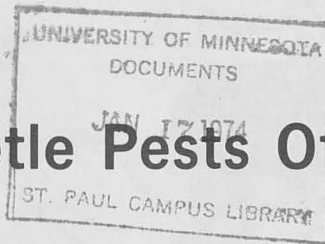
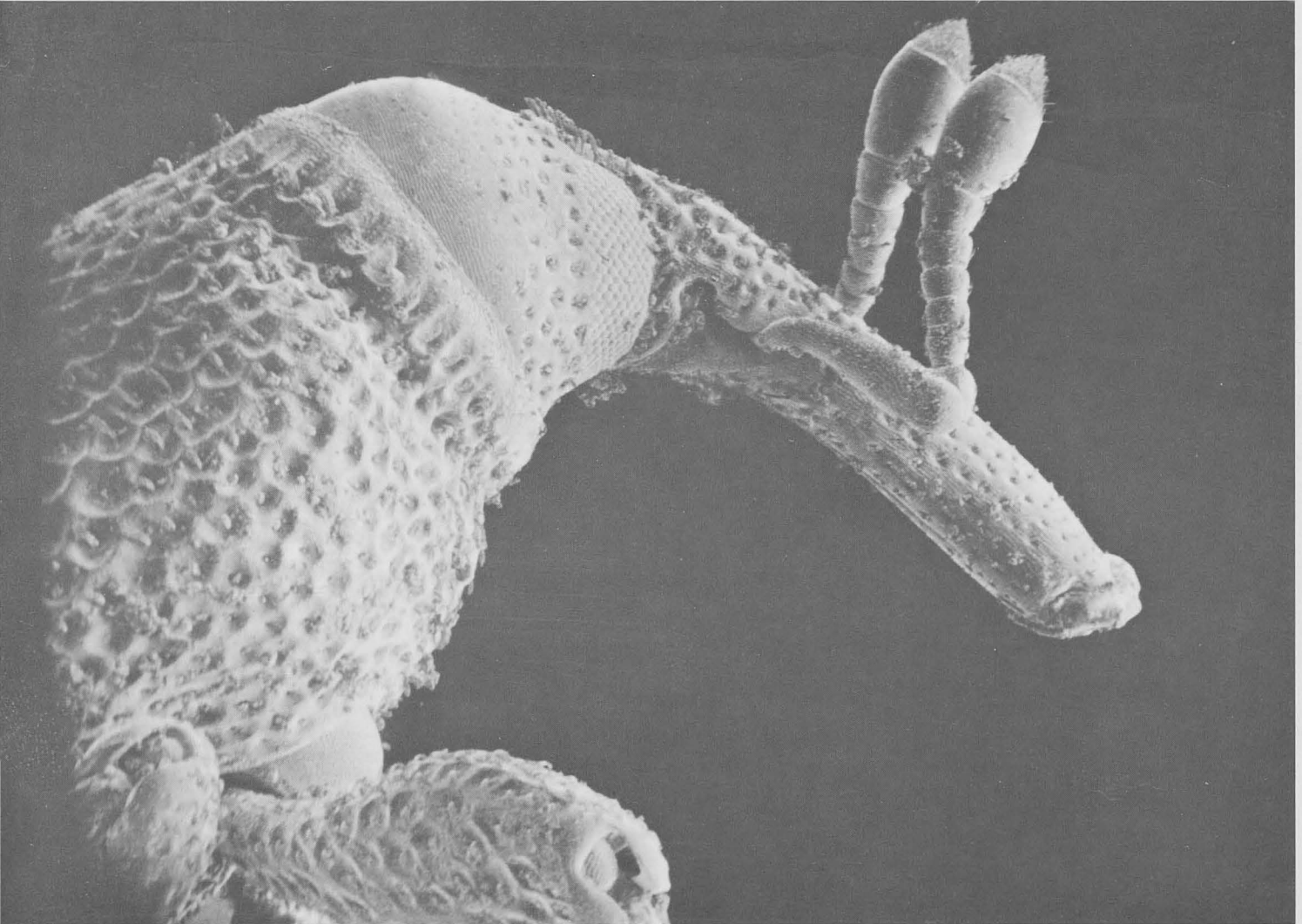


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Some Important Adult Beetle Pests Of Stored Grain

