CLOTHES MOTHS

Integrated Pest Management in the Home

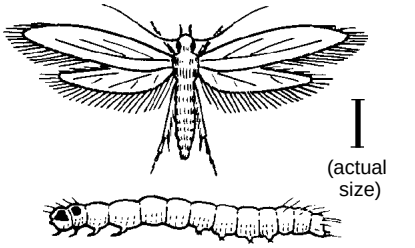

Figure 1. Webbing clothes moth.

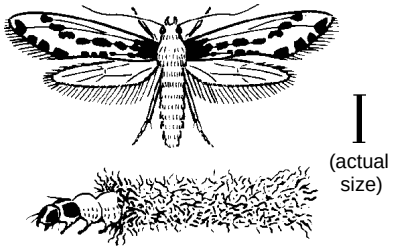

Figure 2. Casemaking clothes moth.

The webbing clothes moth, *Tineola bisselliella* (Fig. 1), and the casemaking clothes moth, *Tinea pellionella* (Fig. 2), are occasional fabric pests in California. Clothes moths are weak flyers and are not attracted to lights. They tend to hide when disturbed, and for this reason, infestations of clothes moths are not usually noticed until damaged fabrics, furs, or feathers are found. Close examination of the objects reveals the presence of silken webs that are spun by the larvae.

IDENTIFICATION

The webbing clothes moth is the most common fabric moth. Adults are golden colored with reddish golden hairs on top of the head. Wings, with a span of about ½ inch, are fringed with a row of golden hairs. Because the moths are weak flyers and not attracted to lights, they are usually found very close to the infested items, such as in dark areas of closets.

Don't confuse the clothes moth with the common food- and grain-infesting moths that are frequently seen flying around the house. At rest, clothes moths are only about ¼ inch in length, whereas most food-infesting moths are about ½ inch in length. Clothes moths are relatively easy to catch when they land. When examined with a hand lens, little tufts of hair are evident on their heads—food and grain moths do not have these tufts. Clothes moths usually only fly around the immediate area of the house where the infestation is found, and their flight pattern is distinctive: they tend to flutter about rather than fly in a direct, steady manner like the food-infesting moths.

Casemaking clothes moths are similar in size and appearance to webbing clothes moths. The wings of the casemaking clothes moth are more brownish than those of the webbing clothes moth and have faint dark-colored spots. Hairs on the head are lighter colored than those of the webbing clothes moth. Larvae of both species are nearly identical, except that larvae of the casemaking clothes moth always carry a silken case with them as they feed. They never leave this silken tube, but enlarge it as they grow. They feed from either end and retreat into it when disturbed. This case takes on the coloration of the fabric eaten by the larvae.

LIFE CYCLE

Females of both species of clothes moth lay an average of 40 to 50 eggs over a period of 2 to 3 weeks and die once egg laying has been completed. Males outlive females and continue to mate during the remainder of their lives. Eggs are attached to threads of fabric with an adhesive secretion; they hatch in 4 to 10 days during warm weather. Larvae molt from 5 to 45 times, depending on indoor temperatures and type of food available. The larval period lasts from 35 days to 2½ years. Larvae are shiny white with a dark head capsule. They spin webbing as they feed and may partially enclose themselves in a webbing cover or feeding tube, depending on species. Excrement of the clothes moth may contain dyes from the cloth fibers being consumed and thus be the same color. When they are ready to pupate, larvae wander away from their food source to find crevices. With the casemaking clothes moth, pupation takes place inside the case—usually on the fabric.

Pupation lasts from 8 to 10 days in summer, 3 to 4 weeks in winter. Heated buildings enable clothes moths to continue development during winter months. Generally, developmental time for the clothes moth from egg to egg is between 4 to 6 months, and there are generally two generations a year (Fig. 3).

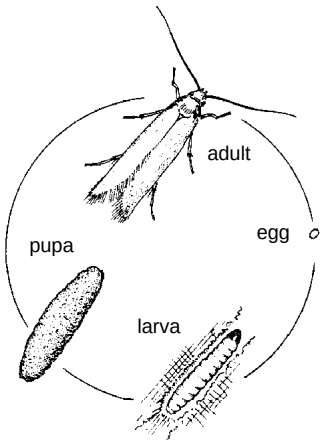

Figure 3. Clothes moth life cycle.

