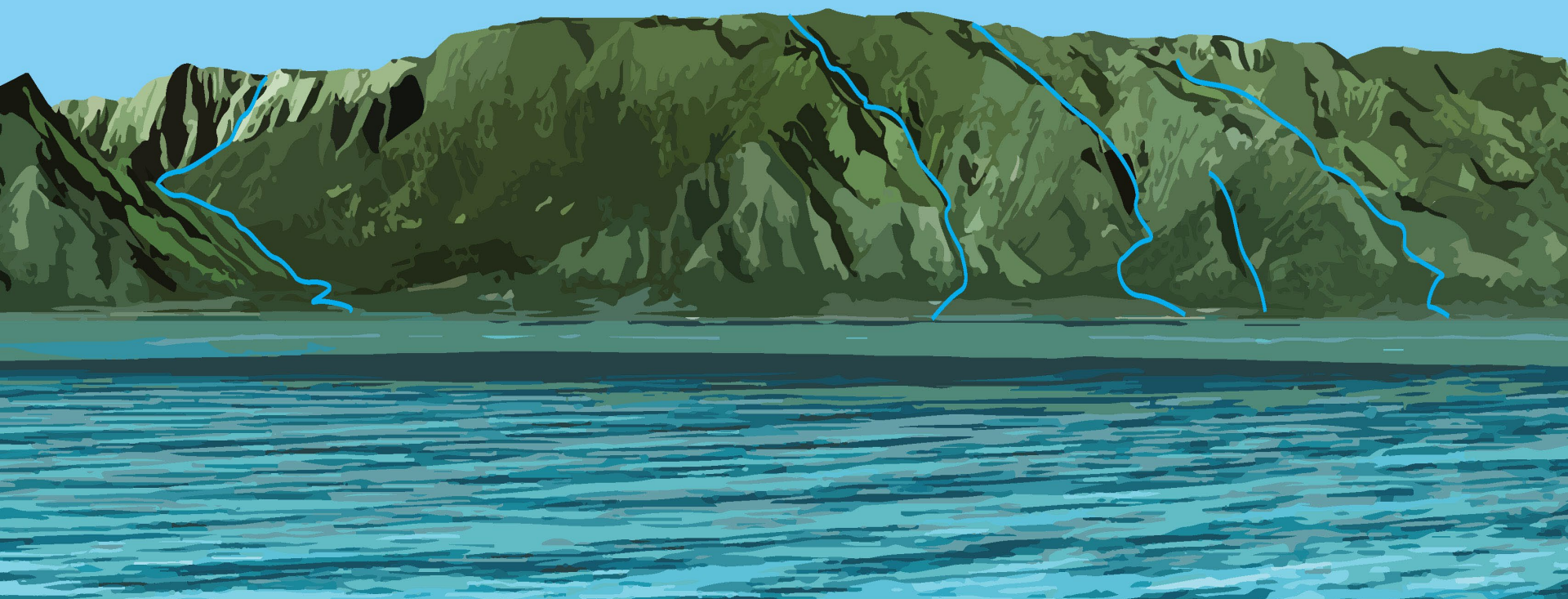


Hau'ula to Punalu'u Watershed Snapshot

» LOCAL MEASURES OF AHUPUA'A HEALTH



HAWAII
CONSERVATION
ALLIANCE



CONSERVATION
CONNECTIONS

WWW.CONSERVATIONCONNECTIONS.ORG



Hawai'i Conservation Alliance
FOUNDATION



WWW.HAULACOMMUNITYASSOCIATION.NET

» A STATUS REPORT ON RIDGE-TO-REEF HEALTH

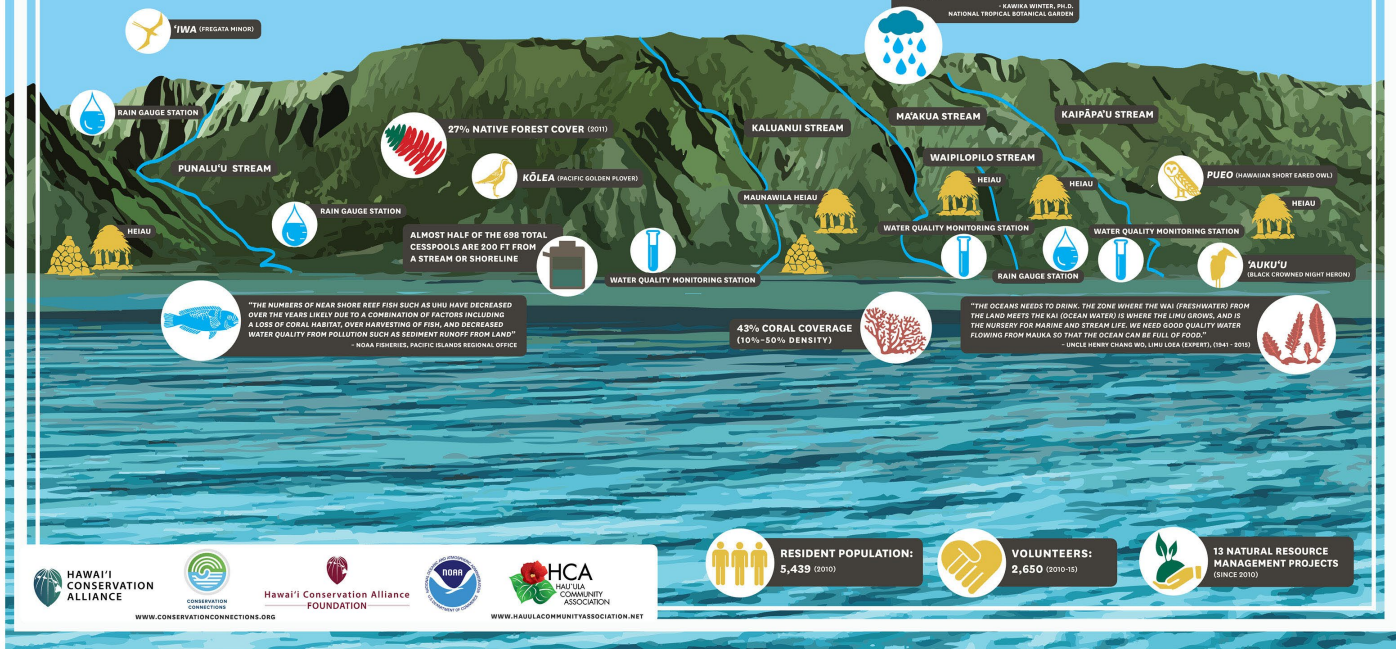
Hau'ula to Punalu'u Watershed Snapshot



» LOCAL MEASURES OF AHUPUAA HEALTH

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"THE KŪPUNA TELL US THERE IS LESS WATER IN THE STREAMS, AND THE SCIENTISTS TELL US THAT NOT ONLY IS THERE LESS RAINFALL, BUT THE SPREAD OF INVASIVE TREES MEANS THE FOREST HOLDS ONTO EVEN LESS WATER THAN THEY USED TO. WE NEED HEALTHY FORESTS TO ENSURE THAT HAU'ULA STILL HAS CLEAN, FLOWING WATER IN THE FUTURE."
 -KAROLE WHITE, PH.D., NATIONAL TROPICAL BOTANICAL GARDEN





PURPOSE

INFORMATION

EMPOWER COMMUNITIES WITH NATURAL RESOURCE INFORMATION

EVALUATION

ASSESS THE IMPACT OF CURRENT MANAGEMENT EFFORTS

ACTION

CATALYZE ACTION, WHETHER TOP DOWN (POLICY)
OR BOTTOM UP (GRASSROOTS EFFORTS)

CO-MANAGEMENT

ENCOURAGE COLLABORATION BETWEEN GOVERNMENT AGENCIES,
NON-PROFITS AND COMMUNITIES FOR RESOURCE MANAGEMENT

WATERSHED SNAPSHOTS PROGRESS 2012-16



<< Honolua to
Napili, Maui



<< Waimea,
Hawai'i Island



<< Hā'ena, Kaua'i



<< Maunaloa Bay, O'ahu

2013

- 8 Community Consultations Statewide
- Watershed Boundary Maps, Scope of Communication Tools and Metrics Confirmed

2014

- Convening of Communities Statewide to Solicit Interest in Snapshot Participation
- Intellectual Property, Data Sharing Agreement, HCA ARC GIS Tool Demo Data Discussion, Communications 101

