

Fabric Pests

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You reach for your favorite blazer at the back of the closet where it has been stored since you wore it last winter, and, to your dismay, it has a small hole in it. It is in such an obvious location too. You can't wear it anymore; your blazer has been ruined. This is a common scenario, repeated every fall season. Fabric pests, particularly carpet beetles, are very common inside homes in Nebraska.

There are two primary types of insects whose larvae damage fabrics. These are carpet beetles (Family: Dermestidae) and clothes moths (Family: *Tineidae*). Both carpet beetles and clothes moths are unusual in the insect world because they are among very few insects that produce an enzyme in their digestive system. This enzyme, keratinase, that allows them to digest keratin, the protein in animal hair.

In Nebraska, damage to woolen fabrics is almost always caused by carpet beetles (dermestids). This is because these beetles are much more adapted to cold temperatures and lower humidities of northern states. While dermestid are more common fabric pests in the Northeast and Midwest, clothes moths are more frequent pests of fabric in the Southeast.

A few other insects: crickets, silverfish, cockroaches and termites can, but infrequently, feed on fabrics.

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Carpet beetle damage on cashmere wool



Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org

Carpet beetle damage on wool



Joseph Berger, Bugwood.org

Varied carpet beetle larva (highly magnified)



Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org

Black carpet beetle adult and larva (highly magnified)



Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org

Furniture carpet beetle adult and larvae on wool (highly magnified)



Whitney Cranshaw, Colorado State University, Bugwood.org

Hide beetle larvae (highly magnified)

Know how. Know now.



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After damage to fabric is discovered, it can take some detective work to identify the culprit. To properly determine the pest, an investigator should make note of the following clues.

Look for live insects. Most of the time, only the damage will be found because the larva is no longer there and has completed its life cycle. Even if the larva is there, it may be hard to find because these secretive insects fall to the floor when you handle your clothing. You can sometimes find carpet beetle larvae by very carefully handling the damaged fabric and shaking it over the middle of a white sheet spread out on the floor.

Adult carpet beetles and clothes moths are rarely found on clothing because they do not feed on fabric and only lay eggs there.

Look for cast skins, insect fragments and products. Cast skins of dermestid larvae may be found with damaged fabric or fur. Webbing or pupal cases is a sign of clothes moths.

Carpet Beetles (Dermestids)

Adult beetles are small and oval, and have knobbed antennae. Some have brightly colored scales or hairs present on their body. The colors of the scales or hairs produces color patterns that varies from species to species. The most common dermestids attacking fabrics are the black carpet beetle, varied carpet beetle, furniture carpet beetle and hide beetle.

Dermestid larvae have a tapering wedge-shaped body covered with hairs. Larvae of some species have a tuft of hairs at the end of the body.

Feeding habits. Outdoors, adult carpet beetles feed on pollen and are frequently found on flowers. Adults do not feed on fabrics. Indoors, beetles are often attracted to windows or lights, perhaps because they are trying to get outdoors. Dead or live beetles are sometimes found on window sills.

In nature, dermestid larvae are among the final decomposers of dead animals, feeding on animal hair, fur, feathers and hide. While they prefer feeding on animal matter, some dermestids can sustain themselves on vegetable matter in the pantry and feed on stored products like flour, grain-based foodstuffs, spices, cereals and nuts. Infestations in the pantry can be the source of beetles that attack unprotected clothing.

Silk does not contain keratin, but dermestids, especially the hide beetle, black larder beetle and furniture carpet beetle are serious pests of silk.

Dermestids will also feed on accumulated pet hair and feathers. They may be more of a problem when families have indoor pets.

Dermestids are hated by museum curators because they feed on insect collections and natural fabrics, but these beetles are also used by museums and taxidermists to prepare clean bones for skeletal displays.

Where do they come from?

Carpet beetles are very common outdoors. The varied carpet beetle is small enough the beetle can go through ordinary window screen. Common reservoirs for dermestids are bird and rodent nests and old bee and wasp nests, where dermestid larvae feed on hair, feathers and/or dead insects. Dermestid beetles are also common indoors, especially in older houses.

Clothes Moths

There are two species of clothes moths that damage fabrics of animal origin. They are the webbing clothes moth and the casemaking clothes moth.

The webbing clothes moth larva spins silk webbing on the fabric and feeds under the webbing. After going through several molts, it pupates and becomes an adult moth. The adult moth is about 1/2" long and creamy white with a golden tuft of hairs on its head. The moths themselves are reclusive and rarely observed.

The casemaking clothes moth larva lives inside a tubular case it constructs out of silk and fibers. The larva "drags" the case around with it as it feeds and will die if it is separated from its case. Again, a full-grown larva will pupate and become a small white moth.