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DAMAGE

The larva is the damaging stage of the clothes moth. Both species feed on wool clothing, carpets, rugs, upholstered furniture, furs, stored wool, animal bristles in brushes, wool felts in pianos, and fish meal in fish food. Synthetics or fabrics such as cotton are fed on if they are blended with wool. Larvae may use cotton fibers to make their pupal cases. Damage generally appears in hidden locations such as under collars or cuffs of clothing, in crevices of upholstered furniture, and in areas of carpeting covered by furniture.

Fabrics stained by foods, perspiration, or urine are more subject to damage.

MANAGEMENT

Clothes moths can be controlled by a variety of methods, including periodic dry cleaning or laundering, proper storage, freezing, heating, or fumigating with dry ice, trapping, or using an insecticide. If humidity can be kept low inside buildings, an environment that is not suitable for clothes moth development will be created. Building construction that is free of many tiny cracks and crevices also contributes to fewer clothes moth problems. Good housekeeping practices are also important. Although most people can control clothes moth problems themselves, some infestations are best handled by a pest control applicator who has the equipment, materials, and experience necessary to deal with a difficult control job.

Preventing or Reducing Infestations

Periodically clean areas of a home that may harbor clothes moths to prevent or control infestation. Those areas include many seldom-cleaned spots, such as:

- under heavy pieces of furniture;
- along baseboards and in cracks where hair and debris accumulate;
- closets, especially those in which woolens and furs are kept; and
- heaters, the areas behind them, and vents.

The vacuum cleaner is the best tool for most of this cleaning. After using it in infested areas, dispose of the bag contents promptly; they may include eggs, larvae, or adult moths.

Clothes moths may first become established on woolen garments or scraps stored for long periods. If such articles are to be saved, they should be stored properly, or periodically hung in the sun and brushed thoroughly, especially along seams and in folds and pockets. Brushing destroys eggs and exposes larvae. Larvae are strongly repelled by light, and will fall from clothing when they cannot find protection.

Dry Cleaning and Laundering

Dry cleaning or thoroughly laundering items in hot water (temperature above 120°F for 20 to 30 minutes) kills all stages of insects. This is the most common and effective method for controlling clothes moths in clothing, blankets, and other washable articles. (Because many woolen garments should not be washed in hot water, dry cleaning may be the only suitable cleaning option.) Keeping fabrics clean also has another advantage: insects are less likely to feed on clean fabrics than on heavily soiled ones.

Protecting Items in Storage

Clothes moths often damage articles that are not stored properly. When storing susceptible items, be sure they are pest-free and clean, and place them in an airtight container. Insect repellents can be placed in the storage container. A new product made from lavender oil is available as a gel-filled sachet that can be used inside drawers and storage boxes, or hung in closets. Research studies are currently underway regarding the efficacy of this product.

Moth balls, flakes, or crystals containing naphthalene or paradichlorobenzene are also available for protecting clothes in storage. These materials are toxic and must be kept away from children and pets. They also leave an unpleasant odor on clothes and other cloth objects. If placed in contact with plastic buttons, hangers, or garment bags, they may cause the plastic to soften and melt into the fabric. As these chemicals evaporate, they produce vapors that, in sufficient concentration, will slowly kill insects. The vapors build up to the required concentration only in an airtight container. If the container is not airtight, the chemicals only weakly repel adults and any larvae already on clothes continue to feed.

Questions are often raised as to the effectiveness of cedar chests and closet floors made of cedar. Aromatic eastern red cedar, *Juniperus virginiana*, contains an oil that is able to kill small larvae, but it does not affect large larvae. After several years, however, cedar loses this quality. Having the chest tightly constructed is more important in the long run than the type of wood used to make it.

Freezing and Heating

Clothes moths can also be controlled by heating the infested object for at least 30 minutes at temperatures over 120°F, freezing the object for several days at temperatures below 18°F, or fumigating with dry ice (see “Household Furnishings”).

