



National Tropical Botanical Garden



NATIONAL GEOGRAPHIC



David A. Burney
National Tropical Botanical Garden
Lida Pigott Burney
Makauwahi Cave Reserve

*Digging into the Past
to Find the Future*



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Digging into the Past To Find the Future

Paleoecology and Restoration on Kaua`i



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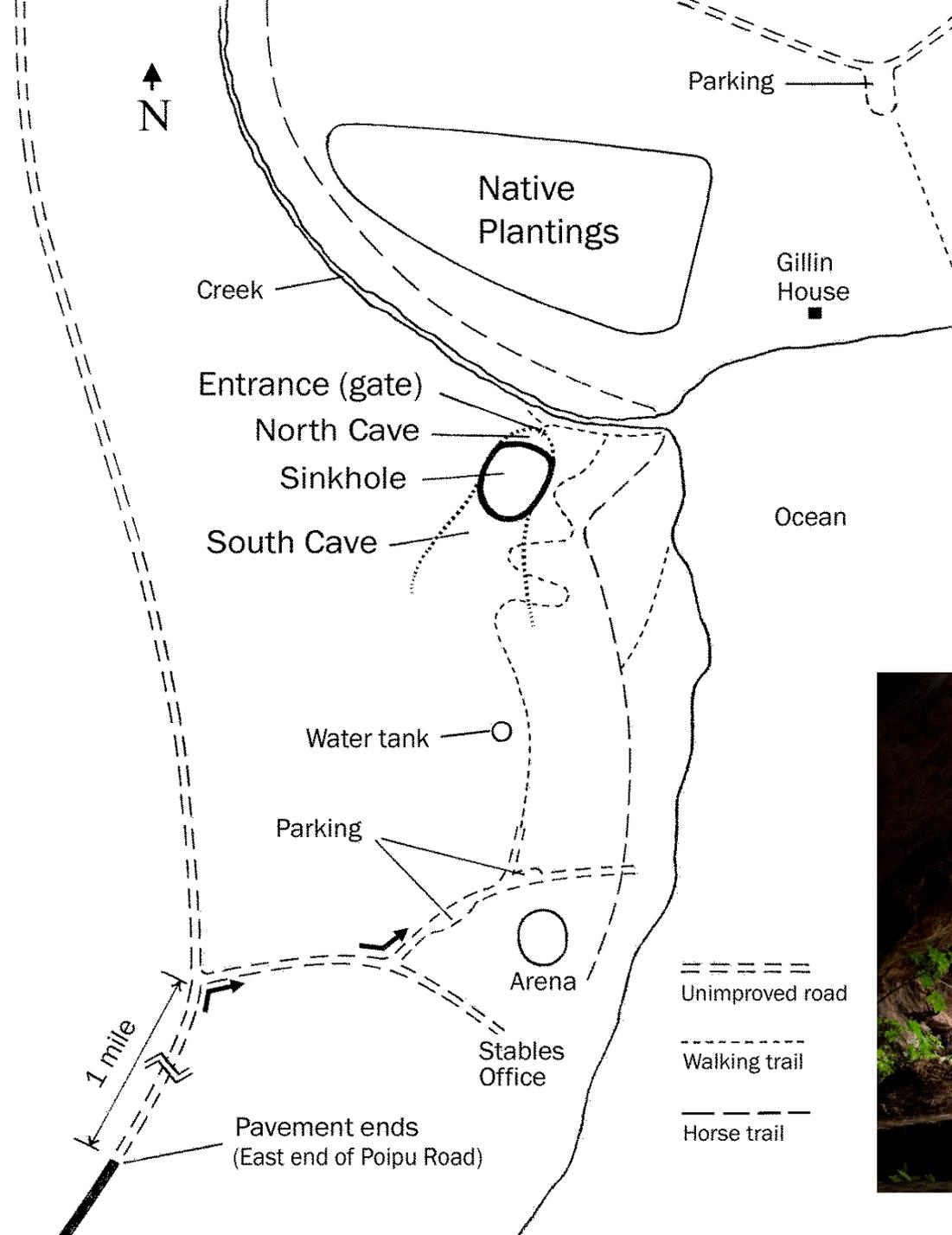




An Integrated Site...

Makauwahi Cave, Maha`ulepu, Kauai

E komo mai !



Makauwahi Cave Reserve:

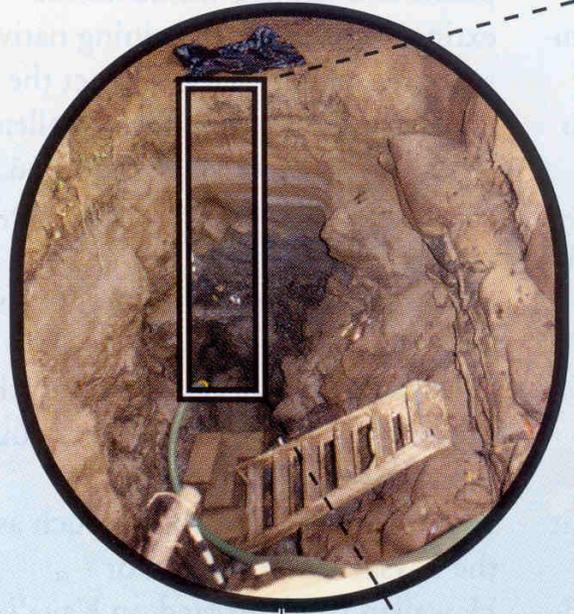
*Just beyond the
Hyatt Golf Course*



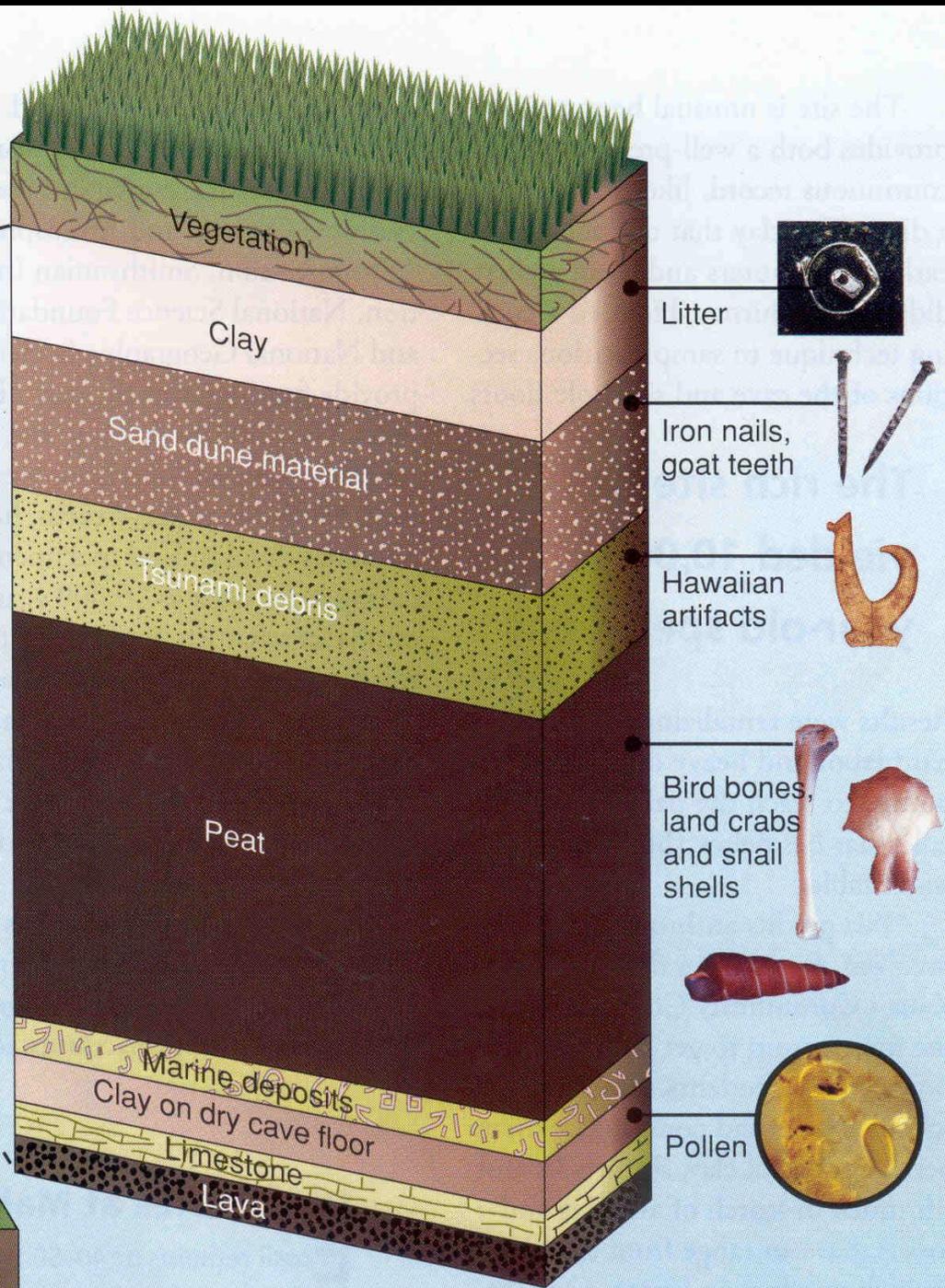
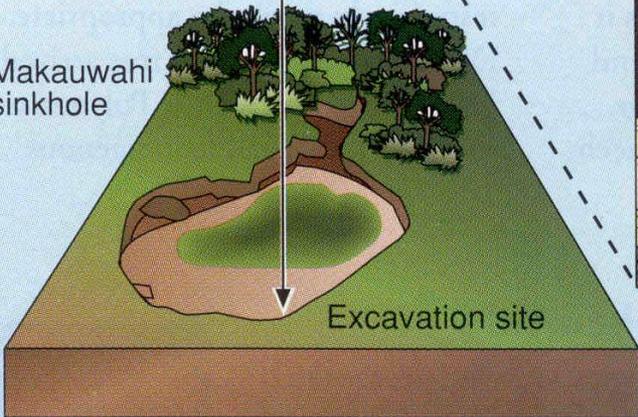


A Kaua'i Diary

Layers of earth in the Makauwahi sinkhole digs record life on the islands for the past 10,000 years



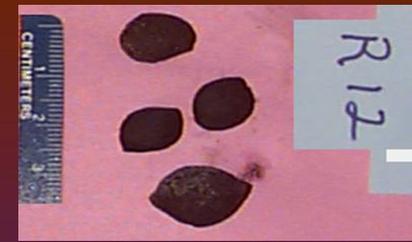
Makauwahi sinkhole



There are many useful kinds of fossil evidence



BIRD BONES



SEEDS

Macrofossils...



