ANT SPECIES IN YORKSHIRE

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Yorkshire, despite its varied topography and geology, has a limited number of indigenous ant species, only 17 species having been recorded in their natural habitat compared with a total of 42 from the British Isles as a whole. This paucity of ant species in Britain north of an approximate line from the Wash to the Mersey is at least partly attributable to the low summer sunshine and temperature. In this area mean hours of bright sunshine rise above six only during May and June on the coast, and the mean temperature for July, the hottest month of the year, seldom reaches 15°C. However there are some interesting features with regard to recent fossil records.

Indigenous species presently known are as follows:

	VC 61	62	63	64	65
Myrmica lobicornis Nylander	●	●	●	●	●
M. rubra (Linnaeus)	●	●	●	●	●
M. ruginodis Nylander	●	●	●	●	●
M. sabuleti Meinert	●	●	●	●	●
M. scabrinodis Nylander	●	●	●	●	●
M. sulcinodis Nylander	●	●	●	●	●
Leptothorax acervorum (Fabricius)	●	●	●	●	●
Formicoxenus nitidulus Nylander		●	●		
Formica fusca Linnaeus	●	●	●	●	●
F. lemani Bondroit	●	●	●	●	●
F. lugubris Zetterstedt	●	●	●	●	●
F. rufa Linnaeus	○			●	
Lasius flavus (Fabricius)	●	●	●	●	●
L. mixtus (Nylander)	●	○			
L. fuliginosus (Latrielle)				○	
L. niger (Linnaeus)	●	●	●	●	●
L. umbratus (Nylander)		○		○	

Additional fossil records of indigenous species:

Stenamma westwoodii (Westwood)	●				
Leptothorax corticalis (Schenck)	●				
Hypoponera punctatissima (Roger)		●			

● 1961 →
○ Pre 1961

Introduced species temporarily or permanently resident:

Pheidole tenerifana Mayr
Tetramorium bicarinatum (Nylander)
Monomorium pharaonis (Linnaeus)
Paratrechina vividula Nylander

In addition to the above, some of which attain pest status in heated premises such as hospitals, bakeries and industrial establishments, a number of species are occasionally introduced from time to time on imported plant material or carried in inadvertently in luggage or vehicles. The most notorious of these is the Argentine Ant *Iridomyrmex humilis* Mayr, which pullulates along the Mediterranean coast and has been reported

from a kitchen in East Yorkshire. Apart from *Monomorium pharaonis* which has long been established in our major cities and is very difficult to dislodge, most imported ants do not survive long at any one site and being denizens of warm temperate zones cannot establish themselves outdoors in our climate. Carpenter ants, *Camponotus pennsylvanicus* Mayr and *C. herculeanus* (Linnaeus) respectively are occasionally reported from docks and timber yards imported in timber from North America or Europe; although they might reasonably be expected to establish themselves, for example in forestry plantations, they have never been known to do so.

INDIGENOUS SPECIES

The genus *Myrmica* is represented in Britain by 9 species, of which 6 occur in Yorkshire. *M. lobicornis*, recognizable by its dark gaster and the toothlike process on its angled scape, occurs in single colonies on stony pasture, heath and dry open woodland. It is somewhat local but may best be found on south facing rocky slopes. *M. rubra* is widespread and common except on the higher exposed moors. It is abundant on the lower slopes and in river valleys in the Dales. Nests usually contain many queens. This species has the most vicious sting of all the British ants, being comparable with that from a stinging nettle. It is distinguished from the more widespread and commoner *M. ruginodis* by the shorter, more broadly based spines, smaller petiole and weaker sculpture. *M. ruginodis* is probably the most widespread of all British ants and may be found equally abundantly on high and low ground; it is often the only species found on the high moors.

