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The finding of *Somatochlora sahlbergi* (Odonata: Corduliidae) in the northern Norway

Nález *Somatochlora sahlbergi* (Odonata: Corduliidae) v severním Norsku

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Abstract. One female of *Somatochlora sahlbergi* was found on 29 July 2001 in the northern Norway near Gandvik village (the municipality of Sør-Varanger in the province of Finnmark, geographical coordinates N 70°00´16.65´´, E 29°15´02.21´´, altitude 81 m a.s.l.). Occurrence description of habitat and species ecological demands are shortly discussed.

INTRODUCTION

The genus of *Somatochlora* Sélys, 1871 is represented by 7 species (ASKEW 1988; LOHMANN 1994) in the European part of the Palaearctic region. Five species occur in boreal and tundra parts of Europe: *S. flavomaculata* (Vander Linden, 1825), *Somatochlora alpestris* (Sélys, 1840), *S. arctica* Zetterstedt, 1840, *S. metallica* (Vander Linden, 1825) and *S. sahlbergi* Trybom, 1889.

Somatochlora sahlbergi is a circumboreal species, its known area of occurrence in Europe looks like disjunctive with several places in the northern parts of Scandinavian peninsula (Finnland, Sweden, and Norway) and Kola peninsula in Russia (ASKEW 1988; DIJKSTRA & LEWINGTON 2006). Habitats of this species are peat bogs at and behind the treeline, i.e. in the boreal and tundra zones transition. Larvae inhabit cold, deep stagnant waters of lakes and pools. The species belongs to the rarest species of the European or Holarctic fauna of Odonata.

The species was found (observed) in Norway in 1990 in the surroundings of Bugøynes (PEDERSEN 1992) for the first time. The species occurs in low population density in its area, therefore every record deserves an adequate attention.

In this article, all detailed information concerning this species finding in the northern Norway from 2001 are presented. This finding was included in a survey of records (as the occurrence in the surroundings of Bugøynes) by WILDERMUTH (2008), however without any details.

RESULTS AND DISCUSSION

One female of *Somatochlora sahlbergi* was caught on 29.VII.2001 near Gandvik village approximately 5 km eastwards of the settlement (in the direction to Bugøynes) in the northern Norway (the municipality of Sør-Varanger in the province

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of Finnmark), geographical coordinates N 70°00´16.65´´, E 29°15´02.21´´, altitude 81 m a.s.l. The female was found at a smaller lake with diameters of 30 x 40 m (fig. 1). Its banks were created by dense stands of *Eriophorum angustifolium* Honck. (fig. 2), individually with specimens of *Triglochin maritimum* L., and *Hippuris vulgaris* L. and in some places with scarce stands of *Eleocharis* sp. The lake banks were surrounded by low (dwarf) specimens of *Betula tortuosa* (Ledeb.) (the height up to 4 m) and shrubs of *Salix glauca* L. only in the southern part. The depth of water column at stands of *Eriophorum* was approximately 50-60 cm.

It was cloudy all the day with the 12ºC temperature, the sky cleared up at 14.00 for only 15 minutes and in this time the female flew up from the edge of *Eriophorum*-stand. It had taken off and by volplaning it flew to the edge of the *B. tortuosa* stand. It settled on the *Empetrum*-stands under the branches of *Betula*. No other species of dragonflies were observed there.

The species area involves the northernmost parts of the Eurasian continent, it means that the species is the northernmostly occurring dragonfly species. Due to its scarceness it is not clear if its area is continuous or disjunctive with more small areas. The occurrence does not cross the 60th parallel, with the only exception in the southern Siberia (see bellow). The species is known in Europe in the northernmost part of Scandinavian Peninsula.

