

Land and Freshwater Mollusca

in

The Arctic Regions of Norway

by

Birgithe Esmark.

Of late years naturalists have turned their attention, with steadily increasing interest to the arctic regions. The northern parts of Norway have also frequently been visited; not only Norwegian men of science, but foreigners go northward in the short summer time, being sure to find much of interest, and being likely to make discoveries of objects new to science. It is however chiefly the vertebrata, insects and the lower marine animalculæ, that have been the subjects of investigation, while the extra-marine Mollusca until recently were entirely disregarded.

It is true that some Swedish Zoologists have picked up a shell here and there; the Swedish expedition to Jenisei 1875 collected land and freshwater shells on Hindø in Nordland and on Renø a little to the north of Tromsø in Finmarken; Mr. R. Collett of the University of Christiania, has also brought some from his travels. I too have received a few specimens from friends; but all that has been done, has been done unsystematically, so to speak in passing by.

Since Tromsø established its own museum, a few years ago, the superintendent, Mr. Schneider, has made a good

beginning of collections of land and freshwater Mollusca, and especially made his researches on Tromsøen, which from its rich vegetation and thick woods, is a particularly suitable habitation for snails and slugs. The results have however been as yet very small in species, and cannot give any complete idea of what is to be found, but will still have an interest for Malakologists, as tending to aid in forming an estimate of the geographical distribution of the extra-marine Mollusca.

The Mollusca that have been collected for the museum of Tromsø, have been sent to me by Mr. Schneider, for examination. I have also sought to gather information from those who are in possession of shells, and from the works mentioned below.

As Tromsøen has been most examined and is a well defined field of research, I shall give the description of the geological formation of the island, which I take from Mr. Schneiders article in the „Tromsø Museums Aarshefte II, 1879“.

„The most southerly twothirds of Tromsøen consists chiefly of mica-schist with frequent layers of a crystal-grained grey limestone; a fine-grained greenstone frequently crops out, which, especially on the south side of the island goes over to a complete eklogit. Greenstone like formation rich with garnet appear also in the limestone in layers or masses and also a crystalline rock, consisting of hornblende with quartz and feldspar studded with garnet. The most northern portion of the island, north of a line drawn between Sandnæs on the westside and Brevik on the eastside“ — and thus to the north of the town of Tromsø — „consists chiefly of grey gneis and hornblende-gneis, while here and there a conspicuous light coloured rock consisting of hornblende and a white feldspar projects.

Limestone is not found in this part of the island. The „Fløifjeld“ with „Tromsødalen“ across the sound from

Tromsø, consists of mica-schist and grey limestone. The investigated parts of Tromsøen are mostly covered with glacial sand, gravel and pebbles."

Joachim Frieles work "Norges Land og Ferskvands Mollusker", I have had to leave out of consideration, as, although the author mentions species "which are to be found over the whole country," he fails to specify any locality or give any proofs of their really having been found.

Professor G. O. Sars has in his "Mollusca regionis arcticæ Norvegiæ, 1878."

Margaritana margaritifera L.

Limnæa peregra Müll.

Succinea putris L.

Hyalina hammonis Strøm

Arionta arbustorum L.

The *Mrg. margaritifera* and *L. peregra*, are taken from Friele, and should be excluded had not subsequent research proved their existence. *Suc. putris* is said by Westerlund to have been found in *var. trianfracta*, by Zetterstedt at Alten in West-Finmarken. Sars has admitted *Hyal. hammonis* from Westerlunds "Fauna Sveciæ, Norvegiæ," where he speaks of a *Hyalina* from Finmarken in the museum of Upsala, and which he considered to be this species; I find however (Prof. Lilljeborg having with his accustomed kindness sent me the shell for examination) that E. v. Martens's supposition is correct; it is not *Hyal. hammonis* but *Hyal. petronella* Chrp.

In "Bidrag til Norges Land og Ferskvands Moll.", *Nyt Mag. f. Naturv.* 1879, I have given the following five species, of which the two first mentioned, were known from other localities.

Arionta arbustorum

Hyalina petronella

Conulus fulvus

Cochlicopa lubrica

Succinea pfeifferi.

In Sitzungs- Bericht d. Gesellsch. naturf. Freunde, No. 2, Berlin 1881, E. v. Martens stated that he the previous summer, had received the following Mollusca from Bodø and Mo in Ranen in Nordland:

Vitrina pellucida

Hyalina radiata

„ *petronella*

„ *fulva*

Punctum pygmæum

Patula ruderata

Helix pulchella

„ *arbustorum*

Cionella lubrica

Balea perversa

Clausilia nigricans

Pupa muscorum

„ *alpestris*

Succinea pfeifferi.