M. scabrinodis and *M. sabuleti* have rather similar habits, but the former with its smaller scape process is much more generally distributed. *M. sabuleti* is quite local in Yorkshire, although often quite numerous where it does occur. It is mainly found in warm places such as sheltered sunny banks. *M. sulcinodis* is perhaps the more interesting species in this group; it is a characteristic ant of drier moorland over millstone grit such as the heather moors around Pateley Bridge (SE 16) and Haworth (SE 03) but is also common on the North York moors. It is a dark red, deeply sculptured species and unlike the other *Myrmica* species is not to be found on the plains in agricultural areas.

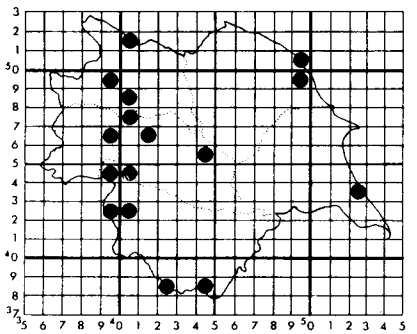
Leptothorax acervorum is a small species generally associated with woodland, living in tree stumps. In Yorkshire, however, it is frequent on high open moorland, nesting under dry peat between tussocks of heather. *Formicoxenus nitidulus* is an interesting species, since it is only to be found living as an inquiline in nests of the large wood ants of the *Formica rufa* species group. It is a minute, shining ant, relatively seldom observed because of its size and cryptic habits but it occurs with wood ants in the Scarborough area, to the north of Helmsley (SE 68) and in the Hebden Bridge (SD 92) woodland complex.

Formica fusca, the large black ant, is a southern species in the British Isles and is very local in Yorkshire, where it is known from a few lowland localities including Strensall Common (SE 66), Meanwood Park, Leeds (SE 23) and southwest of Doncaster (SE 50). It is replaced in North Britain and on high ground by the very similar *F. lemani*, which differs in the somewhat coarser sculpture and the presence in the worker caste of bristles on the front part of the thorax. This is one of the most abundant ants in Yorkshire but does not occur on the predominantly arable land of the plain of York.

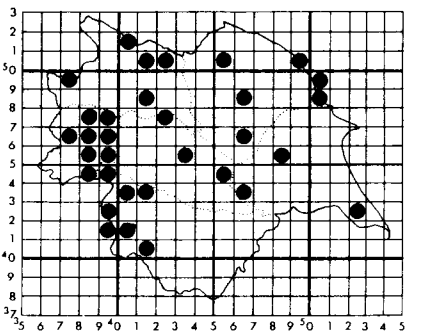
Formica lugubris is the common wood ant of Yorkshire and is locally abundant on some plantation areas of the North Yorkshire moors, where it continues to flourish. This is a large, aggressive ant with a powerful bite, which freely squirts formic acid through its anal gland when disturbed. On a hot day, especially when the ants are in an excited state, the stench of this acid is recognizable at a distance. Like those of all wood ants, its nests are constructed of twigs and leaf litter, such mounds sometimes reaching

heights of a metre or more. This species is the one commonly used on the continent to protect woodland against the ravages of leaf eating insects and it was noticeable a few years ago in the Hebden Bridge area that trees in the proximity of ant nests stood out as islands of green among the caterpillar-damaged woodland. The main food source for wood ants however is aphid honeydew and foraging trails to aphid-laden trees may extend as far as 100 metres. *Formica rufa*, a more southern species is well established in a wooded valley in the Pateley Bridge area (SE 17). It also used to exist in Brockadale Wood, Wentbridge (SE 5017) about 20 years ago but ironically disappeared, shaded out by sycamore trees, at about the time the woodland became a nature reserve. Both species prefer semi open woodland on undulating ground. Over-shading through dense planting, woodland clearance and urban growth have resulted in extinction from about half of the localities from which wood ants were recorded in Yorkshire over 50 years ago.

