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International Dragonfly Fund - Report
A Journal of the International Dragonfly Fund

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Odonata of South Ural, Russia, as observed on expedition of July 2021

published: 10.01.2026

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published: 10.01.2026

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ISSN 1435-3393

The International Dragonfly Fund (IDF) is a scientific society founded in 1996 for the improvement of odonatological knowledge and the protection of species.
Internet: <http://www.dragonflyfund.org/>

This series intends to publish studies promoted by IDF and to facilitate cost-efficient and rapid dissemination of odonatological data.

Editorial Work: Martin Schorr, Milen Marinov, Rory A. Dow, Holger Hunger

Layout: Martin Schorr
IDF-home page: Holger Hunger
Printing: Colour Connection GmbH, Frankfurt
Impressum: Publisher: International Dragonfly Fund e.V., Schulstr. 7B,
54314 Zerf, Germany. E-mail: oestlap@online.de
Responsible editor: Martin Schorr

Cover picture: *Ischnura aralensis*, Gynochromatic female
Photographer: Oleg. E. Kosterin

In the middle of the *Somatochlora sahlbergi* kingdom

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Abstract

From 27 to 31 July 2025, Odonata were observed at two localities in the Polar Ural, Russia, near the Polyarnyy and Sob' railway stations situated at ca 67° N. Six expected species were recorded, including *Somatochlora sahlbergi*, which was very numerous. This confirms the expectation that this species is abundant at that latitude not only on both sides of the Polar Ural but also within the Polar Ural itself. A puzzling report of eleven additional species from about the same localities is discussed. The northernmost record of *Aeshna grandis* in West Siberia, from Labytnangi Town (66.66° N), is also reported.

Key words: Odonata, dragonflies, damselflies, distribution, Polar Ural, *Somatochlora sahlbergi*.

Introduction

Somatochlora sahlbergi Trybom, 1889 is considered the northernmost dragonfly species in the world, although its rare records are known from the mountains of Siberia and the Russian Far East up to as for southerly 49.7° N (Schröter 2011; Onishko & Kosterin 2021). Observing this species remains a dream for many European dragonfly enthusiasts, who often visit Lapland but rarely succeed due to unstable weather conditions. Meanwhile, four reports from Russia indicate that the species can be common and numerous. One of them is a southern outlier (53.090° N, 157.880° E) situated in the stone birch parkland zone in southern Kamchatka Peninsula (Dumont et al. 2005), while three others are from the plains on both sides of the Polar Ural Mts, at or slightly north of the Arctic Circle: one west of the Polar Ural, formally in Europe, in the environs of Vorkuta Town, Komi Republic (Brockhaus 2022 and pers. comm.); and two east of the Polar Ural, formally in Asia, in the environs of Labytnangi Town, Yamalo-Nenets Autonomous Region (Haritonov 1975) and in the Tanlavayakha (Tanlovaya, Tanlovayakha, Tanlovaegan) River at the base of the Yamal Peninsula (ca. 67.27° N, 69.02° E), in the same region (Belyshev & Korshunov 1976) (Fig. 1). Although *S. sahlbergi* has been reported from 11 localities within the Polar Ural itself (localities 14-24 in Tatarinov et al. 2015), no quantitative data or observations were provided to show whether it was as abundant there as on both sides of the range. On 27-31 July 2025, I managed to visit the Polar Ural, albeit briefly, and observe several dragonfly species, including *S. sahlbergi*, which was indeed abundant as expected.

Observations

In the text below, nine-digit figures refer to my photographic observations on the iNaturalist (2025) citizen science platform.

