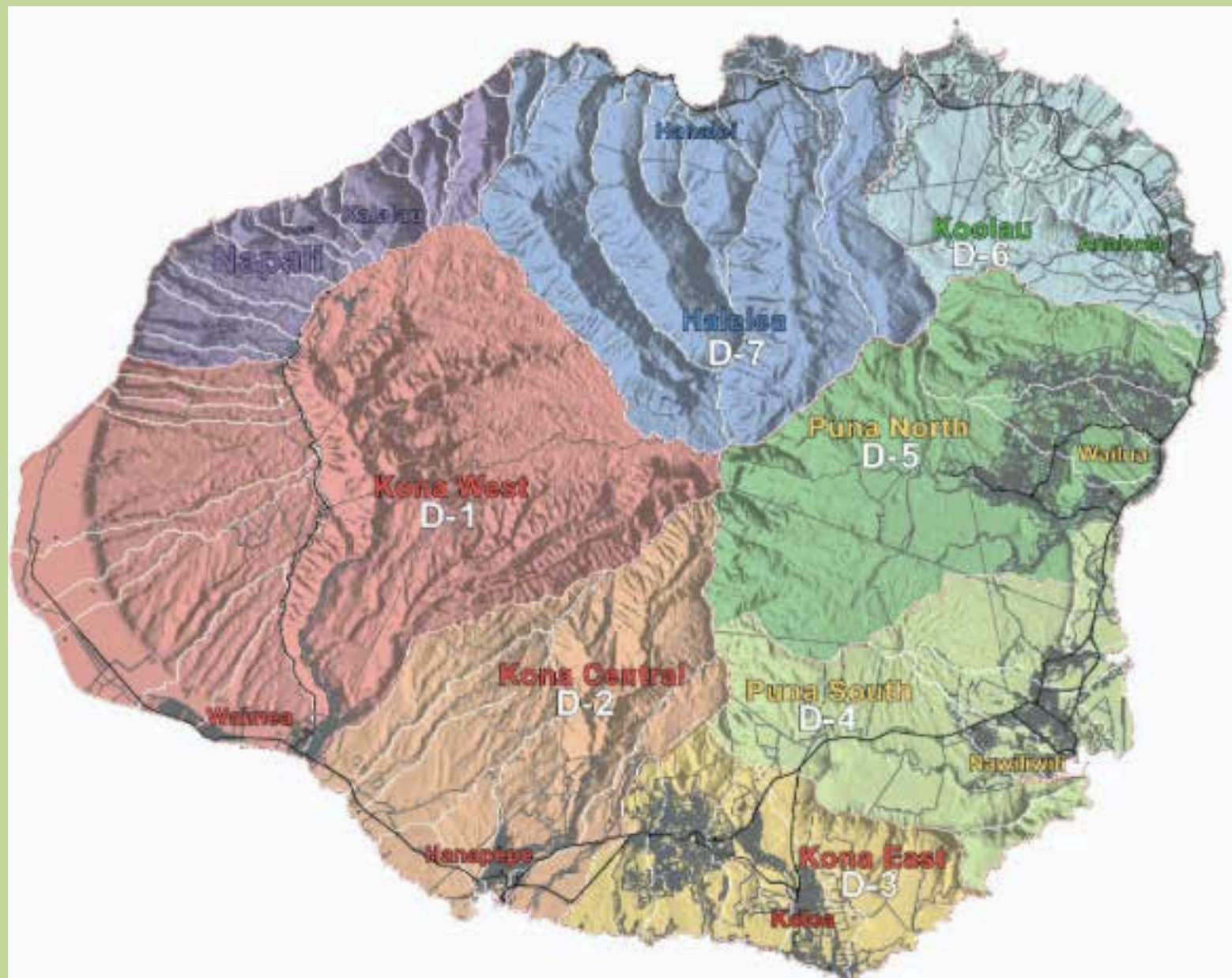


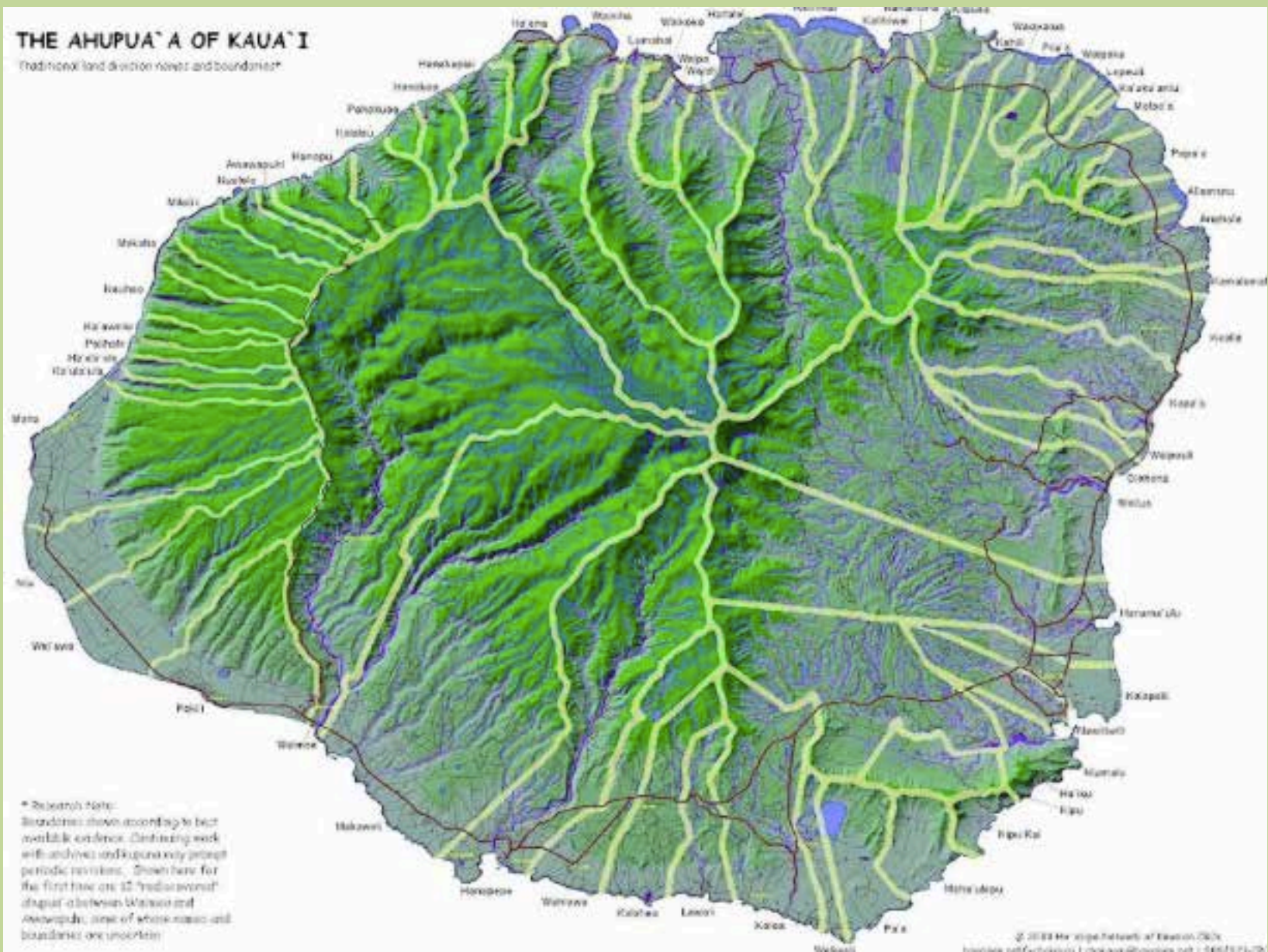
E Aloha, E Mālama, E Kia'i 'Āina



Native Hawaiian Natural Resource Management
Dr. Mehana Blaich Vaughan, NREM



Traditional land division rules and boundaries*



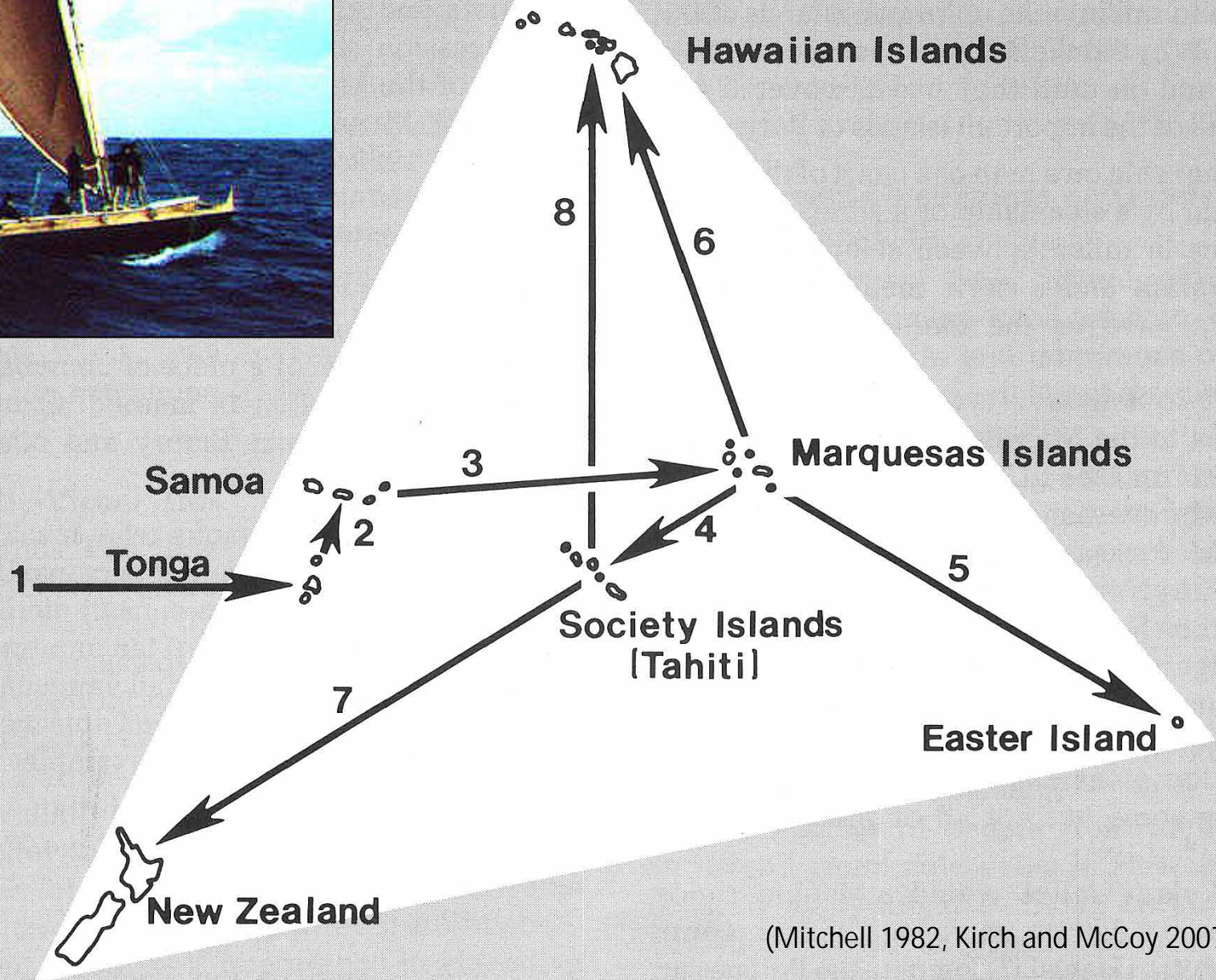
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- 'Ohana – Family
- Diverse
- Integrated
- Adaptive





Polynesian Settlement Pattern



(Mitchell 1982, Kirch and McCoy 2007)

What are we talking about?



‘Aina – That Which Feeds

MANAGEMENT

Kia'i 'Āina – Guardian

Mālama 'Aina – Care Take

Hoa 'Āina – Bound to Land

Kupa 'Āina – One familiar with the land
(of the place)

Maka'āinana – (person that attends the land)

'Ōiwi – One with bones in the land

Konohiki – To invite ability

How did Hawaiians Interact, Relate to and Care for their Environment?