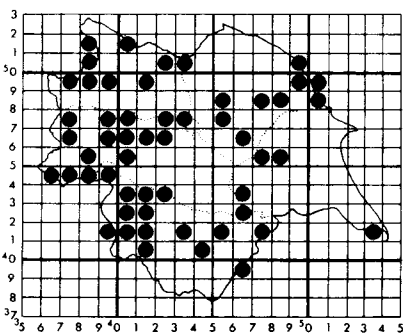
Lasius flavus is the little yellow mound ant characteristic of chalk and limestone pasture and some old undisturbed meadows may be covered in such grassy ant mounds. This species is widely distributed in the lower limestone valleys, often nesting under stones as well as in mound nests; it is less abundant in Yorkshire than in some other areas and



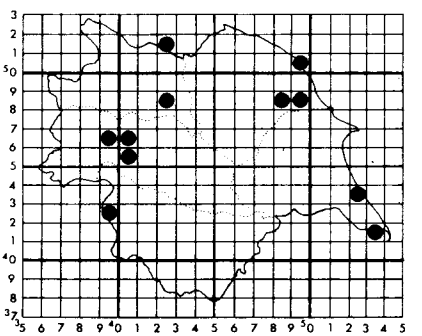
Myrmica lobicornis Nylander



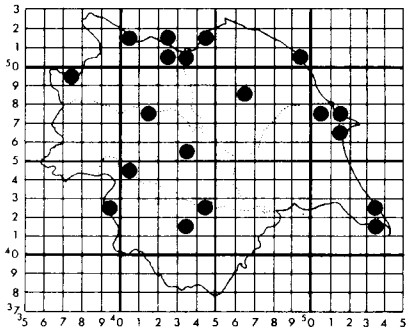
Myrmica rubra (Linnaeus)



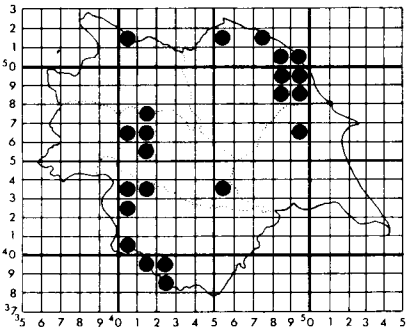
Myrmica ruginodis Nylander



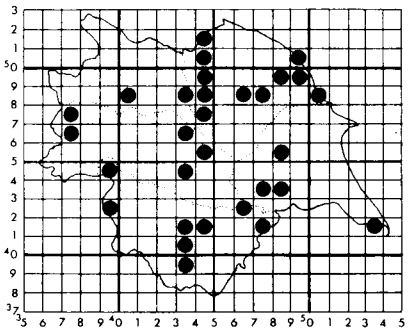
Myrmica sabuleti Meinert



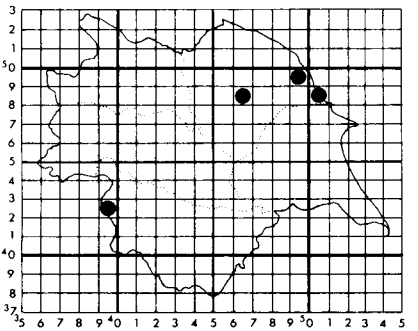
Myrmica scabrinodis Nylander



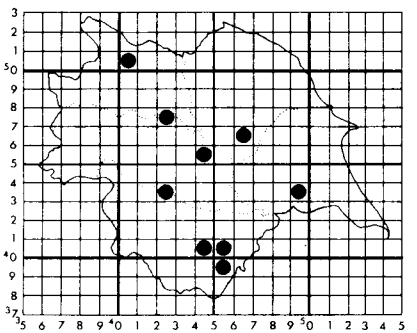
Myrmica sulcinodis Nylander



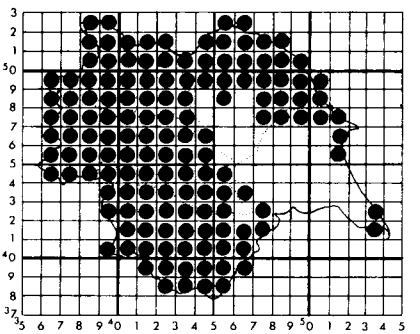
Leptothorax acervorum (Fabricius)



