

## Just the Facts...

The black carpet beetle (*Attagenus unicolor*) and the variegated carpet beetle (*Anthrenus verbasci*) cause major damage to fabrics, carpets, furs, and stored foods inside your home. In an industrial setting, they can be found in and around warehouses and are found in grain-based anticoagulant baits commonly used for rodent control in food warehouses. Carpet beetles also feed on dead animals and preserved animal specimens, including insect collections.

### What do they look like?

Black carpet beetle adults are small, only 1/8 to 3/16-inch in length and are uniformly dark brown to black. The larvae are 5/16-inch, vary in color from light brown to almost black, and are shiny, smooth, and hard with short, stiff hairs. The body tapers towards the rear and ends in a tuft of long hairs. Variegated carpet beetle adults are 1/10-inch and have a distinct wavy pattern of white, brown, and dark yellow scales; however, the scales may rub off, making older adult beetles appear solid brown or black. The larvae are about the same length as the adults and have alternating light and dark transverse stripes. These larvae are broader in the rear, narrow toward the head, and are covered with dense tufts of hair that the larvae can extend into a round plume if disturbed.



*Anthrenus verbasci*, variegated carpet beetle (left) and *Attagenus unicolor*, black carpet beetle (right). Danielle Thomas, ORISE Fellow, Entomological Sciences Division



*Anthrenus verbasci*, variegated carpet beetle larvae, Jim Kalisch, University of Nebraska Lincoln, Department of Entomology

### How do they get in?

Carpet beetles are free-living in the environment but are drawn to buildings by lights and the presence of food and other infestible products. They are also brought into food warehouses (commissaries), retail outlets (exchanges and shoppettes), and homes in infested grocery products and dry animal food. Although carpet beetles can fly, they are often transported inside food packages. The beetles may also be found on the outside of pallets containing food products and between boxes and bags of food on palletized cargo. The increased use of air-tight plastic or foil bags and pouches has minimized carpet beetle infestations during transit and storage since the insects cannot chew through the packaging. Dry animal food is more susceptible since many packages are not "air-tight" and have small openings which permit beetle entry. Carpet beetles may live in bird nests around homes and seek entry at night when lights are on. The beetles may also be brought into the home on cut flowers since plant pollen is a favorite food of adult insects.

### Where do they live?

The larval beetles live and feed inside the products, but often wander from room to room inside infested buildings and homes. Adults will often leave the food to seek mates and are often found along window sills. This may be the first indication that a warehouse is infested, but it will not indicate which products contain beetles or where the infestations are centralized. Carpet beetles are also found in spilled food in cracks and crevices and seams on the floors in shipping containers, rail cars, and trucks.

### What is their life cycle?

The adult life cycle for both species is approximately 5-6 months, but they may spend up to three years as larvae. The adult female black carpet beetle lays approximately 90 eggs; the variegated carpet beetle lays approximately 40 eggs. Black carpet beetle adults live for 4-8 weeks and variegated carpet beetle adults live for 2-4 weeks. If left unchecked, beetles from a single infestation can quickly spread to other susceptible products in warehouses, stores, or homes.

## What damage do they cause?

Adult carpet beetles feed on plant pollen, while the larvae feed on animal fibers such as wool, silk, fur, and feathers. The larvae will also feed on stored food products. The presence of cast larval skins plus the lack of webbing on infested fabric distinguishes beetle damage from clothes moth damage. The larvae may molt 5-12 times, resulting in many cast skins in infested products. Although the larvae are covered with short to long hairs, they are of no medical importance since the hairs do not break off the larvae and lodge in the human or pet digestive linings like those of the warehouse beetle (*Trogoderma variable*).

Within your house, the black carpet beetle can damage almost everything, including kitchen cupboards, silk, wool, leather, clothes and woolen carpets. The target products of the black carpet beetle are those containing keratin, a major protein part of animal hair and feathers. The black carpet beetle can eat dried insects, fabrics synthesized from plant and animal matter, hair, feathers, and dried plants and herbs etc. In short, the black carpet beetle can damage a number of important household items.

Variegated carpet beetles are attracted to all types of fabric, items made of feathers, and upholstered furniture; however, some non-fabric items could also attract them, such as dog food, paint brushes, food cabinets and fresh flowers.

## Prevention methods:

Sanitation and inspection are the keys to good carpet beetle control. Pheromone traps are useful in determining if the beetles are active in warehouses, but they will not indicate the location of infested products. Inspect pallets of food upon arrival at warehouses, and inspect food packages when brought home.

Adults, larvae, or shed skins are indications of infestations. Inspect salvage areas in food warehouses since spillage from broken packages is more common than in the storage areas. Check rodent bait stations weekly to ensure grain-based baits are not infested.

## Control methods:

In the warehouse, remove spilled food daily and vacuum monthly, especially along walls and the edges of pallets where beetles and food products tend to accumulate. Place food pallets at least 18 inches from the walls to permit routine inspection and cleaning. Rotate food products so that older stocks are sold first; frequently inspect food with older manufacturing dates for infestations since adult beetles tend to emerge from packages in greater numbers as the infestation ages. This principle also applies in the home since beetles from a single infested product can migrate and infest multiple food products stored in a kitchen or pantry. Store products susceptible to infestation in containers with tight fitting lids if the contents are not used within one week after opening. Place infested products inside plastic bags prior to disposal to reduce the spread of adult beetles. Segregate infested products in warehouses from non-infested products and cover with plastic until treatment or disposal. Place infested products in a freezer at 0 degrees Fahrenheit for four days to kill adults, larvae, and eggs. Do not reissue infested products or use for food preparation even after beetles are killed.

Infestations can also occur when rodents are present. Mice will accumulate dry animal food, crackers, and cereal in harborage and nesting areas which may be inaccessible (behind walls or under cabinets). Rodent control and pesticide treatment in void areas may be the only way to eliminate beetle infestations in homes after efforts to inspect and locate infested products in kitchens or pantries have failed. Remove bird nests and dead birds from warehouse roofs and retail stores to prevent them being used as a food source for carpet beetles. Since the adult beetles fly toward lights, adults breeding in nests and dead birds may be attracted into warehouses through open doors, windows, or ventilation openings. Do not plant flowering shrubs outside food storage buildings since adult carpet beetles are attracted to the pollen.

For infestations in your home, eliminate accumulations of lint, hair, dead insects, and other debris that serve as food for carpet beetles. Regularly and thoroughly clean rugs, draperies, upholstered furniture, closets, and other locations where carpet beetles congregate. Frequently vacuum to remove food sources and carpet beetle eggs, larvae, and adults. After vacuuming infested areas, dispose of the bag promptly, because it can contain eggs, larvae, or adult insects. Protect fabrics by keeping them clean; food and perspiration stains on fabrics attract carpet beetles. Thoroughly launder washable items in hot water or dry-clean them to kill all stages of these insects. Inspect stored woolens, linens, and furs, and air these items annually in the sun, brushing them thoroughly. If you find an infestation, launder or dry-clean these items before returning them to storage.

For more information on surveillance and control of stored product pests, see the Armed Forces Pest Management Board Technical Guide No. 27, Stored-Product Pest Monitoring Methods, November 2015, and Technical Guide No. 38, Protecting Meal, Ready-to-Eat Rations (MREs) and Other Subsistence During Storage, November 2015, at <http://www.afpmb.org/pubs/tims/tims.htm>.