LAND SNAIL SHELLS



POLLEN



CHARCOAL PARTICLES



BONE FISHHOOK



STONE MIRROR

Artifacts...



DIATOMS



CANOE FRAGMENTS



Palynomorphs...



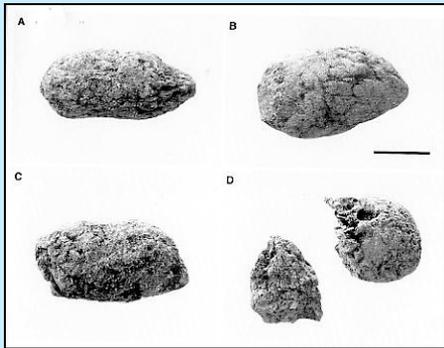
vertebrates







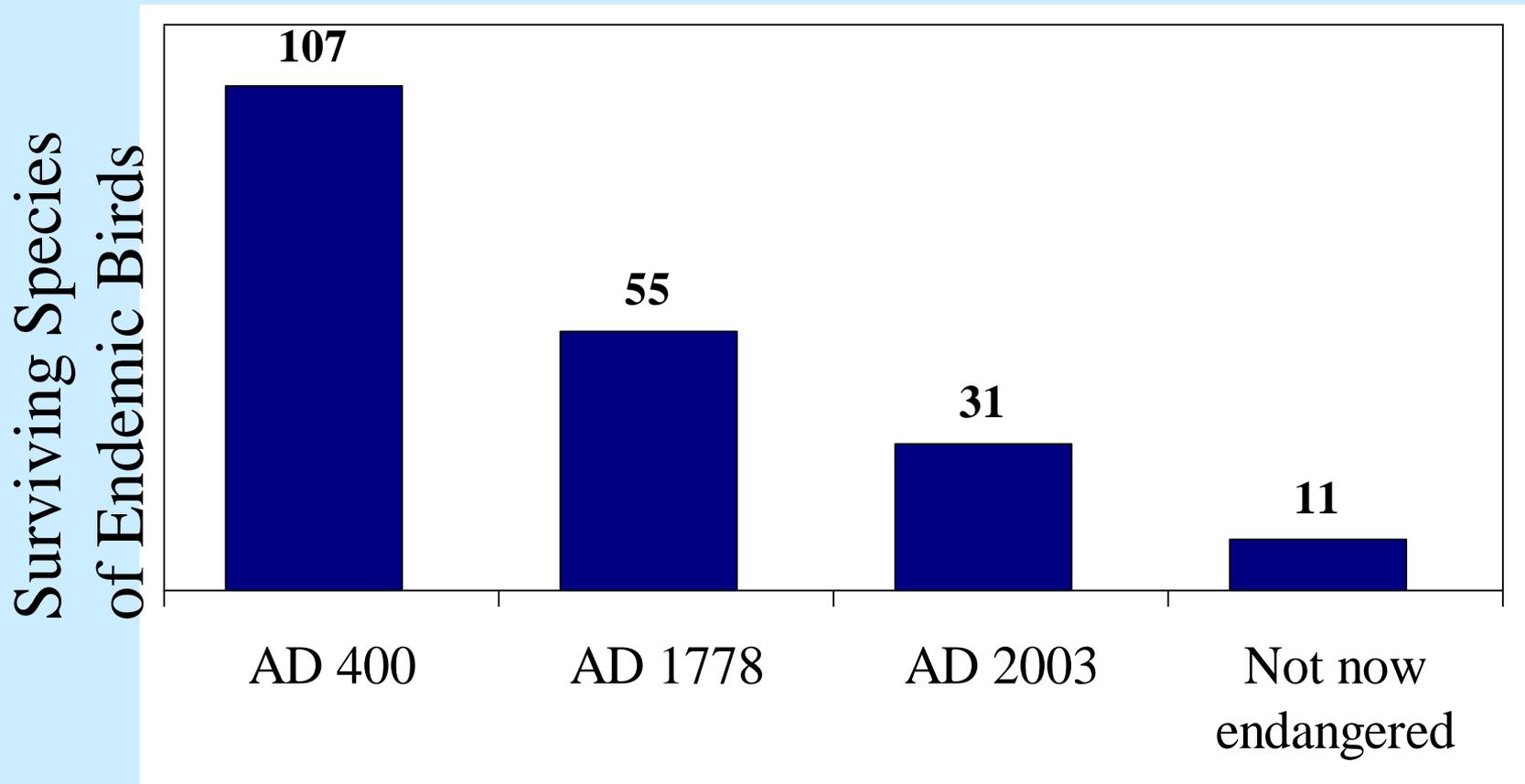
Thambetochen chauliodous Maui Nui Moa-nalo

