UTAH PESTS fact sheet

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Beneficial True Bugs: Damsel Bugs

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What you should know

- Damsel bugs are generalist predators that consume a wide variety of prey including insect eggs, caterpillars, mites, and aphids.
- These beneficial bugs can be found in landscapes, gardens, and many field crops.
- Damsel bugs are not sold commercially but reducing the use of broad-spectrum insecticides and providing shelter and food can enhance their populations.

Predatory insects can provide natural pest control by eating unwanted pests. This beneficial service is known as biological control. Predatory insects are one factor that maintains pest populations at non-damaging levels. By conserving and encouraging predatory insect populations, plants can be protected from pest attack and excessive damage.

Damsel bugs are predatory "true bugs" in the family Nabidae (Fig. 1). There are about 500 recognized species of damsel bugs worldwide. Being a true bug, damsel bugs have piercing-sucking mouthparts and incomplete metamorphosis (egg, nymph, and adult stages). Nymph and adult damsel bugs are predatory and eat many different insect and mite species. Damsel bugs kill their prey immediately, and suck them dry, eating many prey individuals to complete development. Damsel bugs can be found in large agricultural fields to small backyard gardens. Damsel bugs are one of the most numerous insect predators in Utah alfalfa fields.

DESCRIPTION

Damsel bugs are slender, soft bodied insects that have long antennae and legs. Their head is narrow and they have bulging eyes. The damsel bug mouth is long, needle-like, and tucked under the head and body at rest, but is flexible and can be positioned in front of the head when feeding. The front legs of damsel bugs are slightly enlarged and modified for grasping their prey (Fig. 1), similar to a praying mantis. The most common species in Utah vary in color from pale yellow to dull brown/grey.

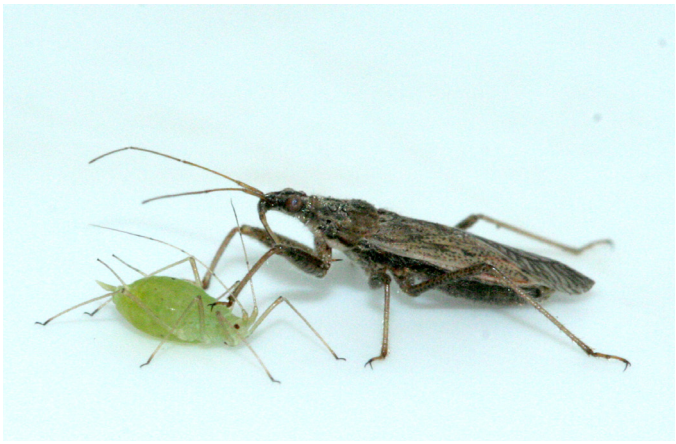

Fig. 1. Adult damsel bug grasping an aphid

Adults are 8-12 mm (1/3 to 1/2 inch) long with 2 pairs of fully functional wings (forewings and hindwings). The forewings are hardened at the base and membranous at the tip. At rest the forewings cross over the back, one over the other, creating a triangle pattern behind the pronotum ("shoulders"), pointing toward the rear (Fig. 2). These wing features are characteristic of true bugs. A distinguishing characteristic of adult damsel bug wings is the presence of a number of small cells lining the margin of the membranous part of the wing (a hand lens will help to see the cells; Fig. 2).

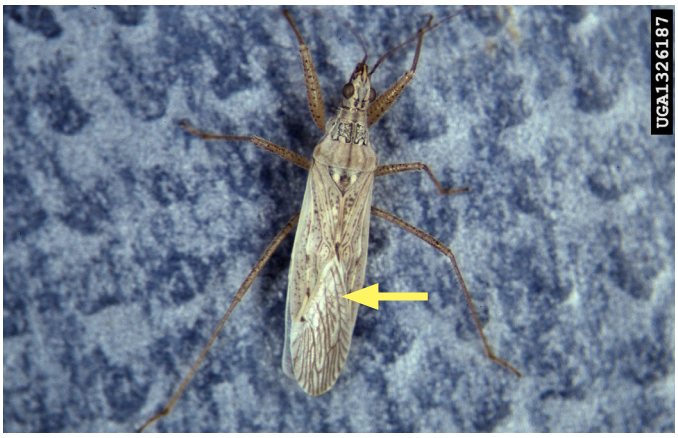

Fig. 2. Damsel bug wing characteristics include small cells bordering the wing. A small cell is indicated by the arrow[1]

Nymphs (juveniles) look like the adults, only smaller and without wings. Nymphs go through five instars (juvenile stages) that range in size from 3-8 mm (1/8 to 1/3 inch) in length. With each successive instar they shed their skin, develop wing pads, and grow larger (Fig. 3).

Eggs are white, oblong, flattened at the base and deposited in plant tissue and stems.

Fig. 3. Damsel bug nymph[2]

Look-alikes: Be aware that other "true bugs" may look like damsel bugs. These include assassin bugs (also a predatory insect), chinch bugs, and stilt bugs (Fig. 4). Small nymphs may also resemble ants.

LIFE HISTORY

Damsel bugs have multiple generations per year and are present throughout the plant growing season. This varies, however, among damsel bug species and within a plant habitat. Damsel bugs overwinter as adults in sheltered sites, weedy areas, and within perennial crops and shrubs. Adults become active in spring and begin depositing eggs in plants. A female damsel bug can lay up to 200 eggs which hatch in 8 to12 days depending on temperature. Nymphs emerge and develop over 3 to 4 weeks and may be found taking cover in plant debris, at the base of plant stems or in cracks at the soil surface. Peak damsel bug activity is in mid to late summer.

Foraging: Adult and nymph damsel bugs will eat aphids, mites, caterpillars, other insect nymphs, larvae and eggs, and occasionally feed on other predators.

Damsel bugs ambush and actively search for prey. They pierce prey with their needle-like mouth and suck up the body contents. Sometimes just the presence of a damsel bug can change the behavior of their prey. For example, the prey may stop feeding or even fall off of the plant. Note that damsel bugs do supplement their diet by feeding on plant tissue, but feeding is minor.

PROMOTING BENEFICIAL INSECTS

Damsel bugs cannot be purchased through commercial suppliers but they are very common in most landscapes, gardens and fields. There are several strategies that can be used to encourage damsel bug populations.

Conservation: Many pesticides are just as or more harmful to damsel bugs as they are to pest insects. Damsel bugs can be conserved by eliminating or reducing pesticides that are toxic to insect predators. Consider using "soft" or selective pesticides that target the pest more specifically and are less harmful to predator populations. Do some research and read the pesticide label for these attributes.

Encourage damsel bug populations and enhance their activity by providing them alternative places to hide, eat, and live. In general, habitats with diverse plantings appear to be more attractive to predators. Consider planting cover crops or flowering plants that may provide alternative food sources, shelter, and overwintering sites.

Keep an eye out for damsel bug populations when sampling and monitoring pests and be sure to incorporate them in an integrated pest management (IPM) program.

Fig. 4. Stilt bugs (left) and assassin bugs (right) can look similar to damsel bugs[3,4]

[1,3,4]Images courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org
[2]Image courtesy of Bradley Higbee, Paramount Farming, Bugwood.org