



## Caves and Lava Tubes – Sanctuary for man and beast

**Description:** Often unnoticed within the Pacific islands, caves and lava tubes are rich sanctuaries containing significant minerals as well as other geological, biological, paleontological, hydrological, and cultural resources.

The Federal Cave Resources Protection Act defines a cave as “any naturally occurring void, cavity, recess, or system of interconnected passages beneath the surface of the earth or within a cliff or ledge, including any cave resource therein, ...” (16 U.S.C. 4301-4310). This definition includes lava tubes, littoral caves, talus caves, and karst features, as well as submerged resources such as sea caves.



A researcher recording data at the mouth of a lava tube at Hawai'i Volcanoes National Park.

At Hawai'i Volcanoes National Park (HAVO) for example, there are over 200 known lava tubes (caves). In Hawaii, lava tubes represent not only an important geologic resource for investigating ongoing geologic processes, but also serve as habitat for rare species such as the small-eyed, big-eyed hunting spider (*Lycosa howarthi*). Many caves are sites of spectacular archeological treasures, and continue to serve an important role in Hawaiian culture. In Guam, karst caves etched by water running through the limestone terrain may be found both on land and submerged in ocean areas.

**Cultural Significance:** Caves have long been important places for native peoples. Shelter, water catchments, places of refuge in times of war, sites of religious ceremony, burial places, and travel corridors are just a few of the many human uses that continue to the present. While cultural practices vary throughout the Pacific islands, caves share a common theme as reservoirs of cultural heritage.

In one example, Hawaiian kupuna (elders) tell stories of using caves as sites for weaving lauhala mats, where the moist air of the cave kept the lauhala supple throughout the dry heat of the day.

**Inventories:** Cave inventories are on-going in HAVO and are planned for several other Pacific island parks. Building upon the data collected through the years of work of many dedicated individuals, the NPS is developing databases of all known cave entrance locations. Efforts such as mapping selected cave passages, assessing the cultural and natural resources within selected caves, and identifying sites of particular cultural or biologic significance for enhanced resource protection are also priorities.

**Monitoring:** Limited cave monitoring is ongoing on a park-by-park basis as determined by individual park needs. Current cave monitoring ranges from human impacts and cultural resources to air quality and invertebrates.

**Status & Trends:** Cave resources are exceedingly fragile, with even a single visit impacting cave air quality, geological and archeological features, and biota. Looting and recreational caving can destroy non-renewable archeological and biological resources. Habitat features, like 'ōhi'a (*Metrosideros polymorpha*) tree roots that provide nutrients to certain cave species are impacted by habitat loss, alien species, fires, human access and trampling,

and altered nutrient cycles. Even ongoing lava flows that continue to create new lava tubes can destroy old ones.

**Management:** The protection and preservation of cave resources and associated values is of primary concern to managers. These goals are supported through public safety efforts, archeological conservation, permitted scientific research, and stewardship of cultural heritage. Management priorities include completing cave entrance inventories, establishing an integrated monitoring program, and sustaining the permit and registration process for cave use.

To protect cave resources, the objects within them, and for human safety, National Park Service policy in all Pacific island national parks is to prohibit public entry unless otherwise authorized. Currently, the only cave or lava tube open to the public is Thurston Lava Tube (Nāhuku) at HAVO. Your cooperation and respect for these sensitive resources is highly valued.

— J. Moniz-Nakamura and F. Klasner

### For more information:

NPS Cave & Karst Program:

<http://www2.nature.nps.gov/geology/caves/>

National Cave and Karst Research Institute:

<http://www2.nature.nps.gov/nckri/>

National Speleological Society:

<http://www.caves.org/>



Left: Petroglyphs at lava tube entrance at Hawai'i Volcanoes National Park.

Bottom-right: Cave-adapted small-eyed, big-eyed hunting spider (*Lycosa howarthi*).

