

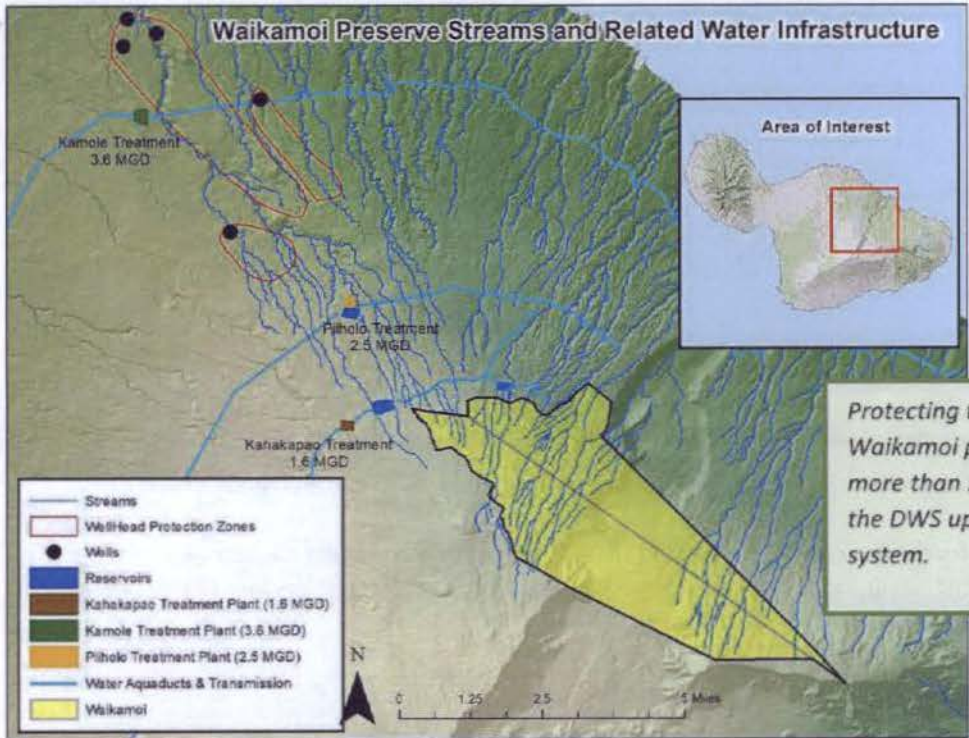
The Nature Conservancy's Maui Program



Waikamoi Preserve, East Maui



Waikamoi Preserve lies immediately above the Waikamoi flume, which provides water to many upcountry residents and businesses. Streams whose headwaters are in Waikamoi contribute to the Pi'iholo and Wailoa water collection systems; these systems together provide water to the bulk of upcountry residents and businesses.



Protecting the upland forest at Waikamoi protects the headwaters for more than 10 streams that feed into the DWS upcountry water collection system.

RECEIVED AT WIT MEETING ON 1/22/20
Alison Cohan

Research shows that:

- Native forest on East Maui provides greater recharge than alien forest.¹
- TNC partnered with the University of Hawai'i's Economic Research Organization (UHERO) to conduct a return on investment analysis for our watershed management at Waikamoi. The project results show that watershed conservation activities in Waikamoi Preserve alone will protect an estimated 1.1 billion gallons of freshwater yield over the next 100 years which translates to 36.2 million dollars in terms of Waikamoi's freshwater benefits (Figure 1).²