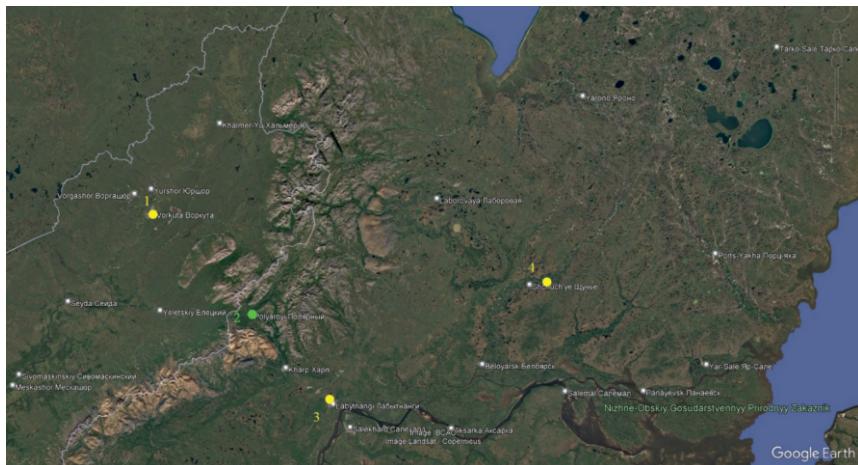


Fig. 1. Localities from which *Somatochlora sahlbergi* has been reported (yellow) or observed by the author (green) as abundant: 1 – environs of Vorkuta Town (Brockhaus et al. 2022 and pers. comm.), 2 – Polyarnyy station (this study), 3 – environs of Labytnangi Town (Haritonov 1975), 4 – middle reaches of the Tanlovayakha River (Belyshev & Korshunov 1976).



Fig. 2. Swampy pond formed by a stream dammed by the railway embankment, 650 m east of Sob' railway station, 27 July 2025.

Two localities were visited, both in the middle reaches of the Sob' River, Priural'skiy District, Yamalo-Nenets Autonomous Region. The weather was sunny and warm on four days but rainy on 28 July 2025, when a mountain valley unsuitable for dragonflies was visited.

The first locality was the environs of Sob' railway station, 67.050-67.088° N, 65.504-65.562° E, 115-430 m a.s.l., examined on 27-29 July 2025. The Sob' River and its tributary mountain streams lacked dragonflies. The only suitable dragonfly habitat was a swampy pond ca. 100 × 130 m (Fig. 2), located 650 m east of the station and formed by a small stream flowing along a mountain foot and dammed by the railway embankment (67.056-67.057° N, 65.526-65.529° E, 120 m a.s.l.), examined on 27 July 2025. The pond contained extensive sedge stands in shallow water and was surrounded by impermeable thickets of willow and dwarf alder (*Alnus alnobetula* subsp. *fruticosa* (Rupr.) Raus), with access to the water possible only near the embankment. In sedges along the banks, *Coenagrion johannsoni* (Wal-



lengren, 1894) (308638875) (Fig. 3) and *C. hylas* (Trybom, 1889) (Fig. 4) (308731964, 2 males collected) were present, including tandems of both species and a freshly emerged male (collected) of the former. A teneral female of *S. sahlbergi* (308733329) was captured above the water (collected).

Additionally, on the same day, a female *Leucorrhinia* sp. was observed (but not captured) on the railway tracks at Sob' Station (67.056° N, 65.509° E). A male of *Somatochlora arctica* (Zetterstedt, 1840) was photographed (Fig. 5, 308489632), and an *Aeshna* sp. was observed in a birch (*Betula pubescens* Ehrh.) forest ca. 600 m NW of the station, near the lower reaches of a fast-flowing stream (unsuitable for dragonfly development) (67.0600° N, 65.5035° E).



Fig. 5. Male of *Somatochlora arctica* in the forest near a stream close to Sob' station, 27 July 2025, 308489632.

The second locality (Fig. 1, point 2) was the environs of the former settlement of Polyarnyy and the Stan Polyarnykh Geologov railway station, also called "110th km railway station", ca. 6.5 km west of the first locality (67.047-67.075° N, 65.348-65.354° E, 125-140 m a.s.l.), examined on 29-31 July 2025. The abandoned geologists' settlement contained many flooded former quarries, at least some of which were inhabited by Odonata. The area was intersected by numerous roads and former streets, with building ruins and construction debris, and was mostly covered by thickets of dwarf alder and, to a lesser extent, willows (mainly *Salix gmelinii* Pall.), interspersed with meadows, ponds and small stream valleys.

Both sexes of *S. sahlbergi* were common throughout the area (Fig. 6) (310556532, 312372466; 2 males collected). They hunted along shrub thickets and frequently rested on branches. On one occasion, we startled a female (shown in Fig. 6, lower panel) which at first was engaged



Fig. 6. Male (upper panel, 29 July 2025, 310556532) and female (lower panel, 31 July 2025, 312372466) of *Somatochlora sahlbergi* in dwarf alder and willow thickets at the abandoned Polyarnyy settlement.

in quite prolonged trophic flight along bushes, then it approached us and for several minutes captured Simuliidae midges around our bodies, and then sat on a bush branch again. On three occasions over three days in similar habitats, I observed some *Aeshna* sp. (certainly larger than *A. caerulea* (Ström, 1783)) but failed to capture any individuals.

