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The Minute Pirate Bug (*Orius*)

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Introduction: Minute pirate bugs (also known as flower bugs) are small, fast-moving predacious insects in the order Hemiptera and family Anthocoridae. Several species of minute pirate bugs in the genus *Orius* occur in the U.S., with the dominant species in Virginia being the insidious flower bug, *O. insidiosus*.

Description: Adults are small (2-3 mm long), oval-shaped, black bugs with white markings on the wing patches. The wings are longer than the body and extend beyond the abdomen. Nymphs are tiny and tear drop-shaped. Hatchlings are colorless soon darkening to yellow and then brown as they grow and molt. Both adults and nymphs have a piercing-sucking beak, which is used for sucking juices from the bodies of prey. All stages move fast.

Figure 1 *Orius insidiosus* feeding on an egg. John Ruberson, Kansas State University, Bugwood.org

Life cycle: Multiple generations of *Orius* develop each year. The bug can complete its life cycle in ~3 weeks at 21°C (70°F); however, development can be slowed by cooler temperatures or lack of prey. Adult females deposit eggs within plant tissue ~2-3 days after mating. Upon hatching, nymphs undergo five instars after which the fifth instar develops into an adult with fully developed wings. Adults live for ~3-4 weeks. When day lengths are less than 13 hours during the fall, *Orius* will undergo diapause (a quiescent resting state) during the winter.

Food: *Orius* feed on virtually any soft-bodied insect close to their size or smaller. They are particularly fond of thrips, mites, aphids, whiteflies, leafhoppers, many kinds of insect eggs, and tiny newly-hatched caterpillars. Both immature and adult bugs can consume numerous prey daily. For instance one study estimated the prey consumption of *Orius* to be ~30 spider mites per day. The bugs will also feed on pollen in flowers when prey is not available.

Figure 2 *Orius* sp. nymph. Adam Sisson, Iowa State University, Bugwood.org

Habitat: *Orius* are found in a wide range of agricultural crops and natural habitats. They are attracted to flowers and to plants that have soft-bodied prey insects. *Orius* also are frequently found in the silks of corn. Since *Orius* feed upon pollen when prey are not available, they are commonly found where flowering shrubs and weeds are located.

Biological control with *Orius*: *Orius* are important biological control agents. They are abundant components to the guild of natural enemies that inhabit many agroecosystems. Large enough populations of *Orius insidosus* alone can maintain densities of flower thrips below damaging levels in peppers. They also have been shown to dramatically reduce the number of eggs of corn earworm in sweet corn. Minimizing applications of broad spectrum pesticides such as organophosphates, carbamates, and pyrethroids, by using economic thresholds rather than preventative spraying and/or using more narrow-spectrum insecticides that have reduced toxicity to the bugs can be extremely helpful in maximizing the biological control potential by *Orius*.


Figure 3 *Orius* in cotton bloom. Ronald Smith, Auburn University, Bugwood.org

Maintaining beneficial plant habitats or farmscaping can help increase *Orius* populations. Farmscaping uses a variety of techniques to attract and encourage beneficial organisms by growing hedgerows, insectary plants, cover crops and installing water reservoirs. *Orius* are also available commercially for mass release, particularly in greenhouse settings.

Information sources:

Farmscaping to Enhance Biological Control. National Sustainable Agriculture Information Service. http://attra.ncat.org/attra-pub/farmscape.html.

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