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insect answers

CUPBOARD BEETLES

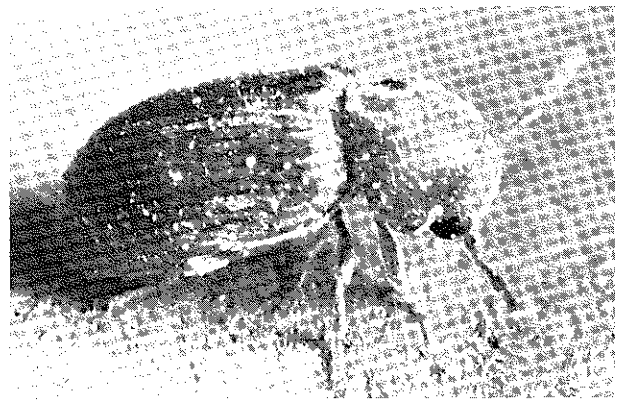
Cupboard beetles or "bran bugs," as they are often called, are beetles that attack stored-grain products or household foodstuffs. Once established in food, populations of these insects can explode and move through the home infesting everything. Some of these beetles enter the home from outdoors, since they are normally scavengers in the environment, while others are transported to the home in purchased materials.

Everyone is vulnerable. However, those who do not practice good sanitation or food storage methods have the greatest problems. Spilled or exposed food will attract and insure chances of infestation. Foods not tightly sealed, especially those maintained for long periods of time, are particularly susceptible to eventual infestation.

Beetles commonly found in this environment include: drugstore beetle, sawtoothed grain beetle, merchant grain beetle, cigarette beetle, flour beetle, spider beetle, rice weevil, granary weevil, and carpet beetle. Drugstore beetle is the most frequent offender in western Washington. The sawtoothed grain beetle is probably the major bran bug in eastern Washington, but weevils and flour beetles are nearly as important.

Drugstore Beetle

The drugstore beetle, *Stegobium paniceum*, is brownish, approximately 3 mm (1/8 inch) long, with the head bent downward giving the insect a humped appearance. It is an aptly named insect, since it not only feeds on most foodstuffs and animal products, but also has been found infesting certain drugs and toxic materials. It is also known to perforate wood to get to food sources. Dried pet foods and spices are some of the most commonly reported sources of infestation. The life cycle is like that of all beetles—it has an egg, larval, pupal, and adult stage. There are from one to four generations per year. Environmental conditions such as temperature and food availability dictate the number of generations that will occur. Food quality is not as important as one might expect, since this pest has symbiotic organisms in it that resemble yeasts which manufacture many "B" vitamins. Therefore, they can survive on low-quality foods.



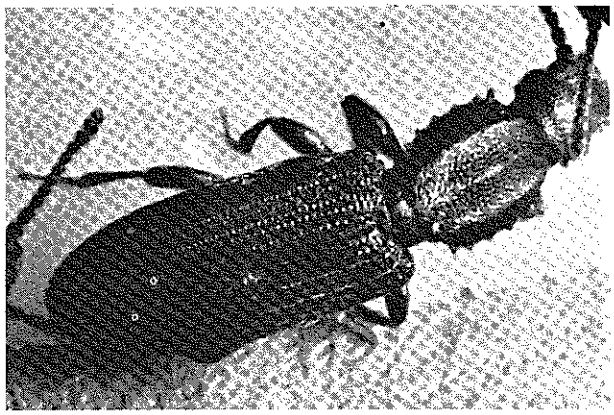
Drugstore beetle

Cigarette Beetle

The cigarette beetle, *Lasioderma serricorne*, strongly resembles the drugstore beetle in appearance and life style. It attacks everything the drugstore beetle attacks, but has an even wider range of foods. It is named for its frequent attacks on tobacco products. Normally, it produces from three to six generations per year, depending on temperature and humidity. Both the drugstore beetle and the cigarette beetle can fly.

