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**TROMSØ MUSEUMS ÅRSHEFTER
NATURHISTORISK AVD. NR. 24.**

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**ANTS OF NORTHERN NORWAY
(HYM., FORM.).**

BY

HOLGER HOLGERSEN, SANDNES.

K. KARLSENS TRYKKERI - 1942
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Ants of Northern Norway (Hym., Form.).

By

Holger Holgersen, Sandnes.

The ant fauna of Northern Norway — i. e. the counties (fylker) of Nordland, Troms and Finnmark — has for a few decennies been somewhat better known than that of most of the other parts of this country, which, however, does not signify very much. The entomologists who have been working north of the arctic circle, have mostly been interested in *Lepidoptera* and *Coleoptera*, and yet the *Hymenoptera* have partly been the object of investigations (f. inst. *Hym. phytophaga* by H. KIÆR), the family *Formicidae* has never been earnestly studied by any specialist.

ZETTERSTEDT in „*Insecta Lapponica*“ 1840 mentions *Myrmica acervorum*, *Formica fusca*, *Form. obsoleta* and *Form. lugubris* as taken by himself in Ofoten and Bossekop (21). According to EMERY 1925 (*Genera insectorum*) the two last-mentioned are both synonymes for *Form. rufa*, and the number of species recorded thus remains only three.

In „*Enumeratio*“ 1880 H. SIEBKE speaks of only *Formica rufa* L. as occurring in Northern Norway, saying: „*Tota Norvegia vulgaris*“ (14), accordingly rather vaguely.

In his „*Bemærkninger*“ (remarks) to that work of

SIEBKE, W. M. SCHØYEN (13) calls the attention to ZETTERSTEDT's informations, and in 1898 E. STRAND (18) has taken up *Formica rufa*, *Form. fusca* and *Leptothorax acervorum* as occurring up to Finnmark (70° N. lat.).

J. SPARRE SCHNEIDER on a few occasions gives information on ants in Northern Norway, his „Hymenoptera aculeata im arktischen Norwegen“ (12) being the hitherto most voluminous work on the *Formicidae* of the districts in question. On 6 pages he writes of 10 species, and, most evidently, STITZ (16) refers to this publication when he says: „Der arktische Teil Norwegens besitzt nur die Gattungen Camponotus, Formica, Myrmica, Leptothorax, Formicoxenus mit zusammen 10 Arten.“

Later a few contributinal publications by J. E. DUFFIELD (2), CHARLES ELTON (3), T. MUNSTER (9), T. SOOT-RYEN (15), EMBRIK STRAND (19, 20) and the author (5, 6) have appeared. Hereby the number of recorded species has been augmented, and many new localities for the other ones have become known.

The greater part of the material had been identified so long ago that one could hardly expect it to stand a more critical revision, and it might as well be of interest to gather as much as possible of the existing material — determined as well as undetermined — in order to get a better knowledge of the fauna.

By courtesy of mr. T. SOOT-RYEN, curator of the zoological departement at Tromsø museum, I was enabled to see the whole ant collection of the museum, from all parts of Norway, and mr. INGVALD DAHL, Saura, kindly sent me for examination all the *Formicidae* that he collected in Nesna during 1941. Finally, I again looked over the collections of the Zoological museum in Oslo.

In all, I have during this last revision had at hand the

greater part of the material upon which the publications 5, 6, 9, 12, 15 are based, but not 2, 3, 4, 8, 19, 20, 21.

As a result of the revision a few forms were found to be new to Northern Norway. Several classifications were corrected, and many new localities for the various species were added. Thus, the present paper should comprise most of what has up to now been published and collected about ants in Northern Norway. As a short summary of the distribution I give below a table corresponding with the new division of Norway into biogeographical sectional areas (STRAND 1942, dividing Nordland in 4, Troms in 2 and Finnmark into 4 areas (17). In the table, a ○ means that the species has been published from the area in question, but that I have seen no specimens, a ● means that I have been able to verify the capture and the determination, resp. identify the specimens myself.

At present, 19 *Formicidae* — including 1 subspecies and 2 varieties — are known from Northern Norway. The Norwegian fauna comprises 44, the imported ones not included. No doubt still a few more of these 44 may be found also within the northern counties, f. inst. *Myrmica sabuleti* Mein., *Formica suecica* Adl., and the varieties *santschii* Wheel. and *dusmeti* For. of *Form. rufa* L.

Form. picea Nyl., that is still unknown in Norway, is not unlikely.

The localities in Northern Norway are the most northern ones where ants are known to occur. The few species recorded from Alaska, have — as far as I have been able to find out from literature — all been taken along the south coast, i. e. a little north of 60° N. lat.

KOLBE (Deutsche ent. Zeitschr. 1912) mentions a *Formica* (presumably *F. gagatoides*?) as occurring as far north as at

Werchojansk (67° 34' N. lat.) on the Jana River in the province of Irkutsk, Siberia.

BÖNNER (in Biol. Zentralblatt 35, p. 75, 1915) speaks of some Swedish ants from Österbotten (nearly 66° N. lat.) as the most northerly ever taken („fast unter dem Polarkreis!“), in spite of SCHNEIDER's publications on ants and in spite of ADLERZ (1), giving information on *Formica fusca* from St. Fugløy on 70° 14' N. lat., and *Leptothorax acervorum* and *Myrmica ruginodis* in Tromsø.

The most northern locality for ants as yet known, is Hammerfest, 70° 40' N. lat., where *Myrmica ruginodis*, *Leptothorax acervorum* and *Formica gagatoides* have been taken.

I want to express my best thanks to messrs. T. SOOT-RYEN, Tromsø, and INGVALD DAHL, Saura, for their lending me material necessary for this paper.

1. *Harpagoxenus sublaevis* Nyl.

Still only a single capture of this species has been reported from Northern Norway, as a female and a worker were taken by A. STRAND in a nest of *Lept. acervorum* F. at Kåfjord in Alta, June 1924 (on 69° 54' N. lat.) (5, 9).

The species seems to be widely distributed in the southern parts of Norway, and it is very well possible that it may also be found in the intervening districts, where it is still missing. It has a continuous distribution throughout Finland, and it seems possible that the invasion to Kåfjord may have taken place from a southeastern direction. Further investigations in the counties of Trøndelag, Nordland and Troms will be of a special interest in this connection. (On *Harp. sublaevis* in and outside Norway, vide 17).

2. *Formicoxenus nitidulus* Nyl.

