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Patch use by egg parasitoids: theory, facts, and biological control

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This is a critical review of theoretical and empirical studies on patch use by egg parasitoids, determining if theory explains observed facts. It explores the possibility that egg parasitoids aggregate in host patches of high density or large size because classical patch-use theory predicts that foraging parasitoids should spend a relatively longer amount of time in high-quality patches, and the possibility that parasitoid aggregation results in density dependent parasitism. It stresses the fact that host age strongly influences patch use by parasitoids of eggs laid in masses because host quality declines with host age; this occurs simultaneously in all hosts in a patch (i.e. egg mass). When parasitoid females discover low-quality host patches just before host hatching, they should leave the patches as soon as possible to search for another patch. The case of *Anagrus sophiae* (= *delicatus*) females that attack only a small fraction of hosts in an egg mass and leave high-quality patches still carrying apparently mature eggs (Cronin & Strong, 1993) seems to be exceptional among quasi-gregarious egg parasitoids. Characteristics of patch use by egg parasitoids are discussed in relation to their use in biological control.