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*CORDULEGASTER HEROS* THEISCHINGER, 1979,  
A NEW SPECIES FOR THE FAUNA OF THE PROVINCE OF UDINE,  
NORTH-EASTERN ITALY (ODONATA, CORDULEGASTRIDAE)

**Riassunto.** *Cordulegaster heros*, Theischinger, 1979, specie nuova per il territorio della provincia di Udine, Italia nord-orientale (Odonata, Cordulegastridae).

Negli anni 2012-2013 alcuni esemplari di *Cordulegaster heros* Theischinger, 1979, specie nuova per la provincia di Udine, sono stati osservati in tre aree delle Prealpi Giulie nel bacino idrografico del torrente Torre. In questa nota vengono anche fornite brevi notizie sulle caratteristiche del sito di rinvenimento e sulla odonatofauna associata.

**Summary.** In 2012 and 2013, specimens of *Cordulegaster heros* Theischinger, 1979, a new species for the Province of Udine, were observed in three areas of the Julian Prealps within the catchment of the torrent Torre. In this note brief details on the characteristics of the discovery site and its associated odonatofauna are also reported.

**Keywords:** *Cordulegaster heros*, distribution, Province of Udine, Friuli Venezia Giulia Region, north-eastern Italy.

## INTRODUCTION

During research aimed at drawing up an Atlas of the Odonata of the Friuli Venezia Giulia region (FIORENZA et al., 2012), in the course of excursions in an area at the south-eastern edge of the Julian Alps, four specimens of the large dragonfly *Cordulegaster heros* Theischinger, 1979 were observed in August 2012 (fig. 1). The species was observed in two additional sites in 2013. This species is listed in the Habitats Directive (Council Directive 92/43/EEC).

## MATERIALS AND METHODS

### Study area

*Cordulegaster heros* was observed in three sites located in the Julian Prealps, in the catchment of the Torre torrent. The sites are: Savorgnano del Torre (ca. 190 m a.s.l., municipality of Povoletto); Rio Bosso near Magnano in Riviera (200 m a.s.l., municipality of Magnano in Riviera); Rio Rabagnolo near Tarcento (250 m a.s.l., municipality of Tarcento). The environment is characterized by young woodland managed as coppice and small streams (fig. 2) characterized by stream-beds that are either muddy-gravelly or made up of large cobbles with almost no fish fauna. The tree cover consists mostly of European Hornbeam (*Carpinus betulus*), as well as Sweet Chestnut (*Castanea sativa*), different oak species (*Quercus* spp.), False Acacia (*Robinia pseudoacacia*) and Sycamore (*Acer pseudoplatanus*). The understore layers reveal the presence of Hazel (*Corylus avellana*) and Butcher's Broom (*Ruscus aculeatus*) together with several species of geophytes. The extensive tree cover of the area is relatively recent, having become widespread in the second half of the twentieth century as a result of the abandonment of agriculture, forestry and grazing practices which formerly saw the land in ques-



**Fig. 1.** Males of *Cordulegaster heros*, Savorgnano del Torre (UD), 12.08.2012 (left) and 21.08.2012 (right).  
Photo by I. Chiandetti.



**Fig. 2.** The typical habitat in which specimens of this species were encountered in the study area.  
Photo by I. Chiandetti.

tion extensively cultivated and covered by broad pastures. The waterways are almost devoid of marsh vegetation, with the occasional occurrence of stonewort algae of the genus *Chara* and an even more modest presence of Lesser Duckweed (*Lemna minor*). This habitat is typical for the species of the genus *Cordulegaster*.

### Odonata survey

In the course of 2012, particularly through the summer months, periodic surveys of Odonata were conducted in the study area, especially along the streams in the woodland. Specimens were mostly identified on sight or later on through the analysis of the many photos previously taken using a digital camera. Only occasionally some specimens were caught, photographed and released. In order to respect the laws governing wildlife conservation, no specimen was caught and collected.