Coleopterologists have on various occasions found this small species also in Northern Norway when sifting ants hillocks. In Nordland, NATVIG has taken it at Ravnå in Nord-Rana (5), MUNSTER at Sandnessjøen as well as at Bø in Vesterålen, and SCHNEIDER has found it in Melbu in Hadsel (15). In Troms DONS has taken it on Bjarkøy, and at Nordmo in Målselv MUNSTER and SCHNEIDER in 1904 found it the first time in Northern Norway (12). In Målselv, NATVIG has later (1916) taken it at Rundhaugen (5). SCHNEIDER has found *Formicoxenus* in Skjåvikør in Malangen, and its most northern locality is at Lakselv in Porsanger, 70° 3' N. lat., where LYS-HOLM and MUNSTER found it in the hillock of *Formica exsecta* Nyl., the only known case where *exsecta* has been recorded as host of *Formicoxenus* (12, 6).

Males and winged females have been taken a few times, the latter at Bjarkøy, unfortunately without date; males have occurred from medio August until medio September.

3. *Leptothorax acervorum* F.

To judge from the existing material, *Lept. acervorum* seems to be the most common ant in Northern Norway, whilst elsewhere in the country *Formica fusca* and *Myrmica ruginodis* are the most common ones.

I cannot here go so far as to enumerate all the known localities; instead I must only refer to the list at the end of this paper.

Lept. acervorum is the only ant which is known to occur in all areas into which the northern counties are divided (see table).

Of new localities I may mention Handnes in Nesna (DAHL), Børselv (SCHØYEN), Lakselv and Burfjord (SCHNEIDER), Måke-

skjær in Troms (70° 11'3" N. lat., SOOT-RYEN) and Vaggetem. The most northern locality is Hammerfest, 70° 40' N. lat.

Several of the specimens at hand are very dark and agree with the description by RUZSKY of var. *nigrescens*. Between these and the typical *acervorum* all transitional forms have been found, and I have not here dealt with the darker ones under any separate name.

4. *Myrmica ruginodis* Nyl.

As elsewhere in Norway, *Myrm. ruginodis* is also in the north the most common species of the genus *Myrmica*. It is reported from a great many localities, and I cannot here give its distribution in details (see table and list below).

SCHNEIDER (12) mentions *Myrm. ruginodis* from Troms only, but it has now been found in all the 3 counties (5, 15, 19), ranging from Nesna (DAHL) and Hemnes (E. STRAND) through Nordland and Troms to Jarfjord (SOOT-RYEN) and Elvenes (MUNSTER) in Sør-Varanger.

Of previously unpublished localities the following ones may be given: Skjåvikør in Malangen, Røst, Ramfjord, Skog and Handnes in Nesna. Most northern it occurs at Hammerfest on 70° 40' N. lat. (15).

The winged sexes have been taken from August 13th to 22nd.

5. *Myrmica laevinodis* Nyl.

From Troms and Nordland *Myrm. laevinodis* has not been recorded, and the single capture in Finnmark was made by ESMARK in Polmak well above 70° N. lat. (6). If further collecting in the two first counties do not result in other discoveries of this species, an exchanging of locality names (labels) may probably be regarded as having taken place (see also *Lasius flavus*).

6. *Myrmica scabrinodis* Nyl.

SCHNEIDER reports the capture of this species at Bodø on May 8th, 1897 (12), and no new localities have later become known.

7. *Myrmica lobicornis* Nyl.

In Nordland *Myrm. lobicornis* has been taken in Brønnøy (E. STRAND, 19) and Røst (SOOT-RYEN, TAMBS-LYCHE, 5) in Finnmark at Storfossen in Sør-Varanger (MUNSTER, 12) and in Alta on nearly 70° N. lat. (A. STRAND, 5). In Troms it has been observed at Punta in Reisa (2). It doubtless occurs in many other places in these counties.

The specimens I have seen, all belong to the typical form.

8. *Myrmica sulcinodis* Nyl.

In addition to the capture of *Myrm. sulcinodis* by SCHNEIDER at Svolvær 1897 (12) three more localities are known, as MUNSTER has taken it at Melbu in Hadsel (5) and LESNE reports it from Lødingen (8); SCHØYEN has brought a worker from Bodø.

As stated in a previous paper (5), the specimens from Melbu — two workers and one female — are not quite typical, the scape of antenna being more sharply bent at base than usual in this species. It is possible that it is this form which FOREL has named var. *sulcinodo-scabrinodis*, but without type specimens at hand I cannot identify our specimens with this variety with certainty.

Myrm. sulcinodis is not known from Troms and Finnmark, but will without doubt be found here too.

9. *Lasius flavus* F.

In the collections at Zoological Museum, Oslo, is a winged female of this species, taken by ESMARK and labelled Polmak.

Las. flavus has not been recorded from any other place in Northern Norway, so the locality seems to be rather isolate. As mentioned above (*Myrm. laevinodis*) an exchange of names may have taken place, or, perhaps, an invasion from south-east may be regarded as possible. Of the likelihood of this I am unable to give evidence, as for the time being, I have no detailed information on the distribution of *Myrm. laevinodis* and *Las. flavus* in Finland.

I am not inclined to believe that this winged specimen of *Las. flavus* has come (flying or swept by wind) from very far away. In the case of *Myrm. laevinodis*, workers too were present, in addition to a winged female.

10. **Camponotus herculeanus** L.

The carpenter ant has been taken on spread localities all over the district in question, from Rana to Kirkenes. SCHØYEN and SCHNEIDER found it in Saltdalen, where the latter quotes it as very numerous (12). SCHNEIDER has also brought specimens from many places in Målselv (12), where NATVIG has taken it at Rundhaugen, and SOOT-RYEN has found it a couple of times in Øverbygd, and STAV in Malangen. E. STRAND reports it from Nordreisa (20).

In Finnmark *Camp. herculeanus* occurs in Alta: Bossekop (SCHØYEN), Jotkajavrre and Vina (A. STRAND, 5), and — as mentioned — at Kirkenes.

The most northern locality is in Alta, nearly 70°.N. lat.

The winged sexes are — as SCHNEIDER states (12) — mostly to be found in July; a female from Moen in Målselv was captured on June 22nd. NATVIG has at Rundhaugen found winged females as early as on June 8th. The males and fertilized (?) females of *Camp. herculeanus* often hibernate in their home nest, the winged specimens one can see early

in the spring thus having emerged in the previous summer or autumn (in Rogaland I have found them in April). The specimens taken in June in Målselv are doubtless such ones. A winged female from Kirkenes was taken as late as on August 30th.

11. *Camponotus ligniperdus* Latr.

Contrary to *Camp. herculeanus* this species is known only from the most southern parts of Northern Norway. E. STRAND has taken it at Rana and Hemnes (19). This corresponds with the frequent informations that *Camp. herculeanus* extends further north than *ligniperdus* (*herculeanus* is also the common species in western Norway, where *ligniperdus* is very rare), but where the limit for the distribution of *Camp. ligniperdus* actually is to be drawn, can only be shown by further investigations. At present it lies at about 66° 20' N. lat.

