Orodemnias cervini Fallou ssp. fridolini n. ssp. (Lepidoptera, Arctiidae)

By Stig Torstenius

On July the 19th 1967 Mr Clas Källander, Gävle, caught a male of an arctiid that he could not immediately classify. The moth was found at an altitude of about 1300 meters on the slopes of the mountain Nissontjårro east of Abisko National Park, Torne lappmark, Sweden. On the same mountain, at an altitude of about 700 meters, his cousin Mr Karl Källander, Gävle, on July the 7th 1968 found two brown bluish-white powdered pupae under a stone. They were fastened to the underside of the stone with a few thin threads. One of the pupae hatched on July the 25th and gave a female evidently belonging to the same species as the previously mentioned male.

The two moths (fig. 1 and 2) have been handed over to me for determination. It was at once evident that they belonged to a species not previously found in Sweden and that they must be closely related to *Orodemnias quenseli* Payk (fig. 7 and 8). Of this genus only one other species is known from Europe, *O. cervini* Fallou (fig. 3—6). However, there was another arctiid to be considered, "*Chibinarctia fridolini*", mentioned by the late Russian entomologist N. J. Kusnetzov. I contacted the specialist on *Arctiidae* Professor Olavi Sotavalta, Oulu University, Finland, who very kindly has examined the specimens and has greatly helped me.

Professor Sotavalta has informed me as follows. In the Zoological Museum of Leningrad there is a female of an arctiid labelled "*Chibinarctia fridolini*" collected by a Mr Fridolin in August 1931 on the Chibina mountain on the Kola peninsula. The specimen is rather worn but it closely resembles the two Swedish specimens. In the Leningrad collection there is also a very worn undetermined specimen from Altai collected by A. Jakobson in July 1908 which might belong to the same species. In his article "The Origin of the Lepidopterous fauna of the Arctic Eurasia" — Arctica No. 3, 1935, pp 115—138 — N. J. Kusnetzov (p. 127) has mentioned "*Chibinarctia fridolini*, gen. n., sp. n.", but without any description of the species. Kusnetzov also wrote a manuscript of several hundred pages containing i.a. a number of new descriptions, but this work has never been published. The manuscript may have contained a description of "*fridolini*".

Through Professor Sotavalta I have received a photostatic copy of page 127 of Kusnetzov's article and through him and other sources I have asked the Leningrad Museum for both a photo of the "*fridolini*" and a copy of Kusnetzov's description of the species, if there was any. It has however not

been possible to get any answer from the museum, and on account of that I can not pay any particular attention of the Leningrad specimens.

Professor Sotavalta has in his collection two Swiss *Orodemnias cervini* Fallou (fig. 5 and 6) bred from eggs. An examination of these two specimens, their two pupal skins and larval skins, of two Swiss specimens of *cervini* (fig. 3 and 4) from the collection of the Naturhistoriska Riksmuseum, Stockholm, of my own Swedish specimens of *Orodemnias quenseli* Payk., four males and a female, and of the two Nissontjårro specimens as well as the pupa and the pupal skin with their two larval skins has given the following result.

The larval skins of the Nissontjårro specimens show that the larvae must have been black with tufts or a band of yellow hairs along the dorsal line and have had the rest of the body covered with black hairs more or less densly, particularly along the sides, intermixed with grey or whitish hairs; the two skins are markedly different in the last respect. The head must have been shining black and the skins indicate that the tail end of the larva has some hairs considerably longer than the rest. The skins are very similar to the two *cervini* skins examined and they tally fairly well with the descriptions of the *cervini* larva given in the literature and with the figure of the *cervini* larva given by Spuler on plate 13 fig. 6. The descriptions of the *quenseli* larva given in the literature indicates that the Nissontjårro larvae were less like the larvae of *quenseli* than those of *cervini;* i.a. the Nissontjårro skins have no trace of reddish hairs along the sides.

The Nissontjårro pupae were redbrown to darkbrown with a bluish white easily rubbed off coating and thus similar to the pupae of both *quenseli* and *cervini*. In the literature it is mentioned that the larva of *quenseli* pupates in a cocoon (Spuler) or under stones in a light cocoon (Forster-Wohlfahrt) and that *cervini* pupates under stones in a light cocoon often consisting of only a few threads. If these statements are correct, the Nissontjårro specimens have pupated in a way more similar to that of *cervini* than that of *quenseli*. I must mention here that the *cervini* given to Professor Sotavalta had pupated in a semitransparent greyish cocoon; but that can be explained by the fact that they hardly could have pupated under normal conditions.