### RESULTS

*Cordulegaster heros* was observed on three distinct sites, together with various other species of Odonata. The list of records for each site follows below.

#### Savorgnano del Torre, 190 m a.s.l., Povoletto (UD):

##### *Calopteryx virgo* (Linnaeus, 1758)

Some ♂♂ and ♀♀, 12.VIII.2012 (obs. I. Chiandetti)

Some ♂♂ and ♀♀, 19.VIII.2012 (obs. C. Del Bianco)

Several ♂♂ and ♀♀, 28.VIII.2012, especially in and around clearing with females also being observed laying eggs in a stream (obs. T. Fiorenza)

##### *Platycnemis pennipes* (Pallas, 1771)

Some ♂♂ and ♀♀, 21.VIII.2012 (obs. I. Chiandetti and C. Del Bianco)

##### *Aeshna cyanea* (Müller, 1764)

1 adult, 12.VIII.2012, in flight in the area immediately around the site where *C. heros* was encountered (obs. I. Chiandetti)

Some ♂♂ and ♀♀ specimens, 28.VIII.2012, in flight, particularly in the clearings and along the field headlands approaching the site where *C. heros* was found (obs. T. Fiorenza)

##### *Cordulegaster heros* Theischinger, 1979

1 ♂, 12.VIII.2012 (obs. I. Chiandetti)

1 ♂, 18.VIII.2012 (obs. I. Chiandetti)

1 ♂, 21.VIII.2012 (obs. I. Chiandetti and C. Del Bianco)

1 ♂, 28.VIII.2012 (obs. T. Fiorenza)

The four specimens were observed moving up and down small streams

*Somatochlora meridionalis* Nielsen, 1935

Some ♂♂ and ♀♀, 12.VIII.2012; egg-laying females were also observed (obs. I. Chiandetti)

Some ♂♂, 19.VIII.2012 (obs. C. Del Bianco)

1 ♂, 21.VIII.2012 at the site where *C. heros* was found (obs. I. Chiandetti and C. Del Bianco)

*Somatochlora flavomaculata* (Vander Linden, 1825)

1 adult, 21.VIII.2012, hunting over the fields (obs. I. Chiandetti and C. Del Bianco)

*Orthetrum brunneum* (Fonscolombe, 1837)

Some ♂♂ and ♀♀, 28.VIII.2012, in flight or perched along the field headlands approaching the site where *C. heros* was found (obs. T. Fiorenza)

*Sympetrum striolatum* (Charpentier, 1840)

1 ♀, 28.VIII.2012, found dead on a field headland approaching the site where *C. heros* was encountered (obs. T. Fiorenza)

Rio Bosso, 200 m a.s.l., Magnano in Riviera (UD)*Calopteryx virgo* (Linnaeus, 1758)

1 ♂, 03.VII.2013 (obs. I. Chiandetti)

*Platycnemis pennipes* (Pallas, 1771)

1 es., 03.VII.2013 (obs. I. Chiandetti)

*Cordulegaster heros* Theischinger, 1979

1 ♂, 03.VII.2013 (obs. I. Chiandetti)

Rio Rabagnolo, 250 m a.s.l., Tarcento (UD)*Calopteryx virgo* (Linnaeus, 1758)

1 ♂, 03.VII.2013 (obs. I. Chiandetti)

*Aeshna affinis* Vander Linden, 1820

1 ♂, 03.VII.2013 (obs. I. Chiandetti)

*Cordulegaster heros* Theischinger, 1979

2 ♂♂, 03.VII.2013 (obs. I. Chiandetti)

*Cordulegaster bidentata* Selys, 1843

1 ♂, 03.VII.2013 (obs. I. Chiandetti)

*Libellula depressa* Linnaeus, 1758

2 ♂♂, 03.VII.2013 (obs. I. Chiandetti)

*Orthetrum coerulescens* (Fabricius, 1798)

