

Bailey House Museum Chas Fisher Garden

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The Chas Fisher Garden consists of the entire grounds of the Bailey House Museum and is named in memory of past Trustee Chas Fisher. The gardens were planted in 1996 with funds contributed in his memory by the Maui community and the Cooke Foundation.

Edward Bailey edited a Botanical Text by Brown and Hooker to the “Ferns of Hawaii” which was published in his name. The fern garden represents his love and respect for Hawaiian ferns.

This work is meant to be used as an information guide/resource tool for the plants here on the grounds of Bailey House Museum. The front garden is primarily planted with plants that were introduced prior to 1900. The back garden is planted primarily with native Hawaiian plants. The site upon which Bailey House sits was called Kahalelani and was part of the royal compound of Kahekili, the last ruling chief of Maui. The site, located at the mouth of Iao Valley, was chosen by the Hawaiian chiefs as a suitable site for a Christian mission station and school for young Hawaiian girls. The story that we tell at Bailey House Museum is that of the dynamics of two cultures coming together.

The main focus of this report, after identifying and describing the plants, is to show how the plants were used in daily life by the Hawaiians, both culturally and physically. Pre contact culture in Hawai`i was largely based on the land and plants, both native and Polynesian introduced. Post contact culture carried on many traditions adapting newly introduced plants or other materials. The uses cited are by no means the only ones; more information can be found in the references listed at the end of this report. Many of these plants were used medicinally. Some are mentioned here, however this type of use varied by practitioner. The medicinal use of plants is not the intention or focus of this report.

For our purposes, the definition of *native plant* according to Beatrice Krauss in “Plants in Hawaiian Culture” will suffice: “The term *native plant* is used in an ethnobotanical sense to include endemic (found only in Hawai`i), indigenous (found in Hawai`i and elsewhere, but unique in each habitat), and Polynesian-introduced plants. In strictly botanical circles, the last named group is not considered native.”

<p>Ko Saccharum officinarum or “Sugar cane”</p>	<p>Polynesian Introduction</p>	<p><i>Ko</i> is a giant grass with thick; coarse stalks 6-15 ft. tall with short internodes. The coloring varies from yellow, pink, green, red, dark purple, or green with variegated white stripes. Inside the stem is filled with fibrous juicy pulp that was used traditionally to add variety to the Polynesian diets.</p> <p><i>Ko</i> was planted near houses, embankments of <i>lo`i</i>, forest zones & kula slopes as hedges by <i>`uala</i> (sweet potato) plantings for windbreaks.</p> <p>A black (charcoal) dye was obtained from the leaves & stems. The stalks were chewed for their sweet taste or the juice was used to sweeten medicinal preparations or a few foods such as <i>haupia</i> (coconut pudding.)</p> <p>The pounded stalks were used to wrap fish bait. The leaves were used for house thatching. The flower tassels were strewn over sledding courses to make them slick; used to make lei; and to make darts for a game.</p>
<p>Olive Tree</p>	<p>Post Contact</p>	<p>It would have been typical for a Christian site to have an olive tree. Judging from the age of the tree, it is possible that it was planted by Reverend Jonathan Green, Edward Bailey, or one of the other missionaries.</p>
<p>Spider Lily</p>		<p>This large variety was a very popular plant in post contact gardens.</p>
<p>Snow Bush Euphorbia family</p>	<p>Post Contact</p>	<p>The new growth is pink. It is easily propagated from root suckers or cuttings.</p>
<p>Egyptian Star Cluster Pentas lanceolata</p>	<p>Post Contact</p>	<p>Native to Africa.</p>
<p>Koki`o Ke`oke`o Native Hawaiian White Hibiscus Hibiscus arnottianus</p>	<p>Endemic</p>	<p>The <i>Koki`o Ke`oke`o</i> is a tall shrub (10-25 ft. in height) with smooth gray bark. Each flower contains 5 long white oval-shaped (usually) petals with a red staminal column and veins. The light fragrance it emits, which is less than Hibiscus Waimea, is rare among the hibiscus family. Its habitat ranges from sea level up to 3000 ft.</p> <p>Note the very beautiful varieties of this white native hibiscus. There is a shorter growing variety in the back yard. Other varieties are the Waimea and the Immaculatus. The Waimea has a tree-like growth with branches stemming from a central axis. The flowers are more compact, have an aroma, and stay open for two days. The Immaculatus is all white including the staminal column, has no scent, and again has a tree like growth. It was named by a Catholic nun.</p>
<p>Niu Coconut Palm Cocos nucifera</p>	<p>Polynesian Introduction</p>	<p><i>Niu</i> can reach heights of over 100 ft. Trees usually start to produce fruit in their 4th to 5th year and can do so yearly for 25 years or so. Separate male and female flowers appear on the same branch yet not at the same time so if pollination is to occur, it must be through different branches or different trees altogether.</p> <p><i>Niu</i> has many uses: Its trunk was used in the manufacture of food containers, drums, small canoes and spears among other things. The leaves were plaited into fans (<i>pe`ahi</i>), game balls (<i>kinipopo</i>), hats, etc. Midribs were fashioned into brooms (<i>pulumi ni`au</i>), shrimp snares (<i>pulu`aha</i>), and for needles in lei making. Husk fibers were braided (<i>pulu niu</i>) or twisted (<i>wili</i>) for cordage (<i>`aha</i>). Shells (<i>`iwi pu niu</i>) were made into food bowls, drinking cups for <i>`awa</i>, and knee drums (<i>pu niu</i>). The flesh or meat was eaten and the unripe nut provided for a tasty beverage.</p>

