

Hyenism in Ants: Non-Target Ants Profit From *Polyergus rufescens* Raids (Hymenoptera: Formicidae)

by

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ABSTRACT

The presence of slavemaker ants alters the structure of the ant community. The influence of slavemakers on non-host ants is believed to be indirect, via changing competitive interactions among the ants. According to my observation *Myrmica sabuleti* (and probably also *Lasius alienus*) profited from a *Polyergus rufescens* raid against a *Formica fusca* nest. Both non-host species collected *F. fusca* corpses. These carcasses were used as food in the case of *M. sabuleti* at least. *M. sabuleti* profited substantially from the *Polyergus* raid because the dry biomass weight of the collected *F. fusca* carcasses was approximately half of the dry biomass weight of all *M. sabuleti* workers.

Key words: ants, Formicidae, profit, slavery, social parasitism

It has been shown that the structure of an ant community is affected by both top-competitors and slavemakers (Puntilla *et al.* 1996). The influence of slavemakers on non-host species is considered to be indirect, taking affect via changing competitive interactions among the ants. The socially parasitic ant *Polyergus rufescens* (Latreille, 1798) is a slave-maker who uses ants from the subgenus *Serviformica* spp. as a host. In this paper I refer to the direct nutrient benefit gained by non-host ants from *Polyergus rufescens* raiding.

I observed a raid of *P. rufescens* on a *Formica fusca* (Linnaeus, 1758) nest on the green of Havraníky (a village in South Moravia) in the afternoon of 31.5.2011. The nests were approximately 15 m apart. The raid was already in progress when I arrived: the dead queen and many dead and dying *F. fusca* workers lay on the surface of the attacked nest and *Polyergus* workers were carrying pupae away into their own nest. Several *F. fusca* workers that had escaped the attack stormed about, in some cases carrying a rescued pupae.

There was a nest of *Myrmica sabuleti* (Meinert, 1861) in the vicinity of the attacked *F. fusca* nest (approximately 20 cm away). *M. sabuleti* workers appeared to increase their activity levels as the number of *Polyergus* workers on the attacked nest decreased. Many *M. sabuleti* workers came to the attacked nest and transported carcasses into their own nest. Moreover, *M. sabuleti* workers behaved very aggressively towards *F. fusca* workers that had escaped the *P. rufescens* raid and attacked them with open mandibles. Nevertheless, the *F. fusca* moved much faster than the *M. sabuleti* and escaped in all the cases that I observed.

During the next day there were still some *F. fusca* carcasses on the plundered *F. fusca* nest. The *M. sabuleti* paid no attention to these carcasses. Instead I observed several *Lasius alienus* (Förster, 1850) workers transporting them away.

I dug up and searched all the nests in the site: the attacked *F. fusca* nest, *M. sabuleti* nest and *L. alienus* nests. There were 127 workers, 8 pupae, and 27 larvae of *M. sabuleti*, and 27 dead workers of *F. fusca* in the *M. sabuleti* nest. Most *F. fusca* carcasses had been placed in a chamber with *M. sabuleti* larvae and these corpses were partly cut into pieces. The *L. alienus* nest contained only 3 *L. alienus* workers; it was not a proper nest but rather a temporary station. There was 12 dead *F. fusca* workers placed in the entrance and a further stock of corpses above the entrance of the station.

There were 14 carcasses of *F. fusca* workers and 1 queen still on the surface of the former *F. fusca* nest. I found nothing inside this nest except 5 forgotten *F. fusca* pupae.

I weighed the dry biomass of *M. sabuleti* workers and the carcasses of *F. fusca*. The total weight of the 27 *F. fusca* workers was 0.0558 g and the total weight of the 127 *M. sabuleti* workers was 0.1194 g. It seems that *M. sabuleti* benefited substantially: The weight of *F. fusca* carcasses in *M. sabuleti* nest was approximately half of the weight of all the *M. sabuleti* workers. It was not possible to make the same calculation in the case of *L. alienus*, because it was not clear which nest the station belonged to.

CONCLUSIONS

Non-host ants can benefit from the presence of slavemaker ants indirectly, through the reduction of competition (Punntila *et al.* 1996), or directly,

through the consumption of the victims of slavemakers' raids. Independently of this observation it is known that ants are the most efficient of all invertebrate carcass scavengers (Fellers & Fellers 1982; Retana *et al.* 1991), and it is probable that non-host ants collect most of the victims of slavemaker raids. Clearly the supply of this food to non-host ants is occasional only. On the other hand, with regard to the range and frequency of *Polyergus* raids, the amount of food gained is not negligible.

The observation of the aggressive behavior of *M. sabuleti* towards escaping *F. fusca* is interesting. I have never observed or read about such aggressiveness of *M. sabuleti* to *F. fusca*. The close vicinity of both nests confirms a non-conflict relationship between both nests of these species. It seems that the aggressive behavior of *M. sabuleti* to *F. fusca* is related to the unfavorable situation of the *F. fusca* colony attacked by *Polyergus*.

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