Diver (1938, 1940) working near the locality of the present study found that whereas *L. niger* was widespread and lived in sand dunes, wet and dry heath, marsh, grassland, scrub and woodland, *L. alienus* was almost restricted to dry heath. Furthermore it appeared to predominate in heath formed on blown sand rather than the older consolidated eocene (Bagshot) sands which were often occupied by *L. niger* as were the damp hollows between ridges. Although in the part of Hartland Moor studied intensively *L. niger* was restricted to wet heath it is a matter of common observation that it is eurytopic and occurs in scrub and gardens and especially roadside verges. It also occurs in pasture provided stones are available as nest sites (for unlike *L. flavus* this species is unable to build mounds strong enough to resist heavy grazing animals). The essential factor common to all these situations is unknown but it might be low wind, high humidity or moderate warmth or something of all three; the food supply is as variable as the vegetation.

Tetramorium caespitum is known as the turf-ant in Germany where it is distinctly eurytopic (Gösswald 1932, 1951). It is well represented in steppe in Moravia (Šilhavý 1938). In Italy it may occur in city pavements and a variety of other habitats. In Hokkaido Hayashida (1960) found it in scrub or woodland and rarely in very dry and exposed situations. Whilst it is most common in Callunetum in this country it does occur occasionally in turf in warm sunny places. There seems to be no doubt that the variety of habitat occupied is much reduced towards the north of the geographical range.

Geographical distribution

As already implied these species are widely distributed in Eurasia and occur in America. Their northerly extension in Britain is interesting as it corresponds with the temperature relation found in this study. According to Collingwood (1957, 1961) *Lasius niger* 'is common in sheltered river valleys as far north as the Oykell in Sutherland'; *Formica fusca* is 'local to the north of the English Midlands and has only been found in Scotland in a few localities in the west'; *Lasius alienus* 'occurs sporadically as far north as south-west Scotland but is characteristic of dry heaths and uplands in south Britain'; whilst the distribution of *Tetramorium caespitum* 'north of the heathlands of south England is almost entirely coastal and is very scattered in Scotland'. This broadly indicates that *Lasius niger* ranges all the way, *Formica fusca* half way and the other two only a small part of the way from the south coast northwards. The tendency to occur on the west coast is interesting because the hours of sunshine in May and June are as high on the coasts round the Irish Sea as they are in the south of England, which presumably means that the soil surface temperatures can be raised and the ants can find suitable nesting places. The line joining points having $6\frac{1}{2}$ h sunlight in June fits the British limits of *Lasius alienus* quite well. *Tapinoma erraticum* is well fitted by the 7 h line.

The ant fauna of upland heath occurring in the north and west of Britain is quite different (Brian & Brian 1951; Brian 1952, 1955, 1956a, b; Collingwood 1961). Transitions from one to the other may be seen on Black Down in west Dorset and Bovey Heath just east of Dartmoor.

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