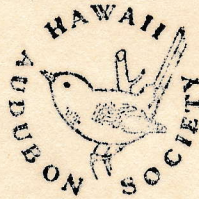


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HAWAIIAN ENDEMIC FLOWERING PLANTS (CONCL.)

By George C. Munro

The tribe *Lobelioideae* is extremely interesting: "there are 149 species, variations and forms," of seven genera, six of which are endemic. It is evidently an ancient group and now declining. It is as fascinating to botanists as the Drepanid, honey-eating birds, are to ornithologists; birds which are even more rapidly disappearing; a number of them evidently developed their very long curved beaks and tongue to facilitate gathering the honey from the long tubular flowers of some species of lobelias. These plants favor different conditions, but most species flourishing in the rain forests at from 2000 to 5000 feet elevation. A garden with species of this tribe from the different islands would be of great interest. I have several species doing well in a valley below Mt. Tantalus and hope to much increase the number.

Lobelia gloria-montis of this group is a superb plant. Seen with its central flower-spike protruding from the bunch of rather stiff leaves, fruits at the bottom of the spike, a band of three inches long white tubular flowers above this and buds above to the top; standing up a small lone tree on the edges of the bog, in the weird surroundings - through the breaking fog - it is a striking plant. Young plants brought to Lanai are doing very well at 3700 feet elevation. Sunlight seems to be necessary for its well being, but it would need to be tempered on the lowlands. A plant tried at Tantalus grew for a time, but a dry spell killed it. It was planted near a kukui tree partly in the shade and open to the sun on one side. After planting, the matured leaves on the shady side all dropped off, but the central shoot turned towards the shade; the leaves on the sunny side all stayed on the plant. This seemed to show that though the sun was necessary for it, but at that elevation it was too strong.

Lobelia hypoleuca flowered at Tantalus. This is a beautiful plant and when well grown it stands about five feet high on a rather thin stem with a crown of long sword-shaped leaves which are pale green above and white below. When it flowers a number of stems branch from the top bearing purple tubular flowers about $1\frac{1}{2}$ inches long. It is not common on Lanai, but I have seen some beautiful specimens there. I recently saw a lobelia on Oahu with beautiful red flowers.

Trematolobelia of this tribe has a species over most of the islands of this group. It is pretty as a plant and when flowering has the flower stems radiating like the spokes of a wheel from the top bearing in profusion a pink flower larger than the last.

Cyanea baldwinii belongs to another genus of the tribe. Riding along a much used trail with Mr. Frank F. Baldwin we noticed a plant like a nest fern. Going to the spot later I found it to be an unfamiliar lobelia. I waited till it flowered and submitted specimens to Forbes. It proved new to science and Mr. Forbes named it in honor of Mr. Baldwin. I have made a pretty complete search of the Lanai Forest but have so far only found this lone plant. Rooted shoots from round the bottom of the stem have grown well in other places, and much superior plants to the original are now growing in other parts of the Lanai Forest and at Tantalus on Oahu. The very graceful

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leaves are about three feet long, several inches wide with deeply serrated edges. The flowers are purple and about three inches long, tubular and curved, growing amongst the leaves. The fruit is yellow and quite pretty. The original plant is branched and trailing and the leaves not large. The offshoots have grown with a straight stem and a crown of larger leaves. If it can be grown in Honolulu it would add attraction to the very attractive gardens there. It is hard to understand why a plant so easily grown should be reduced to a solitary plant in its natural state in unbroken forest, unless indeed, its original home was at a lower elevation where the forest has been denuded.

Clermontia is a branched tree-like genus. In some species the flowers are the largest in the lobelia family but are not the most colorful.

The well known ohelo is a pretty plant when flowering heavily and also when in fruit. There are several species.

Scaevola naupaka whose flowers are split down one side, has species on all wooded islands, on the semidry lands and the seashore. Most have white flowers, but one on Oahu has very pretty purple flowers. The common seashore species is not endemic, but I think a smaller one with thick fleshy leaves is so, but of this I am not sure. Bryan in his "Natural History of Hawaii," page 197 tells of a Hawaiian love story connected with the supposed origin of the peculiarity of the flower.