The cremasters of the pupa and the pupal skin from Nissontjårro consist of a number of hooklets placed in two groups each containing 4 to 6 longer and about 10 to 15 shorter hooks. Ventrally between these two groups two isolated shorter hooks are placed. However, these cremasters show a certain range of variation and the cremasters of the two Swiss pupal skins examined are very different from each other as well as from the Swedish ones. No particular conclusions can thus be drawn from the cremasters, at least not with the small material at hand.

It can here also be noted that the Nissontjårro female laid some eggs that were yellow which according to the literature proves them similar to those of both *quenseli* and *cervini*.

The Nissontjårro moths have a wingspan of 35 millimeters, the male, to 35,5 millimeters, the female. The *cervini* of the Naturhistoriska Riksmuseum have a wingspan of 30 millimeters, the male, and 31 millimeters, the female, and the *cervini* belonging to Professor Sotavalta a wingspan of 32 millimeters, the male, and 34 millimeters, the female. My own *quenseli,* found on a mountain not far from Nissontjårro, have a wingspan of 29 to 32 millimeters but

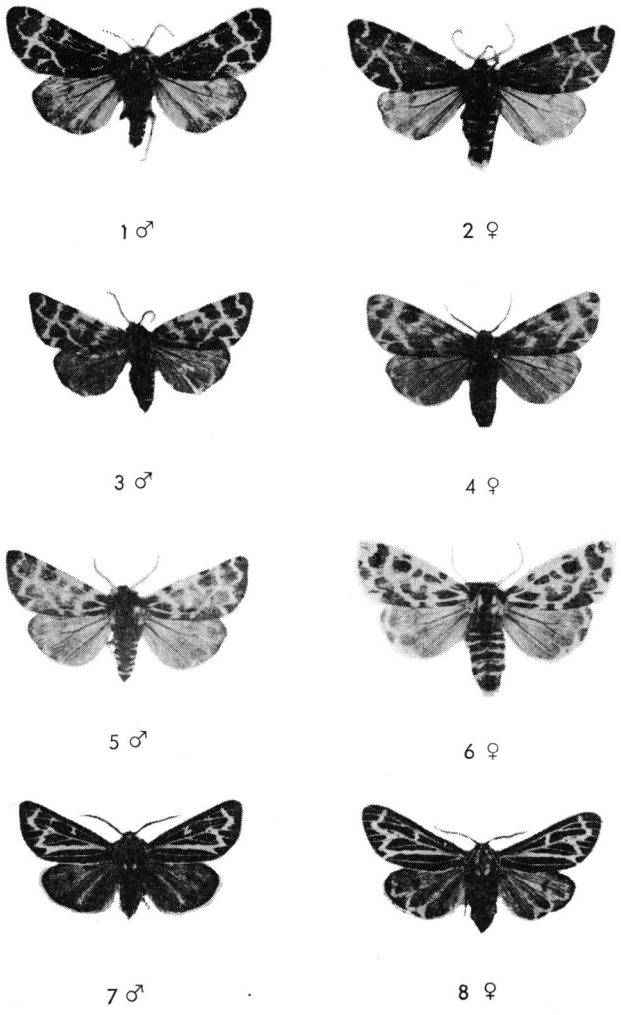

Fig. 1 and 2. *Orodemnias cervini* Fallou ssp. *fridolini* n. ssp., Nissontjårro, To. lpm., Sweden, no. 1 in coll. Clas Källander and no 2 in coll. Karl Källander, both Gävle, Sweden.

Fig. 3 and 4. *Orodemnias cervini cervini* Fallou, no 3 labelled Wallis, Switzerland and no 4 Switzerland both in coll. Statens Naturhistoriska Riksmuseum, Stockholm, Sweden.

Fig. 5 and 6. *Orodemnias cervini cervini* Fallou, ex ovo, Switzerland, in coll. Olavi Sotavalta, Oulu, Finland.

