

Observations on some mayfly and stonefly nymphs (Ephemeroptera and Plecoptera) in Utsjoki, Finnish Lapland.

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In my studies on the littoral and bottom fauna of some lakes and rivers near the Kevo Subarctic Research Station at InL, Utsjoki (69° 45'N, 27°E), I have found, in addition to other animals, some nymphs belonging of the orders *Ephemeroptera* and *Plecoptera*. The samples were collected in July 1962 and 1963 with nets and a dredge (Petersen type) and the specimens were preserved in 70 % alcohol. Later on, the mouth-parts and gills were mounted on slides in order to identify the species. In this work I was assisted by Mr. MICHAEL SAARISTO.

Hydrographically the waters of the Kevo area are rather uniform. The lakes are of the oligotrophic type, with clear, cold water and rather a low humus content. Some measurements made by me in July 1963 proved that the temperature of the surface water varied (10.2–16.4° C). The lowest values were observed in some alpine tarns. The KMnO_4 consumption (measured according to KAARTO-TIE & RYHÄNEN, 1957) varied (13.0–41.8 mg/l). The highest values were recorded after heavy rainfall in the alpine region. Secchi disc values in Lake Kevojärvi were from 4.5 to 4.9 m. and in Lake Taabmukjärvi (in the alpine region) only 1.5 m. The alkalinity (SBV) values varied from 0.06 to 0.14 and the pH values from 5.85 to 7.0. The lowest values were observed in some bog-pools in the alpine region.

Altogether two lakes and eleven tarns were investigated in July 1963. Most of them are situated in the silvatic region. The greatest biomasses of mayfly nymphs in these habitats were found in the uppermost littoral among the aquatic vegetation. The species characteristic of lenitic habitats is *Siphonurus aestivalis*. Stonefly nymphs were collected chiefly in running waters on stony bottoms or among vegetation. Most of them were collected in the rivers Tsharsjoki and Kevojoki, which are the most important feeders of Lake Kevojärvi. Some nymphs were also found in the stomachs and intestines of *Salmo trutta fario* and *Thymallus vulgaris*, caught in the River Vetsikkojoki.

Ephemeroptera.

The geographical distribution of the order in Finland was treated by TIENSUU (1939) and in Norway by BREKKE (1938). Later on, a new *Baëtis* species was described by KIMMINS (1957) (and the nymph of this species by MACAN, 1957) from

the Kilpisjärvi area in Enontekiö, Lapland, (EnL). TIENSUU (op.cit.) reported 22 species from the province of Inari Lapland (InL), to which the Kevo area belongs. In the following survey I shall refer to this publication.

Ephemera vulgata L.

2. VIII. 1962 Lake Kevojärvi, one nymph was dredged from a sandy bottom (depth 0.5 m.).

The species has spread over the whole country. It has once been found in InL (Inari). It is also reported from EnL and from Petsamo but not from Finnmark (BREKKE op.cit.). Although nymphs of this species (according to many authors) are numerous in the bottom fauna of many Fennoscandian lakes, they seem to be rather sparse in our northern lakes.

Heptagenia dalecarlica BENGT.

3. VII. 1962. Tsharsjoki River, 4 nymphs on a stony bottom. 5. VII. 1962 Kevojoki River, 1 nymph under the waterfall. 10. VII. 1962 Tshieskulniva Stream, 2 nymphs on a stony bottom. 21. VII 1963 Vetsikkojoki River, numerous mouth-parts and legs belonging to this species were collected from the stomachs and intestines of *Thymallus vulgaris* and *Salmo trutta fario*.

Almost all the nymphs were collected from swiftly running rivers, where they were found crawling among stones. The size of the specimens (without tails) varied from 7.0 to 12.0 mm.

The species is spread over northern Fennoscandia, but is not found in Finnmark (BREKKE op.cit.). Three collectors have previously found it in Utsjoki.

Siphonurus zetterstedti BENGT. → *S. laurilahti*

10. VII. 1962 Lake Kevojärvi, 1 nymph among the aquatic vegetation. 16. VII 1962 A small pond near Kevojoki, 1 nymph, 30. VII. 1962 Raessijoki River, 1 nymph among *Fontinalis*. 30. VII. 1962 A small lake northwest of Lake Kevojärvi, some nymphs.