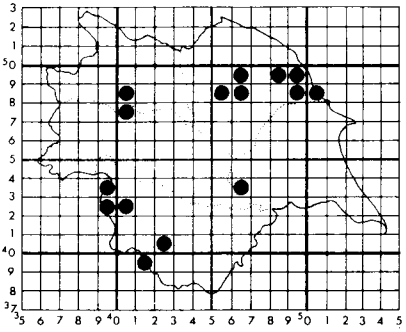
Formicoxenus nitidulus Nylander



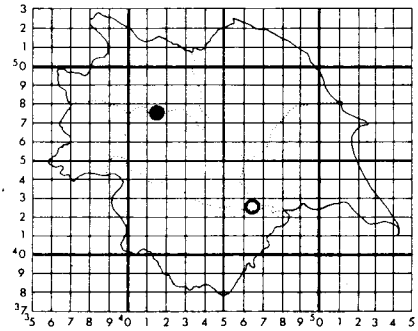
Formica fusca Linnaeus



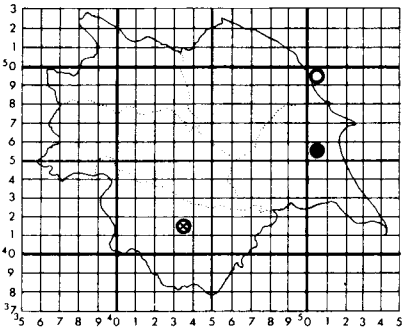
Formica lemani Bondroit



Formica lugubris Zetterstedt

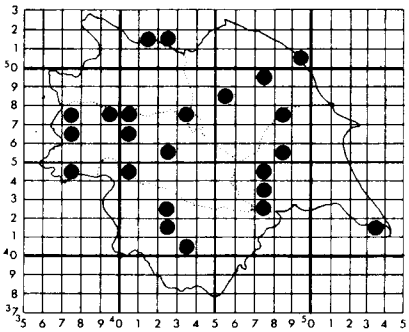


Formica rufa Linnaeus

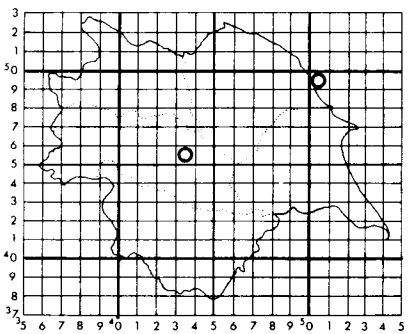


○● *Lasius mixtus* (Nylander)

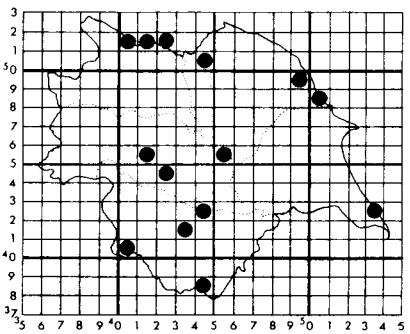
⊗ *Lasius fuliginosus* (Latrielle)



Lasius flavus (Fabricius)



Lasius umbratus (Nylander)



Lasius niger (Linnaeus)

does not occur on acid or high moorland. *L. niger*, a small black ant, is also a valley species in Yorkshire, often nesting in the neighbourhood of streams and rivers. It tends to be abundant in and around towns and villages and is sometimes a nuisance, raiding kitchens for sugary substances. In August, large unmated winged queens and the much smaller winged males leave the nests for their mating flight and large numbers of such insects emerging from the footings of houses, although quite harmless, may give cause for alarm.

