

# MEALWORM BEETLE

## INTRODUCTION

The common name comes from the rather bright yellow color of the larval stage and that it is a stored product pest. Yellow mealworms are of moderate importance as stored product pests and are probably best known as fish bait and food for small pets such as turtles, reptiles, birds, small mammals, etc. They are of medical importance because they are often the species infesting the human gastrointestinal tract. Yellow mealworms are worldwide in distribution and are found throughout the United States, but are abundant only in the northern states.

## RECOGNITION

Adults **about 1/2-5/8"** (12-16 mm) long, somewhat flattened, parallel-sided. Color **shiny dark brown to black**. Head with eyes notched on inside margin by a frontal ridge. **Antenna 11-segmented, slightly clubbed**, with attachment/insertion concealed from above. **Pronotum with** large and small punctures/pits intermixed, **punctures not touching**. Elytra with punctures/pits in rows, area between rows mostly flat. Front leg tibia moderately expanded apically with a sharp edge dorsally on apical half. **Tarsi 5-5-4**.

Mature larvae up to about 1 1/4" (32 mm) long; very smooth, cylindrical, hard-bodied. Color pale brownish yellow in middle going to brownish yellow towards both ends. Terga (dorsal plates) of 2nd and 3rd thoracic and 1st abdominal segments each with a distinct transverse raised line (carina) near its front. Last abdominal tergum (dorsal plate) with 2 terminal upturned acute processes (urogomphi) short (length about 1/5 or less length of last tergum including urogomphi), with 2 short stout hairs (setae) on each side near base of urogomphi. Front leg trochanter with 2 short stout ventral hairs (setae) and tibiotarsus (fused tibia and tarsus terminating with a claw) with 4-5 ventral hairs (setae).



# BIOLOGY

The adult female lays beanshaped, white, sticky eggs which quickly become covered with surrounding food particles. Eggs are laid singly or in clusters in food material over a period of 22-137 days, with an average of 276 (range up to 500) eggs being laid per female. At 65-68°F/18-20°C, eggs hatch in 10-12 days. Larvae develop slowly, usually going through 14-15 molts (range 9-20) in about 4-18 months. Mature larvae crawl to near the food surface to pupate and the pupal stage lasts about 20 days. Developmental time (egg to adult) usually requires 280-630 days. At 77°F/25°C, larval developmental time can be shortened to 6-8 months and the pupal stage to 9 days.

There is usually 1 generation per year but some individuals may require up to 2 years to complete their development. Adults usually live 2-3 months.

This species is of medical concern because eggs and/or larvae ingested with cereals or breakfast foods can cause gastrointestinal discomfort. Whether eggs and/or larvae are ingested, live larvae may be passed in the feces.

# HABITS

Yellow mealworms are usually found breeding in grain refuse and debris, and typically indicate a lack of proper sanitation. They prefer dark and damp situations. They have been found in neglected corners with accumulated grain, under bags of grain in warehouses and feed stores, in spillage around grain bins, in the litter of poultry houses where grain is mixed with droppings, and in other material of animal origin, including dead insects.