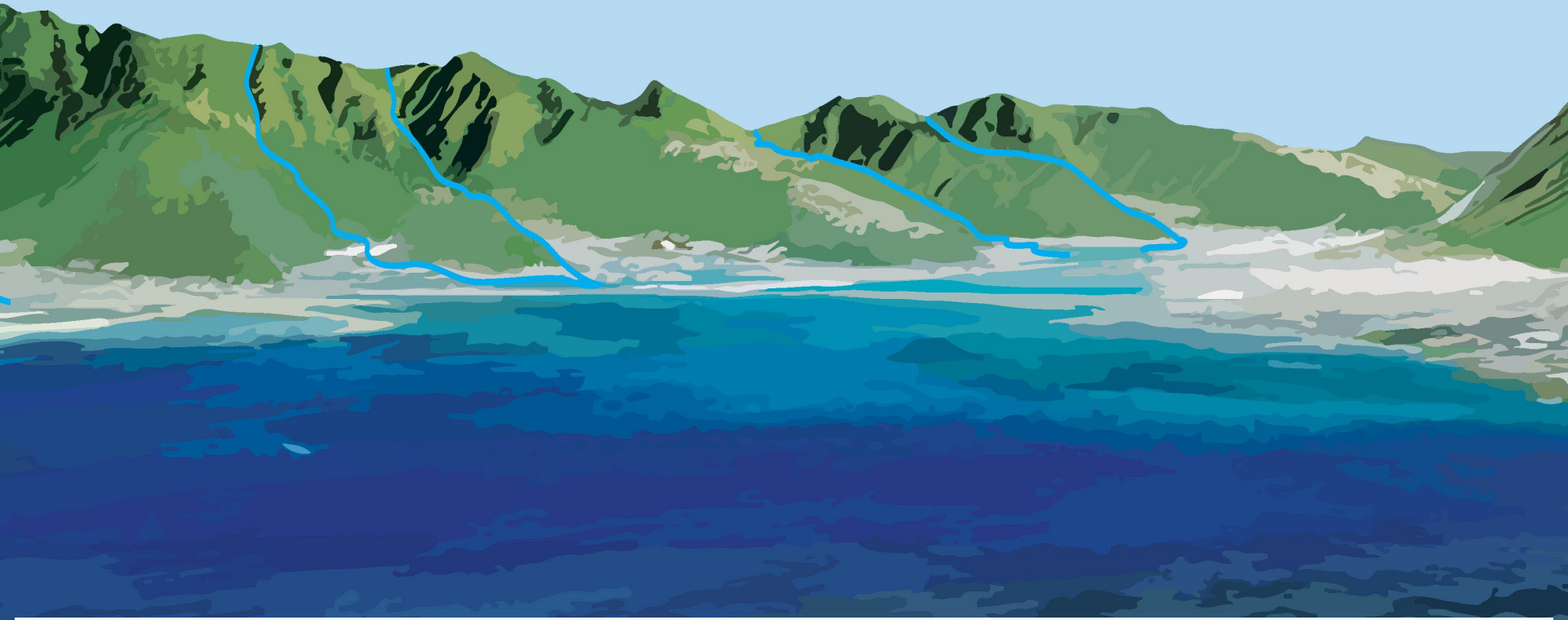


Maunaloa Watershed Snapshot

» LOCAL MEASURES OF AHUPUA'A HEALTH



Hawai'i Conservation Alliance
FOUNDATION

WWW.CONSERVATIONCONNECTIONS.ORG



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CONNECTIONS



HAWAI'I
CONSERVATION
ALLIANCE



WWW.HAWAIIKAIHUI.ORG



WWW.MALAMAMAUNALUA.ORG

Maunaloa Watershed Snapshot

LOCAL MEASURES OF AHUPUA'A HEALTH

The Watershed Snapshot is a status report on the health of our ahupua'a, or watershed. In consultation with the Hawai'i Conservation Alliance, communities across the state identified metrics that would best define the health of their ahupua'a. Available data from resource management organizations was compiled to inform the selected metrics, and communities also collected socio-economic, and local kōpuna (elder) knowledge. An online library of all available watershed related data has been created as a public resource and can be found by visiting hca.maps.arcgis.com. The information compiled in a suite of communication tools will help inform, guide and garner support for increasing mauka to makai management efforts. Visit www.hawaiiconservation.org/communitysnapshot for more information.

