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Coenagrion hastulatum (Charpentier, 1825), new for the dragonfly fauna of Bosnia and Herzegovina (Odonata: Coenagrionidae)

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Abstract. At the high-altitude Donje Bare and Gornje Bare Lakes in the surroundings of Tjentište village, Zelengora Mts., Sutjeska National Park, SE Bosnia and Herzegovina, *Coenagrion hastulatum* was recorded on 26 June 2011. The occurrence of the species on the southern border of its European range is outlined and discussed. Faunistic records on a total of 22 spp. observed at 11 localities in the southeastern part of the country between 26 and 29 June 2011 are appended.

Key words: dragonflies, distribution, disjunction, Bosnia and Herzegovina, the Balkans

Izvleček. ***COENAGRION HASTULATUM*** **(CHARPENTIER, 1825), NOVA VRSTA ZA FAVNO KAČJIH PASTIRJEV BOSNE IN HERCEGOVINE (ODONATA: COENAGRIONIDAE) –** Na visokogorskih jezerih Donje Bare in Gornje Bare v okolici vasi Tjentište, Zelengora, Nacionalni park Sutjeska, JV Bosna in Hercegovina, je bil 26.6.2011 zabeležen barjanski škratec *Coenagrion hastulatum*. Opisano in prediskutirano je pojavljanje vrste na južnem robu njenega območja razširjenosti v Evropi. Dodani so favnistični podatki za skupno 22 vrst, ki so bile zabeležene med 26.6. in 29.6.2011 na 11 lokalitetah v jugovzhodnem delu države.

Ključne besede: kačji pastirji, razširjenost, disjunkcija, Bosna in Hercegovina, Balkan

Bosnia and Herzegovina lies in the heart of the Balkans. In the past, limited odonatological attention has been devoted to it and even in the last decades, also due to war circumstances and numerous minefields left afterwards, this trend persists. In a brief overview of the dragonfly fauna of a broader region, Bedjanič & Bogdanović (2006) refer to 53 species for the entity of Bosnia and Herzegovina. Recently, in a first comprehensive review of available faunistical data and published literature on the dragonflies of the country published by Jović et al. (2010), a list of 57 species has been compiled. Since then, new faunistic data have been added (D. Kulijer pers. comm.), yet Bosnia and Herzegovina remains one of the odonatological white spots in the Balkans.

Between 26 and 29 June 2011, I undertook a brief odonatological survey in southeastern Bosnia and Herzegovina. Focus was set on the surroundings of Tjentište village in Sutjeska National Park. Additionally, some streams in northern direction towards Foča were explored and some interesting habitats in direction south of town Gacko were also visited.

A field trip to Zelengora Mts. on 26 June 2011 was devoted to the visit of high-altitude karst lakes Donje Bare (1490 m elev.) and Gornje Bare (1550m elev.) in the Zelengora Mts., situated approximately 7 km SW of Tjentište village. The weather was changing from sunny to cloudy, but due to strong wind it was not optimal for dragonfly observation. At Donje Bare Lake, numerous individuals of *Enallagma cyathigerum* and *Cordulia aenea* prevailed the scene, however, rather soon also a single »strange looking« male coenagrionid individual was discovered in the bank vegetation. My brief examination immediately revealed that, quite surprisingly, a male *Coenagrion hastulatum* was caught. Careful searching along the southeastern shore was rewarded with a total of 10♂ and 2♀ of the species, which were photographed and some voucher specimens were taken for the author's comparative collection and DNA analyses.

Donje Bare Lake is situated in a steep depression surrounded with forests and slopes, its length reaching about 250m, width 120 m and maximum depth around 4 m. It has permanent water level, no major inflows and a very small outflow on its southeastern shore, which almost instantly disappears underground. The shore vegetation belt is rather narrow, shallow water zones are overgrown by *Potamogeton natans*, *Carex* sp. and partly by *Typha latifolia* and some *Salix* sp. bushes. Typical peat-bog vegetation is absent, however, occasional patches of *Sphagnum* can be found at the southeastern shore. Apart from *C. hastulatum* and very abundant *E. cyathigerum*, *C. aenea* and *Libellula quadrimaculata*, only some individuals of *Ischnura pumilio* and *Pyrrhosoma nymphula* were flying, while *Aeshna cyanea* and *Aeshna grandis* were just emerging. It is interesting to note that only 300 m to the northeast of Donje Bare there is a big marshy depression with transitional mire, where *Sphagnum* is found in abundance. The area seems too dry in general for dragonflies, as there are only some shallow puddles of open water present, however, emerging *Lestes dryas* as well as some adults of *I. pumilio* and *L. quadrimaculata* were found at the spot.

