

**Notes to the first record of *Somatochlora meridionalis* (Odonata: Corduliidae)  
in the Czech Republic**

**Poznámky k prvnímu nálezu druhu *Somatochlora meridionalis*  
(Odonata: Corduliidae) v České republice**

Otakar HOLUŠA\*

Department of Forest Protection and Game Management, Faculty of Forestry and Wood  
Technology, Mendel University of Agriculture and Forestry Brno, Zemědělská 3,  
CZ-613 00 Brno, e-mail: holusao@email.cz

**Keywords:** faunistics, *Somatochlora meridionalis*, Odonata, Corduliidae, Czech Republic, Slovak Republic

**Abstract.** In July 2006 (13<sup>th</sup> VII. and 17<sup>th</sup> VII.) *Somatochlora meridionalis* was discovered in the territory of the Czech Republic for the first time. Totally 3 males and 1 female (as well as egg-laying) were found during two excursions near Vlachovice-Vrbětice village. Locality is situated in the south-eastern part of the Czech Republic in the foothills of the Bílé Karpaty Mts. In 2007 and 2008 the species was not found. Potential expansion or permanent population is discussed.

INTRODUCTION

The genus of *Somatochlora* Sélys, 1871 is represented by seven species in the European part of the Eurosiberian and Mediterranean subareas of the Palaearctis (ASKEW 1988; LOHMANN 1994): *Somatochlora alpestris* (Sélys, 1840), *S. arctica* Zetterstedt, 1840, *S. flavomaculata* (Vander Linden, 1825), *S. metallica* (Vander Linden, 1825), *S. sahlbergi* Trybom, 1889, *S. borisi* Marinov, 2001 and *S. meridionalis* Nielsen, 1935. For a long time, the species *Somatochlora meridionalis* was considered as the East-Mediterranean subspecies of *Somatochlora metallica* species, which has the Euro-Asian area of occurrence. Four species have been found in the territory of the Czech Republic so far. Individual species are morphologically easily recognised. The species have also very different ecological demands.

The species of the *Somatochlora* genus prefer habitats of peat bogs and fenny waters in the mountains and lowland places, but they also inhabit mesotrophic and eutrophic waters. *S. metallica* inhabits a large scale of different types of mesotrophic and oligotrophic stagnant waters (ponds, dam-lakes, sand or gravel pits, natural oligotrophic lakes) and also slowly running waters (drain ditches, rivers). On the contrary, the stenotopic species *Somatochlora meridionalis* inhabits narrow shallow and overshadowed streams and streamlets.

*Somatochlora meridionalis* was found in the late 20<sup>th</sup> century due to intensive odonatological investigations in many countries of the Balkan Peninsula – from Greece to Hungary, in Slovenia, westwards in Italy and up to the southern France (cf. DIJKSTRA & LEWINGTON 2006). Recently it was found in Slovakia, where the species has its northern border of its occurrence area (DAVID 2000, 2005).

---

\* correspondence address: Bruzovská 420, CZ-738 01 Frýdek-Místek, Czech Republic

The aim of the presented work is to introduce all detailed information on the first species finding in the Czech Republic, which has not been published yet. Information on the species occurrence was used for presentations at two conferences (HOLUŠA 2007a, b) and also for processing of *S. meridionalis* species chapter in the publication about the dragonflies of the Czech Republic (HOLUŠA 2007c). In this work, the specification of species record in the region of East Slovakia (cf. HOLUŠA 1997) is also introduced.

## MATERIAL AND METHODS

In 2006 the locality Vlachovice-Vrbětice was investigated in the frame of odonatological research in the region of the Bílé Karpaty Mts. The locality is situated approx. 1.5 km southwards of Vrbětice village centre. The locality is created by a large pasture, which is bordered by the Vlára river with a tree vegetation belt in the western part and in the eastern part by a narrow ditch with a shallow streamlet, which is covered by tree vegetation.

At the locality, particular bodies of water and streams were investigated in details. Imagoes were individually caught by entomological net, larvae were looked for by detritus sluicing from the stream bottom. The findings were added by ocular observations. The locality was checked several times in year 2006 (11.VI., 13.VII., 17.VII., 19.VIII.), in 2007 (27.V., 8.VII., 25.VII.) and in 2008 (30.VI., 15.VII., 31.VII., 10.VIII.).

Nomenclature is used according to ASKEW (1988), zoogeographical characteristics come out from the work of BSHOVSKI (1994). For determination the works of ASKEW (1988) and DIJKSTRA & LEWINGTON (2006) were used. Nomenclature of plant species is used according to KUBÁT et al. (2002). Document material leg., det. et coll. Otakar Holuša.

