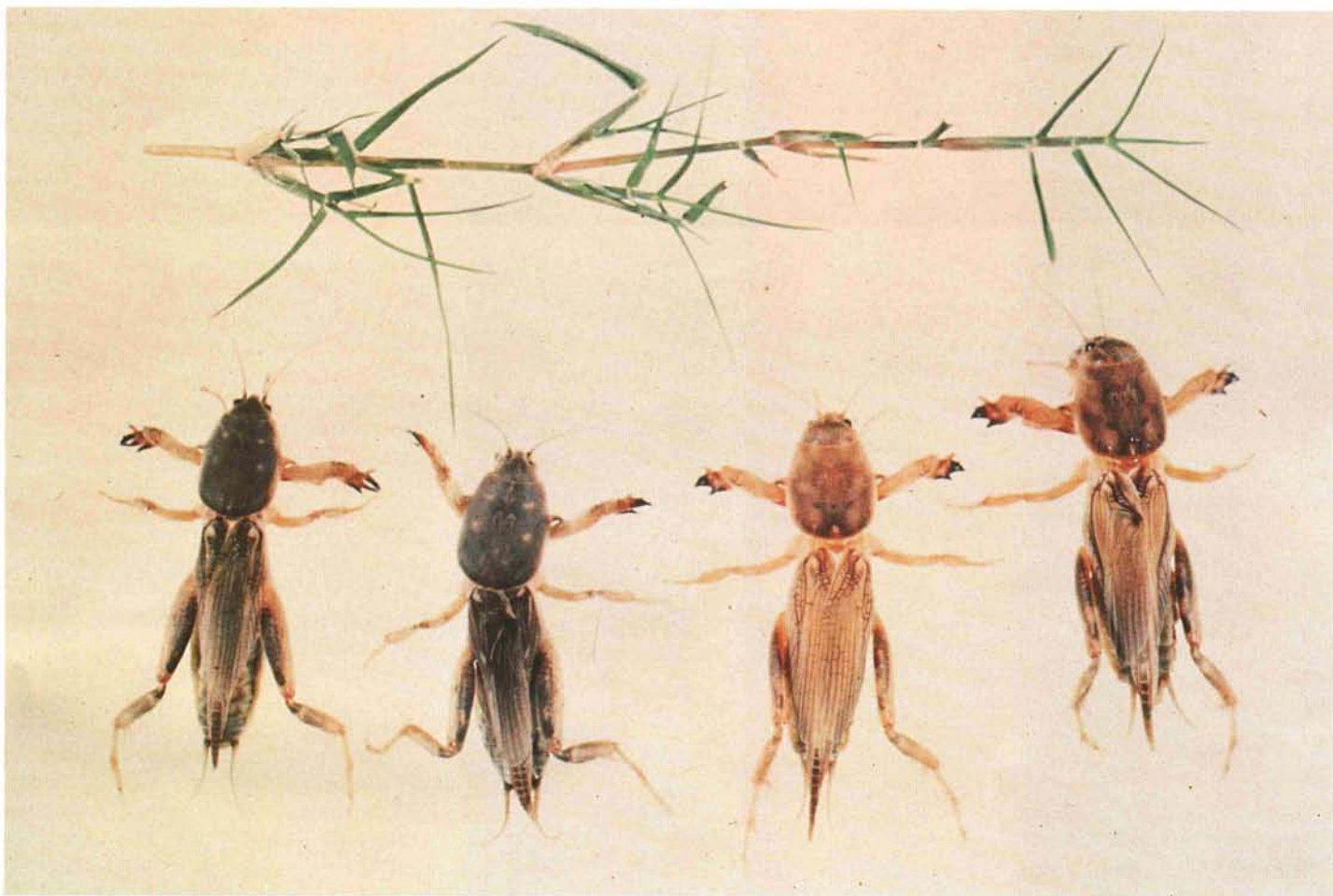


# Mole Cricket Management vs. Control

by **TOM BURTON**  
Superintendent, Sea Island Golf Club, Georgia



Two species of mole crickets, left to right: adult male tawny, adult female tawny, adult male southern, adult female southern.

**T**HE MOST SERIOUS insect pests of turf in the southeastern United States are mole crickets. The tawny mole cricket (*Scapteriscus vicinus*) and the southern mole cricket (*S. acletus*) were inadvertently introduced into the United States from South America. The tawny mole cricket was first recorded at Brunswick, Georgia, in 1899. It seems likely that they traveled in ships' ballast that was dumped in preparation for taking on heavy loads of timber. The southern

mole cricket was likewise introduced at the Brunswick, Georgia, port in 1904.