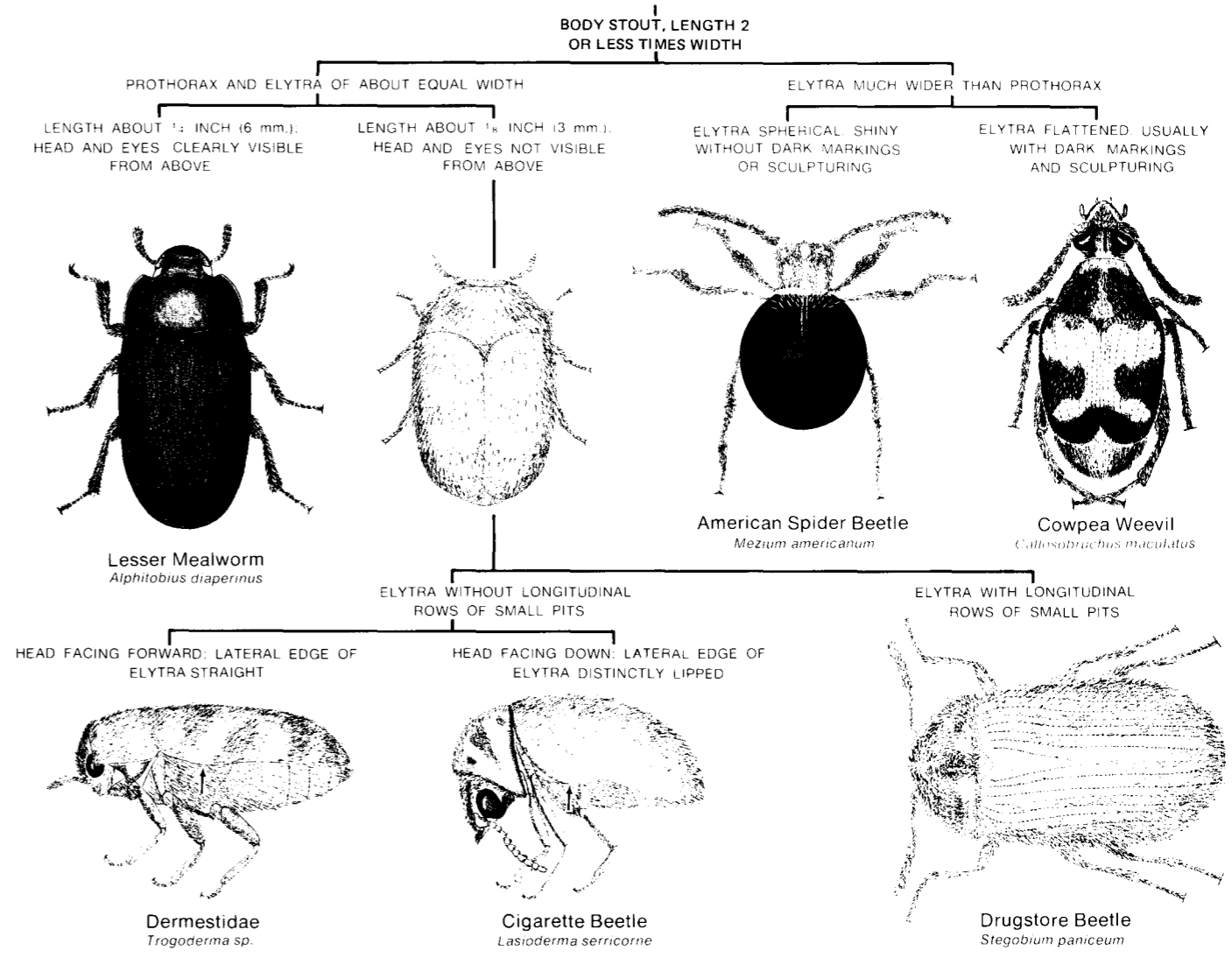
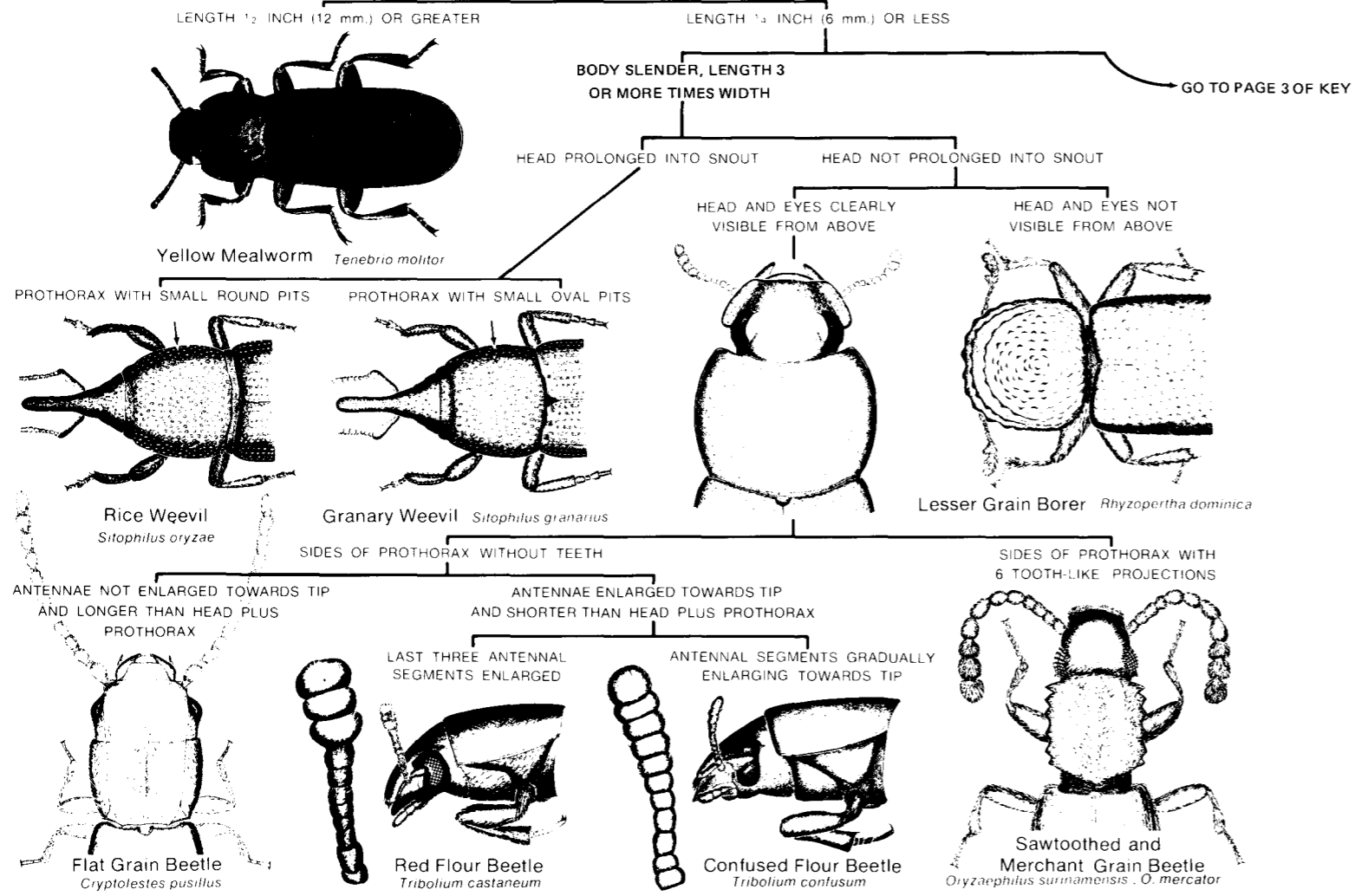


