

# *Malama O Ka 'Āina I Hawai'i*



*Taking Care of the Land in Hawai'i*





As an isolated tropical archipelago, Hawai'i is home to over 1,000 native flowering plants, 90% of which are found nowhere else in the world.

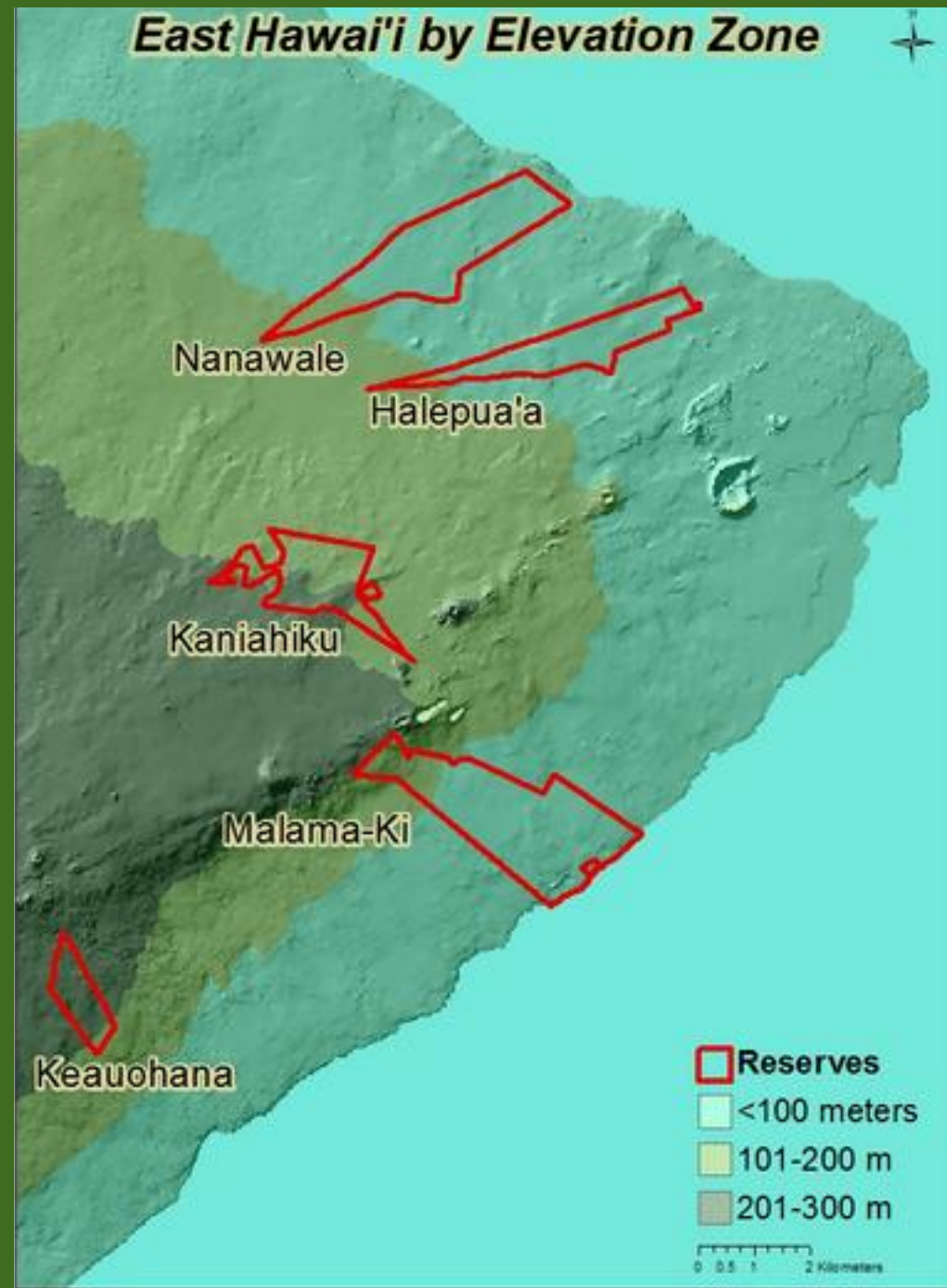




Very few native plant species are today scattered across Hawai'i's developed lowlands; and they are confined to increasingly compromised forest fragments



- In Puna District  
5 State Forest Reserves
- Set aside for conservation  
in 1903
- Left unmanaged,  
largely replaced by  
invasive species





Besides loss of habitat due to human development, invasive species is a principle cause for the loss of native plant life



