

FEASIBILITY OF CONSTRUCTING A PALEO-TSUNAMI RECORD FOR THE ISLAND OF MAUI, HAWAII

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ABSTRACT

Eighteen sedimentary cores were collected on the island of Maui, within the Hawaiian Island Chain. The sample cores were collected using a Dutch Corer (push core) with maximum penetration up to 5 m (18 ft). The cores were collected from ponds/marshes roughly 0.5 km from the coasts. The lithologic records from the sites differed substantially. The core from Kealia Lagoon (on the south side of the Maui isthmus) was characterized by red clays and evaporates to depths of 2.5- 3 m (8-12 ft). At greater depth, five sand layers, two charcoal layers, and two shell-fragment layers were found in the core on the south side of the pond. On the north side of the pond numerous thin sand layers were observed. These sediments are interpreted as representing sedimentation associated with a hypersaline pond and the sand layers may indicate storm or tsunami events. The core sites from Kato Nursery are situated on the east side of Kealia pond and were composed of dark brown soil, and gray mud, with 3 sand layers. The lower two sand layers contained shell fragments and rock fragments, respectively.

On the north side of the Maui Isthmus, the core sites at Kanaha Pond contained brown and gray sands as well as sand layers of black and yellow colors. A layer of sand at 1.25 m contains shell fragments, and a layer of gravels was recovered at 2.1 m.

On the north coast of West Maui, on Maui Conservation Trust land, a series of cores were collected. The stratigraphy involved mud and organic rich soils (in the upper half meter) that overlay yellow and then gray sand, and the lowest meter of sediments contained a mixture of black and white sand grains. Shells were found at 1 m depth in the black and white sand unit and gravel was found between 1 and 2 m depth.

Potentially each of the sand layers, especially those associated with shell or rock fragments, could be interpreted as a paleo-tsunami record although a tsunami origin cannot be proven at this time. The coring indicates that layers containing shells fragments overlay layers containing rock fragments at each of the sites. The shell-fragment layers range from 88 cm to 125cm depth at the disparate sites, while the layer containing rock fragments occurs at depth of 138, 212.5, and 200 cm (except at South Kealia pond where a layer consists of black sand and shells at 305 cm depth). These reconnaissance-coring efforts indicate that there is a potential for establishing a paleo-tsunami record in the Hawaii Islands.