

Terrestrial Invertebrates



Photo: Bishop Museum; *Achatinella sowerbyana*



Photo: Kapua Kawelo; *Partulina* spp.

Land Snails

Orders Stylommatophora,
Archaeogastropoda

ORDERS INCLUDE:

Oahu Tree Snails, Federally/State Listed as Endangered
13 Native Families
51 Native Genera
767+ Native Species
767+ Endemic Species

GENERAL INFORMATION: The Hawaiian native land snail fauna is probably the most diverse in the world per unit of area, with many species endemic to a single island. Over 98 percent of known land snail species are endemic to the Hawaiian Islands. All but two families, Hydrocenidae and Helicinidae, are in the order Stylommatophora. The families Amastridae and Achatinellidae are the most speciose with 325 and 209 species, respectively. The family Endodontidae may contain as many as 200 undescribed species; to date only 33 are described. There are 60 described species in the family Helicarionidae, 56 in Pupillidae, 42 in Succineidae, 14 in Helicinidae, ten in Zonitidae, ten in Ellobiidae (native but mostly not endemic), two in Hydrocenidae, and one in Punctidae. The systematics of the amastrids, achatinellids, helicarionids, pupillids, helicinids, and zonitids was revised in the first half of the 20th century, but these taxonomies should be updated. The other families have never been comprehensively revised. The ecology of some species in Achatinellidae, especially those in the genera *Achatinella* and *Partulina* are well-known, and studies on some species in the family Succineidae are underway. The basic ecology of most other species is lacking.

DISTRIBUTION: Land snails are known from all MHI and NWHI.

ABUNDANCE: Unknown. A lack of systematic surveys prevents accurate population estimates for all but a few species in the genus *Achatinellidae*. However, because of declines in the availability of suitable habitat, combined with the widespread presence of introduced predators, particularly non-native carnivorous snails (e.g., *Euglandina rosea*), it is believed that most (90%) native snail species are extinct and the remaining species are in steep decline. Of the extant groups, the most abundant, although still threatened or endangered, are members of the genus *Tornatellides* (Achatinellidae), and a few members of the family Succineidae, such as *Succinea caduca*. All other extant species are critically endangered.

LOCATION AND CONDITION OF KEY HABITAT: Hawaiian land snails occur in all native forests, including dry, mesic, and wet.

THREATS:

- Loss and degradation of habitat.
- Non-native invasive predators (particularly *E. rosea* and rodents).

- Insufficient information for species assessments.

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 land snails should include:

- Surveys to determine the geographic ranges of all extant species.
- Systematic surveys of all extant populations to determine abundance.
- Systematic surveys to locate unknown populations.
- Conservation of remaining native forests from further loss and/or degradation.
- Control predators.

MONITORING:

- Monitor known populations to assess population trends.

RESEARCH PRIORITIES:

- Conduct life history studies to quantify growth, population size, age distribution, and habitat needs.
- Develop and refine survey protocols to facilitate the collection of useful population data.

References:

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