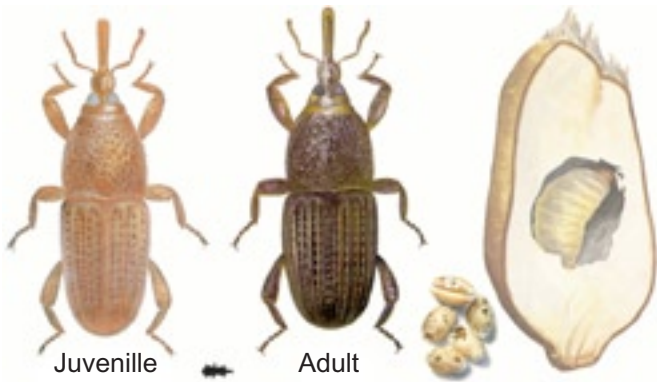


PRINCIPAL STORED GRAIN INSECTS

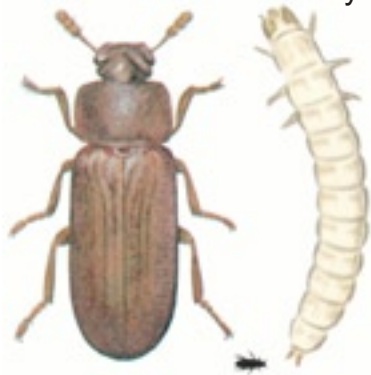


Juvenile Adult

1. Granary Weevil



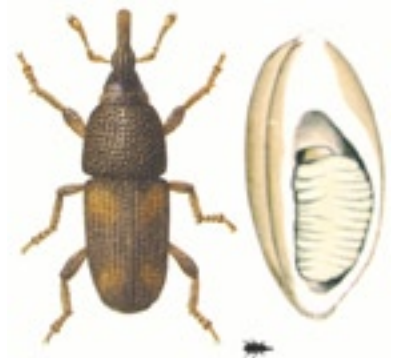
2. Lesser Grain Borer



3. Red Flour Beetle



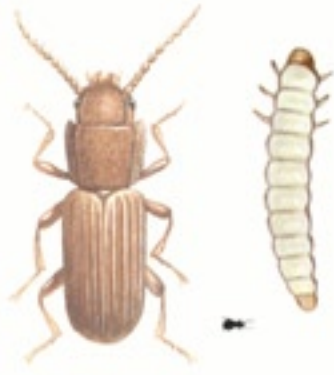
4. Saw-toothed Grain Beetle



5. Rice Weevil



6. Cadelle



7. Flat Grain Beetle



8. Khapra Beetle



9. Angoumois Grain Moth



10. Indian Meal Moth

- 1. Granary Weevil.** A weevil of 3-5 mm length; black-brown (red-brown shortly after hatching); the head ends in a slightly curved proboscis; the neck shield has depressed markings and is almost as long as the longitudinally-grooved wing covers. The granary weevil is the main stored grain pest in countries of the temperate zones. Damage is caused primarily by the larvae but also by the adults. Prefers wheat and rye, but also feeds on corn, barley, millet, rice, and buckwheat. After mass infestation the grain becomes damp and warm leading to infestation of secondary pests and mold.
- 2. Lesser Grain Borer.** A beetle of 2-3 mm length, red-brown to black-brown, slim, cylindrical in body. The hood shaped, rounded neck shield extends beyond the head; the spots on the shield gradually become smaller towards the rear. The larvae are white, similar to grubs, and have brown head capsules. Both larvae and beetles bore into the grain. The lesser grain borer mainly attacks wheat, rye, corn, rice and millet. Also attacked are beans, lentils, and chick-peas.
- 3. Red Flour Beetle.** A slim beetle of 3-4 mm length, of uniform red-brown to black color. Beetles and larvae feed on a very wide variety of dry vegetable substances, such as, milled cereal products. A frequent mill pest; it can also attack undamaged wheat kernels.
- 4. Saw-Toothed Grain Beetle.** A slim beetle 2.5-3.5 mm long, dark brown; neck shield has two deep longitudinal grooves and six sharply-pointed projections on each side. The slim whitish-yellow larvae are freely mobile and grow to a length of 3.5-4 mm. Found in warehouses, silos, mills, and food processing plants; it infests grain and grain products. In granaries, it is usually found as a secondary pest together with other grain pests but occasionally is found alone as the primary pest.
- 5. Rice Weevil.** Similar in appearance to the granary weevil but is smaller (2.3-3.5 mm long) and has reddish spots on the brown wing covers. A dangerous stored grain pest in warmer climates; it infests all types of grain and is often found together with granary weevils.
- 6. Cadelle.** A slim, flat, 6-11 mm-long beetle, dark brown to black; ventral side, antennae and legs are red-brown. A particular feature is the waisting between wing covers and neck shield, whose outer front corners extend toward the head. A serious pest in the tropics, found in mills, silos, and warehouses, on grain, mill products, and feeds. Irregular borings are found in kernels; germs are preferred.
- 7. Flat Grain Beetle.** A small 2 mm, flattened, oblong, reddish-brown beetle, with elongate antennae about two-thirds as long as the body. This insect is not a primary pest of stored grain, and the adult is unable to survive in sound uninjured grain. It follows up the attack of more vigorous grain pests and infests grain and meal that are in poor condition.
- 8. Khapra Beetle.** An oval beetle 2-3 mm long, dark brown with smudgy yellowish-brown and reddish-brown transverse strips on the wing covers and covered with fine hairs. The yellowish-brown, spindle-shaped larvae grow to a length of up to 5 mm. They have thick, reddish-brown hairs, with characteristic bunches of tail hairs growing out of the rear end. The larvae is a very serious stored product pest but the beetle itself does no damage. It is found in warehouses, silos, mills, breweries, and malt plants. It attacks all types of grain, malt, cereal products, and pulses. Grain kernels are often hollowed out until only the husk remains.
- 9. Angoumois Grain Moth.** A moth with a wing expanse of 13-19 mm and a length of 6-9 mm. The forewings are clay-yellow and without markings; the rear wings are grey. The rear edges of the forewings and rear wings have long fringes. A primary pest of grain, which may be attacked in the field, although most damage occurs in storage. It attacks all types of grains, particularly corn and wheat. Badly infested grain has a sickening smell and taste that makes it unpalatable.
- 10. Indian Meal Moth.** A moth with a wing expanse of 14-20 mm. When at rest with closed wings, it is 8-10 mm long. The outer halves of the forewings are bronzy; the inner halves light grey to ochre yellow. The caterpillars are yellowish white, sometimes reddish or greenish, with a brown head; they grow to a length of 17 mm. Found in warehouses, silos, mills and food processing plants they infest a large variety of dry vegetable products.