



FABRIC INSECT PESTS: CLOTHES MOTHS & CARPET BEETLES

How to Identify, Prevent, Control, & Repair the Damage

Bette Jo Dedic, Extension Clothing Specialist and Mike Potter, Extension Entomologist

Although clothes moths are usually blamed for insect damage on fabrics, other insect pests, most notably carpet beetles, are also capable of causing damage. Serious infestations of clothes moths and carpet beetles can develop undetected in a home, causing significant damage to clothing, bedding, floor coverings and other articles.

The immature stages (larvae) of both the clothes moth and carpet beetle feed on a variety of animal-based materials, including wool, fur, silk, feathers and leather. Items commonly infested include wool sweaters, coats, clothing, blankets, carpets, decorative items, down pillows and comforters, natural bristle brushes, toys and animal trophies.

Neither the clothes moth nor carpet beetle larva can digest cellulosic fibers (such as cotton, linen, or rayon) or synthetic fibers (such as polyester, nylon, or acrylic) so they generally leave these alone. However, synthetic fabrics that are blended with wool may be eaten along with the wool, even though they are not digested. Cotton, linen and synthetics heavily soiled with food stains or body oils may also be occasionally attacked.

Even though the prevention of damage and the control of both insects are similar, knowing which insect is doing the damage will help you find and eliminate the infestation.

How to Identify Clothes Moths

Clothes moths are small (about 1/2-inch), buff-colored moths with narrow wings fringed with hairs. Two different species are common in Kentucky, the **webbing clothes moth** and the **casemaking clothes moth**. The webbing clothes moth is uniformly buff-colored, whereas the casemaking clothes moth is similar in appearance but has indistinct dark specks on the wings (*Figure 1*).

Adult clothes moths are seldom seen because they avoid light. They prefer dark, undisturbed areas such as closets, basements and attics, and tend to live in corners or in folds of fabric. If you do see **tiny moths flying about in the kitchen and other open areas, they are probably grain moths** originating from some infested cereal, flour or stored food item. Clothes moth adults do not feed so they cause no injury to fabrics. However, the adults produce eggs which hatch into fabric-eating larvae.

The larval stage of clothes moths are creamy-white caterpillars up to 1/2-inch long. Webbing clothes moth larvae spin silken feeding tunnels or patches of webbing as they move about on the surface of fabrics. They often deposit tiny fecal pellets similar in color to the fabric.

The casemaking clothes moth encloses itself in a portable case that it drags about wherever it goes. Often the larvae leave the material they developed on and can be seen crawling slowly over walls or ceilings. The casemaking clothes moth, in particular, may travel considerable distances from the infested article to spin its cocoon in a protected crack, or along the juncture of a wall and ceiling.

How to Identify Carpet Beetles

Although there are many different species of carpet beetles, the adults of all species are small, oval-shaped beetles about 1/8 inch long (*Figure 2*). The black carpet beetle (a common variety of carpet beetle) is shiny black. Adults of other common species are brightly colored in various patterns of white, brown, yellow and orange.

The **larvae** or immature stages of carpet beetles are about 1/8 to 1/4 inch long and **densely covered with hairs or bristles**. Only the larval stage feeds on fabric and causes damage. Carpet beetle larvae will also feed on seeds, pet food or cereal products in the kitchen or pantry. In nature the adults feed on flowers outdoors, but are often seen indoors around light fixtures and windows, indicating that a larval infestation is present somewhere within the home.

Habits of Both Pests

The larvae of the clothes moth and carpet beetle prefer to feed in dark, undisturbed areas such as closets, attics, and within boxes where woolens and furs are stored for long periods. Clothing and blankets in constant use are seldom damaged by these pests, nor are rugs that get a normal amount of traffic or are routinely vacuumed. Edges of carpeting next to walls or underneath furniture, however, are often attacked.

These pests may also be found infesting upholstered furniture (both inside and out), and in air ducts where the larvae may be feeding on lint, shed pet hair and other bits of debris. Infestations may also originate from bird or