2015

- Site Planning Meeting on O'ahu and Moloka'i for 6 Volunteer Communities
- Maps with Available Data, Metrics Checklist, Site Plan Development, Additional 2-3 Metric Selection, Project Timeline, Metric Data Compilation

2016

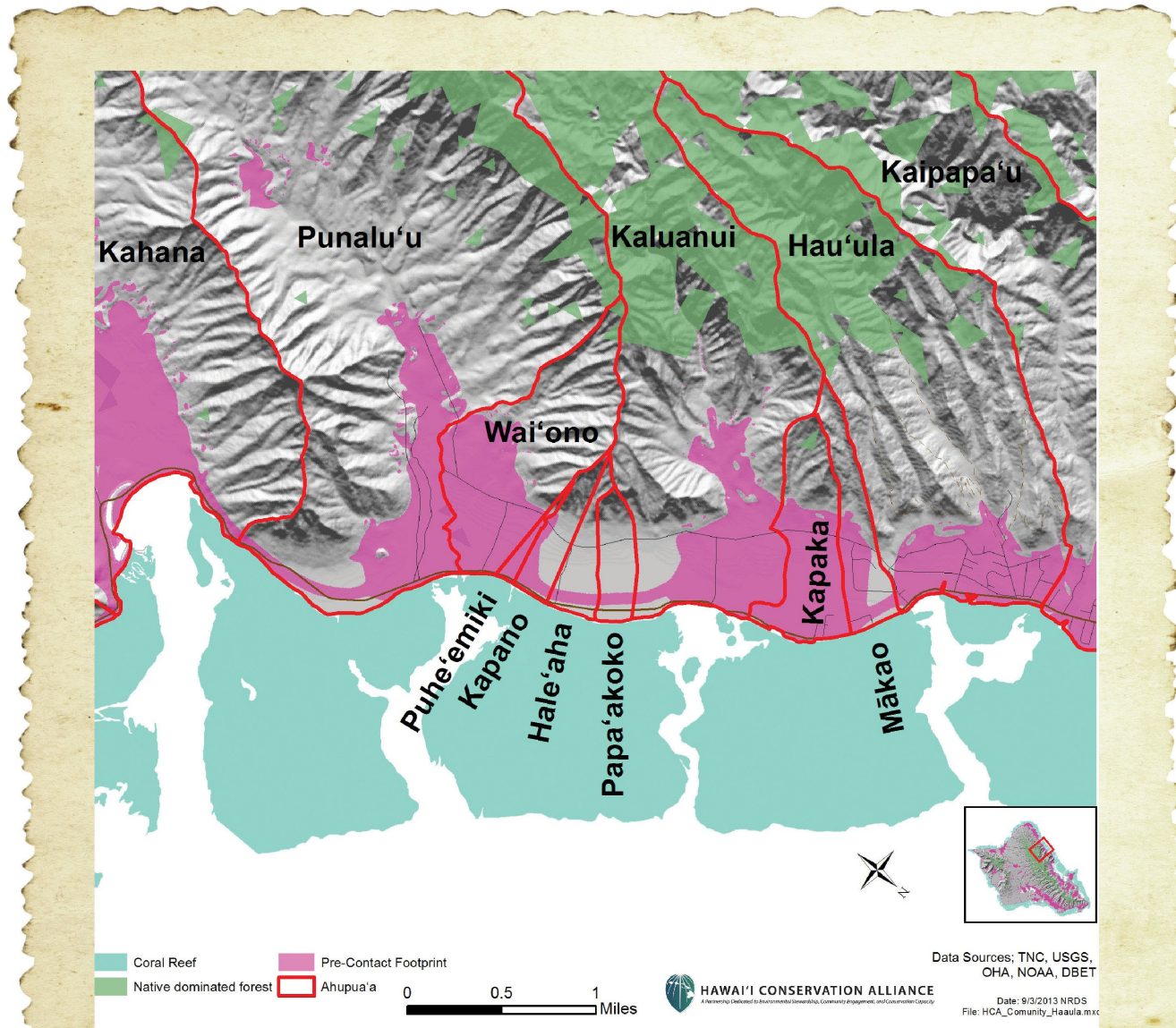
- 3 Community Engagements
- Watershed Health Web Map and Snapshot Web Maps for each of the 3 sites
- Water Quality: Training, Consult, Collection, Supply Kits and Monitoring Plans
- Community Data Gathering: Community Involvement in Resource Management, Place Names, Local Knowledge
- Lessons Learned Workshop
- IUCN WCC Pavilion Event

» HOW DO WE MEASURE THE HEALTH OF OUR WATERSHED?