KŪLO'U VALLEY

RAIN GAUGE STATION

MAUNA O'AHĪ

KALAKEKE VALLEY

HANALEI VALLEY

KALI'ANUI

KAMILŌ VALLEY

PŪO

KĀNE'OHE VALLEY

KALAMA VALLEY

KŌNĒLEPELE, PU'U MAKI (KOKO CRATER)

7% NATIVE FOREST COVER (2011)

KANE'OE SPRING - 850k GALLONS OF FRESH WATER PER DAY INTO THE BAY

PAIKO LAGOON STATE WILDLIFE SANCTUARY

KĀLANIHĀHĀ FISHPOND

WATER QUALITY MONITORING STATION

WATER QUALITY MONITORING STATION

WATER QUALITY MONITORING STATION

WATER QUALITY MONITORING STATION

HAWEA HEIAU COMPLEX & KEAWA WETLAND

ALAKA'I

PAHOA HEIAU

HAWAI'I KAI MARINA (KE AHUPUA'A O MAUNALOA)

MAUNALOA BAY

26% IMPERVIOUS SURFACE THAT DOES NOT ALLOW SURFACE WATER TO PENETRATE

25% OF 1,655 TOTAL CESSPOOLS ARE 200FT FROM A STREAM OR SHORELINE

KA IWI COAST →

"THE GREAT FISHPOND OF KEAHUPUA'O MAUNALOA WAS NOTED FOR BEING THE LARGEST SALTWATER FISHPOND IN ALL OF POLYNESIA. TODAY, THE RENEWAL OF ANCIENT HILLET PONDS AT KĀLANIHĀHĀ AND KANE'OE GIVES NEW HOPE AS WE UPHOLD THIS RICH LEGACY OF HAWAIIAN OCEAN FARMING."
- CHRIS CRABBE, CO-FOUNDER, MAUNALOA FISHPOND HERITAGE CENTER

"WHEN I WAS LITTLE OUR YARD IN NI'U INCLUDED KĀLANIHĀHĀ SPRING. ON ITS EWA SIDE WAS A SMALL PASTURE WITH DAIRY COWS AND HORSES. THOSE ANIMALS DREW FRESH WATER FROM THE POND. WATER IN THIS VALLEY TRAVELS FROM THE MOUNTAINS IN BIG LAVA TUBES."
- LAURA LUCAS THOMPSON, KUPUNA FROM NI'U

"WETLANDS, SERENE AND UNNOTICED, HAVE A POWERFUL INFLUENCE OVER LAND AND SEA ALIKE. THEY REPLENISH GROUNDWATER, PROTECT CORAL REEFS, AND PROVIDE HABITAT FOR ENDANGERED WILDLIFE LIKE THE "ALAE'ULA."
- CHARLES VAN REES, ADVISORY ECOLOGIST, LIVABLE HAWAII/KAI NI'U

RESIDENT POPULATION:
207,400 (2010)

VOLUNTEERS:
12,973 (2010-15)

53 NATURAL RESOURCE MANAGEMENT PROJECTS (2010-15)

HAWAII CONSERVATION ALLIANCE FOUNDATION
WWW.CONSERVATIONCONNECTIONS.ORG

LIVABLE HAWAII/KAI NI'U
WWW.HAWAIIKAI.NIU

MAUNALOA FISHPOND HERITAGE CENTER
WWW.MAUNALOAFISHPOND.ORG

MĀLAMA MAUNALOA
WWW.MALAMAMAUNALOA.ORG

WWW.HAWAIICONSERVATION.ORG/COMMUNITYSNAPSHOT



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



<< Honolulu to
Napili, Maui



<< Waimea,
Hawai'i Island



<< Hā'ena, Kaua'i



<< Maunaloa, 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

Population Size and Growth (DBEDT)