Understanding Relevance in Contemporary Times



I Ka Wa Ma
Mua,
I Ka Wa Ma
Hope



How Do We Know?

- Archaeology
- Secondary Sources
- Handful of Hawaiian Scholars
(Malo, Kamakau, Pūku‘i)
- Mo‘olelo / Oli / ‘Olelo No‘eau
(Stories/ Chants/ Proverbs)

- HAWAIIAN LANGUAGE NEWSPAPERS
- KŪPUNA (Elders)
- YOUNG SCHOLARS
- PRACTICE



- **‘Ohana – Family**
- Mountain to Sea
- Diverse
- Adaptive



AKUA
KINOLAU
(Many Forms)

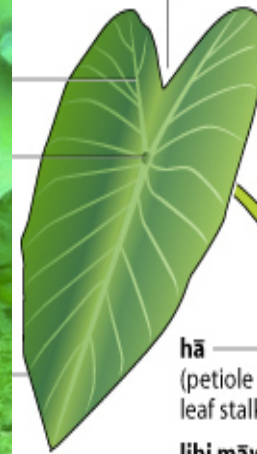


Living - Mana





'ao lū'au or mahola
(unexpanded, rolled leaf blade)

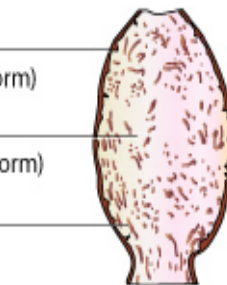


hā
(petiole or
leaf stalk)

lihi māwae
(sheath edge)

māwae
(petiole sheath)

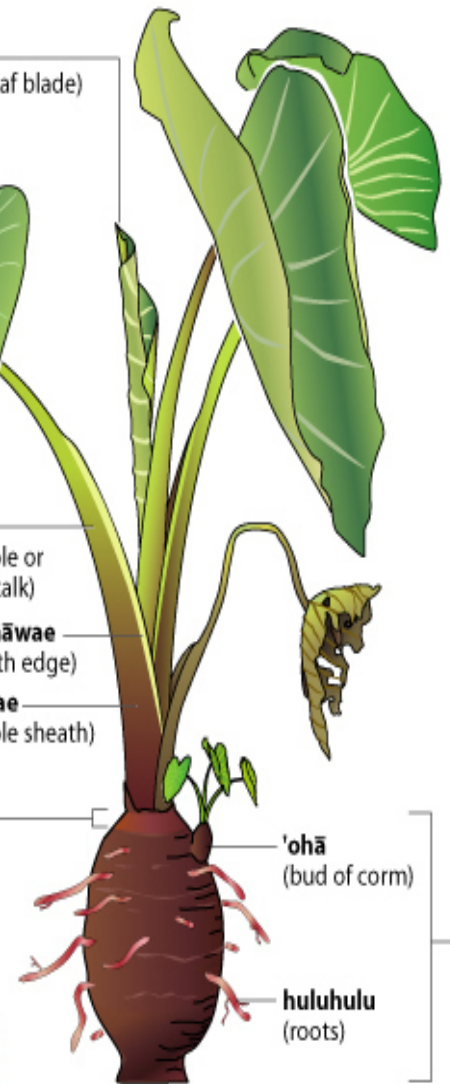
ōhina
(top of corm;
cut to form huli)



'ili kalo
(skin of corm)

'i'o kalo
(flesh of corm)

'a'a'a
(fibers)



'ohā
(bud of corm)

huluhulu
(roots)

kalo
(corm)



'Ohā - 'Ohana (Family)

