

Type of damage and symptoms

Larvae and adult *Gnatoceus* spp. are general feeders and damage is not readily identifiable as being specifically caused by this insect. Infestation can lead to persistent disagreeable odours in the commodity due to secretion of benzoquinones from abdominal glands.

Ecology

Owing to its relatively slow rate of reproduction, *Gnatoceus* may be out-competed by more rapidly reproducing species such as *Tribolium*. *Gnatoceus* populations thrive best when they can prey on other insects. They also thrive on commodities which have a high proportion of protein, such as fish meal and dried material of animal origin.

Monitoring

Gnatoceus spp. are easily caught in pitfall type traps. Crevice traps are also effective and their efficacy can be improved with addition of food bait. A number of proprietary bait and trap systems are available which would be attractive to these pests.

Geographical distribution

Species	Pest status	USA & Canada	Central & South America	Europe & N.Asia	Mediterranean basin	Africa	S. & SE. Asia	Australia & Oceania
<i>Gnatoceus cornutus</i>	●●	X	X	X	X	X	X	X
<i>Gnatoceus maxillosis</i>	●●	X	X	X	X	X	X	X

Pest status: ● minor to ●●●● major pest
X: recorded

Both species are found worldwide. *G. cornutus* is more likely to be found in temperate regions and *G. maxillosis* in tropical areas. Both are not cold-hardy and will only survive winter in cool temperate climates in heated premises.

Longheaded flour beetle (*Latheticus oryzae*)

Summary

Feeding strategy	secondary pest
Commodities attacked	any dried material of animal and plant origin
Distribution	worldwide
Economic importance	low-medium
Eggs	laid amongst commodity
Larvae	elateriform, mobile, live amongst commodity
Adults	long lived, feed on commodity, can fly

Introduction
Members of the genus *Latheticus* lives in rotten wood and under bark as scavengers and part-time predators. One species, *L. oryzae*, is a minor pest of stored grain.

Identification
L. oryzae is a slender, flattened, parallel-sided, light yellowish to brown beetle of about 3 mm long (Figures 153–154). When viewed from the side, eyes are crescent shaped. Its antennae are distinctive, short, with a five-segmented club, the final segment of which is narrower than the one preceding it (Figure 154). Larvae are active, elateriform, and light brown.



Figure 153 *Latheticus oryzae*, adult, live

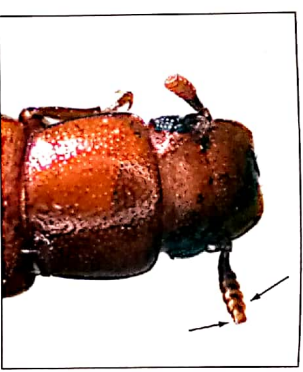


Figure 154 *Latheticus oryzae*, adult, head showing last segment of antennae narrower than segments before it

Life cycle

Eggs are laid at random as females move through the food media. They are sticky and become coated with flour or other particles. Adults are long-lived, feed and can fly. Females may lay up to 300 eggs during their lifetime of three to four months. Larvae are active and move through the food like the adults. Pupae are naked and are also found amongst the food.

Physical limits and optimum rate of multiplication

Species	Conditions within which breeding takes place	Shortest development period, with optimum conditions	Maximum monthly rate of increase
<i>Latheticus oryzae</i>	25–40°C, r.h. > 30%	22 days at 35°C, 85% r.h.	10

Compared to most other storage insects, *L. oryzae* has an unusually high minimum temperature required for development to take place.

Economic importance

Normally, *L. oryzae* is a minor pest of cereals and cereal products and oilseeds, especially under the hot conditions of the humid tropics or elsewhere in heated grain. It is a common inhabitant of flour mills in hot climates. It is usually a much less important pest than *Tribolium*, but can become dominant in hot and heating grain.

Type of damage and symptoms

Larvae and adult *L. oryzae* are general feeders and damage is not readily identifiable as being specifically caused by this insect. Infestation can lead to persistent disagreeable odours in the commodity due to secretion of benzoquinones from abdominal glands.

Ecology

Under normal conditions of storage, *L. oryzae* is likely to be out-competed by faster breeding species such as *Tribolium castaneum*. However, due to its tolerance to high temperatures, *L. oryzae* may become dominant in heating grain. *L. oryzae* is unable to attack sound whole cereal grains, but even very small imperfections allow access by young larvae. Presence of damaged grains, grain germ, moulds and frass of other insect species is beneficial to growth of populations of this insect.

Monitoring

L. oryzae are easily caught in pitfall type traps. Crevice traps are also effective and their efficacy can be improved with addition of food bait. A number of proprietary bait and trap systems are available which would be attractive to these pests.

Geographical distribution

Species	Pest status	USA & Canada	Central & South America	Europe & N.Asia	Mediterranean basin	Africa	S. & SE. Asia	Australia & Oceania
<i>Latheticus oryzae</i>	●●	X	X	X	X	X	X	X

Pest status: ● minor to ●●●● major pest
X: recorded

Found worldwide but most abundant in the tropics, in particular Asia. It is susceptible to cold conditions and in temperate regions is usually restricted to heated premises or to hot grain, e.g. that heated by drying or by the metabolic activities of other pests.

***Palembus* (Uliomoides) spp.**

Summary

Feeding strategies	secondary pest, mould feeder
Commodities attacked	dried material of vegetable origin
Distribution	tropical, especially Asia
Economic importance	low
Eggs	laid amongst commodity
Larvae	elateriform, mobile, live amongst commodity
Adults	long lived, feed on commodity, can fly

Introduction

One species of this genus, *P. dermestoides*, is of note as it is reared and often consumed alive as a traditional Chinese medicine.