

A SARCOPHAGID PARASITE OF THE COMMON FIELD CRICKET¹

BY

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The purpose of this article is to record what seems to be a new case of parasitism in the cricket, *Gryllus assimilis* Fabricius, which, according to Rehn and Hebard (1915, pp. 295, 296), is the common black field cricket, not only of Kansas but of America. The cricket hosts of this parasite were taken in an alfalfa field near a stone wall. This wall and the débris along the south side of it afforded excellent protection for the congregated crickets. Numerous dead crickets were in the wall and under the débris near it and may have attracted the sarcophagids.

While examining these black field crickets for nematodes under the direction of Dr. J. E. Ackert, two insect larvae were found on Sept. 29, 1920. From the method of examination it is apparent that these larvae were in the body-cavity of the crickets. After excising the extreme posterior end of the cricket the thorax and abdomen were gently separated, and by sustained effort the whole intestine was removed from the abdomen. While the intestine was being examined the active larval parasites escaped through the large open end of the abdomen. One larva was 3 mm. in length, while the other, which was further developed, was 14 mm. long. The large larva was placed in a small covered tin box where, within 24 hours, it had pupated and become cemented to the floor of the box.

In this container the pupa was kept at laboratory temperatures, which ranged from 55° to 96° F., with an average temperature of 72° F. On the nineteenth day after pupation the adult fly emerged. It was sent to the Bureau of Entomology of the United States Department of Agriculture, where Dr. J. M. Aldrich identified it as *Sarcophaga kellyi* Aldrich.

This sarcophagid was first seen by Kelly (1914), who discovered it as a parasite of grasshoppers at Wellington, Kan., in mid-summer. His attention was attracted to certain flies that struck flying grasshoppers and caused them "to drop to the ground as if shot." On examining such grasshoppers he found tiny larvae crawling toward the base of the unfolded hind wing. Similar observations were subsequently made in New Mexico by Smith (1915), who found that this fly chose healthy, freshly molted, or inactive grasshoppers for the deposition of its larvae. He states (p. 8) that, "The female (*Sarcophaga kellyi*) upon locating a suitable victim was observed to alight upon the dorsum of the thorax and quickly deposit sev-

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eral living maggots, which, encountering only the soft tender membrane, speedily made their way into the body cavity of their host. The maggots are capable, however, of entering a host which is fully dried out and hardened." This observer found as many as sixteen of these larvae in the body-cavity of a single grasshopper. He found that the larvae usually escaped through the wall of the thorax immediately behind the anterior coxa, but that others either bored through the abdominal wall or escaped through the anus.

Kelly (p. 438), who reared large numbers of *S. kellyi*, found that the larvae deposited in the fall, on escaping from the grasshopper host, penetrated the ground to a depth of from one-half an inch to 2 inches, where they remained throughout most of the winter. Pupation in nature occurred early in March and adults emerged from late March until the last of May. In warm weather Kelly (p. 439) found that the life cycle was completed in much shorter periods. By June or July a second generation had matured, and from this time "until November no distinction could be made between generations on account of overlapping. However, judging from the rapidity of their development, there were probably three or four additional generations, making about five or six for the season." According to this author, *S. kellyi* has been reared from grasshoppers at Wellington, Kan., Washington, D.C., and points in New Mexico, Arizona, and Utah.

SUMMARY

1. Larvae of *Sarcophaga kellyi* Aldrich were found inhabiting the body-cavity of black field crickets, *Gryllus assimilis* Fabricius at Manhattan, Kan., in September, 1920.
2. This seems to be a new case of parasitism in the black field cricket.
3. The larvae of *Sarcophaga kellyi* have been reported from grasshoppers in Kansas, Washington, D.C., New Mexico, Arizona, and Utah.

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