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S. L. Tuxen: Plecoptera and Ephemeroptera

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## Plecoptera and Ephemeroptera

BY

S. L. TUXEN

**Plecoptera.** If, as Lindroth (1931 p. 139—40) surely correctly supposes, "*Phryganea bicaudata*" in Olafsen & Povelsen (1772 p. 603) is a Plecopteran, this is the first record of these animals from Iceland, and this record then was repeated in Mohr (1786 p. 92), and since in many lists of Icelandic insects<sup>1</sup>). In 1857 Staudinger determined its generic name, but it was not till 1931 that its specific name was decided (Lindroth 1931).

**Ephemeroptera** have hitherto not been recorded from Iceland; one species of this group is, however, found on rather many localities during the new investigations.

The material belongs to the Zoological Museums of Copenhagen and Reykjavik. Included are however some finds (marked G.G.) from the collection of Mr. Geir Gígja, Reykjavik. Finds known from the literature are marked with the author's name.

### I. Synopsis of the Species.

#### A. Plecoptera.

##### 1. *Capnia atra* Morton.

*Capnia atra* Morton 1896 p. 58, pl. II.

#### Iceland records:

*Phryganea bicaudata* Olafsen & Povelsen 1772 p. 603.

*Phryganea bicaudata* Mohr 1786 p. 92.

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<sup>1</sup>) Mohr's list was reprinted by Gliemann (Geogr. Beschr. von Island 1824 p. 150 ff), his list again by Ebel (Geogr. Naturk. von Island 1850 p. 293 ff), Robert (in Gaimard, Voyage en Islande 1851 p. 161 ff) and Hagen (Zur Fauna Islands, Stett. Ent. Z. 1857 p. 381), and Robert's list again by Barnard (in Paijkull, A Summer in Iceland, London 1868 p. 353 ff). Such reprints are not recorded here under "Iceland records".

Eine Capnia-Art Staudinger 1857 p. 228.

Capnia sp. Jacobson 1899 p. 232.

Perla bicaudata ibid. p. 232.

Eine Plecopteren-Nymphe Lindroth 1928 p. 7.

Capnia atra Lindroth 1931 p. 140.

Capnia atra Ulmer 1932 p. 224.

**Occurrence in Iceland:** *N.*: Mælifell; Möðruvellir (near Akureyri); Laxá near Mývatn (G.G.).—*E.*: Egilsstaðir.—*S.*: Volasel in Lón (G.G.); Reynivellir (G.G.); Breiðabólstaður in Síða (Lindroth); Varmahlíð (Lindroth); Stóra Mörk (Lindroth); Barkarstaðir and Hlíðarendakot in Fljótshlíð (Lindroth); Alviðra and Bíldsfell in Árnesýsla (G.G.).—*W.*: Pingvallavatn (Staudinger).

**Distribution:** North and Central Europe: Finland, Sweden (Lapland), Norway, Scotland, ?Germany, Switzerland (in the Alps). Not found on Spitzbergen and Novaya Zemlya, but on the latter two nearly related species occur. Plecoptera are entirely wanting on the Faroes and in Greenland.

**Remarks:** *Capnia atra* is known from the literature to have full-winged males; Morton states it expressly in his description. However, all the males of this species that I have seen from Iceland (during the new investigations in all 19 males and 12 females were found together with a lot of larvae) were short-winged<sup>1</sup>). Thus it seems as if the Icelandic specimens represent a special *f. brachyptera* of *Capnia atra*. On the other hand, all females were full-winged as is the case in other regions.

The imagines were captured from April to July, the nymphs (5—8 mm in length, with wing-pads) from March to June, a larva without wing-pads, 4 mm, in February, and on the 19th of August were found (on Egilsstaðir) 30 quite young larvae, 1—1.5 mm in length, without any traces of wings. The biology of *Capnia atra* in Iceland thus seems to be the following: The eggs are laid late in summer, the larvae hibernate in the cold rivers and streamlets and in early spring the imagines appear even before the snow has quite disappeared.

The species no doubt will prove to be common all over Iceland; but the gatherings most often have been made in the summer when the frequency of the animals has culminated. Thus I found it abundantly on May 10th, 1937, on rocks in an icecold river near Mælifell, but later it disappeared.

<sup>1</sup>) Among the animals collected by Lindroth, which I have been able to see by the courtesy of Dr. H. Lohmander, Göteborg, was only one male, and it was a nymph.

## B. Ephemeroptera.

2. *Cloëon praetextum* Bengtsson.

*Cloëon praetextum* Bengtsson 1914 p. 217.

Occurrence in Iceland: N.: Kálfatjörn near Tunguháls (determination uncertain, see later), Stapavatn, Skíðastaðir, all in Skagafjarðarsýsla; Hólar and Laugar in Reykjadalur in Suður Þingeyjarsýsla (G.G.); Slý near Mývatn.—E.: Egilsstaðir (G.G.).—S.: Heinaberg and Svínafell near Hornafjörður (determination uncertain); Pveit near Hornafjörður (G.G.).

Distribution: Sweden, ?Norway, Denmark, Germany. In Sweden right to Lapland, in Norway the only find (determination uncertain) on 70° n. Lat. (Bengtsson 1930). Not found on Spitzbergen, Novaya Zemlya, the Faroes, and Greenland.

Remarks: It is necessary to make some remarks about two of the finds mentioned above. The specimens from Heinaberg and Svínafell near Hornafjörður originate from the gatherings of Dr. A. G. Bøving during his expedition in 1908. "Heinaberg 16. VIII." is, however, a larva without head and gills, and "Svínafell 25. VIII." is 4 subimagines so exsiccated, that a safe determination is impossible. Yet I have no doubt that also these specimens belong to the species *praetextum*.—Greater interest is attached to the find from Kálfatjörn near Tunguháls. In this lake 9 larvae, 3 mm in length, were found on Aug. 21st, larvae which in all resembled the larvae of *Cloëon praetextum* except that all their gills were single, not double-lobed as is the case in the genus *Cloëon*. Also the black ring on the cerci was wanting. I have no doubt that these larvae are really quite young larvae of *Cloëon praetextum*, and this indicates that also this species has single gills in the young larvae but double-lobed in the older ones as described by Lubbock (1863) for *Cloëon dimidiatum* Curt. No doubt this will prove to be the case in all species of *Cloëon*.

The larvae of *Cloëon praetextum* were found in July and August, the few imagines all in August (6th and 25th).

It is peculiar that Ephemeroptera have never been recorded from Iceland, though the oldest find of these insects dates back to 1908.

## II. General Remarks.

*Capnia atra* is decidedly a representative of the arctic element in the Icelandic fauna. It occurs in the alpine and subalpine region of North Europe and the Alps, and its nearest relatives are all attached to decidedly cold localities. It is therefore quite natural that it occurs commonly in Iceland; but it is curious that it is the only Icelandic species of this group,

since the Plecopterous fauna of arctic Norway comprises no less than 29 species (Esben Petersen 1908—10).

*Cloëon praetextum* rather belongs to a boreo-arctic element in the Icelandic fauna, though this too may certainly be found all over the island. Its home is the small lakes heated by the sun in the summer, but frozen in the winter, and it therefore will be a late summer species in Iceland. Of the three North-European species of *Cloëon* it is the most cold-suffering, extending its distribution farthest to the north. It is not unlikely that also other species may be found in Iceland, since the Ephemeropterous fauna of arctic Norway comprises at least 22 species (Bengtsson 1930).

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