Turf damage caused by mole crickets results from direct feeding on roots and desiccation of roots through cricket tunneling in the soil. Where mole cricket populations are heavy, large areas of turf will die out. In areas where cricket populations are low, turf withstands the damage, but the raised areas of soil are unsightly and interfere with golf play. These creatures create another problem by

tunneling through soil and breaking the barrier of preemergent herbicides, consequently contributing to our weed problems.

When the less-expensive long-residual insecticides were removed from the market several years ago, the crickets became more difficult and costly to control. Treatments were then made after damage had occurred, and although vast numbers of crickets might have been killed, we only scratched the surface. We



were throwing dollars at the problem, as much as \$1,000 per hole, but we were not getting the job done.

When tournaments were held, we had a local rule (the Mole Cricket Rule), which allowed the player to play the ball as ground under repair if it landed in a mole cricket tunnel or mound.

It was evident we needed a comprehensive program of mole cricket management. Bill Jones, III, vice-president and part owner of the Sea Island Company, which owns and operates The Cloister Hotel, helped organize a cooperative effort between Sea Island Golf Club, Jekyll Island State Park Authority, and Sea Palms Golf & Tennis Resort. These three resort operations have a total of 144 holes of golf.

We looked for an entomologist with mole cricket experience, an understanding of our problem, and a recognition of the need for a different approach. We hired Dr. Leon Stacey, an agricultural consultant who was actively involved in mole cricket research while employed by the University of Georgia Cooperative Extension Service (1977-84). A brief summary of the cricket management program developed and used in 1987 and 1988 follows.

**D**URING 1987, management strategies for mole crickets were tailored to meet the needs of each cooperating golf course. Large populations of crickets were the problem. To design control systems for such large populations, biological studies were conducted on crickets collected from pitfall traps.

Size, sex, and species determinations were made one time a week, and pregnant females were dissected to provide useful information on egg-laying activities and to predict peak egg hatch. Emphasis was placed on timing application of control materials to coincide with nymphal hatch.

Peak egg hatch occurred the week of June 12, in 1987, and the large population of hatching nymphs (½ million per acre) was reduced considerably.

Although peak hatchout of nymphs was accurately predicted and control materials were applied during peak hatchout, a high population of overwintered adults provided a consistent, continuous hatchout of nymphs during June, July, and August. Spot treatments were utilized on several holes while blanket treatments



*First instar nymph of tawny mole cricket. Peak hatching date is usually last of May through first two weeks of June.*

of insecticides were needed on others. Detailed mapping of crickets was used to determine which holes required spot treatments, etc. Candidate insecticides were screened to determine the most effective treatments, and we presently use only the most effective products available.

One of the most significant improvements in control of crickets through the use of sprays was the discovery of high alkaline content in the water from deep wells on St. Simons Island. The water pH ranges from 7.9 to 9.1; changes of 0.5 pH unit during one week are not uncommon. To improve insecticide performance in alkaline spray water, buffer material (Buffer-X, Buffer PS, Super Buff) is added to reduce water pH to approximately 6.5 before the pesticides are added.

Detailed cricket mapping during March and April was accomplished. Its purpose was to locate overwintered adults and carry out massive suppression before they laid their eggs. Spot treatments with residual insecticides (Mocap) were done on areas where adults were not controlled before April 15, and follow-up spot treatments were made with the short residual materials Sevin and Orthene, as dictated by cricket mapping.

These approaches provided excellent reduction in cricket numbers and damage. During May, June, and July, very few crickets could be found (less than 10 per hole). August and September rains generally favor outbreaks of crickets. These rains appear to bring all crickets to the surface, some of which apparently feed at depths that do not cause surface damage.

The major factors leading to the success of the 1988 program are:

- 1) Accurate monitoring of crickets (cricket mapping)
- 2) Buffering the spray water
- 3) Massive suppression of overwintered adults
- 4) Timing insecticide treatments to coincide with peak egg hatch

**M**AJOR ACCOMPLISHMENTS of the program to date have been a considerable reduction in insecticide costs, a tremendous improvement in turf quality, and improved weed control. As cricket numbers have been reduced, pre-emergence weed control has improved. Crickets are not present to break the preemergence barrier and allow weed seed germination.

In summary, we feel the new approach of total management is far superior to the old control method of killing mole crickets when we saw damage. Eradication of mole crickets as a pest on golf courses is not the goal of our program. We do feel, however, that by using sound management practices, turf damage and control costs can be reduced.

Through timing studies and frequent detailed mapping of cricket activity, we are getting maximum return for dollars spent, and mole cricket damage to turf is at a minimum. Good turf has eliminated the need for the local Mole Cricket Rule.

The present program has been partially funded to date by agricultural industries. We hope for additional funding from other sources in 1989.