

SHORT COMMUNICATION

**Notes on an army ant (*Eciton burchelli*)
raid on a social wasp colony (*Agelaia yepocapa*)
in Costa Rica**

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In this note we describe a raid by army ants (*Eciton burchelli* Westwood) on a colony of tropical swarm-founding wasps (*Agelaia yepocapa* Richards). The general features of such raids have been discussed elsewhere (Jeanne 1970, Naumann 1975, Young 1979). Army ants are a major predation force on social wasp colonies in many Neotropical areas (Chadab 1979a, Jeanne 1975), and features of swarm-founding wasp behaviour indicate strong selection for dealing with army ant predation (Chadab 1979b, Jeanne 1975).

The raid described here involved a number of behavioural responses of the wasps to the ant attack which have not been reported before, and occurred at an unusually high elevation. The raid took place next to the dirt road leading to the Monteverde Cloud Forest Preserve in Puntarenas Province, Costa Rica. The wasp nest was located 4 m above the ground in a trunk cavity of a large (about 0.7 m DBH) broadleaf tree, several kilometres downhill from the Preserve headquarters. The surrounding habitat is a mixture of disturbed forest and pasture, at an elevation of about 1100 m. This is near the upper elevational limit for *E. burchelli* in the area (William Haber, pers. comm.)

We first noticed the attack on 27 July 1988 late in the morning, but local residents claimed it had begun the previous afternoon. Army ants were entering the wasp nest cavity and extracting wasp brood (larvae and pupae) when we arrived, and continued to do so during our last observation at 1500 h that afternoon. The raid spanned a period of at least 24 h though it is uncertain whether it had continued through the night, when army ants usually bivouac (Franks 1989).

The wasps were identified as *Agelaia yepocapa* (formerly *Stelopolybia yepocapa*). This is the first record of an *A. yepocapa* nesting site; like most

of its congeners this species apparently nests in cavities (Richards 1978). We were unable to observe the nest directly to compare its architecture with those of other *Agelaia* nests.

During the raid, the ants (*Eciton burchelli*) crossed the road in a broad band several metres wide, with a number of more or less well defined columns of bi-directional traffic in the band. The columns converged on the base of the tree containing the wasp nest. We did not locate the ants' bivouac site, as the raid traversed private property, but the columns extended for at least 50 m from the wasp nest tree into a wooded area. The ants were undaunted by the passage of pedestrians, horses, and an occasional four wheel drive vehicle, all of which disrupted their traffic only temporarily.

Our attention was drawn to the fact that wasps were under attack when a wasp worker stung one of us (SOD) as we approached to within 30 m of the colony. The wasps were very agitated: most of the colony of several thousand individuals was clustered on a branch 2 m from the nest cavity, and many workers flew wildly around the area. All large objects (human-size or greater) that passed by on the road were attacked by the wasps. One of us (SOD) was stung two more times, and we had to remove several wasps which took firm hold of our hair with their mandibles and buzzed loudly; this appears to be a common pattern of aggressive behaviour for some *Agelaia* species (Jeanne 1973).

Of special interest was the interaction between the wasps and the ants. Over the course of an hour, we watched about 20 wasps land on the ground near ant columns. These wasps oriented to individual ants and pecked at them as described by Chadab (1979a), sometimes striking the ant with their mandibles. We also saw several wasps captured by *E. burchelli* workers while they pecked. More ants quickly joined in, holding the wasp's appendages and eventually dismembering it. This type of response by wasps to ant raiders off the nest has not been observed previously (Chadab 1979a, b).

The wasp colony remained clustered near the cavity up to 1500 h (when we last observed it that day), and had moved back into the old nest site by the following morning. Wasp workers were busily flying to and from the cavity on 28 July, and were no longer attacking nearby vertebrates. When the nest site was examined nearly a year later (13 July 1989), a colony of the same species (presumably the one that was raided) was present in the cavity. Colonies of other *Agelaia* species are at least sometimes perennial (Jeanne 1973, Richards & Richards 1951).

Chadab (1979a) estimated that nearly 80% of social wasp colonies raided by *Eciton* abscond to new nesting sites, as did a raided colony of *A. areata* observed by Jeanne (1973). *A. areata* is atypical for the genus in that it builds envelope-covered nests in the open rather than in cavities. Cavity-nesting wasps may be more likely to re-use a raided nest than those that nest in the open because of greater nest site limitation; this comparison is best made within genera like *Agelaia* which exhibit variation in nest placement. Jeanne (1973)

also noted the non-aggressive nature of *A. areata*, which is morphologically similar to *A. yepocapa* but differs in nest placement. We hypothesize that nest sites which are limiting and likely to be re-used will be defended more vigorously by the resident wasps (other factors being equal). This may explain the intense aggression to the ants and other moving objects by *A. yepocapa* workers.

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