

NEW DATA ABOUT LARGE GOLDEN-RINGED DRAGONFLY (*CORDULEGASTER HEROS THEISCHINGER, 1979*) IN THE LIPKOVO REGION

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Abstract

In this paper are presented the first data about the large golden-ringed dragonfly (*Cordulegaster heros Theischinger, 1979*) recorded in the region of Lipkovo.

During the years 2016, 2017 with our field trip about the biodiversity of Odonata, were found and identified 12 species of dragonflies. Among this group of dragonflies was found *Cordulegaster heros*, a new species among the dragonfly species for this region. Three individuals of the species *Cordulegaster heros* were observed on May 27, 2016, near the river over the village of Mateç. Four individuals of *Cordulegaster heros* were observed in the same locality on June 15, 2017. Other species of dragonflies were also observed: on May 27, (29 May) 2016: *Calopteryx virgo*, *Coenagrion puella*, *Pyrrhosoma nymphula*, *Ischnura elegans*, *Ischnura pumilio*, *Orthetrum cancellatum*, *Onychogomphus forcipatus*, *Gomphus vulgatissimus*, and on June 5, 2017, were observed: *Libellula depressa*, *Sympetrum meridionale*, and *Sympetrum sanguineum*.

This data provides an important part of the information on the spread of this species, and this was the first field trip that confirmed the occurrence of *Cordulegaster heros* in this region.

Keywords: Dragonflies, Odonata, Cordulegastridae, *Cordulegaster heros*, Lipkovo Region.

1. Introduction

The great significance of species that belong to genus *Cordulegaster* lies in the fact that they are protected in many European countries and are included in the Red List of Threatened Species. *Cordulegaster heros* is the only species strictly protected and in Natura 2000 is included in the group of indicator species of habitat status. But information on the distribution and ecology of this species are not numerous, and that would be important for its conservation.

Cordulegaster heros for the first time was described by Theischinger [13] and this species is one of the largest dragonflies in Europe. The female of this species has wings length up to 115 mm and the body length up to 89 mm. It is predominantly widespread in the region of southern Europe and is endemic species.

This species is evidenced in all the neighboring countries of the central and western Balkans [3]. *C. heros* is distributed by the eastern Mediterranean (Balkan Peninsula - including Greece, Republic of North Macedonia, Montenegro, Albania, Croatia, Slovenia, Bulgaria, eastern Italy and Romania) to central Europe (in the Alps lowlands, in eastern Austria and the peaks of the Carpathian Mountains) [2][14]. Habitats of this species are small streams in forest complexes.

In the Mediterranean region, those species are currently declining due to habitat destruction, particularly from wood harvesting, climate change and the drying up of watercourses. The typical color of *Cordulegaster heros* is described by Theishinger [13]; The same description gave Askew [1]. The

main color of the body is black. In the thorax, in the two epimerons, namely as mesosternum and metasternum, there are wide yellow stripes. In the mesospisternum, there is a large triangular stain, while on the dorsal surface of the metapisternum is a thin yellow stripe. The species is classified under NT (Near Threatened) category according to IUCN [4].

The purpose of this study was to record the distribution of the *Cordulogaster* species even outside the known area of its distribution so far.

2. Material and Methods

The fauna of the dragonflies was explored in the valley area over the village of Matec, Lipkovo region, the north-eastern part of the Republic of North Macedonia. (Figure 1).

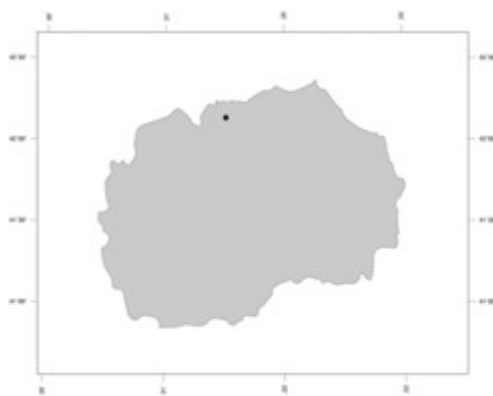


Figure 1. The position of the researched locality (the black point)

So far there are no preliminary data on the research of the Odonata in this area. Research in this area was conducted with observation and collection of material from 10:00 am to 03:00 pm, during four days' field trip, during the May and June 2016, 2017. Images after photographing with the help of a digital camera (Canon EOS 400D) were collected through the entomological net (50 cm diameter) and deposited in the envelope. The geographic coordinates were determined with the help of the navigation system (MEDION S3867). The identification was carried out using the binoculars (NATIONAL 405TBL). While the keys for the determination were used by the authors: Beschovski [5], Marinov [10], Dijkstra & Lewington [7], Jović et al [8]; as well as making the comparison of species with those of the collection of the Museum of Natural Sciences in Skopje.

3. Results and discussion

In the researched locality, the area near the river is inhabited by xerothermic vegetation (*Populus sp.*, *Salix sp.*, *Ulmus sp.*, *Castanea sativa*, *Juglans regia*, and *Corylus sp.*) and shrubs (*Berula erecta*, *Rubus sp.*). The width of the river is about 1.5-2m, in some places less than 1 m, with a depth of 10-15cm. Substrate river was loess but in some places composed of silt and gravel mixture (Figure 2). Images were sought along the riverbed and herbs around it. In the beginning, they were photographed and then captured to be determined.



Figure 2. View of the locality of collected species *Cordulogaster heros* (river flow over the village of Mateć)

Cordulegaster heros is a species with a wide distribution in the Balkans [3][6][9]. North Macedonia is located in an area within the realms of spreading of *Cordulogaster bidentata* and *Cordulogaster heros* [14]. The *Cordulogaster bidentata* is widespread in the colder mountainous areas [12]. The *Cordulogaster heros* is a typical species for lower altitude heights and certainly lies in the appropriate habitats of the valleys, and especially over the Vardar river flow the course of the Vardar River (unpublished data from Holusa).

According to the data from the literature, individuals of this species in other parts of North Macedonia are recorded in Struga, Demir Kapija, Skopje and Prilep [10] [11].

During our field trip, three individuals of *Cordoulogaster heros* (Fig 2) (Fig. 3) were observed on May 27, 2016, near the river over the village of Matec (42° 07 '16.82 "N; 021° 34' 36.40" E, altitude 559).



Figure 3. The male of *Cordulegaster heros* (ventral view - left and lateral view - right) (Photo: G. Iseni, 2017)

Four individualsof *Cordulogaster heros* (3♂1♀) were observed in the same locality on June 15, 2018 - *Calopteryx virgo*, *Calopteryx splendens*, *Coenagrion puella*, *Pyrrhosoma nymphula*, *Ischnura elegans*, *Ischnura pumilio*, *Orthetrum cancellatum*, *Onychogomphus forcipatus*, *Gomphus vulgatissimus*, *Libellula depressa* (42° 07 '17.9 "N; 021° 34' 50.4" E, altitude 446m) on June 15, 2017- *Sympetrum meridionale*, *Sympetrum sanguineum*, *Coenagrion ornatum* (42° 07 '16.50 "N; 021° 34' 50.43" E, altitude 532m).

Relying on preliminary data of other authors for the identification of this species researched in other countries, we can say that the locality in which was found the presence of *C. heros* represents a new area of the distribution for this species in this region.

4. Conclusions

The valley area of the mountainous part of the village of Matec can be considered as a new area of distribution for species *Cordulegaster heros*. The observation of some individuals at the same locality indicates the permanent presence of the population of this species in this area and the good ecological status of the environment.

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