

## A FRESHWATER AMPHIPOD *GAMMARUS LACUSTRIS* SARS IN UTSJOKI, FINNISH LAPLAND

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Our two freshwater amphipods, *Gammarus pulex* and *Gammarus lacustris*, seem to have quite different distribution areas in Finland (SEGERSTRÅLE 1954). The former is restricted chiefly to eutrophic areas in Southern Finland, where it lives in springs and brooks above the shorelines of the Littorina Sea. It has spread there during the Baltic Ice Lake and subsequent freshwater stages from the South. The distribution area of *Gammarus lacustris* is to the north in Finland to-day as can be seen from map 28 published by SEGERSTRÅLE (1956 p. 46). It has been found in Kilpisjärvi, Kittilä, Sodankylä, Kuusamo and in two lakes in Inari Lapland (InL).

In July 1962 and 1963 when I collected material in the neighbourhood of the Kevo Subarctic Research Station at Utsjoki, I found the species rather common in Lake Kevojärvi and in some surrounding waters in the silvatic region. It is possible that it spread to Utsjoki in postglacial times via the Teno River or that it was carried by birds from Norway, where it survived the Ice Age in refuges (SEGERSTRÅLE 1954).

According to many writers *Gammarus lacustris* lives in deep, clear and cold fjeld lakes, though the temperature range especially of southern populations seems to be rather wide. In Britain it is found in lakes and their outflows, not in running water except below a lake (HYNES, MACAN and WILLIAMS 1960). In lakes it occurs almost exclusively in higher litoral areas among the aquatic vegetation, where it is well sheltered against enemies. It feeds on fine detritus, algae, higher water plants and sometimes also planctonic animals (STUBE 1958).

In lakes Kevojärvi and Jomppalanjärvi where I found the species in the summer year 1962 and 1963 in 15 sampling stations it occurred within the zone 0.1—4.5 m. Only the deepest observation place was outside the aquatic vegetation zone.

Bottom conditions varied according to depth. In shallow water, the bottom consists mainly of stones, sand and gravel, or finer sediments where the place is more protected against erosion. Outside the *Myriophyllum alternifolium* —

belt (about 1—2 m) the bottom is characterized by fine sediments often rich in iron. Usually in the observation places of the species the bottom was covered by birch leaves and other organogenic material. In those places the animal community consisted of larvae of *Chironomidae* (*Sergentia*, *Stictochironomus*, *Chironomus anthracinus*, *Tanytarsus gregarius* — group and *Orthocladinae*), *Trichoptera* (*Molanna*, *Molannodes*, *Limnophilus borealis* and other *Limnophilinae*), *Sialis*, *Helobdella stagnalis*, *Glossiphonia complanata*, *Spongilla lacustris*, *Sphaeridae*, *Tubificidae*, *Stylodrilus heringianus* and *Lumbriculus variegatus* etc. The underwater vegetation comprised several species.

Deeper down the species was observed living among *Isoëtes lacustris* and *Myriophyllum alternifolium*. It is not found among *Nitella*, which in Lake Kevojärvi reaches a depth of 9 m. In Lakes Ankarvattnet and Blåsjön in Northern Sweden the species is reported as deep as 13 m (GRIMÅS 1961). It is there most abundant between 2 and 6 m. In Lake Blåsjön a considerable decrease of the species was observed after regulation of the water level. The water level in Kevojärvi fluctuates more than 2 metres in the spring, but no harmful effect on the population of the species is observed. The bathymetric distribution of the sexes of *G. lacustris* seems to be different. The phenomenon is explained by STUBE (1958).

In July the males in Kevojärvi were found chiefly in uppermost litoral 0.5—1 m. The females were collected at a deeper level among *Myriophyllum* and *Isoëtes*. The limit between the sexes in bathymetric distribution is less definite in August, when the temperature of the water has decreased. Many of the observed females had eggs in their brood pouches in July. Over 50 eggs were observed in one female. The size of the collected specimens varied in males from 0.4 to 1.6 mm. and in females from 0.8 to 2.1 mm. (in both cases without antennae).

The maximum densities in two samples of the species taken from the higher litoral region of Kevojärvi were over 200 per m<sup>2</sup>. Near the inflow of Raessijoki River over 400 were counted per m<sup>2</sup>. There the water temperature in July 1962 was 5 degrees lower than elsewhere in the litoral region of the lakes mentioned.

The species was also found in some ponds Northwest of Kevojärvi at 100—170 m. a.S.l. on the slope of Jesnalvaara Fjeld. One of these ponds was situated in subalpine region. Near this pond another alpine Crustacean *Polyartemia forcipata* Fisch. was found in great numbers.

All the ponds were shallow and without fishes. The bottom of the subalpine pond was covered by yellow-green elastic algal ooze containing chiefly *Chlorophyceae*. The pond was surrounded by a *Carex*-belt. Plancton was rather scanty, probably due to oligotrophy. Many individuals of *G. lacustris* were found swimming in water together with the larvae of *Dytiscus*. Some were

crawling on the bottom with many *Chironomidae*, *Pisidiae* and *Lumbriculus variegatus*. The density of the species per m<sup>2</sup> was in many places much greater than in Kevojärvi. Because the ponds are shallow and the climate very hard at these altitudes it seems almost impossible that such dense *lacustris* — populations can survive there in winter. However the eggs found in the brood pouches of the females prove that the species was well implanted there.

*Summary.* The density of *Gammarus lacustris* in Lakes Kevojärvi and Jomppalanjärvi and some adjacent ponds probably proves that it is spread much wider in Finnish Lapland, especially in waters flowing to the Arctic Sea, than has hitherto been supposed. It belongs in Utsjoki to the same fauna type as *Salmo salar*, *Gasterosteus aculeatus*, *Anguilla vulgaris* etc. which have come there via the Teno River.

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NOTES ON SOME SOUTHERN BIRD SPECIES FOUND IN  
THE VICINITY OF KEVO IN UTSJOKI,  
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In the present paper are reported some ornithological observations made in recent years in the vicinity of the Kevo Subarctic Research Station in Utsjoki, Finnish Lapland (69°45'N). All the observations relate to bird species whose normal distribution area is in southern Finland, and does not extend to the zoological region of Fjeld Lapland (see MERIKALLIO 1958). These observations are of purely faunistic interest, because they reveal, as far as I know, the northernmost places in Finland where the species are encountered. In addition, they show that the commonly known phenomenon of many southern bird species moving gradually northwards is still in operation and that explorers of some of these species are reaching rather northern latitudes. Generally, the first newcomers are individuals whose spring migration has been prolonged. Most of the following observations deal with cases of this type.

Just as in Finland, the spread of southern birds northwards has also been considerable elsewhere in Scandinavia. Especially this can be said about the coastal areas of northern Norway, where the average rise of temperature and the climate's changing to a more maritime one, which are the principal reasons for the spread (KALELA 1949), have been relatively more marked (HESSELBERG & BIRKELAND 1940, HAFTORN 1957 b). It is therefore of interest when reviewing observations at Kevo, to compare the distribution of the species in Finland and in Norway, respectively. At the same time it can be speculated from what directions the specimens have come to Kevo.

1. Heron (*Ardea cinerea* L.)

On May 23rd 1960 a bird of this species rose from an islet in the mouth of the Kevojoki River at 21.10 and hovered over the Kevojoki valley and Lake Kevojärvi for about two hours. Every now and then it alighted to stand in the shallow waters near the promontories of Kevonniemi and Kutuniemi. I did not see when the bird left the lake, nor was I able to estimate its age.