Cultural
(# of kūpuna, # families persist, presence of lo'i,
traditional fishing)

Health/Diet
(Prevalence of diabetes, heart disease, obesity, drug abuse;
of farmers/fish markets)

**Community Involvement in
Natural Resource Management**
(# of people, # of projects, # of organizations, # schools, etc)

BIOPHYSICAL

Rainfall
(rain and stream gauges- NOAA-Weather)

Availability Of Fresh Water
(# of water sources/household(or capita), Board of Water Supply)

Water Quality
(Stream sediment, flow, pathogens)

Groundwater Recharge, Land Use
(% Impermeable Surface, ratio of developed over natural)

Native Vegetation
(% trees/plants cover, acres)

Key Bird Species
(Presence, abundance, compare historic)

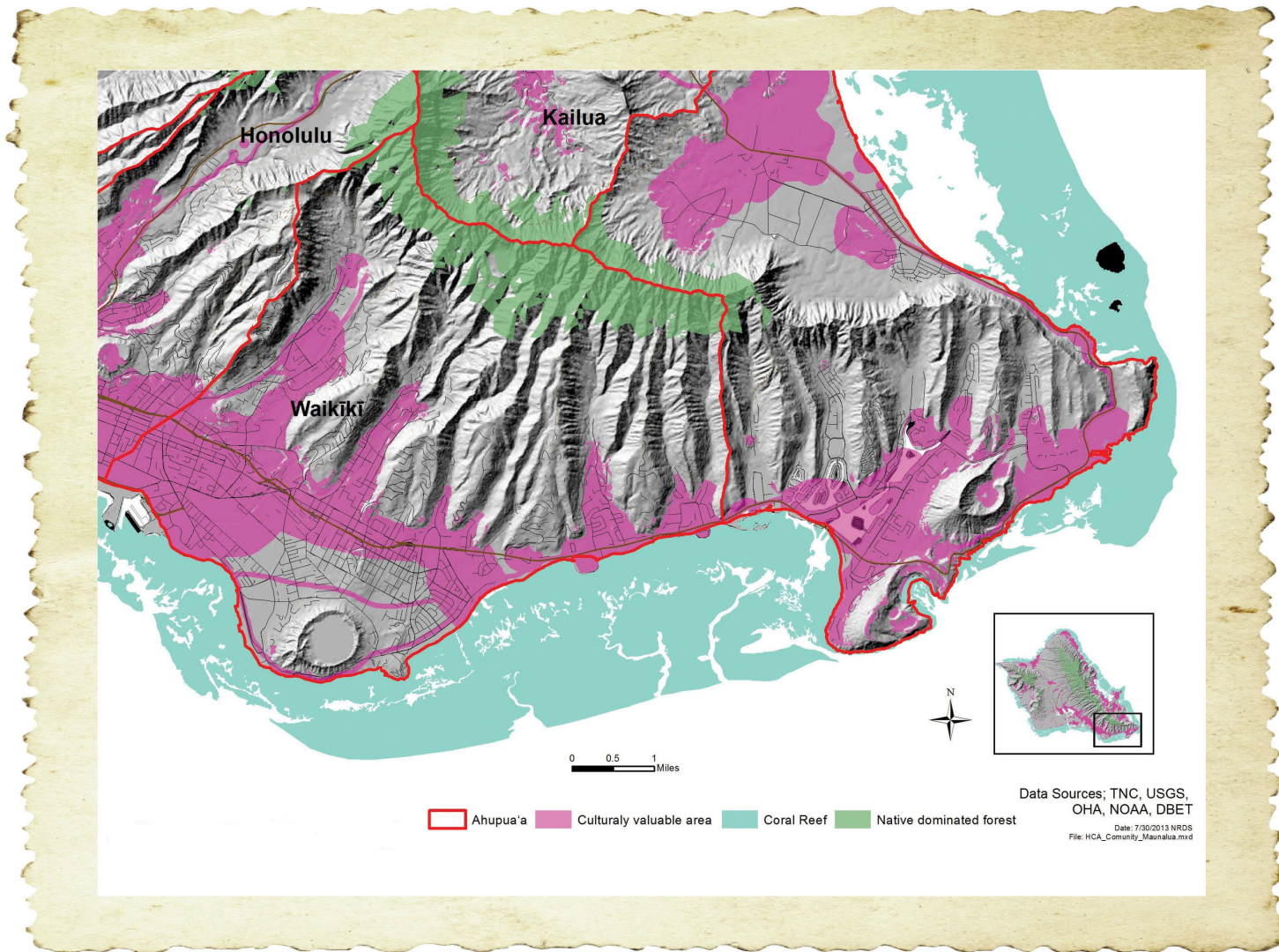
Target Food Fish
(Biomass, Fishing Effort, Size Structure)