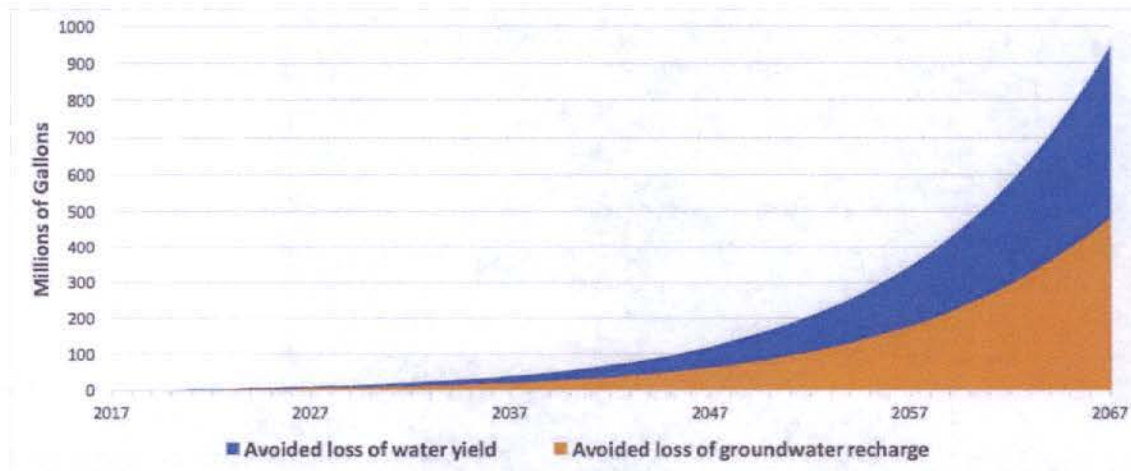


Figure 1. Avoided loss of freshwater yield and groundwater recharge as a result of conservation activities.

- East Maui's native forest is already threatened by the effects of a changing climate. For example, a century-long trend of declining rainfall has accelerated, with a 12 percent decline in the last 20 years.

Consequences of not doing this work

¹ Johnson et al. 2014.

² Bremer et al. 2019. Contributions of native forest protection to local water supplies in East Maui. Science of the total environment 688: 1422-1432.

In the absence of conservation management activities at Waikamoi Preserve that the Maui County Department of Water Supply funds, the native forest would quickly be overtaken by invasive nonnative weeds (Figure 2), greatly altering watershed function and aquifer recharge. As we experience the loss of native forest habitat to non-native plant and animal species the likelihood of widespread soil erosion increases, greatly impacting freshwater quality. It is well documented that erosion can lead to increased pollution and sedimentation in streams and rivers which feed our aquifers and surface water systems. The UHERO analysis document that continued TNC management activities at Waikamoi over the next 50 years will prevent an estimated 4,300 tons of sediment per year from entering our waterways, thus avoiding large costs for water treatment.

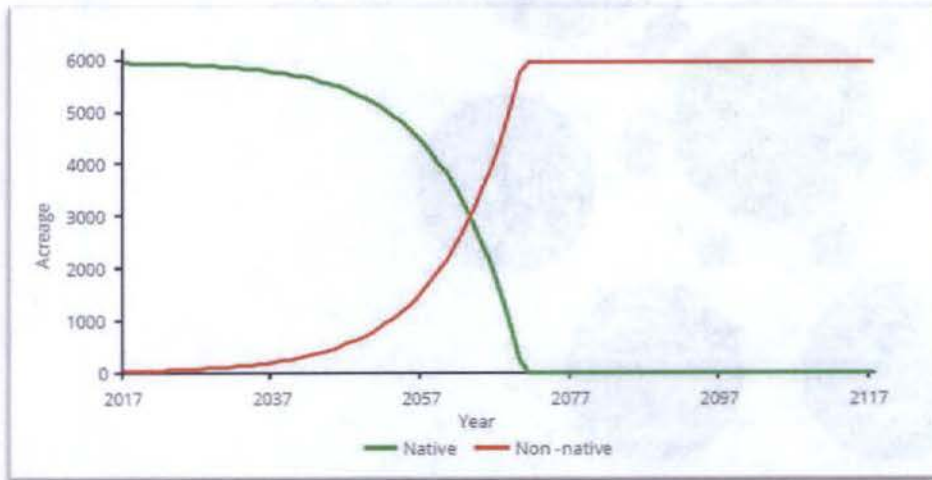


Figure 2. Acres of native to non-native forest over time in the absence of management. (UHERO 2018)

Project Primary Objectives:

Prevent ungulate ingress into the 9,000 acre ungulate-free Waikamoi Preserve	Contain & suppress priority weeds that alter the hydrological cycle
Prevent new weeds, disease, and nonnative pests from establishing in Waikamoi	Conduct & support threat and resource monitoring to document progress
Build public support & increase community engagement for watershed protection	Collaborate with watershed partners and landowners to leverage resources & cross-pollinate on innovative work

Project Benefits:



Project Budget, DWS FY20:

	DWS FY20 Award Amount	Requested Budget Amount
Personnel	158,296	168,035
salary		
fringe		
Contractual	43,000	55,000
Utilities		
Travel	2,400	2,400
Supplies & Equipment	5,000	5,000
Subtotal	208,696	230,435
Indirect costs	31,304	34,565
Total	\$240,000	\$265,000



Protecting Water at its Source

In the midst of a vast ocean, the peaks of Haleakalā in east Maui, Pu'u Kukui in west Maui and Kamakou on Moloka'i pierce the Pacific sky, pulling moisture from clouds, directing it to underground aquifers and sending it to homes and fertile fields below.

