

Insidious Flower Bug, Minute Pirate Bug *Orius insidiosus* Say (Insecta: Hemiptera: Anthocoridae)¹

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Introduction

The insidious flower bug, *Orius insidiosus* Say, is a common predator of a wide variety of small, soft-bodied arthropods (Figure 1). *Orius insidiosus* is in the family Anthocoridae. Species of the genus *Orius* are commonly referred to as minute pirate bugs, while the common name for *Orius insidiosus* is the insidious flower bug (Funderburk 2009). *Orius insidiosus* is an important predator of many economically important pests (Lattin 1999, Funderburk et al. 2000, Silveira et al. 2004, Xu et al. 2006). In Florida, *Orius insidiosus* receives recognition for being the key predator of a major economic pest, the western flower thrips, *Frankliniella occidentalis* (Funderburk et al. 2000, Funderburk 2009).



Figure 1. The insidious flower bug, *Orius insidiosus* Say, feeding on a thrips larva.

Credits: Lyle J. Buss, UF/IFAS

Distribution

Orius insidiosus is most common in the eastern United States, although it occurs across the southwestern United States to Utah and southern California, then south into Mexico and Central and South America (Herring 1966). It also occurs in Cuba, Puerto Rico, and many other islands of the West Indies (Herring 1966).

Description

Eggs

The eggs of *Orius insidiosus* are 0.4 mm long (Green Methods 2016). Adult females deposit eggs within plant tissue (Lattin 1999).

Nymphs

The nymphs of *Orius insidiosus* are less than 3 mm in length, wingless and teardrop-shaped (Lattin 1999). They range from yellow-orange to brown in color (Wright 1994) (Figure 2). The first instar is slightly yellow and later instars become progressively darker in color (Funderburk 2016).

Adults

The adults of *Orius insidiosus* are approximately 3 mm long (Lattin 1999). They are oval and black with white wing patches. The wings extend beyond the abdomen. Adults have a long proboscis used for sucking plant juices and consuming prey (Wright 1994) (Figure 3).

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Figure 2. Nymph of *Orius insidiosus* Say.
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Figure 3. *Orius insidiosus* Say adult.
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Life Cycle and Biology

Orius insidiosus has multiple generations per year. The total developmental time from egg to adult is approximately three weeks (Wright 1994). Adult females lay their eggs within plant tissues (Lattin 1999). Eggs hatch in six to ten days (Funderburk 2016). *Orius insidiosus* undergoes incomplete metamorphosis, and nymphs develop through five instars (Wright 1994). Development of the nymph requires at least ten days, depending on temperature (Funderburk 2016). Adults live for approximately three to four weeks (Wright 1994, Lattin 1999). Nymphs and adults are highly mobile. When day length is less than 14 hours, adults will enter a quiescent resting state (Ruberson et al. 2000). They are active from March to November in northern Florida and year-round in southern Florida (Funderburk 2016).

Hosts

Orius insidiosus is found in a wide range of agricultural crops and natural habitats (Wright 1994). It is attracted to flowers and plants that have soft-bodied insects feeding on them (Wright 1994). Pollen and plant juices are known to be used as food when prey is scarce (Lattin 1999). Nymphs

and adults feed on a variety of small prey, including thrips, mites, aphids, whiteflies, scale insects, small caterpillars, and eggs of various insects (Lattin 1999).

Although a generalist predator, *Orius insidiosus* has a preference for flower thrips (Thysanoptera: Thripidae) (Baez et al. 2004). In Florida, it preys on the adult and larval stages of many species of thrips, including *Frankliniella occidentalis* (Pergande), *Frankliniella tritici* (Fitch), and *Frankliniella bispinosa* (Morgan). *Frankliniella occidentalis* larvae are the preferred prey of *Orius insidiosus* (Funderburk et al. 2000, Baez et al. 2004).

Economic Importance

Species of *Orius* have been successfully used as biological control agents against *Frankliniella occidentalis* in chrysanthemum (Silveira et al. 2004), cucumber (Chamber et al. 1993), sweet pepper (Funderburk et al. 2000), eggplant (Funderburk 2009), and strawberries (Frescata and Mexia, 1996). Funderburk et al. (2000) reported that the ability of *Orius insidiosus* to suppress populations of thrips in Florida field-grown pepper exceeded the suppressive effects of weekly insecticide applications. At a ratio of one predator to 180 thrips, thrips populations were suppressed and, at a ratio of one predator to 40 thrips, thrips populations were controlled below economic thresholds (Funderburk 2009).

A study by Xu et al. (2006) found that *Orius insidiosus* can suppress populations of the two-spotted spider mite, *Tetranychus urticae* Koch (Arachnida: Acari: Tetranychidae), on bean plants. Suppression of the two-spotted spider mite was achieved when two bugs were released for control of an initial density of 40 spider mites. *Orius insidiosus* is also an important predator of soybean aphid, *Aphis glycines* (Hemiptera: Aphididae) in soybean fields (Lattin 1999).

Applications of most broad spectrum insecticides, such as pyrethroids, neonicotinoids, organophosphates, and carbamates, eliminate *Orius insidiosus* populations (Funderburk et al. 2000). However, *Orius insidiosus* can be conserved through the careful use of reduced-risk insecticides and the adoption of economic thresholds rather than preventative insecticide applications (Funderburk et al. 2000, Demirozer et al. 2012). In addition, maintaining beneficial plant habitats and refugia plantings that serve as hosts for *Orius insidiosus* can also help increase and maintain populations (Funderburk 2009, Demirozer et al. 2012).

Orius insidiosus is commercially available for mass release. Release rates vary among the type of crop and the level of thrips infestation (Silveira et al. 2004). For horticultural

crops, release rates of one to two predators/m² per release are usually used (Sanchez et al. 2000, Silveira et al. 2004). *Orius insidiosus* is shipped in the adult stage. Commercial producers of *Orius insidiosus* recommend its use in greenhouses, fields, interiorscapes, orchards, and gardens.

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