Ocean Habitat Quality
(Coral: abundance & biodiversity; sand; rubble etc)

Marine Invertebrates & Algae
(Indicators of water or habitat quality)

Freshwater: Food Fish & Key Invertebrates
(see fish and invertebrate above)

» AREA BOUNDARY





COMMUNITY REPRESENTATIVES



CHRIS CRAMER

ANGELA COUREA

JOHN COUREA

GERRY DAVIS

RAE DECOITO

KIMO FRANKLIN

EUGENE "KINI" GLEASON

ROBIN JONES

ANN MARIE KIRK

NAI'A LEWIS

MANUEL MEJIA

VALERIE MOORE

ELIZABETH REILLY

JANET SCHEFFER

BRANDEN SHIM

LAURA THOMPSON

PAM WEINT

NICOLE WILLIAMS



W A T E R S H E D M E T R I C S



“Over the past 90-100 years, rainfall in Hawai‘i has slowly declined overall. While the effects of global warming on Hawaiian rainfall are still uncertain, evidence suggests decreases in some areas will continue.”

**- DR. TOM GIAMBELLUCA, PROFESSOR,
UNIVERSITY OF HAWAI‘I**

WATER QUALITY TRAINING



MARCH 2016

HUI KŪ MAOLI OLA, KĀNEʻOHE

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

<< KANEWAI SPRING, KULIʻOUʻOU

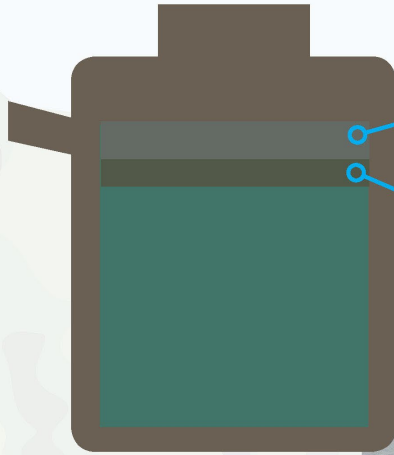
COMMUNITIES RECEIVED:

- 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



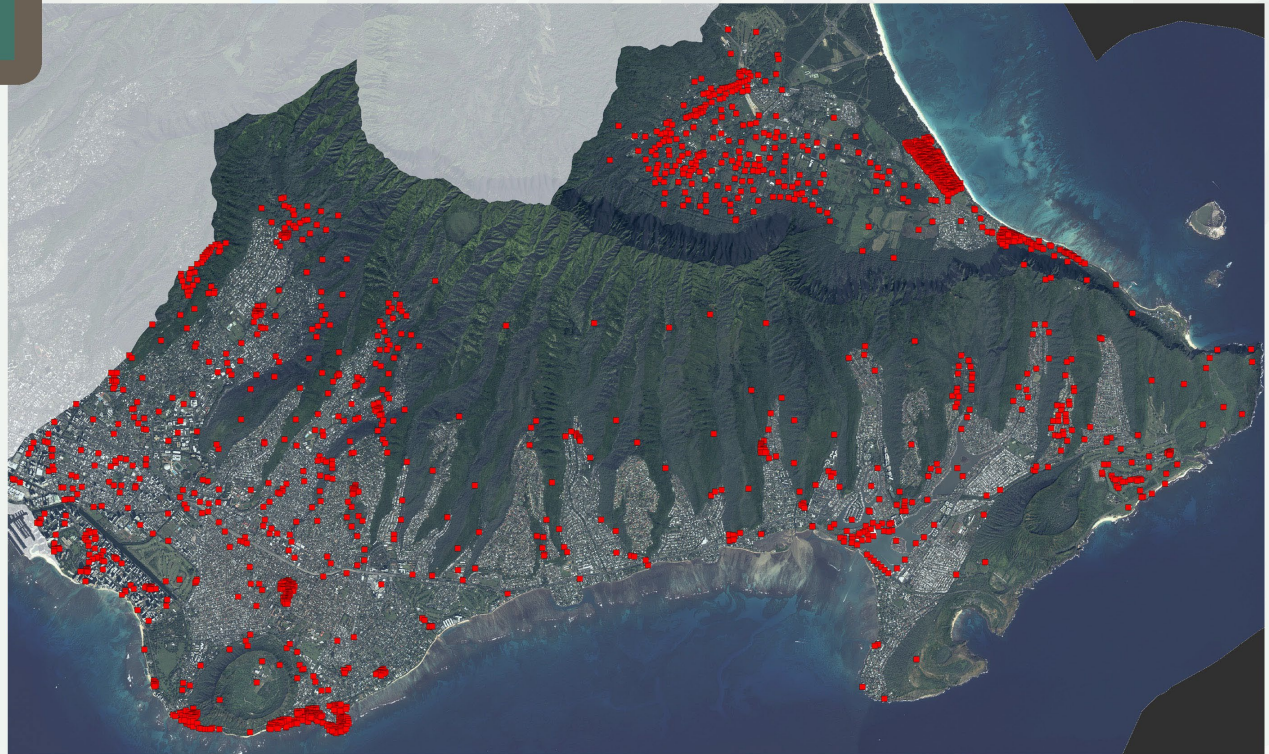
“When I was little our yard in Niu included Kalauha’iha’i Spring. On its ewa side was a small pasture with dairy cows and horses. Those animals drank fresh water from the pond. Water in this valley travels from the mountains in big lava tubes.”

- LAURA LUCAS THOMPSON, KUPUNA FROM NIU

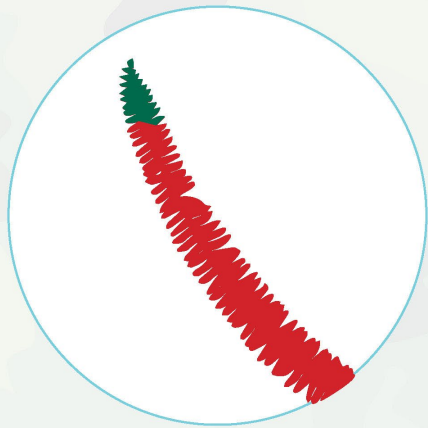


248 of 1,655 Cesspools are within
200 feet of a stream.

165 of 1,655 Cesspools are within
200 ft of the coastline.



DEPT. OF HEALTH, 2016



7 %

NATIVE FOREST COVER
(USGS, 2001)



PUEO
ENDANGERED SPECIES



'ALAE'ULA
ENDANGERED SPECIES



“Wetlands, serene and unnoticed, have a powerful influence over land and sea alike. They replenish groundwater, protect coral reefs, and provide habitat for endemic wildlife like the ‘alae‘ula.”