SOCIO-CULTURAL
<p>Population Size and Growth (DBEDT)</p>
<p>Cultural (# of kūpuna, # families persist, presence of lo'i, traditional fishing)</p>
<p>Health/Diet (Prevalence of diabetes, heart disease, obesity, drug abuse; # of farmers/fish markets)</p>
<p>Community Involvement in Natural Resource Management (# of people, # of projects, # of organizations, # schools, etc)</p>

BIOPHYSICAL
<p>Rainfall (rain and stream gauges- NOAA-Weather)</p>
<p>Availability Of Fresh Water (# of water sources/household(or capita), Board of Water Supply)</p>
<p>Water Quality (Stream sediment, flow, pathogens)</p>
<p>Groundwater Recharge, Land Use (% Impermeable Surface, ratio of developed over natural)</p>
<p>Native Vegetation (% trees/plants cover, acres)</p>
<p>Key Bird Species (Presence, abundance, compare historic)</p>
<p>Target Food Fish (Biomass, Fishing Effort, Size Structure)</p>
<p>Ocean Habitat Quality (Coral: abundance & biodiversity; sand; rubble etc)</p>
<p>Marine Invertebrates & Algae (Indicators of water or habitat quality)</p>
<p>Freshwater: Food Fish & Key Invertebrates (see fish and invertebrate above)</p>

WATERSHED BOUNDARY





COMMUNITY REPRESENTATIVES

LINDA AVEGALIO

DR. TUSI AVEGALIO

LISA CHANG

KEN FURUKAWA

RONNIE HUDDY

DOTTY KELLY-PADDOCK

DAN VANRAVENSWAAY





**WATERSHED
METRICS**



“The kūpuna tell us there is less water in the streams, and the scientists tell us that not only is there less rainfall, but the spread of invasive trees means the forest holds onto even less water than they used to. We need healthy forests to ensure that Hau‘ula still has clean, flowing water in the future.”

**- KAWIKA WINTER, PH.D.
NATIONAL TROPICAL BOTANICAL GARDEN**

WATER QUALITY TRAINING



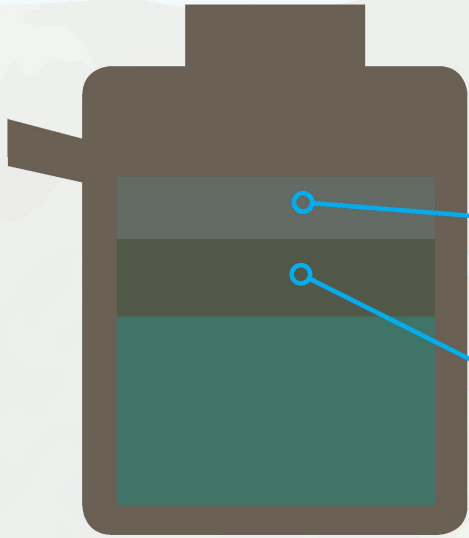
MARCH 2016

HUI KŪ MAOLI OLA, KĀNE‘OHE

FACILITATED BY THE NATURE CONSERVANCY’S
DR. KIM FALINSKI AND MANUEL MEJIA

COMMUNITIES RECEIVED:

- SUPPORT IN DESIGNING A COLLECTION PLAN
- SUPPORT FOR FIRST SAMPLE COLLECTION
- WATER QUALITY STIPEND FOR START-UP KIT AND LAB ANALYSIS FEES
- QUAAP CERTIFIED TURBIDITY METER, AVAILABLE AT KUA’S LENDING LIBRARY