## RESULTS AND DISCUSSION

### Material

Morava: Vlachovice-Vrbětice; (code of grid mapping square 6873); geographical coordinates N 49°06'01.04'', E 17°56'12.13'', 335 m a.s.l.; 13.VII.2006; 2M/1F (observ. 1M+egg-laying of female); 17.VII.2006, 1M;

Slovensko: Jovsa (7198), geographical coordinates N 48°49'04.73'', E 22°04'34.40'', 130 m a.s.l., 20.VIII.1996, 1M – the record published by HOLUŠA (1997) as *Somatochlora metallica*;

### Habitat

Narrow overshadowed streamlets (width of 20 cm); direct streamlet basin; the bottom is created by a soft mud covered by leaves of *Alnus glutinosa* (Fig. 1); in the streamlet basin a large quantity of thin twigs; the depth of water column 1-2 cm; slowly running muddy water, the speed of the rapid centre is 10 cm.s<sup>-1</sup> (Fig. 2).

The eastern bank of the streamlet is created by a short slope which is covered by tree vegetation, the western bank, where is only a band of *Alnus glutinosa* (L.) Gaertn., comes over to the pasture. There are lines of *A. glutinosa* along the streamlet basin, in the higher parts of the bank there are tree species of *Acer campestre* L., *Padus padus* L., *Quercus robur* L. and *Carpinus betulus* L. The following plant species are in the open places of the streamlet basin: *Phalaris arundinacea* L., *Urtica dioica* L., *Impatiens noli-tangere* L., *Rubus hirtus* W. et K., and *Geranium robertianum* L. There are local bunches of *Caltha palustris* L., *Rumex* sp., *Scirpus sylvaticus* L. and *Lycopus europaeus* L. in the water. During the vegetation period the streamlets did not dry out, except the year 2008 when the basin dried out in VII and in VIII.

*Somatochlora meridionalis* is the Eastmediterranean species (BSHOVSKI 1994). The majority of findings were published from Italy – regions of Piemonta, Toscana, Lazio, Liguria and the surroundings of Rome (CARCHINI et al. 1985; CARCHINI 1992; 90

SEIDENBUSCH 1996). The western area „border“ reaches up to the Azur seacoast (KOTARAC 1995). The occurrence in the southern France – in Provence, was published also by GRAND (1996). KOTARAC (1995) recorded also specimens of transitional population of *S. metallica* x *S. meridionalis* from the region of the southern France (Gers – the Lauze River). Tens of localities were found in Slovenia, mostly in the eastern and southern parts (KOTARAC 1993, 1995; KOTARAC & BEDJANIČ 1994; KOTARAC et al. 1995, the total survey of localities is reported by KOTARAC 1997). Individual localities are known from the territory of Monte Negro, Croatia and Greece. The species was found in Bulgaria in its north-eastern part and also from the southern part of the seacoast of the Black Sea (BESHOVSKI 1994), individual findings are known from central part of the land (MARINOV 2000). KOTARAC & BEDJANIČ (1994) report the occurrence from Austria (Steiermark, Burgenland) and also in the western Hungary without any detailed localisation. Species is known from Austria from the south-eastern part which is adjoining to Slovenia, i.e. Steiermark, one locality was found in the region of Marchfeld (RAAB et al. 2006). In the territory of Slovakia, the species was found in the southern part in the surroundings of Šahy town (DAVID 2000, 2005) and also in the region of the Východoslovenská nížina Lowland (TÓTHOVÁ & DAVID 2004).

Only insular occurrences are known from the territory of central Europe (i.e. from the Pannonian Lowland), unbroken occurrences are recorded only from Slovenia and the northern Croatia (cf. DIJKSTRA & LEWINGTON 2006; WILDERMUTH 2008). The northernmost occurrences then do not cross the line, which goes from Vienna through the Podunajská nížina Lowland in the foothills of the Carpathians Mts. and the Východoslovenská nížina Lowland in Slovakia. The recorded occurrence in the Czech Republic or specified occurrence in Slovakia in the foothills of the Vihorlat Mts. (see. geographical coordinates) represent then the northernmost records in Europe at all. In Slovakia, the area would probably comprise the regions of foothills of the Carpathians Mts. i.e. the Štiavnické vrchy Hills, the Juhoslovenská kotlina Valley, the Cerová vrchovina Hills, the Krupinská planina Hills, the Slovenský kras Karst, the Slanské vrchy Hills and the Východoslovenská nížina Lowland, and the area might continue into the Ukraine. The species finding in the Czech Republic lies 140 km from the nearest Austrian locality and 130 km from the Slovakian localities respectively. The migration of species into the Czech locality was probably realized along the Morava river and along foothills of the Bílé Karpaty Mts., or in the lowland along the Váh river (which is more probable), and then by mountain pass of the Vlára river, which is the right-hand inflow of the Váh river from the Czech territory.