hanai Aku, hanai mai
`Ai à `Āina



- 'Ohana – Family
 - Integrated
 - Diverse
- Place Specific
- Adaptive







300 Varieties
(Winter 2013)



Photos: Jerry Konanui

Place Names

Mānoa

Waikīkī

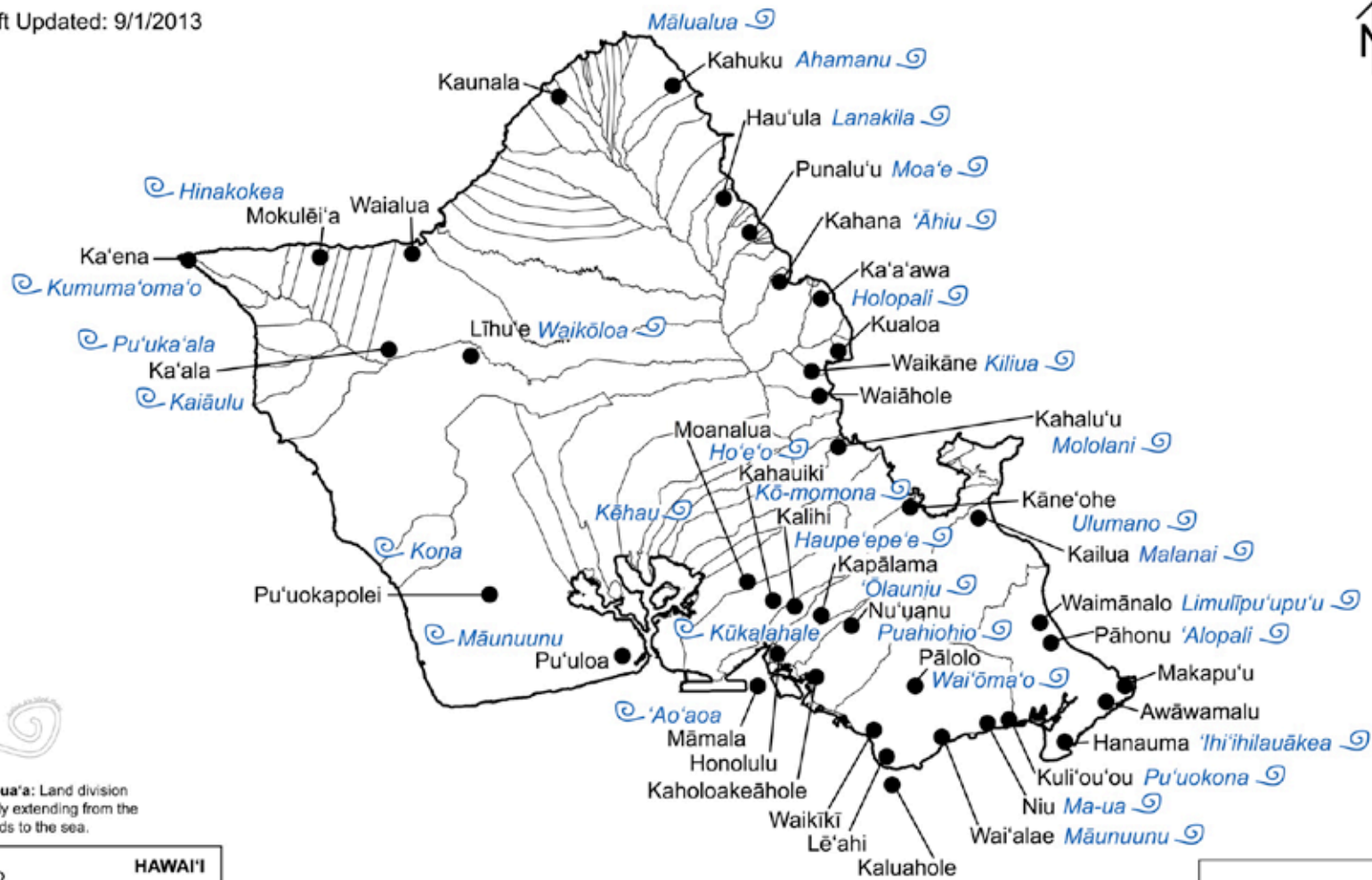
Pālolo

Punahou

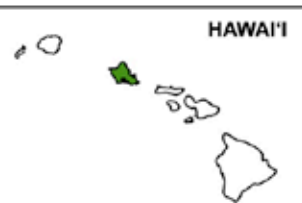
Nuʻuanu

Nā Makani o O'ahu-nui-a-Lua: Wind Names of O'ahu, from Moses Kuaea Nakuina's *The Wind Gourd of La'amaomao*

Draft Updated: 9/1/2013



Ahupua'a: Land division usually extending from the uplands to the sea.



Produced by Kapōmaika'i Stone, Lindsey Spencer, and Iāsona Ellinwood for Kahua A'o: A Learning Foundation. Map from the Hawai'i State Geographic Information System.

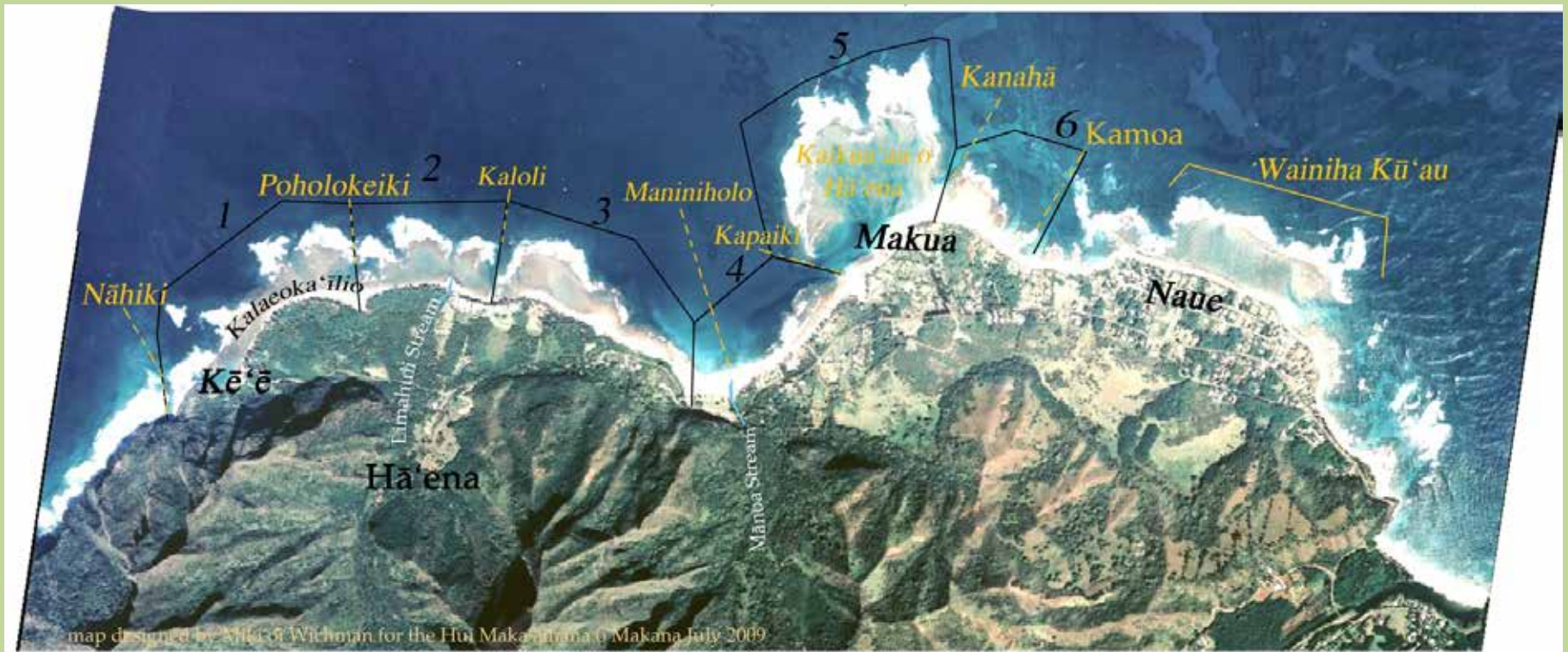
- Coastline boundary
- Ahupua'a boundary
- Place name
- ⌀ Wind name

