

# CARPET BEETLES & CLOTHES MOTHS

Two common fabric pests are carpet beetles and clothes moths. Carpet beetles or "buffalo moths" are not as well known as clothes moths but are often more abundant. Their damage is frequently blamed on clothes moths.

Adult Carpet Beetle



Carpet Beetle Larva

## HABITATS AND DAMAGE

- The larvae of these pests are in the damaging stage and prefer to work in dark areas of drawers, cupboards, closets, boxes, etc.
- Larvae feed on anything that contains feathers, wool, fur, or animal hair.
- Carpet beetle larvae become one-quarter inch long, elongated-oval in shape, and have brownish to black bristles that give them a gray or golden fuzzy appearance.
- As they develop, it reaches the end of their larval stage, it pupates in their final skin by molting and turning into an adult.
- The adult carpet beetle is about three-sixteenths of an inch long, broadly oval, and dark mottled with white, yellow, brown, or black.
- Adult beetles and larvae live around baseboards and moldings.
- Carpet beetles are frequently brought in with infested materials, on clothing, etc.

Clothes Moth Adult



Clothes Moth Larva (Caterpillar)

## HABITATS AND DAMAGE

- The larvae of these pests are in the damaging stage and prefer to work in dark areas of drawers, cupboards, closets, boxes, etc.
- Larvae feed on anything that contains feathers, wool, fur, or animal hair.
- The full-grown clothes moth larvae are about three-eighths of an inch long, white with a brownish head, and practically hairless.
- As they develop, they cast their skins and the small fuzzy case in the image above is the first sign of an infestation.
- Larvae prefer dark, undisturbed areas and they can attack a wide array of items.
- Adults have four wings, are weak flyers and since they avoid lighted areas, are rarely seen.
- Adults prefer to rest in dark, undisturbed areas such as closets, attics, or basements, and will also live in the folds or seams of fabrics.



## PREVENTION

- Practice good housekeeping constantly.
- Vacuum cleaning is the best way to remove lint and hair from hard-to-reach places, especially close to the wall.
- Rotate rugs or the furniture on wall-to-wall carpeting.
- Woolen scraps, pennants, or garments that lay for long periods are a source of infestation. Store these items properly with treated paper, or get rid of them.
- Dry cleaning kills all stages of these pests but is no protection against re-infestation.
- You can rid woolen articles of pests by brushing them, incredibly close to the seams, and sunning them for several hours.
- Carpet beetle larvae may feed on dried flour-like food products, in old wasp nests, or on museum specimens.

## PRECAUTIONS

1.	Handle insecticides with care and follow instructions on the label.
2.	Do not use around open flame or exposed foods, and always clean food preparation areas after the use of pesticides.
3.	Store out of reach of children and pets, preferably in locked cabinets.
4.	Never keep pesticides in anything other than the original container.
5.	Never reuse the pesticide container to store any other materials.
6.	Dispose of all empty containers by placing them in the trash can for removal to the local disposal area.

## Carpet Beetles

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Updated: March 2019



Photo credits: Clemson University, USDA Cooperative Extension Slide Serie

### Identification

The black carpet beetle (*Attagenus unicolor* (Brahm)) is the most common carpet beetle species (Figure 2). It is small, black, oval, and 1/8 to 3/16 inch (3–5 mm) long. The larva is carrot-shaped, golden to dark brown and up to 1/2 inch (13 mm) long. It has a tail of long hairs, which is a distinguishing characteristic of this species.

The varied carpet beetle (*Anthrenus verbasci* (L)), furniture carpet beetle (*Anthrenus flavipes* LeConte), and common carpet beetle (*Anthrenus scrophularia* (L)) are similar in their appearance and habits (Figures 3–5). The adults are typically 1/12 to 1/8 inch (2–3 mm) long and have a round body. The body has an irregular arrangement of mixed white, brownish, black, orange, or yellowish scales. The mature larva is about 1/5 inch (5 mm) long and is much shorter than the black carpet beetle. It has dense bristles and hairs at the sides and end of the body. In the varied carpet beetle, the head end is narrower than the tail end, a characteristic that distinguishes it from black carpet beetle larva.