The first occurrence in Europe was found in Russia in the western part of Kola peninsula – Parkinna village – Petsamogebiet (at that time a part of Finland, today Petchenga [Печенга, Мурманская область]) (VALLE 1931), later then in Haukilampi and Liinahamari villages, and then more southernly in Jekostroff village at Imandra-lake (VALLE 1952). The species is known from the territory of Finland from Innari Lapland – Utsjoki region (HÄMÄLÄINEN 1967) and Kevo village (SAHLÉN 1987; BUTLER 1992). The species was also found in Sweden – first in Torne Lapmark region – surroundings of Karesuando settlement (SAHLÉN 1994), i.e. a place 240 km far from known Finnish localities. In Norway, the species was found near Bugøynes village in the province of Finnmark in July in 1990 by PEDERSEN (1992) for the first time. Totally, the species is known from five places of the northern Scandinavia.

The species is also known from other parts of Eurasia: Polar Ural – surroundings of the settlement Labytnangi [Приполярный Урал – окрестности Лабытнанги] (KHARITONOV 1975); peninsula Yamal – river of Tanlovaya [Ямал – Танловая] (BELYSHEV & KORSHUMOV 1970); two places at lower Yenisej river [Нижний Енисей] – Plachino village [Плахино], Dudinga village [Дудинка] (BELYSHEV & OVODOV 1961; BELYSHEV 1973); peninsula Tajmyr [Таймыр] – Gydan [Гыдан] (BELYSHEV & KHARITONOV 1981). Other records come from the eastern Russia: Magadansky region – Koni peninsula – valley of Burgauli river [полуостров Кони – река Бургаули] (KOSTERIN 1992); Kolyma river – Verchnyi Seymtchan [река Колыма – Верхний Сеймчан] (BELYSHEV et al. 1978) and Kamtchatka peninsula – Pauzhetka river [Камчатка – река Паужетка] (BELYSHEV & KHARITONOV 1981). A separate "group" of localities is known in the southern Siberia, where the species inhabits mountain placements: Tunkinskaja valley near Turan village [Тункинская котловина – близ села Туран] (BELYSHEV & OVODOV 1961); the West Sajan Mts. – souroundings of Abaz village [Западный Саян – село Абаза] (KHARITONOVA 1990); the South-eastern Altaj Mts. – Kuranskyi mountain range – north-eastern from Atkash village [Юго-Восточный Алтай – Курайский хребет – село Акташ] (KOSTERIN 1989) and the North-eastern Altaj Mts. – the Vostočnyi Manyi Mts. [Северо-Восточный Алтай –

массив Восточный Маный] (KOSTERIN 1992). In the North American continent, the species occurs in the region of Alaska and Northwest Territories of Canada (CANNINGS & CANNINGS 1985).

The species was mostly found in low population densities, only at localities in Jamal peninsula [Ямал] and Tajmyr peninsula [Таймыр] it was found in "higher" numbers (BELYŠEV & KHARITONOV 1981).

The habitat is generally described in the same way – subarctic forest tundra (or open tundra) with lower stands of dwarf trees of *Betula* sp., *Pinus* sp. or *Alnus* sp. with the height approximately up to 4-5 m (cf. VALLE 1931, KOSTERIN 1992) and with the occurrence of lakes and pools. The lakes are smaller (with surfaces from several m^2 to hundreds m^2) and deeper (not less than 0.5 m). The species was found in the eastern Russia by flow lakes in riverbasins (KOSTERIN 1992). It occurs from the sea level up to approximately 200-300 m a.s.l., only in the region of the southern Siberia (the Eastern Altaj Mts. [Восточный Алтай]) it inhabits mountain placements up to 2000 m a.s.l. This separate area is described as a relict occurrence (cf. KOSTERIN 1992).

Imagoes fly along banks of lakes and also along streams. Species occurrence in „flying" days (or flying opportunities) are rare due to its occurrence in the tundra (forest tundra), therefore it is also difficult to find imagoes (cf. WILDERMUTH 2008). Weather conditions may be unfavourable there for even several weeks. The flight period of the species is dated from middle of July to the end of August. (cf. KOSTERIN 1992).

The species is ranked into the category of data deficient species (DD) (IUCN 2008), because we have very scarce information about the species bionomy. Since the species density is very low, it is very difficult to observe its bionomy and also the weather in these regions may be unfavourable for a dragonfly research. Although the species area is large, we have no information about current threats, it could be threatened by the effects of future climate changes. OLSVIK & DOLMEN (1992) regard the species as possibly threatened due to acid deposition caused by Russian industry from Kola peninsula.