6 miles



Place Names

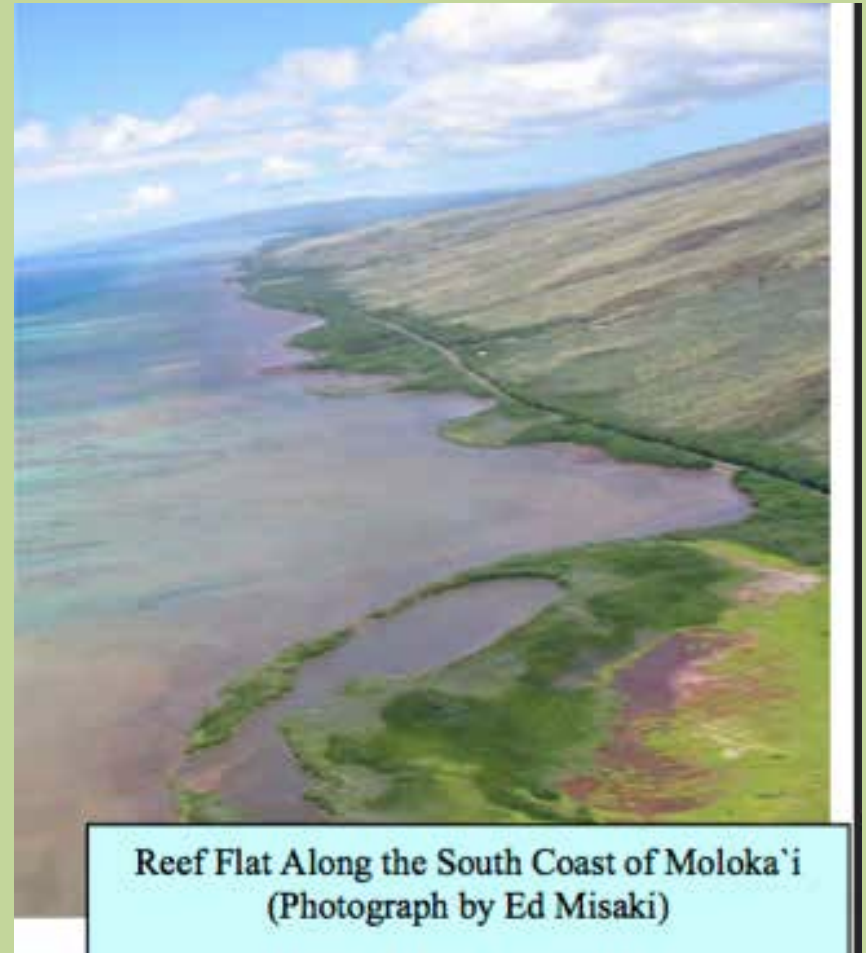
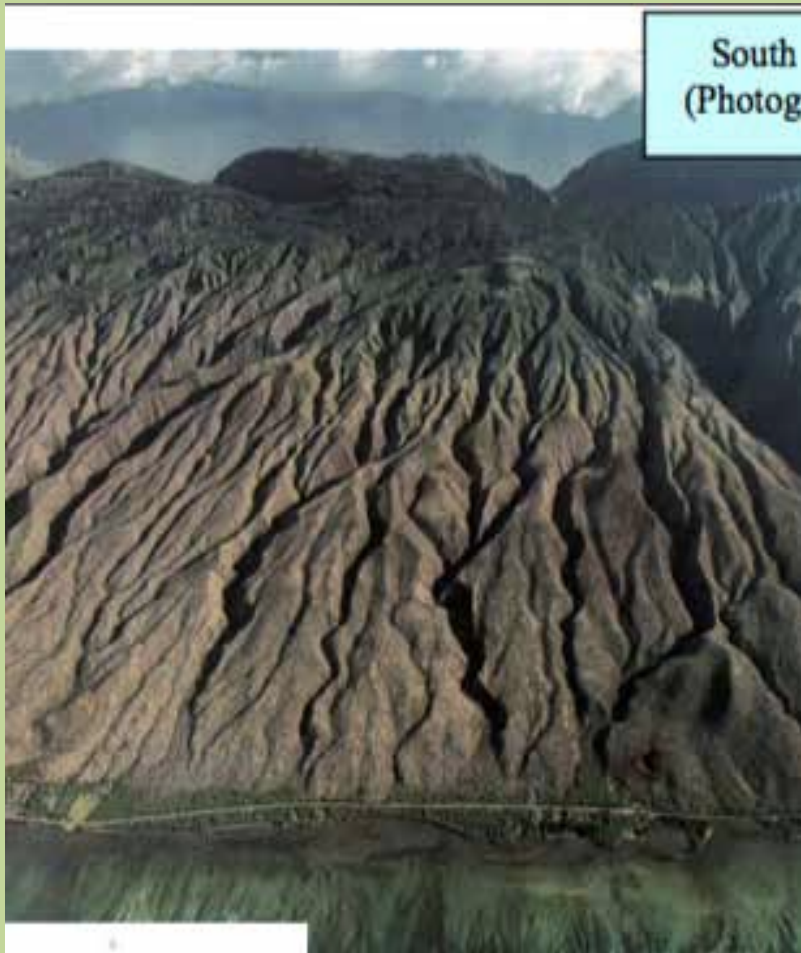
“There was no place that had a name for no reason” (Kamakau)



