

## **Beneficial Insects Sheet 4 <sup>1</sup>**

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**Damsel bugs** ( Plate 1 ). These are small, slender insects, 1/4" to 3/8" long, and yellow to brown with prominent eyes. They are important predators, feeding on a wide variety of insects including aphids and caterpillars.

**Minute pirate bugs** ( Plate 2 ). These insects are about 1/8" long and black with white markings. There are about 70 North American species, and they prey on many small insects and eggs. One species is an important predator on the eggs and larvae of the corn earworm.

**Tiger beetles** ( Plate 3 ). These insects are active, usually metallic or iridescent, and 1/2" to 3/4" long. They have well-developed jaws, or mandibles, that are easy to see. These beetles can run or fly rapidly, making them difficult to approach. The adult beetles feed on a variety of insects. The larvae live in vertical burrows in the soil, where they capture insects and pull them into their tunnels.

**Tachinid flies** ( Plate 4 ). These flies, parasitic in the larval stage, are a valuable asset in keeping many of our serious pests in check. There are about 1,300 North American species. Many tachinids

resemble the common house fly, but are a little larger. Others are bee-like or wasplike in appearance.

Most tachinids deposit an egg directly on the body of their host, and it is not uncommon to find caterpillars and other insects with several eggs on them ( Plate 5 ). Upon hatching, the larvae burrow into the host and feed internally. Other tachinids lay their eggs on foliage, and the eggs hatch inside the host insect after it eats the foliage.

Still other tachinids, such as the one that parasitizes mole crickets, locates the mole cricket by its song and deposits live larvae on or near the mole cricket. This particular fly was imported from South America and has been released as a biological control agent at many locations in Florida.

**Parasitic nematodes** ( Plate 6 ). Some nematodes are beneficial and attack harmful insects, especially soil-inhabiting species. One example is the nematode that is parasitic on mole crickets. It was introduced from South America and has been released throughout Florida.

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**Beneficial pathogens.** Microbial agents, or pathogens, are extremely important in naturally occurring biological control. Beneficial pathogens are very diverse and include fungi, viruses and bacteria.

**Fungi** ( Plate 8 ). The body of an insect infected with an entomophagous fungus becomes mummified and covered with white, grey, tan, pink or green powdery-looking mold ( Plate 7 ). As the fungus disease progresses, the insect disappears as the mycelium expands over its body. One common fungus, *Metarhizium*, attacks mole crickets ( Plate 9 ) and other soil-inhabiting insects. When a fungus disease appears and weather conditions are favorable, an insect population can be drastically reduced in a short time.

**Viruses.** Insects infected with a viral disease rarely show symptoms of infection until just before death. At this time dramatic changes occur, such as the body darkening and becoming shiny. Viruses are usually very host-specific, and pest populations can be suppressed without harming beneficial insects ( Plate 10 ).