

Trees and Shrubs of Johnston Island



By CAST VII

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A Note to Future CASTs

This project is intended for use as a field guide by future Crazy Ant Strike Teams and as an aid to others conducting research or otherwise spending time on Johnston Island. All trees and shrubs that were observed by Cast VII can be found in these pages, though there are likely still more. With limited resources available on island, we were unable to identify all plants to species. Therefore, many species are simply labeled *Genus sp.* For assistance to those who may be interested in continuing the identification process or in learning more about the plants, all the resources used in creating this guide are listed in the “References” page. Digital sources are available on the Primary computer in the folder C:/JA-Database/JA_Literature/Vegetation. Print sources can be found in the Ant Cave library. We hope that knowledge of Johnston’s plants can grow as they do.

Thank You

A huge thank you to Stefan Kropidowski with the U. S. Fish and Wildlife Service and Danielle Frohlich with The Bishop Museum. For five months they accepted my stream of “Unidentified Plants” inquiries, sifting through over 70 photographs and providing identifications for 25 species, and the resources to identify still more. Without you, this guide would be far from complete.

~ Jane

Nerium oleander

Oleander



Identification

- Tall shrub up to 30 feet tall.
- Branches are pale green to light gray in color, and produce a milky sap when broken.
- Fruits are pairs of long, narrow pods. Fruits are not common in Hawaii and have not been observed on Johnston.
- Flowers develop in clusters at branch tips.

Johnston Specifics

- Forms a thick hedge approximately 15 feet tall bordering the road just west of the internet. Smaller, isolated individuals have been observed in the near vicinity.
- White, dark pink, and light pink varieties are known to be present.

Oleander Flowers and Leaves



Flowers are showy, fragrant, and 3 – 4 inches in length. Two oleander cultivars are most commonly seen on Johnston. One bears white flowers with 5 petals (top left), while the other has dark pink/purple flowers with multiple whorls of petals (lower left). Hybrids and/or other cultivars are also present.



Leaves are simple, entire, and pointed at the tip. 2 - 3 leaves grow from each node, attached to the stem by a short petiole. They are 4 – 12 inches long and $\frac{1}{2}$ - 1 inch wide. In color, leaves are dark green above and lighter below.



Plumeria obtusa

Plumeria, Frangipani



Identification

- Small tree growing up to 30 feet tall, usually equally as wide as it is tall .
- Of *P. obtusa*'s many cultivars, most are evergreen and a few are deciduous.
- Rarely produces fruit, but when it does, bears two 7-inch long pods.

Johnston Specifics

- Broadly dispersed across Johnston, but more concentrated mid-island near the tennis courts and the internet.
- Its rounded canopy is often used by Red-Footed Boobies for nesting habitat.
- Specimens observed on Johnston are evergreen, although deciduous varieties may also be present.

Plumeria obtusa Flowers and Leaves



Leaves (right) are bright green and glossy with a blunt tip. They are simple, entire, and about 8 – 12 inches long and 2 – 4 inches wide. Leaves grow from the stem in a whorled pattern.

Flowers are highly fragrant and about 2 – 4 inches in diameter. Each flower has 5 petals that are joined in a tube at their base, from which they extend out in a pinwheel formation. Most flowers on Johnston are yellow at center, fading to white (left). Cultivars with varying color schemes may also be present.



Apocynaceae

Plumeria rubra

Plumeria, Frangipani



Identification

- Slender ornamental with smooth, curving, gray-brown branches.
- Of *P. rubra*'s many cultivars, some are deciduous and some are evergreen.
- *Plumeria rubra* is distinguishable from *P. obtusa* by its pointed leaves.
- Hybrids may occur.

Johnston Specifics

- Usually lacks dense foliage and therefore does not provide nesting habitat.
- Specimens observed on Johnston are deciduous, although evergreen varieties may also exist.
- In Spring, leaves and flower stalk unfurl rapidly from branch tips. Flowers remain through October.

Plumeria rubra flowers, leaves, and branches



Flowers (above) are fragrant and showy with attractive coloring. They are yellow at center, fading to pale pink with a magenta border. Petals come to a soft point at their tip, and have a thick, dry texture. Like *Plumeria obtusa*, each flower has five petals arranged in a pinwheel formation around a tubular center. Flower buds are deep crimson.

Leaves (below), are dark green, with yellowish veins and a light green underside. They are thick and leathery, and about 8 – 12 inches long. Their pointed tip distinguishes them from the blunt tip of *Plumeria obtusa*.



Plumeria rubra loses all foliage in the winter. The bare plant looks so strange that it hardly resembles a plant at all, much less a living one. The above photo was taken in early February of 2014. Leaves were barely beginning to emerge from the tip of each branch. This same plant is pictured on the previous page, taken on March 21st, 2014, as it was just beginning to bloom.

Araucariaceae

Araucaria columnaris

Cook Pine



Identification

- Large erect tree that can grow up to 200 feet tall.
- Strikingly straight and symmetrical.
- Despite this tree's common name, it is not actually a true pine.

Johnston Specifics

- As of 2014, two Cook Pines are known to be present on Johnston. The taller of the two, pictured at left, is the tallest tree on Johnston, located in the eastern end of Sector 13. The other, smaller tree grows near the western border of Sector 2.

Cook Pine Branches and Leaves



The bark of Cook Pine is rough and gray. Branches grow at right angles from the trunk, and in a complete ring around it. As the tree matures and lower branches die and fall off, a series of rough, evenly-spaced bands remain. Cook Pine's "needles" grow straight up, perpendicular to the branches from which they sprout. On young trees, the leaves that compose each "needle" are sharp and tightly clustered. As the tree matures, the leaves widen and overlap one another in a spiraling pattern.



A Red-footed Booby nests in the Cook Pine in Sector 2 (above). A cluster of young, sharp "needles" at the end of a branch (below).



Cocos nucifera

Coconut Palm



Identification

- Tall, slender tree growing up to 100 feet tall with a smooth, curving trunk.
- Leaves may grow up to 18 feet long.
- Yellow, fragrant flowers are borne in clusters that can span almost 6 feet in length.
- Although it's flowers are unisexual, the tree is monoecious, having both male and female flowers on the same individual tree.
- Produces large coconuts.

Johnston Specifics

- Fallen fruit and leaves provide habitat where YCA are known to thrive.
- As with other fruits on Johnston, it is not recommended that coconuts be consumed due to possible contamination.

Coconut Palm Leaves and Fruit



Coconut Palm fronds can be up to 18 feet long, with individual leaf segments reaching lengths of up to 3 feet. Leaves are thin, pinnately veined, and without spines (above).

Coconuts are 8-12 inches long and grow in tight clusters (below). Young, green coconuts are filled with liquid which becomes the “meat” of the coconut as it grows. Mature coconuts are brown and covered by a dense, fibrous husk.



Areaceae

Pritchardia sp.



Identification

- Medium-sized fan palm that bears large clusters of berry-like fruits.
- Fan-like leaves are free of spines.
- Trunk is smooth.

Johnston Specifics

- It is currently unknown whether one or multiple *Pritchardia* species exist on Johnston.
- The tree pictured at left is about 15 feet tall and is located west of the internet, across from the Oleander hedge.

Pritchardia sp. Leaves, Fruits, and Trunk



Fruits are berry-like in shape and are born in large, downward hanging clusters. They are first green, then red, then deep burgundy at maturity.



Leaves are fan-like in structure (above). They are approximately 2 – 3 feet wide and 3 – 4 feet long. Leaf stalks are thick, fibrous, and spineless. Dead leaves cling to the trunk and droop downwards, forming a “skirt” around the base of the live leaves. The trunk (right) is smooth.

Washingtonia robusta

Mexican Fan Palm



Identification

- Tall palm with large, fan-like leaves.
- Leaf stems are lined with orange-brown spines.
- Dead leaves droop downwards, surrounding the trunk like a shaggy beard.

Johnston Specifics

- Only one of these palms is known to exist on Johnston. It is about 15 feet in height as of April 2014, and is located on the northern perimeter of the tennis court. No flowers or fruits have been observed.
- Mexican Fan Palm's spines distinguish it from other, perhaps multiple species of fan palm on Johnston that lack these spines (see page).