- ‘Ohana – Family
 - Integrated
- ## Mountain to Sea
- Diverse
 - Adaptive



Health of Ocean Starts in the Mountains



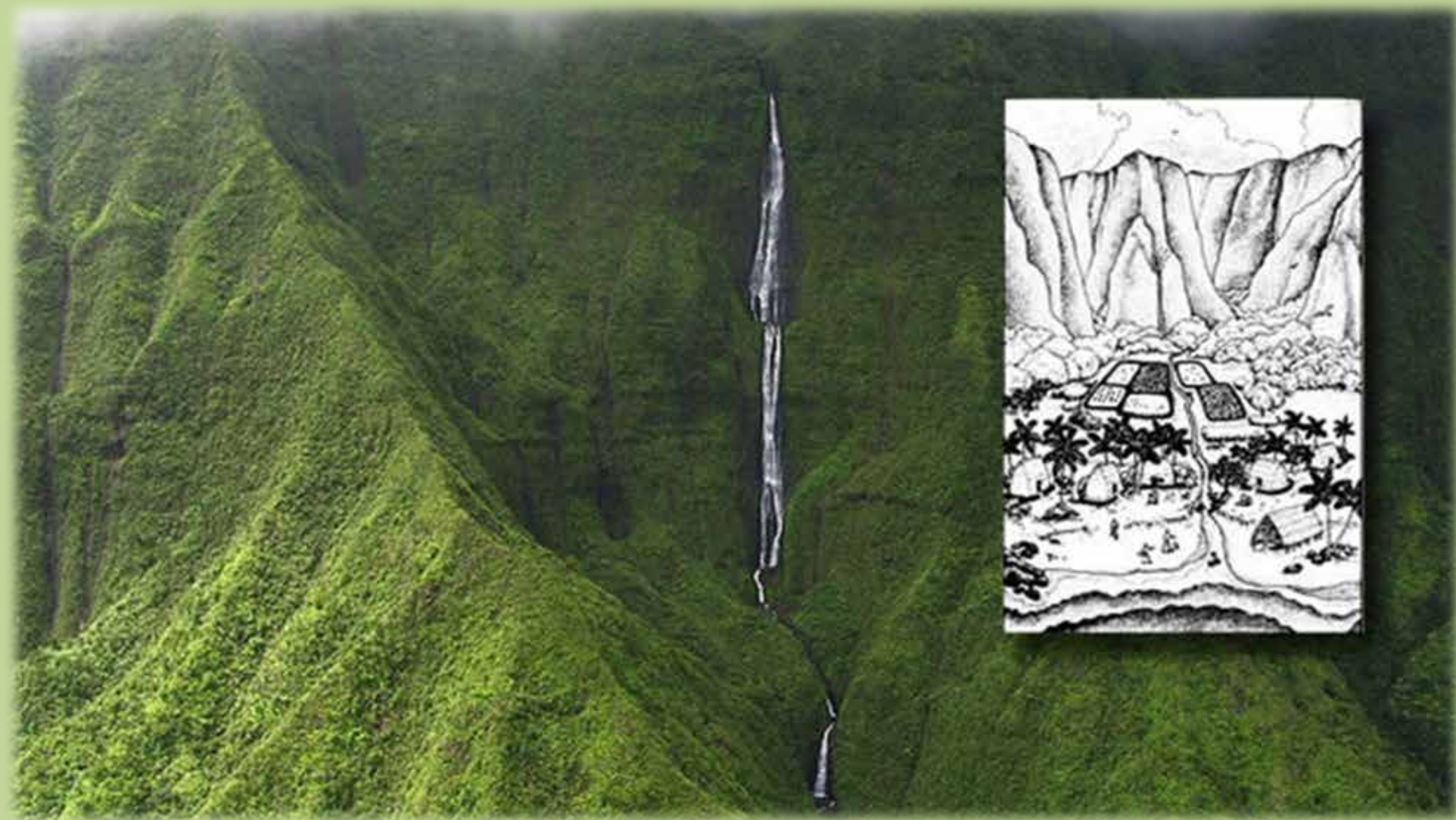
Ecological and Social System



WAI: WATER



Wao Akua – Realm of the Gods



Wao Kānaka – Realm of the People



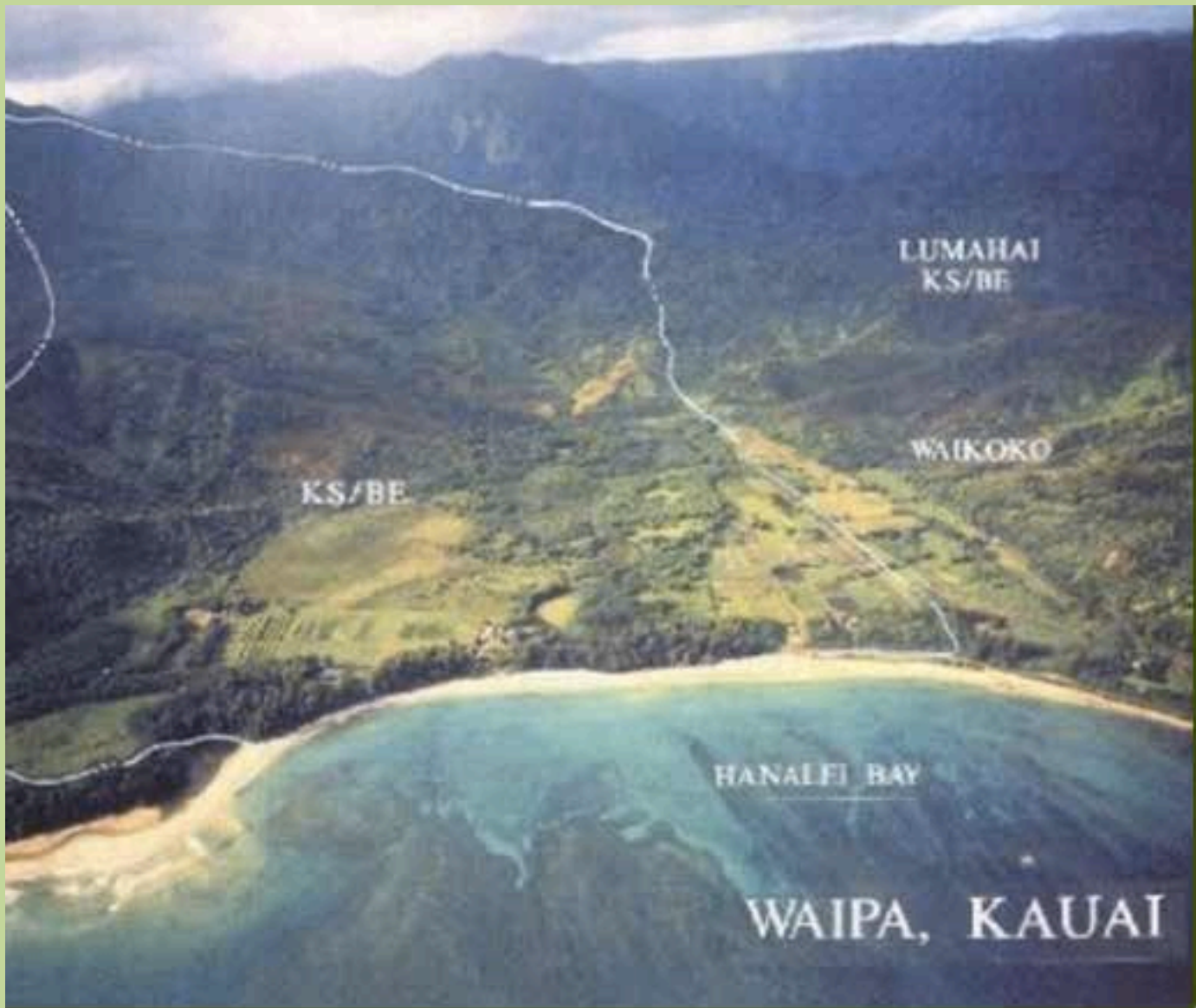


Nā Loko I`a, Ka Papa, Ke Kai Moana



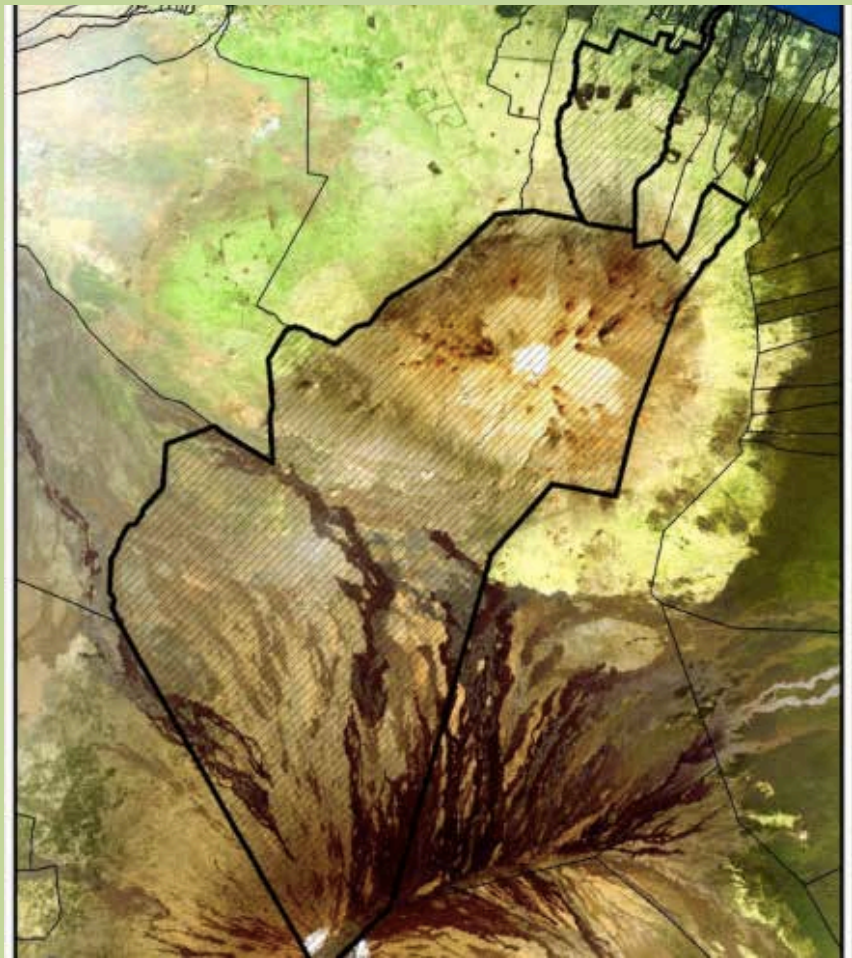
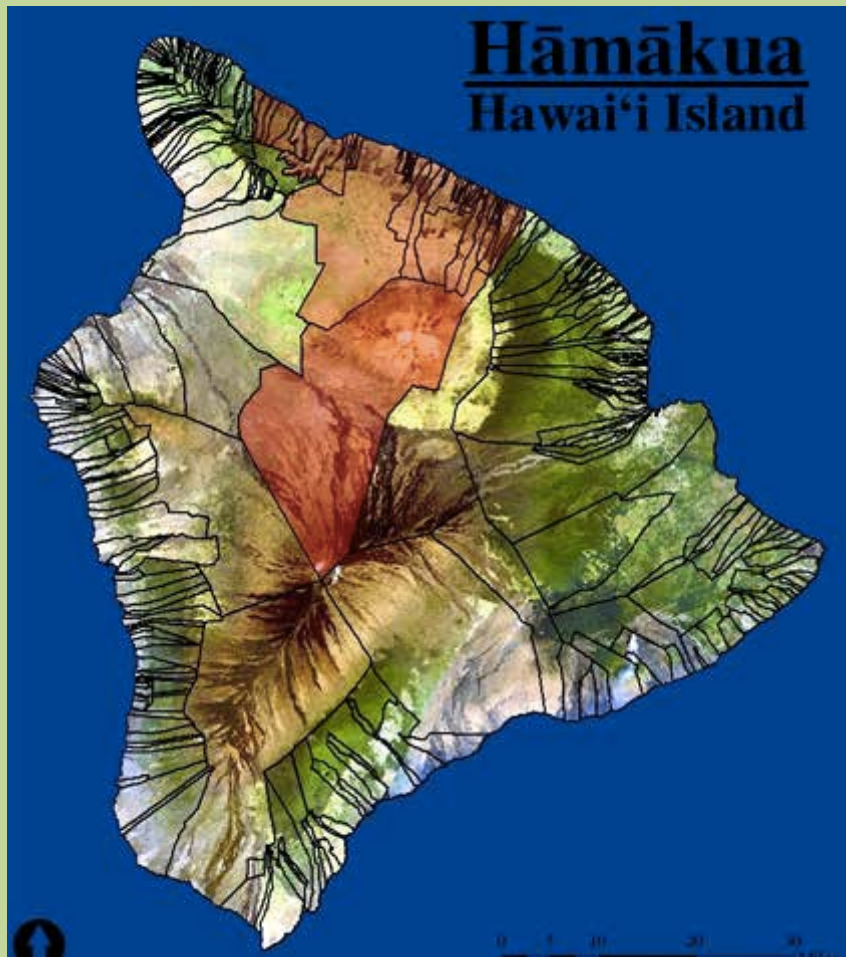
Collective Sufficiency





Pālena

Yet...