**- CHARLES VAN REES, PH.D CANDIDATE, ADVISORY
ECOLOGIST, LIVABLE HAWAII KAI HUI**



KAMILONUI
VALLEY
**87 ACRES OF
AGRICULTURAL LAND**



26% IMPERVIOUS
SURFACE
**DOES NOT ALLOW SURFACE
WATER TO PENETRATE**
(NOAA CSC, 2010)



“The great fishpond of Keahupua o Maunalua was noted for being the largest saltwater fishpond of its kind in Polynesia. Today, the renewal of ancient mullet ponds at Kalauha‘iha‘i and Kānewai gives us new hope as we uphold this rich legacy of Hawaiian ocean farming.”

**- CHRIS CRAMER, CO-FOUNDER,
MAUNALUA FISHPOND HERITAGE CENTER**



28 acres of invasive algae removed.

More than 3.5 million pounds have been recycled as soil amendment at local farms.

One of the last few places where *Halophila*, Native Seagrass grows in Hawai'i.

- MALAMA MAUNALUA



RESIDENTS

207,400 (US CENSUS, 2010)



VOLUNTEERS

12,973 (2010-15)



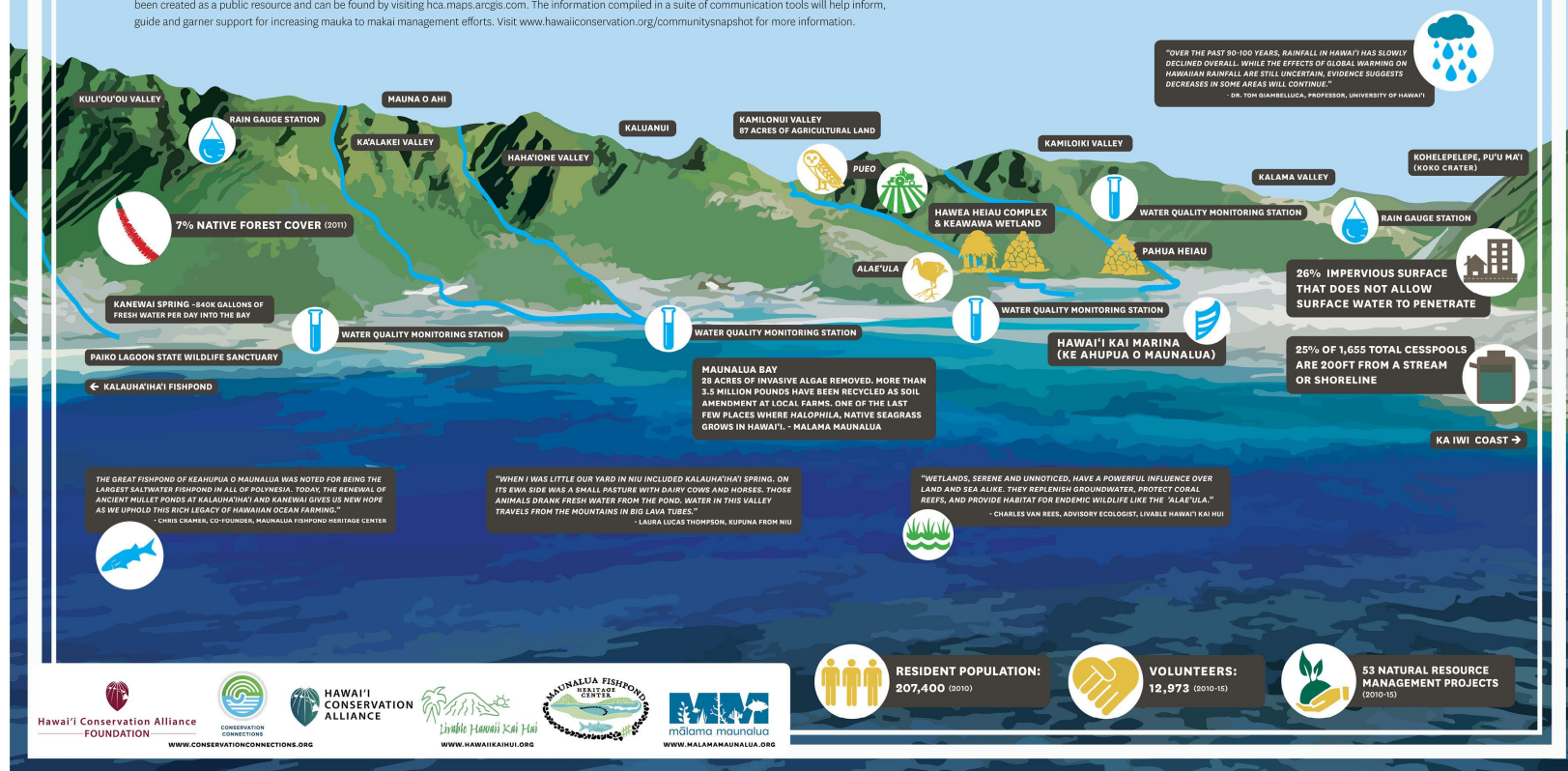
53 NATURAL
RESOURCE
MANAGEMENT
PROJECTS (2010-15)