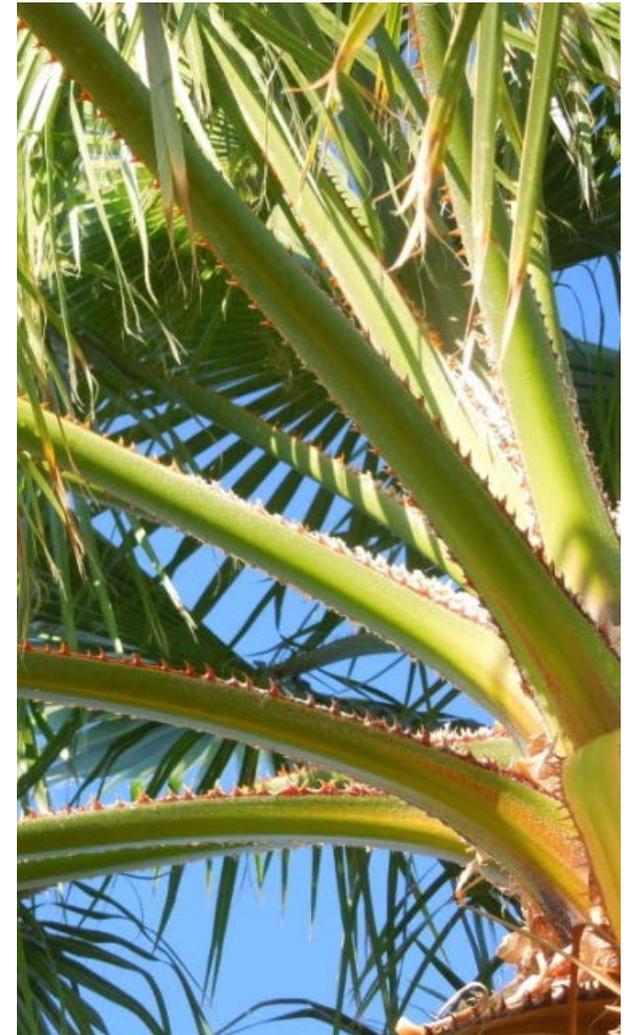
Mexican Fan Palm Leaves and Trunk



Leaves (right) are bright green and fan-like in structure. They are 3 – 5 feet wide and equally as long .

Leaf stems are lined on either side with a row of sharp, forward-curving spines about ½ inch in length (right). They are orange-brown to red-brown in color.

As the tree grows and leaves eventually fall, the trunk is left with an interwoven criss-cross covering of the remaining stem bases. This distinguishes it from the smooth trunk of the Coconut Palm.



Calotropis gigantea

Milkweed, Crown Flower



Identification

- Erect shrub or small tree with milky sap.
- Recognizable by large, silvery leaves and conspicuous flowers.
- Foliage is often sparse due to predation by insects.

Johnston Specifics

- Milkweed is host to a local population of monarch caterpillars. Monarch butterflies can usually be found flying nearby.
- A variety of other insects, such as preying mantises, ants, and aphids, are also frequently observed on Milkweed.

Milkweed Flowers and Leaves



Leaves are simple with an entire leaf margin. They are obovate in shape and cordate at their base. In texture, they feel leathery and thick. Pale, fuzzy pubescence covers both sides of the leaves, though it is denser on the underside, giving it a silvery color. The top of the leaf is bright yellow-green, punctuated by slightly darker reticulate venation (above).

Flowers (below) grow in clusters at the tips of branches. They are generally white, though they may be green or purple hued. A large superior ovary sits atop the 5 petals, resembling a crown (hence the common name). Flowers are fleshy in texture and highly fragrant.



Milkweed Fauna



Monarch butterflies (upper left) lay their eggs only on Milkweed, which contains a toxin that is unpleasant to many would-be Monarch predators, thus providing valuable defense to both the butterfly and caterpillar (lower left). In the two weeks between hatching and metamorphosis, the caterpillar feeds nearly nonstop, growing to be approximately 2000 times its initial size.



Egg galls (above) are usually present on Milkweed. Praying mantises (below) are often seen feeding on aphids. They also likely consume young monarch caterpillars and other insects that this plant attracts.



Pluchea carolinensis

Sourbush



Identification

- Aromatic perennial shrub.
- Often grows as a low, wide, dense shrub of 4-5 feet in height, but can also grow spindly and erect, reaching 5 to 8 feet.
- Leaves and stem are covered in soft pubescence.

Johnston Specifics

- Provides nesting habitat for both Red-tailed Tropicbirds and Red-footed Boobies.

Sourbush Flowers and Leaves



Flowers grow in dense clusters at branch tips (left). They are small, fluffy, and may be white to pinkish-lavender in color. After the seeds have been released, the remaining dry flower bases resemble a bouquet of tiny sunflowers (right).



Leaves (right) are elliptic in shape, alternate, and entire. They are pubescent above and below. Tearing or crushing the leaves releases a pleasant, lightly basil-like aroma.



Pluchea indica

Indian Fleabane



Identification

- Weedy shrub reaching up to 6 feet in height.
- Grows as an isolated shrub or may form dense thickets comprised of many individuals.

Johnston Specifics

- This is the most common shrub on Johnston. It is widespread throughout all parts of the island.
- Frequently used as nesting habitat by Red-footed boobies and Red-tailed Tropic birds. Tropicbird nests may be located on the immediate perimeter of the shrub or up to 6 feet into the foliage.

Indian Fleabane Flowers and Leaves



Leaves (far right, below) are yellowish-green in color with a shiny appearance and a dry, waxy texture. They are obovate in shape with coarsely dentate margins. Leaves are pinnately veined, and arranged densely along the stem in an alternate pattern.



Small, fluffy, purple- or rose-colored flowers grow in clusters at branch tips (upper left). Compact petals emerge from a scaly, cup-like base (lower left). Flowers become dry and hairy as they mature and seeds are released (above).



Tabebuia aurea

Trumpet Tree



Identification

- Medium-sized upright tree with gnarled grayish bark and conspicuous clumps of large, bright yellow flowers.

Johnston Specifics

- Currently, only one of these trees is known to exist on Johnston. It is growing on the west edge of the tennis courts, with its base engulfed in Sea Grape.
- The tree currently hosts one Red-Footed Booby nest.
- When flowering, the yellow flowers easily distinguish this species from the otherwise similar Pink Trumpet Tree. When not in flower, differences include Trumpet Tree's upright stature and its dark, matte leaves.

Trumpet Tree Flowers and Leaves



Vibrant yellow flowers bloom rapidly and abundantly in early spring. They form in large, downward-facing clumps composed of about twenty individuals. Each flower has 5 thin petals, connected at the base in a tube about 1 - 2 inches in length (right and left).



Leaves are palmately compound, extending outwards from one central point (left). Each leaflet is 3 - 7 inches long and about 1 - 2 inches wide. Their dark green coloration and matte appearance distinguishes them from the yellow-green, glossy leaved Pink Trumpet Tree. Bark is gray-brown and gnarled (right).



Bignoniaceae

Tabebuia heterophylla

Pink Trumpet Tree, Pink Tecoma



Identification

- Medium to large tree
- Usually grows as a spreading tree with an irregularly bushy canopy and indistinct base. Less commonly grows tall and erect with a single trunk.
- Produces flowers similar in shape and size to Trumpet Tree, except they are pinkish white and loosely clustered.

Johnston Specifics

- Common in the area surrounding the tennis courts and the internet. Not known to exist outside this area.
- Provides nesting habitat for Red-Footed Boobies and Red-Tailed Tropicbirds.

Pink Trumpet Tree Flowers and Leaves



Flowers are pinkish-white in color and lightly fragrant. The thin, delicate petals unite at their bases to form a pale yellow, 1 – 2 inch-long tube. Fuchsia lines faintly mark the petals, becoming darker at the tube's throat (upper left). Flowers may be found growing singly or in loose clusters. Buds are pale pink (lower left).



Leaves are palmately compound. Three leaflets extend from one point: two small leaflets at the base, and one larger leaflet in the center (above). They have a smooth texture, glossy appearance, and are yellowish green in color with yellow veins. Leaves are 3 – 7 inches long and 1 – 2 ½ inches wide, slightly wider than those of Trumpet Tree.