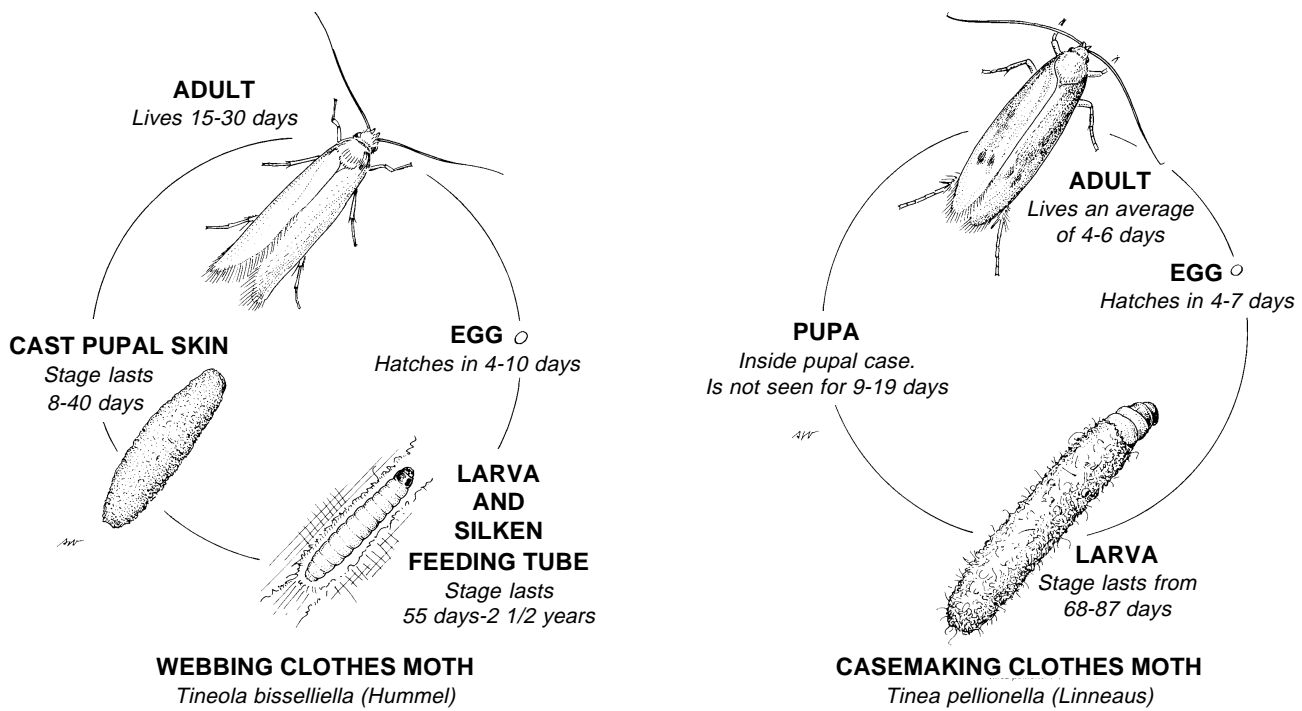


Figure 1. Webbing clothes moth (left) and casemaking clothes moth (right).

animal nests, or an animal carcass present in an attic, chimney or wall space.

Some infestations occur when adult carpet beetles or clothes moths fly from one house to another. Other times, eggs or larvae are transported into a home on articles containing wool or other animal fibers, such as secondhand clothing, used furniture, and woolen scraps exchanged for making rugs or quilts. Once inside, the larvae may crawl from room to room, item to item, slowly causing widespread fabric damage.

Damage to articles may consist of irregular surface feeding or holes eaten completely through the fabric.

Controlling Infestations

Good cleaning practices are the best prevention. Newly-hatched larvae are so small that they can crawl into any crack or crevice. Vacuum carpets thoroughly and frequently to remove deep down debris. Pay close attention to dark, out-of-the-way places, such as cracks, crevices, and vents; under the edges of rugs; and along the walls, under couches, chairs and other items. Use vacuum attachments such as crevice and upholstery tools to thoroughly clean places where larvae are likely to hide. If you have pets, clean more often since pet hair is a food source for these pests.

Elimination

When you suspect insect damage, check all susceptible items carefully. For example, the source may be on an old woolen scarf at the back of a closet, a fur hat in a box, or a remnant of wool carpeting in the corner of a room. There may be more than one source of infestation.

Clothes moths and carpet beetles often breed in hair-based accumulations that are likely to be found behind baseboards, under door jambs, inside heating vents, etc. Remove all items from the infested area, being careful not to spread the infestation. Vacuum infested areas thoroughly.

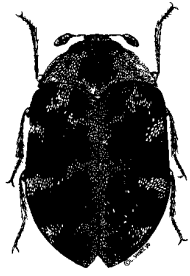
If infested areas are cleaned well, it may not be necessary to apply an insecticide. If an insecticide is used, treat only cracks, crevices, and infested areas; it is not necessary to spray shelf surfaces or walls. Sprays may be applied to infested carpets (especially along and beneath edges adjacent to baseboards) and underneath furniture. Many household pesticides labeled for ant, flea, and cockroach control are also labelled for fabric pests and can be obtained at supermarkets and hardware stores. **Never** spray clothing or bedding directly with household insecticides. These items should be removed before spraying inside closets or drawers. Always read the label and follow product directions carefully.

