

The Wai'anae Ahupua'a Ecological Characterization

Preliminary Project Summary



CZM Hawaii
Coastal Zone Management



The National Oceanic and Atmospheric Administration's Coastal Services Center (NOAA CSC) has developed an approach called an "ecological characterization" that uses GIS and Internet technologies to integrate landcover, spatial, historic, socio-economic and cultural data. In conjunction with NOAA CSC, Coastal Zone Management Hawai'i (CZM) will begin work on an ecological characterization that focuses study on the Ahupua'a of Wai'anae on O'ahu.

Call for Participation

At the present time, CZM and NOAA CSC would like to invite partners from government, private and community organizations in Hawai'i to participate in the development of the characterization. CZM is seeking agencies and organizations that have or are currently working on projects in the Wai'anae *moku* (district) in order to augment existing information for the area. CZM is also seeking groups that would be interested in data collection and conducting research within Wai'anae.

Preliminary briefings with interested agencies and organizations will be held to identify potential partners for data-sharing. Please contact the following staff members from CZM by **August 16, 2002**, if you are interested in participating in this project:

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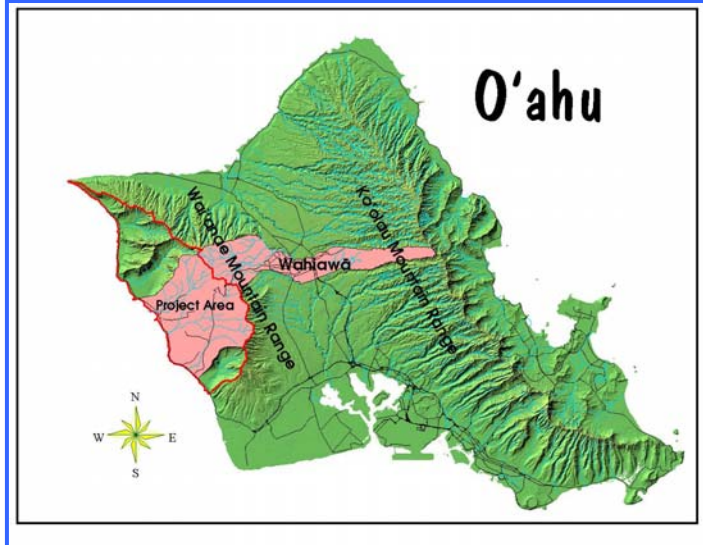
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What is an Ecological Characterization?

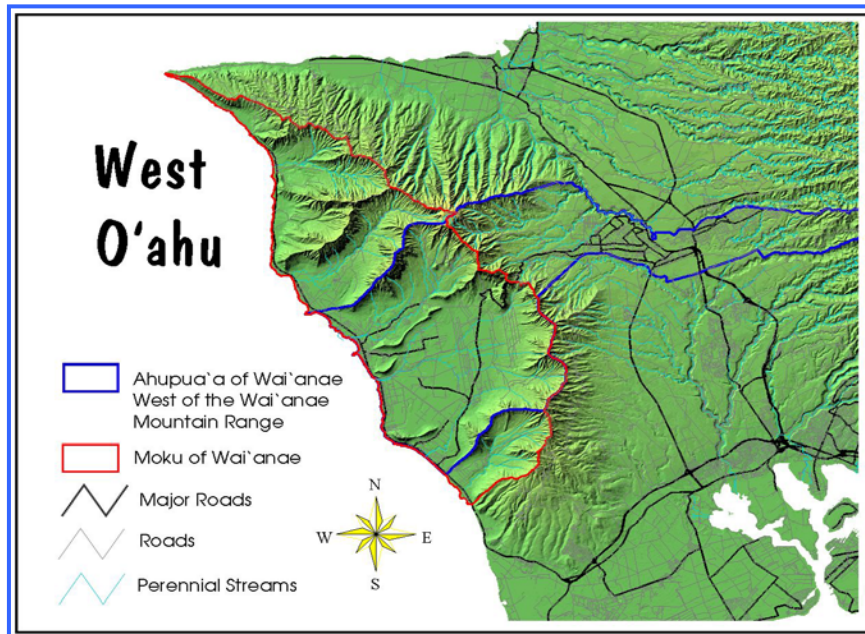
An "ecological characterization" is a synthesis of regional information emphasizing research, management, and educational needs. It presents a site-specific picture of the region's ecosystem, including its human elements (for instance, social-economic and cultural history). A characterization also incorporates supplementary information, such as annotated bibliographies, tabular and geospatial data, and data access tools.

The Wai'anae Ahupua'a Ecological Characterization will synthesize available and new biological,

physical, and human use information about the Ahupua'a of Wai'anae. Please note that although the ahupua'a boundary for Wai'anae extends beyond the Wai'anae Mountain Range, through Wahiawā and to the Ko'olau Mountain Range, the study area for this



Map 1: Showing the Wai'anae Ecological Characterization project area. The extent of the Ahupua'a of Wai'anae is shown in pink. The Wai'anae Moku is delineated in red. Prepared by the State Office of Planning/Statewide GIS Program 7/24/02.



Map 2: Showing a closer view of the Wai'anae Ahupua'a Ecological Characterization Project Area.

