

Minute Bug with Enormous Impacts on Insect Pests

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Orius spp. (Family Anthracoridae) are valuable natural enemies in cotton and abundant throughout the season. There are two species in Arizona, *Orius tristicolor* (A) and *O. insidiosus* (B), referred to as Minute Pirate Bugs (MPBs). Adult MPBs are tiny, 1/12–1/5 inch long. They stand out from the other insects in the bottom of a sweep net because their forewings are black with white patches that from a distance form an ‘X’ (E). The body is somewhat flattened and oval-shaped with a prominent beak for piercing soft-bodied prey and sucking body fluids (C & D). A MPB inserts its pale white eggs into plant tissue, so eggs are rarely visible. The red eyes of the embryo appear through the eggshell before hatching. The nymph resembles an adult except for coloration and lack of wings. The emerging nymph is shiny and almost colorless, turning greenish yellow after a few hours; older nymphs are amber colored to bright orange with red eyes (F).

MPB are one of the first beneficial insects to enter cotton each year. Both nymphs and adults are voracious generalist predators that search out and stalk their prey. They aggregate in areas of high prey density, moving into cotton from alfalfa early in the cotton season to feed on thrips. Later, MPB feed on mites, whiteflies, insect eggs, aphids, thrips, and small caterpillars. MPB occasionally feed upon pollen and plant nectar when their preferred prey (insects) are not available. Although they can survive without prey, their reproduction may be impaired.

The ratio of MPB to whitefly large nymphs is a good indicator of the biocontrol potential in a cotton system and can be used in whitefly management. This ratio is formed by the number of MPB (adults + nymphs) per 100 sweeps to whitefly large nymphs per leaf disc. When there are at least 5 MPB to 1 whitefly large nymph present in a field (5:1), a whitefly control spray may be deferred. Consult Vandervoet et al. (2014; see below) for more guidance on how to determine and interpret this and other predator to prey ratios.

MPB can be very susceptible to broad-spectrum insecticides, which may reduce the potential impact and value of these predators. Using selective insecticides, especially “Stage I” or fully selective materials recommended in our cotton IPM guidelines when needed, helps conserve MPB and other natural enemies in Arizona fields.

6/2014

Also see:

Ellsworth, P.C., J.C. Palumbo, S.E. Naranjo, T.J. Dennehy, R.L. Nichols. Whitefly Management in Arizona Cotton 2006. IPM Series No. 18. University of Arizona Cooperative Extension Bulletin, AZ1404, 5/2006. URL: <http://cals.arizona.edu/pubs/insects/az1404.pdf>

Mostafa, A.M. 2003. Beneficial insects in alfalfa fields. Forage Seed News 10 (2): 22–28

Wene, G.P. and L.W. Sheets. 1962. Relationship of Predatory and Injurious Insects in Cotton Fields in the Salt River Valley Area of Arizona. J. Econ. Entomol. 55: 395–398

Vandervoet, T., P.C. Ellsworth, L.M. Brown, S.E. Naranjo. 2014. Making Whitefly & Natural Enemy Counts. University of Arizona Cooperative Extension IPM Short. URL: <http://ag.arizona.edu/crops/cotton/files/PredatorToPreyRatios.pdf>

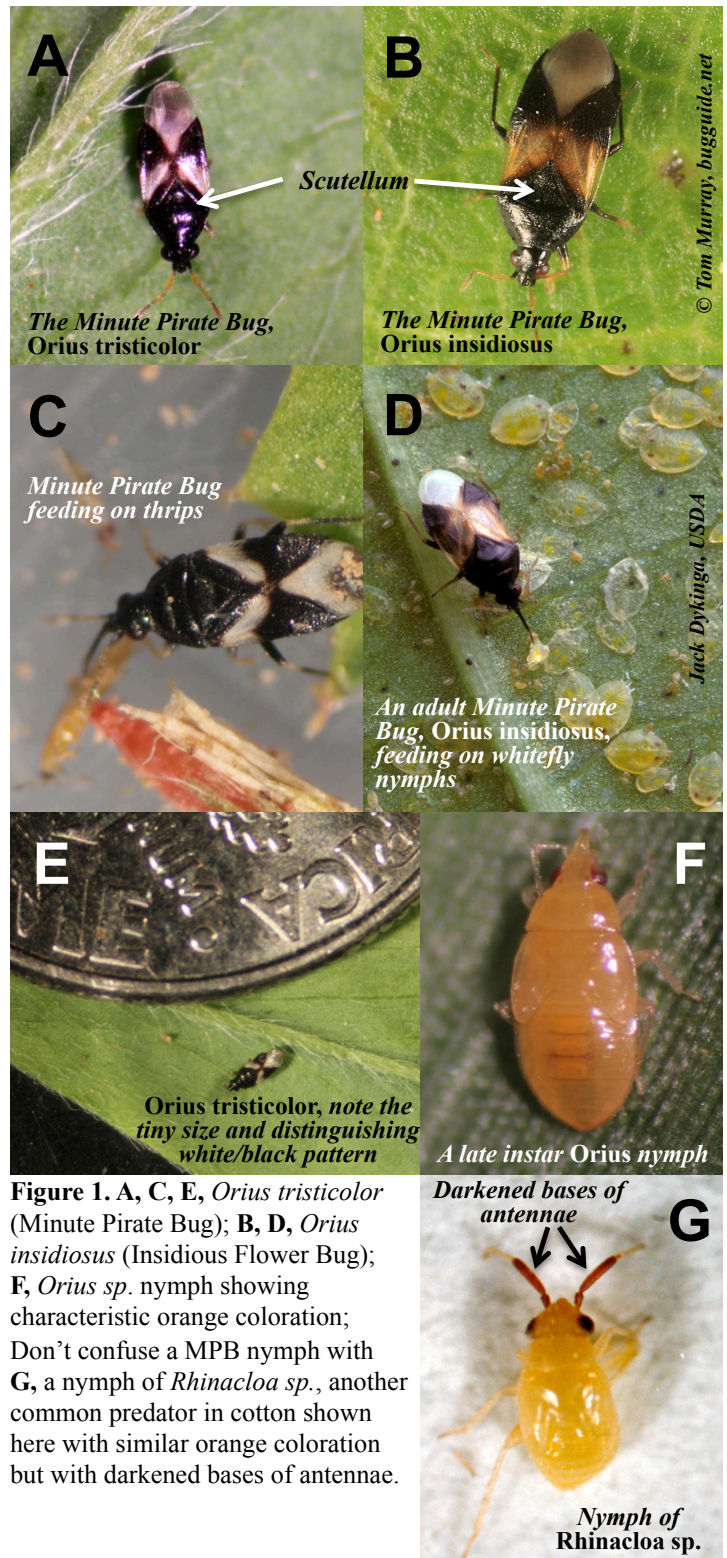


Figure 1. A, C, E, *Orius tristicolor* (Minute Pirate Bug); B, D, *Orius insidiosus* (Insidious Flower Bug); F, *Orius* sp. nymph showing characteristic orange coloration; Don't confuse a MPB nymph with G, a nymph of *Rhinacloa* sp., another common predator in cotton shown here with similar orange coloration but with darkened bases of antennae.