Grain Beetle

The sawtoothed grain beetle, *Oryzaephilus surinamensis*, and the merchant grain beetle, *Oryzaephilus mercator*, are slender, flattened, reddish brown beetles about 3 mm (1/8 inch) long. They are distinctive as they possess saw-like teeth along the edge of the prothorax (shoulder area). Differences between these two

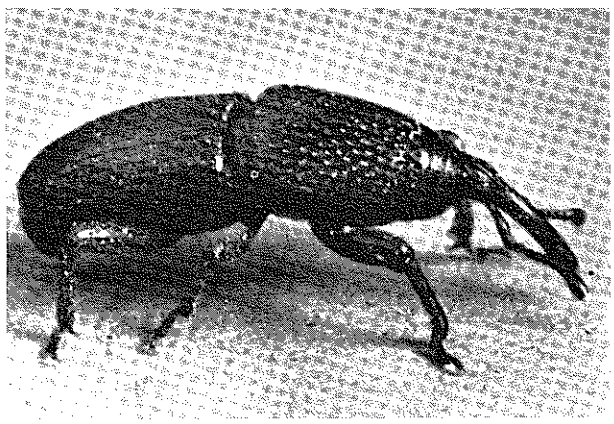


Merchant grain beetle (note the saw-tooth edge on the section behind the head)

are in the configuration of this shoulder area and can be seen only with a hand lens. Feeding habits of these two are similar to that of the drugstore beetle, but the grain beetle does not have as wide a food range. It has from one to ten generations per year. Although they are suspected of being capable of flight, beetles have never been seen flying.

Granary Weevil

The granary weevil, *Sitophilus granarius,* is a dark brown to black beetle, 4 to 5 mm (approximately 3/16 inch) long, with a characterstic



Granary weevil (note the distinctive snout)

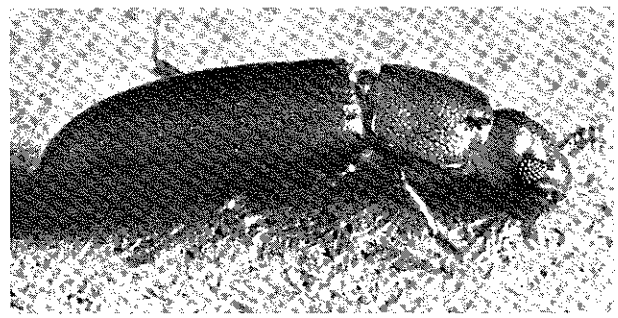
weevil "snout." It has no wings. It is primarily a pest of whole or intact grains and is not usually a pest of processed foodstuffs. It has from two to ten generations per year, but usually about four.

Rice Weevil

Sitophilus oryzae, is a close relative of the granary weevil and is similar in habits and appearance. It differs from its relative the granary weevil by having four light-colored spots on its wing covers, by having well-developed wings under the wing covers, and by being slightly smaller. Although it has been found in Washington, it is more commonly a stored-products pest in the South.

Flour Beetle

The flour beetles, *Tribolium spp.,* are small (approximately 3 mm or 1/8 inch long), elongate beetles that are reddish brown to black, depending on species. They are most often found in

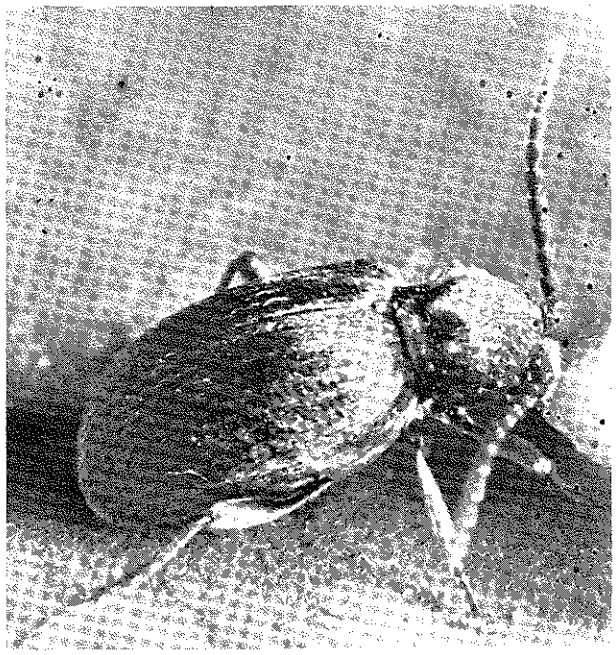


Flour beetle

finished or processed cereal products. Some species can fly, but do so rarely, while others are unable to fly. In a heated building, they can produce four to five generations a year.