Boraginaceae

Cordia sebestena

Kou Haole, Geiger Tree



Identification

- Erect tree reaching up to 30 feet in height.
- Capable of producing shoots from its shallow root system that grow into full-size trees, sometimes creating thickets. Also reproduces sexually by seed.
- Popular ornamental species in Hawaii.

Johnston Specifics

- Several specimens are located between the internet and the road that connects Refuge Road and the runway.
- Can be easily confused with the more common *Cordia subcordata*, but note the rough leaves and deeper orange, more flattened flowers.

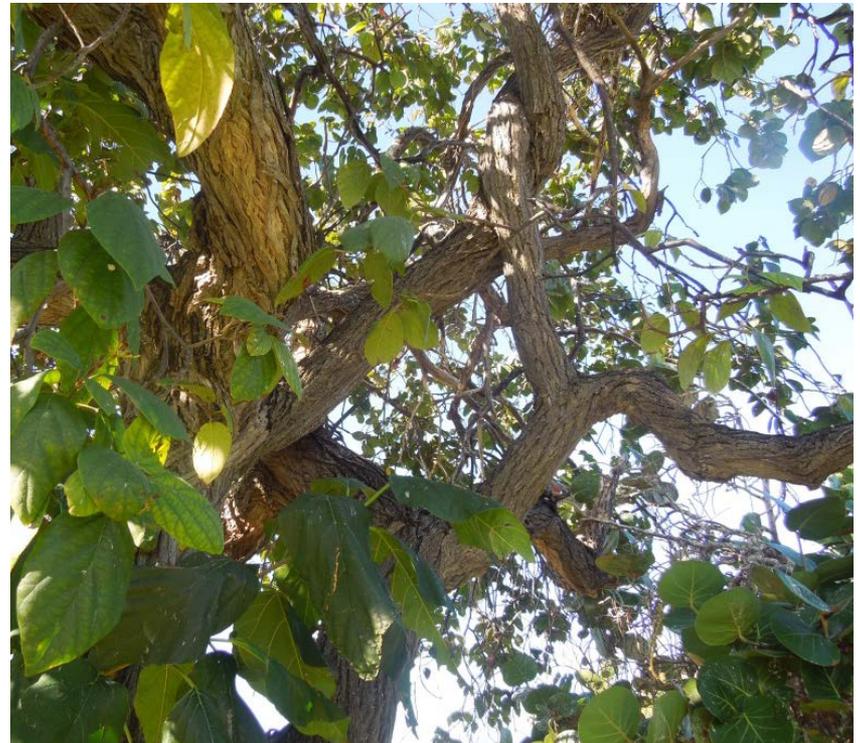
Kou Haole Flowers and Leaves



Leaves have an unmistakably coarse, sandpaper-like pubescence. Their shape is broadly ovate to elliptic, indented by deeply set veins (above).

Bark is thick, light brown, and textured in an interwoven pattern (right).

Deep orange flowers appear almost red, especially when compared to Kou. Petals are thin, wrinkled, and spread from the center on a flat plane, not curling backwards like the petals of Kou. Flowers grow in clusters (in the photo, adjacent flowers had recently fallen). Each flower has 5 to 7 petals.



Boraginaceae

Cordia subcordata

Kou



Identification

- Tree growing up to 30 feet tall with a broad, spreading crown.
- Like *Cordia sebestena*, its roots produce shoots that grow into full-size trees, though it can also reproduce by seed.
- Distinguishable from *Cordia sebestena* by its smooth leaves, light orange flowers, and hard green fruits that turn brown at maturity.

Johnston Specifics

- Common and widespread, though more prevalent on the eastern half of the island.
- Sturdy and densely foliated, Kou provides nesting habitat for Red-Footed Boobies and Red-Tailed Tropicbirds.

Kou Flowers, Leaves, and Fruit



Kou's bright orange flowers consist of 5 - 7 wrinkled petals that join to form a dark orange tube. The tips of petals curve backwards towards their base. Flowers are scentless, and grow in loose clusters (above).

Leaves(left) are ovate to elliptic in shape. They are smooth and glossy, aside from fine fuzz on the underside along the leaf's main vein.



Fruits (above) are green when young, becoming brown at maturity. They are 1 – 2 inches long, and each encloses 4 seeds.



Boraginaceae

Tournefortia argentea

Tree Heliotrope



Identification

- Small to medium tree growing up to 20 feet tall with a short trunk and an umbrella-shaped canopy.
- Identified by gnarled, pale gray-brown branches, curling inflorescences of tiny white flowers, and large, fleshy leaves.

Johnston Specifics

- Often grows in areas of high wind exposure, such as along Johnston's eastern shoreline, though it is also present further inland.
- It's broad canopy often hosts many Red-footed Boobies.

Tree Heliotrope Flowers and Leaves



Flowers are tiny, white, and grow on scorpioid cymes about 2 – 3 inches long. Flowers give way to tightly packed fruits (Some are forming in the photo at left). Fruits are small, smooth, round, and white at maturity.



Leaves are obovate in shape and appear to be whorled, though they are actually alternate. They are fleshy and covered in silky white hairs (above). Red-Footed Boobies commonly nest and perch in this tree (left).

Cactaceae

Cereus uruguayanus

Hedge Cactus



Identification

- Upright cactus composed of many tall, slender pillars lined with clusters of spines.
- In cross-section, its branches form the shape of a plus-sign.

Johnston Specifics

- Only one specimen is known to exist on Johnston. It is located south of the Johnston Atoll sign with the seabird information display, in the shade of large Haole Koa. It is currently about 7 feet tall and 4 feet wide. A disintegrating garden hose is wrapped around its base.
- No flowers or fruits have been observed.

Hedge Cactus Branches and Spines



Hedge Cactus's smooth, dark green branches are 4-lobed (right). Each lobe is oriented at a right angle to those adjacent, forming a plus-sign in cross-section. Along the outer perimeter of each lobe grow clusters of 7 – 9 spines (left). These spines are fine, sharp, and yellowish to brown in color. Many young, miniature pillars grow at the plant's base (below).



Cactaceae

Opuntia cochenillifera

Cactus



Identification

- Shrub or tree growing up to 4 meters tall.
- Succulent, elliptical leaves with few spines, brilliant red flowers, and branches spreading from a distinct trunk characterize this species.

Johnston Specifics

- The largest specimen, pictured at left, is located on top of the Education Center. Smaller specimens grow west of the internet behind the former drive-in theatre, near the Kaffir Lime.
- Not known to provide habitat to any seabirds.

Cactus Flowers and Leaves



Flowers (right and left) are long, narrow, and bright. Red petals wrap around the base of a tight bundle of pink stamen. The stamen extend about $\frac{1}{2}$ - 1 inch beyond the petals, and are topped by a green 6 – 8 lobed stigma. The fruit at the base will eventually become red and fleshy.



Cactus leaves, or “joints,” (left) are relatively spineless and smooth to the touch. 1 – 3 weak, grayish spines may surround the pale areoles. Joints may be narrowly elliptic or narrowly obovate in shape. Flower buds (right) form directly from the outer edge of the joints.



Casuarina equisetifolia

Ironwood



Identification

- A tall tree that can reach 150 feet in height.
- The family name is derived from the Cassowary, a large Australian bird whose feathers resemble the shaggy, drooping branches characteristic of Casuarinaceae.
- Only about 50 species exist in this family.
- Ironwood's association with nitrogen-fixing bacteria may help it thrive in nutrient-poor soils.
- Ironwood reproduces both by seed and by sending up suckers from its roots, creating dense stands.
- Beneath Ironwood stands, other plant species are rarely observed. It is unknown if this is due to lack of sunlight and dense soil coverage by Ironwood leaves, or if its leaves may have allelopathic properties, releasing chemicals that adversely effect other plants.

Johnston Specifics

- Though Red-Footed Boobies sometimes nest in Ironwood, it is most favored by the Red-Tailed Tropicbird, which finds sheltered nesting locations amongst raised roots and upturned root balls.

Ironwood Flowers, Leaves, and Cones



Ironwood produces unisexual flowers. Male flowers (upper left) grow at the tips of “needles”, hanging downwards. Looking closely, one can see that the flower is composed of many pollen-bearing stamen. Female flowers (lower left) grow close to the branches, nestled amongst leaf bases. They resemble tiny, bright red fireworks. Flowers can typically be seen from February through March.