Lasius fuliginosus has only been recorded in Yorkshire from Wooley Edge (SE 31) many years ago; there are no recent records of this highly aromatic, shining black ant although it is known from several places on or near the Lancashire coast, where it nests in hedges, the base of old trees and in sandy woodland. *L. mixtus* and *L. umbratus* are evidently rare in Yorkshire with very few records. These are yellow ants similar to *L. flavus* but larger. Foundress queens have to secure adoption in nests of *L. niger*, whose queen they kill, since they are unable to rear brood unaided. Both species live underground in grassy areas or open woodland at the roots of trees or under deep stones and the lack of Yorkshire records is no doubt partly due to their cryptic way of life.

Fossil Records

Additional species are known from recent fossil records. Head capsules of the cosmopolitan species *Hypoponera punctatissima* were found among other insect remains in York from old sediment dating from Roman times c.150 AD (Buckland 1972). This ant occurs in many places in Britain, in hot houses and fermenting heaps where temperatures of 25°C or more necessary for brood rearing may develop and although its natural habitat is in warm temperate regions, it has evidently long been a denizen of the British Isles. There is, in fact, an old record from a tropical house in the City of York (Donisthorpe 1926) and there may well be more recent occurrences.

FIGURE 1
Fossil *Stenamma westwoodii* (Westwood) — Head capsule

Stenamma westwoodii (Fig. 1) has been recognized from head capsules from the Bronze Age period found at Thorne Moor (SE 61). This is about 100 miles north of the nearest known record for this relatively southern species. Other species determined from the same sample of insect remains (from a project study by A. R. Davies under the guidance of Professor A. D. Lee, University of Leeds) included *Myrmica ruginodis*, *M. scabrinodis*, *Formica fusca* and *Leptothorax acervorum*. An unidentified head capsule (Fig. 2) closely

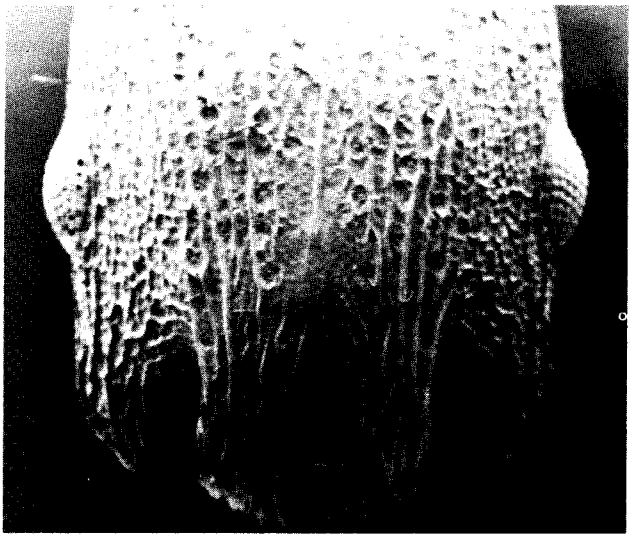


FIGURE 2
Fossil *Leptothorax* cf *corticalis* — Head capsule

resembles *Leptothorax corticalis* Mayr. This is a central European species found rather locally in oak trees, with a relict population in Central Sweden but not known to occur in the British Isles.

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Davies, A. R. (1979) Bronze age ant remains from Thorne Moor. Project study, University of Leeds.

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Walsh, G. B. and Rimington, F. C. (1956) Natural History of the Scarborough district. Aculeata — Ants, Wasps and Bees. **2**: 281–287.

BOOK REVIEWS

Multivariate Analysis of Ecological Communities by **P. G. N. Digby** and **R. A. Kempton**. Pp. viii + 206, including numerous tables and line drawings. Population and Community Biology Series. Chapman and Hall, 1987. £25 hardback, £12.95 paperback.

The study of ecological communities frequently involves the collection of large amounts of data, the satisfactory analysis of which requires the use of a powerful computer to