He compares these with the previously discovered species and finds 14 sp. from Nordland and 8 from Finmarken, including *Marg. margaritifera* and *L. peregra*, which as before mentioned, must be admitted.

Westerlund has subsequently in his „Malakologiska bidrag“, Stockholm 1881, added for the northern Norway.

Vitrina angelicæ

Succinea contortulus

which were found by the Swedish „Jenisei expedition“.

In „Die Pisid. d. südl. Norwegens, Malak. Bl. N. F. V. B, I have mentioned *Pis. nitidum* also from Andenæs on Andø in Vesteraalen.

The total number would thus be 20, of which 15 in Nordland and 10 in Finmarken, 5 are common for both provinces.

Several of the species are found far north; *B. perversa* has been found on Hammersø (68° 15' N.) by Mrs. Gylche. That *Pat. pygmæa* is found at Vardø (70° 20' N) is of very great interest, as showing how very far to the north Mollusca are distributed along our coasts where the temperature never sinks so low as in the interior of the country. Westerlund (Sibir. Land och Ferskv. Moll.) mentions—according to G. Gerstfeldt — Kultuk at the lake of Baikal as the most northern locality in Siberia for *P. pygmæa* and Luleå Lapmark in Sweden.

Clausilia bidentata lives even on Tromsøen, where *Pupa alpestris* also is to be found.

L. truncatula is very common on Tromsøen, especially in slender forms.

All the information concerning the habitation of the Mollusca I owe to Mr. Schneider, as I have not personally made any of these collections.

Arion Fér.

A. empiricorum Fér.

var. albus. A young specimen from Tromsdalen.

A. subfuscus Drp. Common on Tromsøen. The colour of specimens from the museum of Tromsø is very dark brown, and goes in one case evenly over into the side — bands, while in another these are well defined. A very large specimen is from Andenæs on Andø. Miss Møller has brought me two specimens from Stangenæs at the mouth of Tana river, which are of a light brown colour on the back.

Limax Lister.

L. agrestis L. Very common on Tromsøen; Mr. Schneider has found it to the middle of October; but scarcely any of the specimens found exceed 25 m. m. in length. The colour is uniform light brown.

Vitrina Drp.

V. pellucida Müll. Tromsøen.

V. angelicæ Beck. On Tromsøen under stones. At Vardø under stones a few feet above the sea-level.

Hyalinia Fer.

H. hammonis Strøm. Pretty shells and very glossy, the largest has 3,8 m. m. in diameter. Common as well south as north on Tromsøen. From Maalselven by Collett.

H. petronella Chrp. In Septb. found at Brevik on Tromsøen. The greenish tinge is paler than in shells from the south of Norway.

Conulus fulvus Müll. Common on Tromsøen. Hornø by Vardø together with *Vitr. angelicæ*.

Helix Linnè.

Patula harpa Say. Of this pretty little Mollusk Schneider has in Juli found two dead specimens in the stem of a decayed birch-tree, at Kirkenæs in South-Varanger. It was first found in North-America, later in the country of Amur, but not yet in Siberia, while in Finland it goes as far as the shores of the arctic ocean.

P. pygmæa Drp. Only one shell together with *Pupa muscorum* from Hornø by Vardø.

P. ruderata Stud. Common on Tromsøen; on „Fløifjeld“ not higher than 60 m. Elvenæs in South-Varanger.

Vallonia pulchella Müll. „Sølbakken“ on Tromsøen, not common.

Vallonia costata Mull. Together with the previous species.

Eulota fruticum Mull. In the collection at the museum of Christiania is a half-grown specimen from Lofoten, but without any locality specified.

Arionta arbustorum L. Since I in „Nyt Mag. f. Naturv. 1880“ mentioned that I only had light coloured shells from Tromsø, I have later also got two brown ones. One

shell from „Fløifjeld“ is brown with a greenish tinge. It is thus evident that in Norway, it is no rule that the brown colour of the shells becomes lighter as the go farther northward any more than by rising in altitude. It is said, that it was once found in great numbers in Tromsdalen. It is known with certainty, that it lives very high up on „Tromsdalstind“, but I have not yet seen any specimens.

var. alpestris. Together with *Eul. fruticum* from Lofoten, at the museum of Christiania.

var. morbosa—albina Rosm. Tranø in Hammerø.

Pupa Drp.

P. muscorum L. Verry common on Tromsøen, especially where limestone prevails. *Unidentata* is only one out of 48 shells. From Hornø at Vardø are collected 24 full-grown specimens, only two are *unidentata*.