1 ♂ and 1 ♀, 03.VII.2013 (obs. I. Chiandetti)

*Orthetrum brunneum* (Fonscolombe, 1837)

1 ♂ and 1 ♀, 03.VII.2013 (obs. I. Chiandetti)

## DISCUSSION

Eight species of Odonata were found in Savorgnano del Torre, by far the most interesting site from a natural history perspective, while in the other two sites were found respectively three and seven species, including *Cordulegaster heros*, which is a rare and endangered dragonfly. The other species are common or very common in the territory of the Friuli Venezia Giulia region, except *Cordulegaster bidentata* (PECILE, 1984; FIORENZA et al., 2012).

*C. heros*, found in south-eastern Europe, is replaced in most of the European continent by *Cordulegaster boltonii* (Donovan, 1807) (fig. 3), a geographic vicarious species (DIJKSTRA, 2006). *C. heros* was distinguished as a separate species from the closely related *C. boltonii* a few decades ago, compared to which it is a little larger, with a black occipital triangle (yellow in *C. boltonii*), wider yellow abdominal spots, its abdominal rings are connected above and the outer corners of its antehumeral stripes are angular. In the same area in which this new station for *C. heros* was found, the presence of *Cordulegaster bidentata* Selys, 1843 (fig. 4), has also been noted (T. Fiorenza, pers. obs.), a species, however, that is much smaller in size with an oblique spot near the middle of first abdominal segment, its upper appendages are parallel (diverging in *C. heros*) with straight outer borders and separated at the base. *C. bidentata* normally has 3 cells in the hindwing anal triangle (5 are normally found in *C. heros*).

The occurrence of *C. heros* was already known for the Friuli Venezia Giulia Region from small tributaries of the river Isonzo and the torrent Judrio in the Province of Gorizia (BEDJANIC & SALAMUN, 2003), and from a stream in the city of Trieste (UBONI et al., 2007). The discovery of specimens of this species in the context of the south-western Julian Prealps (at a shaded stream in hills, with sandy and rocky bed), already postulated by UBONI et al. (2007), suggests a much wider distribution of this species in north-eastern Italy, going north from the Collio district in the Province of Gorizia towards the upper reaches of the torrent Torre, perhaps even coming into contact, in the west, with *C. boltonii*, that is present as far as the river Tagliamento (T. Fiorenza, pers. obs.).

This confirms the encounter of insects from different biogeographic regions in north-eastern Italy, as it is already known for other plant and animal taxa. It also makes a critical review of all the material relating to the discovery of *C. boltonii* on the left bank of the river Tagliamento, surveyed in the past, all the more opportune, as confusion with the closely-related Balkan species is possible.





**Fig. 3.** Males of *Cordulegaster boltonii*, Peonis (UD), 23.08.2012. Photo by I. Chiandetti.



**Fig. 4.** Males of *Cordulegaster bidentata*, Preone (UD), 04.08.2012 (left), and Taipana (UD), 11.08.2012 (right). Photo by I. Chiandetti.

Presently in Italy *C. heros* is known only for the Provinces of Trieste (UBONI et al., 2007), Gorizia (BEDJANIC & SALAMUN, 2003) and Udine (this work), whereas *C. boltoni* inhabits suitable environments of northern and central Italy. Southern Italy (south of Rome) and Sicily are inhabited by the endemic species *Cordulegaster trinacriae* Waterston, 1976, ecologically similar to the previous species. *C. bidentata* is found throughout peninsular Italy and Sicily (DIJKSTRA, 2006).

This report also raises issues of a conservation nature as *C. heros* falls within Annexes II and IV of the Habitats Directive. This species is also considered a declining or threatened taxon in Europe (SAHLÉN et al., 2004).

The necessary continuation of this study will be the broadening of the survey to other environments with similar characteristics with the aim of discovering further sites featuring the presence and breeding of *C. heros*.

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