Fig. 7 and 8. *Orodemnias quenseli* Payk., Snorritjokko, To. lpm., Sweden, in coll. mihi.

I have seen smaller specimens from the mountains and larger ones from the moorland east of the Swedish mountains. In Svenska Fjärilar by Nordström, Wahlgren, Tullgren the wingspan of Swedish *quenseli* is stated to be 30—35 millimeters.

The two Nissontjårro specimens are very similar in appearance and must belong the same species. The forewings are broader than in *quenseli,* more

like those of *cervini* and their colour is black with yellowbrown or white markings. As the veins are lightcoloured only in the inner third of the forewings and there is no trace of the longitudal light stripe so prominent in *quenseli,* the markings seem quite different from those of that species and are very like those of a *cervini* with reduced light markings. The hindwings are semitransparent black with light markings similar to those of both *quenseli* and *cervini.* The body is somewhat more slender than that of *cervini.* The markings of the thorax are not so prominent as those of *quenseli,* the abdomen lacks the distinct black dorsal area of *quenseli* and the end of the abdomen carries a short but distinct yellowbrown anal tuft of the same colour in both the male, which has white markings on the forewing, and the female, which has yellowbrown markings somewhat darker in colour than the anal tuft. The bodymarkings are very similar to those of a darkened *cervini.* The antennae of the male are pectinate with short branches and those of the female clearly serrate and thus similar to those of both *quenseli* and *cervini.*

The two Nissontjårro specimens in question can not belong to the species *O. quenseli* Payk., but do they belong to *O. cervini* Fallou or to another and possibly undescribed species? I have come to the conclusion that, at least at present with such a small material at hand, they must be considered as specimens of an arctic population of *cervini.* However, since they show some distinct differences from the Alpine population I consider them belonging to a different subspecies; and as it seems improbable that the specimen in Leningrad from the Chibina mountain should belong to a different species or subspecies, I believe it to belong to the same arctic subspecies of *cervini.* This last mentioned specimen is known under the name of *fridolini,* and on account of that I suggest that the new subspecies is given that name.

Orodemnias cervini Fallou subspecies *fridolini* n. ssp. can be described as follows. Size larger and body proportionally somewhat slenderer than in *Orodemnias cervini cervini* Fallou. The light body markings the same but narrower than those of *cervini cervini.* The antennae the same. The forewings more slender and the outer margin more oblique than in *cervini cervini.* The inner half of the forewings dark with only a dot at the costal margin, this margin, the subcostal, the median and the submedian veins coloured yellowbrown to white. The outer half of the forewings is of the same dark colour with the coastal margin, a short line between this margin and the median vein, this vein to the outer line, this line and the very irregular submarginal line yellowbrown to white, the lines being narrower than those of *cervini cervini.* The hindwings are semitransparent black with undistinct yellowgrey or whitegrey markings of the same kind as in *cervini cervini,* but the hindwings are somewhat more oblong and more transparent than those of *cervini cervini.*

I sincerely thank Professor Olavi Sotavalta for his great help without which this article would not have been written. Also I thank Mr. Ingvar Svensson, Österslöv, Sweden, for his help and interest in this article and for his neverending readiness to help in general.

References

FORSTER, W. & T. WOHLFAHRT, 1960: Die Schmetterlinge Mitteleuropas, III Spinner und Schwärmer — Stuttgart.

KUSNETZOV, N. J., 1935: The origin of the Lepidopterous fauna of the Arctic Eurasia. — Arctica No. 3 p. 127.

NORDSTRÖM, F., E. WAHLGREN & A. TULLGREN, 1941: Svenska Fjärilar — Stockholm.
SEITZ, A., 1913: The Macrolepidoptera of the World, I, The Palearctic Fauna 2, The Palearctic Bombyces & Sphinges — Stuttgart.
— 1934: Idem, The Palaearctic Bombyces & Sphinges, Supplement — Stuttgart.
SOTAVALTA, O., 1964: Studies on the variation of the wing venation of certain tiger moths (Lep. Arctiidae, subfam. Arctiinae) — Ann. Acad. Scient. Fennicae, Series A.IV.74.
— 1965: A revision of the genus *Hyphoraia* Hübner s. lat. (Lepidoptera, Arctiidae) — Ann. Ent. Fenn. 31: 3 p. 159—197.
SPULER, A., 1908: Die Schmetterlinge Europas — Stuttgart.