P. inornata Mich.

var. Gredleri Cles. Only one shell from the limestone quarry, behind the parish church on Tromsøen. Abundantly under stones on Hornø at Vardø.

P. alpestris Ald. A large, glossy, dark brown shell from Brevik on Tromsøen.

P. arctica Wallenb.

Shell dark horncolour, the tooth on the pillar lip is small, on some specimens it is vanished; none of them have any tooth inside the outer lip.

This species is new to Norway. Mr. Schneider found it this summer under stones together with *P. Gredleri* on Hornø at Vardø. Wallenberg found it first in Luleå Lapmark, Müller and Mørch mentions it from Greenland as *P. hoppersi*. As it is found many places in Sweden, is it most likely to be found in other localities; this time it was only by chance it was found.

Cochlicopa Risso.

C. lubrica Müll. Common everywhere on Tromsøen.

Balea Brid.

B. perversa L. The museum of Tromsø has a half-grown specimen from Tranø in Hammerø.

Clausilia Drp.

Cl. bidentata Strøm. On the southern parts of Tromsøen.
var. septentrionalis. Tromsøen, and Tranø in Hammerø (Mrs. Gylche).

Valvata Müll.

V. piscinalis Müll. The colour is in halfgrown specimens greenish, on fullgrown ones it goes over to yellowish grey or yellowish brown. The largest shell has 6 m. m. in diameter, the height 4 m. m. One shell is scalariform, the foremost half of the last whorl is separated from the preceding, and bent downward. Very common at „Bjerkeng“ by Fjeldfrøskelv, a tributary to Maalselven, in the soft muddy bottom together with *L. ovata*.

Fjeldfrøskelv runs very slow, every where in a bed of quartz-schist and quartzite and therefore contains but very little calcium.

Limnæa Drap.

L. stagnalis L. At „Gadde-luobbal“ („Katalombola“), Pasvik river in South-Varanger.

L. ovata Drp. Very thin shells, colour light, greyish yellow or brown. The spire in most of them very long; the whorls very convex. It is very common in Fjeldfrøskelv, „empty shells are found by thousands on the bottom together with,“ *V. piscinalis*. One small form from „Præstvand“ on Tromsøen.

L. mucronata Held.

I know no other species to which to refer this form. It is well distinguished from *L. ovata*, by its high and slender spire, and very convex whorls. The shell is thinner than specimens from Glessin as it lives in water containing

very little calcium. Most of them have the upper whorls more or less gnawed. The colour is light brown. Together with the preceding species.

L. palustris Müll.

var. fusca C. Pf. Very common where it occurs in Fjeldfrøskelv. The form is somewhat elongated conic, and resembles Clessins figure in Deut. Exc. Moll. Fauna. The largest has the height 17 m. m. and br. 8,5 m. m. The upper whorls are mostly gnawed, the last with sculpture as in *L. stagnalis*.

var. turricula Cles. Frequent in the same river as the preceding one. Both varieties are found in „Langkjosen“, only on the tufts of *carex*, just then overflowed with water. Single specimens are found in a closed creek by Fjeldfrøsk bridge, as well as in a creek in Maalselven. In both the last places under similar circumstances as in „Langkjosen“.

L. peregra Müll. All the shells collected seemed to have been dead, they were thin and brittle, the whorls convex; the color greyish yellow. It must be referred to Kobelts figure 1493 Iv 149 in Rossm. Iconog. BV. The largest shell has only the last $1\frac{1}{2}$ whorls left. The height of the mouth 11,5 m. m., which makes it probable that the height of the shell have been between 16—17 m. m. All the shells have marks of gnawing, especially the upper whorls with hollows and furrows „Is found in great numbers in „Stenvand“, a mountain lake, in a bed of limestone, in Salangen.“

L. truncatula Müll. In a ditch on Sørstranden by Tromsø. In a limestone quarry north of the town.

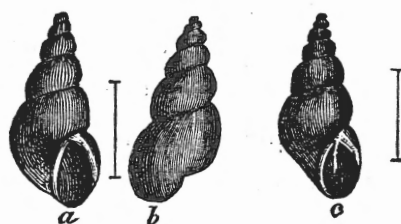
var. ventricosa. The shell thin and brittle, the colour yellowish brown, somewhat glossy, the whorls distinctly truncated as in *typica*. Moen in Maalselven.

var. microstoma (Mal. Bl. 1879, Tr. II, F. 3). The shell firm and solid, dark redish brown, several specimens have on the inner lip a thin redish calcareous layer. The colu-

mellar fold is less reflected than is general, whereby the *umbilicus* becomes more visible. From the limestone quarry by Tromsø. By the quarrying of stone wanted for building purposes, cavities have been formed. These have gradually been filled with water, though having no communication with any rivulet. It would therefore be difficult to account for, how *L. truncatula* could be found there, if the enigma could not so easily be solved by recurring to the *grallatores* and *anser*es among the birds as transporters. When the birds swim and walk about the shores, among reeds and grass, and in mud, eggcapsules and animals can easily stick to their legs and thus by the birds be carried from one lake to an other.

var. Schneideri m.