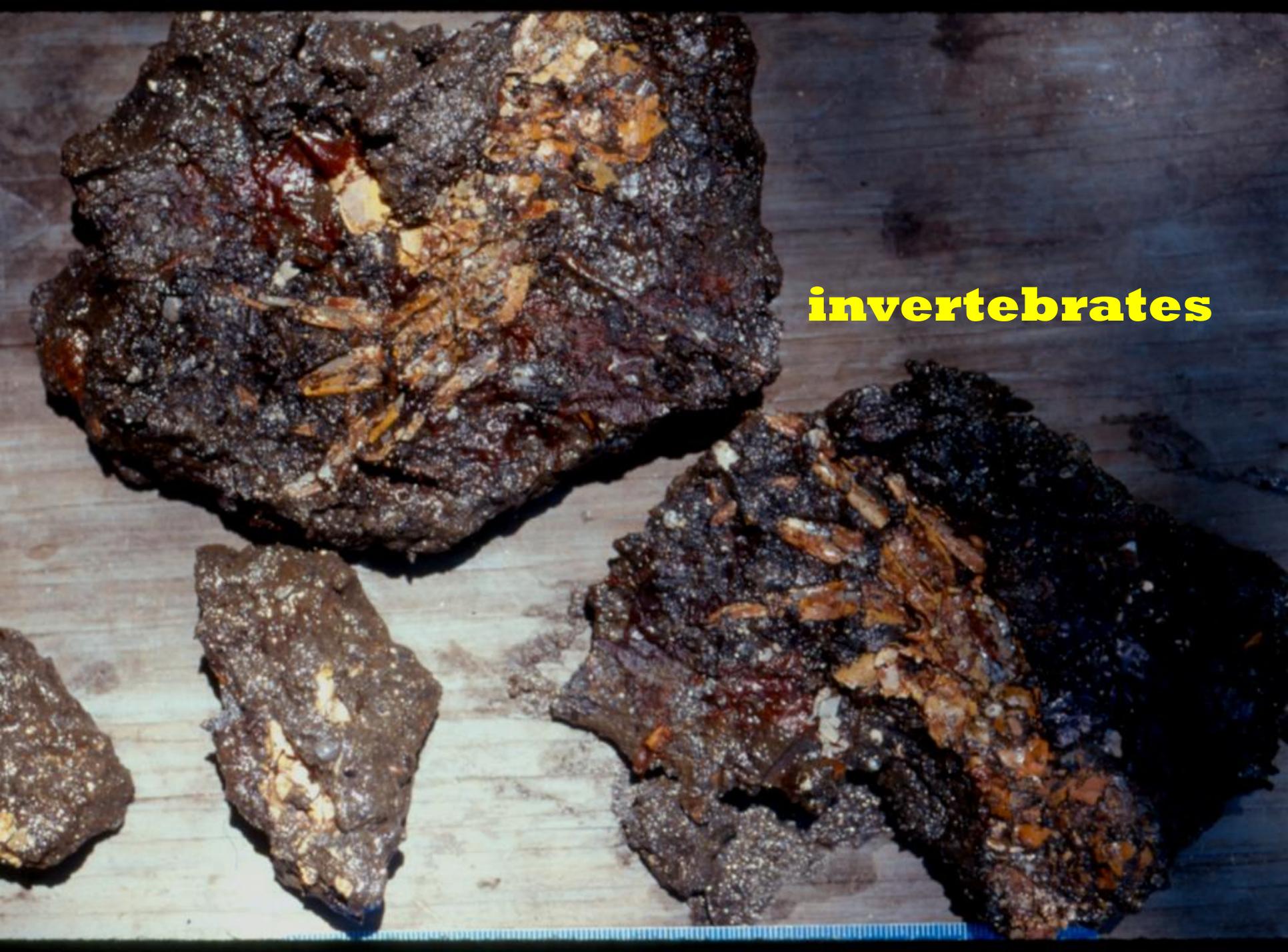


“coprolites”



Decline of the Hawaiian Avifauna



The image shows four pieces of dark, fossiliferous rock, likely shale or siltstone, resting on a light-colored wooden surface. The rocks are dark brown to black and contain numerous small, light-colored, elongated fossils, which are identified as invertebrates. The fossils appear to be small shells or skeletal remains, possibly brachiopods or bryozoans. A blue ruler is visible at the bottom of the image, providing a scale for the size of the rock samples. The text "invertebrates" is overlaid in yellow on the right side of the image.

invertebrates

Dr. Nicholas Porch,
Quaternary Entomologist,
Australian National University



Identifying fossil
insects, Acacia Lab,
NTBG



Sifting fossil insects, Makauwahi





pollen and seeds

5,000 year old fossil kou seed capsules from Makauwahi Cave show definitively that, contrary to previous notions, *Cordia subcordata* is a native plant – Burney et al., 2001, *Ecological Monographs*