Though it looks like a pine, Ironwood’s “needles” are actually composed of many individual leaves, each demarcated by a faint line (above). These leaves do not grow in fascicles like a true pine’s would, but rather, are attached directly to the stem.

Multiple cones often grow heavily from a single branch. Each cone contains many flat, winged nuts. Cones are green when young, becoming brown and woody with maturity. They eventually open to release their nuts (below).



Terminalia catappa

False Kamani, Kamani Haole



Identification

- A tall, erect, deciduous tree with a wide canopy .
- The leaves may be a variety of rich shades from dark green to bright red, depending on season.
- Produces both perfect and unisexual flowers.
- Green, uniquely shaped fruits grow in small clusters.

Johnston Specifics

- The seeds of its fibrous fruit are edible, but it is not recommended they be consumed on Johnston.
- Red Footed Boobies frequently nest in this tree, often in large numbers.

False Kamani Leaves, Flowers, and Fruit

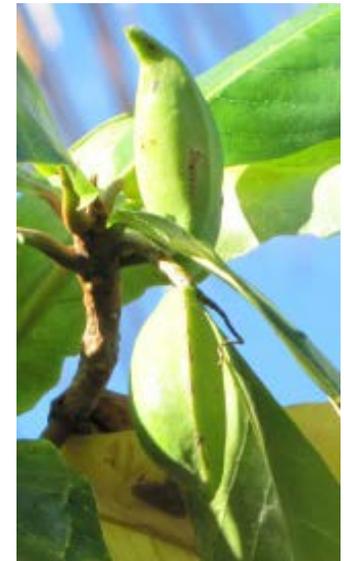


Leaves are obovate in shape and 6 – 12 inches long. They appear whorled, but are actually alternate, clustered at branch tips. Young (left) leaves are bright green and glossy, becoming brown or bright red as they age (right) and eventually fall.



Small flowers grow in spikes at branch tips (left). Each spike is 4 – 10 inches long. Perfect flowers grow at the base of the spike and staminate flowers grow at the end (above).

Fruits (right) are green and may be tinged red. They are 1 – 2.5 inches long. The outer covering is firm and fibrous. Fruits often grow in small clusters.



Cyadaceae

Cycas circinalis

Sago Palm



Identification

- Stout, bushy palm with a rounded canopy and indistinct base.

Johnston Specifics

- Only one of these trees is known to exist on Johnston. It is located on the north side of Refuge Road, and about 100 meters west and inland from the Tide Station dock.
- Not known to provide nesting habitat.

Sago Palm



FronDS (left) grow to be 8 feet long. They are pinnately compound, and leaflets are arranged oppositely on either side of a yellowish center vein. The leaflets have a glossy sheen and a waxy texture. Small, sharp spines line either side of leaf bases (above and below).



Euphorbiaceae

Euphorbia lactea

Euphorbia, Mottled Candlestick Tree



Identification

- Stout, dense, succulent tree with a rounded canopy and indistinct base.
- Smooth, triangular, highly segmented branches form a jumbled mass.
- Armored with pairs of dark thorns which are connected at their base.

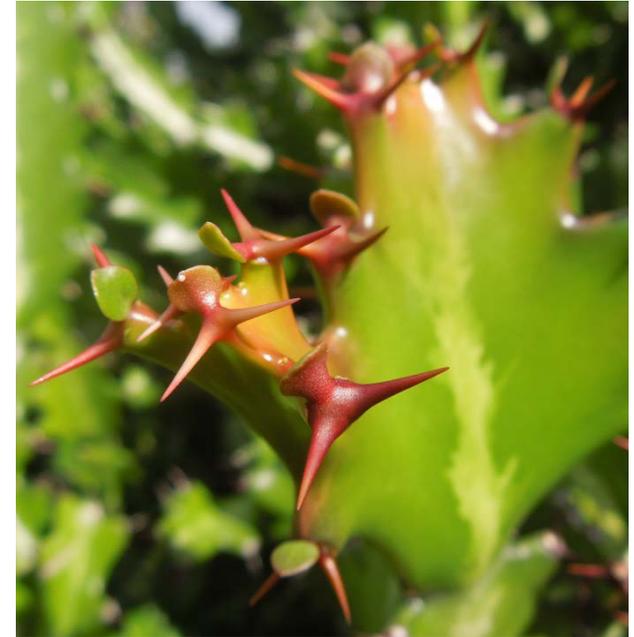
Johnston Specifics

- One specimen has been observed on Johnston, located north of the internet in Sector 13. It is about 10 feet tall as of April 2014.

Euphorbia Branches and Spines



Euphorbia's many short branches grow every-which-way in a dense tangle. Each branch is composed of three lobes, creating triangular pillars (left and below). These pillars are highly segmented, appearing to be pinched and then widening rapidly, at intervals of 3 – 12 inches. Branches are smooth to the touch and bright green in color, with a pale streak down the center. If broken, milky sap gushes forth.



The outer edge of each lobe is lined with pairs of spines, ranging in color from deep mahogany to red-orange. The spines point away from each other. At the base of each spine pair is a small white leaf scar.



In the spring, small, succulent leaves form at the base of spines (above). The tiny leaves are ovate to cordate in shape, and they attach directly to the spines. On one side, the leaf is bright green like the stalk of the plant itself, while the other side is the same orange-red of the spines.

Acacia farnesiana

Klu



Identification

- Thorny shrub capable of reaching 12 feet in height.
- Produces fragrant, yellow, fluffy flowers, and 2 – 3 inch long seed pods.
- Visually, Klu can be difficult to distinguish from young Kiawe or Haole Koa plants, but a quick check for thorns with hand or calf (intentionally or not) provides an unmistakable identification.

Johnston Specifics

- As of 2014, Klu eradication efforts on Johnston are ongoing. Several isolated Klu patches exist near the runway in Sector 13, near the tennis courts, and in Sector 9. Special attention is given to its removal as Klu thickets would make work on Johnston highly uncomfortable.
- Most Klu plants present on Johnston are small, young, and wispy, rarely over 3 feet tall and (hopefully) not flowering.
- Klu's deep tap root makes even the smallest plant difficult to pull.

Klu Leaves, Thorns, and Stem



Very sharp thorns emerge from Klu's grayish branches. At each thorn, the branch changes direction slightly, creating a zigzagging pattern (above).



Leaves are bipinnately compound. Pinnae grow from the center vein in pairs of 2 – 7 (above). From these pinnae grow small oval leaflets, each only 3 – 6 mm long. These leaflets are significantly smaller than those of Kiawe and Haole Koa, for which they could be confused.

Desmanthus pernambucanus

Slender Mimosa



Identification

- Small shrub rarely reaching over 5 feet in height.
- Occasionally forms dense hedges, but more often grows solitarily or as a patch of a few wispy individuals.

Johnston Specifics

- Common and widespread on Johnston, but easily overlooked due to its small stature.
- Appears similar to Klu (*Acacia farnesiana*), but note its thornless stem and larger leaflets.

Slender Mimosa Flowers, Leaves, Branches, and Seed Pods



Tiny, white and yellow bundle-like flowers grow at branch tips (left). Leaves (right) are bipinnately compound. They are similar in appearance to the leaves of Haole Koa (*Leuceana leucocephala*), but significantly smaller in size.



Branches (left) are long, spindly, and zigzag slightly at each node. They are completely free of thorns. Seed pods (right) are born in clusters. They are narrow and about 2.5 to 5 inches long.



Leucaena leucocephala

Haole Koa, Koa Haole



Identification

- Small tree growing 15 - 30 feet tall.
- One of the world's fastest growing trees.
- Thornless and highly drought tolerant.
- Readily colonizes disturbed areas, where it often forms dense thickets.
- Produces clusters of long green seed pods and white puffball flowers.

Johnston Specifics

- Common, widespread, and often growing very densely on Johnston.
- Usually too spindly to support Red Footed Booby nests, but Red Tailed Tropicbirds commonly nest in its shaded, padded understory.

Haole Koa Leaves, Flowers, and Seed Pods



Leaves are bipinnately compound. Each leaf has 3 - 8 pairs of pinnae. Leaflets grow from the pinnae stem in pairs of 7 - 21. Leaflets are 6 - 19 mm long.