Lysimachia, a trailer or climber, is a nice plant with neat leaves and a pretty bell-shaped flower. It was grown on Lanai from seed of a Molokai species.

Labordia, a Hawaiian genus, several species in the rain forest are graceful plants.

The maile is well known as a lei plant, varying on the different islands. The Lanai plant has three leaves growing opposite and that of Kauai has only two which are much broader. It can be trained as a tree as well as a vine. It is curious to see the fruits occasionally attached to one another end-on. The stripped bark of the long shoots with the leaves attached make very pretty and fragrant leis.

Several members of the potato family are ornamental. One especially from Kokee, Kauai, can be grown easily from seed and one plant is now growing on the mountain top of Lanai.

Breweria menziesii is a rather rare vine of the dry lands. It is close to the morning glories - the flower is small though both it and the leaves are very neat. Of the morning glories that add so much to the beauty of the scenery in places, few are native and I think none endemic.

Cyrtandra has many species in the rain forests. Some are handsome plants with large leaves. The flowers are white and small. The berries are also white.

Haplostachys is a Hawaiian genus. H. munroi, one of my discoveries which is found only on a small area which may later come under the plow. It has graceful leaves and a white flower and a curious though not unpleasant aroma. Naturally I am interested in saving the species. Seeds do not readily germinate and young plants have not thrived long away from its habitat. It grows in the shade of a remnant of a unique dry forest on the upland of Lanai. This forest originally covered thousands of acres now under pineapples. It was in its natural condition within the memory of living persons but it had vanished by 1911, when I went over the lands.

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Stenogyne has more than a dozen species, mostly vines or trailers. The flowers of the Maui species are pretty; they are white or pinkish in clusters and curved like lobelias. Plants taken to Lanai flowered there and roots from there are now growing at Tantalus. Some of the species would surely be attractive garden plants if successful on the lowlands.

Achyranthes and Nototrichium are very pretty shrubs of the dry country. The first has small flowers on upright spikes and these when laden with seed standing above the handsome silvery foliage have a fine effect. The last of the native Kului has also very pretty silvery foliage with flowers and seed in neat and numerous catkins.

The sandalwoods are trees, but when small are ornamental.

The three orchids as such are insignificant.

The vine of the hoi or yam has very ornamental leaves. It is peculiar in developing bulbs above the vines. I recently saw this plant overgrowing and destroying forests in the Wainiha Valley on Kauai; staghorn fern was taking up the ground after the trees die out from the smothering effect of the mass of hoi.

A number of the ferns are worthy of attention. The nest fern can be grown to a large size, with leaves seven feet long and over a foot wide, by keeping the heart of the leaves filled with tree leaves. It is my opinion that the plant transpires an acid that dissolves the leaves into mould and beautiful black garden mould can be quickly made by keeping the nest fern well filled with leaves - kului or alligator pear serve very well. However this can now be done with chemicals and the services of the fern may not be needed.

We are at great loss from not having a forest-clad outlying island - which could not by any excuse be used for commercial purposes - to set apart as a sanctuary for our vanishing bird and plant life. By keeping such an island exclusively for native plants and animals many species could be perpetuated that will otherwise vanish. To those of us who have learned to love the native flora and fauna this is almost tragic.

Many of the birds are doomed, in fact, some have already gone. Killed off by introduced bird diseases. Many of the plants will not be able to hold their own amongst introduced vegetation and altered conditions, even where carefully preserved for water conservation. It therefore, devolves on individuals to do their best to keep as many interesting species as possible from oblivion.

Note: This paper was written about 1935 and, of course, there have been many changes since then. The only place where the beautiful white flowered awikiwiki bean may now survive is in the late Mr. Charles Judd's dry country tree plantation, at Wahila on St. Louis Heights. Lobelia gloria-montis did not flower at Kanaihaile, Lanai. Without care after I left the Islands the plants from Mt. Kukui, West Maui, I think all succumbed, including the West Maui silversword. Other plants overshadowed and killed them out. Cyanea baldwinii grew beautifully in other parts of Lanai Forest and at Tantalus, Oahu. Those on Oahu with the rest of my lobelia collection were killed by root disease.

