

Faunistics of stoneflies (Plecoptera) in Finnmark, northern Norway, including DNA barcoding of Nemouridae

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During a large-scale survey in the Norwegian county of Finnmark in 2010, insects were collected with Malaise traps and manual collecting techniques. Almost 6000 specimens of stoneflies collected during this survey are reviewed, and the incidence and abundance of the northern Scandinavian species are discussed. The species composition at the sites of the Malaise traps is explained by stream characteristics like width and velocity, rather than the altitude and continentality of the trap sites. The morphological distinction between the rare Arctic stonefly *Amphinemura palmeni* (Koponen, 1917) and the common *A. standfussi* (Ris, 1902) is discussed, and both species as well as the Fennoscandian endemic *Nemoura viki* Lillehammer, 1972 are illustrated with colour photographs. Initial results from DNA barcoding of Norwegian stoneflies show that *A. standfussi* colonised the Scandinavian Peninsula from the south as well as the northeast. Comparison with North American barcode data reveals that *A. palmeni* and *Nemoura sahlbergi* Morton, 1896 have a Holarctic distribution.

Key words: Plecoptera, Norway, Finnmark, faunistics, habitat preferences, Nemouridae, *Amphinemura*, *Nemoura*.

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Introduction

In 2010 entomologists from the universities of Trondheim, Bergen and Oslo carried out a large-scale inventory of aquatic insects in the Norwegian county of Finnmark, using Malaise traps and manual collecting methods (Ekrem *et al.* 2012). This inventory was primarily designed for the collection of aquatic Diptera, but large numbers of stoneflies were also collected. The Scandinavian Plecoptera fauna is depauperate relative to central and southern Europe and only 35 species are known from Norway. However, unlike the situation in many animal and plant taxa, within Scandinavia, the highest number of stonefly species occurs in the northernmost region. This is

due to the adaptation of many stonefly species to cold environments (Brittain 1990), and the occurrence of several species that are restricted to the Arctic region. In addition, since the last glaciation one species with a primarily southern distribution, *Protonemura intricata* (Ris, 1902), reached Scandinavia only from the Northeast, and has not yet dispersed south into the peninsula. Only three Norwegian species have not been found in Finnmark, whereas six other species only occur in the northern part of Norway. Finnmark is the Norwegian county with the highest number of stonefly species, namely 32 (Lillehammer 1988, Boumans 2011a).

The stonefly fauna of Norway is well studied so that no new species are to be expected.