Spider Beetle

Spider beetles, *Ptinus spp.,* are small globular-appearing beetles which range from 2-4 mm (1/16 to approximately 1/8 inch) long. Although variable in color, depending on species, they all possess an obvious spider-like appearance. They feed on a wide range of foods from grain products to feathers, rodent droppings, and insects. They can withstand colder temperatures than most bran bugs. Free water is very important to



Spider beetle

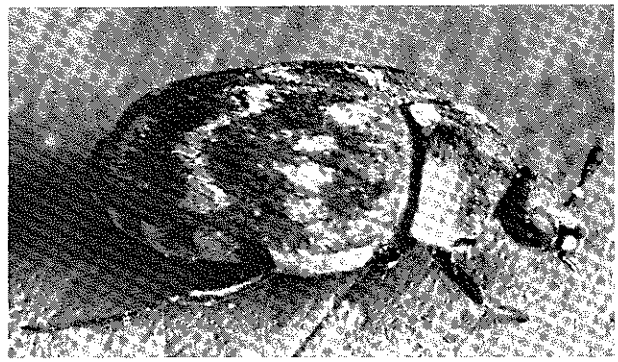
their success in establishment and speed of development.

One of the more common spider beetles, the white-marked spider beetle, has four to ten generations per year. Spider beetles are normally only encountered in situations with very poor sanitation and/or in situations where foodstuffs have been standing a long time. Even then, other insects have usually already attacked the food before the spider beetles infest it.

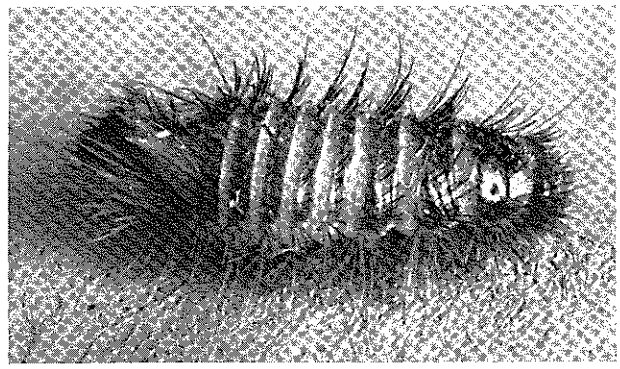
Carpet Beetles

These are small, elongate or oval beetles ranging from 2-8 mm (for most species found in stored products) and vary in color and color pattern. They are most easily diagnosed by the layman as larvae which are often elongate and quite hairy or with distinctive tufts of hair, especially at the end of the body. The number of generations is variable. Under poor conditions, larvae of some species have been known to live for years. Adults are capable of flying, and of all the beetles mentioned here, these are the beetles most likely to fly in from outdoors. Although they are common pests of foodstuffs, carpet beetles go beyond cupboard beetle status in that they are nearly as frequently seen as pests of animal products, such as furs, woolens, feathers, and animal collections. More extensive information on this group of beetles is provided in the Extension publication on carpet beetles, EM 4323.

Other stored-products beetles include the flat-headed grain beetle, larder beetle, pea weevil, and ham beetle. Except the pea weevil, whose habits are outlined in EM 4004, most of these beetles are rarely encountered in the home.



Carpet beetle adult



Carpet beetle larva

PREVENTION AND CONTROL OF CUPBOARD BEETLES

Sanitation

The primary method for avoiding problems with these pests is good sanitation. Some points to remember are:

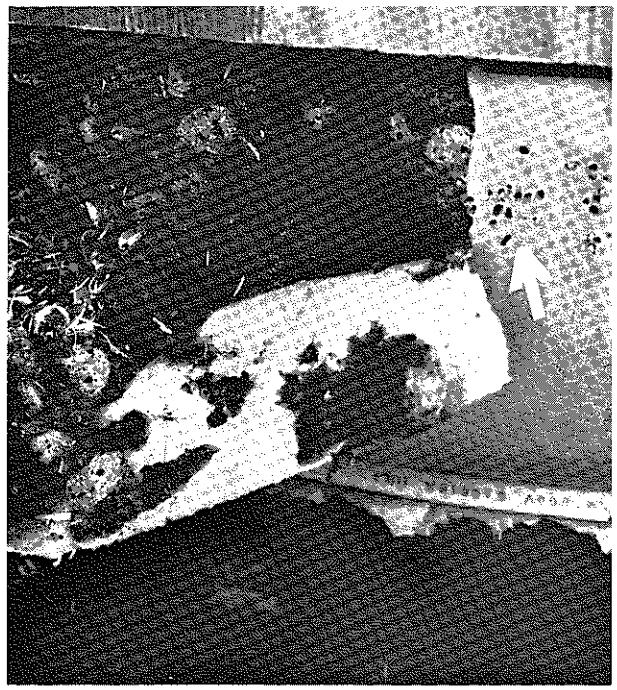
- Spilling and/or leaving food exposed as a common practice attracts and harbors these pests. Avoid these practices and you will likely never, or rarely, have this pest problem.
- Buy "storage" food such as flour grains only in quantities that you will use in reasonable lengths of time. Materials stored for long