# What Can We Do?



**It is never too late to improve upon our environmental circumstance**



Taking a more conscious role in balancing our ongoing influence on vegetation patterns in Hawai'i can make a big difference





# 1. Take care of our local native forest



It is the air we breathe, the water we need to drink and eat



There is a great difference between:



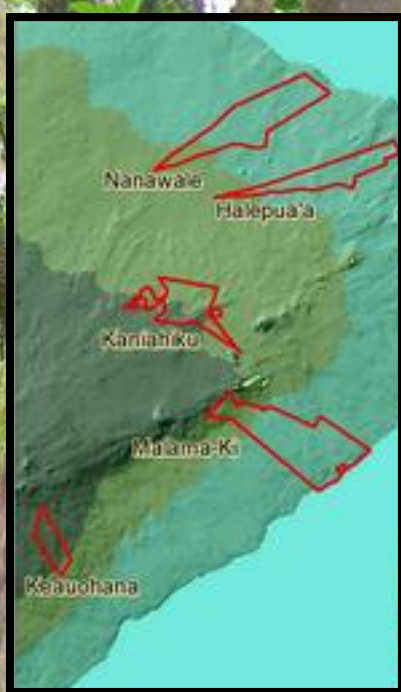
A forest ecosystem that can sustain a biodiversity of life-forms