(Signed) G.C. Munro

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FIELD NOTE:

Bird Walk: Pa Lehua Trail, July 11, 1948

A very clear day, a bright sun and a cool breeze at the summit. A few birds were seen and heard- among these the justly famous bush warbler. Other birds seen were white eyes, linnets, and amakihi.

The trees, shrubs, and herbs were interesting though mostly introduced. Several species of conifers - one *Pediocarpus imbricatus* is native to Japan, but is a close relative of the California redwood. Eucalyptus trees in several varieties were there, with a species of acacia called the black wattle tree from Australia. This tree has fine pinnate leaves and green bark. Older trees exude a gum which is sometimes used in the manufacture of candy.

We walked through a small grove of bamboo on one part of the trail. The ohia lehua was of interest on account of the varieties of leaf forms and the light colored leaf buds. The beauty of the lichens were not missed with their shades of brown and gray swaying gently in the wind and also the flat forms clinging to the rock faces. The trailing vine *coccolus ferrandianus* which unfortunately seems to have no popular name is interesting because the early Hawaiians used the vine for cordage, the sections often being twenty feet long and of uniform thickness throughout. A very interesting description of the introduced weed with orange flowers called *tritonia* a member of the iris family, is to be found on page 103 of the book, Plants of Hawaii National Park by Degener.

The pretty pink European Centuary (*Centaureum umbellatum*) a member of the Gentian family is to be found in this sector, also the heather-like plant with its pink fruit which the Hawaiians call Pukeawe (*Cyathodes*, or *Styphelia tameiameia*). The bright green leathery leafed *Gouldia* was noticed by several, this tree belongs to the coffee family. Several shrubs of the Aalii (*Dodonaea*) were seen from the trail. One couldn't help noticing the *Dianella* with its delicate fruit and flower stalks. Sometimes the fruit is porcelain blue. It is a member of the lily family.

On the slopes of the ridge, the tree-like fern *Sadleria*, together with the sword fern and brackin, caught the eye. Beyond the cabins on the northern slope of the ridge near the summit several members of the lobelia family were seen. These looked like miniature palm trees about 5 to 6 feet in height with all their long narrow leaves at the top of the plant, and hanging over like the ribs of an umbrella.

A kalia tree (*Elaeocarpus bifidus*) stood near the cabins. This tree has shiny plum-like fruit. The Hawaiians used the bark of this tree for cordage, and the branchlets for holding thatch.

Popolo (*Solanum nodiflorum*), hawkweed (*Crepis Japnoca*), Cape gooseberry or poha (*Physalis peruviana*) and honohono grass carpeted the ground near the cabin, while the green fruit of the passion vine hung from the trees above the roof.

An interesting shrub which sometimes gets to be a good sized tree is the Heau (*Toxicarpus sandicensis*) a member of the sandalwood family, was hard to miss on account of its dark green, thickly clustered needle-like branches. Several of these were located beyond the cabins, though they are classed as rare in the Flora Hawaiianis.

Thanks to the plans, care and thoughtfulness of the leaders, we all had a delightful time. It is to be hoped that in the near future we may go again to Pa Lehua and see more of the birds as well as other objects of interest to natural science.

Mark Kerr

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Bird Walk: Kahuku, September 12, 1948

Neither rain nor a bus strike halted the bird walkers - seventeen appeared at the Library on September 12th, despite both handicaps. Heavy rain before dawn and a curtain of clouds about the mountain tops necessitated a shift in destination from Pauoa Flats to Kahuku. There we found perfect weather, clear, with a brisk breeze.

As the cars drove down the airstrip at Kahuku, turnstone and plover rose in flocks, with plaintive cries, but settled again at a short distance. Many of the plover were still in breeding plumage, some with completely black breasts, others mottled with black. To our delight, two curlew were seen, and were most obliging in coming close enough for observation. After we had watched one on the beach for some time, Unoyo undertook to flush it, that we might hear its call. She approached within a short distance before it took flight, profitting from her effort in our behalf by a very close view, while the wind carried the cry away from the ears of the lazy sitters.

