

STERILIZATION OF ADULT MALE FIELD CRICKETS  
*GRYLLUS INTEGERS* (ORTHOPTERA: GRYLLIDAE)  
BY GAMMA RADIATION

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In this paper I report a dose of gamma radiation that will induce sterility in adult male field crickets. This work was undertaken as part of a larger study on sperm competition in the field cricket *Gryllus integer* (Backus, 1985).

The methods used in this study are outlined in Backus (1985). Fifteen virgin adult female *G. integer* were each mated twice to 1 of 15 adult male crickets within 24 hr of the male's exposure to 7,000 roentgens of gamma radiation (R males). Following mating females were allowed 11 days for oviposition in a container filled with 250 ml moist vermiculite. Oviposition dishes were examined daily for the presence of nymphs; any nymphs found were mouth-aspirated and counted. A control group consisted of 5 females mated with unirradiated (N) males and were treated similarly to females mated with R males.

Following 8 weeks, the soil in each oviposition dish was dried and examined under a dissecting microscope for the presence of unhatched eggs. All unhatched eggs were counted; any nymphs that had hatched and were remaining in the soil were counted and added to the number of emerged nymphs.

Productivity, the total number of eggs laid by a female, was determined by summing the number of nymphs emerged with the number of unhatched eggs. Mean productivity for females mated with R males was 337.5 (SD 201.4, Range 65-733), whereas mean productivity for females mated with N males was 291.2 (SD 128.3, Range 153-500). A Mann-Whitney U test revealed no significant difference in mean productivity between the 2 groups ( $U = 35.5$ ,  $p > 0.05$ ).

The mean proportion of eggs hatched for females mated with R males was 0.01 (SD 0.02, Range 0-0.04); for females mated with N males was 0.67 (SD 0.27, Range 0.19-0.86). There was a significant difference between these values ( $U = 0$ ,  $p < 0.05$ ; one-tailed).

The mean age of death for males in the R group was 22.8 days (SD 30, Range 16-28); for males in the N group was 59.2 days (SD 19.0, Range 27-77). There was a significant difference between the 2 groups of males for age of death ( $U = 1$ ,  $p < 0.05$ , two-tailed).

The proportion of eggs hatched for females mated with N males was much greater than for females mated with males exposed to 7,000 roentgens of gamma radiation. The proportion of eggs hatched by females in the R group was so low that 7,000 roentgens was apparently sufficient to sterilize adult male *G. integer*. A second effect of this dosage appears to be a significantly shortened lifespan in R group males. The dosage of radiation used did not appear to affect male courtship or mating behavior (Backus, 1985). This was the only dosage of radiation tested and may be considered as a minimum as 1% of the eggs laid by females mated with R group males hatched.

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OBSERVATIONS ON *MANTOIDA MAYA*  
(ORTHOPTERA: MANTIDAE)

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The Little Yucatan Mantid, *Mantoida maya* Saussure and Zehntner, is a small (15 mm) ground-dwelling species native to Florida and Mexico (Blatchley 1920; Helfer, 1953), it appears to be relatively abundant at the Archbold Biological Station (Highlands Co., FL.), though live adult specimens are seldom seen and are apparently most active at night (Hubbell, 1945). Two small, continuously operated Townes traps set up in a dense stand of sand pine (*Pinus clausa* Chapman) have captured 198 individuals over a period of 3 years. These capture records indicate that the flight period is concentrated in July and August (196 specimens), and strongly suggest that there is one generation per year. A dramatic decrease in number of individuals in 1985 might be related to very dry conditions in fall of 1984, and winter and spring of 1985.

Immature *Mantoida maya* are difficult to see as they run through surface litter in their usual habitat of dimly lit hammocks and thickets of dense scrub. Immature individuals (Fig. 1) probably derive additional protection from their resemblance to ants and wingless ichneumonids. My work on ants at the Archbold Biological Station has led to occasional encounters with immature *M. maya* which I have mistaken at a distance of a few feet for a novel species of ant. The presumed mimetic features of *M. maya* are: 1) The red coloration of the head and thorax, contrasting strongly with the black abdomen, as in the abundant sympatric ants *Camponotus abdominalis floridanus* (Buckley) and *C. tortuganus* Emery; 2) the apically expanded oval abdomen, resembling the gaster of an ant; 3) the white band on the first 2 visible abdominal tergites, reducing the visual impact of the "petiole" area; 4) the white median band on the antennal flagellum, as in females of many ichneumonids. The immature mantids run in a series of short spurts, the antennae quivering rapidly. The visual contrast between adult and young in this species is far more dramatic than in any other U.S. mantid. It is the only mantid I know in which the shape, color, and behavior is defensively mimetic rather than cryptic.

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