

do not materially affect large trees. They are slow and sluggish in their movements and apparently not particularly voracious. In spite of the large size of these grasshoppers, they do not consume large amounts of leaf area.

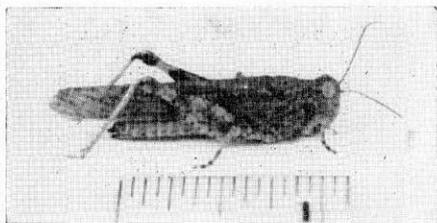


Fig. 73.—Adult female of the species *Arphia granulata* Sauss. The markings on this grasshopper are striking and the legs are usually colored.

CONTROL

Chemical control is practical, although dosage is relatively heavy as compared with that necessary in other parts of the United States because these two species are exceptionally large. Complete details on control may

be found in Florida Agricultural Experiment Station Bulletin 496 or in the Spray and Dust Schedule of the Better Fruit Program.

It was found that clean cultivation from February through May was generally effective against the bird grasshoppers as a means of preventing oviposition and the subsequent hatching of young. Clean cultivation, started in mid-August, prevented most of the second generation injury. Chemical control was necessary only in small areas in the grove, or when invasions occurred from adjacent fields.

The lubber grasshopper migrates into the edges of many groves adjacent to marshes, and may seriously damage any young trees present. Control measures under these circumstances are not too satisfactory. Insecticides may be used to kill the hoppers, but unless the grasslands are thoroughly treated also, a reinvasion is likely.

KATYDIDS

Katydids are commonly seen in citrus groves. The broad-winged katydid, *Microcentrum rhombifolium* (Sauss.), lays its eggs along the margin of the leaf (Fig. 75). These eggs are often parasitized by *Anastatus mirabilis* (Walsh & Riley) and small, round emergence holes may be seen (Fig. 75). The broad-winged katydid has several generations per year (13). Almost all stages can be found at any time during the year, but a general hatch appears to occur at approximately the same time as spring growth.

Although at least two other species of katydids (Fig. 74) are sometimes found on citrus, only the broad-winged katydid