COMMUNICATION PRODUCTS

ISLAND OF O'AHU

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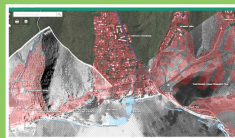
MAUNALUA

Located on the southeast coast of O'ahu, the Maunaloa area profiled for the Watershed Snapshot stretches from Kūpikūpiki (Black Point) to Kāwahoā (Fortlock Point), encompassing the eastern portion of Kōna *moku* (district) and the entire *Maunaloa moku*. The region has long been treasured for its beauty, abundant resources and cultural significance. In recent decades, the region's flatlands and hillsides have seen significant development, changing the area from rural to suburban. This development has increased the area's impervious surfaces in the form of paved roads, shopping centers, cementing of streams and the altering of other natural areas to support its 80,000 residents. As a result, an increase in sediment run-off into Maunaloa Bay has caused degradation of near-shore ecosystems, poor water quality and invasive algae to take over near-shore reefs. Intense community action has led to efforts to protect Maunaloa Bay, Paiko Lagoon State Wildlife Sanctuary, Kalahehewa'i Fishpond, Kāneʻi Spring, and Keawawa Wetland.



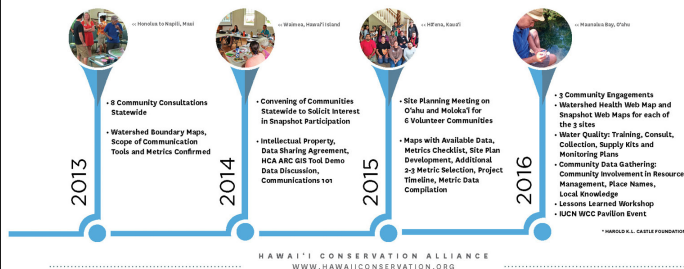
In March 2016, a water quality training with community members resulted in data collection from two sites. Communities received water quality kits and are in the process of developing monitoring plans for on-going data collection.

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 Maunaloa Web Map, which features data from the community snapshot metrics used for this project and additional requested data.

» WATERSHED SNAPSHOT PROGRESS 2012-16



Maunaloa Watershed Snapshot 2016

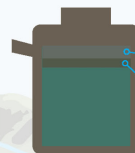


TARGET FOOD FISH

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- CHRIS CRAMER, CO-FOUNDER, MAUNALOA FISHPOND HERITAGE CENTER

AVERAGE ANNUAL RAINFALL



WATER QUALITY

248 of 1,655 Cesspools are within 200 feet of a stream.
165 of 1,655 Cesspools are within 200 ft of the coastline.



"Over the past 90-100 years, rainfall in Hawai'i has slowly declined overall. While the effects of global warming on Hawaiian rainfall are still uncertain, evidence suggests decreases in some areas will continue."

- DR. TOM GIAMBELLUCA
PROFESSOR, UNIVERSITY OF HAWAII

MARINE INVERTEBRATES AND ALGAE



One of the few places where **Halophia**, native seagrass, grows in Hawai'i.



