

New records of *Somatochlora arctica* in northwestern Lower Saxony (Odonata: Corduliidae)

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Abstract

During two visits to the German side of the borderland of the Province Groningen (Netherlands) and the Emsland district (western Lower Saxony, Germany) in June and July 2006 we recorded *Somatochlora arctica* at three new localities. All records pertain to adult males, up to seven at a time. These findings point to the possibility that this enigmatic and regionally rare dragonfly may be present at more sites in the northwest of Germany and the northeast of the Netherlands than hitherto supposed.

Zusammenfassung

Neue Nachweise von *Somatochlora arctica* im nordwestlichen Niedersachsen (Odonata: Corduliidae) — Auf zwei Exkursionen im deutsch-niederländischen Grenzgebiet am 24. Juni und am 12. Juli 2006 wurden auf der niedersächsischen Seite im Kreis Emsland drei neue Fundorte dieser in der Region sehr seltenen Libellenart entdeckt. Bei den Fundorten handelte es sich um die Tinner Dose zwischen Lathe, Sögel und Meppen, um das Kesselmoor bei Klein Berßen und das Stadtveen bei Hülsen. Alle Nachweise beziehen sich auf adulte Männchen, und es wurden bis zu sieben Individuen gleichzeitig registriert. Die aktuellen Nachweise deuten auf die Möglichkeit, dass *S. arctica* im Nordwesten Deutschlands und im Nordosten der Niederlande mehr Vorkommen besitzt, als bisher angenommen wurde.

Introduction

In the northwestern part of central Europe, *Somatochlora arctica* is one of the least known and rarest dragonflies (VAN DER WEIDE 2002: 298, DE KNIJF et al. 2006: 162). It is a species typical of bogs and wet heaths, with a range extending from Ireland to Japan (WILDERMUTH 2006, NELSON & THOMPSON 2004: 235). At the same time, it is found regularly in the mountainous regions of central Europe and across the northern parts of Eurasia. In Germany *S. arctica* is listed as endangered (OTT & PIPER 1998), and in Lower Saxony (Niedersachsen) the species is considered as critically endangered (ALTMÜLLER 1984). In this German federal

state recent populations are known e.g. from the Helstorfer Moor near Hannover (GÄRTNER et al. 2006) and from the Südheide near Celle where the species is present in different peat moors (cf. CLAUSNITZER 1985, 1988, CLAUSNITZER et al. 2007). Especially for the western part of Lower Saxony, the Weser-Ems region, only a few records of the species have been published (BUCHWALD 1986, LÖSING 1988, EWERS 1999).

In the adjacent Netherlands *S. arctica* is also extremely rare. Only five populations are currently known, all of them close to the German or Belgian border (GROENENDIJK & BOUWMAN 2006a, KETELAAR et al. 2006). The species is listed as endangered on the national Red List (WASSCHER et al. 1998) and a species protection plan was published recently (KETELAAR et al. 2006). Currently, much more is known about its distribution and ecology in The Netherlands (e.g. GROENENDIJK & BOUWMAN 2006b). The increased interest in this species may explain that recent excursions of Dutch Butterfly Conservation not only focussed on characteristic moorland butterflies but also on the possible presence of *S. arctica* in the visited peat moors of the border area between Germany and the Netherlands. Here we report on three new localities where the species was found.

Localities and records

The peat moors visited were all located in the northwestern part of Lower Saxony near the Dutch border in the Landkreis (administrative district of) Emsland, and differed markedly in appearance. They varied from a small isolated peat moor in a forested area to a large raised bog. During our visits on 24 June and 12 July 2006 only adult males of *Somatochlora arctica* were observed. In the Tinner Dose one male was caught, all other individuals being identified with binoculars. Although serious effort was undertaken to find exuviae, this search was not successful several weeks after the emergence period. In total, four peat moors were visited, and *S. arctica* was found in three of them.

Tinner Dose between Lathe, Sögel and Meppen (52°48'N, 07°22'E)

With an area of almost 3200 ha the Tinner Dose is one of the largest actively growing raised bogs in northern Germany. It was traditionally used as a military training area. At first sight, this area did not look suitable for *S. arctica* because trees, typical for many central European sites featuring this species, were almost completely lacking in the centre of the area (Fig. 1). The bogs were largely overgrown with *Molinia caerulea*, and some of them showed strong signs of desiccation. During our first visit (24-vi-2006) at the western side of this peat moor, a total of six males were seen patrolling the pits and ditches with peat moss. Later that day the southeastern part was visited where two males were observed. Other Odonata present included *Ceragrion tenellum*, *Leucorrhinia dubia* and *Orthetrum coerulescens*.

