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Mating Strategies in Solitary Aphid Parasitoids: Effect of Patch Residence Time and Ant Attendance

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Abstract Mate finding and dispersal from the natal patch in parasitoid Hymenoptera are influenced by the availability of host resources and interactions with other organisms. We compared the mating behavior of three solitary aphid parasitoids, *Aphidius ervi* Haliday, *Lysiphlebus hirticornis* Mackauer and *Pauesia pini* (Haliday) (Hymenoptera: Braconidae: Aphidiinae) that differ in host resource exploitation and ant mutualism. In *L. hirticornis,* which is obligately ant-attended, the residence time on the natal patch was approximately 4 h compared with less than 2 h in the facultatively ant-attended *P. pini*; the sexes did not differ in residence time. Females of *A. ervi,* which is not attended by ants, stayed for slightly more than 2 h on the natal patch while their male siblings remained for only 1 h. In *L. hirticornis*, 90% of all siblings in a clutch mated on the natal patch but only 13% in *A. ervi* and 42% in *P. pini* did so. Off-patch matings (23%) were observed only in *A. ervi.* Males and females of *L. hirticornis* were 12-times more likely to mate on the natal patch when aphids and ants were present than when either of the latter species was removed; and patch residence time declined from approximately 4 h to approximately 2.5 h in the absence of either aphids or ants. We propose that, in aphidiine wasps and perhaps other quasigregarious parasitoids, mating behavior is influenced by the availability of resources on the natal patch and the presence or absence of trophobiotic ants.

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