Trapping

Trapping is a relatively easy-to-use technique that helps to both detect a webbing clothes moth infestation and to reduce it. Pheromone traps are available to trap the webbing clothes moth, but not the casemaking clothes moth. Pheromones are chemicals (in this case a sex attractant) produced by an organism to affect the behavior of other members of the same species. The sex pheromone attracts male moths into the trap where they get stuck on the sticky sides. Because the pheromone specifically attracts clothes moths, other moth species will not be attracted—conversely, webbing clothes moths will not be attracted to pheromone traps for other species such as grain-infesting moths. Pheromone traps for clothes moths are available from major hardware stores.

Place traps in closets and other areas where clothes are stored. Trapping not only allows you to detect the presence of webbing clothes moths but also provides some control because trapped males cannot mate. However, if you trap moths, you should also take other measures such as dry cleaning or laundering to protect clothes that were exposed to the moths.

Using Insecticide Sprays

If clothes moths are detected, articles that cannot be dry cleaned, laundered, heated to temperatures over 120°F, frozen, kept in cold storage, or fumigated with dry ice (see "Household Furnishings") can be sprayed with an insecticide. Find a product that lists clothes moths on its label and follow the directions exactly. Insecticides for clothes moths usually contain pyrethrins, which provide quick knockdown of clothes moths, and most can be sprayed directly on fabrics if needed (in situations where fabrics cannot be laundered or dry cleaned). Pyrethrin insecticides do not leave persistent toxic residues, which makes them more suitable for clothes moth control in many cases than many other products.

Some insecticides have an oil base. Do not spray them on silk, rayon, or other fabrics that stain easily. Do not use them around open flames, sparks, or electrical circuits. Do not spray them on asphalt-tile floors. Use only lightly on parquet floors. On linoleums, first spray a small inconspicuous area and let it dry to see if staining occurs.

Widespread or heavy infestations often require the services of a professional pest control applicator.

For more information contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your phone book for addresses and phone numbers.

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To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

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Special Situations

Rugs, carpets, furs, and household furnishings require special attention for protection from clothes moths. Rugs and furnishings made entirely of synthetic fibers are not affected. This includes most wall-to-wall carpeting.

Rugs and Carpets. Closely inspect areas beneath heavy furniture and along carpet edges for infestation. Area rugs can be dry cleaned or hung out in the sun and vacuumed. The edges on wall-to-wall carpets can be pulled back so that an insecticide can be applied to both sides of infested carpets. Spray the upper surface of the carpet lightly to reduce the possibility of staining. If the rug pad contains animal hair or wool and has not been treated by the manufacturer, spray it also. It is preferable to wait until the rug has dried before putting any weight on it.

Fur. Applying protective sprays to furs is not recommended. If you store furs at home throughout the summer, protect them with moth crystals, flakes, or balls; or frequently shake and air them. Furs in commercial cold storage receive professional care and can be insured against damage.

Household Furnishings. Some furniture, mattresses, and pillows are stuffed with animal products such as hair or feathers. When clothes moths get into the stuffing, they cannot be controlled simply by spraying the outside surface of the item. The best way to eliminate them is to fumigate the item with dry ice or to have a pest control or storage firm treat the infested item with a lethal gas in a fumigation vault.

To fumigate an object with dry ice, place the item and the dry ice in a thick (4 mils) plastic bag. (Do not handle dry ice with your bare hands because it will quickly freeze your skin.) If you use a plastic bag with a 30-gallon capacity, a ½- to 1-lb piece of dry ice should be adequate. Seal the bag loosely at the top until all the dry ice has vaporized; this will allow the air to escape and keep the bag from bursting. When the dry ice is gone, tighten the seal and let the bag sit for 3 or 4 days. Proper fumigation gives quick, satisfactory control, and kills all stages of clothes moths, although it does not prevent reinfestation.

Sometimes felts and hammers in pianos become infested and so badly damaged that the tone and action of the instrument are seriously affected. The services of a piano technician are then recommended; synthetic felts are available.

COMPILED FROM:

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REFERENCES

Mallis, A. 1990. *Handbook of Pest Control*, 7th ed. Cleveland: Franzak and Foster Co.

Marer, P. 1991. *Residential, Industrial, and Institutional Pest Control.* Oakland: Univ. Calif. Agric. Nat. Res. Publ. 3334.