



Lorry Dunning

Damsel bugs

useful as predators but need help

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The Sacramento Valley of northern California annually produces 10 percent of California's 1.2 million acres of hay alfalfa. This important livestock feed crop is frequently damaged by a complex of insect pests including the Egyptian alfalfa weevil, *Hypera brunneipennis* Boheman, and the western yellow-striped armyworm, *Spodoptera praefica* (Grote), which sometimes require insecticide treatment. As the first step in improving the pest-management program for this crop, we determined which insect predators were present in northern California hay alfalfa, their abundance, and their range.

One of the most abundant groups of insect predators in insecticide-treated hay alfalfa fields is the Hemiptera. To determine the numbers and seasonal influences on these predators in northern California hay alfalfa, we made two types of surveys. The first, conducted in 1973, was an extensive area survey covering the major producing counties of Butte, Colusa, Glenn, Sutter, and Yolo. The second was an intensive three-year local survey conducted in Yolo County from 1972 to 1975.

Thirty-one species representing 11 families of Hemiptera were collected in the two surveys. The total included 14 carnivorous and 17 herbivorous species. In many cases the division into herbivore or carnivore is not distinct, because some carnivores, especially *Geocoris* spp., frequently take plant juices, and herbivores, such as *Lygus* spp., may prey on other insects.

The five predaceous species in the genera *Orius* (one species), *Geocoris* (two species), and *Nabis* (two species) comprised 72 percent of the 49,054 specimens collected in the intensive survey (see table). During July, these five species reached a density of 18 individuals per square foot, which makes them the most abundant and important group of insect predators in alfalfa under present management conditions.

The only other common hemipterans found were the lygus bug complex (*Lygus hesperus* Knight and *L. elisus* Van Duzee), which are important pests. This group constituted 27 percent (13,098 individuals) of the intensive survey total. All other species in these surveys were considered visitors; they were rarely found and were collected only as adults, which indicates that they do not normally feed and reproduce in alfalfa fields. Possible exceptions are the seed bugs, *Peritrechus tristis* Van Duzee and *Embelethis vicarius* Horvath, which may feed on weed seeds present in the field.

Species composition differed little among the surveyed counties. Most of the species