Within their folds, unique species cling to a landscape diminished by invasive species and a changing climate. The Nature Conservancy protects mountain forests so they continue to provide Maui and Molokai's people with fresh water, a robust economy, and a source of spiritual and cultural renewal.

The Challenge: Protecting Lands and Waters

Maui Nui's native forests – the source of fresh water and home to species found nowhere else on Earth – are shrinking.

When people arrived about 1,000 years ago, there were 465,000 acres of native forest on Maui and 166,000 acres on Moloka'i. Today, fewer than 75,000 acres of intact native forest survive on Maui and just 25,000 acres on Moloka'i.

Today our work managing invasive plants, animals and diseases enables remaining native forests to soak up moisture and rain and replenish water supplies. For example, our Waikamoi Preserve protects the headwaters for more than 10 streams that feed directly into the Department of Water Supply's upcountry water collection system.

Our Solution: Actively Manage Native Forest

To address these challenges, The Nature Conservancy works closely with government, private citizens and community partners to:

PROTECT Maui and Molokai's native forests from feral hoofed animals, invasive weeds and fire.

TRANSFORM conservation through new tools, technologies and partnerships.

INSPIRE stewardship of our natural world through direct experience.

With your continued support we can protect the source of Maui Nui's fresh water.

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Maui County is an essential partner

With the long term support of DWS, we are able to protect the stream headwaters that feed reservoirs and boost aquifers such as Ko'olau and Hana, which recharge faster during times of drought.

At a time when most native forests continue to contract, we have an opportunity and plan to expand them. Your support helps:

- Detect and eliminate invasive weeds like Himalayan ginger and pines from key native forest areas.
- Improve an innovative aerial technique to control invasive trees and plants.
- Monitor remote native forests to manage threats more efficiently.

The Nature
Conservancy 
Hawai'i

Our Strategies for Maui Nui's Forests

Expand the Area of Native Forests

Our highest priority is to ensure Maui Nui's native forests can capture and filter fresh water, reduce erosion, provide habitat for native species and sustain us. The first step is protection through purchase and legal designations like conservation easements, but the real work that expands and heals native forests is everyday management of feral hoofed animals, invasive weeds, disease and fire.

This work requires ongoing funding. We apply the latest research, techniques and conservation methods to leverage partnerships and use funds efficiently.

With your support, we can continue protecting native forest from the steady onslaught of threats, including reduced rainfall and other climate impacts.

Collaborate Across Landowner Boundaries

By partnering with landowners through Watershed Partnerships, we have transformed how large, connected areas of forest are cared for across Hawai'i. Tools and techniques we developed are being used by neighboring landowners and making a significant positive impact on watershed health for Maui Nui.

Connect People and Nature

We host hikes and volunteer work trips to control invasive weeds, providing an increasingly rare, direct experience in native Hawaiian forest. These vial opportunities inspire others to care for the natural world that cares for us.

Investing in the Future

We recently partnered with University of Hawai'i Economic Research Organization to conduct a return on investment analysis for conservation activities at Waikamoi Preserve. The report said the Conservancy's work will protect an estimated 63.8 billion gallons of clean water, at a projected value of \$36.2 million, over the next century. Awards from Maui County are an excellent investment in the future. We are able to leverage these funds at a 1:4 ratio with state, federal and private funding sources.

Effective management includes fencing to keep destructive non-native animals out, such as the one shown below.



Your support has helped

protect **150,000** acres of watershed for East and West Maui

provide **300** million gallons of fresh water daily to East Maui

2.8 million residents and annual visitors who depend on Maui's healthy watersheds

With your continued support we can:

- Ensure Maui Nui's watersheds function at a high level, providing fresh water for residents, businesses, and agriculture.
- Protect ground water recharge and stream headwaters.
- Restore the kaleidoscopic and unique flora and fauna in Hawai'i's forests, which are found nowhere else on earth.
- Encourage community engagement with Maui Nui's natural resources.

The Nature Conservancy has a long and well demonstrated history of leadership, innovation and conservation management expertise in Hawai'i.

Jordan Jokiel
Vice President, Land Management
Haleakala Ranch Company