		<p>Coconut was kapu (forbidden) to women, therefore they could not prepare it, eat it, or make aha (coconut cordage). Cordage was used primarily for making canoes. The clothlike sheath was used for straining beverages such as coconut milk or awa.</p> <p>Kahili (royal standards) feathers were held to poles using niu midribs.</p> <p>Coconut meat was used for fish bait. It was used to make implements for mele (chants) and hula accompaniment (e.g. drums and rattles). Coconut flowers were used to scent kapa.</p>
<p>Ti Cordyline fruticosa: Asteliaceae family</p>	<p>Polynesian Introduction</p>	<p>Natural habitat: wet, open forests at lower elevations.</p> <p>Frequently found growing on banks of taro patches roots were cooked (steamed in <i>imu</i>) and eaten as sweets; molasses candy.</p> <p>Sap from roots used to stain surfboards (<i>papa he`e nalu</i>). Roots were fermented to make an alcoholic beverage (<i>okolehau</i>).</p> <p>Used as outside thatching for houses. Dried leaves soaked for flexibility & made into bundles (<i>pe`a</i>) tied at the base with another leaf so the blades spread out like a fan.</p> <p>Leaves used for preparation, transport and storage of food used as wrappers to provide moisture for food inside the imu bundles (<i>pu`olo</i>) used to carry goods.</p> <p>Clothing manufactured from leaves: skirts; “<i>pa`u</i>,” sandals; “<i>kama`a</i>” - raincoats; “<i>kui la`i</i>”</p> <p>Leis; leaves themselves were used in a hili method (braiding of a single plant), or a “deboned” <i>Ti</i> leaf was folded over & used as a core or base for the <i>wili</i> method in which various flowers & leaves were attached to it with fibers.</p> <p>As medicine, ti has various usages:</p> <ul style="list-style-type: none"> - <i>Ti</i> dipped in cold water & placed on forehead to relieve headaches/fever - <i>Ti</i> wrapped around warm stones used as hotpacks for swellings/sprains, etc. <p>For fishing, <i>Ti</i> shredded & tied to nets (<i>huki lau</i>) to scare/attract fish into net</p> <p>Protection:</p> <ul style="list-style-type: none"> - <i>Ti</i> is considered to be a protective force when worn or planted around homesteads. Priests frequently wore woven leaves around their necks to assure proper guidance in rituals. <i>Ti</i> leaves were a symbol of divine power. <p>The <i>ti</i> plant was carried in procession to announce the arrival of chiefs and was the precursor to the feather kahili.</p> <p>The students here at the Wailuku Female Seminary slept on stacks of <i>ti</i> leaves. There is a Hawaiian variety which almost never flowers or seeds.</p>
<p>Mango</p>		<p>Planted approximated 75 years ago by the Dukelow family.</p>
<p>Hapu`u: Hawaiian Tree Fern</p>	<p>Endemic</p>	<p>Two species are accounted for as a result of different types of <i>pulu</i> (“wool” that covers young frond buds).</p> <ol style="list-style-type: none"> 1. <i>Citotium glaucum</i> Yellowish-brown hairs are soft and silky 2. <i>Cibotium menziesii</i> Reddish-brown or black bristles are coarse and stiff <p><i>Hapu`u</i> ferns grow in the cool, shady sections of the rainforests and are commonly seen growing under <i>Ohi`a Lehua</i> trees. The fronds can extend to heights exceeding 30 ft.</p>