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SOUHRN

Somatochlora sahlbergi je cirkumboreálním druhem, v Evropě se vyskytuje disjunktivně na několika místech severní části Skandinávského poloostrova (Finsko, Švédsko a Norsko) a poloostrova Kola v Rusku (ASKEW 1988; DIJKSTRA & LEWINGTON 2006). Biotopem tohoto druhy jsou rašeliniště na a za hranicí stromové vegetace, tedy na přechodu mezi boreální zónou a zónou tundry. Larvy obývají chladné, hluboké stojící vody tůní a jezírek. Druh patří k nejvzácnějším druhům evropské resp. holarktické odonatofauny.

V Norsku byl druh poprvé zjištěn (pozorován) v r. 1990 v okolí Bugøynes (PEDERSEN 1992). Vzhledem k tomu, že druh se vyskytuje ve velice nízkých populačních denzitách, zaslouží si každý nález náležité pozornosti.

29.VII.2001 byla ulovena 1 samice *Somatochlora sahlbergi* nedaleko vesnice Gandvik cca 5 km východně od osady (směrem na Bugøynes) v severním Norsku (správní obvod Sør-Varanger v provincii Finnmark), geografické souřadnice N 70°00´16.65´´, E 29°15´02.21´´, 81 m n.m.

Biotop je většinou popisován stejně – subarktická lesotundra s porosty nízkých zakrslých stromů – *Betula* sp., *Pinus* sp. or *Alnus* sp. s výškou cca 4-5 m (cf. VALLE 1931; KOSTERIN 1992) a výskytem jezer a tůní různé velikosti, popř. v odkryté tundře. Jezírka jsou menší (s velikostí od několika m^2 do cca 10 x 20 m) a hlubší (ne méně než 0,5 m). V oblasti východního Ruska byl zjištěn i u průtočných jezírek v korytech říček (KOSTERIN 1992). Druh se vyskytuje od úrovně moře do cca 200-300 m n.m., jen v oblasti jižní Sibiře vystupuje do hor až do nadmořské výšky 2000 m n.m. (Východní Altaj (Восточный Алтай)). Tato samostatná arela je označována jako reliktní výskyt.

Imága (resp. samci) létají podél břehů jezer i podél potoků. Vzhledem k tomu, že druh žije v tundře, „letových“ dní resp. příležitostí je velice málo a proto i zjištění imág je obtížné (cf. WILDERMUTH 2008). Podmínky počasí mohou být nepříznivé i několik týdnů. Doba letu druhu je udávána cca od poloviny července do konce srpna (cf. KOSTERIN 1992).

Druh je řazen do kategorie druhů ohrožených (CR), protože máme k dispozici velmi málo informací o druhu. Jelikož denzita druhu je velice nízká, sledování bionomie je rovněž velice obtížné, navíc počasí v těchto oblastech může být i několik dnů nevhodné pro sledování vážek. Ačkoli je areál druhu velmi velký, nejsou informace o současném ohrožení. Druh by mohl být v budoucnu ohrožen efektem klimatické změny. OLSVIK & DOLMEN (1992) předpokládají možné ohrožení druhu z důvodu kyselých imisí ruského průmyslu na poloostrově Kola.

Fig. 1. View of the locality near Gandvik village in northern Norway (the municipality of Sør-Varanger in the province of Finnmark) with recorded occurrence of *Somatochlora sahlbergi* 29.VII.2001 (photo O. Holuša)

Obr. 1. Pohled na lokalitu poblíž vesnice Gandvik v Severním Norsku (k.ú. Sør-Varanger v provincii Finnmark), kde byla 29.VII.2001 nalezena *Somatochlora sahlbergi* (foto O. Holuša)

Fig. 2. Detail view of the bank vegetation stands with dominant *Eriophorum angustifolium* (photo O. Holuša)

Obr. 2. Detailní pohled na pobřežní vegetaci s dominantní *Eriophorum angustifolium* (foto O. Holuša)