Kesselmoor south of Klein Berßen (52°45'N, 07°27'E)

Compared to the Tinner Dose, the Kesselmoor seemed to us a more typical habitat for *S. arctica*, being rather small and surrounded by pine forest. Until recently, all three butterfly species characteristic of peat moors, i.e. *Coenonympha tullia*, *Boloria aquilonaris* and *Plebejus optilete*, were present here in good numbers. This location was visited twice (24-vi-2006, 12-vii-2006). During the first visit two males, and during the second visit seven males of *S. arctica* were observed. The central part of raised peat moss vegetation was dry and obviously unsuitable for the development of *S. arctica*. The reproductive site of *S. arctica* was most probably located at the eastern part of the moor, where a few ditches with peat moss and *Caltha palustris* were present, obviously threatened by the increasing presence of *Betula pubescens* and *Pinus sylvestris*.

Moor near Westerlohnhöfen (52°43'N, 07°27'E)

This area was surrounded by forest and the habitat in a few places rather suitable as reproductive habitat for *S. arctica*. However, compared to the other sites, the area of open water was relatively large. During our visit (12-vii-2006) *S. arctica* was not found here. Other Odonata present included *Lestes virens vestalis*, *C. tenellum* and *L. dubia*.



Figure 1: The "Tinner Dose" in northwestern Lower Saxony, Germany, although not a typical habitat for *Somatochlora arctica*, probably supports a large population of this species (24-vi-2006). — Abbildung 1: Die "Tinner Dose", ein ausgedehntes Hochmoor im Landkreis Emsland (NW-Niedersachsen) beherbergt möglicherweise eine große Population von *Somatochlora arctica* (24.06.2006). Photo: JB

Stadtveen near Hülzen (52°42'N, 07°28'E)

This area was also surrounded by forest, and a fen with *Nymphaea alba* was situated in the northern corner. During the visit (12-vii-2006) five patrolling males of *S. arctica* were observed. The westernmost part especially seemed suitable to us as reproductive habitat. Many small ditches with peat moss and a lot of *Rhynchospora fusca* and *Narthecium ossifragum* were present there. Superficially, this site looked more or less like the Kesselmoor. However, it was larger and contained more habitats suitable for *S. arctica*. Other Odonata present included *L. v. vestalis*, *C. tenellum* and *Aeshna juncea*.

Discussion

In the western part of Lower Saxony, the Weser-Ems region, *Somatochlora arctica* is very rare. After 1990, records of this species from the Weser-Ems region are known to us from only three sites: In 1994 *S. arctica* was recorded ovipositing at the "Seerosenschlatt", Landkreis Cloppenburg (R. Jödicke pers. comm.). At the "Börstel", Landkreis Osnabrück, the species was first detected in 1983/1984 (BUCHWALD 1986), and its occurrence was confirmed there several times until 2006 (EWERS 1999, R. Jödicke pers. comm.). The third locality in this area is a small peat moor between Lingen and Nordhorn close to the Dutch border in the Landkreis Emsland, where *S. arctica* was recorded in 2003 (R. Altmüller pers. comm.).

The discovery of three new sites for *S. arctica* shows that it is still possible to find new localities of this typical peat-moor species in northwestern central Europe. It will be worth looking at similar localities again in other places, especially in the Tinner Dose, but also in other peat moors in the area and visiting them during the peak flight period. Although the Tinner Dose was visited for only a short time and in a relatively small area of this large peat moor, we easily managed to see a total of eight males, raising the possibility that it harbours a large population of *S. arctica*.

We expect the peak flight period to be comparable to that in The Netherlands, where it starts as early as mid-May and lasts until the beginning of July. Low densities of *S. arctica* may still be present until late August. For targeted searches it has to be taken into account that the habitat of *S. arctica* is very distinctive and that in many cases there is hardly any visible open water present. Furthermore, searching for exuviae is probably the best way to locate the species. Especially when the species is present in low numbers, it can be difficult to observe adults, whereas exuviae of *S. arctica* are relatively easy to find. According to personal experience, this approach to recording *S. arctica* in The Netherlands and around Celle (H.-J. Clausnitzer, pers. comm.) proved to be more successful than searching for adults. Personal experiences from The Netherlands also showed that the best time to look for exuviae is from the last week of May until late June, depending on the season.

It will be of major conservation importance to detect further occurrences of *S. arctica* in the region as well as the exact reproductive sites within the localities where the species is found. Our conclusion is that the presence of these newly discovered sites also encourages one to expect that the species will be found in northern parts of The Netherlands, where many peat moors are present, but where *S. arctica* has not so far been found.

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