Prepared by the State Office of Planning/Statewide GIS Program 7/24/02.

project will be limited to the area of the ahupua'a between the Wai'anae Mountain Range and Wai'anae coast (refer to Maps 1 and 2 on this page).

The characterization will also develop a centralized Geographic Information System or GIS for the Ahupua'a of Wai'anae. The characterization will be published in an interactive digital format on a compact computer

disk (CD), suitable for both novice and technically sophisticated audiences. Unlike a paper document, the CD format will utilize hypertext markup language (HTML, the language used on the Internet) enabling easy updates, and allowing the user to query and manipulate data. In addition, information contained on the CD will be available on the Internet. For those who cannot access these formats, hardcopy (paper) versions will also be produced.

What are the goals for the Wai‘anae Ahupua‘a Ecological Characterization?

The goal of the Wai‘anae Ahupua‘a Ecological Characterization is to develop information, data, and GIS-based tools for examining the effects of land use on coral and other living resources. A specific focus of the characterization will be the effect of land use on sediment discharges into coastal waters.

An essential step of the characterization will be to further develop the *Impervious Surface Analysis Tool* (ISAT) for Hawai‘i, which was created in part by NOAA, to add examinations of soil erodibility and sediment discharges. The remainder of the characterization would focus on explaining the results of the ISAT analyses to the environmental and social framework of ahupua‘a based management.

What is an Impervious Surface Analysis Tool?

Unlike areas where soil and vegetation absorb rainwater, *impervious surfaces* are areas that water cannot penetrate. Rooftops, roads, and parking lots are examples of impervious surfaces associated with development. When rains wash over these surfaces, residue and debris are collected and delivered to streams, and are eventually drained into soil and groundwater or coastal waters. Not all impervious surfaces are manmade, however. Some soil and rock types, such as clays, are naturally impervious. When the percentage of impervious surface blanketing a watershed reaches a certain level, water quality is negatively impacted.

The *Impervious Surface Analysis Tool*, or ISAT, created by the NOAA CSC’s Coastal Remote Sensing Program and the Nonpoint Education for Municipal Officials (NEMO) Project, identifies the percentage of impervious surface resulting in water quality degradation. CZM is currently partnering with the Coastal Services Center to adjust the tool for Hawai‘i’s impervious surface issues. The current tool uses the Ahupua‘a of Wai‘anae as a test area for analysis.

For more information on the ISAT being developed for Hawai‘i, please refer to the document “An Impervious Surfaces Model for Determining Water Quality within Watersheds: An Application of GIS and Remote Sensing to Coastal Issues” available from CZM.

What are examples of other Ecological Characterization Projects?

Characterizations have been developed for Kachemak Bay in Alaska, and Ashepoo-Combahee-Edisto (ACE) Basin and Otter Island in South Carolina. Please visit the following websites for more information about the characterizations for these regions:

*Kachemak Bay, Alaska Ecological Characterization
Interactive Site*

<http://www.csc.noaa.gov/lcr/kachemak/>

*ACE Basin, South Carolina Ecological Characterization
Interactive Site*

<http://www.csc.noaa.gov/acebasin/>



*Ecological Characterization Prototype for Otter Island, South Carolina (description of
Project)*

http://hypernews.ngdc.noaa.gov/HyperNews/get/IGBP_Otter.html

How will this project benefit the Wai'anae Community and the State?

The decline of the sugar industry in the 1980's left large agricultural districts, such as Wai'anae, vulnerable to urban development and sprawl. Cumulative and secondary impacts (CSI) associated with urban growth, especially in areas previously used for sugar cultivation, include water degradation, leaching, and polluted runoff. These CSI directly impact coral reefs and other coastal and marine resources.

The Wai'anae Ahupua'a Ecological Characterization Project will specifically focus on synthesizing available cultural, biological, and human use (land use) information on the Ahupua'a of Wai'anae, and will provide this information in an interactive format that community members and government partners can access in order to: (1) identify the specific sources of CSI in the Ahupua'a of Wai'anae; (2) undertake a future assessment of the impacts of CSI on coral reefs in the Ahupua'a of Wai'anae; and (3) share this information with community members of Wai'anae. The ecological characterization will be produced in the form of an interactive CD program and hard-copy maps and will be utilized by the Wai'anae Community and government partners.

What is the time frame of this project?

Work on the characterization will begin in September 2002 and will be completed in June 2004. The first deliverable is a strategic work proposal that is due by September 2002. CZM would like all potential partners to have an opportunity to provide input on

the proposal, as well as to review the proposal, so that all participating agencies and organizations may benefit from this project.

How will products of the characterization be distributed?

Products derived for this characterization will be delivered to all participating partners. Additional CD's and hardcopy products will be available from CZM or CSC and online.

How will work for the characterization be accomplished?

Work will be performed through contracts with the local universities, community colleges, and/or private entities that have the technical capability to research, collect and/or analyze data for this project. The procurement process for contracted work will not commence until the project officially begins in September.

Coordination with partners

Coordination between CZM, NOAA CSC, National Ocean Service Pacific Services Center, contractors, and partners is essential to the success of this project. In order to expedite the flow of work and information, all questions, suggestions and deliverables should be transmitted through the primary contacts at CZM as listed on the first page of this summary. In addition, all partners will be asked to review and sign a simple Memorandum of Agreement (MOA) for participation in the characterization.