And a forest that is depleted of richness and abundance





In Puna we have the Keau'ohana Rainforest

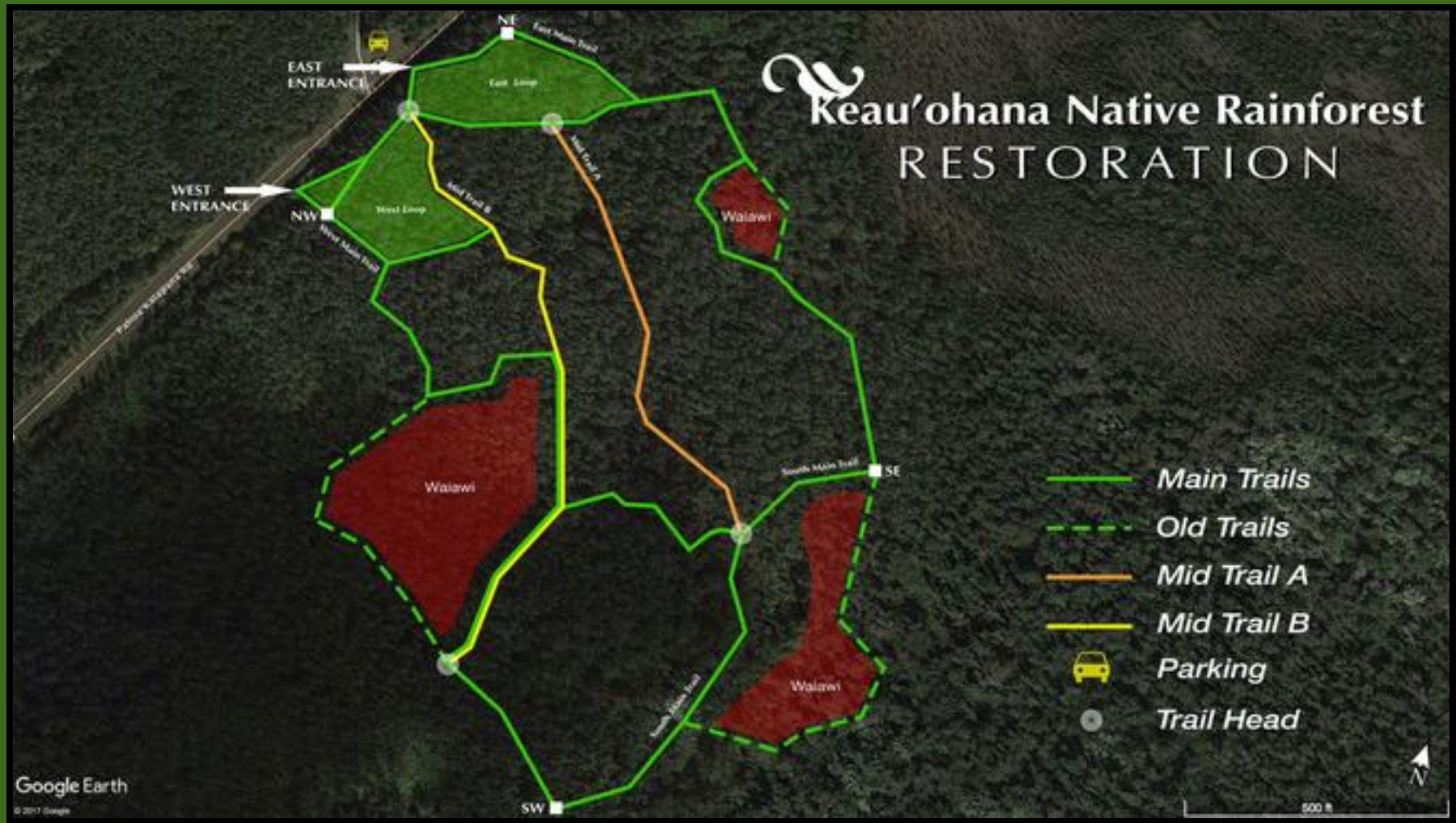




**Largest and most intact lowland native forest remaining (< 1,000 ft)  
in State of Hawai'i**



# Restoration Site Trail System:





In 2014 intensive restoration efforts began in Keau'ohana



Hard-working crew restoring 30 acres



Have persisted through environmental challenges:



Keau'ohana endured hurricane damages *Isele* 2014



## Feral pig damage



Making use of our trails and turning compost piles



# Rapid Ohi'a Death (ROD) -- subsequent to Iselle



Increased light = increased weeds



Hand pulling and composting of all invasive species







Control treatment of all larger waiawi stems



# Control of Invasive species:

Before



Clidemia understory infestation 2015

After



One or two hours later



Before



Invaded ha'iwale patch 2015

After



Endangered Ha'iwale patch 2018





# Selective Foliar Spray Treatment



Before

After



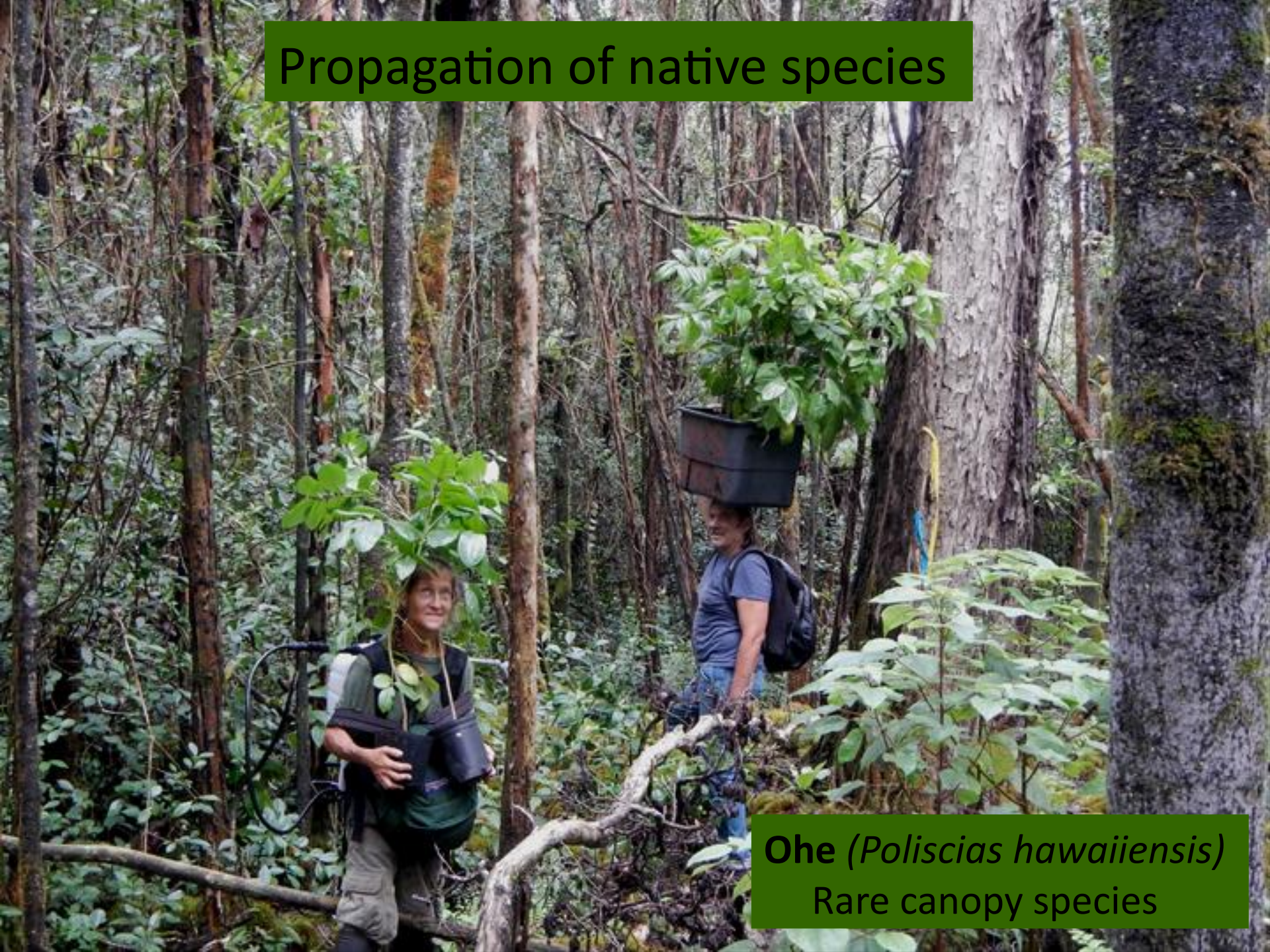
Kukae Maile A zone 2015



Kukae Maile A zone 2018



# Propagation of native species



**Ohe (*Poliscias hawaiiensis*)**  
Rare canopy species





**Native plant nursery in Koa'e/ kapoho**



## Key restoration plant (replacing clidemia niche)



Mamaki (*Pipturus albidus*) -- Direct broadcasting of seeds



## 2. Get to know our plant species



What we choose to plant in our yards is very important  
for the future of Hawaii's environment



## *Hawai'i Lowland Plant Distinction :*

- Native
- Non-native
- Polynesian-introduced
- Invasive





# *Native Plants*

Arrived by:

1. Wind
2. Water
3. Wings



Not introduced by humans























## ***Non-Native Plants***

- All introduced plants that were brought here by humans
- Otherwise known as exotic or alien species
- Well over 8,000 species
- Less than 100 of these are actually considered ***invasive***



# *Polynesian - introduced*

- Arrived with the early Hawaiians
- Otherwise known as the ‘canoe plants’
- Less than 50 species
- Important to human survival and culture
- Mostly non-invasive

















# *Invasive Plants*



- Harmful to our environment in Hawaii; grow too fast and aggressively
- Tend to replace rather than coexist with native species (extinctions)
- Brought here because they are pretty or useful somehow
- We don't know they will become invasive at first, lack of monitoring  
... and then it becomes too late



























### 3. Plant native and Polynesian-introduced plants





And plenty more food in our own yards





## 4. Do not plant invasive species





## 5. Control invasive plants species





- Avoid transporting yard waste that may contain invasives (weed seeds/propagules, fire ants, coqui frogs...)
- Make efficient compost piles with weeds in our yards
- If properly managed, weeds hold a key to sustainability
- Chippings or coppicing provides mulch and compost for healthy gardens and trees.
- Larger stems and stumps can be used in Hugelkulture