### Habits and Food

Adult carpet beetles live both outside and inside homes. Outdoors, they are found on the blossoms of crape myrtle, spiraea, Queen Anne's lace, buckwheat, daisies, wild asters, and other flowering plants with abundant pollen. Larvae feed on animal-produced debris and are often associated with animal nests. Indoors, larvae feed on a wide variety of materials. Their food include carpets, woolens, furs, stuffed animals, leather book bindings, feathers, horns, hair, silk, dead insects, dead spiders, pet food, and nests of birds, bees, and wasps. Plant products such as seeds, grain, and cereals may also be infested by carpet beetles.

Adult beetles are mostly seen in spring on flowers. They crawl or fly into dwellings through vents, windows, doors, and eaves. Carpet beetle adults are attracted to light. They are often found around windows. Adult females lay eggs on lint around baseboards, carpet edges, cracks, in ducts of hot-air furnace systems, on mouse carcasses, or in similar situations. An adult female carpet beetle lays about 40-90 eggs that hatch into tiny larvae in one to two weeks. A larva molts 8-17 times before turning into a pupa. The larval stage may be as short as 70 days and as long as more than one year, depending on the species, temperature, and food availability. Full-grown larvae change into pupae, and adults emerge after about two weeks. The adult beetles seldom live more than four weeks.

Carpet beetle larvae stay hidden in materials in which they feed. Carpet beetle infestations differ from clothes moth infestations in that the damage usually occurs in a large area or a portion of the garment or carpet rather than scattered in different areas. Carpet beetle larvae leave shed skins. They do not produce webbing as webbing clothes moths do.

### Prevention and Control

Carpet beetles are often difficult to eliminate because of their ability to live in obscure places and disperse widely within a structure. Successful control relies on integrating sanitation, exclusion, non-chemical, and chemical control methods.

### **Exclusion**

Keeping doors and windows tightly sealed will help minimize invasion of adult beetles. Eliminating flowering plants and shrubs immediately around the building will reduce pest pressure from outside. Check for the presence of beetles before bringing in cut flowers. Proper storage is most important in preventing damage from fabric pests. Valuable furs and other items of animal origin should be placed in cold storage or airtight garment bags. Before storing the articles, carefully examine them to make sure they are clean and pest-free. A tight chest or cabinet is not adequate for protecting woolens for long periods of time. Placing naphthalene or paradichlorobenzene (PDB) in a storage unit will prevent damage from fabric pests. These products should not be placed in direct contact with the articles. PDB can damage plexiglas®, many resins and furniture finishes, buttons, and ornaments on clothing.

### **Non-Chemical Control Methods**

#### **Inspection**

The first step in the control of carpet beetles is to find the source of infestation. Dark storage rooms, lint-laden corners, heat ducts and cold-air return ducts, attics, basements, areas under slip covers on furniture, back sides of furniture, and seldom-used sofas in darkened corners all need to be inspected. Placing sticky traps around windows during the spring will catch adult varied carpet beetles trying to enter or escape to the outdoors. Food-baited sticky traps can be placed around the perimeter and corners of floors to monitor the activity of the carpet beetle larvae.

#### **Dry Cleaning and Hot Laundering**

Garments can be dry cleaned or hot laundered to kill all fabric pests.

#### **Freezing**

Non-washable items can be wrapped inside a plastic bag and placed in a household freezer for two weeks. After the treatment, the objects should be allowed to return to room temperature within the sealed plastic bag to prevent condensation damage.

