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FIRST RECORD OF A SUCCESSFUL BREEDING OF
ANAX EPHIPPIGER (BURMEISTER, 1839)
IN THE MALTESE ISLANDS (*Insecta Odonata*)

SUMMARY

The author reports the first record of *Anax ephippiger* successfully breeding in the Maltese islands along with its behaviour documented locally.

RIASSUNTO

Segnalazione del primo caso di riproduzione di Anax ephippiger nelle isole Maltesi (Insecta Odonata). L'autore riporta diverse osservazioni di *Anax ephippiger* nelle isole Maltesi; tra queste vi è stato un caso accertato di riproduzione nell'isola di Gozo, che ha avuto successo. Si tratta della prima prova di riproduzione di questa specie nell'arcipelago.

INTRODUCTION

The Maltese Odonata fauna currently consists of 18 species (SCIBERRAS, 2008, 2010; SCIBERRAS & SAMMUT, 2008; GAUCI & SCIBERRAS, 2010). *Calopteryx virgo* (Linnaeus, 1758), *Aeshna mixta* (Latreille, 1805), *Orthetrum nitidinerve* (Selys, 1841) and *Trithemis arteriosa* (Burmeister, 1839) which were recorded from few or single records, are obviously not included in the breeding list. All local species except *Anax ephippiger* (Burmeister, 1839) and *Orthetrum brunneum* (Fonscolombe, 1837) are known to breed in the Maltese Islands. However, it cannot be excluded that the latter species also breeds locally, but till now no larvae, exuviae or ten-

eral specimens have yet been found to confirm this. *Anax ephippiger* (sometimes attributed to the genus *Hemianax*) (Odonata Aeshnidae) is an obligate migrant species which is typical of the arid regions of the southern coasts of the Mediterranean regions, and is commonly observed in southern and central Europe. This species also has a very wide geographic distribution in Africa, southern Europe, central and south Asia. Breeding events (confirmed by the finding of larvae, exuviae and teneral adults) are known to occur in Sicily, Peninsular Italy, Spain, and France (ASKEW, 2004); a summer generation may occasionally emerge in Central Europe as well (BOUDOT *et al.*, 2009).

OCCURRENCE OF *ANAX EPHIPPIGER* IN THE MALTESE ISLANDS

The genus *Anax* is represented in the Maltese Islands by three species, i.e.: *Anax parthenope* (Selys, 1839), being the most common and dominant aeshnid in most of the coastal areas, *Anax imperator* (Leach, 1815), which was much common in the past as it was frequently recorded (SCIBERRAS, 2008), and *Anax ephippiger*.

Anax ephippiger was first recorded locally in 1949 (VALLETTA, 1949). This species is a regular migrant in the Maltese Islands and although from the 1950's it was recorded with gaps of up to two decades from each migration to the other, since 2000 to the present day this species has been sighted in the Maltese islands every year, with the only exception of 2006. The largest migration of this species observed locally in the last decade was recorded during the 19-25th April 2007 period, when hundreds of specimens were observed flying towards Zurrieq and Qrendi from Wied Babu. The migration continued to spread to many localities including Il-Maqluba and many specimens performed interesting hunting patterns feeding mostly on Culicidae and other Diptera, followed by other smaller insects.

Many dragonfly individuals were hovering simultaneously in the same direction facing the light breeze and swiftly darting down on the prey keeping the head facing always the opposite direction of the sun. Multiple observations showed that each batch of insects contained approximately 10-12 insects. These were flying in a certain pattern, where there was one male in front followed by ten females and another male following the rest. This was checked by netting a whole group of specimens for sex identification and by observing them in flight as this species is quite sexually dimorphic. The same spectacular scenes were observed in the evenings at Dwejra and at Ta' Cenc, Gozo, where hundreds of these specimens were resting on trees and shrubs as the sun was about to set (SCIBERRAS *et al.*,



Fig 1-2 — Maps indicating the sites on the Maltese islands mentioned in the text.

2007). Two marked specimens from Ta' Cenc were recorded on the April 20th 2007, and were recollected from Dwejra on the same day and twenty-two days later from Gharb. Out of 34 marked specimens, only these two were re-trapped (SCIBERRAS, 2008, 2011). During the 14-19th May 2010 period, 68 specimens were recorded at Ramla Bay, again feeding exclusively on Culicidae and other Diptera. This was concluded from observations and the checking of stomach contents. On June 12th, 2010, 14 dead specimens were found in San Blas Bay. On March 18th 2011 over 4000 specimens were observed on the North East of Gozo and several were marked for hopeful re-trapping.

BREEDING BEHAVIOUR

In September of 1984, several specimens were observed mating and ovipositing at Fiddien, Wied Ghomor and Simar. In addition, Degabriele observed pairs in tandem but no nymph or exuviae were ever recorded (DEGABRIELE, 1992; EBEJER *et al.*, 2008; SCIBERRAS, 2008). Therefore, nothing seemed conclusive to confirm whether the species is locally breeding.

Through the years, the present author noted several behaviours related to mating. When pairs started to form it seems that the acceptance of the female to mate is dependent on the habitat they are in. Acceptance of the male was only noted where very shallow temporary fresh water-bodied habitats occurred nearby, such as the case of a *A. ephippiger* pair found at Ghar Lapsi in tandem on a rock-pool on October 29th, 2009. 17 similar observations were carried out. In fact, this is the only type of habitat where ovipositing was observed, i.e. 1 at Wardija on April 23th, 2009 and one at Clapman Junction on May 14th, 2009. All activities related with pairing were recorded just before dusk unlike any other local Odonata species. Numerous larvae (1167 specimens) and exuviae of *Anax* spp. were examined during 2004-2010. Most of these specimens were kept until reaching adult stage and were identified according to the available literatures (HEIDEMANN & SEIDENBUSCH, 1993; KOHL, 1998; DIJKSTRA & LEWINGTON, 2006) including images of exuviae from past specimens. All of these specimens belonged either to *Anax parthenope* or *Anax imperator*. On August 23th, 2010, a teneral male specimen of *Anax ephippiger* was found at il-Qammieh on *Foeniculum vulgare* just above an almost waterless rock pool, where some water retained between the crevices of the bottom mud slabs. An accurate search for the exuviae was carried out, but none were recovered.

CONCLUSION

The single teneral male specimen observed on 23th August 2010 is the only record to suggest that the species started to successfully breed in the Maltese islands although il-Qammieh specimen is not enough to confirm that the species is regularly breeding in the Maltese islands. Conversely, all the data presented suggest that the successful breeding of the species in the area is only occasional. It is probable that most of the specimens that reach the islands in their breeding season do actually mate and oviposit but the larval cycle is most likely unsuccessful, as this species choose habitats which do not retain water long enough to allow their metamorphosis. In fact, recent observations suggest that the preferred habits are rock-pools which tend to dry early in the season due to their moderate water volume capacity. Ebejer and Degabriele's records do not match the present author's observations, either due to misidentification of the species or lack of similar sightings. The Qammieh specimen probably survived because this rock pool had thick mud bed and retained some water. Records of this species may also be locally rare because only recently the species unusual preference for seasonal water bodies was discovered.

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