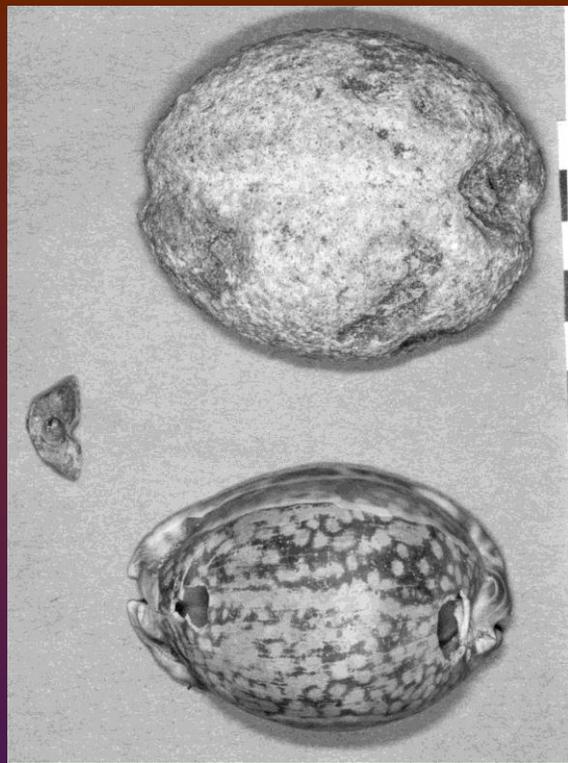




aff. Kanaloa





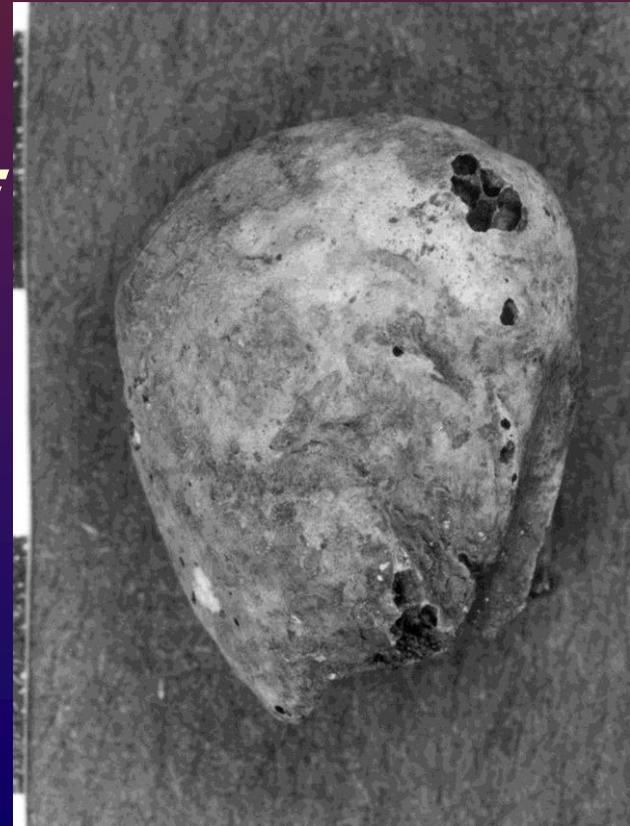
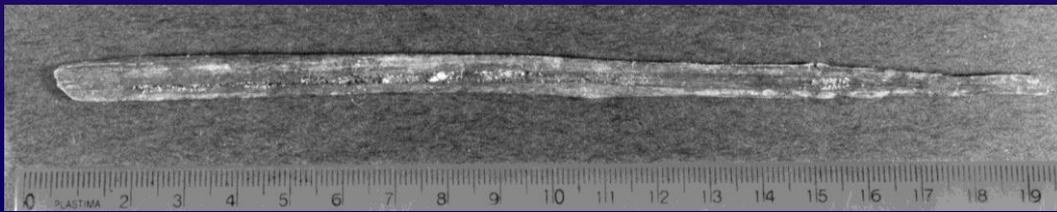


