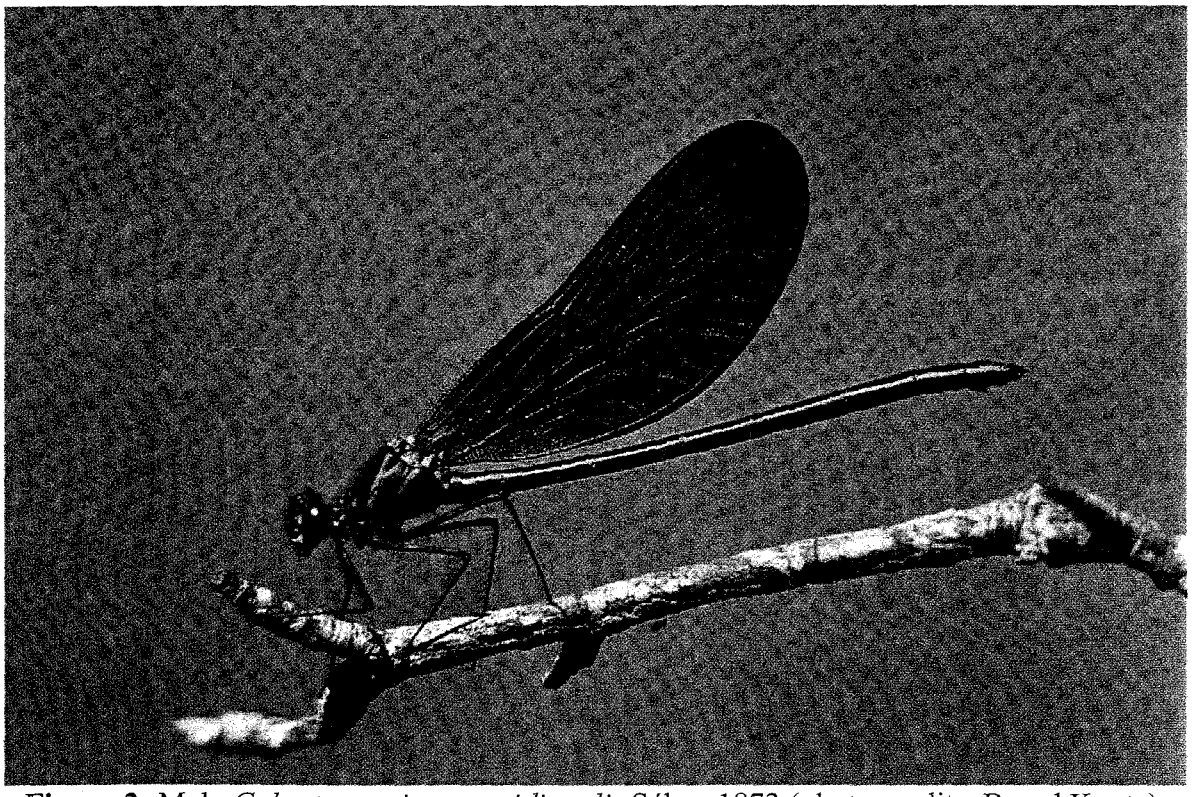

**Figure 2:** Male *Calopteryx virgo meridionalis* Sélys, 1873 (photo credits: Bernd Kuntz).

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