Each flower grows on a stem emerging from the junction of a leaf's base and the branch to which it connects (above). Immature flowers are round and green, blooming into puffballs of white, wispy petals. Flowers contain both male and female reproductive parts.



Seed pods are 3 - 7 inches in length. They are bright yellowish green when young (left), becoming brown and dry as they mature and open to release their seeds (right).



Prosopis pallida

Kiawe, Mesquite



Identification

- Large, wide tree with many thin branches growing in a loose tangle.
- Can reach over 60 feet in height.
- Long, pale thorns grow from some leaf nodes.
- Young branches are pale green (unlike the reddish-brown of young klu).
- Bears narrow seed pods and spikes of tiny, yellow-green flowers.

Johnston Specifics

- Most prevalent on the eastern half of the island.
- Many Red-footed Boobies nest and perch in its uppermost branches.

Kiawe Leaves, Flowers, and Seeds



Leaves are bipinnately compound. They have 3 – 4 pairs of pinnae, each with 6 – 15 pairs of leaflets. Leaflets are smaller than those of Haole Koa and larger than those of Klu. Perfect, yellow-green flowers grow in cylindrical spikes 3 – 5 inches long (left). Red-Footed Boobies frequently perch and nest high in Kiawe's branches (below).



Slender, curving seed pods are green when young and yellowish-brown when mature. Each is 3 – 10 inches long, and contains many small brown seeds (left). Long, pale spines emerge from branches (above).



Senna surattensis

Scrambled Egg Tree, Kolomona



Identification

- Shrub to small tree growing 2 – 20 feet tall.
- It's compound leaves, flat brown seed pods, and clusters of bright yellow flowers are very distinct.

Johnston Specifics

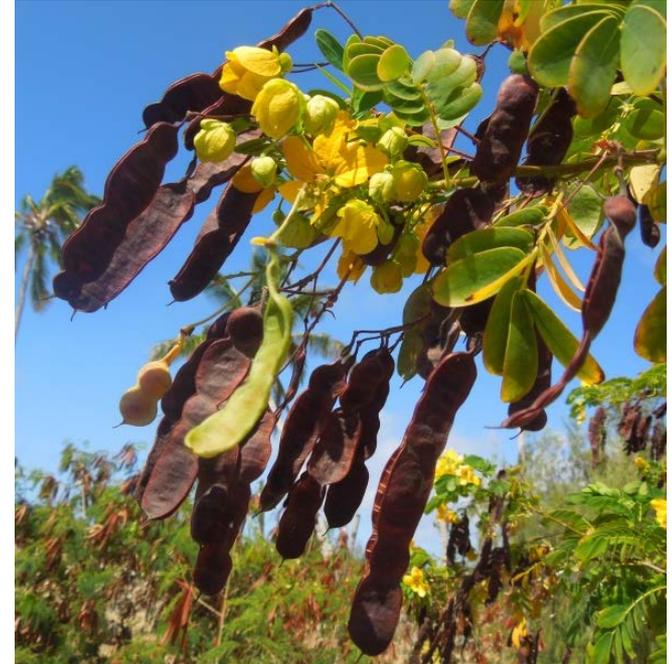
- Only one of these little trees is known to exist on Johnston. It is located directly across the road from the internet.

Scrambled Egg Tree Flowers, Leaves and Seed Pods



Flowers (above) are bright yellow to orange-yellow, with 5 ovate petals. Each flower is about 1 inch in diameter. They often grow in large, untidy clusters of many flowers, somewhat resembling a plate of scrambled eggs.

Leaves (below) are pinnately compound. 6 – 10 pairs of pubescent, oval leaflets are oppositely arranged along the stem. They are 1 – 2 inches long and about 1 inch wide.



Seed pods (above) are dark brown, flat, and about 5 inches long. Each contains a row of glossy, pale brown seeds in narrow, circular compartments.

Goodeniaceae

Scaevola taccada

Beach Naupaka, Naupaka Kahakai



Identification

- May grow as a low, spreading shrub about 3 feet in height, or as a taller, more open and spindly shrub of up to 10 feet.
- Recognizable by its glossy, succulent leaves, tightly-packed white berries, and fragrant white half-flowers.

Johnston Specifics

- In areas with high wind exposure, such as the east end of the island, this shrub keeps a low profile, hugging the ground. Further inland and away from direct wind, it grows tall and erect, with significantly larger leaves and flowers.

Beach Naupaka Leaves, Flowers, and Fruits



Leaves appear to be whorled, but are actually alternate. They grow in large rosette-like clumps at the ends of slender branches (upper left). In color, leaves are glossy and bright yellow-green, with a thick, succulent texture (lower left). They are obovate to oblanceolate in shape, and the underside is lightly covered in silky white pubescence. Leaf size varies greatly amongst different plants, from 2 – 8 inches.



Flowers appear to have been cut in two, creating a distinct “half flower” about $\frac{3}{4}$ inch across (above). The five white petals are often streaked with faint purple lines, and each petal has a winged, frilly margin. The flowers are followed by smooth, round, white berries.

Vitex trifolia

Vitex



Identification

- Medium-sized bushy tree with a low, spreading canopy.
- Vitex's young, green branches are square-stemmed, and leaves have an earthy, minty aroma. These qualities are characteristic of Lamiaceae, also known as the mint family.

Johnston Specifics

- Not common, but widespread throughout eastern half of island.
- Its dense understory and spindly canopy do not make ideal nesting habitat for Johnston birds, but occasionally a Red-footed Booby or Red-tailed Tropicbird will use it as a nest site.

Vitex Flowers, Leaves, and Fruits



Flowers are small and pale lavender, borne in clusters at the tips of branches (left). The five petals connect to form a short tube. The top petal is larger than the lower four. Flowers give way to clumps of round fruits, which are first yellow-green (right), and mature to dark black brown (lower left).



Leaves (right) are opposite, entire, and pinnately veined. Those growing near branch tips are often divided into three segments. Tops of leaves are silvery-green, and the underside is pale silvery-green. They are fragrant, and covered in soft, slight pubescence.



Malvaceae

Hibiscus sp.

Hibiscus



Identification

- Lovely ornamental that may be short and stout with a thick, woody base, or tall and slender with long, waving branches.
- Many native and introduced species of Hibiscus exist, with a multitude of cultivars and hybridizations.

Johnston Specifics

- Many varieties of Hibiscus have been observed on Johnston, although it is difficult to say with certainty exactly which cultivars are present. The most commonly observed specimens are red or pink.
- Red-footed Boobies will occasionally nest in a sturdy Hibiscus.

Hibiscus Leaves and Flowers



Flowers (above) are large, showy, and occur in a variety of colors. The five petals are thin and frilly. Their color often grows deeper at the base. A long pink column emerges from the center, bearing pollen-covered stamen and a multi-segmented style. Many of the Johnston varieties have a five-segmented style, each topped with bulbous stigma.

Leaf shape, size, and color varies according to cultivar, but the majority of those observed on Johnston are ovate in shape with a serrate leaf margin and pinnate venation (below). They are arranged alternately. They may be dark green to yellowish green in color, and often have a reddish tint, especially along the edges.



Hibiscus sp.



Identification

- Wide, spreading tree with dense foliage and an indistinct base.
- Identifiable by 3-lobed, wrinkled leaves and 5-petaled yellow flowers with an extra petal in the center.

Johnston Specifics

- Only one specimen is known to exist on Johnston. It borders the south side of Refuge Road, about 50 meters northwest of the internet.
- As of May 2014, it is unknown whether this species is a variety of *Hau* from elsewhere in the Pacific, or a different species altogether.

Hibiscus sp.



Flowers hang downwards from branch tips (upper left). They appear similar to Hau (*Hibiscus tiliaceus*), with their loose cone-like shape, dark center, and 5 brightly colored petals with a texture like tissue paper. They differ, however, in that they have an additional sixth petal that wraps around the pistil (lower left).



Leaves (upper right), are 3-lobed and palmately-veined. They range in color from dark green to nearly yellow. Their distinct puffy, wrinkled texture causes them to appear constantly withered.