The musical whistle of the tattler was heard several times, but only one was seen. Four sanderlings were feeding in the midst of a flock composed mostly of turnstone, with a few plover near one of the little pools among the sand dunes. The plover were surprisingly pugnacious; repeatedly they darted at the turnstone, who placidly retreated a few steps under the attacks.

Sea birds were observed some distance from shore, two being unmistakably identified as red-footed boobies. Their swift dives for fish were an interesting sight.

The walk over the dunes to Kahuku Pond yielded little in the way of bird life, except for an occasional turnstone or plover in flight, and we wondered again why this area, in which, before the war, skylarks were to be found in abundance, has been deserted by them?

Kahuku Pond is now in sad plight. Decaying cane refuse has turned a large part of the pond into something which resembles, both in color and consistency, some sort of unwholesome porridge. Only a small area remains clear and unpolluted. An estimated 175 coot were on the pond, or along its shore; a few stilt displayed their beauty. We admired the night heron, particularly one adult whose back glowed a beautiful deep blue.

It had been a good day, one in which we were fortunate in seeing a number of birds at close range, yet a sober and unhappy thought was in our minds as we left the pond, once a haven for migrating ducks, and frequented by numbers of shore birds. Where, and how, can a sanctuary for them be found?

Count:	Pacific golden plover	100 (estimate)
	Ruddy turnstone	150 (estimate)
	Sanderling	4
	Wandering tattler	1
	Bristle-thighed curlew	2
	Red-footed booby	2
	Black-crowned night heron	9
	Coot	175 (estimate)
	Hawaiian stilt	5

Grenville Hatch

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LETTER FROM HOWARD COGSWELL

1075 S. 53rd St.
Apt. 1-D
Richmond, Calif.
Sept. 8, 1948

"----This summer we were at the Audubon Nature Camp of California at Norden -- and for the first time in my life I got paid for doing more or less what I like to do. I was one of two bird instructors and went birding almost every day all summer long. Most of the campers in attendance at the camp are more or less beginners in bird study and a great many of them are school teachers who want to be able to interest their pupils in nature study, so the bird program was centered more around habitat and ecologic relationships with the rest of the out-of-doors than on bird-listing. I hope some of you from Hawaii can come to next year's camp.

"The 'camp' is located at the Sugar Bowl Ski Lodge, one of the largest such in California. It is at the edge of dense red fir and lodgepole pine forest at an altitude of 7000 feet with 1400 more of steep mountainside immediately above the Sugar 'Bowl' itself, which is a rugged walled cirque down which the ski races are held each year. When camp first opened in mid-June there was still plenty of snow-- so much, in fact, that we could not take groups very far afield in the immediate vicinity of the lodge unless they were prepared with proper footwear, etc. Despite rapid melting there was still a patch of snow visible from the lodge at the start of the last session on August 15. Wildflowers were gorgeous; we saw the whole gamut from early spring with pussy-willows through masses of elephants' heads and lupines, to asters, goldenrod, and gentians in August. 147 kinds of birds were listed in the vicinity of the camp or in the area covered by our field trips away from there. These included one all day trip for all campers down the east slope of the Sierra Nevada into the sagebrush desert south of Reno, with a visit to an alkaline lake there which was alive with ducks, geese, shorebirds, snails, and muskrats, and this followed by return over a mountain pass nearly 9000 feet in altitude and around the north end of Lake Tahoe. Nearly half as big as the whole island of Oahu and set amid spectacular snow-clad peaks Tahoe is one of the awe-inspiring sights of the area and is a far-famed resort area -- but we found more wildlife in areas less frequented by the crowds of summer vacationists. ----"

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NOVEMBER ACTIVITIES:

BIRD WALK: November 14th, to Kahuku to see the migratory birds from Alaska. Walk along the abandoned runway, to the beach, and then to the pond. Meet at the Library of Hawaii at 8:30 a.m.

MEETING: The regular monthly meeting will be held on November 15th at 7:30 p.m. in the auditorium of the Library of Hawaii.

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