By Norman T. Baker, illustrations
Ronald A. Hellenthal, key
Phillip K. Harein, text

The mouth at the end of its snout is a useful tool for the adult granary weevil. This weevil is equipped to feed into kernels of grain or to chew holes into grain kernels to deposit eggs. The paired antennae, near the middle of the snout, and the compound eyes, near the base, help identify acceptable food, reducing this food to unacceptable waste as illustrated on the back cover.

Agricultural Extension Service
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Pictorial Key to Some Important Adult Beetle Pests of Stored Grain
(15 X hand lens is recommended for identification)



DESCRIPTIONS

AMERICAN SPIDER BEETLE

Mezipan americanum—Small, spiderlike beetles often infest grain in elevators and processing plants. They feed on organic matter, causing serious damage to stored foods. As a group, they are relatively resistant to low temperatures. As many as 500 species of spider beetles are known. The American spider beetle is a major species. Generally, spider beetles are of minor economic importance in Minnesota.

CIGARETTE BEETLE

Lasioderma serricorne (F.)—This beetle damages stored grain, but it may breed in various foods including rice, raisins, ginger, pepper, dried fish, and cereal products. The life cycle averages 50 days with three to six generations per year.

CONFUSED FLOUR BEETLE

Tribolium confusum Jacq. du-Val.—This beetle is probably the most important and best known of the group of insects known as "bran bugs." It closely resembles the red flour beetle; however, the confused flour beetle cannot fly. The confused flour beetle feeds on all cereal foods. It's frequently found in granaries, bins, and warehouses where whole grains or finished products are stored. This beetle may live 2 years and can survive low temperatures in unheated buildings. Under optimum conditions, four to five generations may be produced per year.