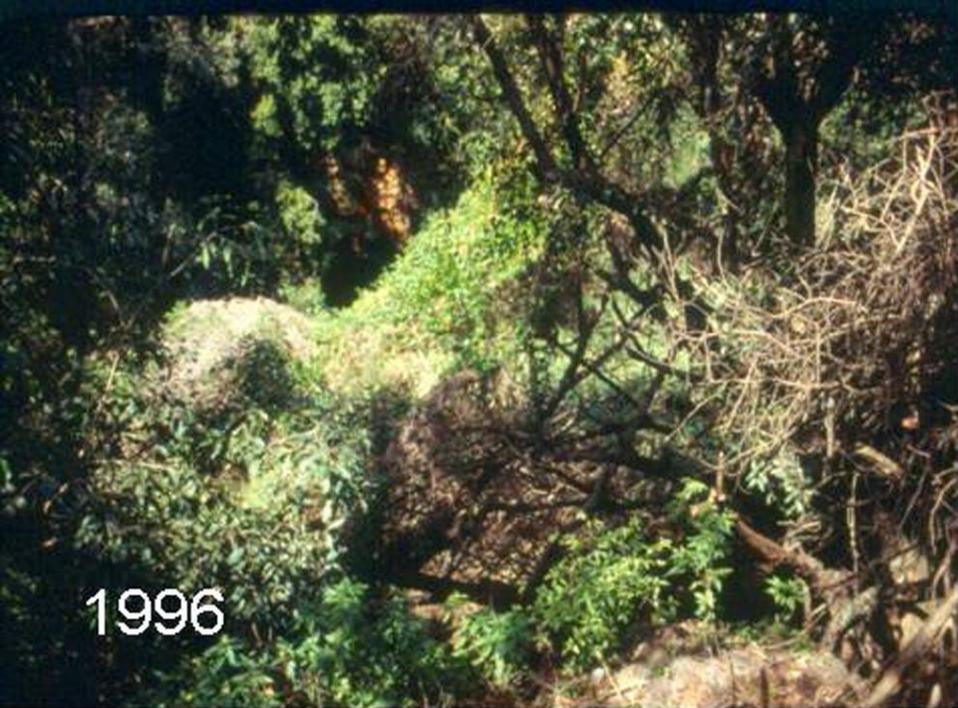
FISHING





***PERISHABLE
ARTIFACTS***









Makauwahi Cave Reserve

Field reclamation

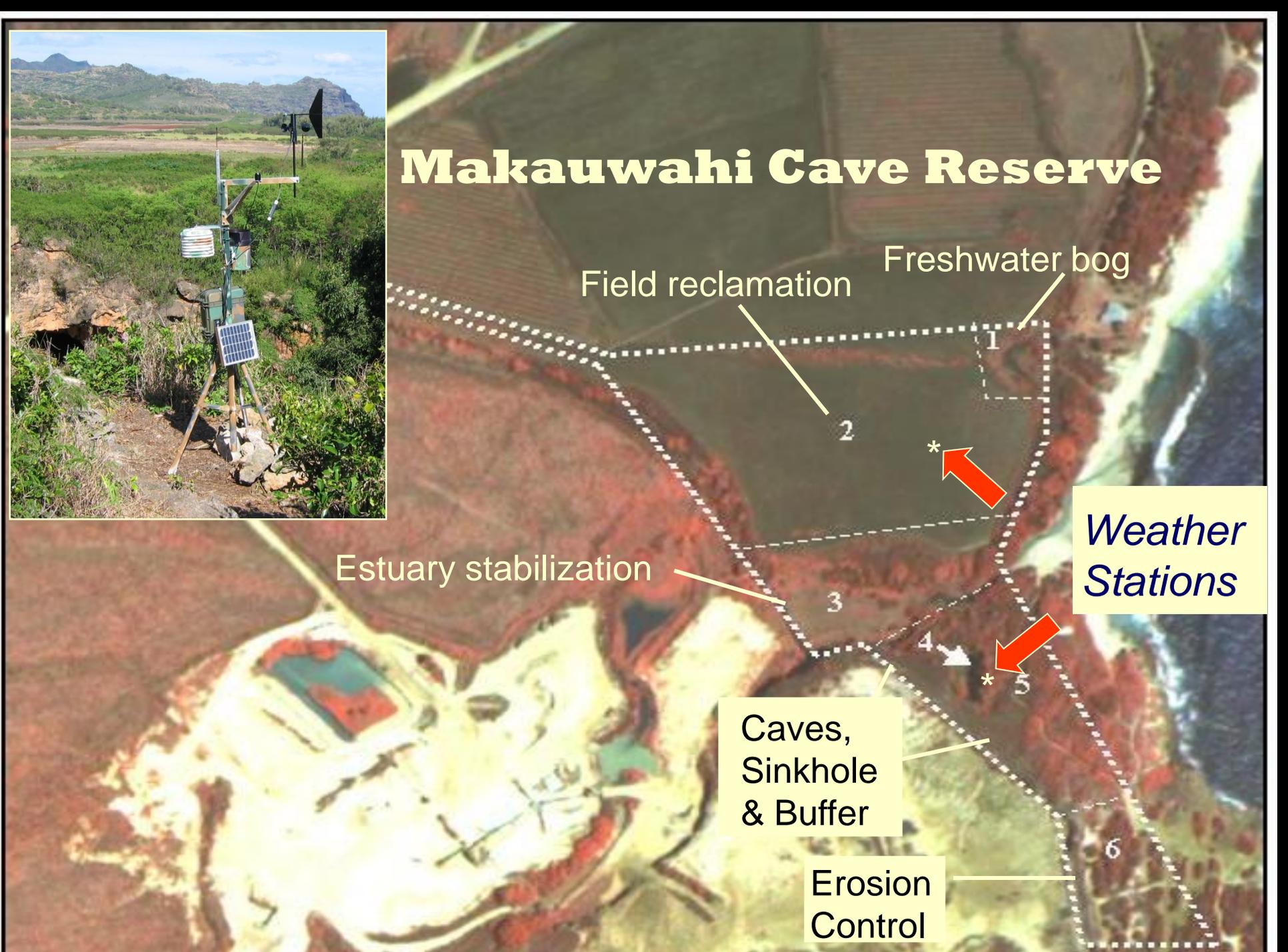
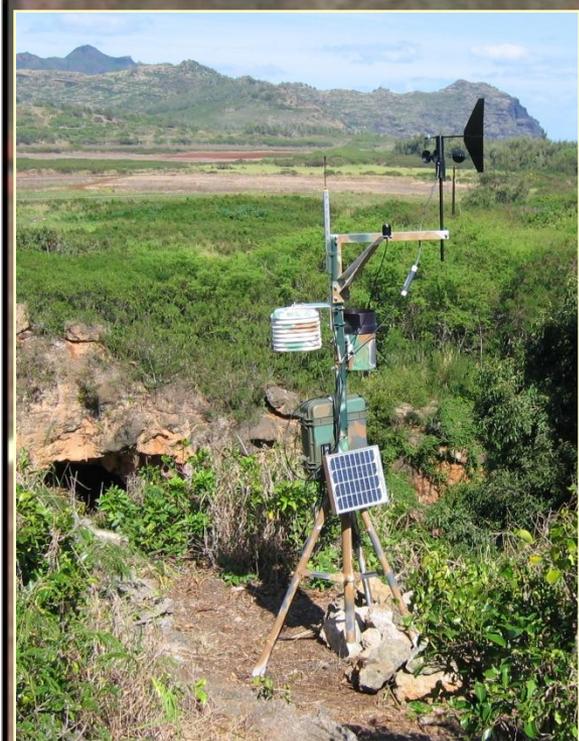
Freshwater bog

