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PRESERVING THE RARE PLANTS OF HAWAII

By George C. Munro

(This paper was written for and read by the Secretary at the Eighth Annual meeting of the Hawaiian Academy of Science, May 3-6, 1933.)

I wish to say a few words in favor of efforts to save and render accessible growing specimens of the straggling remnants of the very ancient flora of these islands.

Comparatively few people have a chance to learn much of the wonderful plant life that evidently prevailed before the more recent arrivals, such as ohia and staghorn fern monopolized so much of the surface. Many species were no doubt fighting for existance when man first arrived. He was detrimental to some, and later herbiverous animals, man introduced plants, and advanced agriculture added much to the struggle. Consequently species have disappeared and more are on the verge of extinction.

Our native birds are going, alas! but a small remnant is likely to survive. However, they can be studied from the mounted specimens and preserved skins in the Museum. The mounted specimens can be seen much as they are in nature. Botanical specimens on the other hand convey very little of the appearance of a plant in its native habitat. We have no botanic garden or real sanctuary for the native flora. The forest reserves are sanctuaries of a sort; but the ancient forms are being crowded out by more recent arrivals and we are doing our best to still further crowd them by the introduction of exotics to favor our business interests. There is no outlying island that could be dedicated to the perpetuation of the native flora and fauna.

Private gardens have done a good part and could perhaps do more in preserving species, but here they are not secure, as change of ownership may result in their being destroyed to make room for building or more showy plants; or even neglected without their value being known or appreciated. A public institution dedicated to the study would therefore be desirable. The Kamehameha Girls' School seems to have led in this and has a very good Hawaiian garden several years old, with many interesting native trees, some rare and one certainly extinct in natural conditions. This plantation is quite an attraction amongst the many attractive features in the planting of that very beautiful situation.

About a year ago the Board of Agriculture and Forestry, in co-operation with the University of Hawaii, started a Hawaiian garden at Waahila, on the ridge between the valleys of Manoa and Palolo. This will take care of and bring to an easily accessible situation many of the plants of the dry open country and up to the borders of the wet forest. It will be a growing collection of an extremely interesting class of vegetation. Some of the trees and plants are very ornamental both with foliage and flowers. The view from the garden is superb. Co-operation of residents of the other islands who came in contact with rare and local native plants will no doubt be appreciated and they can thus help to get together a wonderful collection which will add to the sights and interest of the city.

I did not know of these two plantations when I started this paper and intended to treat at greater length on this class of plants as I have worked amongst them for many years. However, I will confine my remarks more to the equally interesting plants of the rain forests and open marshes of the higher elevations. Many of these are rare and in danger of disappearing altogether. Little has been done so far to have the higher forest flora more accessible to the public. This of course is difficult; the nature of the plants is such that only persons sufficiently enthusiastic to walk a considerable distance along forest trails could avail themselves of an opportunity to see them.

In the rain forests we have the very broad leaved Gunnera, many varieties of the banana, native palm, woody stemmed violet, the rare Hesperomannia, numerous species of Lobelioideae, Cyrtandra, Stenogyne and many other interesting forms. On the open mess covered bogs and on thier borders there are violets, lobelias, Plantage, Wilkesia, Lageenophera and others including the silver sword on West Maui. Most of these plants can be grown on one of the ridges leading up to and on the top of one of the highest points on Oahu. They might grown even on one of the lower and more accessible tops. The open marshes of Kauai, Molokai and Maui are at elevations from 3700 to 6000 feet, but the present bog flora probably extended much lower down at one time but has been crowded by taller thick foliaged trees and shrubs and driven as a last stand to the high open bogs. The extremely wet condition is not absolutely necessary for their existence, but light is certainly essential and by preventing taller plants from interfering with them, they do very well under different conditions to what they are now living under. I have experimented with this on Lanai where five species from Puukukui on West Maui are flourishing, and youngplants of two of them are growing from self sown seed, despite the fact that the elevation is much lower with but a fraction of the yearly rainfall of the location from which they were taken. In fact, some seem more at home in their present situation on Lanai, the silver sword especially. After seeing the silver sword of Haleakala Crater and that of West Maui who would say that the latter was in its natural home? More than likely it is there because there is not a more suitable place left for it. At least that was the impression I got from those I saw.

