

Cultural Knowledge & Heritage Values

Climate Vulnerability Assessment and Adaptation Strategies for Hawai'i

ECOSYSTEM SERVICE DESCRIPTION

Native Hawaiian culture is dynamic and inextricably tied to the surrounding land and seascapes. Great cultural importance is placed on native species, especially the native plants and animals that have shaped the culture, including those that provide food and medicine. Many cultural practices are dependent on natural resources, such as the gathering of native plant and animal species for food, medicine, carving, tools, weaving, jewelry, and ceremonies such as hula. Important physical components of cultural knowledge and heritage include significant places of the past, such as villages, agricultural fields, rock art sites, and heiau (temples).



ECOSYSTEM SERVICE VULNERABILITY

Cultural knowledge and heritage is vulnerable to changes that impact the health and integrity of ecosystems and/or native species, as well as changes that damage or destroy valued cultural assets and heritage sites. Disturbance events can affect large areas and cause the damage or loss of living things and important landscapes of cultural importance, and they also limit access to traditional gathering areas and the ability to carry out traditional practices. Many non-climate stressors are linked to increasing human populations and associated impacts, including changes in land use and the overuse of natural resources. This service currently receives relatively little support, however, people may increasingly seek out traditional practices under changing climate conditions.



Drivers of Ecosystem Service Vulnerability

- **Climatic factors and disturbance regimes:** Sea level rise, air temperature, precipitation (amount/timing), tropical storms/hurricanes, wind/circulation, wildfire, riverine flooding, insects, disease, volcanic eruptions
- **Non-climate factors:** Residential/commercial development, agriculture/aquaculture, pollution/poisons, roads/highways/trails, groundwater development, water diversions, recreation, invasive species

PROJECTED FUTURE CHANGES	POTENTIAL IMPACTS ON CULTURAL KNOWLEDGE & HERITAGE VALUES
Increased rate of sea level rise +0.4m (1.3 ft) to +3.3m (10.8 ft)	<ul style="list-style-type: none"> • Increased coastal flooding, saltwater intrusion, and beach erosion • Damage to structures, artifacts, and iwi kūpuna (ancestral burials) in coastal areas
Increased air temperature	<ul style="list-style-type: none"> • Increased stress in native species and shifts in species distribution
Changes in precipitation	<ul style="list-style-type: none"> • Reduced health and integrity of valued native ecosystems due to water stress, as well as shifts in habitat distribution
Increased frequency and strength of tropical storms/hurricanes	<ul style="list-style-type: none"> • Damage to coastal areas, forests, and other valued landscapes and cultural/historical sites • Possible extirpation of endemic species
Changes in wind and circulation	<ul style="list-style-type: none"> • Increased plant water stress, preventing upslope shifts in species distribution
Increased wildfire	<ul style="list-style-type: none"> • Habitat loss and destruction of cultural sites • Reduced forest access for gathering traditional materials
Increasingly variable riverine flooding	<ul style="list-style-type: none"> • Damage to culturally-valued species, heritage sites, and infrastructure
Increased insects and disease	<ul style="list-style-type: none"> • Damage and mortality to native species, which may impact large areas

ADAPTIVE CAPACITY

Factors that enhance adaptive capacity:

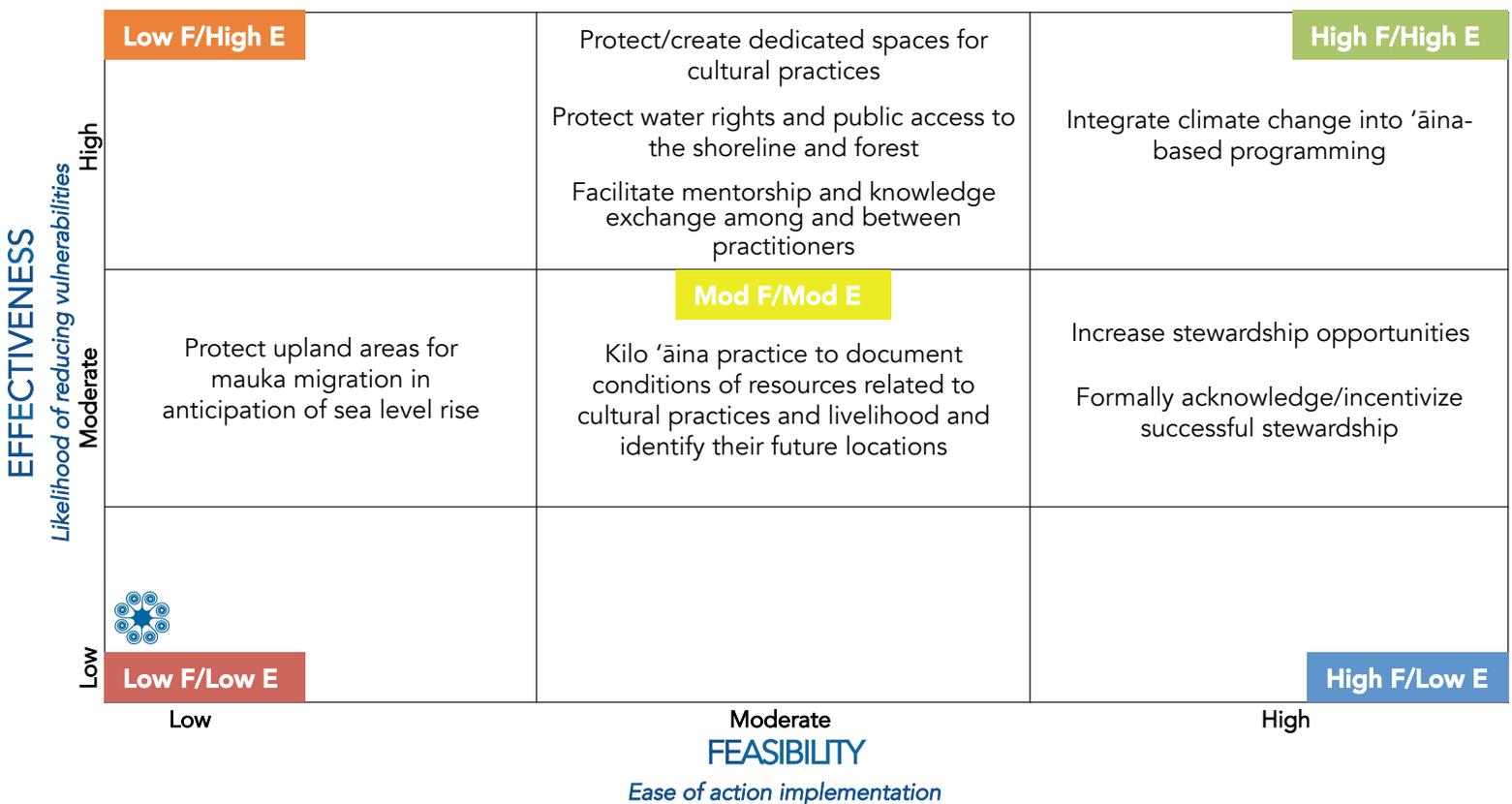
- + Valued by constituency groups and practitioners and increasingly incorporated into management
- + People may seek out traditional values & cultural knowledge as climate changes become apparent
- + Recognized in the Hawai'i State Constitution, which provides some protections

Factors that undermine adaptive capacity:

- Receives relatively little societal and public support
- Native Hawaiian people are impacted by the ongoing effects of colonialism
- Access and connection to forests can conflict with European ideas of land ownership and resource use
- Little effort is made to consider climate change impacts to less visible species

ADAPTATION STRATEGIES FOR CULTURAL KNOWLEDGE & HERITAGE VALUES

Types of Adaptation Approaches	Adaptation Strategy	Specific Action
Resistance: Prevent climate change from affecting a resource. <i>Near-term approach</i>	Preserve cultural practices and sites (e.g., landscapes, traditions)	<ul style="list-style-type: none"> Protect/create dedicated spaces for cultural practices Protect water rights and public access to the shoreline and forest Integrate climate change into 'āina-based programming
Resilience: Help resources weather climate change by avoiding the effects of or recovering from changes <i>Near- to mid-term approach</i>	Increase biocultural landscape-based planning and management	<ul style="list-style-type: none"> Kilo 'āina practice to document conditions of resources related to cultural practices and livelihood and identify their future locations
Response: Intentionally accommodate change and adaptively respond to variable conditions <i>Long-term approach</i>	Anticipate and facilitate habitat migration	<ul style="list-style-type: none"> Protect upland areas for mauka migration in anticipation of sea level rise
Knowledge: Gather information about climate impacts and/or management effectiveness in addressing climate challenges <i>Near- to long-term approach</i>	Ensure community-wide intergenerational transmission of knowledge	<ul style="list-style-type: none"> Facilitate mentorship and knowledge exchange among and between practitioners
Collaboration: Coordinate efforts and capacity across landscapes and agencies <i>Near- to long-term approach</i>	Increase number of Native Hawaiian stewards for cultural resources	<ul style="list-style-type: none"> Increase stewardship opportunities Formally acknowledge/incentivize successful stewardship



Further information and citations can be found in the Hawaiian Islands Climate Vulnerability and Adaptation Synthesis and other products available online at www.bit.ly/HawaiiClimate.

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