

FOREIGN GRAIN BEETLE

INTRODUCTION

The common name of grain beetle probably comes from this beetle's association with grains, and that of foreign possibly because at the time of its discovery it was recognized as being an introduced species. Although occasionally abundant, the foreign grain beetle is of minor economic importance because it is a pest of damp and deteriorating stored product materials. The foreign grain beetle is found worldwide and throughout the United States.

RECOGNITION

Adults about 1/16-1/8" (2-3 mm) long; **body greatly flattened** with numerous short hairs (setae) on dorsal surface. Color uniformly reddish brown. **Antenna** less than half body length, **with 3-segmented club**. **Pronotum with front corners projecting outward (about 45° angle), each into tubelike lobe with rounded end**, pronotum wider than long, without lateral raised line parallel to side margins nor teeth on margins. Elytra (wing covers) with punctures/pits in rows. **Tarsi 5-5-5**.

Mature larvae up to 1/8" (3.5 mm) long. Color yellowish white. Elongate, without urogomphi (paired processes projecting from last abdominal segment), relatively smooth. Antenna 3-segmented with 2nd segment longest and 3rd very small. The merchant, sawtoothed, and squarenecked grain beetles share this same description.



BIOLOGY

Adult females lay their eggs singly or occasionally in clusters of 2-3, averaging about 3 eggs/2 days at 81°F/27°C and 75%RH. A female can lay 100-300 eggs in 135 days. Eggs require 4 days to hatch. Larval development takes 11-19 days for 4-5 instars as follows: 1st instar 3.6 days, 2nd instar 2.4 days, 3rd

instar 2.4 days, 4th instar 2.2 days, and 5th instar 2.2 days. There is a prepupal period of 1-2 days and the pupal stage lasts 3-5 days.

The developmental time (egg to adult) requires 19-24 days at 81°F/27°C and 66-92% RH when reared on rolled oats and brewer's yeast. When reared on fungi at 81°F/27°C, the foreign grain beetle has a developmental time of 17-20 days on *Aspergillus amstelodami*, 22-34 days on *A. candidas*, 19-24 days on *Cladosporium*, and 16-23 days on *Penicillium citrinum*.

HABITS

Foreign grain beetles are scavengers, feeding on plant and animal debris and the fungi which grows on such materials. It is attracted to damp and moldy grains where it feeds on the grain, fungi, and dead insects and mites associated with the grain.

It is part of a natural succession of insects, mites, and microflora. In Canada, it was found infesting stored moldy wheat and oats already infested by the sawtoothed (*Oryzaephilus surinamensis* (Linnaeus)) and rusty (*Cryptolestes ferrugineus* (Stephens)) grain beetles. All stages were found where the grain temperature was 45-108°F/7-42°C (usually 64-97°F/18-36°C) and the moisture content was 15-27%. The associated microflora were *Absidia*, *Aspergillus*, *Penicillium*, *Rhizopus*, and *Streptomyces* spp.

The senior author has occasionally found it associated with the sheetrock of newly built homes, similar to mold/plaster beetles (Lathridiidae). The excessive moisture needed for mold growth usually came from when the striping and skim plaster coats were applied and occurred on the wall void side. This beetle can also be associated with mold, especially in bathrooms, supported by plumbing leaks or pipe condensation. In both cases, infestations are possible because the adults are very strong fliers and are attracted to lights at night. In the case of bathrooms, a window is frequently left open to let out the excessive moisture after a shower, and these beetles can then enter through ordinary window screens.