FOLIAR PREDATORS

INSECTS THAT EAT OTHER INSECTS

In Lesson 2, we learned that species in the order Hemiptera have piercing-sucking mouthparts, which many small Hemiptera use to feed on plants. But you can't tell for sure whether an insect is beneficial or a plant pest simply by looking at its mouthpart. Hemiptera also includes predators like damsel bugs (family Nabidae, or nabids) and several species of predatory stink bugs (family Pentatomidae).

Unlike the ground beetles profiled in Lesson 3, beneficial insects in Hemiptera are primarily foliar predators. (A foliar predator is an insect that spends its time on the leaves or branches of plants—and also preys on other insects who are on the plants.) Foliar predators have two main strategies: sit-and-wait and active pursuit. Sit-and-wait predators—and some of their prey—excel at camouflaging themselves with plants.

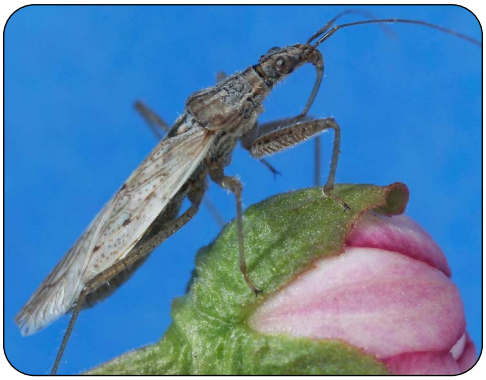

Photo 4-1. This damsel bug's mouthpart is curved down and backward to make it easier for it to capture and eat other insects. (Photo by Joseph Berger, Bugwood.org)

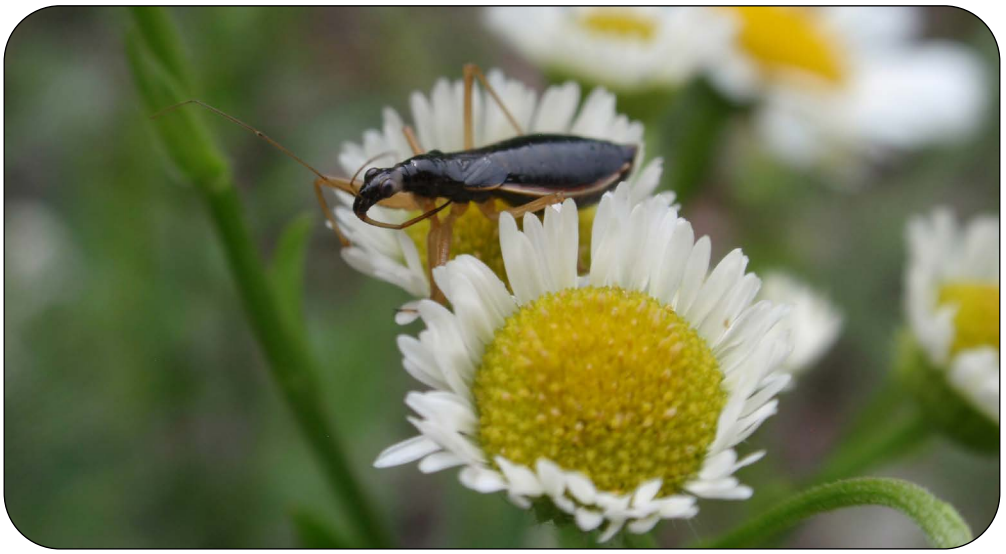

Photo 4-2. A dark brown damsel bug (*Nabis subcoleoptratus*) waiting for prey on a flower. (Photo by Nate Walton, MSU Extension)

In this lesson we'll explore how damsel bugs feed on other insects.

Damsel bugs aren't picky about what they eat, chowing down on small caterpillars, mites, insect eggs, and soft-bodied adult insects like leafhoppers and small caterpillars. Occasionally, they will feed on other beneficial insects such as minute pirate bugs and assassin bugs. In your vegetable garden, damsel bugs will hunt pests that eat plants in the tomato family (Solanaceae) and cucumber family (Cucurbitaceae).

IDENTIFYING DAMSEL BUGS

All damsel bugs (Photo 4-1) have:

- **Narrow bodies**
- **Curved beaks or piercing-sucking mouthparts with four segments**
- **Slightly enlarged front legs**
- **Short veins on the ends of their wings**

While most damsel bugs are light grey, a few species have black thoraxes and abdomens (Photo 4-2). Damsel bugs undergo simple metamorphosis, and both the nymphs and adults can feed on other insects.

Thirteen species of damsel bugs are found in Michigan (Swanson, 2012). The two most common species, *Nabis subcoleoptratus* and *Nabis roseipennis*, are distributed throughout the state. Damsel bugs are active in Michigan from June through September and have multiple generations each season. Females lay up to 200 eggs at a time that develop into nymphs in 8 to 12 days.

Damsel bugs attack prey with their mandibles (jaws). At only 0.1 inch to 0.5 inch long, they don't eat hundreds of food items a day. For example, Snyder and Wise (2001) found that a typical damsel bug only eats about four squash bug nymphs a week. But if you have hundreds, or even just dozens, of damsel bugs and other, closely related predatory Hemiptera in your garden eating a few insects each day, they will gradually reduce the insect pest population.

Assassin bugs (family Reduviidae) are another beneficial insect that behave like damsel bugs

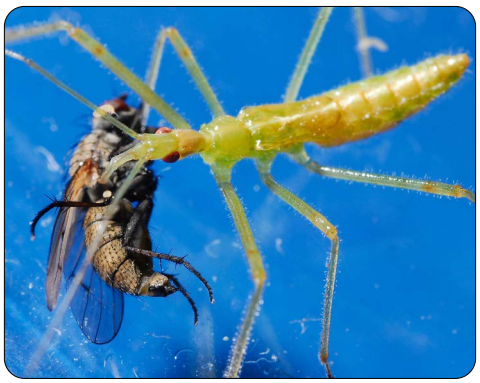

Photo 4-3. An assassin bug (*Zelus luridus*) adult attacking a fly. (Photo by Joseph Berger, Bugwood.org)

(Photo 4-3). The main physical difference between the two is that assassin bugs have beaks with three segments and damsel bug beaks have four.

Damsel bugs are small enough that larger predators like ground beetles and wolf spiders sometimes eat them. This is called *intraguild predation*, which is when predators who compete for the same prey kill—and sometimes eat—each other instead of the prey. Intraguild predation is why having more predators in an environment doesn't always equal better natural pest control.

FINDING DAMSEL BUGS

Damsel bugs are hard to find in the garden because they prefer to stay in brushy or grassy areas close to or just above the ground and wait for their prey to come to them. Some gather around porch lights at night. Nabids fly, and some have been found at an altitude of 1,000 feet or higher after being caught by the wind (Lattin, 1989). They spend the winter in leaf litter.

Growing wildflowers or leaving a small undisturbed area in your garden encourages damsel bugs and other beneficial insects to stick around.

Vegetable and field crop producers often catch damsel bugs in insect sweep nets when scouting for pests. As part of the natural pest control system, damsel bugs should be left alone if you find them in your garden.

WHAT'S NEXT

Next week we'll learn why, for some insects, there's safety in mimicking others.

FIND OUT MORE: REFERENCES & RESOURCES

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