12. *Formica exsecta* Nyl.

This species is so far known only from Nordland (Handnes in Nesna, DAHL) and from Finnmark, where it occurs in different places. In Alta it has been found on several occasions (by MUNSTER, SCHØYEN, SCHNEIDER and A. STRAND) and it has been taken at Lakselv in Porsanger. MUNSTER has also found *Form. exsecta* at Karasjok, and it is reported from Strand in Sør-Varanger (5, 12, 15).

Specimens from Bossekop have blackish brown head and a great spot on pronotum, like *Form. rufa pratensis* Retz.

SCHNEIDER records *Form. exsecta* from Kirkenes, where he found it to be numerous also on damp ground (12). Specimens from this locality do not exist in collections, and the identification is possibly not correct. ADLERZ states that his *Form. suecica* lives on damp ground. In Rogaland, where I

have found *Form. suecica* a few times, it has built on comparatively dry spots, and at Bråtveit in Suldal, I have seen *exsecta*-hills on very damp marshes. Thus, according to SCHNEIDER's report, the species at Kirkenes may be either of these two, but it seems more likely to have been *Form. exsecta*, owing to the rare occurrence of *Form. suecica*. Anyway, one cannot exclude the possibility of finding also *Form. suecica* in Northern Norway, In Rogaland it lives in heights from 1000 feet upwards, and thus it should be able to live also in the extreme north.

13. *Formica rufa* L.

Under this name previous authors have gathered all hill-ockbuilding red ants (with the exception of *Form. exsecta*), *Form. rufa* and its var. *rufo-pratensis* For., subspecies *pratensis* Retz. and transitional forms, *Form. truncorum* F. and its var. *truncicolo-pratensis* For. A control of the informations on this species without the material at hand is quite impossible, and so most of the captures mentioned in the literature still must be regarded as due to *Formica rufa* sensu lato. Of the specimens I have had for examination, the males and some females have been placed into this group, whilst the workers and most of the females have been the object of a more detailed examination.

Form. rufa is recorded from Saltdal, Narvik (12), Ofoten (21) and Digermulen (8), all in Nordland. In Troms it is known from Målselv, Malangen, Bjarkøy, Bardu and Dividal, and in Finnmark from Karasjok. SCHNEIDER (12) mentions *Form. rufa* from Sør-Varanger, but this specimen is a *Form. truncorum* var. *truncicolo-pratensis* For.

Here I have also included the specimens which come very near to the typical *Form. rufa*. I have previously called them

var. *rufo-pratensis* forma *rufoides*, but it is better, according to FOREL 1920 (Les Fourmis de la Suisse) to call them *Form. rufa pratensoides*. They represent the most *rufa*-like of the transitional forms between *rufa* s. str. and the subspecies *pratensis* Retz.

Such specimens NATVIG has taken at Mo, Storfosshei and Ravnå in Rana, SCHNEIDER in Saltdal and at Melbu, and MUNSTER at Bø in Vesterålen.

The winged sexes have been found from June to August, and SCHNEIDER has observed swarming in Saltdal on June 28th (12).

Formica rufa var. **rufo-pratensis** For.

This intermediate form has been brought from a few places, Rana, Sandnessjøen, Melbu (*pratensis* 5), Målselv and Karasjok (NATVIG, MUNSTER), and DAHL has found it at Handnes in Nesna.

14. **Formica rufa** L. subsp. **pratensis** Retz.

Most of the specimens here included have been very nearly if not quite typical, with a great black spot on the pronotum and close pubescence, eyes being distinctly haired.

In Finnmark *Form. pratensis* has been taken at Karasjok, in Troms it is found only in the inner parts of the county. In Nordland, SCHNEIDER has found *Form. pratensis* on Sør-Herøy and NATVIG has taken it on Storfosshei in Rana.

Winged females have been captured from July 5th until early in August.

15. **Formica truncorum** F.

This species seems to occur very sparsely in Northern Norway. Of the typical form I have seen only a winged

female from Strand in Sør-Varanger, taken by MUNSTER in 1909 (*rufa*, 15).

ELTON (3) records *Form. truncorum* F. from Punta in Reisa, Troms, but I feel sure that the specimens here belong to the var. *truncicolo-pratensis* For.

Formica truncorum F. var. **truncicolo-pratensis** For.

The typical *Form. truncorum* is rare everywhere in Norway, but this dark variety occurs widely spread in the south. In Northern Norway, however, it is at present known in 4 localities only. A. STRAND has taken a worker at Strand, MUNSTER 2 workers at Bossekop (5), one in Karasjok, and one at Storfossen in Pasvik 1904. This last one F. KOHL has previously determined as typical *Form. rufa* L., and under this name it has been published by SCHNEIDER (12).

16. **Formica gagatoides** Ruzsky.

The discovery of this species in Norway is interesting, as it has previously been recorded — as far as I know — from Sowjet-Russia only, and also because it seems to be widely distributed throughout Norway. In the south it is a mountainous species, living between 2400 and 4000 ft., from Ryfylke to Dovre. I am going to deal with the characteristics and distribution of this species in another paper, and here I will give only particulars of its occurrence in Northern Norway, as at present known.

The specimens taken by A. STRAND at Vina and Alta June 1924 I have earlier published as *Form. fusca*, and the same I have done also with the specimens which NATVIG has found at Rundhaugen in Målselv (5).

Evidently some of SCHNEIDER's records on *Form. fusca* actually refer to *Form. gagatoides* (12). F. inst., *Form. fusca*

is reported to have been found at Hammerfest by MUNSTER. In the collections in Tromsø museum there is no *fusca* from Hammerfest, but, on the contrary, a worker of *Form. gagatooides*, taken by MUNSTER.

In Nordland *Form. gagatooides* has been found in Rana, see below. From Troms I have seen specimens from Nordmo (SCHNEIDER) and Rundhaugen (NATVIG) in Målselv, from Tabmokdal and Ramfjord (SOOT-RYEN) and two females from Tromsø (SCHNEIDER). In Finnmark *Form. gagatooides* has been taken — in addition to the already mentioned localities at Alta and Hammerfest — at Børselv by SCHØYEN, and in Kolvik and Lakselv by SCHNEIDER. Further east it has still not been observed, but may doubtless be found in several places also here.

Just before I finished this paper, mr. FRITZ JENSEN, Stavanger, handed me some few ants — 9 workers and 2 females — that he had collected in Northern Norway in 1931 and stored among unmounted *Coleoptera* until now. Curiously enough they all proved to be *Form. gagatooides*, from Staburselv and Skoganvarre, both in central Finnmark, and from Grønnlidalen in Rana, Nordland.

