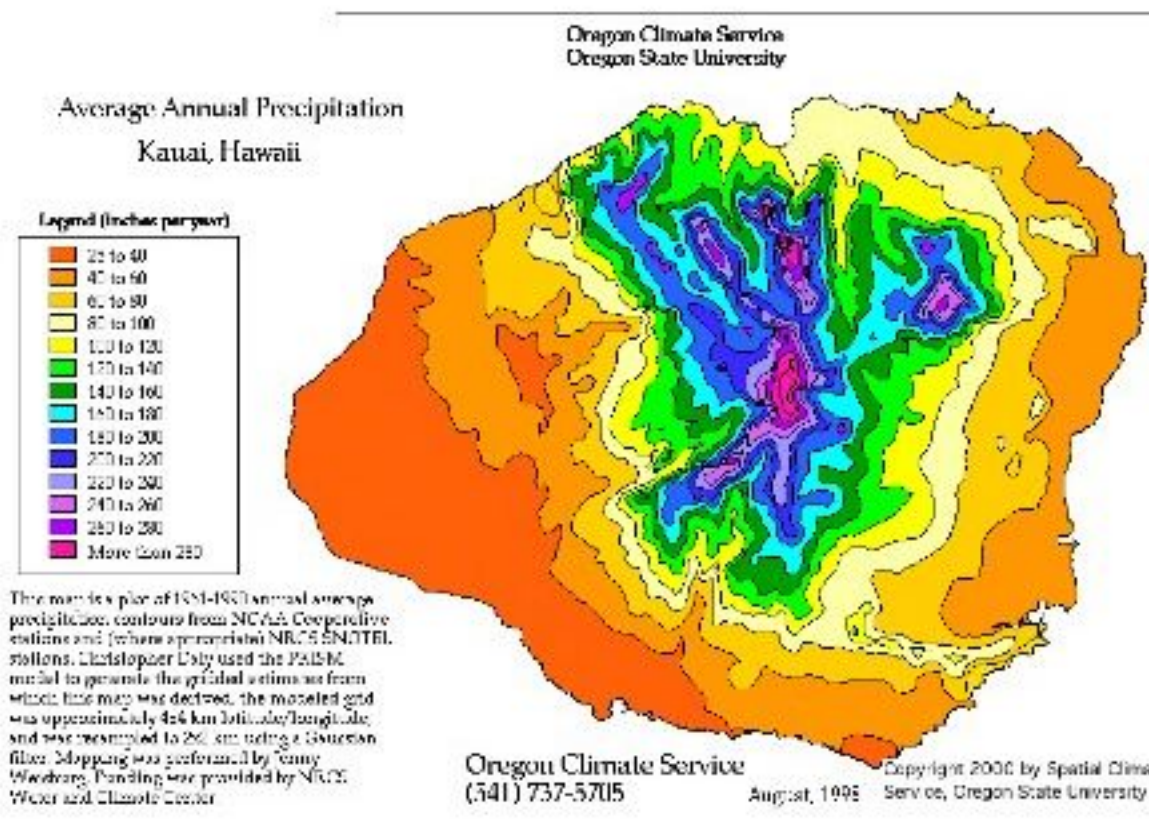


# DRY FOREST TREES AND SHRUBS OF KAUAI

Tropical dry forests used to be the most common of all tropical forest types, but today they are one of the most endangered ecosystems in the world. Since the Hawaiian Islands contain highly diverse and unique groups of species, failure to protect and restore tropical dry forests will result in significant biodiversity losses. Kauai has already lost approximately 90% of its original dry forest, however the actual coverage may be as low as 1%. It has the most endemic species of flowering plants out of all the Hawaiian Islands (383 species). Kauai also has the highest number of single-island endemic species with fourteen.



## Identification of Dry Forest Trees, Shrubs and Lianas

All plants can be identified as either having simple or compound leaves that are arranged oppositely or alternately on a branch. The plants are identified by their bark (color, texture), leaves (shape, veins, and structure), and smell. Below are 12 common and important trees and shrubs found in the Kauai dry forest. Provided are information on their scientific name, botanical family, Hawaiian name, and characteristics that can be used to identify the species, local uses, and conservation status.



Agavaceae *Pleomele aurea* Hala pepe

Small evergreen tree or shrub that resembles trees in Dr. Seuss. Trunk with few, nearly erect branches that end in clusters of sword-shaped, spreading and drooping leaves. Massive bell-shaped panicle flowers. Endemic to seasonal mesic habitats of Kauai. Soft wood used for religious carvings.



Epacridaceae *Styphelia tameiameia* Pukiawe

This large evergreen tree or shrub has small, alternate and spreading leaves with narrow, oblong blades that bend at right angle to twig. It has a twisted, irregular trunk with spreading branches and gray, fissured bark. Native to Hawaiian and Marquesas Islands, major component of mid to upper elevation shrubland. Used in leis garlands.



Thymeleaceae *Wikstroemia furcata* forest false ohelo

This small perennial tree or shrub has large, glabrous, narrowly ovate or broadly elliptic, and chartaceous leaves. Long, repeatedly forking spikes. Large, bright red drupes. The branches are erect and stout. Endemic to seasonal mesic habitats of Kauai Island.



Malvaceae *Hibiscus clayi* Koki'o 'ula

This shrub or tree has leaves that are simple, oval or elliptical with entire or toothed margins toward apex and is hairless on the upper surface with a slightly hairy lower surface. Stems bear sparse hairs at branch tips and single flowers appearing near branch ends. This endangered and endemic has only one naturally occurring population of four individuals intact on the Nounou Mountain, Kauai.



