



## Ground Beetles

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### Introduction

Ground beetles, also called carabid beetles, are common insects found throughout Virginia. Many are a drab brown or black (Fig. 1), but others are brightly colored or even have an iridescent or metallic appearance (Fig. 2). Most species are primarily carnivorous, eating caterpillars, maggots, grubs, and other soft-bodied insects. Some prey on snails and worms. A few species feed on plants, including weed seeds and young seedlings. Two species (*Stenolophus lecontei* and *Clivina impressifrons*) can be plant pests, attacking corn or soybean seeds as they germinate and reducing the plant density of these field crops. However, most species of ground beetles are considered beneficial insects in the environment. Ground beetles belong to the Family Carabidae in the Order Coleoptera.



Figure 1. Typical appearance of a ground beetle (Ken Chamberlain, the Ohio State University, Bugwood.org).

### Description

Adult ground beetles typically have large eyes, strong jaws with chewing mouthparts, long legs, and thread-like antennae (Fig. 1). The head is usually smaller than the thorax (the middle section of the body). The wings are protected by a pair of hard elytra and the exoskeleton is tough. Ground beetles

show a wide variation in size, with most ranging from 0.125-0.5 inches (approximately 3-13 mm). A few of the larger species measure approximately 1 inch (2.54 cm) in length. Some adult ground beetles will fly, but most are fast runners and agile climbers. Adults frequently hide in protective, damp areas during the day under and are active at night.



Figure 2. A more colorful ground beetle (Emilie Bess, USDA APHIS PPQ, Bugwood.org).

### Life History

Ground beetles have a complete life cycle including the egg, larval, pupal, and adult stages. Eggs are laid in the soil or in damp organic material. Ground beetle larvae, also called grubs, somewhat resemble caterpillars with a hard exoskeleton and large jaws (Fig. 3). Pupation also occurs in the soil. Adults may overwinter and live more than a year.

### Habitat and Distribution

Ground beetles can be found in nearly every habitat imaginable, including forests, fields, farms, and buildings. They tend to hide during the day in undisturbed, damp places such as in woodpiles, under mulch and decaying vegetation, and among loose debris on the ground.



Figure 3. Yellowing and stippling feeding damage by lace bugs on sycamore (Whitney Cranshaw, Colorado State University, Bugwood.org).

## Damage

Many people object to the presence of ground beetles, especially when found indoors, but they are not considered harmful in general. Ground beetles that feed on other insects should be considered beneficial species. Very few ground beetles feed on plants and cause damage. Some species may release an offensive odor to defend themselves against predators, but most do not. Larger species can give a painful pinch with their strong jaws if handled roughly. Ground beetles do not damage food, clothing, or structures, and they do not reproduce indoors.

## Control

Standard home repair can greatly limit the entry of ground beetles and other insects into the home. Check and seal any gaps found around windows and doors, in foundation walls, or places where pipes enter a building. Make sure window screens and door sweeps fit tightly and are in good repair. Adult ground beetles are attracted to lights. Turn off porch lights when not needed or use yellow lights that are less attractive to nocturnal insects than white lights. Reduce or remove organic mulch and overgrown weeds or grass from the foundation of the house. Store firewood away from the house.

The occasional ground beetle found inside the home can be relocated outdoors or controlled with the use of a fly swatter, a vacuum, or a can of aerosol insecticide. Foundation or perimeter treatments with residual insecticides are not necessary unless large numbers of ground beetles are found consistently

inside a house. Residual insecticide treatments work best when the other precautions suggested above are followed as well.

## Note

Bombardier beetles in the genus *Brachinus* are ground beetles with specialized defensive glands. These beetles can spray hot, noxious chemicals from the tip of the abdomen as a defense against larger predators. Some bombardier beetles in Africa can even direct the direction of the spray using the tip of their abdomen.



Figure 4. A bombardier beetle [Patrick Coin, CC BY-SA 2.5 (<https://creativecommons.org/licenses/by-sa/2.5>), via Wikimedia Commons].

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