In the afternoon, the nearby Gornje Bare Lake was visited as well. Its length is about 150 m, its width 80 m and its maximum depth around 2 m. It is a glacial lake surrounded by slopes and mountain meadows, its shore vegetation is a narrow belt of *Carex* sp. Here, the weather was windy and partly cloudy, too, thus not optimal for dragonflies. Again, *E. cyathigerum* and *C. aenea* were by far the most abundant, but 2♂ of *C. hastulatum* were also found resting in the dense *Carex* belt. Other observed species include *Ischnura elegans*, *L. dryas* and *L. quadrimaculata*, while *Aeshna juncea* and *A. cyanea* were just emerging.

Zoogeographically, *C. hastulatum* can be classified as a Eurosibirian species, distributed from east Siberia to Central Europe (Sternberg & Röhn 1999). The southern border of its European range runs over the southern Alps in France, northern Italy, Austria and Slovenia, with south-western disjunction in the Pyrenees and south-eastern disjunction in the Balkans in Serbia, Montenegro and Bulgaria (Boudot et al. 2009, Dijkstra & Lewington 2006). Records of *C. hastulatum* at Donje Bare and Gornje Bare lakes are the first from Bosnia and Herzegovina. According to Jović et al. (2010), its occurrence in the mountainous part of the country was expected, but it is interesting from a zoogeographical point of view in any case.

Figure 1. *Coenagrion hastulatum* male photographed on 26 June 2011 at Donje Bare Lake in Sutjeska National Park (photo: M. Bedjanič).
Slika 1. Samček barjanskega škratca *Coenagrion hastulatum* , fotografiran 26.6.2011 na jezeru Donje Bare v Nacionalnem parku Sutjeska (foto: M. Bedjanič).

Following the rediscovery of *C. hastulatum* in Slovenia a decade ago, its distribution in the neighbouring Italy, Austria, Hungary and in the Balkans was summarized in detail already by Bedjanič & Weldt (2000). For Slovenia, the presence of *C. hastulatum* on the Pohorje Mts., where it was rediscovered, and in the Julian Alps, from where it has been known historically, could not have been confirmed recently. Up to now, the species has been reported only once from Croatia, however, the original historical record from the vicinity of Osijek is based on a species determination error (Belančić et al. 2008). Further south there are relict populations of *C. hastulatum* in Montenegro, where the species was first recorded from two mountain lakes in Durmitor National Park (Adamović et al. 1994, 1996a, 1996b). At one of these, namely Barno jezero Lake near Žabljak, I confirmed its presence on 30 June 2011. It is worth mentioning that Zelengora Mts. in Bosnia and Herzegovina and Durmitor Mts. in Montenegro are actually part of the same mountain massif, the localities of *C. hastulatum* presently known from both countries being only 45 kilometres apart. Additional published records from Montenegro are from the Zeta River northeast of Podgorica (Gligorović et al. 2007) and from the mountainous Lukavica area (Gligorović et al. 2009). However, the records from the lower flow of the Zeta River near Danilovgrad might actually belong to *Enallagma cyathigerum* (B. Gligorović, *in litt.*). In Serbia, *C. hastulatum* was found only at a high elevation Daićsko jezero Lake on Mt Golija in southern part of the country (Adamović 1990). According to Beshovski (1994), *C. hastulatum* also occurs at few localities in Bulgaria. Indeed, *C. hastulatum* probably occurs elsewhere at high-altitude lakes scattered around the Balkans, however, appropriate habitats for this boreoalpine species are probably rather scarce towards the south and much mountaineering field work will be needed to complete the picture of the species' distribution in this part of Europe.

Due to the paucity of published odonatological faunistic records for the territory of Bosnia and Herzegovina, I list all my other observations made between 26 and 29 June 2011 in the southeastern part of the country, in addition to *C. hastulatum* records. It is my hope that this small addendum will nevertheless represent a valuable contribution to the knowledge of this interesting regional dragonfly fauna.

