

## True Bugs: Treehoppers, Leafhoppers, and Planthoppers

by Danae Wolfe

**O**F ALL THE insects in the world, I think true bugs are some of the most beautiful. From the whimsical adornments protruding from the heads of treehoppers to the psychedelic colors on the wings of some leafhoppers, true bugs are often ornately decorated. Unfortunately, since many true bugs feed on our favorite garden vegetables and ornamental plants, gardeners and farmers alike sometimes harbor negative feelings towards these insects. After all, many are considered pests. But a closer look will shed light on these bugs that might make you appreciate them. Let's hop in.

### HEMIPTERANS

Hemiptera is the insect order that includes true bugs. True bugs are characterized by a common arrangement of piercing, sucking mouthparts, and while most species are sap suckers, a few are known to feed on small insects like aphids. Some are specialists, feeding only on particular species of plants and others are generalists and can feed on a diversity of shrubs, trees, and herbaceous plants. Species like the potato leafhopper are agricultural pests because they can transmit plant diseases and damage crops.

Some of the most prominent true bugs include treehoppers, leafhoppers, and planthoppers. These insects are most abundant in tropical and subtropical regions, but we can find a variety of these hopping insects in our North American gardens. Like all true bugs, treehoppers, leafhoppers, and planthoppers are hemimetabolous—that is, they undergo incomplete metamorphosis. Their life cycle includes eggs, nymphs, and adults. Eggs are typically laid on the undersides of leaves or on the stem of a plant. The nymphs hatch from the eggs and go through several stages of develop-

ment before reaching adulthood.

Immature true bugs often look like smaller versions of the adults, though in some species, nymphs bear fanciful defenses like spikes or waxy filaments. Adults are typically active during the warmer months of the year and can be

their home in North America. Treehoppers often congregate on the tips of new growth on trees and other plants.

### LEAFHOPPERS

Leafhoppers belong to Cicadellidae, a family characterized by insects with long,



While some leafhoppers blend into plants, others, like candy-striped leafhoppers (*Graphocephala coccinea*), boast brightly colored wings.

seen climbing or hopping from plant to plant. When disturbed, the insects use their hindlegs to leap away from harm.

### TREEHOPPERS

Treehoppers are a large family (Membracidae) of very small insects. They are typically less than a half-inch in length, and many species have a distinctive profile, with a projection on the top of their head that gives them the appearance of having a hump or horn. There are more than 3,000 known species of treehoppers in the world, with over 250 species making

slender bodies and their ability to quickly hop from plant to plant. A short walk through your yard or garden is almost sure to reveal leafhoppers bounding away from your footsteps. These insects are usually less than a half-inch in length and many species are brightly colored or have intricate patterns on their wings. There are over 20,000 known species of leafhoppers throughout the world with 3,000 species in North America.

### PLANTHOPPERS

Fulgoroomorpha is an infraorder of in-



Left: Planthoppers like these two-striped planthoppers (*Acanalonia bivittata*) can camouflage themselves as small leaves and thorns on plants. Above: Ants sometimes collect honeydew secretions from treehoppers—such as from the *Entylia carinata* nymph shown here—in a symbiotic relationship with the bug.

sects that includes a diverse group of bugs known as planthoppers, lanternflies, and froghoppers. If you've ever seen what appeared to be spit on your garden plants, then you've seen a planthopper. This frothy substance is a secretion created by spittlebugs, which are a type of planthopper. Spittlebug nymphs encase themselves in these frothy masses of bubbles as a form of protection and insulation. Other planthopper nymphs produce waxy strands from their abdomen that serve several practical functions, including helping to conceal the bugs from predators and drawing honeydew,

or waste, away from the insect's body.

### SYMBIOSIS

Some species of treehoppers, leafhoppers, and planthoppers have a mutually beneficial relationship with ants. As the true bugs feed on plant sap, they secrete honeydew as a byproduct. Honeydew is a sugary substance that can attract unwanted predators like wasps. But ants collect the honeydew as a food source and, in return, protect the bugs to help keep their environment clean. This relationship is beneficial to both the treehoppers and the ants, as it allows both species to thrive.

### MATERNAL CARE

While most species of insects lay eggs and hope for the best, others, like the oak treehopper, take special care of their offspring. After laying eggs, female oak treehoppers stay with their young throughout their entire development—a rare characteristic among insects. Some studies have shown that the mother treehopper will go as far as to sacrifice herself in an effort to protect her children. She is also known to rear up on her front legs and snap her hindlegs together as a warning to predators like wasps.

### CONTROL

In many cases, the presence of treehoppers, leafhoppers, and planthoppers in the garden should not be cause for concern. In fact, you might find it difficult to spot these insects thanks to their small size, stealthy camouflage, and ability to mimic leaves, thorns, and even other insects. But if you are faced with a hopper problem, the bugs can be easily dislodged from plants with a well-directed blast of water from a hose. For more problematic infestations, contact your county Extension agent for recommendations on control.



Female oak treehoppers (*Platycotis vittata*) care for their young from the time they lay eggs until their offspring fully mature and leave the colony, a rare characteristic among insects.

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