Malvaceae

Hibiscus tiliaceus

Hau



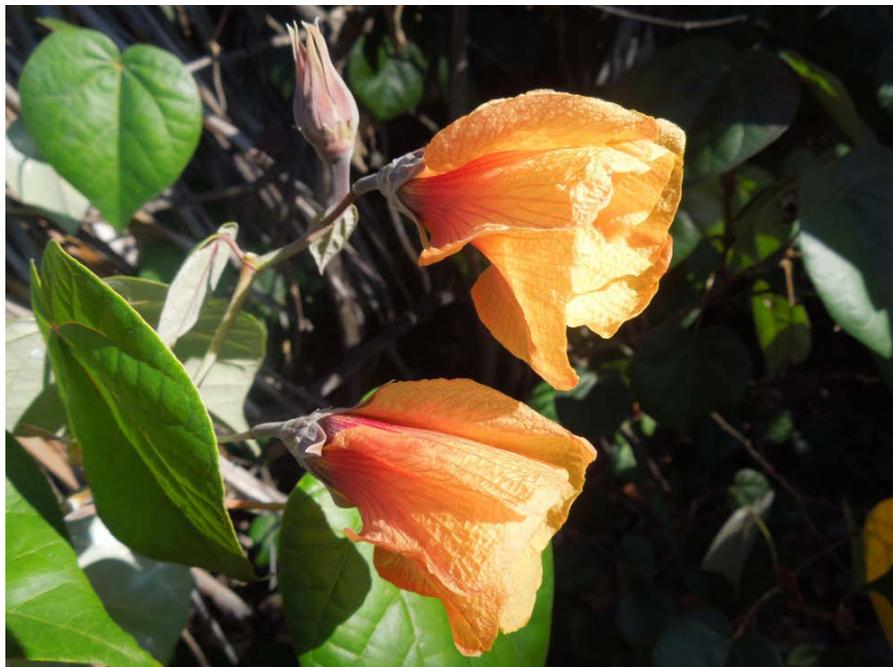
Identification

- Sprawling tree growing up to 30 feet tall, capable of forming impenetrable thickets.
- Unknown whether it is a Hawaiian native or Polynesian introduction.
- Hau's heart-shaped leaves and bright, cone-shaped flowers can cause it to be confused with Milo, but note Hau's looser flowers and more deeply-veined leaves.

Johnston Specifics

- Uncommon on Johnston. A few scattered plants grow mid-island.

Hau Flowers and Leaves



In the morning, flowers are yellow. As the day progresses, their colors gradually deepen to orange (above and right), then red. Flowers are cone-like in shape, with a dark center and 5 thin petals that have a consistency like tissue paper. They may be solitary on branches, or in small, loose clusters.



Leaves (above) are broadly heart-shaped, ranging in size from 3 – 12 inches across. They are dark green in color, sometimes becoming burnt red. The deeply-set veins create a puffy, texturized appearance.

Thespesia populnea

Milo



Identification

- Small to large tree growing up to 40 feet.
- May form large, lush stands of many trees, or may grow singly in open areas where it adopts a smaller, shrub-like stature.
- Unknown whether it is native to Hawaii or an introduction from Polynesia.

Johnston Specifics

- Common on Johnston, often in thick stands intermixed with Kou.
- Milo's shelter, shade, and thick leaf litter provide habitat for both Red Tailed Tropicbirds and Yellow Crazy Ants. Red Footed Boobies often nest in its branches.

Milo Flowers, Leaves, and Fruit



Milo produces cone-shaped flowers with deep maroon centers. In the morning, flowers are pale yellow, deepening to pinkish-purple by evening. The petals spread from their smooth bases to their ruffy ends in a spiral formation (left and right).



Milo bears fruits that are shaped like tiny tomatillos. They are initially green, becoming brown and woody at maturity, eventually opening to release their grayish-brown seeds (lower right).



Milo's heart-shaped leaves are 2 – 10 inches wide. They are smooth, glossy, and lighter green than those of Hau, with yellow veins (left).



Ficus microcarpa

Chinese Banyan



Identification

- Large, evergreen tree with a spreading, umbrella-like canopy.
- Produces milky sap.
- In order to reproduce, flowers must be pollinated by a specific species of gall wasp.
- Sends down aerial roots, some of which become auxiliary trunks.

Johnston Specifics

- Several large Chinese Banyans grow on the eastern half of the island, where they provide nesting habitat for Red-Footed Boobies.

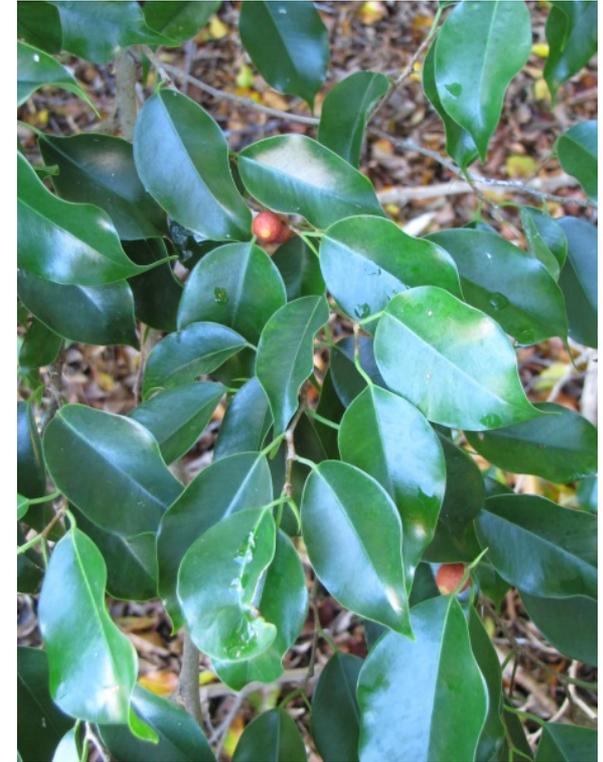
Chinese Banyan Leaves, Fruit, and Branches



Bark is smooth and gray. Thin aerial roots dangle from the trunk and branches, often twisting around one another like thick, wooden ropes. When they reach the ground, these interwoven roots become auxiliary trunks, supporting the tree's wide canopy (left).



Fruits can be red or yellow, and are about $\frac{1}{4}$ inch in diameter (right). They are born in pairs at leaf bases.



Leaves are alternate, pointed, and slightly cupped. Their color varies from dark green (above) to light yellow-green (right). They are smooth, glossy, and about 2 inches long by 1 inch wide.

Ficus elastica

Rubber Tree



Identification

- Medium to large tree with thick, leathery leaves, vibrant red stipules, and aerial roots that form auxiliary trunks.
- Produces milky sap.
- In order to reproduce, flowers must be pollinated by a specific species of gall wasp.

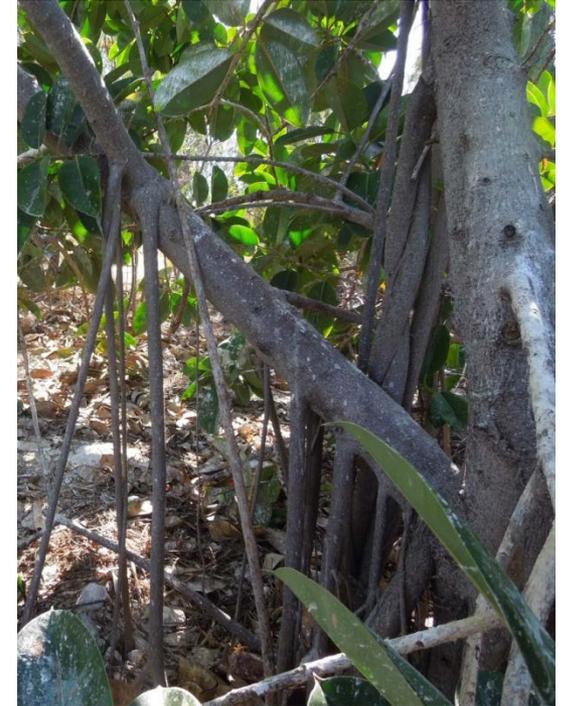
Johnston Specifics

- Only one of these trees is known to exist on Johnston. It is located near the north seawall just east of the Tide Station dock.
- Provides nesting habitat to Red Footed Boobies.

Rubber Tree Leaves, Stipules, and Branches



Leaves are simple, entire, and pinnately veined. They are thick and leathery in texture, and approximately 7 - 12 inches long and 5 – 6 inches wide. They range in color from yellow-green to dark green. The center vein is yellow on leaf's upper-side and orange-red below. Pointed, bright red stipules encase new leaves, gradually detaching as the leaves unfurl. Leaves appear to be arranged in a whorled pattern around the branches from which they grow.



