"Golden Tortoise Beetles"

Figure 1. Mottled tortoise beetle with associated leaf feeding injuries.

Scientific Names: *Charidotella sexpunctata bicolor* (F.) *(=Metriona bicolor)* **(Golden tortoise beetle);** *Deloyala guttata* (Olivier) **(Mottled tortoise beetle)**

Order: Coleoptera (Beetles)
Family: Chrysomelidae (Leaf Beetles)

Identification and Descriptive Features: A "gold bug" or "golden lady bug" are common descriptions of someone first seeing one of the golden colored tortoise beetles. They have a generally rounded body form and a similar size to some common lady beetles (about 5-6 mm length). Their body is domed, with somewhat flatter areas along the edges, somewhat resembling a safari hat. When disturbed they can press themselves close to the leaf surface with all appendages safely protected underneath, somewhat in the manner a tortoise can withdraw into its shell.

Figure 2 Golden tortoise beetle. Photograph courtesy Clemson University/BugWood IPM Images.

Figure 3. Mottled tortoise beetle larva and adult.

It is the coloration that is so striking and these beetles may be a brilliant gold. The golden tortoise beetle may be nearly uniformly gold, whereas some darker markings are always present on the mottled tortoise beetle. However, the color also varies with both species and the same insect may later appear more bronzed or even reddish with spots. The golden color is lost when the insect dies.

Distribution in Colorado: The golden tortoise beetle and mottled tortoise beetle can likely be found wherever its host plants, all members of the morningglory family (Convolvulaceae), can be found.

Life History and Habits: Winter is spent in the adult stage and the beetles move to host plants

in spring and mate. Field bindweed (*Convolvulus arvensis*) is likely an important early season host, being perennial and emerging in midspring. Later, morninglories and sweetpotato may be colonized.

Eggs are laid on leaves and the developing larvae feed on foliage, producing characteristic holes in the center of leaves. Tortoise beetle larvae are much less likely to be observed than the adults and have certain features that discourage closer inspection. Feeding on the underside of leaves, they are flattened, spiny insects with an elongated moveable fork at the end of the body. They also have an eversible anus that they use to deposit their excrement on the back, often mixed with old larval skins. These "peddlars" then carry with them a sort of moveable parasol that covers the body and helps deter potential enemies. When full grown them pupate on the plant, where they undergo transformation to the ultimate adult form. The pupal stage is also covered with the old larval skin and fecal matter.

Figure 4. Tortoise beetle larva ('peddlar') carrying old skin and debris on back.

Figure 5. Argus tortoise beetle being attacked by ants.

Adults emerge after a week or two and feed during late summer. They do not reproduce at this time and subsequently go into winter dormancy, hiding among plant debris or in other sheltered sites.

These golden colored tortoise beetle is usually brilliant metallic gold when first seen on a plant but fades quickly to a duller reddish brown beetle with spots upon death. Fading also can occur with the mottled tortoise beetle. This color shift is achieved by introducing, or withdrawing, moisture to the surface of the exoskeleton. When hydrated, a perfect reflecting surface is produced, but in the absence of the moisture the underlying colors become visible.

Related Species: A few other tortoise beetles occur in parts of Colorado, but none approach the vivid coloration of the golden tortoise beetle and mottled tortoise beetle Also occasionally found on morningglorry family (Convolvulaceae) plants in eastern Colorado are the **argus tortoise beetle**, *Chelymorpha cassidea* (F.), and the **striped tortoise beetle**, *Agroiconota bivittata* (Say). Other tortoise beetles known to occur in Colorado are the **blacklegged tortoise beetle**, *Jonthonota nigripes* (Olivier), and the **thistle tortoise beetle**, *Cassida rubiginosa* Muller.