

EFFECTS OF PARENTAL AGE AT MATING ON THE REPRODUCTIVE RESPONSE OF THE GYPSY MOTH PARASITOID *GLYPTAPANTELES FLAVICOXIS* (HYMENOPTERA: BRACONIDAE)

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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 parental age at time of mating is known to affect the sex ratio in some Braconidae, we crossed haploid males and virgin females 0-, 1-, 4-, 9-, and 16-days-old with at least 10 trials for each of the 25 combinations. Numbers and sex ratios of progeny produced by females each day were recorded and subjected to two-way analysis of variance. We used the Holm-Sidak procedure to detect differences in sex ratios among progeny of differently aged parents and G-tests to test for treatment differences in proportions of females producing mixed and all male progeny. The

numbers of progeny produced per female was positively correlated with female longevity. Both progeny and sex ratios (percent females) among progeny produced by ovipositing females of *G. flavicoxis* decreased markedly over time, so only the first days production need be used in mass rearing. The reduction in the proportion and numbers of females among progeny as ovipositing females aged is consistent with depletion of sperm in the spermatheca. Therefore, we focused our analyses on sex ratios in progeny produced on the first day hosts were provided to females. Females in all age classes mated to newly emerged males (day 0) were more likely to produce all male progeny (30%) than those mated to older males (10-15%). When crosses with only male progeny were excluded from the analysis, females mated to one-day-old males had higher sex ratios than those mated to males in other age classes. In addition, females mated the day that they emerged tended to have the highest sex ratios. Therefore, one should not use newly emerged males in rearing this species, but newly emerged females appear to be good candidates for a rearing program.