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Short Communication

First Record of the Violet Dropwing *Trithemis annulata* (Palisot de Beauvois, 1807) (Odonata: Libellulidae) in Bulgaria

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Abstract: Violet Dropwing *Trithemis annulata* (Palisot de Beauvois, 1807) has been found at the north-eastern coast of Mandra Reservoir (East Bulgaria) near the town of Burgas. One adult male and three adult females were detected on 30 and 31 August 2020. This is the first documented record of the species in Bulgaria and it forms the north-easternmost part of its geographical range. The genus *Trithemis* is reported for the first time for the fauna of Bulgaria.

Key words: *Trithemis annulata*, Odonata, Anisoptera, Bulgaria, range expansion, dragonflies.

Introduction

Violet Dropwing *Trithemis annulata* (Palisot de Beauvois, 1807) is an Afrotropical dragonfly with wide distribution. It occurs throughout Africa and Arabian Peninsula, reaching to eastern Iran and southern Turkey. However, it has recently expanded its geographical range in the Mediterranean basin, especially in south-western Europe (Kalkman et al. 2015). In the second half of the last century, the species has also extended its distribution around the Greek Islands, being recorded at least on 15 islands in Ionian and Aegean Sea, in contrast to its previous distribution restricted only to the islands Rhodes and Astipalia (Lopau 2010).

The first record of the species from the Balkan Peninsula was in 1977 on the west coast of Peloponnese in Greece (Stobbe 1978). Later, it was found also in the northeast part of Greece around the outflow of Lake Volvi, east of Thessaloniki (Kappes & Kappes 1995). The observation dated from 1984 and, since then, the species has not been detected in this area (Lopau 2010). Nowadays, *T. annulata* is widespread on most of the Greek Islands as well as on the Adriatic coast of the country and Halkidiki (Lopau 2010, Kalkman et al. 2015). In 2008, the species was found in Montenegro (Gligorović et al. 2010) and it is likely to occur also in Albania, Croatia and Bosnia and Herzegovina (Kalkman et al. 2015). Although it is now widespread and common around the Mediterranean Sea, it is still unknown from the Black Sea area (Kalkman et al. 2015).

Materials and Methods

We performed observations in the region of Mandra Reservoir in SE Bulgaria, near the town of Burgas. It is a former natural coastal lake, which has been dammed in 1963. It used to be a brackish liman lake but nowadays the connection with the Black Sea is interrupted and the lake is almost entirely freshwater.

Results

On 30 and 31 August 2020 one adult male (Fig. 1) and three adult female individuals were found on the north-eastern coast of Mandra Reservoir, GPS

Fig. 1. *Trithemis annulata*, adult male, found on 30 August 2020 at Mandra Reservoir near the town of Burgas.

coordinates: 42.44339 N; 27.42356 E; elevation: 4 m a. s. l. (Fig. 2). The location where *Trithemis annulata* was found represented a small shallow bay with dense coastal vegetation, practically on the edge of city's urban area. The observed individuals often perched on dry grass and small bushes about 60-90 cm from the ground. The water in this part of the reservoir is well exposed to the sun due to the lack of trees along the coastline. Being a ubiquitous species, which inhabits a variety of sun-exposed and standing waters, *T. annulata* should be favoured by these warm habitat conditions.

Discussion

Although the dragonfly fauna of Bulgaria and the Black sea coast is comparatively well investigated (Beschovski 1994, Beschovski & Marinov 2007, Marinov 2003, Kutsarov et al. 2012) there are no data about the presence of *T. annulata* in the country. Therefore, the individuals found by us near Burgas are the first documented record of the species in Bulgaria. Thus, *T. annulata* represents a new species and new genus for the Bulgarian dragonfly fauna. The present record is the north-easternmost part of geographical range of this species, which is on the front of its expansion in this part of European continent.

Last few decades, *T. annulata* has colonised most of the Mediterranean and west Europe and now is common not only in coastal but also in some inland localities. The main driver of this huge extension of its range is presumably the climate warming. According to Kalkman et al. (2015), it is likely that the species will continue to increase its range in the future and this statement is well supported by our record.