This indicates that *Form. gagatooides* must be rather common in Northern Norway.

Its most northern locality is Hammerfest on 70° 40' N. lat., at the same time the most northern locality for ants in Norway. (In the south, *Form. gagatooides* has been taken as far down as in Suldal, 59° 33' N. lat.).

17. *Formica fusca* L.

In southern Norway *Form. fusca* is the most common ant species, and also in the north it seems to be widely distributed. From all the captures mentioned in the literature, I have

seen only comparatively few specimens, and all reports cannot be said to refer with certainty to this species (vide sub *Form. gagatoides*).

In Nordland *Form. fusca* is recorded from several places by E. STRAND (19, 20) and SCHNEIDER (12). DAHL has taken it at Skog and Handnes in Nesna, SOOT-RYEN in Lofoten and in Folla (15), whilst SCHØYEN has brought a female from Bodø and LESNE (8) records the species from Digermulen in Vågan. From Troms I have specimens and reports from a number of localities in the outer as well as the inner districts, and in Finnmark *Form. fusca* has been found at Bossekop (4, 21), in Sør-Varanger by MUNSTER, and it is reported from Lakselv by DUFFIELD (2).

SCHNEIDER states that *Form. fusca* is „Ueberall verbreitet und sehr häufig, auch auf den Inseln“ (12), and it is no doubt more numerous and more widely distributed than the existing material indicates.

The winged sexes have been taken from August 12th to 19th.

| | Nsy | Nsi | Nnø | Nnv | TRy | TRi | Fv | Fi | Fn | Fø |
|---|-----|-----|-----|-----|-----|-----|----|----|----|----|
| <i>Harp. sublaevis</i> Nyl. | + | - | - | - | - | - | - | ● | - | - |
| <i>Formic. nitidulus</i> Nyl. | ● | ● | - | ● | ● | ● | - | - | ○ | - |
| <i>Lept. acervorum</i> F. | ● | ● | ○ | ● | ● | ● | ● | ● | ● | ● |
| <i>Myrm. ruginodis</i> Nyl. | ● | ● | - | ● | ● | ● | ○ | ● | - | ● |
| — <i>laevinodis</i> Nyl. | - | - | - | - | - | - | - | - | - | ● |
| — <i>scabrinodis</i> Nyl. | ● | - | - | - | - | - | - | - | - | - |
| — <i>lobicornis</i> Nyl. | ○ | - | - | ● | - | ○ | - | ● | - | ● |
| — <i>sulcinodis</i> Nyl. | ● | - | - | ● | - | - | - | - | - | - |
| <i>Lasius flavus</i> F. | - | - | - | - | - | - | - | - | - | ● |
| <i>Camp. herculeanus</i> L. | - | ● | - | - | - | ● | - | ● | - | ● |
| — <i>ligniperdus</i> Latr. | - | ○ | - | - | - | - | - | - | - | - |
| <i>Form. exsecta</i> Nyl. | ● | - | - | - | - | - | - | ● | ● | ● |
| — <i>rufa</i> L. | ○ | ● | ○ | ● | ● | ● | - | ● | - | - |
| — var. <i>rufo-prat.</i> For. | ● | ● | - | ● | - | ● | - | ● | - | - |
| — <i>subsp. pratensis</i> Retz. | ● | ● | - | ● | - | ● | - | ● | - | - |
| — <i>truncorum</i> F. | - | - | - | - | - | ○ | - | - | - | ● |
| — var. <i>trunc.-prat.</i> For. | - | - | - | - | - | - | - | ● | - | ● |
| — <i>gagatoides</i> Ruzsky | - | ● | - | - | ● | ● | ● | ● | ● | - |
| — <i>fusca</i> L. | ● | ● | ● | ● | ● | ● | - | ○ | ○ | ○ |

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Table of subfamilies, genera and species.

In this key I give only shortly the characteristics of the ♂ ♀ of the species which are known to occur in Northern Norway, and in () I have added some species which may probably be found there.

A complete determination table of the Norwegian Formicidae still does not exist. For use in this country I can recommend H. DONISTHORPE: *British Ants*, 2nd ed., London 1927 (George Routledge & Sons Ltd.) and A. FOREL: *Die Ameisen der Schweiz. Fauna insectorum helvetiae*. Dübendorf 1915 (G. A. Baeschlin, Bern).

The former (436 pages, illustrated) gives information on life habits, distribution, classification etc. etc., but does not include the genus *Harpagoxenus*, nor the species *Formica gagateoides*, *Form. truncorum* (and var. *truncicolo-pratensis*), nor *Form. suecica* and *Form. pressilabris*.

The latter (77 pages, not illustrated) is a determination table only, but does not include *Form. gagateoides* nor *Form. suecica*.

Family Formicidae.

♂ ♀

- Pedicele two-jointed subfamily MYRMICINAE Lep.
 Pedicele one-jointed subfamily CAMPONOTINAE For.

MYRMICINAE.

- A. Post-petiole with a spine beneath.
 I. Head rounded, head and body shining, pubescence sparse; inhabits ant-hills (*Formica rufa* and allied species) *Formicoxenus nitidulus* Nyl.

- II. Head rectangular, head and body with strong bristles; inhabits nests of *Leptothorax acervorum* F. *Harpagoxenus sublaevis* Nyl.
- B. Post-petiole without a spine beneath.
- I. Antennae 11-jointed; subgenus *Mychothorax* Ruzsky of the genus *Leptothorax* Mayr.
- a. Scape of antennae and tibiae with outstanding hairs *Lept. acervorum* F.*
- (b. Scape of antennae and tibiae without outstanding hairs *Lept. muscorum* Nyl.)
- II. Antennae 12-jointed genus *Myrmica* Latr.
- a. Scape of antenna evenly curved, not sharply bent at base.
1. Epinotal spines strong, longer than their basal width, the space between transversely striate, thorax and post-petiole strongly rugose . *Myrmica ruginodis* Nyl.
2. Epinotal spines shorter than their basal width, the space between smooth and shining, thorax and post-petiole slightly rugose *Myrmica laevinodis* Nyl. (Intermediate forms. var. *ruginodo-laevinodis* For.)
- b. Scape of antenna bent at right angle at base.
1. Top of the angle rounded, wearing no tooth or ridge at bend; colour red and black *Myrmica sulcinodis* Nyl.
2. Scape furnished with a distinct tooth at bend, very pointed in profile; colour dark, red and blackish-brown *Myrmica lobicornis* Nyl.

* *Leptothorax acervorum* var. *nigrescens* Ruzsky:

Femura with great blackish or blackish-brown spots, thorax and epinotum with basal part of spines chiefly dark brownish black.