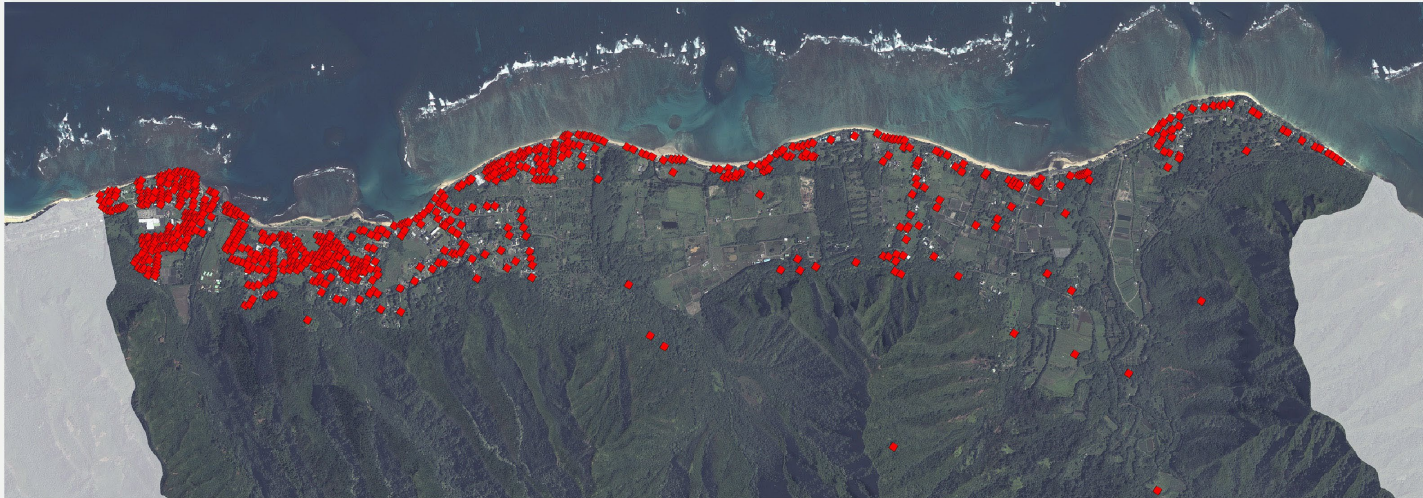


121

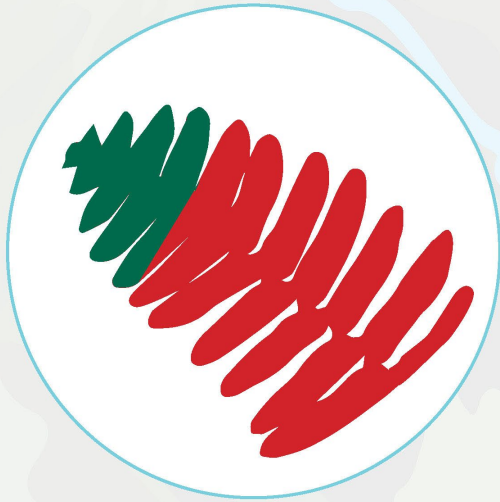
of 698 Cesspools are within
200 feet of a stream.

201

of 698 Cesspools are within
200 ft of the coastline.



DEPT. OF HEALTH, 2016



27%
NATIVE FOREST
COVER
(USGS, 2001)



‘IWA
(FREGATA MINOR)



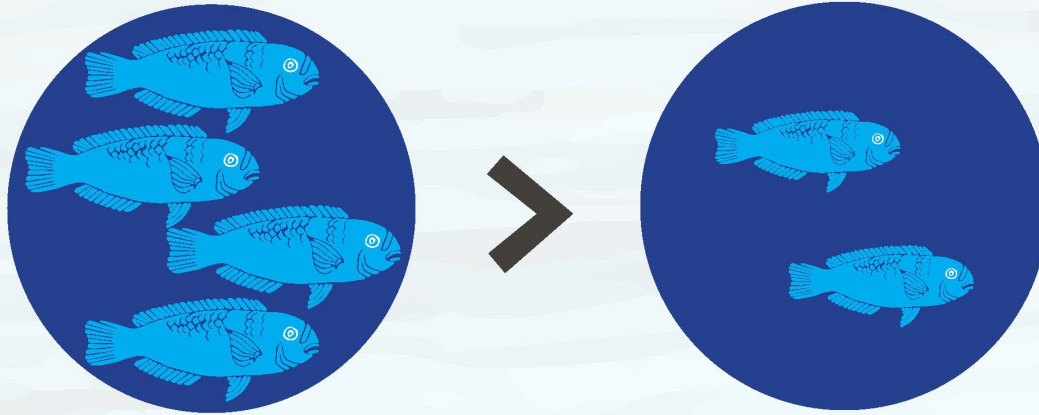
KŌLEA
(PACIFIC GOLDEN
PLOVER)



PUEO
(HAWAIIAN SHORT
EARED OWL)



‘AUKU‘U
(BLACK CROWNED
NIGHT HERON)



The numbers of near shore reef fish such as *Uhu* have decreased over the years likely due to a combination of factors including a loss of coral habitat, over harvesting of fish, and decreased water quality from pollution such as sediment runoff from land.