During one excursion in 2006, also egg-laying had been observed, but larvae were not found in the following years (2007-2008). Habitat fully responds to species demands. Majority of authors (KOTARAC 1997; RAAB et al. 2006) describe the habitat as slowly running waters with clayey banks covered by rich vegetation, often shallow streamlets are overshadowed by tree vegetation. The occurrence was rarely recorded at stagnant waters (oxbow, material pits) in places with water column of 30 up to 40 cm. Higher frequency of the occurrence was recorded at the low moors with stands of *Typha* sp., *Potamogeton* sp. and *Eleocharis* sp. Larvae have a larger niche choice – places among tree roots, among the leaves and plant rests, also in the organic mud, but also in coarser sandy bottom in small streamlets and broader rivers (KOTARAC 1997). According to altitude the occurrence prevails in lowlands (the optimum is the altitude of 200 m a.s.l.), in Slovenia it inhabits places from 100 m up to 800 m a.s.l. (KOTARAC 1997). It ascends in the karst regions of Balkan Peninsula up to 1000 m a.s.l.

The occurrence was recorded in Austria from 255 up to 490 m a.s.l., individually in 732 m a.s.l. (RAAB et al. 2006).

Following species of dragonflies were also recorded together with *S. meridionalis* in the locality (only imagoes in individual specimens): *Platycnemis pennipes* (Pallas, 1771), *Coenagrion puella* (Linné, 1758) and *Aeshna cyanea* (O. F. Müller, 1764). KOTARAC (1997) describes the occurrence following species from Slovenia: *Calopteryx splendens* (Harris, 1782), *C. Virgo* (Linnaeus, 1758), *Onychogomphus forcipatus* (Linnaeus, 1758), *P. pennipes*, *C. puella* and *A. cyanea*.

Character of locality fully suits to the demands of species, moot point is the occurrence of permanent population, which has not been recorded. The occurrence is possible also in another localities in the foothills of the Bílé Karpaty Mts. or at the whole southern foothills of the Western Carpathians Mts. It is possible to express a hypothesis opinion, that except of recorded regions, *S. meridionalis* inhabits also the whole territory of the Pannonian Lowlands or its hilly parts up to the Carpathian arc, i.e. territory of Hungary, southern parts of Slovakia, southern part of Pannonian Ukraine, north-western and western Romania, northern Serbia and eastern Croatia, the occurrence is also possible in the eastern Romania. Due to its absence in mountain territory (there is *S. metallica*), its area in the southern part of Balkan Peninsula would be discontinuous.

## SUMMARY AND CONCLUSION

*Somatochlora meridionalis* is the Eastmediterranean species whose continuous area is known from Italy, Slovenia and the northern Croatia. Insular occurrences are known from central Europe – Austria, Slovakia and Hungary (cf. DIJKSTRA & LEWINGTON 2006, WILDERMUTH 2008).

During two excursions in July 2006 (13<sup>th</sup> VII and 17<sup>th</sup> VII) 3 males and 1 female (with egg-laying) of *S. meridionalis* were recorded in the locality near Vlachovice-Vrbětice village in the foothills of the Bílé Karpaty Mts. in the south-eastern part of the Czech Republic. The habitat with its characteristics, vegetation and altitude fully responds to the species demands. Larvae and imagoes have not been found in following years (2007-2008).

The finding of *S. meridionalis* in the eastern Slovakia in the foothills of the Vihorlat Mts. was specified – locality Jovsa village (cf. HOLUŠA 1997), because the record was published as the occurrence of *S. metallica* before. This record is the northernmost occurrence point in Slovakia.

Open question remains, if the permanent population would occur, which has not been confirmed so far. It is possible to interpret the finding of *S. meridionalis* as an erratic “paradrop”, although on the other hand there were recorded more specimens, or as an expansion of its area northwards, which is possible just by the valleys of rivers which have north-south orientation (e.g. the Váh river in the western Slovakia).

