

Inocellia crassicornis (Schummel, 1832) (Raphidioptera) new to Norway

SIW ELIN EIDISSEN

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The paper reports a new snakefly to Norway. *Inocellia crassicornis* was registered in June 2014 in the Grane municipality in Nordland County. A single male was observed on a kelo-tree. This is the fourth species within the order Raphidioptera registered in Norway and the first within the family Inocelliidae.

Key words: *Inocellia crassicornis*, Raphidioptera, Inocelliidae, new record, Norway.

Siw Elin Eidissen, Høgskolen i Nesna, NO-8700 Nesna, Norway. E-mail: siwee@hinesna.no

Introduction

Raphidioptera is an ancient insect order documented back to the Mesozoic period through the discovery of many fossils from the Jurassic and Cretaceous periods. It is currently distributed through the northern hemisphere, with an emphasis north of 30°N. Raphidioptera lives in different habitats with trees, in Europe both coniferous and deciduous forests (Aspöck 2002). The Order is divided into two families: Raphidiidae with 185 species and Inocelliidae with 21 species (Aspöck *ibid.*). In Norway, three species are recorded, all within the family Raphidiidae (Greve 2002). They are *Xanthostigma xanthostigma* (Schummel, 1832), *Phaeostigma notata* (Fabricius, 1781) and *Raphidia ophiopsis* (Linnaeus, 1758). Species from the family Raphidiidae have an elongated trapezoidal head with three ocelli (Cederberg 1988) and have crossveins in pterostigma (Rintala *et al.* 2014).

This article will present the discovery of a new snakefly to Norway, which is also the first species in the family Inocelliidae. The species in this family have a rectangular shaped head without ocelli (Cederberg 1988). In addition,

the family Inocelliidae is without crossveins in pterostigma, as seen in the Raphidiidae family (Rintala *et al.* 2014). *Inocellia crassicornis* is one of the snakeflies with greatest geographical distribution, being found in Sweden, Poland, the Netherlands, Austria, Slovakia, the Czech Republic, Russia, Armenia, Germany, China, North Korea, South Korea and Mongolia (Liu *et al.* 2010, Cederberg 2010). *Inocellia crassicornis* is described as a black snakefly, with yellowish antenna mounts and legs. The neck shield is about 1.5 times longer than its width, and is about the same length as the head. The wings are transparent with dark fine networks. (Cederberg 1988, 2010).

The record

The first discovery of *Inocellia crassicornis* in Norway was made during an investigation of kelo-trees in Danielåsen in the Grane municipality in Nordland County (Figure 1). A snakefly was observed and depicted seated on the east side of a kelo-tree with a diameter of 40 cm at breast height (DBH) (Figure 2–3), about 124 cm above ground level. The habitat is an open, low-



FIGURE 1. Danielåsen in Nordland County marked with a red dot in the middle of the map. © Kartverket (<http://www.kartverket.no/>)

productive montane pine forest *Pinus sylvestris* (Linnaeus) (altitude about 400 m) with elements of spruce *Picea abies* (Linnaeus) Karsten) and birch *Betula pubescens* (Ehrhart). The individual had a body length of about 13 mm. The head was broad, flat and rectangular. The antenna mounts and feet were yellow. Record data of *Inocellia crassicornis*: NSI, Grane: Danielåsen, (EIS 115) UTM WGS84 33W E436753 N7270454, 15 June 2014 1♂, discovered by S.E. Eidissen, det. Teemu Rintala. Remarks: The species was not collected, but it has been determined from photos by Teemu Rintala, Conservation Biologist, Natural Heritage Services, Jyväskylä, Finland.

Discussion

Images of the finding in Danielåsen show a snakefly with a clear rectangular head (Figure 4), indicating that the species must belong to the family Inocelliidae. Yellow bones, antenna



FIGURE 2. Male of *Inocellia crassicornis* (Schummel, 1832) from Danielåsen, Grane municipality in Norway. Photo: S.E. Eidissen.

mounts, neck shield and wings fit the descriptions of *Inocellia crassicornis*. Even if it is not possible to determine from the images whether ocelli are missing, or if pterostigma is without crossveins, the rectangular shape of the head shows that this snakefly definitely is *Inocellia crassicornis*. The species is the only one within the family Inocelliidae previously registered in Sweden, and is mainly observed in Dalarna and Hälsingland, and first known from Borlänge in 1888 (Cederberg 2010). It was expected that the species would emerge in Norway (Greve 2002). The first Norwegian finding is about 40 km from the Swedish border and about 300 km in a straight line from the nearest findings in Sweden



FIGURE 3. *Inocellia crassicornis* (Schummel, 1832) was observed on the kelo-tree in the middle of the picture. Photo: S.E. Eidissen.



FIGURE 4. *Inocellia crassicornis* (Schummel, 1832) has a rectangular head shape, yellow legs and antenna mounts. Neck shield has approximately the same length as the head, and is 50% longer than the width. Photo: S.E. Eidissen.

(Swedish University of Agricultural Sciences 2014).

The larvae of *Inocellia crassicornis* are most likely predators on insect eggs, larvae or pupae that exist under the bark of dying or dead conifers (Aspöck 2002, Cederberg 2010). Evidence indicates that continuity in the presence of dead coarse pines with bark is a necessary habitat for the species (Bratt *et al.* 1993), and that adults prefer dry, sparse pine forests (Cederberg 2010). This suggests that the species is dependent on old-growth woodland. In Norway, only 2.1 percent of the total forest area is more than 160 years old (Granhus *et al.* 2012), and more than 50 percent of the productive woodland is clear felled (Brandrud *et al.* 2010). In other words, the Norwegian pristine forest is fragmented and a small part of the area is old forest. Danielåsen is a suitable habitat with some dead wood in a relatively open mixed forest. Further examination of the site can generate more knowledge about ecological conditions for *Inocellia crassicornis*. The species is undoubtedly vulnerable to fragmentation and other habitat change or habitat destruction (Cederberg 2010).

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