One of the quarries, measuring ca. 60 × 17 m and situated in a rather deep hollow, with steep banks bearing sparse sedges and surrounded by willow bushes (Fig. 7), was examined on midday on 30 July 2025 and appeared the most productive (although still species-poor) site for Odonata (67.0520–67.0523° N, 65.3532–65.3544° E). A male of *S. sahlbergi* patrolled



Fig. 7. Inundated quarry where *Enallagma cyathigerum*, *Leucorrhinia orientalis* and *Somatochlora sahlbergi* were found, 30 July 2025.

a short segment of the bank, flying to and fro with fairly fixed turning points; after it was captured (311166406, collected) another one soon appeared. A male of *Leucorrhinia orientalis* Selys, 1887 perched on bushes emerging from the water, while a tandem (311164864, collected) and a female in maiden flight (311161621, collected) of this species were also captured (Fig. 8) (but see comments at the end of this section). In addition, a male of *Enallagma cyathigerum* (Charpentier, 1840) was noticed flying above the water surface.

Besides the quarries, two natural roundish lakes were present on the left bank of the Sob' River, both surrounded by dwarf birch (*Betula nana* L.) tundra. One (100 × 50 m, 67.0478–67.0484° N, 65.3500–65.3520° E) (Fig. 9) had very gentle and poorly defined banks, with water extending beneath dwarf birch thickets, replaced by a broad sedge belt only at some distance from the water line. A solitary white birch tree (*B. pubescens*) and several juniper (*Juniperus communis* var. *saxatilis* Pall.) bushes were present away from the water. From the taller shrubs and the single tree, not less than three individuals of *S. sahlbergi* (310666858, 311273041, two males and one female, the latter collected) were flushed during two short visits on 29 and 30 July 2025 (Fig. 10). The surrounding shrubbery also held several *C. hylas* (310664874, 310664877, 311604452, 2 males and 2 females collected), a male of *C. johanssoni* (collected), and a grey female of *E. cyathigerum* (310664875, collected) (Fig. 11a).

The second lake, situated ca. 100 m to the southeast (60 × 60 m, 67.0471–67.0477° N, 65.3537–65.3553° E), had higher and clearly defined banks and was surrounded by a stand of white birch (*B. pubescens*) with a dense juniper understorey and a narrow sedge fringe along the water edge (Fig. 12). Only a single male of *E. cyathigerum* was observed there



Fig. 8. Male and female captured in tandem (a, 311164864) and a teneral female (b, 311161621) of *Leucorrhinia orientalis* (tentative identification) from the inundated quarry shown in Fig. 7, 30 July 2025.

(Fig. 11b, 311505191), which was very active, repeatedly landing but soon flying for several metres again.

Discussion

Thus, during five days of fieldwork at two localities in the Polar Ural I, recorded only six species of Odonata and failed to identify at least one additional species (*Aeshna* sp.). All recorded species were quite expectable for the area, and no new faunistic records were obtained.

Both localities visited had previously been studied by A. G. Tatarinov and O.I. Kulakova in 1993, 1994, 1997, 1999, 2001, 2007, 2008 and 2013 (Tatarinov et al. 2015). For their locality 18, which for unclear reasons combined data from Sob' station (my first locality) and Krasnyy Kamen' station, situated 23 km to the southeast, they reported, in tabular form without details or comments, as many as 15 species: *Coenagrion hastulatum* (Charpentier,

1825), *C. johanssoni*, *Aeshna caerulea* (Ström, 1783), *A. crenata* Hagen, 1856, *A. juncea* (Linnaeus, 1758), *A. subarctica* Walker, 1908, *A. grandis* (Linnaeus, 1758), *Somatochlora metallica* (Vander Linden, 1825), *S. alpestris* (Selys, 1840), *S. sahlbergi*, *S. arctica*, *Libellula quadrimaculata* Linnaeus, 1758, *Sympetrum danae* (Sulzer, 1776), *S. flaveolum* (Linnaeus, 1758) and *S. vulgatum* (Linnaeus, 1758). For the Polyarnyy station (my second locality), combined with Polyarnyy Ural station 12 km to the southwest (their locality 17), they reported seven



Fig. 9. Small lake on the left bank of the Sob' River near the former Polyarnyy settlement, 30 July 2025.