		The starchy center was traditionally cooked in the imu and used for pig food, and as famine food. The young uncurled fronds (<i>pepe`e</i>) were also used for pig food, or peeled and cooked for human consumption. The pulu was used as pillow stuffing and was commercially sold in post contact times. It was also used in some embalming practices.
<i>Moa</i> Psilorum nudum	Indigenous	This primitive fern was found all over the world when the dinosaurs were here. It takes the form of a slender, shrubby, stiff perennial reaching a maximum height of 2 ft. with many spreading branches. The stems function as leaves with an underground stem functioning as a root. <i>Moa</i> is propagated through spores so is widely distributed (wind distributes), and can grow in moist to dry areas either in soil or on rocks and trees. As a medicine, the spores were traditionally used as a powder to relieve chafing caused by the <i>malo</i> (loincloth). Sometimes called the “Chicken Fern”. Its leaves were used in a children’s game. The winner of the game would crow like a rooster.
<i>Mamake</i>	Endemic to Hawaii	<i>Mamake</i> grows as a shrub or small tree and is found growing wild on the outskirts of forests and in clearings at elevations of 1500-4000 ft. The lower surface of the leaves have a silvery coloring with reddish-colored veins. <i>Mamake</i> was used as an alternative source of <i>kapa</i> (barkcloth) as it is a close Hawaiian relative of <i>Wauke</i> (Paper mulberry). The <i>kapa</i> produced from <i>Mamake</i> is brown. Medicinally, the leaves were used in a hot tea as a general cleansing agent and smooth muscle relaxant. The white fleshy mulberry-like fruits are a mild laxative, and a healing agent for wounds.
`Ama`u Fern or `Amaumau Sadleria cyatheoides	Native	The `Ama`u fern grows in the uplands, on fresh lava flows, or in wet forests. Its trunk is short and young fronds are bright red which turn green with maturity. Fronds are made up of many segments with a single mid-vein. The ferns can reach heights of ten feet or more. Traditional uses of `Ama`u consist of using the sticky sap of furled fronds (<i>palaholo</i>) mixed with sprinkled water when beating <i>kapa</i> (barkcloth) to keep damp. Also, bunches of cut fronds were used to finish thatching by tying them on to the inside ridge posts with `ie`ie or `aha cordage. `Ama`u ferns also used as a famine food in times of need. A red dye resulted from using young fronds.
<i>Laua`e Fern</i>	The is not the native variety.	Used for lei and kapa scenting.
<i>Wauke</i> Paper mulberry tree Broussonetia papyfera	Polynesian Introduction	<i>Wauke</i> is found growing at lower elevations of the wet forests. The upper surface of the leaves are rough in texture while the underside is soft. Orange fruits appear when mature. Also at maturity, leaves are coarse, thick & lobed in shape. Sprouts come up from root shoots. <i>Wauke</i> was the main source in Polynesia for <i>kapa</i> (barkcloth). Branches about 3 meters long and 4 cm (1 ½”) in diameter were cut to use in kapa making. The inner bark was peeled off, soaked in water to loosen fibers, beaten with hardwood beaters with various shapes for the various stages of manufacture, and dried in the sun. Two soakings and two beatings was necessary, along with laying out the fabric on a bed of banana (<i>mai`a</i>) leaves to mature and ferment, to make the material soft and pliable.