This Fennoscandian species has spread sporadically over the whole of Finland. Earlier finds in InL: Inari and Utsjoki Outakoski.

Siphonurus aestivalis EAT.

3. VII. 1962 Kevojoki River, some nymphs on a stony bottom. 5. VII. 1962 Tsharsjoki River, near the inflow. 9. VII. 1962 Lake Jomppalanjärvi, some nymphs on a rock-strewn bottom. 10. VII. 1962 Lake Kevojärvi, numerous nymphs near the southern end among the vegetation. 30. VII. 1962 Raessijoki R., some nymphs among *Fontinalis*. 30. VII. 1962 A small lake in the forest region, some nymphs among *Carex*.

The size of the specimens collected varied from 5.0 to 13.0 mm. *S. aestivalis* is a European species which has spread over the northern and eastern parts of Fin-

land (TIENSUU, 1939). Earlier finds in InL: Inarinjoki River and Utsjoki Outakoski. *S. aestivalis* is the commonest mayfly species in the Kevo area. The nymphs are common in the littoral zone, swarming abundantly among the aquatic vegetation. They are also found in gently flowing waters.

Ameletus alpinus BENGT.

3. VII. 1962 Kevojoki River near the waterfall, 1 nymph on a stony bottom. 9. VII. 1962 Lake Jomppalanjärvi, 1 nymph (size 10 mm).

This North-Fennoscandian species (or subspecies?) has previously only once been found in Finland, recently in Utsjoki Outakoski. The identification of the nymphs is based on BENGTTSSON's description (BENGTTSSON 1930 b. p. 17).

Baëtis pumilus (BURM.)

3. VII. 1962 Kevojoki R., near the waterfall, 1 nymph on a stony bottom.

The nymph was uniformly dark brown without light spots on the abdominal tergites, but the form of the mandibles and gills fits well with MACAN's description of that species (MACAN 1961 p. 41).

In Finland to-day, the species is only found in the northern parts of Lapland. In 1905 it was found in Utsjoki. BREKKE (op.cit.) reports it from Finnmark.

Baëtis rhodani PICT.

3. VII. 1962 Kevojoki R., near the waterfall, 1 nymph.

The species has previously been reported from southern Finland; however, this find and some newer finds from the Kilpisjärvi area (SAARISTO & BAGGE, unpublished) probably prove that it has spread much more widely in Finland than has hitherto been supposed. BREKKE (op.cit.) reports it from Finnmark.

Baëtis macani KIMMINS

21. VII. 1963 Vetsikkojoki River, numerous mouth-parts and gills were found in the stomachs of *Thymallus vulgaris* and *Salmo trutta fario*. 29. VII. 1963 A small alpine lake east of Utsjoki church, numerous nymphs among *Carex aquatilis*.

The form of the gills and the spines of the front legs fits well with MACAN's description of the species (MACAN, 1957 p. 59). The size of the nymphs collected varied from 6.0 to 8.0 mm. The mouth-parts of the nymphs are seen in Fig. 1.

Centroptilum diaphanum MÜLL.