It is possible that *S. meridionalis* inhabits the whole territory of the Pannonian lowland up to the Carpathian arch. The finding in the Czech Republic is the northernmost occurrence. If there is a permanent population it would be the aim of next research.

**Acknowledgement.** This paper was worked up in the frame of the research project „Strategy of the management of territories with a special protection status“ MSM 6215648902-04 of Faculty Forestry and Wood Technology of Mendel University of Agriculture and Forestry Brno.

## REFERENCES

- ASKEW R. R. 1988: The Dragonflies of Europe. Harley Books, Colchester, 291 pp.
- BESHOVSKI V. L. 1994: Fauna na Blgarija 23. Insecta, Odonata. Izdatelstvo na Blgarskata Akademija na naukite, Sofia, 372 pp.
- CARCHINI G. 1992: Some new records of odonate larvae in Italian caves, with a note on the advantage of cave-dwelling for *Somatochlora meridionalis* Nielsen (Odonata: Corduliidae). Opuscula Zoologica Fluminensia, 82: 1-6.
- CARCHINI G., ROTA E. & UTZERI C. 1985: Lista aggiornata degli Odonati italiani e loro distribuzione regionale. Fragmenta Entomologica (Roma), 18(1): 91-103.
- DAVID S. 2000: Faunistical notes. New records of dragonflies (Insecta: Odonata) from Slovakia. Biológia (Bratislava), 55: 444.
- DAVID S. 2005: Výsledky výzkumu vážek (Odonata) ve Slovenské republice. Ochrana přírody, Banská Bystrica, 24: 168-187.
- DIJKSTRA K. D.B. & LEWINGTON R. 2006: Field guide to the dragonflies of Britain and Europe including western Turkey and north-western Africa. British Wildlife Publishing, Gillingham, 320 pp.
- GRAND D. 1996: *Somatochlora meridionalis* Nielsen, 1935 en Provence et autres observations d'Odonates dans les départements du Var et des Alpes-Maritimes (Odonata, Anisoptera, Corduliidae). Martinia, 12(1): 9-18.
- HOLUŠA O. 1997: Nové znalosti o rozšíření vážek rodu *Somatochlora* na území bývalého Československa (Odonata: Corduliidae). Klapalekiana, 33: 23-28.
- HOLUŠA O. 2007a: Vážka *Somatochlora meridionalis* (Odonata: Corduliidae) zjištěna na území České republiky. In: BRYJA J., ZUKAL J. & ŘEHÁK Z. (eds.): Zoologické dny Brno 2007. Sborník abstraktů z konference 8.-9. února 2007. Ústav biologie obratlovců AV ČR, Brno, pp. 65-66.
- HOLUŠA O. 2007b: Shift of the northern limit of *Somatochlora meridionalis* (Odonata: Corduliidae) in Central Europe? In: MARTENS A., SAHLÉN G. & MARAIS E. (eds.): Abstracts. 5<sup>th</sup> WDA International Symposium of Odonatology. 16-20. April 2007, Swakopmund, Namibia, p. 35.
- HOLUŠA O. 2007c: *Somatochlora meridionalis*. In: DOLNÝ A., WALDHAUSER M., HOLUŠA O., BÁRTA D. & HANEL L. 2007: Vážky České republiky. Ekologie, ochrana a rozšíření. Český svaz ochránců přírody, Vlašim, pp. 488-491.
- KOTARAC M. 1993: Dragonfly observations in the Raka area, Lower Carniola, eastern Slovenia a with a note on the behaviour of *Somatochlora meridionalis* Nielsen (Anisoptera: Corduliidae). Notulae Odonatologicae, 4: 1-4.
- KOTARAC M. 1995: *Somatochlora meridionalis* Nielsen, 1935 a new species for the odonate fauna of France. Exuviae, 2/1: 15-16.
- KOTARAC M. 1997: Atlas kačjih pastirjev (Odonata) Slovenije z Rdečim seznamom: projekt Slovenskega odonatološkega društva. Atlas Faune et Florae Sloveniae 1. Center za kartografijo favne in flore, Miklavž na Dravskem polju, 205 pp.
- KOTARAC M. & BEDJANIČ M. 1994: *Somatochlora metallica* (Vander Linden) and *Somatochlora meridionalis* Nielsen in Central Europe. Abstracts of Papers and Posters of the 1<sup>st</sup> Odonatological Symposium of the Alps-Adriatic regional Community Maribor, Slovenia 3-7. July 1994: 11.
- KOTARAC M., BEDJANIČ M., PIRNAT A. & ŠALAMUN A. 1995: Prispevek k poznavanju favne kačjih pastirjev (Odonata) v Beli krajini (JV Slovenia). Exuviae, 2/1: 1-9.
- KUBÁT K., HROUDA L., CHRTEK J. jun., KAPLAN Z., KIRSCHNER J. & ŠTĚPÁNEK J. (eds.) 2002: Klíč ke květeně České republiky. Academia, Praha, 928 pp.
- LOHMANN H. 1994: *Somatochlora metallica abocanica* Belyshev, 1955, a new member of the European dragonfly fauna (Anisoptera: Corduliidae). Notulae Odonatologicae, 4: 39-40.
- MARINOV M. 2000: Dzhoben polevi opredelitel na Vodnite koncheta na Blgarija. ET „Eshna“, Sifjam, 104 pp.