Sammandrag

På Nissontjårro (vid Lapporten) To. lpm. fann Clas Källander, Gävle, den 19.7.1967 en björnspinnarhane och på samma fjäll fann hans kusin Karl Källander, Gävle, den 7.7.1968 två puppor varav han ur den ena kläckte en hona av tydligen samma art. Pupporna var med några få trådar fästade vid undersidan av en sten. Båda fjärilarna (fig. 1 och 2) måste tillhöra en art, som tidigare icke varit känd från Sverige men som står *Orodemnias quenseli* Payk. (fig. 7 och 8) nära. I detta släkte är endast ytterligaren art känd från Europa, *Orodemnias cervini* Fallou (fig. 3—6). Emellertid finns det ytterligare en arctiid att beakta, den av den avlidne ryske entomologen N. J. Kusnetzov omtalade "*Chibinarctia fridolini*". Professor Olavi Sotavalta, Uleåborg, Finland, utan vars synnerligen stora hjälp uppsatsen knappast kommit till stånd, har vid besök undersökt de två exemplaren från Nissontjårro och meddelat följande. I Leningrads Zoologiska Museum finns en arctiid-hona med etikett "*Cibinarctia fridolini*" tagen av en Herr Fridolin i augusti 1931 på Chibina-berget på Kolahalvön. Den liknar mycket de svenska exemplaren vilket även ett i Altai i juli 1908 taget mycket slitet exemplar gör. Detta senare exemplar är obestämt och finns likaledes i Leningrad-museet. I en artikel från 1835, "The origin of the Lepidopterous fauna of the Arctic Eurasia", nämner Kusnetzov "*Cibinarctia fridolini* gen. n. sp. n." men utan någon beskrivning. Ej heller är från något annat arbete en beskrivning av denna "art" känd. Det har vidare icke varit möjligt att få några uppgifter om "*fridolini*" från Leningrad, varför jag helt bortser från dessa exemplar.

En jämförelse mellan de två Nissontjårro-exemplaren, fyra schweiziska *cervini* och mina egna *quenseli* samt puppan och pupphuden jämte de två larvhudarna från Nissontjårro och två schweiziska puppskal med larvhudar har givit följande resultat. Nissontjårrolarverna måste ha i hög grad liknat *cervinis* larver men avviker i vissa avseenden från *quenselis*, bl.a. saknas rödaktiga hår på sidorna. Förpuppningen hade skett på ett sätt som mer stämmer med litteraturens uppgifter om *cervini* än med uppgifterna om *quenseli*. Av puppskalens utseende kan på grund av den stora variationen inom materialet inga säkra slutsatser dragas. De två fjärilarna från Nissontjårro måste tillhöra samma art men kan inte vara *quenseli*. De bör, i vart fall till dess ett större nordiskt material föreligger, betraktas som tillhörande en arktisk population av *Orodemnias cervini* Fallou och med hänsyn till vissa ej oväsentliga avvikelser från *cervini cervini* beskrivs de som tillhörande en ny underart vilken med hänsyn till att Leningrad-exemplaret är känt under namnet "*fridolini*" ges detta namn.

Orodemnias cervini Fallou ssp. *fridolini* n. ssp. beskrivs som något större än ssp. *cervini* men med proportionsvis något slankare kropp. Antennerna lika dem hos *cervini*. Kroppens ljusa teckningar lika dem hos *cervini* men smalare. Framvingarna smalare med snedare utkant än hos *cervini* och bakvingarna såväl mer avlånga som genomskinligare än hos *cervini*. Framvingarna med samma teckningar som hos en förmörkad *cervini* med inre vinghalvan nästan helt mörk och de ljusa teckningarna i den yttre vinghalvan väsentligt smalare än hos *cervini*. Bakvingarna med samma teckningar som hos *cervini*. Framvingarnas ljusa partier gulbruna till vita och bakvingarna gulgrå till vitgrå.

Till slut framföres ett varmt tack till Profsesor Olavi Sotavalta, Uleåborg, och Jägmästare Ingvar Svensson, Österslöv.