

Fig. 7. Ant traffic on the main trail close to the nest entrance (night 17); above: □ workers leaving the bivouac within 1 min; ■ workers returning to the bivouac within 1 min; ★ light intensity; below: □ rate of prey-laden workers

number of guests. Their number varied from colony to colony. Many species of guests followed the emigration trail during or shortly after the nest relocation. We observed at least two species of staphilinid beetles (see Note added in proof); a lepidopteran, which was sometimes transported on pupae; a reddish spider (Oonopidae); white collembolans; and females of the recently described phorid species *Puliciphora rosei*, which was observed to be associated with *Leptogenys mutabilis* (Disney 1988) and a hitherto undescribed species of *Rhynchomicropteron*.

Several guest species are carried on different stages of the brood apparently depending on their special residence site in the colony. *Exalloniscus maschwitzii*, an isopod species that is greatly adapted to its myrmecophilous life (Ferrara et al. 1987), often clings to the end of a pupa and is thereby carried to the new bivouac. We observed up to four individuals of a tiny ptiliid beetle on top of a pupa and also observed mites riding on pupae. On the larvae we found a larger dark ptiliid beetle, a whitish beetle with partly reduced wings, and several mites. A mite species was also observed on the workers.

#### Foraging behavior

*Leptogenys* sp. 1 forages nocturnally. The raids began at dusk and ended before or shortly after dawn. During the observation period, 1–3 raids per night ( $\bar{x} = 2$ ,  $n = 7$ ) were conducted. In every raid a new trail system was developed (Fig. 8). We registered up to 38,400 participants in each raid (16,700–38,400,  $\bar{x} = 27,200$ ,  $n = 11$ ). Three raid

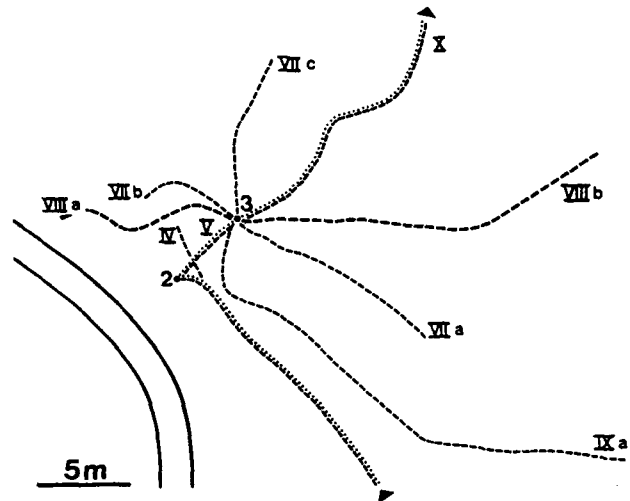


Fig. 8. Raid courses conducted from bivouacs 2 and 3 (no measurements were taken on nights 6 and 9, and after the nest relocations on nights 4 and 5). (--- raid trail; ···· emigration trail)

phases were distinguished: the exodus, the main raiding phase, and the retreat (Fig. 7).

**Exodus.** The forays started after sunset between 1920 and 1945 hours. The first activities that could be seen outside the bivouac were groups or columns of workers moving beneath the leaves. From there they expanded rapidly in several directions into the leaf litter around the bivouac. They advanced by forming pseudopodia-like formations, which consisted of hundreds of workers, or narrow columns. The main trail on which the mass exodus occurred was established within 20–60 min ( $n = 5$ ). During the exodus, the outgoing traffic dominated