

## Marine Invertebrates

### Echinoderms

#### Echinoids

*Actinocidaris thomasi*  
*Lissodiadema purpureum*  
*Lovenia hawaiiensis*

#### Asteroid

*Mithrodia fisheri*

#### Holothuroids

*Stichopus sp.1*  
*Stichopus sp. 2*

**SPECIES STATUS:**  
IUCN Red List - Not Considered  
Endemic



**SPECIES INFORMATION:** Thomas' sea urchin (*Actinocidaris thomasi*), fined spined urchin (*Lissodiadema purpureum*, *Leptodiadema* is a junior synonym), Hawaiian lovenia (*Lovenia hawaiiensis*), the sea star *Mithrodia fisheri*, the Hawaiian spiny sea cucumber (*Stichopus sp. 1*), and Hawaiian yellow-tip sea cucumber (*Stichopus sp. 2*) are all endemic. Specific feeding habits are known for two species: the fine spined sea urchin grazes on algae and *M. fisheri* probably feeds on sponges, bryozoans, and other sessile organisms. Little is known on the feeding habits of the two sea cucumbers as they have not been scientifically described. Thomas's urchin may host small molluscs in shallower waters and barnacles in deeper waters. The fine spined sea urchin hosts a commensal shrimp. They all have separate sexes and reproduce by releasing eggs and sperm into the water. Larvae are part of the planktonic community for a few days to weeks and then they settle to mature.

**DISTRIBUTION:** All species occur throughout Hawai'i.

**ABUNDANCE:** Unknown

**LOCATION AND CONDITION OF KEY HABITAT:** Thomas's sea urchin primarily is found in deeper waters, but may be found in waters as shallow as 9 meters (30 feet). It stays under

coral slabs and in crevices during the day. Fine spined urchins live on rocky substrates from approximately 6 to over 46 meters (20 to over 150 feet). Small fine spined urchins are most often found under stones, while larger ones in caves and crevices. Hawaiian lovenia lives in the sand. Hawaiian spiny sea cucumbers are found out in the open beside coral reefs in sand and rubble. They also can also be found on steep slopes from approximately 15 to 46 meters (50 to 150 feet). Hawaiian yellow-tip sea cucumbers prefer areas under stones during the day. *M. fisheri* primary habitat is on cave ceilings and walls.

**THREATS:**

- Aquarium collectors harvest Thomas's and fine spined sea urchins.

**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. In addition to common state-wide and island conservation actions, specific actions include:

- Maintain healthy populations with appropriate fishing regulations, enforcement, and education.

**MONITORING:**

- Continue to survey for populations and distribution in known and likely habitats.

**RESEARCH PRIORITIES:**

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

**References:**

Gulko, D. 2005. Hawai'i Endemic Species Status Chart spreadsheet. Honolulu, HI: Hawai'i Division of Aquatic Resources.

Hoover JP. 1998. Hawaii's sea creatures, A guide to Hawaii's marine invertebrates. Honolulu, HI: Mutual Publishing. 366 pp.