Like Chinese Banyan (*Ficus microcarpa*), this *Ficus* sends down thin aerial roots (above). Upon reaching the ground, these roots become auxiliary trunks, supporting the tree's large canopy.

Moringaceae

Moringa oleifera

Drumstick Tree, Kalamungay



Identification

- Small tree recognizable by rounded, yellowish leaflets, yellowish-white flowers, and abundant, highly distinct seed pods which resemble drumsticks.

Johnston Specifics

- A few scattered individuals grow mid-island, where they provide nesting habitat for Red-footed Boobies.
- Johnston specimens are about 10 feet tall.

Drumstick Tree Flowers, Leaves, and Fruit



Flowers (above) grow in clusters of 6 – 20 which seem to burst from branch tips. Their petals are cream colored with a pale yellow or green tint. One prominent petal points upward, with two extending backwards behind it, and seven petals folding downwards from the center. They are about $\frac{1}{2}$ - 1 inch in diameter, and lightly fragrant.

Seed pods (below) dangle conspicuously from nearly bare branches, often in pairs. They may be over 1 foot in length, and are triangular in cross section. Young pods are green, maturing to light tan. They eventually open to release many brown, winged seeds.



Leaves are fern-like in structure, divided into many sets of leaflets (above). Each leaflet is oval in shape and the edges are folded gently inwards, like cupped hands. Leaflets are bright yellow-green in color, punctuated by dark green reticulate veins. They grow from the tips of branches, often with a clump of flowers nestled within the foliage.

Myoporaceae

Myoporum sandwicense

Naio, Bastard Sandalwood



Identification

- Shrub to large tree ranging from 3 – 35 feet in height.
- The wood of Naio smells like that of Sandalwood, but the scent is less long-lasting, hence the common name “Bastard Sandalwood.”
- Identified by dark gray, slender branches, pointed, leathery leaves, and small, white or pink flowers.
- Native to Hawaii.

Johnston Specifics

- Upon the departure of the military from Johnston Island, several Naio were planted on landfills and chemical disposal sites. As of 2014 these plants are doing well. One is located in Sector 9, and a few grow in Sectors 1 and 2.

Naio Flowers, Berries, and Leaves



Flowers (left) are composed of 5 petals that can range from white to pink in color. They are approximately $\frac{1}{2}$ inch in diameter and are clustered close to the stem. Flowers give way to round, whitish or purple berries, $\frac{1}{4}$ inch in diameter (above).

Naio's narrow leaves (right) are about 2 – 6 inches long and $\frac{1}{2}$ inch across, with a pointed tip. They are dark green to yellow green and highly glossy, with a leathery, slightly succulent texture. Leaves are arranged alternately along grayish branches.



Bougainvillea spectabilis

Bougainvillea



Identification

- Large, loosely sprawling shrub.
- Easily identified by thin, thorny branches, pointed leaves, and brilliantly colored flowers.

Johnston Specifics

- Commonly grows near the tennis courts and further east towards the internet, reaching up to 12 feet in height. A few smaller specimens grow in Sectors 2 and 3.
- Magenta, white, and pink varieties currently exist on Johnston.
- Usually too spindly to provide nesting habitat.

Bougainvillea Flowers, Leaves, and Branches



Leaves may be yellow, dark green, or a mottled combination of both (above). They are 1 – 5 inches in length, with a pointed tip. They are alternately arranged and pinnately veined.

Thorns protrude from Bougainvillea's smooth, gray-green to red-brown branches (below). They are sharp and about $\frac{1}{4}$ - 1 inch long.



Bougainvillea's vibrant "petals" (above) are actually bracts, or modified leaves. These leaves are thin and translucent, with a consistency like tissue-paper. They are similar to the true leaves in size and shape.

The true flowers (right) are small, star shaped, and cream to pale green in color. They grow in groups of three, nestled within the brightly colored bracts.



Dendrobium sp.



Identification

- Lovely, delicate orchid with white petals and a purple center.
- A hybrid from Thailand, with 3 to 4 species in its background – *D. phalaenopsis*, *dicuphum*, *stratiotes*, and possibly *bigibbum*.

Johnston Specifics

- Only one of these plants grows on Johnston. It is about 14 inches tall, and is located in Sector 13 on the north side of the Oleander hedge.

Dendrobium sp.



The three forward-most petals are white, streaked faintly with purple (upper left). The petal in the center curls into tube, extending backwards to form a spur (above center). The stem is sheathed by leaves, creating a pattern of neat, parallel, maroon lines (upper right). Leaves are thick in texture, with a thin purple/maroon border (left).

Phyllanthaceae

Phyllanthus acidus

Otaheite Gooseberry



Identification

- Small, bushy tree.
- Identifiable by thick foliage, rough, knobby branches, watery sap, and unique, 6-compartmented fruits.

Johnston Specifics

- Several specimens are present on Johnston – one is located near the southwest corner of Sector 3, and others can be found in the southwest corner of Sector 4.
- Johnston specimens are approximately 7 – 9 feet in height.
- They do not currently host any nesting seabirds.

Otaheite Gooseberry Leaves and Branches



6-compartmented fruits grow densely on thin stems which dangle from branches. They are green when immature, eventually ripening to yellow. They are squat, round, and about $\frac{1}{2}$ - $\frac{3}{4}$ inch wide.



Leaves are simple, alternate, pinnate, and have an entire leaf margin. They grow thickly and symmetrically from either side of thin, reddish branches. These branches appear to be arranged in a whorled pattern at the tip of a larger, central branch.

Polygonaceae

Coccoloba uvifera

Sea Grape



Identification

- Large shrub to sprawling tree.
- Large, round leaves and grape-like fruits make this species easily identifiable.
- Often planted in coastal areas of Hawaii.

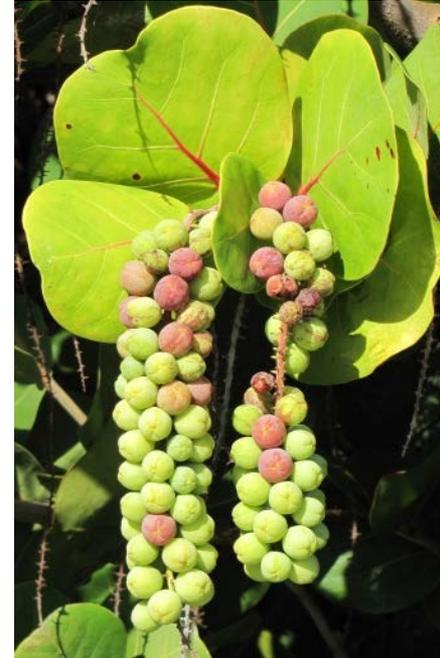
Johnston Specifics

- Provides nesting habitat for Red Footed Boobies, and usually boasts large colonies of Yellow Crazy Ants in its thick leaf litter.

Sea Grape Leaves, Flowers, and Fruit



Small flowers (above) grow thickly on catkins (left) that may be 15 inches in length.



Sea grape produces abundant round fruits that are green when young and darken to a reddish-purple when ripe (left). They grow in clusters that droop much like table grapes.

Leaves (left) are thick and leathery in texture. They can be extremely large, with a diameter of 12 inches or more. In shape, they are widely rounded with a heart-shaped base. They are alternately arranged and attach directly to the stem with no visible petiole. The thick, raised veins may be yellowish-green, pink, or bright red in color.

Rubiaceae

Morinda citrifolia

Noni, Indian Mulberry



Identification

- Large shrub or small tree that grows 10 to 20 feet tall.
- Dark green, shiny leaves and foul-smelling ovoid fruits characterize this species.
- Introduced to Hawaii from Polynesia.

Johnston Specifics

- Yellow Crazy Ants are often found on or near this plant, perhaps attracted to the putrid odor of the fermenting fruit.
- Do not let any CAST members convince you to eat the fruits!

Noni Flowers, Leaves, and Fruit



Noni's white, 5 petaled flowers (above) form in clusters at the tips of branches. At only 1/3 inch long, the flowers are dwarfed by the large leaves and fruit of this species. Flowers eventually fuse into an oval, lumpy ball that will become the fruit.