**- NOAA FISHERIES, PACIFIC ISLANDS
REGIONAL OFFICE**



43%

CORAL COVERAGE

(10%-50% DENSITY)

(NOAA, 2007)



“The oceans needs to drink. The zone where the *wai* (freshwater) from the land meets the *kai* (ocean water) is where the limu grows, and is the nursery for marine and stream life. We need good quality water flowing from mauka so that the ocean can be full of food.”

**- UNCLE HENRY CHANG WO,
LIMU LOEA (EXPERT), (1941 - 2015)**



RESIDENTS

5,439 (US CENSUS, 2010)




VOLUNTEERS

2,650 (2010-15)



13 NATURAL
RESOURCE
MANAGEMENT
PROJECTS (SINCE 2010)



COMMUNICATION PRODUCTS

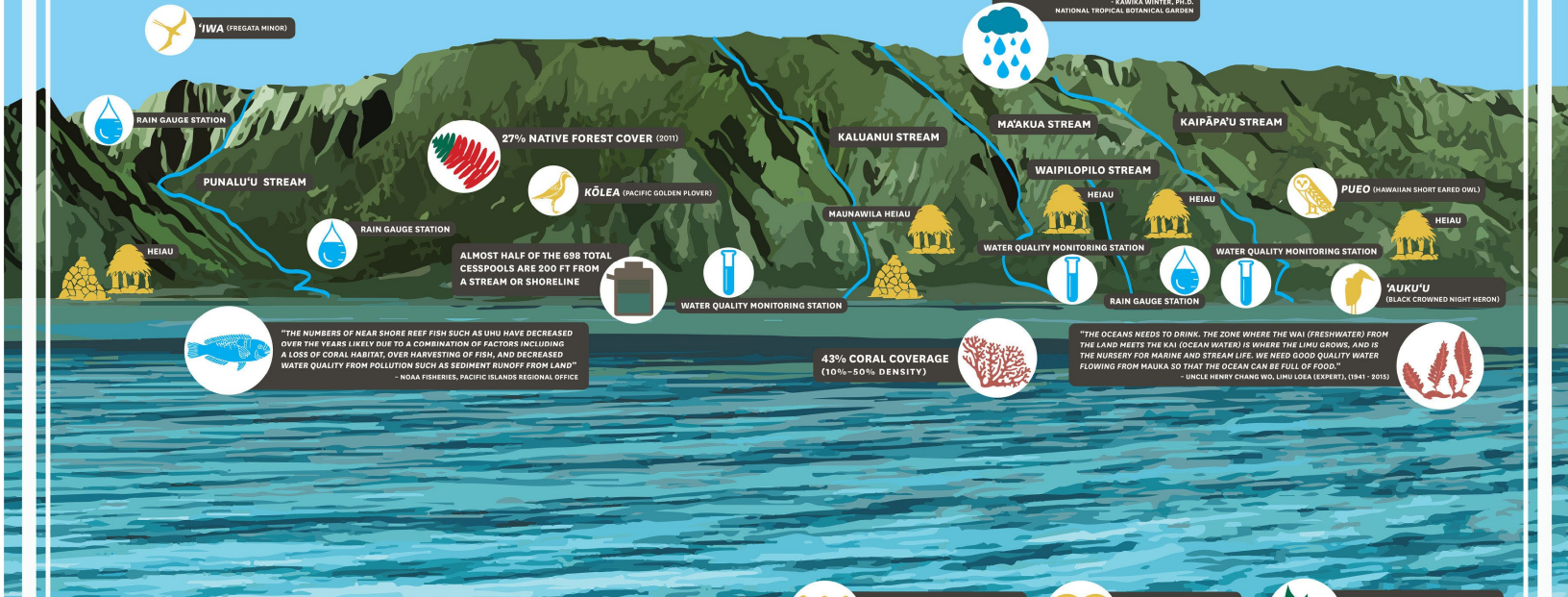
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www.hawaiiconservation.org
www.conservationconnections.org
www.hauulacomunityassociation.net

