

Wetlands Restoration in a Hawaiian Cultural Context

Scott Fisher, Ph.D.

Maui Coastal Land Trust

[www. Mauicoastallandtrust.org](http://www.Mauicoastallandtrust.org)

Introduction

- A Brief Overview of the Hawaiian Relationship with Coastal Wetlands;
- Management Considerations when Conducting Ecological Restoration Work in Coastal Wetlands: An Overview of the Bradley Method of Bush Regeneration
- Application in the Waihe'e Coastal Dunes and Wetlands Refuge (Maui Coastal Land Trust)

Traditional Hawaiian Relationships to Wetlands

Agriculture

- **Kalo** (taro) primarily cultivated in wetlands.
- Because wetland kalo cultivation was essential to the production of the Hawaiian staple food, traditionally Hawaiian farmers frequently enhanced the size and quality of wetlands (by bringing water into formerly upland fields through the construction of 'auwai, or aqueducts);



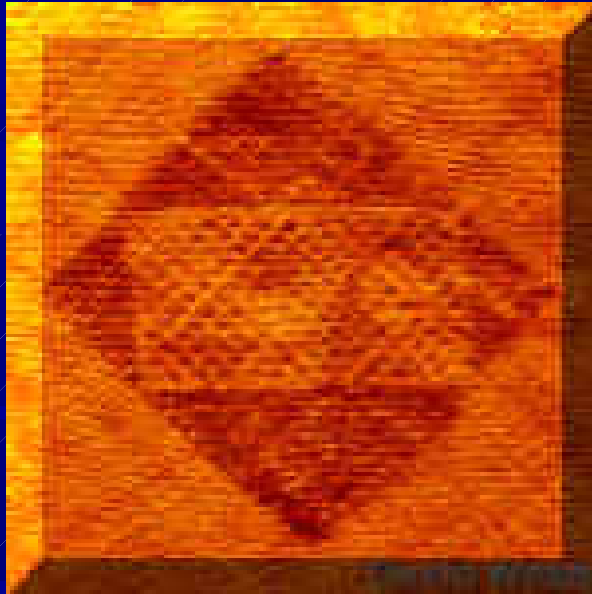
Fishponds

Shallow marine fishponds in nearshore waters (loko i'a) and inland freshwater fishponds in palustrine wetlands (loko kalo i'a) provided abundant fish catches.



Material Culture

- Makaloa (*Cyperus laevegeticus*) weavers made some of the most highly sought after mats;




Material Culture

- ‘Ahu ‘Awa (*Cyperus javanicus*) was used to strain the popular drink ‘Awa.



Spiritual Places: Wahi Pana

- Wetlands were often thought of as the domain of mo'o, or dragons;

- The dragon goddess Kihawahine (mokuhiniakalama'ulakala'aiheana)  worshipped in heiau known as hale puaniu which were situated on the edges of wetlands, where offerings of mottled dogs, spotted pigs and coconut flowers were given to her.



Wetlands Restoration

- In addition to being important cultural lands, wetlands are also critical habitat for a number of endangered species. These include:
 - The Hawaiian goose, or nene;
 - The Hawaiian duck, or Koloa;
 - The Hawaiian stilt, or Ae'o;
 - The Hawaiian coot, or 'Alae Ke'oke'o;
 - The Hawaiian moorhen, or 'Alae 'ula;
 - And the Laysan Duck (which once thrived on the main Hawaiian Islands but is now found only on Laysan and Midway Atolls).
- The sole indigenous and non-endangered waterbird is the 'Auku'u, or black-crowned night heron.

Wetlands Restoration

- **Definition of ecological restoration:** *“Ecological restoration is an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability.”* (From the primer on ecological restoration by the Society for Ecological Restoration).
- **Restoration of Ecosystem Health:** Restoration of Ecological function and values (e.g. sediment and nutrient attenuation, wildlife habitat, groundwater recharge, etc.).
- **Restoring Ecosystem Integrity:** Restoring the pre-disturbance ecosystem structure, function and composition.
- **Sustainability:** Autogenesis, or placing the ecosystem on a trajectory where it can heal itself from periodic disturbances without human interference.

Wetlands Restoration

- Ecological restoration in close proximity to cultural sites precludes the use of machinery which might damage archaeological features;
- Ground disturbance is prohibited, or must be done with archaeological monitoring which dramatically increases costs;
- Result: Managers must rely on labor intensive strategies using hand-held tools (chainsaws, brushcutters, loppers, etc.);

Wetlands Restoration

- Volunteer labor is critical to the success of restoration projects in cultural contexts, but it also requires staff and management oversight;
- The Bradley Method of Bush Regeneration has proven exceptionally useful in the Waihe'e wetlands;

The Bradley Method of Bush Regeneration

- Developed in Australia by two sisters in their mid-50's who were not professional ecologists;
- Consists of three basic principles:
 - Principle One: Always work from areas with native plants towards weed infested areas;
 - Principle Two: Make minimal disturbance;
 - Principle Three: Let native plant regeneration dictate the rate of weed removal (Bradley 2002: 19-21)

The Bradley Method of Bush Regeneration

- The Bradley method is specifically designed for areas where ecological restoration work must be slow and deliberate;
- Perfectly suited to cultural sites with archeological features;
- The trade off: The reduced rate of land clearance is traded for a reduction in the amount of time required for maintenance (hand weeding secondary re-growth or the cost of using herbicides);

The Bradley Method of Bush Regeneration

- Volunteers are a critical aspect of the successful application of the Bradley Method (Waihe'e Wetlands, students and kupuna)













Conclusions and Summary

- Public interest in important cultural features provides an opportunity to involve the community in ecological restoration;
- This is especially true when cultural practitioners help to clear invasive species and cultivate plants they will later harvest for cultural uses (e.g. weavers growing, planting and tending areas planted in makaloa);
- Ecological restoration strategies, such as the Bradley Method, are ideally suited for community participation;
- Ecological restoration projects benefit through public participation and understanding;
- He ali'i ka 'aina, he kauwa ke kanaka;
(The land is the master and humans are the servant);