Estuary stabilization

Caves,
Sinkhole
& Buffer

Erosion
Control

*Weather
Stations*

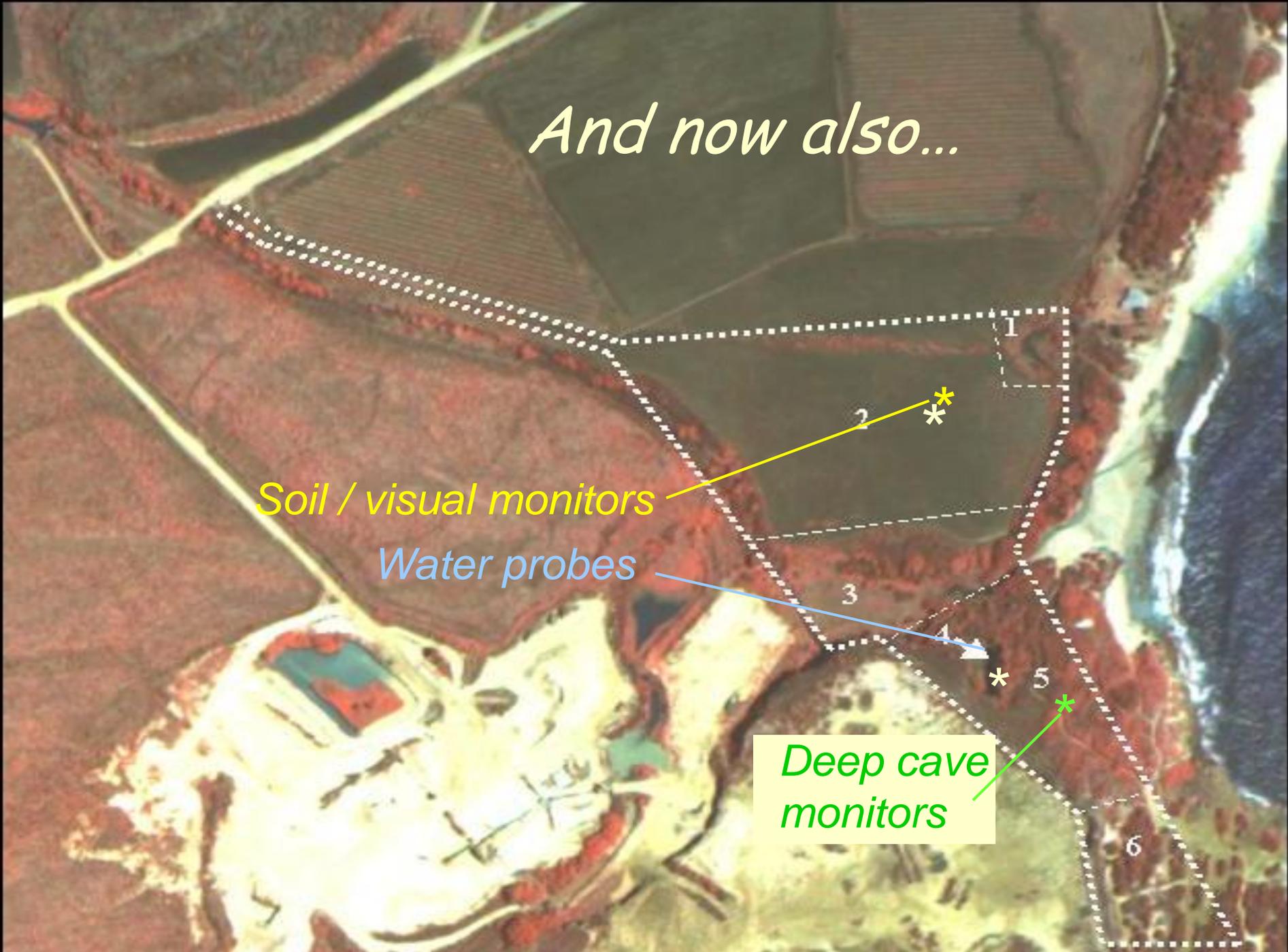


And now also...