9. VII. 1962 Lake Jomppalanjärvi, 1 nymph on a stony bottom.

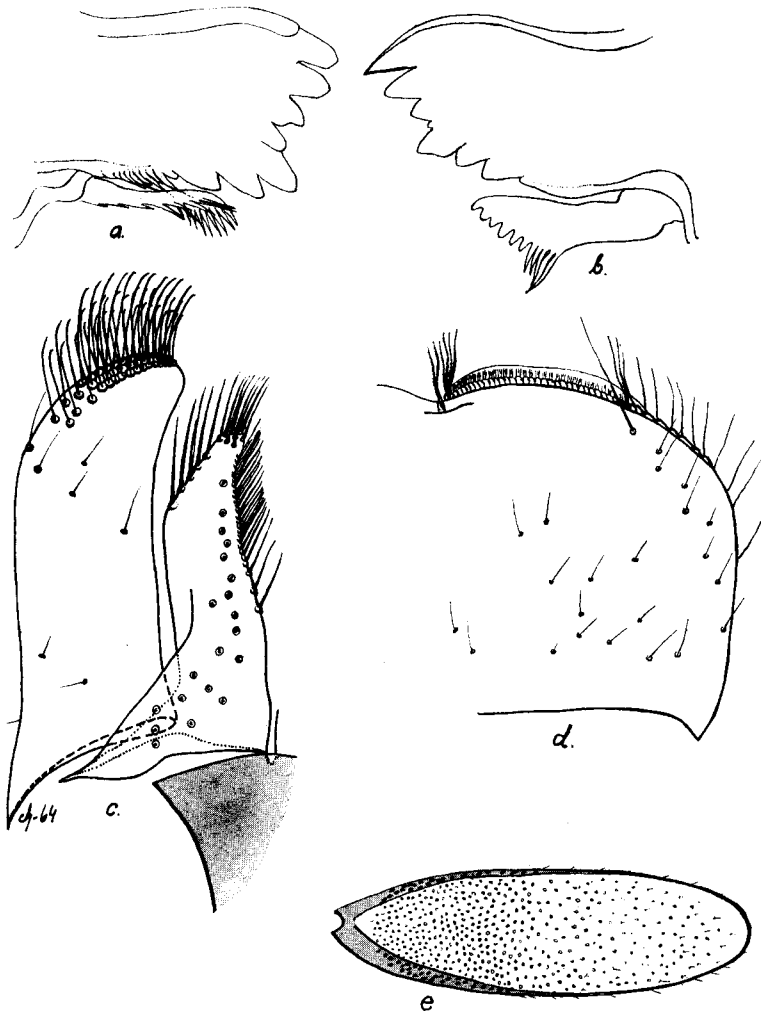


Fig. 1. *Baetis macani* KIMMINS 1957. - a. Canine area of the right mandible, ventral aspect. - b. Canine area of the left mandible, ventral aspect. - c. Right glossa and paraglossa, ventral aspect. - d. Right half of the labrum, dorsal aspect. - e. First gill. - Orig., drawings by M. SAARISTO.

Size without tail 13.0 mm.

A European species which has been found in most Finnish provinces. This is the first observation of the species in InL.

Leptophlebia vespertina L.

30. VII. 1962 Lake Kevojärvi near the south end, 1 nymph was dredged from the sandy bottom (depth 0.5 m). 26. VII. 1963 Jesnalvaara Fjeld, 1 nymph in an alpine tarn. 28. VII. 1963 An

alpine brook east of Utsjoki church, several nymphs among *Fontinalis* in the brook and in the littoral zone of Lake Taabmukjärvi.

This rather eurytopic species is found in all Finnish provinces. It has twice been reported from InL. It seems to be rather common in small tarns and slowly running brooks surrounded by *Sphagnum* bogs, especially in the alpine region. In the Lake District in England the species abounds in the more sheltered parts of lakes and in tarns and also occurs in slowly flowing streams where there is vegetation (MACAN, 1952).

Leptophlebia marginata L.

28. VII. 1963 At the same place as *L. vespertina*, 1 male and numerous nymphs.

The distribution of the species in Finland is similar to *L. vespertina*.

Ephemerella notata EAT. →

5. VII. 1962 Tsharsjoki R., 2 nymphs on a stony bottom near the inflow. 21. VII. 1962 Kevojoki R., under a small waterfall, 2 nymphs among the aquatic vegetation.

The size of the specimens varied from 9.0 to 11 mm.

This species has not previously been found in Finland. The identification of the nymphs is based on MACAN's description (MACAN, 1961). GRIMÅS (1961) mentions the species as being found in the subarctic Lake Ankarvattnet in Northern Sweden.

Plecoptera

Details of the distribution of this group in Finland have been published by KOPONEN (1916) and HIRVENOJA (1960). The former reports 12 stonefly species from InL. In the following survey I shall follow the systematic order proposed by BRINCK, 1952.

Nemoura sulcicollis STEPH.

7. VII. 1962 Tsharsjoki River near the inflow to Lake Kevojärvi, 1 nymph. It was collected with a case of *Hydropsyche* (*Trichoptera*). 29. VII. 1963 An alpine brook east of Lake Mantojärvi, 1 nymph was collected with numerous *Nemoura cinerea* nymphs.