		Cordage was also obtained from the white inner bark. It was used to make a soft light-weight netting to carry `umeke (wood or gourd containers).
Rainbow Shower Tree	Post contact	
Kukui: Candlenut tree Aleurites moluccana	Polynesian Introduction	<p>The <i>Kukui</i> tree is easily identified by its silvery green leaf tops with a darker green coloring on the undersides. Small white flowers are in clusters at the ends of branches. <i>Kukui</i> grows to heights of 80 ft. and tend to form dense groves in lower mountain elevations and in wet gulches. The kernel is used as a relish to liven up food (<i>inamona</i>) where it is roasted and mashed with salt. Best not to eat too much though because it's also a natural laxative and cathartic.</p> <p>Both the nut and the leaf are used to make leis.</p> <p>Traditionally, the meat inside the nut was used for lighting in three ways:</p> <ol style="list-style-type: none"> 1. The seed kernel was crushed to produce oil which was put into stone lamps with a piece of <i>kapa</i> used as a wick. 2. <i>Kukui</i> nut candles were constructed by roasting nuts, cracking open shells to get at the seed kernel, threading the seed kernel on to midribs of coconut leaves, which were lighted. 3. An ohe (bamboo) section was filled with seed kernels and lit. <p>Sap from the green fruit is used to numb sore teeth and gums, and in the treatment of thrush (<i>`ea</i>). Sap applied to a wound forms a seal which induces healing.</p> <p>By pounding the inner bark and mixing with seawater, a reddish-brown stain resulted and was used to dye fishnets and <i>kapa</i>.</p> <p>Fishermen chew roasted kernels and spit them into the water to create an oily surface which increases the visibility below.</p> <p>Burning roasted nuts provides a soot used as a black dye for tattooing, painting canoe hulls and dyeing <i>kapa</i>.</p>
Awa Piper methysticum; Pepper family	Polynesian Introduction	<p><i>`Awa</i> is a tall shrub (4-12ft.) with multiple nodes on each branch. Dark green leaves are arranged in an alternate pattern and smooth and shiny in texture. Leaf shape is heart-shaped and wide. It can be found growing wild in lowland forests.</p> <p>All plant parts have relaxant elements. Medicinally, <i>`Awa</i> was used for cases of rheumatism & asthma. It was also a cure for sleeplessness, and a tonic was produced from the roots for cases of general debility, headaches, and sore muscles.</p> <p><i>`Awa</i> was also traditionally used for ceremonial occasions. Either the dried root chewed, or a cup of the strained root was a necessary offering to various Gods for various rituals.</p>
Ohia`a Lehua Metrosideros polymorpha	Endemic to Hawaii	<p>The <i>Ohia`a Lehua</i> tree is variable in size, leaf shape and flower color. Young leaves typically are of reddish hues while mature leaves are green. Flowers are commonly red, and uncommonly yellow, pink or white (rare).</p> <p>The tree is a <i>kinolau</i> (representative body form) of the Gods <i>Ku</i> and <i>Kane</i>. The blossom is sacred to <i>Pele</i> - the Volcano Goddess, and represents <i>Kuka`ohi`a Laka</i> on the hula altar.</p> <p>The tree's dark, dense wood had various uses: spears, <i>poi</i>-pounding boards, as rafters, house posts and thatching poles in housebuilding, for decking, spreaders, seats and gunwales in canoes, and for carving sacred images (<i>ki`i & akua ka`ai</i>) in <i>heiau</i> (temples).</p> <p>A medicinal tea is made from the young reddish leaves (<i>liko ohia`a</i>).</p>