Soil / visual monitors

Water probes

Deep cave monitors



Field School at Makauwahi Cave Reserve

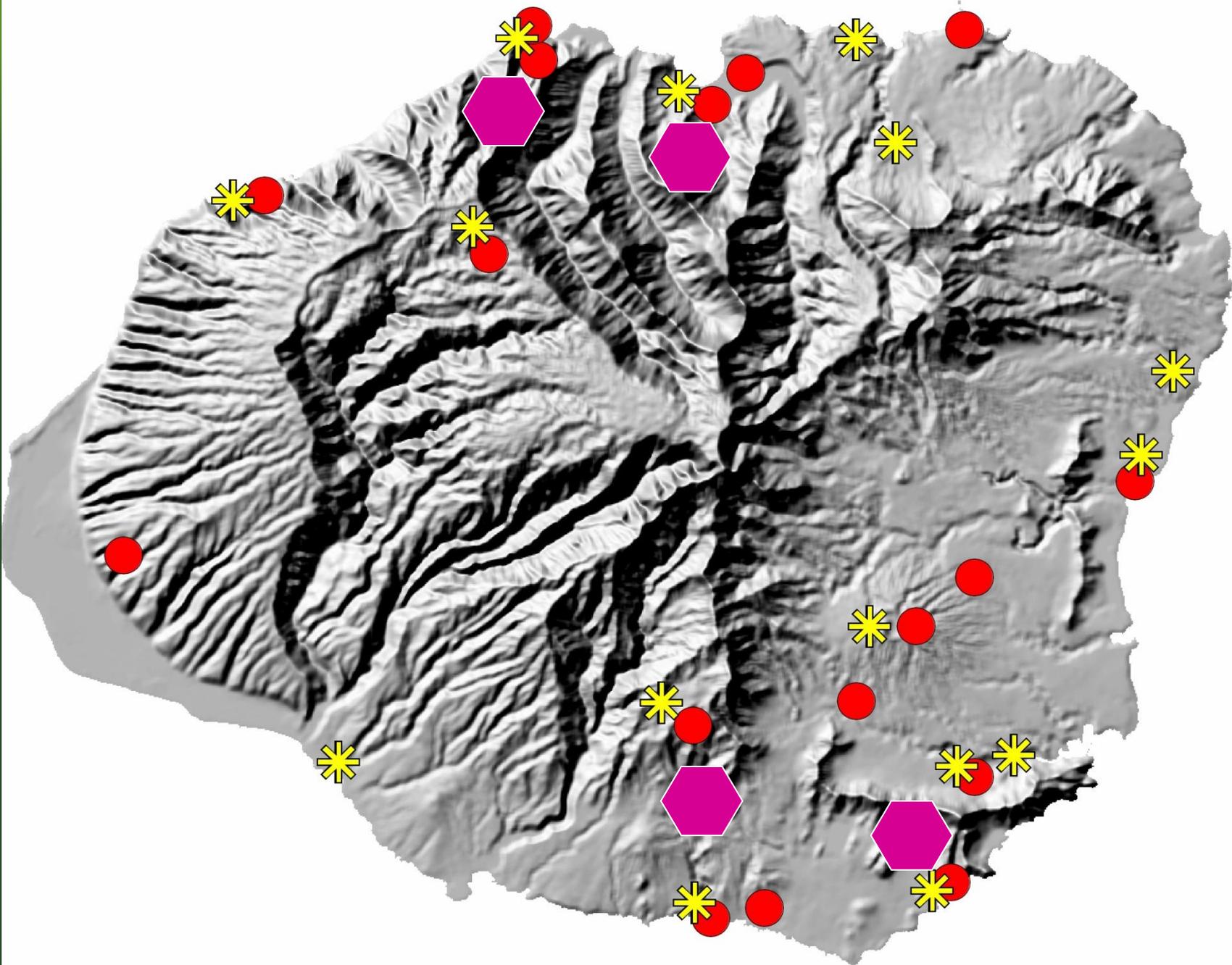


- Fossil tree trunks
- Thousands of seeds
- Wooden artifacts
- Polynesian fishing gear
- 1895-S Barber dime



Community Outreach through Ecological Restoration, and vice versa







mahalo

Makauwahi Cave, 1000 BC, by Julian Hume
From new book by D. Burney at Yale Press
Sponsored by Guggenheim Foundation

YALE UNIVERSITY PRESS

DAVID BURNEY

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