Sapindaceae *Sapindus oahuensis* Lonomea

The oval leaves are green with a yellow midrib and are the texture of thick paper. Ranging 20 to 50 ft. in height, the bark is typically light gray to white bark on older branches or covered with yellow brown fuzz on the youngest ones. The flower or seed is traditionally used for the making of the lei.



Fabaceae *Erythrina sandwicensis* Wiliwili

This small deciduous tree has leaves that are alternate and compound with a long slender leafstalk. Usually grows between 5-15 m tall with a short, stout, crooked or gnarled trunk. 5-15 m tall with a short, stout, crooked or gnarled trunk. The flower clusters are on hairy yellow stalks. Commonly used for surfboards.



Ebenaceae *Diospyros hillebrandii* Elama

*Diospyros hillebrandii* also known ebony, persimmon, elama and lama; is a tree that averages 4-7 meters tall. The leaves are dark green that are oblong-elliptic. The flowers are solitary however sometimes the male ones come in clusters of 2-5. The fruit of the tree is pale orange and dry on the inside.



Fabaceae *Acacia koa* Koa

This tree has phyllodes, which are modified leaf stems that function as leaves that are gray-green in color. It has flowers that are small, yellow, and shaped like a powder-puff that occur in clusters either at the ends of the branches or at the bases of the phyllodes. The tree is used for landscaping and also has some medicinal qualities.



Euphorbiaceae *Flueggea neowawraea* Mehameame

This multi-trunked tree is red and brown in color and its leaves are simple, alternate, and elliptic in shape. It has hard wood, which allows for the dead remains to last for long periods of time in the forest. Its fruit are dark brown and spherical containing six seeds. The flower is usually dioecious. It remains endangered and threatened by invasive species such as, the black twig borer.



Euphorbiaceae *Chamaesyce celastroides* 'Ekoko

This shrub has leaves that are simple and opposite, with thick stems, and a milky latex. The flowers are usually bisexual and occur year round with the fruit. Seeds are enclosed in capsules that open when dry enough. The seeds are dispersed by birds. The shrub occurs coastally, on steep terrain, and in the dry parts of the mesic forests. It is threatened by non-native shrubs and grasses.



Rhamnaceae *Alphitonia ponderosa* Kauila

This tree's leaves are ovate in shape, alternate, simple and stipulate. The wood of the tree is reddish in color and one of the strongest and heaviest woods in Hawaii. The yellow flowers form the shape of a 5-petal star. The fruit are drupaceous and contain a few seeds with red covering. The wood from this tree was used to make tools, such as spears, when metal was unavailable to the islands.



Oleaceae *Nestegis sandwicensis* Olopuu

This tree has simple opposite leaves, with small yellow flowers clustered together. Its fruit is dark purple with a single seed and look like olives, which gives it the common name Hawaii Olive. It is found in dry to mesic forests on the island. It is threatened by habitat destruction and invasive species. One of the most common trees in the Hawaiian Dry Forest

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Pictures from Hawaii Ecosystems At Risk project ([www.hear.org](http://www.hear.org)). Other images provided by [www.princeton.edu/~lhedin/Project5.htm](http://www.princeton.edu/~lhedin/Project5.htm), Hawaiian Native Plant Propagation Database Online at: <http://www2.hawaii.edu/~eherring/hawnprop/sap-oahu.htm>  
Bornhorst, Heidi L. 1996. *Growing native Hawaiian plants: a how-to guide for the gardener*. Honolulu: The Bess Press. p. 56-57. The National Tropical Botanical Garden Found online at: [http://www.ntbg.org/plants/plant\\_details.php?rid=1480&plantid=4907](http://www.ntbg.org/plants/plant_details.php?rid=1480&plantid=4907)  
Flora of the Hawaiian Islands Online at: <http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/speciesdescr.cfm?genus=Diospyros&species=hillebrandii> Hawaiian Native Plant Propagation Database Online at: <http://www2.hawaii.edu/~eherring/hawnprop/aca-ko.htm>  
Bornhorst, Heidi L. 1990. Introduction to xerophytic native Hawaiian plants. *The Bulletin of the National Tropical Botanical Garden* 20 (3):49-54. Agriculture and Human Resources. University of Hawaii at Manoa. 2003. [http://www.ctahr.hawaii.edu/forestry/Data/CommonTreesHI/CFT\\_Alphitonia\\_ponderosa.pdf](http://www.ctahr.hawaii.edu/forestry/Data/CommonTreesHI/CFT_Alphitonia_ponderosa.pdf) Implementation Plan for Makua Military Reservation 16.13. University of Hawaii. 2003. [http://www.botany.hawaii.edu/faculty/duffy/DPW/2003\\_MIP/Sec\\_1/FluNeo.pdf](http://www.botany.hawaii.edu/faculty/duffy/DPW/2003_MIP/Sec_1/FluNeo.pdf) Implementation Plan for Makua Military Reservation 16.13. University of Hawaii. 2003. [http://www.botany.hawaii.edu/faculty/duffy/DPW/2003\\_MIP/Sec\\_1/ChaCel.pdf](http://www.botany.hawaii.edu/faculty/duffy/DPW/2003_MIP/Sec_1/ChaCel.pdf) Hawaiian Ethnobotany Online Database. The Bishop Museum. <http://www2.bishopmuseum.org/ethnobotanydb/resultsdetailed.asp?search=olopua> Agriculture Handbook no. 679 by Elbert L. Little Jr. and Roger G. Skolmen, published by the Forest Service, U.S. Dept. of Agriculture, 1989, p.86 Pau, S. et al. 2008. natural History, Biogeography, and Endangerment of Hawaiian Dry Forest Trees Department of Geography, University of California, Los Angeles. p. 20 Agriculture Handbook no. 679 by Elbert L. Little Jr. and Roger G. Skolmen, published by the Forest Service, U.S. Dept. of Agriculture, 1989, p.265