- RAAB R., CHOVANEC A. & PENNERSTORFER J. 2006: Atlas der Libellen Österreichs. Umweltbundesamt, Wien, Springer Wien, New York, 343 pp.
- SEIDENBUSCH R. 1996: Description of the last instar larva of *Somatochlora meridionalis* Nielsen, 1935 (Anisoptera: Corduliidae). Odonatologica, 25: 303-306.
- TÓTHOVÁ G. & DAVID S. 2004: Vážky (Odonata) okolia Kráľovského Chlmca (JV Slovensko). In: BALÁŽ I. (ed.): Teória a prax krajinnno-ekologického plánovania, Zborník príspevkov z vedeckého seminára organizovaného pri príležitosti životného jubilea Prof. RNDr. Milana Ružičku, DrSc., FPV UKF, Nitra, 2004, pp. 163-169.
- WILDERMUTH H. 2008: Die Falkenlibellen Europas. Corduliidae. Die Neue Brehm-Bücherei, 653. Westarp Wissenschaften, Hohenwarsleben, 496 pp.

## SOUHRN

*Somatochlora meridionalis* je východomediteránní druh, jehož souvislý areál je znám z Itálie, Slovinska a severního Chorvatska. Z oblasti střední Evropy – Rakousko, Slovensko, Maďarsko, jsou známy jen ostrůvkovité výskyty.

Během dvou exkurzí v roce 2006 (13.VII. a 17.VII.) na lokalitě Vlachovice-Vrbětice na úpatí Bílých Karpat v jihovýchodní části České republiky byl zjištěn výskyt 3 samců a 1 samice (včetně kladení vajíček). Biotop svým charakterem, vegetací, nadmořskou výškou plně odpovídá nárokům druhu. V následujících letech však larvy ani imága (2007-2008) zjištěny nebyly.

Upřesněno bylo zjištění druhu *S. meridionalis* v oblasti Východoslovenské nížiny na úpatí Vihorlatu – lokalita Jovsa, jelikož údaj byl publikován jako druh *S. metallica*. Tento výskyt je nejsevernějším výskytem v oblasti Slovenska.

Otevřená zůstává doposud nepotvrzená otázka, zda se na území ČR bude vyskytovat trvalá populace. Výskyt lze vysvětlit buď jako zálet, i když bylo zjištěno více exemplářů, nebo jako postupné rozšiřování areálu na sever, což je možné právě údolími velkých řek s orientací S-J (např. řeka Váh).

Je pravděpodobné, že *S. meridionalis* obývá mimo zjištěná území celou oblast Panonské nížiny až po Karpatský oblouk. Zjištění na území ČR je tedy nejsevernějším výskytem tohoto druhu vůbec. Zda se jedná o výskyt stále populace, bude předmětem dalšího průzkumu.

Fig. 1. Locality of Vlachovice-Vrbětice village, the foothills of the Bílé Karpaty Mts., where *Somatochlora meridionalis* was found, 13.VII.2006 (photo O. Holuša)

Obr. 1. Lokalita Vlachovice-Vrbětice (úpatí Bílých Karpat), kde byla 13.VII.2006 nalezena *Somatochlora meridionalis* (foto O. Holuša)



Fig. 2. Detail view of the streamlet at the locality of Vlachovice-Vrbětice village with aiming of place, where the egg-laying of species *Somatochlora meridionalis* was found, 13.VII.2006 (photo O. Holuša)

Obr. 2. Detailní pohled na potůček na lokalitě Vlachovice-Vrbětice s přesnou lokalizací místa, kde bylo 13.VII.2007 zaznamenáno kladení vajíček *Somatochlora meridionalis* (foto O. Holuša)