Shell dark brown with a redish tinge, turreted, the ridges are in fullgrown specimens indistinct in spiral direction; young shells transparent, fullgrown ones opaque, many of them bleached and all more or less gnawed. *Whorls* 6, convex, rapidly increasing in breadth, the last bowed down towards the mouth, and more (a. b) or less (c) truncated; *suture* deep; mouth eggshaped, rather acute—angled above; *columella* a little oblique; the outer lip is fastened very much to the left on the penultimate whorl, almost meeting the inner lip, the latter is not folded on the columella, which makes the umbilicus free.



It was found Sept. 11th, very numerous on „Fløifjeld“ about 500 m. high in a shallow dike, only 33 cm. deep, but also by hundreds quite dry under stones, and bored down in the moist sand where the water was dried up.

Planorbis Müll.

Pl. borealis Lovén. One shell from Varangerfjord belongs to the museum in Upsala.

Margaritana Schum.

M. margaritifera L. At the museum in Tromsø there are specimens from „Græsmyrvand“ on Senjen island, and from „Borge“ in Lofoten. It is also found in South-Varanger, and Berlevaag in East-Finmarken. In Øxfjord at Mr. Buck's I was informed that in Karasjok river it is very common, and not unfrequently with pearls.

Until now the total number of species found is 35. Of these are 17 sp in Nordland, 27 in West-Finmarken and 14 in East-Finmarken*). 14 species are common for Nordland and West-Finmarken, 9 for Nordland and East-Finmarken, 9 for West- and East-Finmarken.

A table of the species with their habitation in different provinces is added.

| Name of species | Nordland. | West-Finmarken | East-Finmarken | |
|-------------------------------------|-----------|----------------|----------------|---|
| <i>Arion empiricorum</i> | — | — | — | 1 |
| „ <i>subfuscus</i> | — | — | — | 3 |
| <i>Limax agrestis</i> | — | — | — | 1 |
| <i>Vitrina pellucida</i> | — | — | — | 2 |
| „ <i>angelicæ</i> | — | — | — | 3 |
| <i>Hyalinia hammonis</i> | — | — | — | 2 |
| „ <i>petronella</i> | — | — | — | 3 |
| <i>Conulus fulvus</i> | — | — | — | 3 |
| <i>Patula harpa</i> | — | — | — | 1 |
| „ <i>pygmæa</i> | — | — | — | 2 |
| „ <i>runderata</i> | — | — | — | 3 |
| <i>Vallonia pulchella</i> | — | — | — | 2 |
| „ <i>costata</i> | — | — | — | 1 |
| <i>Eulota fruticum</i> | — | — | — | 1 |
| <i>Arionta arbustorum</i> | — | — | — | 3 |
| <i>Pupa muscorum</i> | — | — | — | 3 |

*) East-Finmarken called by E. v. Martens „North coast“.

| Name of species | Nordland | West-Finmarken | East-Finmarken | |
|--|----------|----------------|----------------|---|
| <i>Pupa inornata</i> | " | — | — | 2 |
| " <i>alpestris</i> | — | — | " | 2 |
| " <i>arctica</i> | " | " | — | 1 |
| <i>Cochlicopa lubrica</i> | — | — | " | 2 |
| <i>Balea perversa</i> | — | " | " | 1 |
| <i>Clausilia bidentata</i> | — | — | " | 2 |
| <i>Succinea putris</i> | " | " | — | 1 |
| " <i>pfeifferi</i> | " | — | " | 1 |
| " <i>contortulus</i> | " | — | " | 1 |
| <i>Valvata piscinalis</i> | " | — | " | 1 |
| <i>Limnæa stagnalis</i> | " | " | — | 1 |
| " <i>ovata</i> | " | — | " | 1 |
| " <i>mucronata</i> | " | — | " | 1 |
| " <i>palustris</i> | " | — | " | 1 |
| " <i>peregra</i> | " | — | " | 1 |
| " <i>truncatula</i> | " | — | " | 1 |
| <i>Planorbis borealis</i> | " | " | — | 1 |
| <i>Margaritana margaritifera</i> | — | — | — | 3 |
| <i>Pisidium nitidum</i> | " | — | " | 1 |
| | 17 | 27 | 14 | |