Leaves (left) are simple, pinnate, alternate, and entire. They are dark green, highly glossy, and grow to be very large – well over 12 inches from the leaf's base to the pointed tip.

Noni's oddly shaped fruits (below) are divided into polygons, representing the many individual fruits that have been fused into one. These fruits can be up to 5 inches long. Ripe fruits are yellowish-white and soft. Fallen, fermenting fruits release a foul odor.



Citrus hystrix

Kaffir Lime



Identification

- Small to medium tree with smooth, thorny branches.
- Leaf shape is distinctive and unique. It appears (falsely) that one leaf grows directly from a leaf below it.
- Leaves have a strong, delicious fragrance of sweet Thai lime.

Johnston Specifics

- Only one of these trees is known to exist on Johnston. It is growing among thick Haole Koa and fallen palm fronds, located south of the Johnston Atoll sign with the seabird information display. It is currently about twelve feet tall.
- Neither flowers nor fruits have been observed.

Kaffir Lime Leaves, Thorns, and Branches



Leaves are smooth, shiny, and leathery. The top is dark green and the underside is light yellow-green. Up close, one can see small pinprick-like spots scattered over both sides. When crushed or torn, the leaf releases a powerful aroma of sweet lime. In shape, leaves are unusual. It appears that one leaf begins where another ends, when in fact, each “pair” is one leaf. They are alternate, pinnate, and up to 10 inches long.

Young branches are smooth, green, and lined with sharp thorns about $\frac{1}{2}$ - 1 inch in length (below). Older growth is rough, brown, and heavily adorned with thorns reaching 2 inches. The base of Kaffir Lime is a tangle of many gnarled “trunks,” each about 2 – 3 inches in diameter.



Nicotiana glauca

Tree Tobacco, Mustard Tree, Makahala, Paka



Identification

- Shrub or small tree.
- Native to Argentina, but naturalized in Hawaii.
- Recognizable by smooth, blue-tinged leaves and yellow, tube-like flowers.

Johnston Specifics

- Grows as a spindly shrub on Johnston, reaching up to 12 feet in height.
- Multiple specimens can be found bordering the gravel road that forms the southern border of Sector 9. Others have been spotted elsewhere.

Tree Tobacco Flowers and Leaves



Leaves (above) are simple and alternate, with a smooth-waxy coating that gives them a blue-white tint and a thick, supple texture. They are ovate to ovate-lanceolate in shape and 2 - 4 inches long.

Tree tobacco bears thick clusters of flowers and seed pods at branch tips, often causing the wispy branches to droop visibly. Flowers are yellow in color and tube-like in shape. Seed pods are small, reddish-brown, and urn-shaped (below).



Sterculiaceae

Waltheria indica

Waltheria, 'Uhaloa



Identification

- Small, erect or sprawling shrub reaching 1 - 6 feet in height.
- Velvety hairs cover all parts of this plant, giving it a whitish glow in the sunlight.
- Indigenous to Hawaii.

Johnston Specifics

- Common and broadly dispersed on Johnston.
- Especially common as a sprawling mat on the runway and roads.

Waltheria Leaves and Flowers



Fragrant flowers grow on a short petiole emerging from the joint of the leaf and stem. They are small, yellow, 5-petaled, and can occur in clusters or as single flowers (above). After the flowers go to seed, small, furry balls remain (right).



Leaves (above) are green-gray in color and range from 1 – 6 inches in length. Leaf veins are deeply set, causing the veins to protrude on the underside. Margins are serrate, and velvety hairs cover the leaf entirely.

Verbenaceae

Stachytarpheta jamaicensis

Jamaica Vervain



Identification

- Annual or perennial herb that may grow as a spindly weed or low, sprawling shrub.
- Thin, flower-bearing tendrils reach up to 3 feet in height.
- Flowers are said to have a mushroom-like flavor.

Johnston Specifics

- Common along runway and other open, disturbed areas such as the edges of roads and concrete pads.
- This plant is usually not tall or dense enough to support nesting seabirds.

Jamaica Vervain Flowers and Leaves



Leaves (right) are opposite, pinnate, and have a serrated leaf margin with teeth angled upwards towards the leaf tip. The center vein is often maroon or purple in color, and indents the leaf deeply. Leaf edges are sometimes reddish. Leaves are 1 – 3 inches long, and have a coarse texture.



Flowers are purple, with five rounded petals (lower right). The top two petals are larger than the lower

three. Flowers often grow in groups of one to several near the base of long, asparagus-like spikes which may be 6 – 20 inches long (above).



Verbenaceae

Lantana camara

Lantana



Identification

- Small erect or sprawling shrub up to 10 feet tall.
- Thorns are said to be present along stems.
- Bears bright flowers that change colors from yellow to orange to pink as they age.

Johnston Specifics

- On Johnston, Lantana is often a small, solitary plant rather than a large, intertwined thicket or mat as described in species accounts.
- Currently too small to be utilized by nesting seabirds.

Lantana Leaves, Flowers, and Fruit



Flowers (above) form in hemispherical clusters. The newest flowers, in the center, are yellow. Flowers are older the closer they are to the perimeter of the circle. As they age, their color deepens first to orange, then pink. They are followed by small berries that turn from green (upper right) to dark purple-black (right) as they ripen.



Leaves (right, above) are 1 – 5 inches in length. They are opposite, simple, and coarse in texture. They have a pungent odor, prominent veins, and blunt teeth along their margins.



Glossary

Alternate: A leaf arrangement pattern in which leaves originate from the stem not directly opposite each other, but singly from each node.

Areole: In the family Cactaceae, a cushion from which spines, flowers, or branches grow.

Bipinnate: A compound leaf that is twice divided - first into pinnae, then into leaflets. Examples include Klu, Kiawe, and Haole Koa.

Bract: A specialized leaf at the base of an inflorescence.

Compound: A leaf with two or more distinct leaflets.

Cordate: A leaf shape resembling a stylized heart with a pointed tip and a notch at the leaf base.

Cyme: An inflorescence in which the terminal flowers bloom first.

Dentate: A leaf margin composed of wide, blunt teeth.

Elliptical: A leaf in the shape of a compressed circle more than twice as long as it is broad, widest at the middle with rounded ends.

Entire: A smooth leaf margin without teeth or incisions.

Fascicle: A close bundle or cluster.

Inflorescence: An arrangement of flowers, encompassing all of their parts.

Leaflet: The ultimate unit of a compound leaf.

Margin: The edge/outline of a leaf.

Node: A place on a stem where a leaf is (or has been) attached, or the point of branching of the stem.

Obovate: Inversely egg-shaped with the larger portion toward the tip (distal end).

Opposite: A leaf arrangement pattern in which leaves are situated in pairs directly across from each other at the same node.

Orbicular: A circular leaf shape.

Ovate: An egg-like leaf shape, with the axis widest near the base.

Perfect: A flower with both male and female reproductive parts

Glossary

Palmate: Composed of three or more lobes, veins, leaflets, or branches originating from a central point.

Petiole: A stalk that attaches the leaf blade to the stem.

Pinnate: With two rows of veins or leaflets; featherlike.

Pinnae: Lobes of the primary division of a pinnately compound leaf.

Pistil: The female reproductive organ of the flower.

Pubescent: Bearing hairs of any kind.

Reticulate: A leaf venation pattern in which the veins form a network. Usually applies to leaves with either pinnate or palmate primary veins.

Scorpioid: A dichotomously (forking more or less regularly into 2 branches of equal size) branching cyme that is coiled from the tip downward with the flowers born on opposite sides of the axis. Think of the shape of a scorpion's tail.

Serrate: A leaf margin composed of small, pointed teeth.

Simple: A leaf with the blade all in one piece, although it may be deeply lobed; not compound.

Spike: An un-branched inflorescence with flowers arranged along the axis.

Stamen: The male reproductive part of a flower.

Staminate: A unisexual flower containing only male reproductive parts.

Stigma: Part of the pistil that receives the pollen, located at the top of the style.

Style: Stalk of the pistil that connects the ovary to the stigma.

Whorl: An arrangement in which petals, flowers, or leaves form in a ring around a central point, spiral-like. Leaves, for example, spiral around the stem, petals likewise may encircle the center. Thus the structures are "whorled" around a central point.

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