- 'Ohana – Family
- Mountain to Sea
- Diverse
- Adaptive

Best Practices

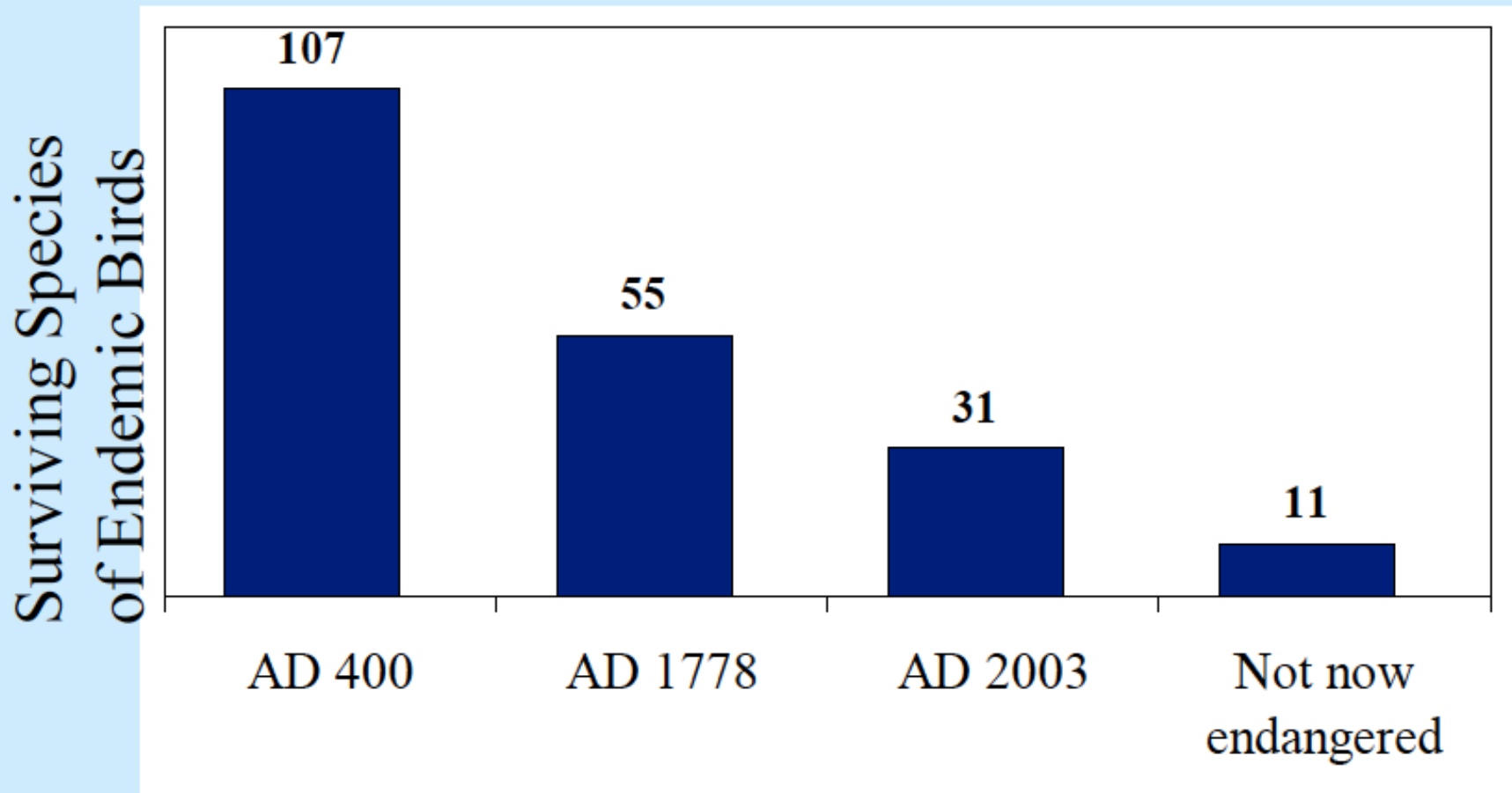


Trial And Error



Burney & Kikuchi 2006

Decline of the Hawaiian Avifauna



Cultivating Abundance

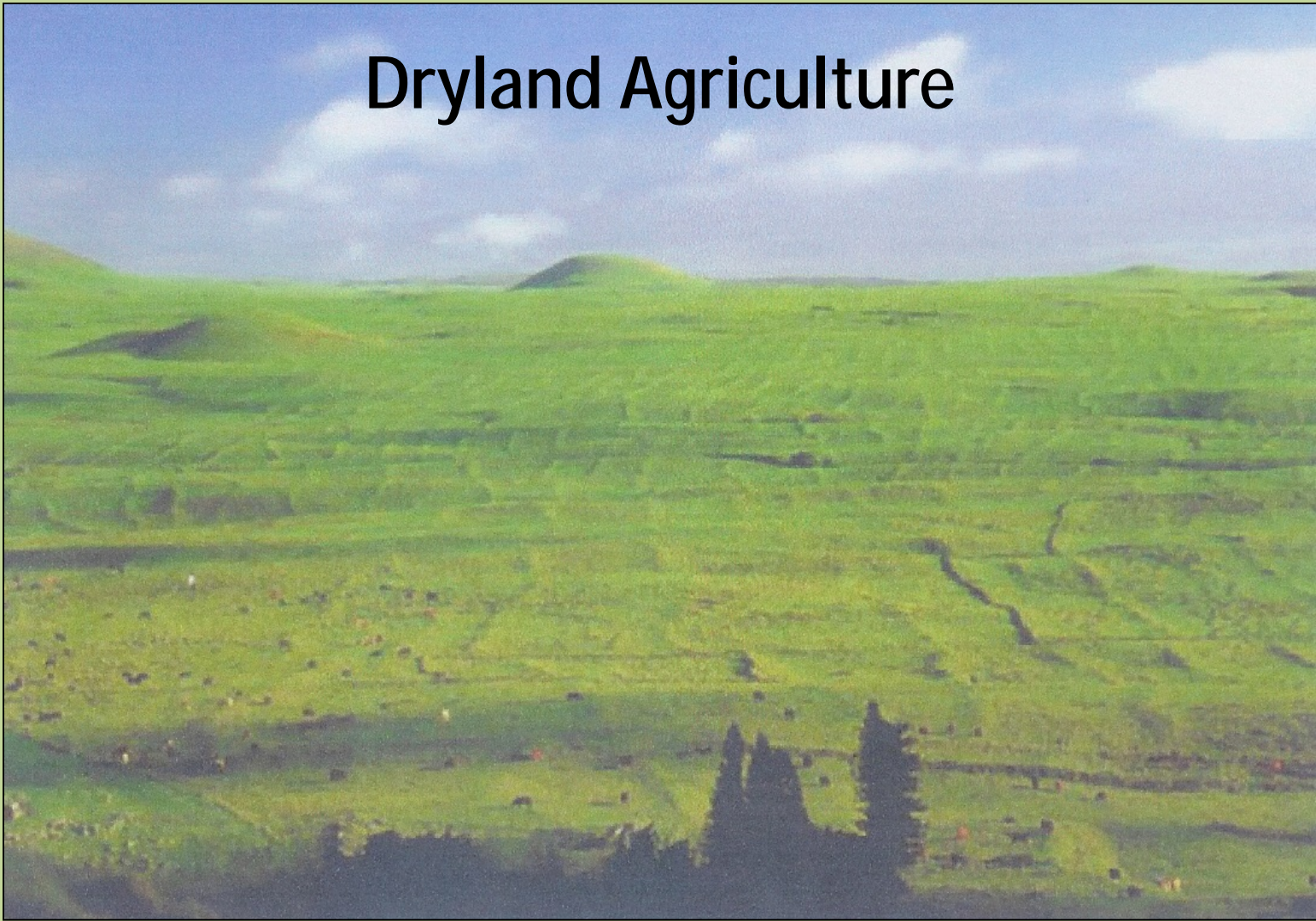
Today's Population

Taro Lo'i

Hanalei River valley & irrigated taro wetland system



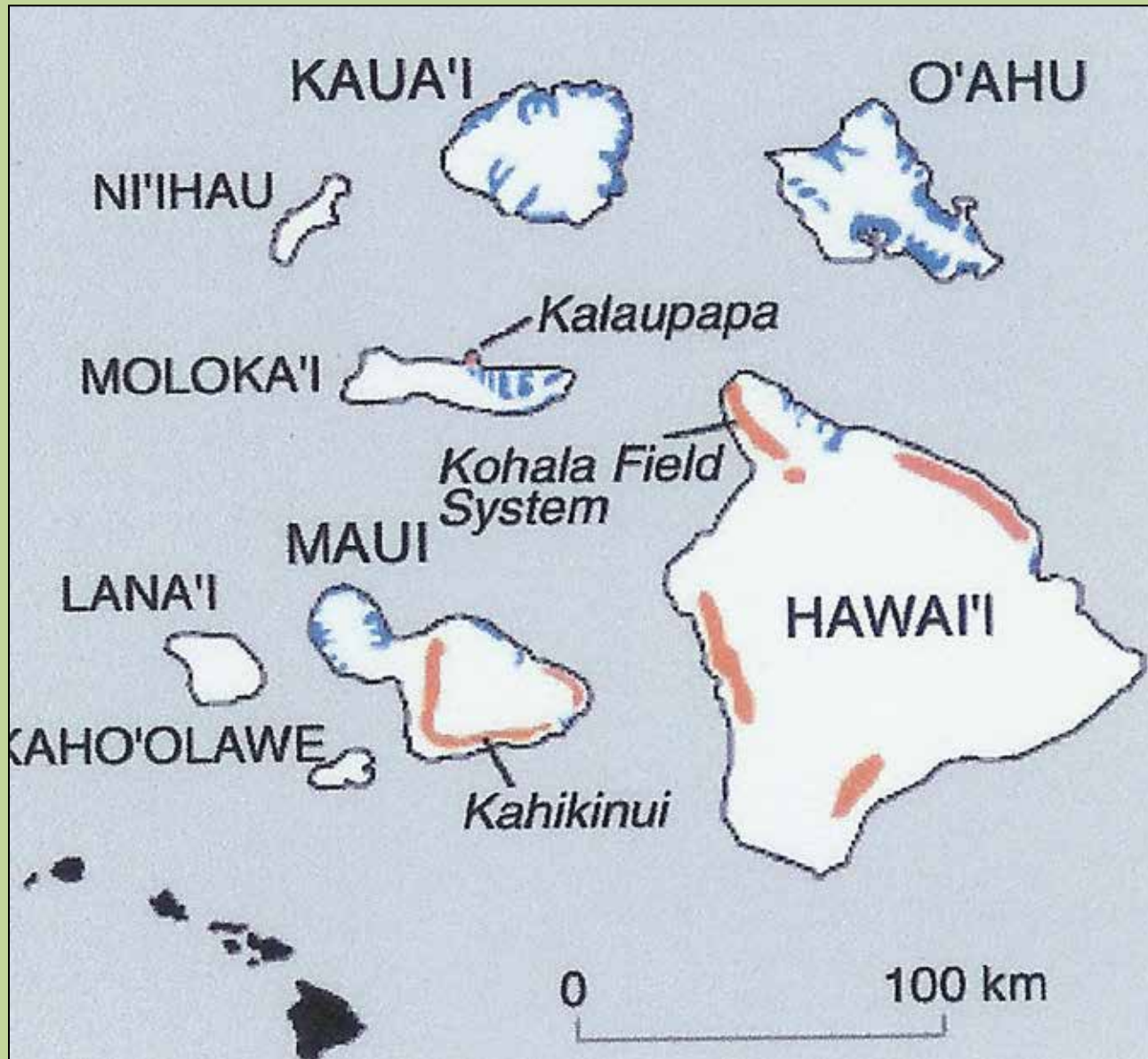
Dryland Agriculture



Leeward Kohala dryland agricultural system.
Field walls run parallel to contours over an
area of 60 km². (Vitousek et al. 2004)



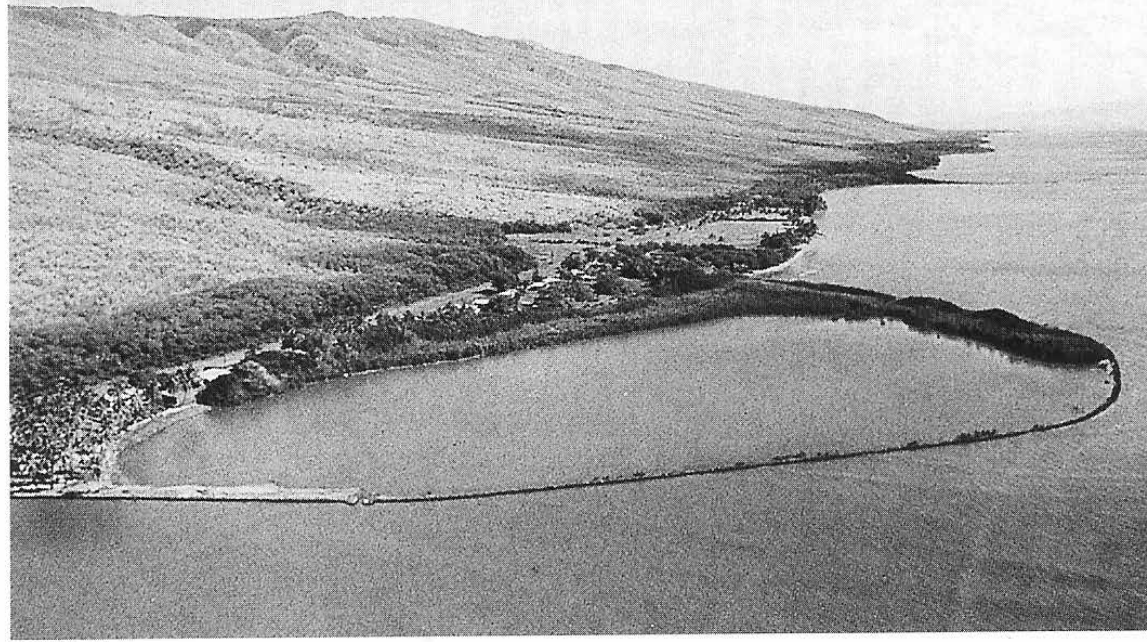
Intensive Agricultural Systems



The distribution of irrigated taro wetland systems (blue) & rainfed dryland agricultural systems (orange) across the Hawaiian archipelago.