List of localities: **(1)** Donje Bare Lake, 7km SW of Tjentište village, Zelengora Mts., Sutjeska National Park, SE Bosnia and Herzegovina; N 43.3180^0, E 18.6306^0; alt. 1490m; 26-VI-2011; - **(2)** Peat bog with some shallow water holes 300 m NE of Donje Bare Lake, 7km SW of Tjentište village, Zelengora Mts., Sutjeska National Park, SE Bosnia and Herzegovina; N 43.3198^0, E 18.6335^0; alt. 1480m; 26-VI-2011; - **(3)** Gornje Bare Lake, 8.3 km SW of Tjentište village, Zelengora Mts., Sutjeska National Park, SE Bosnia and Herzegovina; N 43.3203^0, E 18.6074^0; alt. 1550 m; 26-VI-2011; - **(4)** Stream along the Gacko-Trebinje road in a small village, 9.5 km S of Gacko, SE Bosnia and Herzegovina; N 43.0813^0, E 18.5384^0; alt. 900 m; 27-VI-2011; - **(5)** Source and short flow of a disappearing river 9.7 km SW of Gacko, SE Bosnia and Herzegovina; N 43.0925^0, E 18.4844^0; alt. 820 m; 27-VI-2011; - **(6)** Lakes, 2.7 km SE of Gacko, SE Bosnia and Herzegovina; N 43.1472^0, E 18.5593^0'; alt. 950 m; 27-VI-2011; - **(7)** Stream along the Gacko-Foča road 8.3 km NE of Gacko, SE Bosnia and Herzegovina; N 43.2308^0, E 18.5832^0; alt. 1150 m; 27-VI-2011; - **(8)** Stream along the Tjentište-Foča road 2.5 km NE of Tjentište, SE Bosnia and Herzegovina; N 43.3769^0, E 18.7060^0; alt. 570 m; 27-VI-2011; - **(9)** Small stream and spring along the Tjentište-Foča road 5.7 km NE of Tjentište, SE Bosnia and Herzegovina; N 43.3815^0, E 18.7525^0; alt. 800 m; 27-VI-2011; - **(10)** Forest edges along the road leading towards Perućica Forest Reserve, 1 km E of Tjentište village, SE Bosnia and Herzegovina; N 43.3531^0, E 18.7046^0; alt. 870 m; 28-VI-2011; - **(11)** Stream along the Brod-Hum road 500 m NWW of the border-crossing, SE Bosnia and Herzegovina; N 43.3505^0, E 18.8385^0; alt. 475 m; 29-VI-2011.

List of species: **(1)** *Lestes dryas* Kirby, 1890 - Loc 2: 20 juv. ♂♀, 5 ten. ♂♀, 5 ex; Loc 3: 2 ten. ♂; **(2)** *Coenagrion hastulatum* (Charpentier, 1825) - Loc 1: 10♂, 2♀; Loc 3: 2♂; **(3)** *Coenagrion puella* (Linnaeus, 1758) - Loc 5: 2♂, 1♀, Loc 6: >50♂, 5♀, >50 tand., cop.; **(4)** *Enallagma cyathigerum* (Charpentier, 1840) - Loc 1: >50♂, >50♀, 20 ten. ♂♀, 20 tand.; Loc 3: >50♂, >50♀, 20 ten. ♂♀, 20 tand.; **(5)** *Ischnura elegans* (Vander Linden, 1820) - Loc 3: 2♂; Loc 6: >50♂, 10♀, >50 tand., cop.; **(6)** *Ischnura pumilio* (Charpentier, 1825) - Loc 1: 2♂; Loc 2: 2♂; Loc 5: 10♂, 2 cop.; **(7)** *Pyrrhosoma nymphula* (Sulzer, 1776) - Loc 1: 2♂, 3♀; Loc 5: 5♂, 2 cop.; **(8)** *Platycnemis pennipes* (Pallas, 1771) - Loc 4: 2♂; Loc 6: 2♂, 20 juv. ♂♀; **(9)** *Aeshna cyanea* (Müller, 1764) - Loc 1: 2 emerg., 10 ex.; Loc 3: 2 emerg., 5 ex.; **(10)** *Aeshna grandis* (Linnaeus, 1758) - Loc 1: 3 emerg., 5 ex.; **(11)** *Aeshna isoceles* (Müller, 1767) - Loc 6: 1♂; **(12)** *Aeshna juncea* (Linnaeus, 1758) - Loc 3: 3 emerg., 5 ex.; **(13)** *Anax imperator* Leach, 1815 - Loc 6: 5♂; **(14)** *Cordulegaster bidentata* Selys, 1843 - Loc 8: 1 lar.; Loc 9: 3♂, 3 lar.; Loc 10: 2♂; Loc 11: 3 lar.; **(15)** *Cordulia aenea* (Linnaeus, 1758) - Loc 1: >50♂, 20♀, 30 cop., 10 ex.; Loc 3: 30♂, 5♀, 10 cop., 5 ex.; Loc 10: 10♂, 2♀; **(16)** *Crocothemis erythraea* (Brulle, 1832) - Loc 6: 1♀; **(17)** *Libellula depressa* Linnaeus, 1758 - Loc 4: 1♂; Loc 6: 1♂; **(18)** *Libellula fulva* Müller, 1764 - Loc 6: 20♂, 1♀, 3 cop.; **(19)** *Libellula quadrimaculata* Linnaeus, 1758 - Loc 1: 30♂, 10♀, 5 cop., 1ex.; Loc 2: 2♂; Loc 3: 3♂, 1 cop.; Loc 6: 2♂, 2 cop.; **(20)** *Orthetrum cancellatum* (Linnaeus, 1758) - Loc 6: 5♂; **(21)** *Orthetrum brunneum* (Fonscolombe, 1837) - Loc 4: 1♂; Loc 5: 5♂; **(22)** *Sympetrum flaveolum* (Linnaeus, 1758) - Loc 6: 1♀, Loc 7: 1♀.

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