

# IPM: Integrated Pest Management

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## Cattle Grub Biology and Management

Although the heel fly and bomb fly neither bite nor sting, their egg-laying practices cause considerable distress to livestock. The development of their larvae, (referred to as cattle grubs), within the animal can cause production losses and damage to both meat and hides.

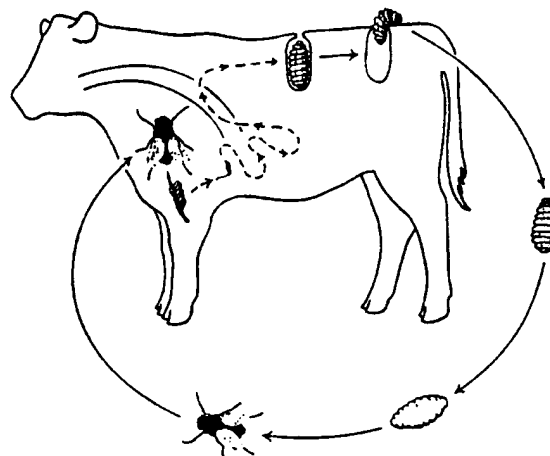
### Identification

Two species, the northern cattle grub (*hypoderma bovis*), and the common cattle grub (*hypoderma lineatum*), are pests in the northeastern United States. The adult stage of the common cattle grub is known as the "heel fly." The adult of the northern cattle grub is called the "bomb fly." The adults of both species are hairy flies that resemble honeybees. (Adults are active during May through August but are seldom seen. Egg-laying activity cause cattle to run wildly with their tails high in the air, a process referred to as "gadding"). In their most familiar stage, the larvae are large, fat, spiny grubs found in tumorlike swellings or "warbles" under the skin of the cow's back.

### Biology, Habits, and Life Cycle

Female bomb and heel flies lay eggs on hairs on the legs and lower body of cattle. The heel fly lays its eggs in a row on the hairs, while the bomb fly deposits its eggs one per hair. The larvae or grubs that hatch from the eggs cut holes in the skin and migrate upward through the connective tissue.

Larvae of the common cattle grub migrate to areas around the esophagus. Larvae of the northern cattle grub migrate to the spinal column. Both species move to the animal's back in the fall. There, the larvae cut breathing holes in the skin and remain throughout the winter. The presence of the grubs



Common cattle bot fly life cycle 10-12 months long.

causes the skin to swell into a warble. Larvae emerge from the animal in the spring, fall to the ground, and pupate in a protected spot.

A knowledge of the insect's life cycle is important in order to apply treatment at the appropriate time. If treatments are administered when the larvae are around the spinal cord or the esophagus, swelling and the release of toxic substances can occur. This can result in either paralysis of the hind legs, in the case of the northern cattle grub, or respiratory distress, in the case of the common cattle grub.

### Economic Threshold

In the case of insects that are not visible during the time of treatment, such as cattle grubs, the concept of economic threshold is not a useful one. There is no way to estimate how large the grub population will

be at the time that treatment must be administered. Treatment must therefore be applied prophylactically in advance of any knowledge of the size of the pest population in order to avoid losses in production.

Infestations of cattle grubs can cause reductions in the quality of both meat and hides and in the quantity of milk. Many slaughterhouses automatically downgrade cattle with five or more grubs. It has been estimated that in the United States, losses in livestock production due to cattle grubs can reach \$160 million per year.

### **Management Strategies**

**Chemical Control Strategies.** Systemic insecticides, applied as pour-ons, spot-ons, injectables, or feed additives, are used to treat for cattle grubs. Treatment should be administered before November, while the larvae are migrating through the connective tissue, normally July through September in West Virginia. Be

certain the read the insecticide label carefully prior to the application and to comply with the treatment cut-off date.

**Nonchemical Control Strategies.** Heel flies and bomb flies lay eggs only in the daytime and do not enter

stables. One nonchemical pest management practice, therefore, is stabling cattle during the day and running them on the pasture at night during those weeks when the flies are active. A less effective but perhaps more practical alternative is to provide darkened sheds or shelters into which cows can retreat as the flies approach.

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