The species has twice been found in Finland (Muonio, Kittilä 1905). It is a characteristic species of brooks in northern Sweden (BRINCK, 1952).

Nemoura borealis MORT.

5. VII. 1962 Kevojoki River near the inflow, 1 nymph was found among *Potamogeton alpinus*.

The size without cerci was 5.0 mm.

Several localities in East and South Finland. Has once been found at Muonio in Lapland. A characteristic species of streams in North Sweden (BRINCK, 1952).

Nemoura cinerea RETZ.

21. VII. 1963 Vetsikkojoki R., one nymph in the stomach of *Thymallus vulgaris*. 29.VII. 1963 An alpine pond east of Lake Mantojärvi, several nymphs. An alpine brook, 14 nymphs among *Batrachospermum*. Lake Taabmukjärvi, remains of cerci in a sample of bottom sediments.

The size of the specimens collected varied from 5.0 to 6.1 mm. The species is rather eurytopic and has spread over the whole country.

Nemoura erratica CLAASSEN (should be *N. flexuosa* Rubert, 1949 cf. Meinander, 1965)

30. VII. 1962 Raessijoki River, 1 nymph among *Fontinalis*.

The size of the specimen was 5.2 mm.

The species has not previously been found in Finland. In Sweden it is mostly found in the south of the country and only seldom in the north (BRINCK, 1952).

Diura bicaudata L.

10. VII. 1962 Lake Kevojärvi near Tshieskula, some nymphs on a stony bottom in gently flowing water.

The size of the nymphs varied from 10.2 to 17.5 mm.

KOPONEN (op.cit.) reports the species as being observed mostly in East and North Finland. In northern Sweden it has been found in alpine lakes at an altitude of 1000 m. (BRINCK, 1952).

Diura nanseni KEMP.

10. VII. 1962 Lake Kevojärvi near Tshieskula, 1 male nymph on a stony bottom in gently flowing water. It was 14.5 mm. long.

This northern and eastern species has been found in northern Finland and in Helsinki.

Isoperla obscura ZETT.

27. VII. 1962 Lake Kevojärvi near the Research Station, 1 nymph on a stony bottom. 10. VII. 1962 Lake Kevojärvi Tshieskula, 1 nymph on a stony bottom in gently flowing water. The length was 10.0 mm.

It has been found in several localities in Central and Northern Finland, and previously collected in Utsjoki and Inari.

Chloroperla burmeisteri PICT.

5. VII. 1962 Tsharsjoki R., near the inflow, 1 nymph (7 mm.).

The species has a discrete distribution area in Finland. It has once been found in Utsjoki. It is widespread in Central and Northern Sweden (BRINCK, 1952).

S u m m a r y.

In this paper some knowledge of the ecology and distribution of mayfly and stonefly nymphs in Finnish Lapland is given. The determination of the species is based on the nymph material collected in the summer of 1962 and 1963 in some lakes, tarns and rivers near the Kevo Subarctic Research Station (69° 45' N, 27° E). Because of the lack of adult specimens in my material, especially of the genus *Siphonurus* and *Ameletus*, no further systematic conclusions can be drawn.

Altogether 12 Ephemeroptera and 8 Plecoptera species were found in the Kevo area. Most of them inhabited lakes and brooks in the silvatic region. The commonest species in this region were *Siphonurus aestivalis* (in lakes) and *Heptagenia dalearlica* and *Diura bicaudata* (in streams). Only three mayflies and two stoneflies were found in the alpine region. The commonest were *Baëtis macani*, *Leptophlebia marginata* and *Nemoura cinerea*. The species observed at all altitudes were *Leptophlebia vespertina* and *Nemoura cinerea*, which seem to be the most eurytopic species of the groups in Finland. The species *Ephemerella notata* EAT. and *Nemoura erraticata* CLAASSEN have not previously been reported from Finland.

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* Meinander, M., 1965: List of the Plecoptera of Eastern Fennoscandia. Soc. Fauna Flora Fenn. Fauna Fennica 19, 38 pp.