Using genetic markers (allozymes) would be a way to detect hybrids. In a previous study (Douwes and Stille 1987) we demonstrated interspecific allozyme variation in the *L. tuberum* group and using another buffer for PGI and MDH there is enough resolution to detect hybrids in most combinations of these species.

Material and methods

In 1984–1988 we collected 246 colonies of *L. tuberum* group species in 20 different localities (Fig. 1). The whole colony was collected (if possible) and some of the workers were stored at −70°C until electrophoresis. Additionally, B. Seifert provided us with a small, selected sample from loc. 21 (Fig. 1).

The electrophoretic and staining techniques used are as described by Selander et al. (1971). From each colony 1–10 (usually 2) ants were individually analyzed. Whole ants were homogenized in deionized water and four enzyme loci were stained: PGI (phosphoglucose isomerase), MDH-1 (anodal malate dehydrogenase), and MDH-2 (cathodal MDH) resolved on a Tris citrate buffer (gel pH 8.4/ bridge pH 7.1) (Varvio-Aho and Pamilo 1980) and PGM (phosphoglucomutase) on a Tris-maleic-EDTA buffer (gel pH 7.4/ bridge pH 7.4). The allozymes were denoted with letters according to relative migration (F = fast, M = medium, S = slow). The variation in PGM, however, could not be understood in terms of allelic variation (Douwes and Stille 1987) and we have therefore simply recorded the phenotypes obtained (1 to 6, 6 is fastest), each phenotype normally consisting of a strong and a weak band.

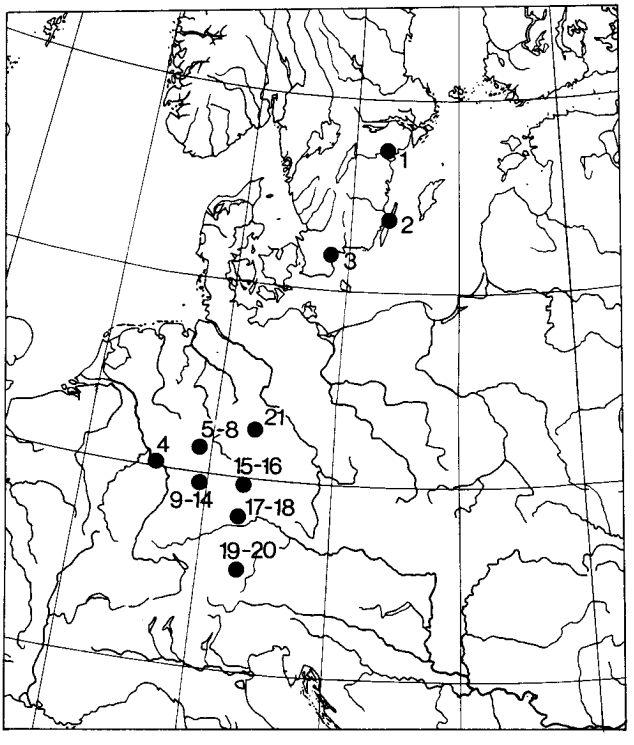

Fig. 1. Localities 1–21 in Sweden and Germany where *Lepthothorax tuberum* group species were collected

The *L. tuberum* group species are discriminated by different degrees of melanism on various body parts and to some extent also by sculpture (Kutter 1977). In our morphological analysis on five workers from each colony we have scored the following four characters: melanism of head (1 to 3), of 3rd leg femur (0 to 2) and of the first gaster tergite that varies from almost totally dark to mainly yellowish with a dark band. We recorded the length of the dark area (along the median line) relative to tergite length (0 to 3) and whether this area is a distinct band (score = 2, as in most *L. unifasciatus*), not well demarcated (0, as in e. g. *L. tuberum*) or midway between these extremes (1, as in most