(From Formicar. Imp. Ross., Kasan 1905).

1. Scale deeply emarginate at apex, maxillary palpi long, almost reaching the „foramen occipitale“ *Formica exsecta* Nyl.
 - (2. Scale not emarginate, maxillary palpi very short, clypeus with a transverse impression *Formica pressilabris* Nyl.)
 - (3. Scale emarginate, smaller and not so broad as in *exsecta*; head distinctly more rounded. Hillocks irregular, built at stumps, stones etc., not free like those of *exsecta* and *pressilabris* . . *Formica suecica* Adl.)
- b. Head not excised posteriorly.
1. Body slender, head long, little broader than thorax; colour black; two species, which live in earth nests, under stones, in stumps etc.
 - ' Body shining, pubescence very sparse, scale usually emarginate at apex, head rounded behind . . *Formica gagatoides* Ruzsky.
 - " Head and body not shining, pubescent; scale not emarginate, head more rectangular behind *Formica fusca* L.
 - (" Head and body shining, thorax and abdomen with abundant strong bristles, scale not emarginate, colour more brown or blackish-brown, not black as in *gagatoides* *Formica picea* Nyl.)
 2. Body robust, head evidently broader than thorax, the species build the well-known hillocks.
 - ' Eyes distinctly haired, scape of antennae, head and body with outstanding hairs; head, thorax and base of abdo-

men red, but gaster brown. *Formica truncorum* F.
Scape of antennae without outstanding hairs, head and thorax darker red, base of abdomen brown or with only a small red spot near petiolus . . .

var. *truncicolo-pratensis* For.

- " Eyes without outstanding hairs, head and thorax with none or few bristles, pronotum with a black spot which does not reach the posterior border, another often on mesonotum . *Formica rufa* L.
- "" Eyes with distinct hairs, pronotum and mesonotum with abundant bristles, the black spot on pronotum reaching the posterior border and usually fusing with a spot on mesonotum. Darker and more hairy than *rufa* . subsp. *pratensis* Retz.
Intermediate forms . *rufa* var. *rufo-pratensis* For.

Additional list of localities etc.

This list gives detailed information on the material dealt with on the previous pages, giving names of county (N, TR, F), district (sy, nv, n, etc.), locality (Karasjok, Bodø, etc.), name of COLLECTOR, date of capture and the specimens captured. A ! means determination or control by the author, and the numbers in () refer to the bibliography.

Abbreviations: FR. = FRAUENFELD, J. = FR. JENSEN, M. = THS. MUNSTER, N. = L. R. NATVIG, S. = W. M. SCHØYEN, SS. = J. SPARRE SCHNEIDER, SR. = T. SOOT-RYEN, AS. = A. STRAND, ES. = E. STRAND, Z. = ZETTERSTEDT.

1. **Harpagoxenus sublaevis** Nyl.

Fi: Kåfjord, Alta AS VI 1924 ♀ ♀! (9, 5, 7)

2. **Formicoxenus nitidulus** Nyl.

Nsy: Sandnessjøen M 1910 ♀ ♀! (15)
 Nsi: Ravnå, Nord-Rana N 1915 4 ♀, 10 ♀! (5)
 Nnv: Melbu, Hadsel SS VII 1907 ♀ ♀! (15)
 Bø M VII 1919 4 ♀! (5)
 TRy: Bjarkøy C. DONS 4 w. ♀, 2 ♀!
 TRi: Nordmo, Målselv SS IX 1904 ♂, 8 ♀! (12)
 Målselvdal M IX 1904 ♀ ♂ ♀! (12)
 Rundhaugen, Målselv N 4 VI 1916 ♀ ♀! (5)
 Skjåvikør, Malangen SS medio VIII 1907 3 ♂! (12)
 Fn: Lakselv, Porsanger LYSHOLM & M 28 VI 1908 (12)

3. **Leptothorax acervorum** F.

Nsy: Brønnøy ES 5 VIII 1903 (19)
 Sør-Herøy SS VI 1900 2 ♀! (11, 12)
 Handnes, Nesna I. DAHL VIII-IX 1941 ♀ ♀!
 Nsi: Hemnesberget ES 10 VII 1903 (19)
 Mo, Rana ES (19)
 Storfosshei, N-Rana N 30 VII 1915 ♀, ♀! (5)
 Storjord, Saltdal SS 14 V 1897 5 ♀! (12)
 Saltdalen SS VI 1909 ♀!
 Nnø: Slovær, Folla SR 2 VIII 1923 ♀ (15)
 Nnv: Melbu, Hadsel M V-VI 1924 3 ♀, 3 ♀! (5)
 Bø M VII 1919 3 ♀! (5)
 TRy: Tromsø SS 7 VI 1908 ♀! (1, 12)
 Tromsdal SS (12)
 Tromsdal 30 VII 1906 (8)

| | | | | | |
|------|---------------------|----|--------------|-------------|------|
| | Måkeskjær | SR | 12 VI 1933 | ♀! | |
| | | | 15 VIII 1934 | 2 ♀! | |
| TRi: | Nordmo, Målselv | SS | 10 VII 1902 | ♀! | (12) |
| | | | 19 VII 1902 | ♀! | |
| | | | 8 IX 1902 | ♀! | |
| | | | VIII 1908 | ♀! | |
| | Rundhaugen, Målselv | N | 9 VI 1916 | ♀, 2 ♀! | (5) |
| | Malangen | SS | VIII 1907 | ♀! | (12) |
| | Frihetsli, Dividal | SR | 17 VII 1922 | ♀, w. ♀! | (15) |
| | Burfjord | SS | VIII 1908 | ♀ ♂ ♀! | |
| | Burfjord | M | | ♀! | |
| Fv: | Hammerfest | M | | ♀, ♀! | (12) |
| Fi: | Bossekop | Z | | | (21) |
| | Alta | M | VI-IX 1924 | 2 ♀, 3 ♀! | (5) |
| | Alta | AS | VI 1924 | ♀! | (5) |
| | Kåfjord, Alta | AS | VI 1924 | 2 ♀, 2 ♀! | (5) |
| | Festningstuen | AS | VII 1924 | 4 ♂, ♀! | (5) |
| | Jotkajavrre | M | 16 VII 1924 | 4 ♀, 3 ♀! | (5) |
| | Jotkajavrre | AS | VII 1924 | 2 ♂, 2 ♀! | (5) |
| | Karasjok | M | 1909 | 2 ♀! | (15) |
| | Karasjok | SS | VII 1908 | 2 ♀! | (15) |
| Fn: | Kolvik, Porsanger | SS | 8 VII 1907 | 11 ♂, 11 ♀! | (12) |
| | Lakselv, Porsanger | SS | VII 1907 | 2 ♀! | |
| | | | VI 1908 | 2 ♀! | |
| | Airojok | SR | 13 VIII 1924 | ♀! | (15) |
| | Børselv | S | | ♀! | |
| | Nyborg | M | 1904 | 2 ♀! | (12) |
| | Vadsø | SS | | | (12) |
| Fø: | Vaggetem | M | | 2 ♀! | |
| | Sør-Varanger | M | | | (12) |
| | Strand | M | 1909 | ♀, ♀! | |