species, all of which were also listed for locality 18: *A. juncea*, *A. subarctica*, *S. alpestris*, *S. sahlbergi*, *S. arctica*, *S. flaveolum* and *S. danae*. (It would seem more natural to combine data from Polyarnyy and Sob' stations, which are only 9 km apart, yet these authors instead merged each of them with more distant localities.) I did not find twelve of the 15 species reported from locality 18 (the *Aeshna* sp. observed by me could tentatively be *A. juncea* or *A. subarctica*). Notably, Tatarinov et al. (2015) did not report *C. hylas*, which I found to be common at both of my localities, *E. cyathigerum* or any *Leucorrhina* species. Furthermore, *S. metallica*, *L. quadrimaculata* and *S. vulgatum* are not known to occur so far north elsewhere in



Fig. 10. Male (left, 29 July 2025, 310666858) and female (right, 30 July 2025, 311273041) of *Somatochlora sahlbergi* at the small lake shown in Fig. 9.



Fig. 11. Female (a, 29 July 2025, 310664875) and male (b, 30 July 2025, 311505191) of *Enallagma cyathigerum* at the small lakes shown in Figs 9 (a) and 12 (b).

Eastern Europe or West Siberia, either from the literature or from iNaturalist records. These species are generally common and difficult to overlook. In such high latitudes, all Odonata species are on the wing at roughly the same time, so differences in flight period cannot explain the discrepancy between their species lists and mine. Although eight field seasons of re-

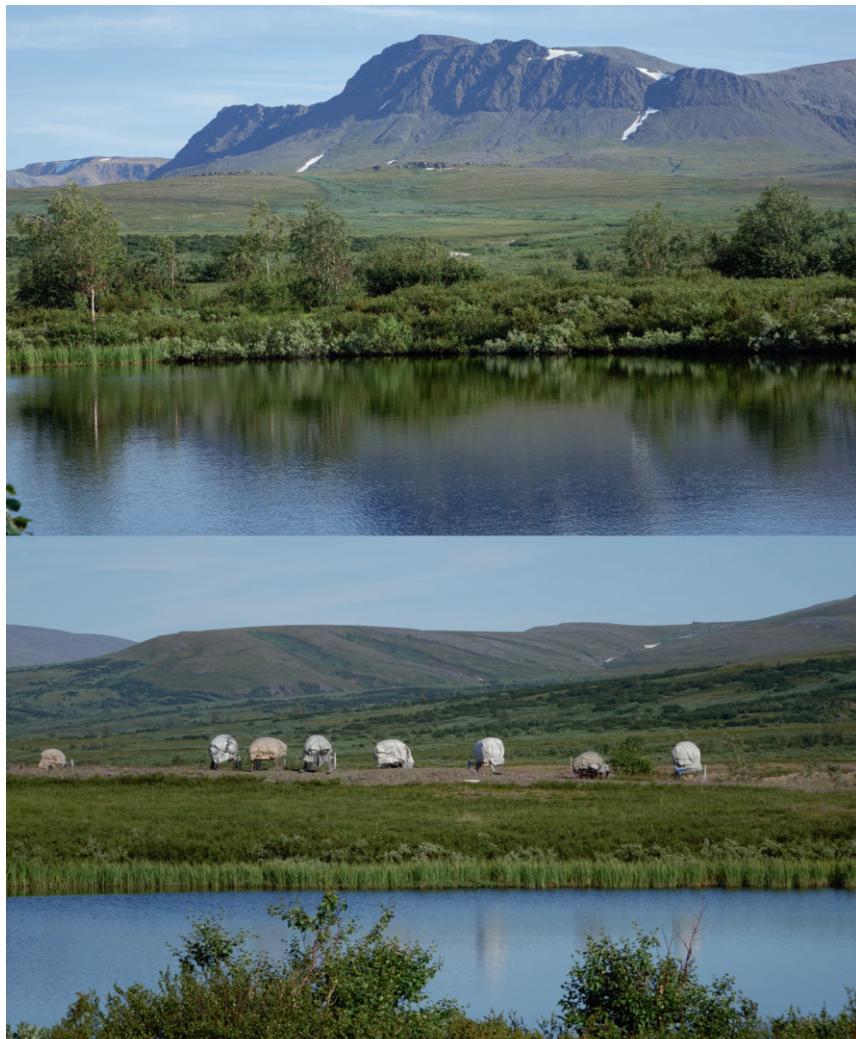


Fig. 12. Another small lake on the left bank of the Sob' River near the former Polyarnyy settlement, 30 July 2025. Sledges ('narty') with packed winter belongings of the Nenets people are visible, left by the river during summer while their owners stayed with their reindeer at mountain pastures.

peated studies are clearly not comparable with my five-day visit in 2025 (it is possible that I simply missed some suitable waterbody), some doubt regarding the correctness of the earlier report nevertheless remains.

