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Red-legged Ham Beetle

Necrobia rufipes

CAUTION

PREDATOR:
INVESTIGATE CAUSE

GENERAL INFORMATION

The red-legged ham beetle, also known as simply the ham beetle or the copra beetle is a pest of primarily stored meat products. This beetle belonging to the family Cleridae, is usually a predator of other pests, although it can feed on various high protein items and causes damage by burrowing into them. This species is found throughout the world and is a known pest from countries such as Brazil, China, India, the Philippines, and the United States. While not common as a pest in museum collections, the red-legged ham beetle can cause serious damage to dried protein sources such as residual tissue on bone, especially fish, palm and coconut materials, and has been reported on mummies.

This small iridescent greenish-blue beetle has reddish brown legs earning it its name. Larvae are long and cylindrical, mostly membranous, with the head and last body segment being a darker brown color. Female and male adults are identical except that hairs on the elytra of the females are more prominent and are oriented toward the head.

SIGNS OF INFESTATION

Adults are not strong flyers and all life stages prefer dark conditions making it less likely to find beetles. Look for adults on blunder traps as adults tend to crawl when dispersing. Museum specimens that are quality protein sources should be visually inspected for burrowing and tunneling of larvae. Frass, small particulate waste, near or below burrows should be prevalent as well. Larvae will make a single entrance hole into very meaty specimens and then tunnel inward, resulting in a dotted surface.



DIAGNOSTIC MORPHOLOGY

Adults:

- Adults are 1/4 inch long (3.5-7 mm)
- They have an elongated oval shape with three distinct body regions
- They are greenish-blue in color with red legs
- The wing covers are covered with 9 rows of little hairs
- Female hairs on the wing coverings are oriented toward the head
- The antennae are 11-segmented with an expanded club region at the end



Immature Stage:

- Larvae are approximately 2/5 of an inch long (10mm)
- They have three pairs of legs in the middle of the body
- The body is reddish in color and the legs are a pale mustard color.

FOOD SOURCES

In general, both adults and larvae are predatory on other pests associated with infestations. They are known to feed on the larvae of other beetle species, moth caterpillars, fly maggots, and even other members of their own species. While searching for their preferred food source, they will feed on high protein content organic material especially dried meat. In the tropics, red-legged ham beetles are called copra beetles as they are known to infest dried coconut (copra). Examples of food sources include: cheese, dried fish, ham, cashews, coconut, mummies, oil seeds, and other pest larvae.

LIFE CYCLE

Adults mate soon after emergence and females lay eggs for up to three months during ideal conditions. Females can lay anywhere from 100 to over 3,000 eggs depending on temperature, humidity, and food quality. Females deposit eggs in small, dry crevices to limit predation due to cannibalism. Eggs will hatch in 4-8 days, young larvae preferentially feed on surrounding eggs before moving on to other food sources.

Larval development includes 3 or 4 stages over a 35-130 day period. When larvae are finished feeding they wander, searching for ideal spots to pupate. The larva finds a relatively dry, secluded spot and creates a cocoon. Adults emerge from the pupa after 6-9 days. Total development time from egg to adult can last between 36 and 150 days. Variations in progression of development is dependent on temperature, humidity, and the quality of available food.

Total life expectancy of adults is unknown, although there are reports of overwintering adults. In one study, larger larvae were found to be able to survive in moderate winter conditions outdoors and reach adulthood, when temperatures warmed.

CONTROL & TREATMENT

The red-legged ham beetle, as a pest of primarily stored food products, has had little research done for control in a museum environment. Chemical control methods can be found in online reference, although should be avoided in museums. Some research has indicated that treatment in low oxygen environments, such as the use of CO₂ treatments should be effective. Freezing in line with current standards for museum pest control should also work for this pest. Although there is no direct research on freezing as a control method, at the very least it will kill the preferential food source of other pest larvae.

As stated they are primarily predaceous on pests however, in the right conditions they can cause major damage to museum objects and infestations should be treated swiftly. At the very least, they are an indication of some other pest infestation and it is imperative that the source is located as soon as possible to mitigate loss.

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Fact Sheet: Red-legged Ham Beetle

Resources:

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- Simon, P. and G. Ellington. 1925. The Ham Beetle, *Necrobia rufipes* De Geer. Journal of Agricultural Research, pp 845-863.

Photo credit: Larva- Kerry Matz, <http://bugguide.net/node/view/271044>

Photo credit: Adult- Mike Quinn, <http://bugguide.net/node/view/316100>