4. *Myrmica ruginodis* Nyl.

| | | | | | |
|------|------------------------|------------|----------------|---------|---------|
| Nsy: | Brønnøy | ES | 5 VIII 1903 | | (19) |
| | Skog, Nesna | I. DAHL | 6-13 VIII 1941 | ♂♂, ♀♀! | |
| | Handnes, Nesna | I. DAHL | 17 VIII 1941 | ♀♀! | |
| | | | 8 IX 1941 | ♀♀! | |
| Nsi: | Hemnesberget | ES | 10 VII 1903 | | (19) |
| | Hestnes, Hemnes | ES | 9 VII 1903 | ♀ | (19) |
| | Mo, Rana | ES | 17 VII 1903 | | (19) |
| | Ravnå, N-Rana | N | 1-10 VII 1915 | 5 ♀! | (5) |
| | Storfosshei, N-Rana | N | 30 VII 1915 | 2 ♀, ♀! | (5) |
| | Rognan, Saltdal | SS | VI 1909 | 5 ♀! | (15) |
| Nnv: | Ramholmen, Røst | SR | 5 VII 1936 | ♀! | |
| | Melbu, Hadsel | M | V 1924 | 5 ♀! | (5) |
| | Bø | M | VII 1919 | ♀! | (5) |
| TRy: | Prestvatn, Tromsøysund | SR | 22 VIII 1924 | ♂! | (15) |
| | Tromsø | SS | | | (1, 12) |
| | Tromsdal | | 29 V 1880 | 2 w. ♀! | |
| | Ramfjord | SR | 14 VIII 1926 | w. ♀! | |
| TRi: | Målselv | SS | | | (12) |
| | Nordmo, Målselv | SS | 10 VII 1902 | 3 ♀! | |
| | | | 16 VIII 1906 | ♂♂ | (12) |
| | Rundhaugen, Målselv | N | 9 VI 1916 | 4 ♀! | (5) |
| | Malangen | SS | VIII 1907 | 5 ♀! | (12) |
| | Malangen | L. A. STAV | 1926 | 13 ♂! | |
| | Skjåvikør | SR | 9 VII 1941 | ♀! | |
| | | | 13 VIII 1941 | 3 ♂! | |
| | Skibotn | | | 7 ♀ | (15) |
| Fv: | Hammerfest | M | | ♀ | (15) |
| Fi: | Alta | AS | VI 1924 | ♀! | (5) |
| Fø: | Elvenes | M | | 2 ♀! | (15) |
| | Jarfjord | SR | 3 VII 1937 | 2 ♀! | |

5. *Myrmica laevinodis* Nyl.

Fø: Polmak ESMARK 1 w. ♀, 3 ♂! (6)

6. *Myrmica scabrinodis* Nyl.

Nsy: Bodø SS 8 V 1897 7 ♀! (12)

7. *Myrmica lobicornis* Nyl.

Nsy: Brønnøy ES 5 VIII 1903 (19)

Nnv: Røst SR 11 VII 1936 ♀!

Sandøy N, Røst SR 9 VII 1936 ♀!

Sandøy N, Røst TAMBS-LYCHE 3 VII 1937 ♀!

Melbu, Hadsel M ♂!

TRi: Punta, Reisa (2)

Fi: Alta AS VI 1924 5 ♀! (5)

Fø: Storfossen, Pasvik M 1904 ♂! (12)

1907 ♀!

8. *Myrmica sulcinodis* Nyl.

Nsy: Bodø S ♂!

Nnv: Lødingen 4 VII 1906 (8)

Svolvær SS 7 VII 1897 2 ♀, 3 ♂! (12)

Melbu, Hadsel M VI 1924 ♀, 2 ♂! (5)

9. *Lasius flavus* F.

Fø: Polmak ESMARK w. ♀!

10. *Camponotus herculeanus* L.

Nsi: Ravnå, N-Rana AS 26 VI 1934 2 ♂!

Ravnå, N-Rana N 10 VII 1915 3 ♀! (5)

| | | | | | |
|------|---------------------|---------------|--------------|--------------|------|
| | Storfoshei, N-Rana | N | 1915 | w. ♀! | (5) |
| | Grønli, Røvassdal | A. M. GRØNLIE | 22 VII 1926 | 3 ♀! | |
| | Saltdal | | | 2 w. ♀, 6 ♂! | |
| | Saltdal | S | | ♀. 2 ♀! | |
| | Storjord, Saltdal | SS | 12-19 V 1897 | 14 ♀, ♂! | (12) |
| | | | VII 1898 | w. ♀! | |
| | | | VII 1899 | ♂, w. ♀! | |
| TRi: | Nordmo, Målselv | SS | VII 1902 | ♂! | |
| | Moen, Målselv | SS | 22 VI 1897 | w. ♀! | (12) |
| | Bjerkeng, Målselv | SS | VII 1895 | 2 ♂! | |
| | Rundhaugen, Målselv | N | 1915 | ♀, 3 ♀! | (5) |
| | | | 8 VI 1916 | 8 w. ♀, ♀! | |
| | Råvatn, Øverbygd | SR | 3 VII 1922 | ♀! | |
| | Frihetsli, Dividal | SR | 17 VII 1922 | w. ♀! | (15) |
| | Malangen | L. A. STAV | 1926 | ♀, w. ♀! | |
| | Malangen | | VII | w. ♀! | (12) |
| | Nordreisa | ES | | | (20) |
| Fi: | Bossekop | S | | ♀! | |
| | Vina, Alta | AS | VI 1924 | ♀! | (5) |
| | Jotkajavrre | AS | VII 1924 | 2 w. ♀! | (5) |
| Fø: | Kirkenes | A. WESSEL | 30 VIII 1891 | w. ♀! | |

11. *Camponotus ligniperdus* Latr.

| | | | | | |
|------|--------------|----|--|---|------|
| Nsi: | Hemnesberget | ES | | ♀ | (19) |
| | Rana | ES | | ♀ | (19) |

12. *Formica exsecta* Nyl.

