

Zoogeographic notes on *Orthetrum trinacria* with special emphasis on its recent discovery on Corsica, France (Odonata: Libellulidae)

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Abstract

Following its first Corsican record in 2012, a male of *Orthetrum trinacria* (Selys, 1841) was recorded on the small Lavezzi islands, south of Corsica, in September 2013. The record of this species in an area lacking in any possible breeding habitat highlights its high mobility and will be discussed in the context of its colonization of the Mediterranean in the past decades.

Zusammenfassung

Zoogeographie von *Orthetrum trinacria* mit Bezug auf zwei kürzlich erbrachte Nachweise auf Korsika (Odonata: Libellulidae) – Der Lange Blaupfeil (*Orthetrum trinacria*) ist eine vorwiegend afrotropisch verbreitete Art mit disjunkten Vorkommen nördlich der Sahara. In den vergangenen 30 Jahren wurde die Art verstärkt im europäischen Mittelmeerraum beobachtet. Am 9. September 2013 gelang die Beobachtung eines Männchens dieser Art auf der Inselgruppe Lavezzi. Nach ihrer Erstbeobachtung auf Korsika in der Nähe von Bastia im Jahr 2012 ist dies nun der zweite Nachweis dieser Art für Frankreich binnen kurzer Zeit. Der Fund dieser Art wird vor dem Hintergrund ihrer hohen Mobilität und der Tatsache, dass Süßwasserlebensräume auf der Inselgruppe fehlen, bewertend diskutiert.

Introduction

The latitudinal expansion of the northern border of several Mediterranean Odonata species became obvious in recent decades and has been ascribed to climate warming, highlighting dragonflies as good indicator taxa for climatic changes (e.g. OTT 2010a). However, despite their excellent physiological adaptations allowing

Odonates to respond quickly to altering temperature regimes (HASSALL & THOMPSON 2008), the availability of suitable reproduction sites is crucial for a successful colonisation which might hamper range shifts according to changing climate (HASSALL & THOMPSON 2008; HOF et al. 2011). Next to the spread of Mediterranean elements into more temperate areas of central Europe (OTT 2010a), there are several species of either Afrotropical or Palaeotropical origin which have colonized the European part of the Mediterranean in recent times. *Trithemis annulata* and *T. kirbyi* have been particularly highlighted in this context (OTT 2010b; HERRERA-GRAO et al. 2012; PRIETO-LILLO & JACOBO-RAMOS 2012). In addition to these species, *Orthetrum trinacria* is a further example as it is also a widespread species in large parts of Africa and south-west Asia (DIJKSTRA & LEWINGTON 2006). Further, it has shown a remarkable range expansion into Mediterranean Europe during the past decades (see KALKMAN et al. 2012 and LOUREIRO 2012 for detailed overviews).

After the first description of *Orthetrum trinacria* from Sicily in 1841, it took more than 130 years until it was rediscovered in Europe in Sardinia in 1973 (BUCCIARELLI 1977). Since its first discovery in Spain in 1983, its ongoing colonization of Iberia is particularly well documented (e.g. BELLE 1984; JAHN 1996; BAIXERAS et al. 2006; SÁNCHEZ et al. 2009; LOUREIRO 2012). Also in the Eastern Mediterranean, *O. trinacria* was discovered recently for the first time in Anatolia and Greece (KALKMAN et al. 2012).

In 2012, a male of *O. trinacria* was observed and documented close to the city of Bastia in coastal wetlands (BERQUIER 2013). This was the first record for the island and for France. In 2013, the author of this note observed a male on an island in the southern part of Corsica. This record will be described below and discussed in the context of its recent increase in the Mediterranean area.

Record

The record was made on the 9-ix-2013 on the main island of the Lavezzi archipelago (41.340806°N, 9.254417°E; 5 m a.s.l.) and documented by a photograph (Fig. 1). The individual was chasing other Libellulid species (*Sympetrum* spp.) and regularly perched vigilantly on a culm. The landscape was open, mostly grassland intersected by granite rocks and low bushes (Fig. 2). The island is ca 5 ha in size and located 4 km off the Corsican main island, and 8.5 km off Sardinia. No sources of freshwater occur on the island, making the habitat unsuitable for reproduction of any Odonata.

Discussion

It has been known for a long time that *Orthetrum trinacria* is a very dispersive species undertaking long-distance displacements (FRASER 1956). This is a typical trait



Figure 1. *Orthetrum trinacria*, mature male, Corsica, Lavezzi Islands (09-ix-2013). – Abbildung 1: *Orthetrum trinacria*, Männchen, Korsika, Lavezzi-Inseln (09.09.2013).



Figure 2. Main Lavezzi Island at the location where the species was found (09-ix-2013). – Abbildung 2: Lavezzi, Hauptinsel, Fundort der Art (09.09.2013).

for many Libellulid species (e.g. FERREIRA et al. 2006). The record obtained from Lavezzi Islands underpins this behaviour. Nonetheless, the origin of the individual remains speculative. Although the next documented populations are located at the northwestern tip of Sardinia (BOUDOT et al. 2009), at least superficially adequate breeding ponds are also available on Corsica. BALZAN (2008) noted that the species was found at agricultural reservoirs on the Maltese islands, where it was initially recorded in 2003 (EBEJER et al. 2008). Similarly, LOUREIRO (2012) mentioned the development of golf courses with their artificial ponds in the Algarve region in recent decades as a possible reason for the continuing successful spread of *O. trinacria* in this region. Recently, CHESTER & ROBSON (2013) called for greater attention to be paid by conservationists to anthropogenic water bodies as potential refuges for freshwater biodiversity. In particular, golf courses might constitute additional habitats for some Odonata species, even for species of special conservation concern (COLDING et al. 2009). Consequently, it is possible that this species has already colonized parts of Corsica's coast, likely nourished by Sardinian populations and taking advantage of increased availability of anthropogenic water bodies.

Among the larger Mediterranean islands, Corsica allocates most water for the tourism and domestic sector in relation to its use for agriculture (CHARTZOULAKIS & BERTAKI 2006). Between 2007 and 2013 a further five to six large 18-hole golf courses were realized on the island (FURT et al. 2012), creating new permanent water bodies potentially available for colonization (cf. LOUREIRO 2012). In addition, the east coast of Corsica is rich in coastal lagoons and brackish marshes which were highlighted as key primary habitats for the species in the Maghreb (JACQUEMIN & BOUDOT 1999; KABOUCHE 2013), although it colonizes many man-made habitats like large dam lakes and cisterns in oases (BOUDOT & DE KNIJF 2012). The first record of the species for Corsica was actually obtained from a coastal lagoon (BERQUIER 2013). Even if the second record was made on an island lacking any suitable water bodies, a major golf course as well as some reedy lagoons are located in close proximity to the record in both the Corsica main island and the nearby Cavallo island (i.e. within a 3-5 km radius). Consequently, a thorough search in suitable habitats in the upcoming seasons might eventually lift the status of the species in Corsica from a vagrant to an established inhabitant.

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