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College of Agricultural Sciences • Cooperative Extension
Entomological Notes
Department of Entomology

CARPET BEETLE DERMATITIS

Dermestidae

Beginning in 1948 several groups of dermatologists reported on case histories involving dermatitis caused by contact with carpet beetles (Coleoptera: Dermestidae). These patients experienced multiple symptoms that included itching, pruritic, and papulovesicular eruptions. Biopsies and clinical tests confirmed that the hairs of carpet beetle larvae in the genera *Anthrenus*, *Attagenus*, *Dermestes* or *Trogoderma* caused these reactions.

CLINICAL SYMPTOMS

Various reports describe, what appears to be an acquired allergic reaction to carpet beetle larval hairs and hemolymph (insect blood). These hypersensitivity reactions are characterized by complaints of being bitten by something causing an intense itching and rash. Additionally, in some patients, irritation of the respiratory tract and eyes may develop. Apparently, only individuals that have long-term exposure (years) to these hairs become sensitized.

DESCRIPTION

Anthrenus: These beetles are oval, 2-3.5 mm in length and are covered with colored scales (flattened hairs). One of the more commonly encountered species is *Anthrenus verbasci*, the varied carpet beetle (3 mm). The adult beetle has white, yellow and black scales (Fig. 1a). The larvae are cream colored with golden hairs and 4 mm in length (Fig. 1b). The hairs are lancelet with sharp terminal ends. In addition to these hairs, there are tufts of hastae on abdominal segments five through seven. Hastae are modified hairs that are spear shaped and are typically clumped into bunches on the posterior abdominal segments.

Figure 1. Varied carpet beetle (1a) and larvae (1b)

Attagenus: These beetles are elongated oval, 2.5–5.5 mm in length, black to dark brown and sparsely covered with dark hairs. The species found in Pennsylvania is the black carpet beetle, *Attagenus unicolor.* The adult is 2.8 to 5 mm long, black to reddish brown and covered with short, sparse pubescence (Fig. 2a). The first segment of the tarsi of the hind legs is much shorter than the second segment. The last antennal segment of the male is twice as long as that of the female. The larvae, which may reach 12.7 mm in length, are very different from other carpet beetles' larvae (Fig. 1b). They are elongate, carrot-shaped, golden to chocolate brown, with short golden hairs on the body and have a tuft of very long, curled, golden-brown hair extending from the last abdominal segment.

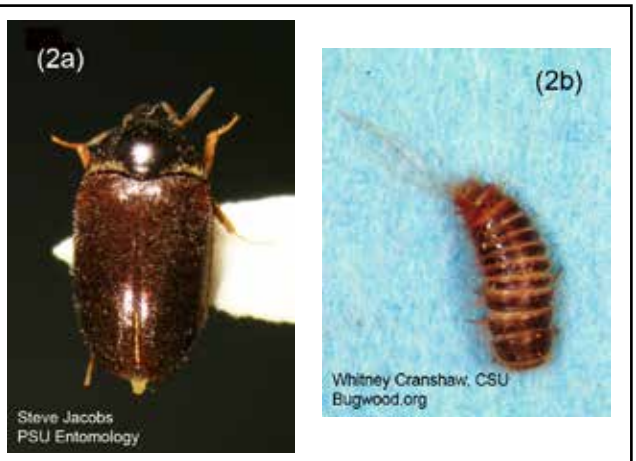

Figure 2. Black carpet beetle (2a) and larvae (2b)

Demestes: *Dermestes* beetles are considerably larger than the previous species being, between 7 and 10 mm, elongate oval in shape and are covered with hairs that are closely appressed to the body. One of the more commonly encountered species in homes is the larder beetle, *Dermestes lardarius*. The adults are easily identified by the yellow or tan band of hairs across the mid-section in contrast to the black head, pronotum and posterior half of the fore wings (elytra) (Fig. 3a). Six dark spots are usually in the yellow band. The undersurface of the body and legs are covered with fine yellow hairs. The larvae are dark brown, hairy and have two horn-like projections on the last abdominal segment called 'urogomphi.' The larvae are elongate 11-13 mm in length (Fig 3b).

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Figure 3. Larder beetle (3a) and larvae (3b)

Trogoderma: Adults are small, 2-5 mm in length, elongated oval and clothed in multicolored hairs arranged in a pattern. The larger cabinet beetle, *Trogoderma inclusum*, is 2-3.5 mm in length (males the smaller of the two) and has a pattern of colored hairs which are in the form of three bands of white hairs on a red background with the anterior band forming loops (Fig. 4a). The larvae are up to 6.3 mm in length and the hairs are lancelet with a several dozen long, thinner hairs extending from the last abdominal segment (Fig. 4b).

Figure 4. Larger cabinet beetle (4a) and larvae (4b)

BIOLOGY

Most carpet beetles can fly and as such are good candidates to infest homes from spring through the early fall. Most infestations, however, are brought into residences via contaminated foodstuffs. The larvae will feed on a wide variety of animal by-products. Some of the potential food sources for carpet beetle larvae include: dried pet food, museum specimens, hides, dried fish, feathers, felt, lint/hair in return-air ducts, dead insects, dried carcasses, seeds, grains, cereals, woolen rugs/clothing, silk, furs velvet, spices, bee/wasp nests, horn, corn meal, fish meal, potato chips and many others too numerous to mention. Not all carpet beetles will infest such a wide range of items. Some prefer dried carcasses. Others might prefer dead insects such as those in entomological museums or overwintering pests like lady beetles, stink bugs, cluster flies that become trapped within the walls, ceilings and attics of homes. Still others have preferences for grain products.

MANAGEMENT

Successful control depends on locating the source of the infestation. It may be a woolen toy stored in the basement, soiled woolen socks in boots, a felt hat on a shelf, carcasses of birds or other animals, dead insects in walls or attic, bits of dried dog food, or similar materials. If you find the infested material, either clean it or destroy the item.

Where the beetles are widespread and no point source of infestation is found, you may apply one of the various insecticides and chemical formulations that are available for carpet beetle control. Diatomaceous earth and silica aerogel that cause insects to lose moisture are known as desiccants. Apply them as a dust to cracks and crevices or inject them into wall voids. They are only effective if they remain dry, and work best where water sources are eliminated or reduced. You can apply synthetic pyrethroids such as deltamethrin, cyfluthrin, lambda-cyhalothrin, cypermethrin, sumithrin, or tralomethrin to cracks as a water-based spray. When injected into dark crevices, the materials have a longer period of efficacy because they are not in direct sunlight. Crevices where lint, hair, and food particles have accumulated are places likely to be infested by carpet beetles. For residences that have yearly problems with an overwintering insect, contact a professional pest control company. They may drill small holes into wall voids and inject one of the insecticidal dusts. It is important in this instance to secure the exterior of the building to prevent additional insects from gaining access the following autumn.

WARNING

Pesticides are poisonous. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

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