WHAT CAUSES MALE-BIASED SEX RATIOS IN THE GYPSY MOTH PARASITOID *GLYPTAPANTELES FLAVICOXIS*?

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ABSTRACT

Glyptapanteles flavicoxis (Marsh) is an oligophagous, gregarious larval parasitoid of the Indian gypsy moth, *Lymantria obfuscata* (Walker), that readily attacks the European gypsy moth, *Lymantria dispar* (L.). This species is believed to have potential for inundative releases against gypsy moth populations, because it can be reared in large numbers with few hosts. Unfortunately, sex ratios in laboratory reared *G. flavicoxis* are usually male-biased. Male-biased sex ratios hinder efforts to mass release parasitic Hymenoptera for biological control by making the production of females costly. Because inbreeding is believed to have adverse effects on the laboratory rearing of natural enemies, we established a new colony of the parasitoid from field-collected material, and maintained it for 16 generations in the laboratory, while comparing sex ratios in progeny of inbred and outcrossed females. Virgin females were allowed to sting hosts prior to mating to insure that only haploid males would be used in the crosses of the next generation. This was done to eliminate any confounding effects caused by the presence of putative diploid males. Only post-mating progeny were used in calculating sex ratios, which were expressed as percent females. Sex ratios of progeny produced by inbred or outcrossed females day were recorded and subjected to two-way analysis of variance using generation and type of cross (inbred or outcrossed) as grouping factors. We used the Holm-Sidak procedure to look for differences in sex ratios among progeny of parents yielding mixed progeny and G-tests to test for differences in proportions of females producing mixed and all male progeny. There were no noteworthy trends in the proportions of females producing mixed progeny over time (generations). Likewise, the proportions of inbred and outcrossed females producing mixed progeny did not differ. When crosses with only male progeny were excluded from the analysis, sex ratios among progeny of inbred and outcrossed females did not differ. Sex ratios appeared to fluctuate more or less randomly over the first 11 generations, but appeared to decline steadily over the last five generations (12-16 inclusive). The study will be continued for several more generations to see if the trend continues.