#### **Sanitation**

Lint should be removed from cracks and crevices in floors and around baseboards. Frequent washing (or shampooing) and vacuum cleaning of all rugs and carpets will help. Discard the vacuum bag immediately after vacuuming to prevent vacuumed carpet beetles escaping from the bag. Remove bird, rodent, bee, and wasp nests and old spider webs outside the structure. These nests may harbor carpet beetles.

### **Chemical Control Methods**

Dichlorvos (DDVP) impregnated resin strips (such as Nuvan® Prostrips, Vapona®) are available for repelling and controlling fabric pests. Vapona® strips can be used to treat museum display cases, storage closets, attics, storerooms, and other enclosed areas that are not regularly occupied by persons. When using them, be careful not to let them contact the article to be treated and select the right size according to the size of the space being treated. In occupied homes, Nuvan® Prostrips can be used in closets, wardrobes, cabinets, and attics. Dichlorvos is slowly released from the strip and when high enough concentrations are reached, it will kill any pests hiding on the treated articles. Closets are not airtight and are opened too frequently to hold enough vapors to kill insects. A trunk, chest, box, or garment bag makes a good storage container for killing existing fabric pests with DDVP resin strips. The strips must be replaced every four months.

## **Insecticide Dusts or Sprays**

Areas that cannot be cleaned may need to be treated with an insecticide dust or sprays. Find a product that lists carpet beetles on its label. Diatomaceous earth dust is less toxic to humans than some other pesticides. The following active ingredients (not a complete list) are suitable for carpet beetle control: bifenthrin, beta-cyfluthrin, lambda-cyhalothrin, and permethrin. Apply insecticides as spot treatments or limit sprays to edges of floor coverings, under rugs and furniture, floors and walls of closets, shelving where susceptible fabrics are stored, cracks and crevices, and other lint accumulating areas. It is not recommended to apply insecticides on fabrics. The ability of the insects to crawl while in the larval stage reduces the effectiveness of insecticide treatments in multi-unit dwellings.

## **Fumigation**

When infestations are severe, or where access to all sources of pest activity is limited, chemical fumigation may be the best method. The services of a pest control operator are usually needed to conduct a fumigation. Treatment with a fumigant is the surest way to penetrate numerous layers of fabrics or rolled rugs and destroys all fabric pests in infested materials. Fumigation can be completed inside of fumigation chambers, trailers, shipping containers, and fumigation bubbles; or by tarping the structure. Sulfuryl fluoride (Vikane®) and phosphine are suitable for treating many articles.

An alternative and inexpensive fumigation method is to use dry ice. This is useful for fumigating stuffed animals, pillows, some furniture, etc. Thick airtight plastic bags can be used for dry ice fumigation. For each 42-gallon heavy duty garbage bag (3 mil), place 3 pounds (1,350 g) dry ice pellets near the bottom or center of the bag. Seal the bag with a string. Dry ice will evaporate into carbon dioxide within a few hours (a process called sublimation). Carbon dioxide is heavier than air and as the dry ice sublimates, air in the bag will be pushed out. As long as the bag is tightly sealed with string, the air inside the bag will contain a very high concentration of carbon dioxide for at least 2–3 days, which are adequate for killing any fabric pests. A 48-hour fumigation at around 70°F is sufficient for killing any fabric pests. Longer time will be required for lower temperatures. Wear gloves when handling dry ice. Conduct the treatment in a vented place to avoid accumulation of high carbon dioxide in the room.

## **Ineffective Treatments**

Aerosol bombs have little value in controlling carpet beetles. The fog has very poor penetrating qualities, thereby preventing the insecticide from reaching the larvae in their hiding places.

Cedar chests are of little use in controlling fabric pests. The volatile oil from red cedar is not an effective repellent. Furthermore, studies show that after cedar chests are 36 months old, volatile essential oils in the wood are absent.

## **Reference**

- Bruesch, J. 2010. Chapter 10 - Fabric & museum pests. pp. 681–734. *In* A. Mallis. Mallis Handbook of pest control. 10<sup>th</sup> edition. Mallis Handbook, LLC.