

“Golden Tortoise Beetles”

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

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: By far, the most common of the golden colored species found in Colorado is the mottled tortoise beetle, which can likely be found wherever its host plants, all



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



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



Figure 3. Golden tortoise beetle. This beetle has not fully hydrated the exocuticle to create the reflective metallic coloration.

members of the morningglory family (Convolvulaceae), can be found. The golden tortoise beetle is only known from eastern Colorado, and similarly is found on morningglory family plants.



Figures 4a-c. Larvae of the mottled tortoise beetle ('peddlar') carrying old skins and feces over the back in a form of a "fecal shield".

this this metallic coloration can be controlled by the insect. The 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

Life History and Habits: Winter is spent in the adult stage and the beetles move to host plants in spring and mate. Only plants in the Convolvulaceae are host plants, and field bindweed (*Convolvulus arvensis*) is the most important plant used by these insects in Colorado. Being perennial and available early, field bindweed is the only important early season host; later in the season these insects may be seen on plants such as morningglory and sweetpotato.

Eggs are laid singly on leaves. 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 they 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.

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 beetles often have brilliant metallic gold coloration when first seen on a plant. However, production of

become visible. The insects may become dull when disturbed and when killed the metallic coloration is lost, bringing to the surface the background colors produced by pigments. In the golden tortoise beetle, they become reddish-brown, often marked with six black spots.

Related Species: A few other tortoise beetles occur in parts of Colorado, but none approach the mottled tortoise beetle and golden tortoise beetle for the display of brilliant metallic coloration, nor can alter colors as do the mottled tortoise beetle and golden tortoise beetle. Also occasionally found on morningglorry family (Convolvulaceae) plants in eastern Colorado are the **Argus tortoise beetle**, *Chelymorpha cassidea*, and the **striped tortoise beetle**, *Agroiconota bivittata*.



Other tortoise beetles known to occur in Colorado are the **blacklegged tortoise beetle**, *Jonthonota nigripes*, and the **thistle tortoise beetle**, *Cassida rubiginosa*. The latter is an introduced species that sometimes becomes locally common on Canada thistle.



Figures 5 a-c. Three common tortoise beetles associated with field bindweed. Top: Mottled tortoise beetle larva and adult. Middle: Striped tortoise beetle. Bottom: Argus tortoise beetle.

Whitney Cranshaw. July 2, 2020 revision.