

## Terrestrial Invertebrates

# Aphids, Hoppers, Whiteflies, Mealybugs, Scale Insects

Order Homoptera

### ORDER INCLUDES:

6 Native Families  
38 Native Genera  
393 Native Species  
393 Endemic Species

**GENERAL INFORMATION:** Homoptera is a large and diverse order, particularly rich in Hawai'i. All members of the order are phytophagous and feed on sap from plant tissue. The most specious families in Hawai'i include: Cicadellidae, Cixiidae and Delphacidae; undescribed species likely occur in each family. Unfortunately, even in these diverse families, the constituent species are generally represented by few specimens, and their life history is poorly known. As an example of the diversity of Hawaii's leaf and tree hoppers, three endemic species are outlined. The endemic genus *Nesophrosyne* (Family: Cicadellidae) is comprised of 62 described species and subspecies. All are likely endemic to individual islands, and most species depend on a narrow range of host plants. Eighty-two described species and subspecies comprise the endemic genus *Nesosydne* (Family: Delphacidae). All are likely endemic to individual islands, and most species depend on a narrow range of host plants. The endemic genus *Oliarus* (Family: Cixiidae) is comprised of 82 described species and subspecies, most of which are endemic to a single island. Unlike the previous genera, members of this genus are not dependent on specific host plants and are found in caves.

**DISTRIBUTION:** Members of the order Homoptera are found on all the MHI.

**ABUNDANCE:** As a group unknown. A lack of systematic surveys prevents any population estimate. However, the loss and degradation of native habitats, especially the loss of native host plants, likely means that species within the order are declining. Species that are dependent on plant species of dryland forests, as in the genus *Dictyophorodelphax*, are believed to be declining because of the almost total loss of native dry forests. The most abundant species appear to be found in the genus *Nesophrosyne* and their tolerance to non-native ants (Formicidae) likely explains their abundance.

**LOCATION AND CONDITION OF KEY HABITAT:** True bugs are a very ecologically diverse group and occur in most terrestrial habitats. Key habitat requirements of individual species are poorly known.

**THREATS:**

- Habitat loss and degradation due to conversion for agriculture, logging, grazing and soil disturbance by a suite of non-native ungulates, and the introduction of invasive plants.
- Loss of native host plants.
- Insufficient information, especially for rare species, hampers conservation efforts.
- Predatory non-native ants.
- Non-native parasitoid wasps (Vespididae) may adversely affect some species in the family Coccoidea.
- Biocontrol agents to control the non-native two-spotted leafhopper (*Sophonia rufofascia*) and glassy winged sharpshooter (*Homalodisca coagulata*) have the potential to adversely affect native members of the family Cicadellidae.

**CONSERVATION ACTIONS:** The goals of conservation actions are not only to protect current populations and key breeding habitats, but also to establish additional populations, thereby reducing the risk of extinction. In addition to common statewide and island conservation actions, specific management directed toward homoptera should include:

- Conduct surveys to determine distribution and abundance of known homoptera and to document and identify new species.
- Outplanting of native host plants that support rare Homoptera.
- Preserve, maintain, and restore habitats supporting existing populations.

**MONITORING:**

- Continue monitoring the status of known populations to detect declines in native species and to detect new non-native species.

**RESEARCH PRIORITIES:**

- Initiate studies to determine species' distributions to determine areas supporting large numbers of native species.
- Initiate efforts to locate and identify new species.
- Initiate studies to determine the effects of biocontrol organisms on species in the family Cicadelliade.
- The genus *Nesophrosyne* (Cicadellidae), which is comprised of many undescribed species that depend on rare native host plants, should be reviewed and revised as appropriate.

**References:**

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