



Indoor Pests

(Stored Product Pests and Carpet Beetles)

Stored Product Pests

Stored product pests typically infest food and nonfood products of plant and animal origin. Due to their intermittent appearance and secretive habits, stored product pests may not be immediately apparent. The term “stored product pest” usually includes a few small moths and beetles.

Their life cycle includes an egg stage, several larval stages, a pupal stage and the adult stage. Adults often mate soon after emergence and then immediately begin searching for a food source. During their lifetime, females lay approximately 100 to 1,000 eggs, depending upon the species. After deposition, eggs incubate for days to weeks. Following egg hatch, larvae develop while infesting and consuming their food resource, remaining mostly unseen. Larval stages are called “instars”. Each successive instar is larger in size and consumes greater amounts of food than the previous instar. Larval development requires weeks to a month or more to complete. The last larval instar pupates, and an adult emerges a short time later. Under optimum conditions, such as warm temperatures and high humidity, most stored product pests can complete a life cycle in just four to five weeks. There are usually multiple generations per year.

In some species of stored product pests, only the larval stages consume food. In these cases, the sole purpose of the adult insect is to mate, discover a food resource, and deposit its eggs during the short period the insect remains alive. Insect species in which the adults also feed can be long-lived, survive and continue to infest and feed on susceptible foods for several months to a year.

Indianmeal moths (*Plodia interpunctella*) are the most common stored product pest in homes; they may infest bird seed, breakfast cereal, and other consumables. They are most commonly found infesting food items in kitchen cupboards, but adults may be found throughout the home because they are excellent fliers and readily disperse from the food item they are infesting. Their wings are bicolored and alternate between beige and copper. Moths are most active at dusk, when they can be seen indoors flying while searching for mates and food. During the day, moths can be found resting motionless on walls and ceilings, often near their larval food source. Adults are short-lived and do not feed.

Sawtoothed grain beetles (*Oryzaephilus surinamensis*) are nearly as common as the Indianmeal moth, and infest many of the same foods (especially bird seed, breakfast cereals, chocolate, and dried fruits and nuts). Adults are small (approximately 1/16 to 1/8 inch long) and flat. They can be identified, aided by use of a hand lens or magnifying glass, by the row of pointed teeth located on each side of the thorax (middle body section), just behind the head.

Red flour beetles (*Tribolium castaneum*) are 1/8 to 3/16-inch-long, flattened, and dark cherry to dark brown in color with gradually-clubbed antennae. These long-lived beetles are serious pests of grain processing facilities and food warehouses, but can also be found in grocery stores and home cupboards. Flour beetles cannot eat whole, intact kernels of grain. The grain must be damaged or milled (i.e., flour).

To stop a current infestation of a stored product pest, the source of the insects must be found and eliminated. The infestation can be stopped by finding and removing the insect’s food sources, vacuuming (or removing) food crumbs from hard-to-reach locations in the cupboard. To find insect-infested material, inspect all items listed previously as susceptible to infestation, begin with those potential sources closest to where most of the adult insects are found. To prevent infestations, food should be stored in tightly sealed containers or in a refrigerator or freezer. Monitor “use by” dates and consume older packages before newly purchased foods. Dry pet food and bird seed should also be stored in tightly sealed containers.



Stored product pests: Indianmeal moth (*Plodia interpunctella*, upper left); sawtoothed grain beetles (*Oryzaephilus surinamensis*, upper right); red flour beetle (*Tribolium castaneum*, lower right); and warehouse beetle (*Trogoderma* sp., lower left). Photos are by Jack Kelly Clark, University of California Statewide Integrated Pest Management.

Carpet Beetles

Carpet beetles are pests in warehouses, homes, museums, and other locations where suitable food exists. They can cause serious damage to fabrics, carpets, furs, stored foods, and preserved specimens. Carpet beetles belong to the family of beetles known as dermestids (also called skin beetles).

Three species of carpet beetles are known to be pests in Arizona: varied carpet beetle, furniture carpet beetle, and the black carpet beetle. Adult varied and furniture carpet beetles are smaller (1/10" long) than the black carpet beetle adults (1/8-3/16" long). All three go through a larval stage and this life stage is when they are most destructive. The larvae of all three species are visibly hairy.

Outdoors, adult female beetles search out spider webs and nests of bees, wasps, and birds where they can lay eggs. These places contain dead insects, beeswax, pollen, feathers, or other debris that can serve as larval food. Indoors, carpet beetles deposit eggs on or near woolens, carpets and rugs, animal skins, furs, stuffed animals, leather book bindings, feathers, animal horns, whalebone, hair, silk, dried plant products, and other materials that serve as food for carpet beetle larvae.

Damage from clothes moths vs. carpet beetles can be difficult to distinguish, but in general, the beetles are more likely to damage a large area on one portion of a garment or carpet while moth damage more often appears as scattered holes. Also, carpet beetle larvae leave brown, shell-like, bristly looking cast skins when they molt. These skins and the lack of webbing are usually good clues that you are looking at carpet beetle damage.

Carpet beetles are among the most difficult indoor pests to manage because of their ability to find food in obscure places and to disperse widely throughout a building. Successful management depends on integrating the use of sanitation and exclusion, and, in some cases, insecticides. First, eliminate the obvious: accumulations of lint, hair, dead insects, and other debris that serve as food. Discard badly infested items. Remove bird, rodent, bee and wasp nests, and old spider webs, which may harbor infestations. Examine cut flowers for adult beetles (they feed on pollen and nectar).



Black carpet beetle damage to a wool sweater (Clemson University USDA Cooperative Extension Slide Series, Bugwood.org).

Regular and thorough cleaning of rugs, draperies, upholstered furniture, closets, and other locations where carpet beetles can congregate is an important preventive and control technique. Frequent, thorough vacuuming is an effective way of removing food sources as well as carpet beetle eggs, larvae, and adults. After vacuuming infested areas, dispose of the bag promptly because it may contain eggs, larvae, or adult insects. Infested items can be placed in a freezer for two weeks or heat-treat them at temperatures above 120 degrees F for 30 minutes. Some pest control companies also have heat chambers where infested items can be treated (heat is also a treatment that kills bed bugs).

In cases where infested items cannot be dry-cleaned or laundered, they can be sprayed with an insecticide. Purchase a product that lists carpet beetles on its label and closely follow the directions. Apply insecticides as spot treatments and 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 in other lint-accumulating areas. Be sure not to spray clothing and bedding.

Pesticides can be used to protect non-food items in storage, first make sure they are pest-free and clean. Place them in an airtight container, using paper to make a layer every few inches. On the layers you can place insecticide-impregnated resin strips that are labeled for control of carpet beetles on fabrics. Some people also use moth balls, flakes, or crystals to control carpet beetles. Be sure to keep these materials out of reach of children and pets and follow label directions.



Carpet beetle adult (*Megatoma variegata*, Gary Alpert, Harvard University, Bugwood.org).



Carpet beetle larva (*Megatoma* spp., Gary Alpert, Harvard University, Bugwood.org).

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