# Permaculture – Grow Food!

## Albizia fall-- Hurricane Iselle Mid-2014

**Before – Sept 2014**



**Albizia fall-- Hurricane Iselle Mid-2014**

**After – Jan 2015**



**Hügelkultur -- bed preparation**



# Taro and pineapple 2018

**Before -- 2015**



**After -- 2018**





## 6. Help neighbors and friends



Help promote awareness of Hawai'i vegetation issues and solutions

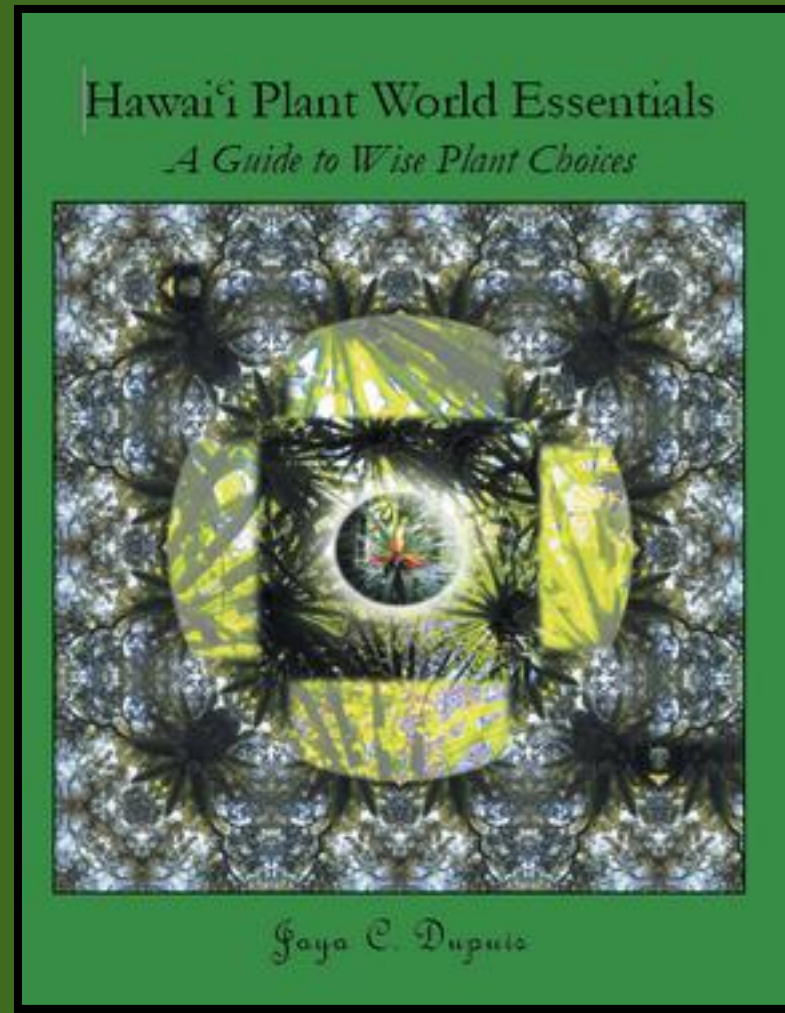




Inspire appreciation and integration of native species into environment!



If you need support:

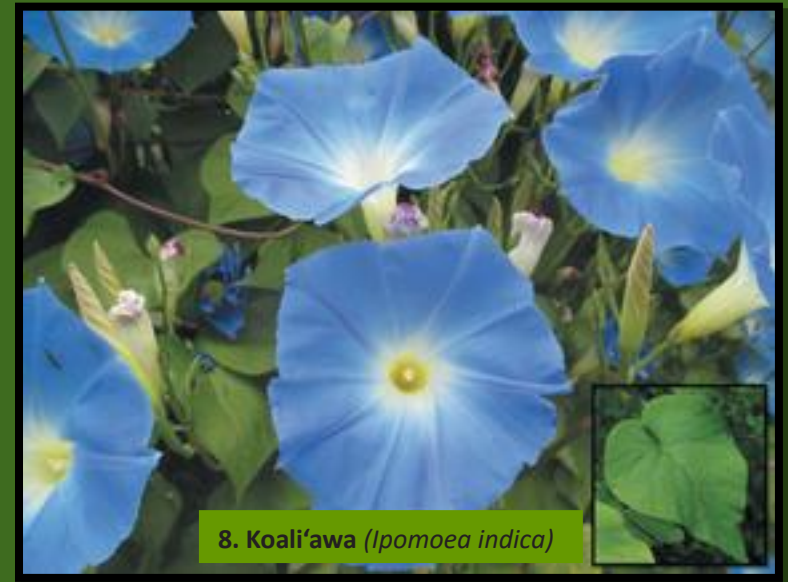


A practical guide to making informed plant choices in Hawai'i

***Available at:*** Basically Books, Island Naturals, Amazon.com  
or contact Jaya personally at ***dupuis@hawaii.edu***



# Plant picture identification guide with organized lists of most common lowland species according to plant distinctions





A photograph of a lush tropical forest. The scene is filled with tall trees and numerous bromeliads growing on the trunks and branches. The bromeliads have long, thin, green leaves and some have small, reddish-orange flowers. The background shows more trees and a clear blue sky. The overall atmosphere is vibrant and natural.

What we choose to plant

has a tremendous impact on the future of Hawaii's environment



# What Can We Do?

1. Take care of local native rainforest
2. Know plant distinctions and species
3. Plant native plants and food
4. Do not plant invasive species
5. Control invasive plants
6. Help neighbors and friends





# Host Special Group Volunteer Events – 100 tree plantings





Inspire youth with hands-on educational opportunities





# Offer classroom presentations



On a donation basis for non-profit Hawaii Environmental Restoration



# Support your local Keau'ohana Puna rainforest:

- Participate in quarterly volunteer events to restore rainforest
- Coordinate a separate volunteer work-group opportunity
- Sign up to work with the crew on a regular workday
- Offer donation to our non-profit

*Visit:* **Hawaii Environmental Restoration.org**



*or contact Jaya personally at [dupuis@hawaii.edu](mailto:dupuis@hawaii.edu)*



**Questions?**



**Mahalo Nui Loa!**