Invasive algae removed from **28 Acres**



207,400

RESIDENT POPULATION (2010)



53 Natural Resource Management Projects

COMMUNITY INVOLVEMENT (2010-15)



12,973 Volunteers

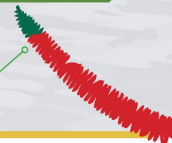
LAND COVER

26% Impervious surface that does not allow surface water to penetrate



NATIVE VEGETATION

Native Forest Cover 7%



HAWAII' I CONSERVATION ALLIANCE FOUNDATION



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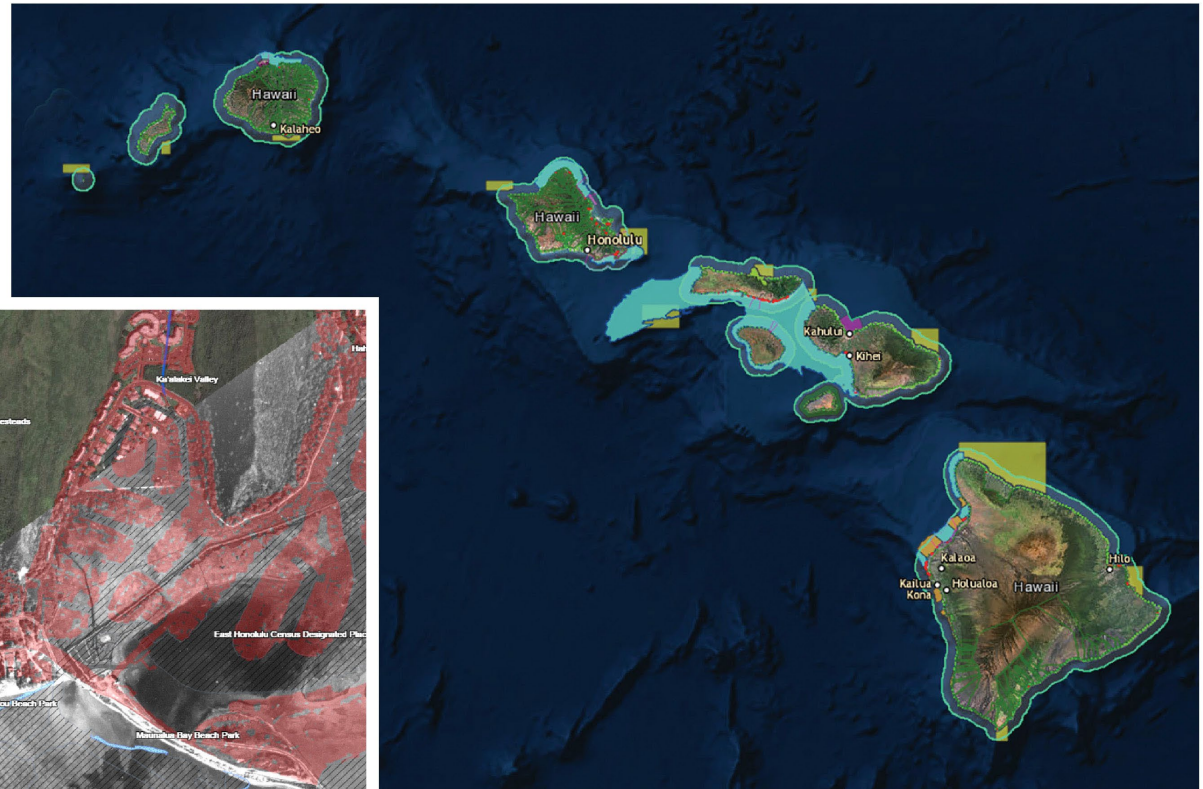
HAWAII' I CONSERVATION ALLIANCE



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M A H A L O



**HAWAI'I
CONSERVATION
ALLIANCE**



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**HAROLD K.L. CASTLE
FOUNDATION**



mālama maunalua

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DISCUSSION