RESIDENT POPULATION:
5,439 (2010)

VOLUNTEERS:
2,650 (2010-15)

13 NATURAL RESOURCE MANAGEMENT PROJECTS (SINCE 2010)

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HAU'ULA TO PUNALU'U

Located on the northeast coast of O'ahu in the Ko'olanua *moku* (district) are the rural communities of Hau'ula and Punalu'u. Hau'ula and Punalu'u are small, coastal communities with fertile landscape fronted by sandy beaches and adjacent fringing reef. Five streams in Hau'ula and two streams in Punalu'u support natural wetlands and inland ponds. In the 1800s the lowlands contained a patchwork of lo'i, later rice fields and then sugarcane. In the 1900s land was subdivided into lots. Hau'ula is the first in the State to be NOAA Certified Storm and Tsunami Ready (2012, 2015).



In March 2016, a water quality training with community members resulted in data collection from three sites. Communities received water quality kits and are in the process of developing monitoring plans for on-going data collection.

STATEWIDE WATERSHED HEALTH DATA



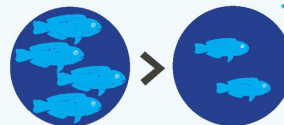
To access statewide, publicly available watershed-related data compiled from various agencies, visit the online Watershed Health Web Map at hca.maps.arcgis.com. Also available is the Hau'ula to Punalu'u Web Map, which features data from the community snapshot metrics used for this project and additional requested data.

» WATERSHED SNAPSHOT PROGRESS 2012-16



Hau'ula to Punalu'u Watershed Snapshot 2016

TARGET FOOD FISH



The numbers of near shore reef fish such as *Uhu* have decreased over the years likely due to a combination of factors including a loss of coral habitat, over harvesting of fish, and decreased water quality from pollution such as sediment runoff from land - NOAA FISHERIES, PACIFIC ISLANDS REGIONAL OFFICE

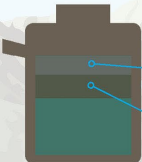
AVERAGE ANNUAL RAINFALL



"The *kūpuna* tell us there is less water in the streams, and the scientists tell us that not only is there less rainfall, but the spread of invasive trees means the forest holds onto even less water than they used to. We need healthy forests to ensure that Hau'ula still has clean, flowing water in the future."

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WATER QUALITY



121 of 698 Cesspools are within 200 feet of a stream.
201 of 698 Cesspools are within 200 ft of the coastline.

MARINE INVERTEBRATES AND ALGAE

"The oceans need to drink. The zone where the wai (freshwater) from the land meets the kai (ocean water) is where the *lima* grows, and is the nursery for marine and stream life. We need good quality water flowing from mauka so that the ocean can be full of food."

- UNCLE HENRY CHANG WO, LIMU EXPERT, 1941 - 2015



5,439

RESIDENT POPULATION (2010)

HAU'ULA'S POPULATION IN 2010 WAS 4,275 AND PUNALU'U WAS 1,164
LAND AREA FOR HAU'ULA IS 1.2 SQ MI AND FOR PUNALU'U IS 2.1 SQ MI

COMMUNITY INVOLVEMENT (2010-15)



13 Natural Resource Management Projects

2,650 Volunteers



NATIVE VEGETATION (2011)

Native Forest Cover 27%



Hawai'i Conservation Alliance FOUNDATION



WWW.CONSERVATIONCONNECTIONS.ORG

WWW.HAULULACOMMUNITYASSOCIATION.NET

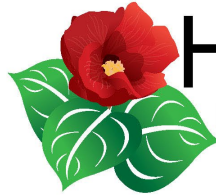
STATEWIDE, PUBLICLY AVAILABLE
WATERSHED-RELATED DATA AVAILABLE AT:
WWW.HAWAIICONSERVATION.ORG/COMMUNITYSNAPSHOT



M A H A L O



**HAWAI'I
CONSERVATION
ALLIANCE**



HCA
HAU'ULA
COMMUNITY
ASSOCIATION



**Hawai'i Conservation Alliance
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**CONSERVATION
CONNECTIONS**

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**HAROLD K.L. CASTLE
FOUNDATION**

DISCUSSION