(Vitousek et al. 2004)

Loko I'a





© Photography by
TEDKANEMITSU

Restoration ('Āina and People)



Types of Hawaiian Fishponds

- Loko kuapā:
seashore ponds
with stone walls
built on reef

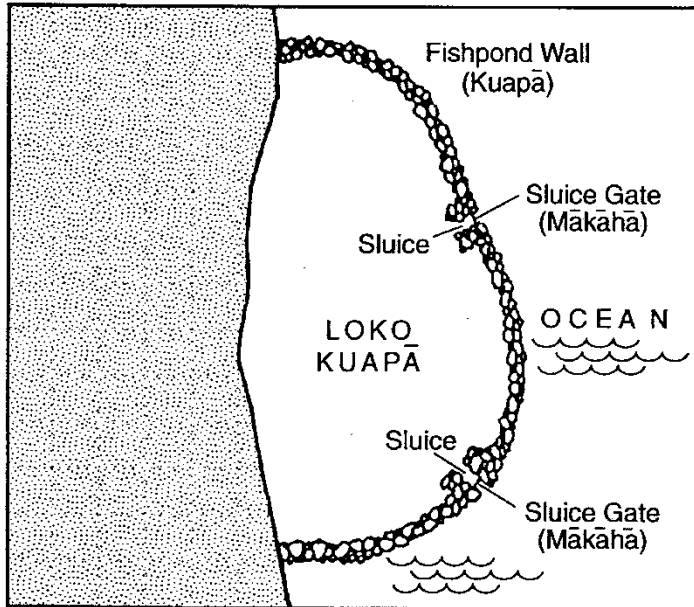


Figure 5: Loko kuapā. (Modified Kikuchi, 1976)

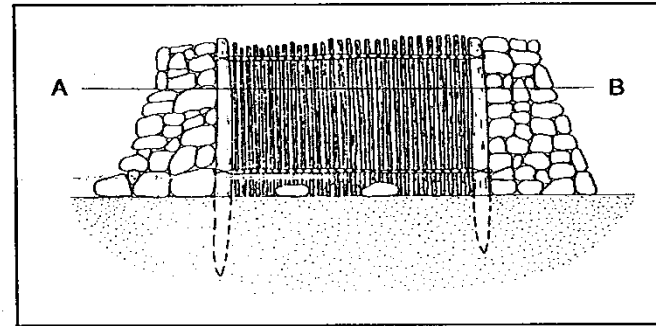


Figure 8: Side view of a mākāhā. Line A-B indicates water level. (Summers, 1964))

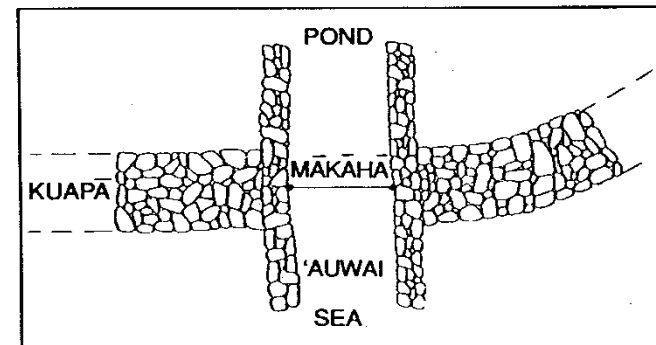


Figure 9: Top view of 'auwai o ka mākāhā. (Summers, 1964)

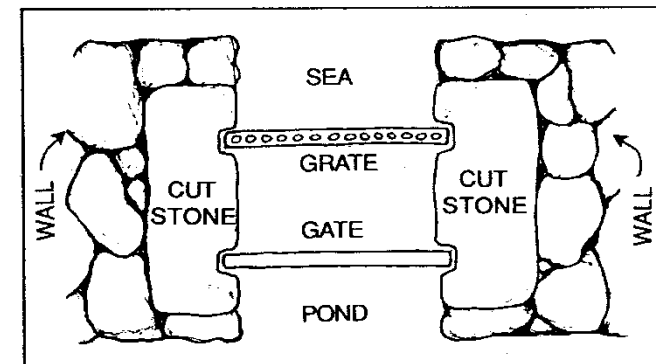


Figure 10: Drawing of typical mākāhā area in fishpond wall. (Modified from Kelly, 1975)

Fishpond at Kaloko-Honokōhau National Historic Park, Hawai'i.