My observations confirm that *S. sahlbergi* is as abundant in the Polar Ural (at least in my second locality at the former Polyarnyy settlement) as it is on the plains on both sides of

the Polar Ural (Haritonov 1975; Belyshev & Korshunov 1976; Brockhaus 2022 and pers. comm.) (Fig. 1). It should be noted, however, that I did not encounter habitats that could be classified as palsa mires, which are considered typical for this species (Schröter 2011). Instead, a teneral female was encountered above a sedge pond formed by a dammed rivulet, territorial males were observed at an inundated quarry, and some individuals were flushed from shrubs by a natural lake near the river banks. I also did not observe any association with the semi-aquatic plant *Comarum palustre* L., with which the species was reported to be associated near Labytnangi Town (Haritonov 1975) – this conspicuous plant is not mentioned at all in my diary. These observations suggest that, in this area, most suitable for *S. sahlbergi*, it may not be strongly specialised with respect to its larval habitats.

In addition, on 1 August 2025 I found a male of *Aeshna grandis* (Linnaeus, 1758) killed by traffic on the pavement of Studencheskaya Street in the centre of Labytnangi Town (66.6622° N, 66.3721° E, 72 m a.s.l.), situated between the Polar Ural and the Ob' River (312935339). This currently represents the northernmost record of this species in the Asian part of Russia. However, in the European part of Russia, across the Polar Ural, it was photographed (178164912) even further north near Seyda settlement (67.0487° N, 63.1025° E) on 19 July 2023 by Alexander Goncharov

The identification of the three collected *Leucorrhinia* specimens as *L. orientalis* rather than *L. dubia* Vander Linden, 1825 remains uncertain and tentative. It is based mainly on the absence of dorsal spots on abdominal segments S4-S5 in the male. They are consistently absent in males of *L. orientalis* but only rarely in *L. dubia*. The dorsal spots on S6-S7 were orange-yellow, whereas in *L. dubia* they are usually orange and in *L. orientalis* yellow, although both species may show intermediate coloration. (In *L. orientalis*, the spot on S6 is more frequently absent than present, but both conditions occur commonly.) The teneral female (Fig. 8b) shows pale rings on S2 and S3, a feature characteristic of *L. orientalis*, whereas in the mature female (Fig. 8a) the marking on S2 is divided into a central spot and lateral spots, and on S3 the lateral elements are reduced to small isolated spots, a pattern more consistent with *L. dubia*. The black basal spots on the hindwings are not as convex as they can be in *L. dubia*, but their shape falls within the range of variation observed in both species and is therefore unreliable. The only reliable structural character separating these species is the shape of the epiproct incision: triangular in *L. orientalis* and shallowly roundish in *L. dubia* (Skvortsov 2010; the drawing on page 444 of this source strongly exaggerates the difference; Onishko & Kosterin 2021). In the single male collected, the incision was shallowly triangular with a rounded apex, which better fits *L. orientalis*. The habitat – an inundated quarry – also fits more *L. orientalis*, rather than *L. dubia*, which prefers peat moss bogs but may also occur in similar environments. Overall, the specimens resemble those from Lake Oyskoe in the West Sayan, Krasnoyarskiy Kray (Kosterin & Zaika 2018), which were regarded as transitional between these two taxa (treated there as subspecies). It is noteworthy that Belyshev & Korshunov (1976) reported a female of *L. dubia dubia* from the Tannovayakha River in the Yamal Peninsula, describing it as “quite a typical specimen”, while Haritonov (1974) attributed his specimens from Polar Ural to *L. orientalis*. It is hoped that specimens from both the Sayanean and Polar Uralian population will eventually be included in a molecular phylogenetic analysis of the *dubia/orientalis* complex across its entire range.

Acknowledgements

I am grateful to the leaders, Irina N. Negoda and Elena A. Kruk, and to all members of the Polar Ural trip of the Young Naturalists' Station in Novosibirsk Academy Town (the Ecological Education Laboratory at the Institute of Cytology and Genetics SB RAS) for bringing the expedition to reality. I also thank Natalya Priydak and Valentin Kosterin for their assistance in the field, and Martin Schorr for his constant and multifaceted support. Holger Hunger and Gerard Chartier have kindly taken a labour of checking the English language.

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