

## Scandinavian Ants

By C. A. COLLINGWOOD

Forsslund (1957) brought the distribution and nomenclature of Swedish ants up to date. This valuable paper not only lists those species that have been verified for Sweden but also indicates their occurrence in adjacent countries including Norway and Denmark. The Swedish fauna is especially interesting in that all the species known to occur in North Europe are to be found there in some abundance while at the same time there are a number of species such as *Camponotus fallax* Nyl., *Formica cinerea* Mayr and *Leptothorax corticalis* Sch. which are usually regarded as members of a more southern fauna. Although most of Scandinavia lies to the north of Britain, the summer climate of many areas of the south-east is considerably warmer than that of south Britain and the July temperature means of Stockholm and Oslo (Lat. 59°) for example, are comparable with that of Bournemouth (Lat. 50° 43').

The writer visited Scandinavia on a short holiday in June 1958 and had the pleasure of seeing some of the more interesting species in their natural environment and also of adding a few new provincial records for some of the commoner species. Dr. K. H. Forsslund very kindly showed me two bog inhabiting Formica species in the neighbourhood of Stockholm, *F. forsslundi* Lohm. and *F. uralensis* Ruzs. *F. forsslundi* is an *exsecta*-like species constructing a small mound nest of pieces of grass and heather in boggy ground. The workers are smaller on the average than those of *exsecta* and considerably more shining. According to Dr. Forsslund, new colonies may be started with the assistance of *F. transcaucasica* Nas. which was common in the neighbourhood. *F. forsslundi* has not so far been found outside Sweden in Scandinavia.

*F. uralensis* is another interesting species resembling other wood ants in behaviour and size. It is distinguished from these by the colour of the head which is entirely black, the thorax which has the back of the pronotum and part of the mesonotum with a dark patch as in *nigricans* and the frontal area which is matt. This species appears to be restricted to open boggy areas in the forests of North and Central Europe, a habitat which is completely contrasted to The Steppes of Eastern Europe where the species was originally discovered. Bisgaard (1944) has suggested that the ant originally inhabited similar steppe like areas in North Europe but through competition with members of the *F. rufa* group of species, has only been able to survive in bogland. Its association with this habitat is however so general throughout Europe from Lapland to Switzerland that it appears to me much more probable that the present species is not the same as Ruzsky's *uralensis* from the Steppes.

Dr. Forsslund also showed me a nest of *F. cordieri* Bond. This species closely resembles *nigricans* except in the queen caste where there are considerable pilosity differences including the presence of long hairs on the scale and the back of the thorax which are absent in *nigricans*. *F. cordieri* according to Forsslund is the commoner of the two species in South Sweden. I also saw it in other localities including Grebbestad and Falkenberg in South-west Sweden. In Norway however I only saw *nigricans* at Hauerseeter, Halden and Svinsund in the south. Both species are found in isolated nests on dry banks and warm open sites at the borders of woodland.

The great abundance of wood ants throughout Scandinavia especially in the great forests of Norway and Sweden provides the greatest contrast with Britain where these ants are absent from large areas of countryside and often very localised where they do occur. Such species as *F. aquilonia* Yarrow, *F. lugubris* Zett., *F. truncorum* Fab. as well as *F. sanguinea* Latr. and *F. exsecta* Nyl. are common within the arctic circle. I found *aquilonia* alone in the neighbourhood of Narvik (Lat. 68° 27') and on the Lofoten islands but the other species were general in the scrubby arctic woodlands around Gällivare and Kiruna in North Sweden as well as further south.