Before returning items to storage areas, either launder/dry clean items according to manufacturers' directions, use another method of control from those listed below, or get rid of them.

While the homeowner may successfully eliminate small infestations of carpet beetles and clothes moths, widespread infestations may require the services of a professional pest control operator. Trained professionals are able to find and treat hidden infestations in walls, attics, and other difficult-to-access areas more effectively.

Laundering/Drycleaning

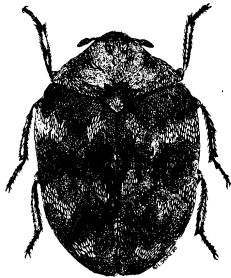
Both laundering in hot water and drycleaning will **kill all stages of fabric pests** that may be present and will also remove perspiration odors that are attractive to pests. Woolens and other susceptible fabrics should be drycleaned or laundered before being stored for long periods.



Adult furniture carpet beetle
(*Anthrenus flavipes*).



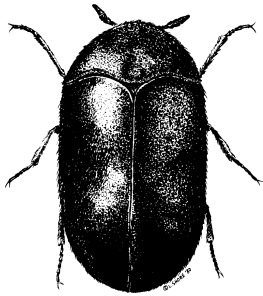
Larval furniture carpet beetle
(*Anthrenus flavipes*).



Adult varied carpet beetle
(*Anthrenus verbasci*).



Larval varied carpet beetle
(*Anthrenus verbasci*).



Adult black carpet beetle
(*Attagenus megatoma*).



Larval black carpet beetle
(*Attagenus megatoma*).

Figure 2. Adults (left) and larvae (right) of common carpet beetle species found in homes.

Storage/Fumigation

Articles to be stored should be packed in tight-fitting containers with moth balls, crystals or flakes containing paradichlorobenzene (PDB) or naphthalene. The **vapors** from these materials are **lethal to fabric pests**, but only **when maintained at sufficient concentrations**.

To achieve sufficient concentrations, enclose the manufacturer's recommended dosage of these insecticides in containers that are practically airtight. Trunks, garment bags, boxes and chests, when tightly sealed, will be effective when used with these insecticides. Seal boxes or other containers with tape to achieve a tight seal, if necessary. Wardrobe boxes from moving companies could also be used to provide good storage space but will need to be sealed.

The length of exposure necessary to kill clothes moths or carpet beetles will vary with the temperature, the size of the larvae, the form in which the insecticide is used, the chemical used and the concentration of the gas. Adult

moths, eggs and young larvae are usually killed within several days with either insecticide if package directions are followed. However, older moth larvae and most stages of carpet beetles are more difficult to kill. As a general rule, two to three weeks of treatment will ensure absolute kill of all stages of insect pests.

After storage, air out items for a few days before using them to get rid of any odor.

All mothproofing products must be registered by the Environmental Protection Agency.

How to use moth control products

Since the vapors of these products are heavier than air, the insecticide should be placed near the top of the storage container so the vapors will sink. **Do not place any insecticide directly on fabric as adverse reactions to the fabric or dyes may occur.**

Either place mothballs, flakes, or crystals on a layer of paper on top of items in a box or chest, or, if the container is deep, layer clothing and place paper and moth control product between the layers. If using a garment bag, suspend the moth control product in an old sock or nylon stocking at the top of the bag or use a moth cake that can be attached to a hanger. When using a garment bag, clothing should be loosely separated.

Do not use PDB in plastic containers as damage can occur with certain kinds of plastics. This could affect both the container and the clothing. Hard plastics that may be used in buttons and some ornamentation will melt when they come into contact with the vapors. Some plastic bags will melt and stick to the items, ruining them. Polyethylene garment bags are not affected by PDB vapors. If you must use plastic bags for containment of vapors, use naphthalene rather than PDB. Many plastic bags do not retain PDB vapors long enough to kill insect pests. It is not a good idea to use plastic bags for long-term storage of textile items.

Contrary to popular belief, cedar closets or chests are seldom effective in preventing fabric pest infestations because the seal is usually insufficient to maintain effective concentrations of the volatile oil of cedar.

Brushing

Brushing clothing or other items at regular intervals of once or twice a month is a very effective means of moth control as crushing or dislodging of the pests occurs. Brushing should be done outside if at all possible and should include all areas of the garment that are accessible, such as under collars and pocket flaps. Items constantly in use are seldom attacked by insect pests.

