Hawaii Congress of Planning Officials Conference

Coastal Ecosystems as Sea level rises

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Goals:

- Present information on locations on two defined wetland habitats on Maui
- Show future projected changes with sea level rise for the wetlands
- Present as examples the four main protected Hawaiian bird species resident in coastal wetlands – as these have implications for the future
- Endangered Species and State protections that would influence development affecting shifting wetland habitats
- Suggest a route for future agency collaboration on resilience and sea level rise issues as way of addressing risk reduction



Unlike hotels, businesses, roads, and infrastructure
Present locations and boundaries of coastal strand, dunes, and coastal wetlands habitat will shift as the effects of sea level rise and ground water movement occurs. Such dynamic open habitat provides quality of Maui life, basis for economy, and often protected native wildlife.

Cumulatively, beach and shoreline habitats act as a buffer between the ocean and inland habitats and human communities (U.S. Fish and Wildlife Service 2011). Beach and shoreline habitats support wet, mesic, and dry vegetative communities, as well as a variety of wildlife species, including terrestrial invertebrates, migratory shorebirds, seabirds, and nesting or basking marine species (Hawai‘i Department of Land and Natural Resources 2015)
It is the rate of change, not amount, that now defines the future of sea level rise effects.

Alternatively, increasing inundation could create new wetlands in previously dry areas (U.S.&Fish and Wildlife Service 2011a; Rotzoll, Fletcher 2013).

TWO Wetlands Two Future Scenarios

Kealia National Wildlife Refuge – current level of sea.

- Note relatively no building developments nearby

Kealia NWR – sea level rise of 5 feet

- Shows expanded wetland area

In contrast Kanaha Pond Wildlife Sanctuary Scenario – problematic due to surrounding development

Current sea level in 2019

The Wildlife Sanctuary

- with 5 feet sea level rise – note the new expansion and new wet areas

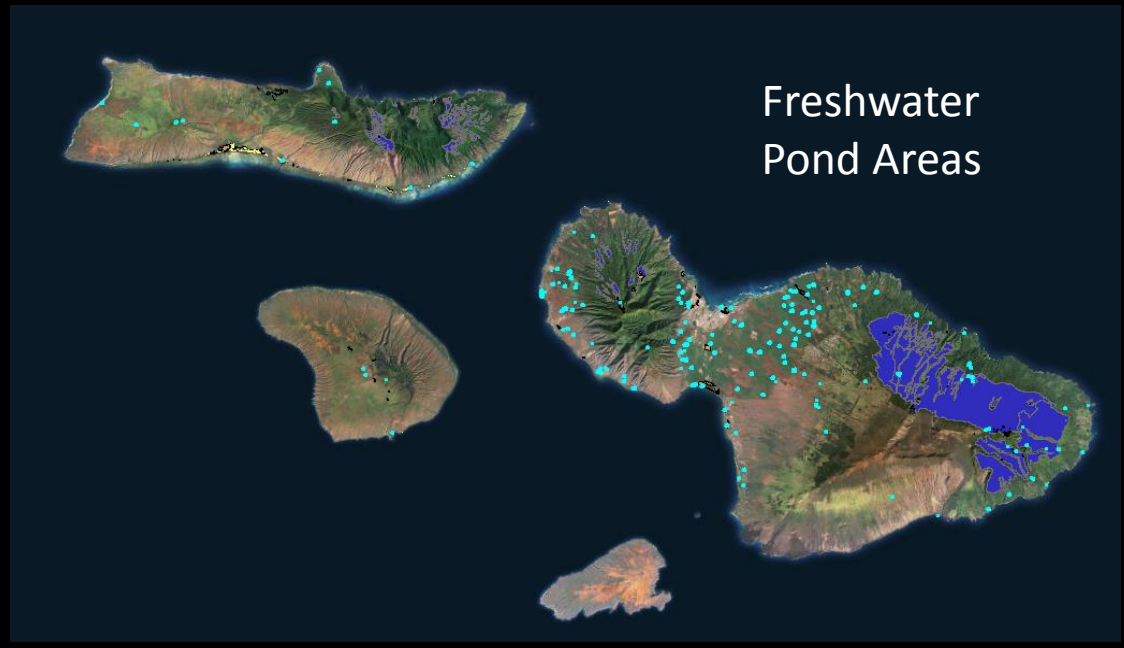
The Kanaha Pond Wildlife Sanctuary established 1974 has little room to “move its present footprint ” without conflict with surrounding development that has encroached over the decades

Maui's wetland habitat could well expand affecting large imprint

Wetter/Rainier model are wetter wetland regions on Maui

New wetlands appear

New ponds appear - more pond and bird habitat



Maui’s Wetland Resident Bird Species – protected species
The Hawaiian Stilt or ‘Aeo

Maui’s Wetland Resident Wetland Bird Species – protected species

The Hawaiian Coot or ‘Alae-ke’oke’o (left)

and Hawaiian Duck or Koloa-maoli

Why the species and their associated habitat are of planning concern for long range resilience planning

- LEGAL MANDATES AT FEDERAL AND STATE LEVELS
- Federal ESA
- State HRS Chapter 195 D
- Cannot “get in the way” if ES are residing

The ESA (1973) makes it unlawful for a person to take a listed animal without a permit. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Through regulations, the term “harm” is defined as “an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.”

HRS Title 13, Chapter §195D-4 Endangered species and threatened species. (a) Any species of aquatic life, wildlife, or land plant that has been determined to be an endangered species pursuant to the Endangered Species Act shall be deemed to be an endangered species under this chapter

- This regulation would cover federal and state mitigation via Habitat Conservation Plans, for example, if development causes/would cause take
- New habitat supporting Endangered Species could be petitioned as protected habitat by anyone

- Rate of change will be the determining factor
- Boundaries are a moving target now
- Drainage of low impeded areas will be, and stay wet
- Build/unbuild and finally sell to government – not get in way
- Collaborate in planning for resilience