periods (for example, six months or more) are often the source of serious infestations. Pests can start here without being observed and explode into near unmanageable numbers.

- Most cupboard pests can chew their way into cardboard boxes or plastic sacks. Place stored materials into tight-fitting containers, preferably of glass or other tough material. If an infestation should occur under these conditions, it probably will be limited to a single jar. The best storage is cool and dry. If at all possible, you may even want to consider refrigerated storage of little used but important dry goods. When dried pet foods are accessible to mice, an unusual problem may occur. These rodents steal the pet food and over time can store large quantities of it in unobservable places, such as in wall voids and sub-floor spaces. If cupboard beetle pests locate the stolen food, you will have a most difficult time finding and removing the problem source. Dried pet foods are the most frequent stored products attacked by these pests, especially the drugstore beetle, so it is wise to be especially attentive to the manner in which you store dry pet foods.
- If such pests become apparent, locate the source immediately and get rid of it. If you act early enough, this may be the only material infested. Unopened cardboard boxes should be thoroughly examined. If there is the slightest suspicion—be ruthless—throw it out. If the material appears uninfested and you prefer to keep it, if at all possible, at least use a containment/inspection technique. Place the material in a jar or Ziplock bag and inspect it frequently. A jar is best since the insects cannot get out. Ziplock bags are often more convenient, but you will have to inspect them more frequently because many of these pests can chew their way out and move to new food sources.
- Use a vacuum cleaner to clean debris from cracks and corners of storage areas. Also, clean all nearby areas, especially spills and crumbs behind and alongside of stoves and refrigerators. Check the dishwasher area and toaster for crumbs. Scrub storage space and vicinity with very hot water and a strong detergent solution. Allow to dry thoroughly.

Chemical Control

Chemicals are not usually recommended unless the problem is severe and widespread. If this becomes the case, it would probably be advisable to seek the help of a reputable pest control operator (exterminator). If chemicals are nevertheless considered, they should never be the primary tool. They can be only supplementary to the more important steps of sanitation.



Insulation in a wall space filled with dry dog food pellets and sunflower seeds. Mice gathered and stored the food, which caused a serious cupboard beetle infestation in the house. Note the beetle holes in the insulation paper in the upper right corner.

Most of the household sprays available are ineffective against many of these beetles. Location of the pests in food prohibits the use of spray in those areas. If used, sprays should be used only in cracks, crevices, or hard-to-reach areas where wandering beetles, away from food sources, often hide. Above all, use chemicals only as the label directs.

Mechanical Control

Some infested or suspect materials may be worth saving. If so, consider temperature extremes as a method of control.

Heat may be used to control stored-products pests. All insects infesting stored food products will be killed if held at 120 to 130° F for two to three hours. Heated to 180°, the kill is much more rapid. Heat must reach all parts of the infested material. For best results, the material to be treated should be spread thinly and stirred to allow rapid penetration of the heat. If an oven is used, prop open the door slightly to avoid scorching materials. Care should be taken to avoid heat-treating stored products degraded by excessive heat; nutrients (vitamin-rich materials), for example, should not be heat-treated, but instead, they should be stored in the freezer.

Low temperatures are also effective. Insect activity usually ceases at temperatures of 40-50° F, and most insects found in stored food products die or at least become inactivated when held at 40° F for two or three days. The most resistant forms will be killed if held for two to three weeks in a deep freeze.

Containment using a Ziplock bag. The manicotti shells inside looked uninfested, but were suspected of containing hard-to-see eggs. Two months after containment with frequent (every 4-5 days) checks, drugstore beetles began to appear. Note the black specks (beetles) on the lower right shell.

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