Cold Storage

Cold storage (at 40°F) is often recommended as a means of protecting previously uninfested furs and other items from insect damage. Cold storage of furs is recommended as it does help prevent skins from drying out and also provides some degree of protection against insects. Although constant cold storage temperatures may prevent larvae from feeding it does not kill clothes moth larvae or eggs already present, and both stages have been found alive after prolonged cold

storage periods of 6 to 12 months. Furs suspected of being infested should be cleaned prior to cold storage by a professional cleaner using the furrier method.

Freezing

Freezing to control all stages of insect pests is effective provided the procedure is done properly and the necessary minimum freezer temperatures are obtained. Some household chest freezers will maintain -20°F but the average temperature is approximately -10°F. Although a complete kill can be obtained at -10°F, it would take much longer; the cooler the temperature the faster the result. Check your freezer before you attempt this method.

Generally, the infested materials are placed in polyethylene bags, the excess air is squeezed out of the bag as much as possible, and it is then sealed tightly. The bag is then placed in a chest-type freezer for a minimum of 48-72 hours at 0°F. After the item is removed from the freezer, place it in a refrigerator and let it thaw slowly before finally bringing to room temperature. Items should remain in the polyethylene bag until brought to room temperature. For complete insect kill, it is also desirable to immediately repeat the freeze-thaw cycle before removing the contents of the bag.

This procedure could be used by consumers for treating small items which have signs of possible insect contamination that would be difficult to launder, such as hanks of yarn or feather accessories.

Miscellaneous Control Methods

Insecticide products intended for direct application on clothing, bedding or textiles in the home for either the treatment or prevention of fabric pests are not currently available to consumers.

Household insecticides that may be used for treating cracks, crevices, and other areas where fabric pests may be hiding, **cannot be used to treat clothing or textile items**. Always read the directions of any product carefully before purchase and use.

Mothproofing

Mothproofing is a chemical treatment given to fabrics that protects them from insects without leaving any odor. Items purchased with "mothproof" or "moth resistant" on the label have been treated with a protective chemical when they were manufactured. This process is considered permanent.

Mothproofing products that can be applied using home laundering methods are not currently being marketed for consumer use.

Dye-bath Mothproofer

Mitin FF is an industrial mothproofing agent available to consumers and used by home spinners and dyers who make or process their own yarn. It is a permanent mothproofing agent which acts like a colorless dye. It is claimed that this mothproofing agent is fast to washing, dry cleaning and to light, and

does not interfere with subsequent working of the goods. It can be applied either in the dye bath or as a separate application. It is not generally used on finished garments.

Repairing the Damage

All is not lost when a garment has been damaged by fabric pests. Such damage, as well as damage from burns, tears, etc., can be repaired or camouflaged. Choose one of the methods below and consider the following questions:

- What was the original price of the damaged garment?
- Would it be expensive to replace?
- Would you miss it?
- Do you have several items that coordinate with the damaged article?
- Would it be cheaper to repair than replace?

Reweaving

Although probably the costliest choice, reweaving may save you a lot of money and could provide the best result. There are two types of reweaving: French and Piece. In both methods, all work is done from the top side of the garment.

French reweaving is used to repair small holes. Threads are collected from elsewhere on the garment and the hole is actually rewoven with those threads. It is usually almost impossible to see this type of repair, even when pointed out.

Piece reweaving is used to repair larger holes. For this method, you need a piece of the fabric to make a patch in order to make the repair. Pieces can be obtained from facings, hemlines, pockets, etc. In this method, the threads from the edges of the fabric "patch" are rewoven into the edges of the hole.

The cost of reweaving, as well as the appearance of the completed mend, will depend on: the method of reweaving, the size and location of the hole, the type of fabric and weave, and the time involved. A hole may cost approximately \$30 to repair; several may cost approximately \$70.

When having this type of work done, ask to see examples of the work or ask for references. Sometimes this type of work is done locally; sometimes a local store will send it to a regional location that specializes in such work.

Embellishment/Camouflage

Sometimes the addition of a scarf, belt, pin or jacket may hide the hole. Is the location such that something could be added that would cover the hole? Is the design, fabric, or style suitable for adding any embellishment such as an applique, decorative thread, buttons, jewels, patches, etc.? Ask a creative person for suggestions.

Recycling/Restyling

Consider the location of the hole and think of alternatives. Could a pocket be added, a hemline or dart altered, a cuff added? Try looking at fashion magazines for current ideas and stretch your imagination!