Plumeria Frangipani	Native to tropical America	Common lei flower.
Hala Screwpine Pandanus tectorium	Endemic	<p><i>Hala</i> grows wild along windward coasts and in lower valleys. Branches consist of spirals of long, thin leaves with sharp, thorny edges and midribs. Reddish-orange to light yellow keys (individual fruits that form one cluster or drupe) appear on female trees (<i>hala hua</i>). Most <i>Hala</i> grow in groves (<i>puhala</i>). The Hawaiian <i>Hala</i> is green while the introduced species are variegated with yellow stripes.</p> <p>The trunk (<i>kumu hala</i>) of the male (<i>hala hinano</i>) was used for houseposts and bowls. Also, the <i>hinano</i> (male blossom) was used to scent <i>kapa</i>.</p> <p>Leaves are plaited (<i>ulana</i>) into mats (<i>moena</i>), fashioned into rectangular or cubical pillows (<i>uluma</i>), baskets (<i>hina`i</i>), fans (<i>pe`ahi</i>), sandals (<i>kama`a</i>), and other useful items. Preparing the leaves was traditionally women's work.</p> <p>Dried leaves were used as thatch mats for houses where <i>pili</i> grass was uncommon and also as walling inside the frame. Fine mats for the ali`i were made from <i>hinano</i> bracts split very fine (<i>moena makali`i</i>).</p> <p>Drupes from the female were made into <i>lei</i>.</p> <p><i>Hala</i> trees are associated with <i>Hi`i`aka</i> as <i>Hi`i`aka makole wawahi waka-Hi`i`aka</i> the red-eyed who smashes canoes: When fishermen saw the fruits on the ground near shorelines, they didn't take canoes out to sea to fish because they knew the seas were rough.</p> <p>Aerial roots were used as walking canes & `ukeke bows (musical instruments). Fibers from female tree roots were used to strain `awa and for stringing lei. Sails (<i>la</i>) for canoes were made from leaves in pre-contact Hawaii.</p>
Noni Indian Mulberry		There are many medicinal uses, externally and internally, for the fruit of the Noni. Juice from the fruit is used to treat skin problems, arthritis, ulcers. A minor use for the plant was for <i>kapa</i> dye.
`Uki`uki Lily family Dianella sandwicensis	Indigenous	<p>Long, narrow, smooth, somewhat leathery leaves, one to three feet long and ½ to one inch wide. From a short erect stem a branching flower cluster arises. The flowers are small and bluish. The fruits are long-persistent light blue or dark blue berries.</p> <p>The blue berry was used for <i>kapa</i> dye and lei. The leaves were used to make cordage.</p>
`Olena: Tumeric Curcuma longa	Polynesian Introduction	<p><i>`Olena</i> is a semi-wild member of the ginger family (root). Leaf stalks come up in spring and die down during the fall season.</p> <p><i>`Olena</i> was used medicinally to relieve earaches and applications of it were put into the nostrils to relieve sinuses.</p> <p>An orange dye resulted from juice of the rhizome and was used to decorate <i>kapa</i>.</p> <p>As a purification ritual, the stem was mixed with salt water by a priest who then sprinkled the liquid, with a frond of <i>limu kala</i>, on persons, places and things to remove <i>kapus</i>.</p>
`Awapuhi Kuahiwi Shampoo Ginger Zingiber zerumbet	Polynesian Introduction	<p>Grows two feet tall and is common in the moist lower forests.</p> <p>The fragrant sudsy fluid from the green to red flower head was used as a shampoo and a thirst quencher. The aromatic rhizome was used for scenting <i>kapa</i>.</p>
`Ape	Polynesian introduced	A close relative of the kalo. Used as famine food. Like kalo, the corm and leaves have a high calcium oxalate content.

<i>Loulu Fan Palm</i> Pritchardia	Endemic to Hawaii	The <i>Loulu</i> has large, rigid leaves that are wedge-shaped and shallowly cut. Flowers appear in clusters and are perfect. Traditional uses include using the leaves for plaiting mats, thatch for hale (house) etc. and for fashioning spears from the hard, fibrous wood. The fronds were used to construct a seasonal heiau for success in fishing called a heiau loulu.
<i>Geranium</i>	Post contact	Bailey's residence was described in early letters as occupying the "choicest site in Wailuku," have a garden with a huge variety of plants. His red geraniums were described as growing "10 feet high."
<i>`Ahu`awa</i> Mariscus javanicus Family: Cyperaceae	Indigenous	`Ahu`awa is a sedge with a clumping form up to 3 feet tall. Multiple seed heads extend out of the silvery green leaf blades. Because this plant is a sedge, the edges of the leaf blades have a rough texture. `Ahu`awa derived its name from the word `ahu which means, "to drink". The fibers were used to strain the `awa before drinking.
<i>Koki`o`ula</i> Hibiscus clayi Family: Malvaceae	Endemic Endangered	Koki`o`ula is a member of the hibiscus family. A native to Kaua`i and is endangered. If let untamed will grow in a columnar fashion up to 15 feet tall with a 5 foot spread.
<i>Ko`oloa`ula</i> Abutilon Menziesii	Native Endangered	Small light green, silvery leaves. Delicate and dark red hibiscus shaped flower ¾" in diameter hangs inconspicuously beneath the leaves.

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