| | | | | | |
|------|----------------|---------|--------------|------|-----|
| Nsy: | Handnes, Nesna | I. DAHL | 27 VIII 1941 | ♀! | |
| Fi: | Alta | SS | VI 1891 | ♀! | |
| | Alta | M | VI 1924 | ♀! | (5) |
| | Alta | AS | VI 1924 | 7 ♀! | (5) |
| | Bossekop | S | | ♀! | |

| | | | | | |
|-----|--------------------|----|------------|-------|------|
| | Bossekop | SS | VI 1891 | 2 ♀! | (12) |
| | Bossekop | M | VII 1910 | ♀! | (5) |
| | | | VI 1911 | ♀! | |
| | Karasjok | M | VII 1909 | 2 ♀! | (15) |
| Fn: | Lakselv, Porsanger | SS | VI 1908 | ♀! | (12) |
| | Lakselv, Porsanger | M | 28 VI 1908 | ♀! | (12) |
| | Skoganvarre | SS | 2 VII 1908 | 14 ♀! | (12) |
| | Skoganvarre | M | 1908 | 2 ♀! | |
| Fø: | Vaggetem | M | | ♀! | |
| | Neiden | M | 1904 | ♀! | |
| | Kirkenes | SS | 1901 | | (12) |
| | Strand | M | 1904 | 3 ♀! | |
| | | | 1909 | ♀! | |

13. *Formica rufa* L. s. l.

| | | | | | |
|------|-------------------|-----------|-------------|------------|----------|
| Nsy: | Sør-Herøy | SS | | | (11, 12) |
| Nsi: | Saltdal | | | w. ♀ | |
| | Storjord, Saltdal | SS | 28 VI 1898 | 5 ♂! | (12) |
| | | | VII 1899 | ♂, 2 w. ♀! | |
| Nnø: | Ofotenfjord | Z | | | (21) |
| | Narvik | SS | VIII 1879 | | (12) |
| Nnv: | Digermulen | | 4 VII 1906 | | (8) |
| TRy: | Bjarkøy | SR | 6 VI 1936 | w. ♀! | |
| TRi: | Moen, Målselv | SS | 21 VI 1897 | ♂! | (12) |
| | Takvatn, Målselv | SS | VIII 1891 | ♀ | (12) |
| | Nordmo, Målselv | SS | VII 1902 | 2 ♀! | (12) |
| | Dividal, Øverbygd | SS | | | (12) |
| | Straumsmo, Bardu | SS | VII 1893 | | (10, 12) |
| | Malangen | SS | VIII 1909 | w. ♀! | |
| | | | VIII 1907 | | (12) |
| | Malangen | L. A STAV | 1926 | ♀! | |
| | Skjåvikør | SS | VIII 1907 | | |
| Fi: | Karasjok | SS | 14 VII 1908 | ♀, w. ♀! | (12) |

Formica rufa L. s. str.

| | | | | | |
|------|---------------------|----|-------------------|-------------|------|
| Nsi: | Mo, Rana | N | VI-VII 1915 | } 7 ♂, 3 ♀! | (5) |
| | Storfosshei, N-Rana | N | VI-VII 1915 | | (5) |
| | Ravnå, N-Rana | N | 26 VI-11 VII 1915 | 2 ♀! | (5) |
| | Saltdal | | | w. ♀! | |
| Nnv: | Melbu, Hadsel | SS | VII 1909 | ♂! | (15) |
| | Bø | M | VII 1919 | ♂! | (5) |
| TRy: | Hushattøy | SR | 18 VII 1935 | ♂! | |

Formica rufa L. var. **rufo-pratensis** For.

| | | | | | |
|------|---------------------|---------|----------------|----------------|------|
| Nsy: | Sandnessjøen | M | 1910 | ♂! | (15) |
| | Handnes, Nesna | I. DAHL | VIII-IX 1941 | 3 ♂! | |
| Nsi: | Mo, Rana | N | 18 VII 1915 | 3 ♂! | |
| | Ravnå, N-Rana | N | 10-15 VII 1915 | ♂! | |
| Nnv: | Melbu, Hadsel | M | V 1924 | ♀, ♂! (rufa 5) | |
| TRi: | Målselv | M | 1904 | ♂! | |
| | Nordmo, Målselv | S | VII 1902 | ♂! | |
| | Rundhaugen, Målselv | N | VI 1916 | 4 ♂! | |
| Fi: | Karasjok | M | 1907 | ♂! | |

14. **Formica rufa** L. subsp. **pratensis** Retz.

| | | | | | |
|------|---------------------|----|-------------------|-------|-----|
| Nsy: | Sør-Herøy | SS | VI 1900 | ♂! | |
| | Herøy | SS | 25 V 1900 | ♂! | |
| Nsi: | Ravnå, N-Rana | N | 11 VIII-8 IX 1915 | 22 ♂! | (5) |
| | Storfosshei, N-Rana | N | 1915 | ♀! | |
| | Storjord, Saltdal | SS | VII 1899 | w. ♀! | |
| Nnv: | Bø | M | VII 1919 | ♂! | |
| TRi: | Nordmo, Målselv | SS | 10 VII 1902 | 4 ♂! | |
| | Takvatn, Målselv | SS | VIII 1891 | w. ♀! | |
| | Rundhaugen, Målselv | N | VI 1916 | 2 ♂! | (5) |
| | Lille Rosta | SR | 5 VII 1922 | w. ♀! | |

| | | | | |
|-----|-----------|----|--------------|-------------------|
| | Malangen | SS | VIII 1908 | 3 ♀! |
| | | | VIII 1909 | w. ♀! |
| | Skjåvikør | SR | 7-8 VII 1941 | 2 ♂, 2 ♀, 3 w. ♀! |
| Fi: | Karasjok | SS | VII 1908 | ♀! |

15. *Formica truncorum* F.

| | | | | |
|------|--------------|-------|-----------|-----------------|
| TRi: | Punta, Reisa | ELTON | VIII 1930 | (3) |
| Fø: | Strand | M | 1909 | w. ♀! (rufa 15) |

Formica truncorum F. var. *truncicolo-pratensis* För.