COWPEA WEEVIL

Callosobruchus maculatus (F.)—The cowpea weevil prefers to develop in cowpeas. However, it also attacks various kinds of beans and peas in storage. Although the cowpea beetle occurs throughout

the United States, it is more abundant in the south. The female cowpea weevil glues her eggs to exposed beans. Unlike the bean weevil, it does not eat out a cavity in the beans for her eggs.

DRUGSTORE BEETLE

Stegobium paniceum (L.)—This general feeder closely resembles the cigarette beetle. It breeds in grain and grain products. The life cycle is similar to that of the cigarette beetle. The adult drugstore beetle is about 1/10 inch long. It's reddish brown and densely covered with very short, light hairs.

FLAT GRAIN BEETLE

Cryptolestes pusillus (Schonherr)—This is a tiny beetle that feeds primarily on the germ of stored grains, especially wheat. It is readily attracted to high-moisture grains. During high moisture conditions, the flat grain

beetle may also develop in many cereal products.

GRANARY WEEVIL

Sitophilus granarius (L.)—This true weevil, together with the closely related rice weevil, is among the most destructive of all stored grain insects. The larvae develop inside stored kernels of whole grain, making them difficult to remove during milling. This weevil is primarily a pest of stored wheat, corn, and barley, especially in elevators, mills, and other bulk storage areas. The granary weevil cannot fly.

LESSER GRAIN BORER

Rhyzopertha dominica (F.)—This pest is most common in warm climates, but it can spread to any area in transported grain. It's only a problem of grain and not cereal products. Larvae develop inside whole kernels. The adults also damage grain. They bore into the kernels, leaving them covered with

powder from the chewed material. Under favorable conditions, a generation is completed in 30 days.

LESSER MEALWORM

Alphitobius diaperinus (Panz.)—The most favorable breeding area is in damp, moldy grain. The lesser mealworm is not a threat to grain that is sound and dry. Identity of the adult may be confused with that of the black fungus beetle. The main difference between the two is the coarsely punctured thorax of the black fungus beetle. Most poultry houses in Minnesota are infested with lesser mealworms feeding and breeding in feed, feces, and litter.

MERCHANT GRAIN BEETLE

Oryzaephilus mercator (Fauvel)—This beetle has habits and habitat similar to those of the saw-toothed grain beetle. *Oryzaephilus* beetles are general feeders. They usually follow the more directly destructive insects such as granary weevils.

RED FLOUR BEETLE

Tribolium castaneum (Herbst)—This beetle is similar to the saw-toothed grain beetle in habits and products it infests. It is a serious pest in flour mills and wherever cereal products and other dried foods are processed or stored. The red flour beetle is a strong flier. Like the confused flour beetle, the red flour beetle may impart a bad odor that affects the taste of infested products.

RICE WEEVIL

Sitophilus oryzae (L.)—The rice weevil is similar to the granary weevil in both appearance and habits. Its name is misleading since it infests other grains besides rice. Adult rice weevils can fly. In warm climates, they can cause widespread damage to corn, wheat, and other grains before harvest. Field infestations generally do not occur in Minnesota. However, postharvest infestations originate from grain shipped in or from already infested storages.

SAW-TOOTHED GRAIN BEETLE

Oryzaephilus surinamensis (L.)—Together with flour beetles, the saw-toothed grain beetle is one of the most common insects in stored grain and cereal products. The larvae develop in flour, cereal products, and many other dried foods. For this reason, it is a common pest not only in grain bins, but also in elevators, mills, processing plants, warehouses, and kitchens. In grain bins, it feeds on broken kernels and grain residues.

TROGODERMA SPP.

A group of beetles known as "dermestids" are natural scavengers. They feed on dried vegetable products and are frequently found in establishments handling grains and cereal products. The black carpet beetle, *Attagenus piceus* (Oliv.) is one of the most troublesome members. Another member, the khapra beetle, *Trogoderma granarium* (Everts) is a

relative newcomer to the United States. Fumigation programs have eradicated the khapra beetle in the United States. The dermestids include members who feed on animal matter or proteins, those who may breed on either vegetable or animal matter, and those who feed only on vegetable matter.

YELLOW MEALWORM

Tenebrio molitor L.—The adult beetle is shiny, dark brown. It's a strong flier that may be attracted to light. The yellow mealworm is generally confined to the northern United States. Larvae are nocturnal and often accumulate in moist, dark areas. There they prefer to feed on decaying grain or milled cereals, especially if these cereals are damp and moldy. The complete life cycle may require up to 2 years. The dark mealworm, *Tenebrio obscurus* (F.), is found in similar habitats and in equal numbers throughout the nation.

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Adult and immature stages of the Granary Weevil are evident in this x-ray of infested wheat kernels. Light colored spots within the kernels show areas already consumed. Both the weevils plus their waste products are serious contaminants of cereal products.

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