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## Marine Invertebrates

### Copepods

*Anthessius hawaiiensis*

*Anuretes fallolunulus*

*Anuretes menehune*

*Brachiella regia*

*Caligus kala*

*Caligus kalumai*

*Caligus kapuhili*

*Caligus ligatus*

*Caligus randalli*

*Dentigryps bifurcataus*

*Dentigryps ulua*

*Griceus buskeyi*

*Hatschekia breviramus*

*Haplostomides hawaiiensis*

*Jusheyhoea moseri*

*Kroyeria praelongacacula*

*Leptocaris itoi*

*Leptocaris noodti*

*Nudisodalis acacula*

*Pseudotaeniakanthus puhi*

#### SPECIES STATUS:

IUCN Red List - Not considered

All Endemic

**SPECIES INFORMATION:** These small crustaceans can be free-living or parasitic and can occur in freshwater or the ocean, although the endemic species are all marine. Free-living copepods can be planktonic in shallow water or occur in deeper waters. The shallow water species are mainly filter feeders, consuming primarily phytoplankton, although a few species feed on detritus. Copepods that live in the deep sea may be carnivores or omnivores. Sexual reproduction occurs through copulation. Eggs are usually carried in a sac that remains attached to the female until the eggs hatch into nauplius (free-swimming) larvae. Copepods make up a significant portion of the planktonic community and are thus important to the survival of many

other species higher on the food web. Many free-living copepods exhibit vertical migration, sinking to the lower depths during the day and rising to the surface at night. Parasitic forms are usually ectoparasitic, and can occur on fishes, sharks, or invertebrates. Body form of parasitic species can be highly modified.

**DISTRIBUTION:** For these species sampling has been inadequate to determine distribution within the state.

**ABUNDANCE:** Largely unknown, though some plankton sampling occurs sporadically in relation to research on local fisheries.

**LOCATION AND CONDITION OF KEY HABITAT:** *Anuretes* parasitize *Naso* species. *Brachiella* is a parasite of *Lampris guttatus*. The *Caligus* species are mostly parasites of acanthurid fishes, although *C. kapuhili* has only been found on *Chaetodon fremblii* and *C. miliaris*, while *C. kala* has also been found on some pomacentrids, and *C. ligatus* has also been found on *Dascyllus albisella*, *Aulostomus chinensis*, *Sargocentron xantherythrus*, *Pranesus insularum*. *Dentigryps bifurcatus* has been found on acanthurids and *D. ulua* has been found on carangids. *Griceus* is a deep benthic species. *Haplostomides* is associated with the ascidian *Polyclinum constellatum*. *Hatschekia* is a parasite of *Mulloidichthys vanicolensis*. *Jusheyhoea* parasitizes deep sea fishes. *Kroyeria* parasitizes the shark *Sphyrna lewini*. The *Leptocaris* species are primarily benthic. *Pseudotaeniocanthus* parasitizes *Gymnothorax* eels.

**THREATS:** None identified.

**CONSERVATION ACTIONS:** In addition to common statewide and marine conservation actions, specific actions include:

- Maintain healthy populations.

**MONITORING:**

- Survey for populations and distribution in known and likely habitats.

**RESEARCH PRIORITIES:**

- Improve understanding of factors affecting the species population size and distribution.

**References:**

Barnes RD. 1980. Invertebrate zoology. Philadelphia, PA: Saunders College. 1089 pp.

Edmondson CH. 1946. Reef and shore fauna of Hawaii. Honolulu, HI: Bishop Museum. 381 pp.