- Walls angled to diffuse wave energy
- Gate allows water exchange w/ pond, prevents larger fish from escaping
- Efforts underway to enable Kaloko Fishpond to be used for aquaculture



Types of Fishponds

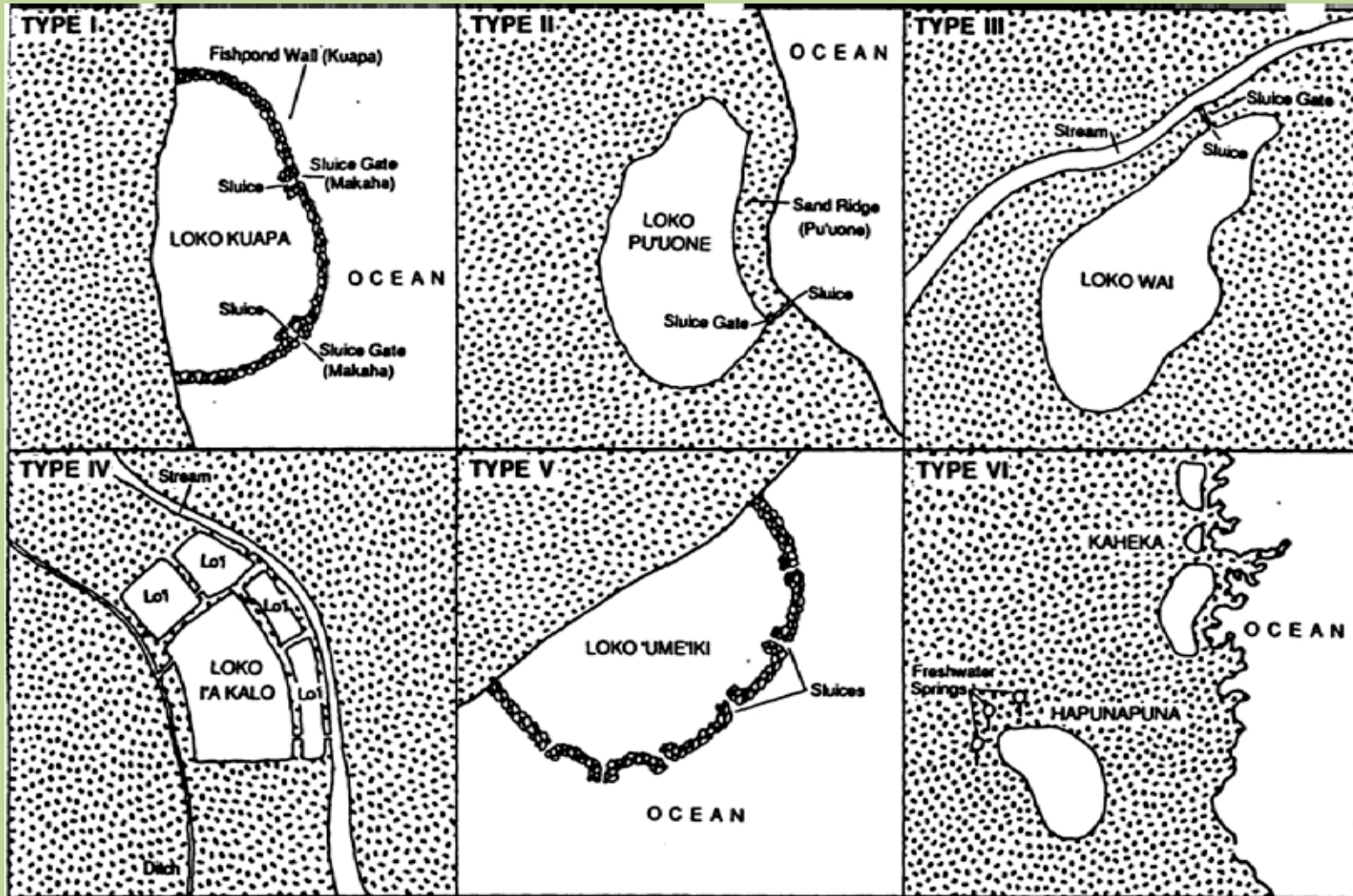


FIGURE 4: Six main types of Hawaiian Fishponds. (Apple and Kikuchi 1975)

Fish Couriers

(Costa-Pierce 1987)

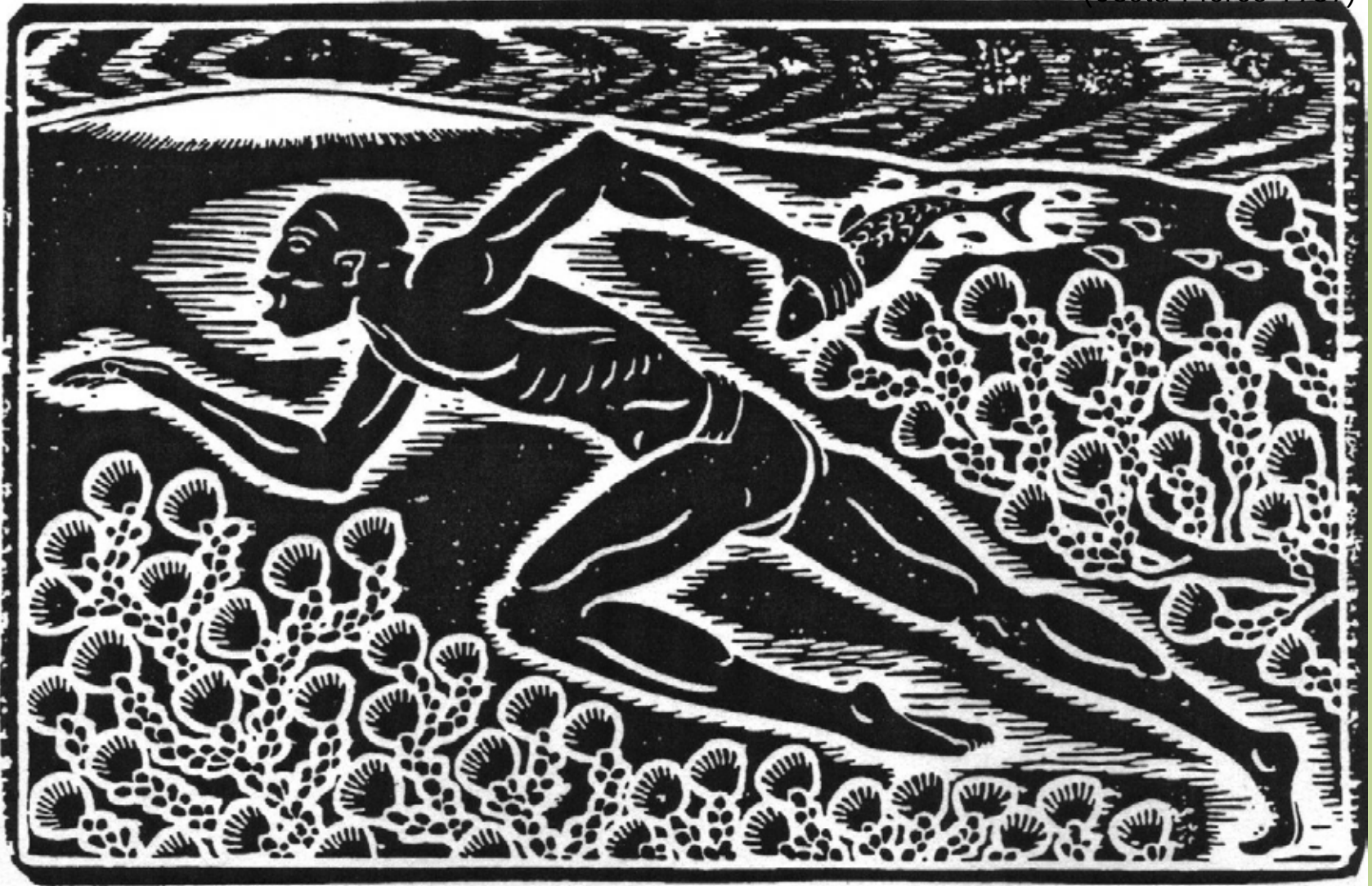


Figure 4. "Makoa," an illustration of the Hawaiian fish couriers who carried fresh fish over long distances from royal ponds to the travelling court of ancient Hawaiian kings. Print: Dietrich Varez, Volcano, HI.

Key Points

- 'Ohana CONNECTED
People = Resources

- DIVERSE
Adapted to Place

- INTEGRATED
Ma uka - ma kai
Ecological and Social

- ADAPTIVE Best Practices
Trial and Error over Time





AHALO LUATION