Our study will continue to monitor this site in order to find whether the species will appear again and, especially, whether it will start to reproduce in the area.

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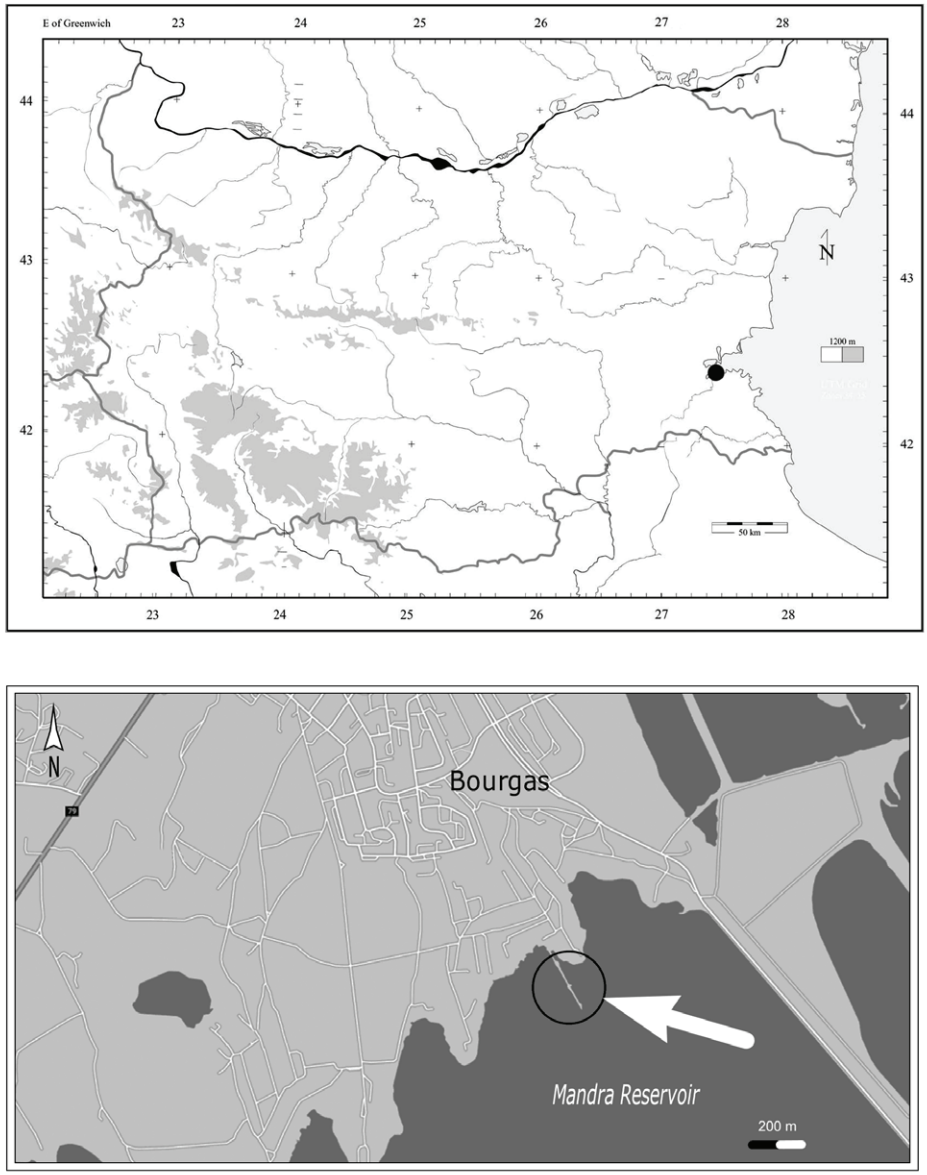

Fig. 2. A. Map of Bulgaria with the location where *T. annulata* was found. B. The exact locality of the species at Mandra Reservoir.

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