



*Theridion grallator* or Happyface spider  
Photo courtesy of Bill Mull

## Terrestrial Invertebrates

### Spiders

Order Araneae

**ORDER INCLUDES:**

Kauai Cave Wolf Spider, Federally Endangered  
16 Native Families  
36+ Native Genera  
132+ Endemic and Indigenous Species

**GENERAL INFORMATION:** Due to the fact that most species are nocturnal, Hawaiian spiders remain poorly known. It is believed that many new species have yet to be discovered. The over 132 endemic species are believed to have originated from about 34 original colonizers. Most endemic spiders disperse through ballooning. Like many of the invertebrates found in Hawai'i, some groups of endemic spiders exhibit extensive adaptive radiation (e.g. *Tetragnatha*, *Misumenops*). The largest spider radiation, *Tetragnatha* (long-jawed orb weaving spiders) are found on all the main Hawaiian Islands. They reach their highest diversity in montane wet/mesic forests, dry forests, high and low shrublands and scrub. Different species in this genus can be found in mosses/lichens, leaves, twigs, tree bark or large branches, with one entire group having abandoned the web-spinning behavior that characterizes the genus. Specific threats are alien species (especially social predators such as ants, wasps) and habitat loss/degradation. Reforestation efforts at places such as Auwahi on East Maui have been shown to increase spider population levels.

**DISTRIBUTION:** Found on all the main Hawaiian Islands

Map

**ABUNDANCE:** Due to lack of systematic surveys, there is limited information on the demography of spider populations; hence future projections are speculative. However, it is likely that some populations are on the decline, with the most likely impacts being habitat modification and competition/ predation from alien species. One species in which the impacts are known is *Adelocosa anops* (*Lycosidae*) which is limited to a single cave on Kauai that is

threatened by development. A total of ten genera in seven families make up almost 80 percent of known Hawaiian spiders: *Cyclosa* (Araneidae), *Orsonwelles* (Linyphiidae), *Pagiopalus* and *Pedinopistha* (Philodromidae), *Havaika* (Salticidae), *Tetragnatha* (Tetragnathidae), *Argyrodes* and *Theridion* (Theridiidae), and *Mecaphesa* and *Misumenops* (Thomisidae). However, many more species remain to be described, particularly in the genera *Tetragnatha* and *Argyrodes*, and perhaps also *Cyclosa*, *Havaika*, and *Theridion*. *Tetragnatha quasimodo*, *Misumenops anguliventris* and *M. facundus*, and *Pagiopalus* spp. are among the most common species in mesic and wet forest on most main islands. Of the known species, *Adelocosa anops* (limited to a single cave on Kauai) and *Doryonychus raptor* (largely restricted to low elevation habitats on Kauai) appear to be the most threatened. However, lack of information prohibits any general statement about the status of endemic spiders.

**LOCATION AND CONDITION OF KEY HABITAT:** Caves, lava flows, and montane wet, mesic, and dry forests. Though not key habitats, spiders can also be found on the summit of Mauna Kea and coastal areas.

**THREATS:**

- Invasive, non-native predators, especially social insects such as ants and wasps, and perhaps also other spiders;
- Loss or degradation of habitat;
- Lack of taxonomic knowledge;
- Insufficient demographic information for species assessments.

**CONSERVATION ACTIONS:** The goals of conservation actions are to not only protect current populations, but to also establish further populations to reduce the risk of extinction for those that are critical. In addition to common state-wide and island conservation actions, specific actions include:

- Restoration of forests at mid-elevations (reforestation efforts at places such as Auwahi on East Maui have been shown to increase spider population levels);
- Control of invasive alien invertebrates directly limiting populations;
- Increased information to better inform on appropriate conservation actions.

**MONITORING:**

- Monitor known populations to assess trends in abundance.

**RESEARCH PRIORITIES:**

- Systematic and taxonomic assessment of understudied groups, including native radiations from the families: Lycosidae, Theridiidae (*Argyrodes* and *Theridion*), Araneidae (*Cyclosa*), Philodromidae, Oonopidae, Salticidae (*Havaika*), Thomisidae, Tetragnathidae (*Tetragnatha*);
- Basic ecological studies, range assessments, natural history.

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