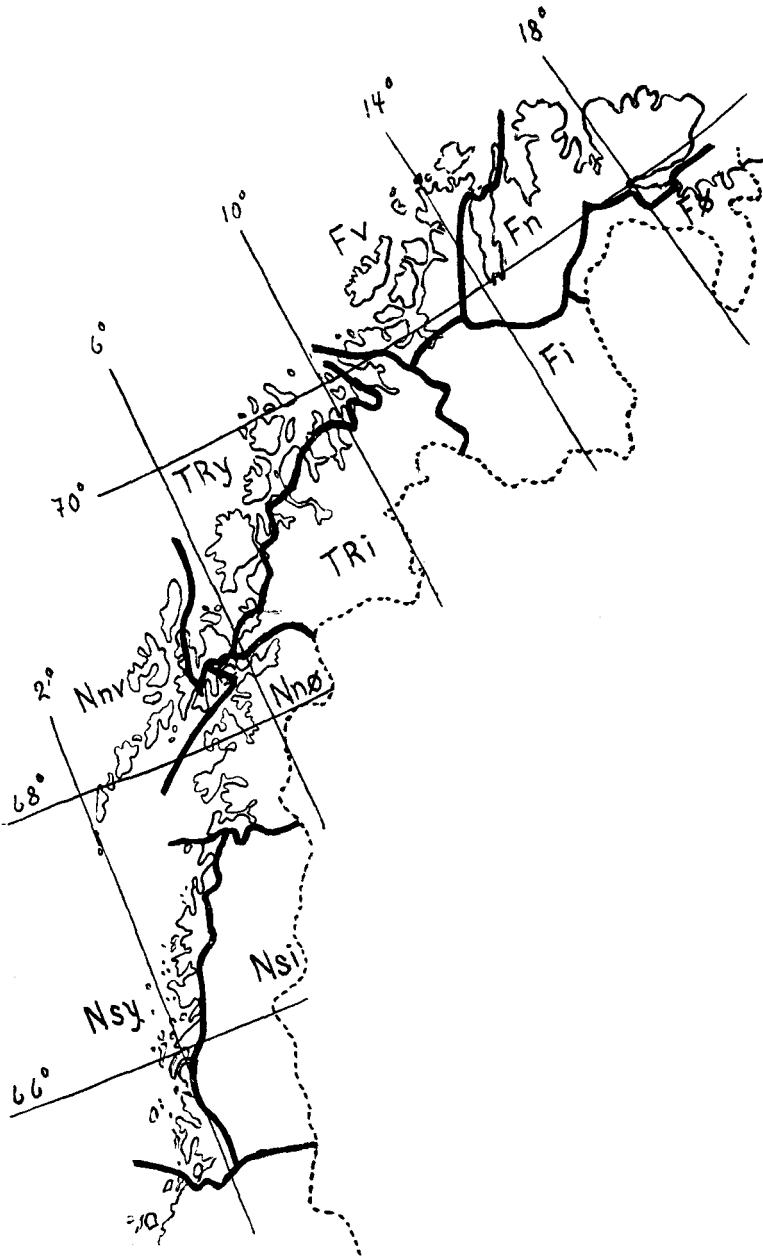
| | | | | |
|-----|--------------------|----|--------------|--------------|
| Fi: | Bossekop | M | VII 1910 | 2 ♀! (5) |
| | Karasjok | M | VII 1909 | ♀! |
| Fø: | Strand | AS | 11 VIII 1929 | ♀! (5) |
| | Storfossen, Pasvik | M | 1904 | ♀! (rufa 12) |

16. *Formica gagatoides* Ruzsky.

| | | | | |
|------|----------------------|----|--------------|----------------------|
| Nsi: | Grønnlidalen, Rana | J | 1931 | ♀, 2 ♀! |
| TRy: | Tromsø | SS | | 2 ♀! |
| | Ramfjord | SR | 15 VI 1924 | ♀! (fusca 15) |
| TRi: | Målselv | N | 7 VI 1916 | 14 ♀, 3 ♀! (fusca 5) |
| | Nordmo, Målselv | SS | VII 1906 | ♂! |
| | Tabmokdal, Balsfjord | SR | 11 VIII 1922 | ♂! (fusca 15) |
| Fv: | Hammerfest | M | | ♀! (fusca 12) |
| Fi: | Alta | AS | VI 1924 | 2 ♀! (fusca 5) |
| | Vina, Alta | AS | VI 1924 | 7 ♀! (fusca 5) |
| Fn: | Kolvik | SS | 23 VI 1908 | ♀! |
| | Lakselv, Porsanger | SS | 11 VII 1907 | ♀! |
| | | | VI 1908 | ♀! |
| | Stabburselv | J | 22 VI 1931 | 3 ♀! |
| | Børselv | S | | 3 ♀! |
| | Skoganvarre | J | 25 VI 1931 | 3 ♀! |

17. *Formica fusca* L.

| | | | | | |
|------|----------------------|---------|------------------|-----------|----------|
| Nsy: | Brønnøy | ES | 4 VIII 1903 | | (19) |
| | Skog, Nesna | I. DAHL | VIII 1941 | ♀ ♀! | |
| | Handnes, Nesna | I. DAHL | 11 IX 1941 | ♀ ♀! | |
| | Sør-Herøy | SS | | | (11, 12) |
| | Bodø | S | | ♀! | |
| Nsi: | Hemnesberget | ES | 11 VII, 6 X 1903 | | (19) |
| | Rana | ES | | | (19) |
| | Ravnå, N-Rana | N | 8 IX 1915 | ♀, ♂! | |
| | Saltdalen | SS | | | (12) |
| | Storjord, Saltdal | SS | 12-18 V 1897 | 4 ♀! | |
| Nnø: | Slovær, Folla | SR | 2 VIII 1923 | 2 ♀! | (15) |
| | Tysfjord | ES | | | (20) |
| Nnv: | Digermulen | | 4 VII 1906 | | (8) |
| | Sommerhus, Hadsel | SR | 22 VI 1936 | ♀! | |
| | Værøy | SR | 13 VII 1936 | 8 ♀! | |
| TRy: | Tromsø | SS | [21 IX 1897 | ♀, 3 ♀! | |
| | Sør-Fugløy | SR | 1 VIII 1934 | 3 ♀! | |
| | Nord-Fugløy | SS | | | (1, 12) |
| TRi: | Målselv | SS | | | (12) |
| | Nordmo, Målselv | SS | 10 VII 1902 | ♀! | |
| | Rundhaugen, Målselv | N | 26 VII 1916 | 2 ♀! | |
| | Vassdal, Signaldalen | SR | 12 VIII 1922 | ♂! | (15) |
| | Nordreisa | ES | | ♀! | (20) |
| | Malangen | SS | 19 VIII 1907 | 2 ♂, 2 ♀! | (12) |
| | Skjåvikør | SS | 19 VIII 1907 | ♂, w. ♀ | (12) |
| | Skjåvikør | SR | VII 1941 | 2 ♀! | |
| Fi: | Bossekop | Z | | | (21) |
| | Bossekop | FR | 1863 | | (4) |
| Fn: | Lakselv, Porsanger | | | | (2) |
| Fø: | Sør-Varanger | M | | | (12) |



Map showing the new division of Northern Norway into biogeographical sectional areas, agreed upon by Norwegian entomologists (Norw. Ent. Society) 1941. For further information, see publication by A. Strand (bibliography no. 17) in next part of Norsk ent. tidsskrift, Oslo (will probably appear 1943).