In South Norway it was possible to find all these species as well as *F. rufa* L., *F. polyctena* Först and *nigricans* together within the same area of woodland. At Hauerseeter about 20 miles to the north west of Oslo, for example, I found a nest of *lugubris* only 20 paces away from *nigricans*, whereas in Europe generally the two species are usually

widely separated. In Britain, *rufa* and *lugubris* have never been found occupying the same locality, as Yarrow (1955) pointed out, yet in Norway these species were found side by side both at Hauer seter and in the extreme southern tip of Norway near Svinsund. Moreover sexuals of the two species were present at the same time together. At Greb bestad in South-east Sweden, alatae of both *cordieri* and *rufa* were flying on the same day, 26th June. It is evident that every opportunity exists for cross mating of most of these species in parts of Scandinavia but it is equally evident that this does not in fact occur as all the species in this group remain distinct and easily distinguishable over their whole geographic range.

*F. polyctena* Först was considered to be a good species by van Boven (1947) and this is likely to be confirmed by the researches of Mr. E. T. G. Elton and Dr. J. G. Betrem in the Netherlands. *F. polyctena* is a polydomous species and I am grateful to Mr. Elton for having shown me sites near Arnhem in the Netherlands where its behaviour pattern was characteristically developed. Its habits appear to be similar to those described by Gösswald (1942) for '*rufa rufo-pratensis* var. *minor*' with which it is probably morphologically identical. It is the most hairless of the *rufa* species and is probably the same as the form described as '*rufa nuda*' by Holgersen (1944) from the island of Hvaler in Østfjold, Norway. I found this ant at Hauer seter, Akershus, where there was a group of nests on a bank. I also took specimens believed to be this species from a single nest near Lake Frescati, Stockholm. In general, however, *rufa* in the form that occurs in Britain was much the most abundant in the few areas visited in South Norway and South Sweden. Mgr. Chas. Bisgaard informed me that he had not seen live *polyctena* in Denmark although there were four workers so labelled in the Copenhagen Museum.

I was fortunate in finding incipient mixed colonies of members of the *rufa* group with those of the *fusca* group on three occasions. The first was at Lulea in North-east Sweden where there was a nest in the stony border of a track consisting of about a dozen very small discoloured *lugubris* workers with one *lugubris* queen and a number of workers of *F. lemani* Bond. A similar nest was found under a stone by the side of the road halfway between Bodo and Fauske in North-west Norway. Here the *lugubris* workers were larger and brighter coloured and the *lemanii* workers apparently more numerous. A *rufa* queen was found in the centre of a small nest of *F. fusca* L. under a stone at Hauer seter. The queen was alive and apparently being tended by the workers but the leg joints had been so injured that unaided locomotion was impossible.

Holgersen (1943) was the first to recognise that *F. fusca* var. *gagatoides* Ruzs. was a distinct species and he redescribed it from Norway, where it is widely distributed. Forslund (1957) also lists it from the provinces of North Sweden. This interesting species occurs in North Russia where it was originally described and in Finland but is not known from anywhere south of Scandinavia.\* It closely resembles *fusca*

\*Since the above paper was written, Dr. H. Kutter has informed me that he has recently discovered both *Formica forsstundi* Lohm. and *F. gagatoides* Ruzs. in the Swiss Alps.

in habits but does not apparently occur within the range of that species. I found it abundantly in Arctic Sweden and on the Dovre plateau and the Jotunhiemen in Norway. *F. lemani* was also present at all these places, occupying similar nest situations. The latter ranges much further south than *gagatoides* in Scandinavia and I found it together with *fusca* at both Hauer seter and Svinsund. It was noteworthy that only *leman* of this species group was seen in the Narvik area which part of Norway seemed to correspond most with the North-west Scottish Highlands. *F. gagatoides* was found to range to higher altitudes than any of the other *Formica* species and was found for example up to 1,000 m. in the Jotunheim mountains. This was above the limit for scrub tree vegetation in that area. *F. lugubris* and *exsecta* however were found nearly as high up the mountains at 850 m. at the approximate tree limit.