Clothes moths are uncommon pests in Nebraska, but may be imported in woolen goods from other parts of the world where this pest is more common. Small whitish-grey moths found in Nebraska homes are nearly always likely Indian meal moths, a pest of seeds and grain-based products. For more information about Indian meal moths, go to <http://lancaster.unl.edu/pest/resources/pantrypests304.shtml>

Cricket, Silverfish, Cockroaches and Termites

These other groups of insects can, but infrequently damage fabrics.

House and field crickets are the most common cricket species invading homes, usually in the late summer

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Damage and cast skins of dermestid larvae (highly magnified)



Webbing clothes moth — adult (right), pupal case (center), larva (bottom) (highly magnified)



Case making clothes moth larvae use fabric to weave a case they live in (highly magnified)

and fall of the year. Both have been recorded to damage fabrics, but this occurs infrequently. Sometimes houses near landfills become infested with house crickets. Crickets may also be found in large number in mulches, leaves and other vegetation around houses. Crickets survive best in humid conditions; removal of moisture may help to reduce populations.

Sealing exterior cracks and crevices will be helpful to prevent entry. Indoors, sticky traps (glue-boards), placed near entry points and dark corners is a non-toxic method of control.

Silverfish feed almost exclusively on starchy materials and feed on paper with a glaze on it. They feed

on wallpaper and wallpaper paste. In humid climates they can be serious museum pests. Silverfish may eat fabric especially if it has been starched. Silverfish control often involves reducing humidity and moisture. Desiccant dusts, such as silica gel or diatomaceous earth may be useful.

Cockroaches are omnivorous, feeding on all sorts of organic matter, even fingernails. On occasion, they may feed on hair and wool fabrics.

Termites feed on cellulose and, if the opportunity presents itself, will feed on fabrics of plant origin, like cotton or linen. The presence of dried mud near the feeding damage is a characteristic sign of termites.



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Termites feed on many sources of cellulose, including cotton fabrics. They always leave telltale signs of mud behind.

Treatment Strategies

Control of fabric pests centers around cleaning and prevention practices. Closets which are cleaned regularly have clothing less likely to be damaged by fabric pests.

Vacuuming. In addition to killing the fabric pests themselves, vacuuming will remove hair, dead insects and other debris these insects feed on. Vacuuming carpets, areas along and under baseboards, behind and under furniture, under furniture cushions, inside dressers and chests. Oriental rugs should be vacuumed on both sides.

Laundering or Dry Cleaning. Before storing clothing, it should be laundered or dry cleaned. Dry cleaning kills all stages of fabric pests.

Pheromone traps. Effective pheromone traps are available for webbing clothes moth, casemaking clothes moth, varied carpet beetle and black carpet beetles. These traps are useful in monitoring these pests.

Prevention. Prevention includes summer storage of clothing in tightly sealed containers with moth balls or crystals. Studies have shown cedar is not a repellent and does not discourage larvae from

feeding. Cedar chests are not usually airtight. It is possible fabric could still be damaged in a cedar chest.

Mild Fumigants. Naphthalene and paradichlorobenzene (PDB) are sold as moth balls, crystals, cakes or flakes. These products are mild fumigants, which means at room temperature, they produce a gas which may be somewhat toxic to these pests.

• **Paradichlorobenzene.** Of the two active ingredients, PDB is more toxic to insects. At room temperature and in high concentrations for several weeks, the heavy gas produced kills all stages of carpet beetles and clothes moths. Crystal formulations release gas more quickly than cakes or balls. One disadvantage of paradichlorobenzene is it can damage plastics, including polystyrene, styrofoam as well as the plastic in many sweater boxes. Plastic buttons may also be damaged. Damage to plastic may be due to direct contact or from vapors.

• **Naphthalene.** Naphthalene controls clothes moths when high concentrations of the gas are

produced, but carpet beetles are poorly controlled. It is best used by scattering balls or flakes in clothing. Under moist conditions, it may discolor fabrics so it should be placed in a manner so it does not contact the fabric. Placing naphthalene in or on papers may help. Naphthalene does not damage plastics, but will corrode metal.

Cold Storage. Dry cleaners may offer cold storage for furs and other valuable fabrics. Professional mothproofing may be helpful in protecting valuable oriental rugs.

Insecticides. Fabric pests are difficult to control because of all the potential food sources found inside homes. These pests can be widely scattered. Managing them should focus on the prevention tactics already discussed. In chronic cases, insecticides may be helpful if used after preventative actions have been taken. Because these insects often live in cracks and void areas, crack and crevice applications should be used. We recommend contacting a pest control company experienced in this type of treatment.