Examples of *F. exsecta* taken at this altitude and also at Kiruna in North Sweden were much hairier than those seen from other parts of Scandinavia or from Scotland and these may perhaps belong to a distinct species provisionally described by Betrem (1954) from Finland as *kontuniemi*. Much further collecting of this group including sexuals is required however before it is possible to assess these differences correctly. *F. suecica* Adlerz is another species similar to *exsecta* that is widely distributed in Norway, Sweden and Finland but not apparently elsewhere. Unfortunately I was unable to find this ant for myself. Mgr. Bisgaard kindly took me to see some nests of *F. pressilabris* Nyl., another member of this species group, at Tisvildeleje in Zealand, Denmark. One nest was in open sandy ground with very little leaf litter; the other was in a bank nearby.

I was also shown some *Myrmica schencki* Em. nests at the same locality. The openings to the nests had the tubular prolongations of closely-woven plant fibres that Bisgaard (1944) described. Both Hølgersen (1944) and Forsslund (1947) were doubtful with regard to previous records of *M. rubra* L. (*laevinodis* auct.) in North Scandinavia. However, O'Rourke (1949) recorded this species from Narvik and I found colonies by the seashore at Kabelvåg near Svølvær in the Lofoten islands well within the Arctic Circle. I also found this ant in two places between Luleå and Gammelstad in North Sweden. The commonest *Myrmica* species in the north, however, were *M. ruginodis* Nyl., *sulcinodis* Nyl. and *lobicornis* Nyl. The latter in particular appeared to be more abundant generally than it is in Britain. One nest in a pine stump at Gällivare contained four winged queens which must have overwintered in the nest as at that date, 14th June, spring had only just begun in the Arctic. I was fortunate in discovering a large nest of the uncommon *M. rugulosa* Nyl. in sandy pasture at Halmstad in South Sweden.

*Harpagoxenus sublaevis* Nyl., an interesting semi-parasite, was found together with its host *Leptothorax muscorum* Nyl. at Stockholm and also with *L. acervorum* Fab. at Abisko and at Hauer seter. *H. sublaevis* is unlike many other similar parasitic or dependant species in that its presence in a colony does not appear to affect the development of the host species including the appearance of sexuals, in any way. *L. muscorum* was very abundant in oak trees in the Stockholm

parks, often occurring in the same trees occupied by *Lasius brunneus* Latr. as *L. nylanderi* Först does in England and France.

A locality list of all the species seen in Norway and Sweden is given below. In all cases the nearest town is given as locality and an asterisk indicates those records believed to be new for the province in which the town occurs.

- Formica polyetena* Schenck. Sweden—Stockholm\*.  
Norway—Hauerseter\*.
- „ *rufa* L. Sweden—Stockholm, Grebbestad, Halmstad, Falkenberg.  
Norway—Hauerseter, Halden, Svinsund.
- „ *aquilonia* Yarrow: Sweden—Lulea, Gammelstad.  
Norway—Hauerseter\*, Svinsund\*, Narvik, Svolvaer, Fauske, Saltdal, Hjerkin\*, Elveseter, Lom.
- „ *lugubris* Zett Sweden—Lulea, Gammelstad, Gällivare.  
Norway—Fauske, Hjerkin\*, Elveseter, Lom, Hauerseter\*, Svinsund\*.
- „ *cordieri* Bond. Sweden—Stockholm, Grebbestad, Falkenberg.
- „ *nigricans* Em. (Sweden—Halmstad\*, workers only).  
Norway—Hauerseter\*, Halden\*, Svinsund.
- „ *truncorum* Fab. Sweden—Stockholm, Kiruna, Grebbestad\*.  
Norway—Hauerseter\*, Halden\*.
- „ *uralensis* Ruzs. Sweden—Stockholm.
- „ *sanguinea* Latr. Sweden—Stockholm, Lulea, Gällivare, Grebbestad\*, Halmstad.  
Norway—Lom\*, Hauerseter, Halden, Svinsund.
- „ *excisa* Nyl. Sweden—Stockholm, Kiruna, Grebbestad\*.  
Norway—Fauske, Elveseter, Hjerkin, Hauerseter.
- „ *forsslundi* Lohm. Sweden—Stockholm.
- „ *rufibarbis* Fab. Sweden—Stockholm, Grebbestad.  
Norway—Svinsund\*.
- „ *lemani* Bond. Sweden—Lulea, Gammelstad, Gällivare, Kiruna, Abisko.  
Norway—Narvik, Svolvaer, Fauske, Hjerkin, Elveseter\*, Lam, Saltdal, Hauerseter\*, Svinsund\*.
- ✓ „ *fusca* L. Sweden—Stockholm, Grebbestad, Falkenberg, Halmstad, Hälsingborg, Göteborg.  
Norway—Lom, Hauerseter, Halden, Svinsund.
- ✓ „ *gagatoides* Ruzs. Sweden—Gällivare, Kiruna, Abisko.  
Norway—Fauske, Hjerkin, Elveseter\*.
- „ *transcaucasica* Nas. Sweden—Stockholm.
- Camponotus herculeanus* L. Sweden—Stockholm.  
Norway—Hauerseter, Svinsund.
- „ *ligniperdus* Latr. Sweden—Stockholm.  
Norway—Hauerseter, Halden, Svinsund.
- Lasius niger* L. Sweden—Stockholm, Göteborg, Hälsingborg, Grebbestad, Falkenberg, Halmstad.  
Norway—Hauerseter.

- Lasius alienus* Först. Sweden—Falkenberg\*, Halmstad.  
 „ *brunneus* Latr. Sweden—Stockholm.  
 „ *flavus* Fab. Sweden—Stockholm, Grebbestad, Falkenberg, Halmstad, Hälsingborg.  
 Norway—Hauerseter, Halden, Svinsund.  
*Myrmica rubra* L. Sweden—Stockholm, Gammelstad\*, Grebbestad, Falkenberg, Halmstad, Hälsingborg.  
 Norway—Svolvaer, Hauerseter, Halden.  
 „ *ruginodis* Nyl. Sweden—Stockholm, Lulea, Gällivare, Kiruna, Halmstad, Falkenberg, Grebbestad, Hälsingborg.  
 Norway—Svolvaer, Elveseter, Hauerseter, Halden, Narvik.  
 „ *sulcinodis* Nyl. Sweden—Lulea, Gammelstad\*, Gällivare, Abisko.  
 Norway—Fauske, Hjerkin, Elveseter\*, Hauerseter\*, Halden\*.  
 „ *lobicornis* Nyl. Sweden—Stockholm, Lulea, Gammelstad, Gällivare, Kiruna\*, Grebbestad.  
 Norway—Fauske, Hjerkin, Elveseter\*, Hauerseter, Svinsund.  
 „ *schencki* Em. Sweden—Stockholm, Grebbestad.  
 „ *sabuleti* Mein. Sweden—Stockholm, Grebbestad, Falkenberg.  
 Norway—Svinsund.  
 „ *scabrinodis* Nyl. Sweden—Stockholm, Grebbestad, Falkenberg, Hälsingborg.  
 Norway—Svolvaer\*, Halden.  
*rugulosa* Nyl. Sweden—Halmstad.  
*Leptothorax acervorum* Fab. Sweden and Norway—All localities.  
 „ *muscorum* Nyl. Sweden—Stockholm, Grebbestad.  
 „ *tuberum* Fab. Sweden—Stockholm, Grebbestad.  
 Norway—Svinsund.  
*Harpagoxenus sublaevis* Nyl. Sweden—Stockholm, Abisko.  
 Norway—Hauerseter.  
*Tetramorium caespitum* L. Sweden—Stockholm, Grebbestad, Falkenberg.  
 Norway—Svinsund.  
*Formicoxenus nitidulus* Nyl. Sweden—Stockholm.  
 Norway—Hauerseter.

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