The tribe Lobelioideae alone would be worthy of some expenditure of thought and effort in getting a maximum number of species together where they could be seen without great effort. According to Rock in 1919, there were then known 104 species peculiar to these islands and in all 149 species, varieties and forms in our flora. More may have been described since. Dr. Perkins who spent ten years solely in the investigation of native Hawaiian life, was of the opinion that the Lobelioideae was much more a component part of the plant life at an early stage of the history of these islands than it is now. Also that is and several other forms with tubular and bell shaped honey bearing flowers probably played an important part in the development of some of the long beaked honey eating birds of the Drepanid family, that are as fascinatingly interesting as the Lobelioideae itself. Some of the finest species have already disappeared and others are not at all common. Cyanea baldwinii is represented by a solitary tree in nature on the Island of Lanai and Rock reported several species on Maui which he had photographed but later could not find, using a term often sadly brought in his writings, "gone forever." They are mostly wet land plants but many are lovers of light and cannot compete with close topped vegetation and have to be cared for to some extent to be grown successfully. When kept clear of other plants and protected from the wind some of the species are very ornamental. Cyanea baldwinii in its natural is a much branched, straggling, partially recumbent plant. When slips are taken from its stems, planted and tended, they grow into beautiful single stemmed small trees with very large and graceful leaves. Rock says of another, "The finest of our lobelias is Lobelia gloria-montis, a truly royal and superb plant ... when in flower is really a gorgeous sight." I can bear him out in the last remark, when this beautiful plant is seen in full flower, looming through the clearing fog on the edges of the open bog on Puukukui, West Maui. Plants of this species are growing well on Lanai, but whether they will flower as gloriously there as at the higher elevations remains to be seen.

I could go on indefinitely in this vein, but must finish and will close with an appeal to those interested in things Hawaiian to promote some such work on Oahu.

RECENT LITERATURE

Canton Island, by Robert Cushman Murphy, Alfred M. Bailey and Robert J. Niedrack. Denver Museum of Natural History, Museum Pictorial No. 10, 1954. 78 p.

This bulletin is the second dealing with expeditions of the Denver Museum to the islands of the Pacific. The first, "Stepping Stones Across the Pacific" reports on field work on the islands of Oahu, Midway and Wake.

Canton Island is the largest of the Phoenix group and lies a few degrees south of the equator at approximately 172 W. longitude. It is a typical atoll, being a narrow ribbon of sand encircling a blue lagoon. The lagoon teems with fish, giant clams and other marine life. The island is an important air base for both commercial and military flights. It is populated with CAA, PAA and BOAC personnel and their families, plus a number of Gilbertese laborers who add color to the population. At the time of my visit there in July 1950 and again in March 1951, recreation was provided by the excellent fishing, a tennis court, an outdoor movie theater and two "clubs".

The British and American flags fly side-by-side on the Island since these two countries have agreed peaceably to disagree about its ownership. Plant life is sparse as Canton lies in an arid belt ofthe tropical Pacific and has a low rainfall. Low thickets of Scaevola provide nesting sites for those birds - such as the red-footed booby - that prefer to nest above the ground.

An interesting account by Mr. E. H. Bryan, Jr. of the discovery and early visits to the Island is included in the bulletin together with the circumstances pertaining to its becoming a "condominium." Mr. Bryan visited Canton in 1924 on the schooner France of the American Museum of Natural History. He recorded his observations in a series of articles and made a collection of birds which - the authors state - is still the most complete collection from the Island. Mr. George C. Munro, W. R. Donaghho and Mr. Bryan visited the Island by means of the U. S. Coast Guard Cutter, Roger E. Taney, in 1938, with the object of banding the sea birds. The visits of other individuals and expeditions are listed and their accomplishments cited.

A description of the bird life of Canton makes up the bulk of the publication. Canton has no resident land birds such as we have in Hawaii, and the small fly-catcher like "kokikokiko" of the Line islands does not occur there. Twenty-seven species have been recorded for Canton by several different observers plus one additional species from a neighboring island. These are as follows: wedge-tailed shearwater, dusky shearwater, Christmas Island shearwater, Phoenix Island petrel, white-tailed tropic bird, red-tailed tropic bird, masked (blue-faced) booby, brown booby, red-footed booby, Pacific man-o'-war bird, lesser man-o'-war bird (from nearby Phoenix Island), mallard, shoveller duck, Pacific golden plover, turnstone, bristle-thighed curlew, wandering tattler, sharp tailed sandpiper, sanderling, sooty tern, grey backed tern (referred to in one place, p. 17 as the "grey-headed tern"), brown-winged tern, black-naped tern, crested tern, brown (common) noddy, black (white-capped) noddy, fairy tern and blue-grey noddy.

You will note that many or most of these species also occur in the Hawaiian group. Mr. Bryan's check-list, however, does not include the dusky shearwater, Phoenix Island petrel, lesser man-o'-war bird, brown-winged tern and crested tern. Most of the birds listed for Canton also occur on Christmas Island, about 900 miles to the east and just north of the equator (King, Pacific Science 9(1):42-48, 1955). I'm pretty sure though that the lesser man-o'-war, sharp-tailed sandpiper, brown-winged tern, and black-naped tern have not been reported for Christmas or the other islands of the Line Island group.

Despite the several visits of ornithologists to Canton, it is still not possible to define the nesting seasons for the different sea birds or to give the time of arrival and departure of the migratory waterfowl and shore birds. The authors state that the mallard is reported to nest on Canton -- which perhaps is not too surprising in view of

its wide nesting range and the readiness with which it takes to domestication. The hermit crabs are a pest on all the low Pacific islands and greedily devour the eggs and young of the ground nesting birds -- the terns suffer particularly from such predation, according to the authors. They report that the golden plover feed on small lizards (skinks) which accounts for their frequenting the dry, hot portions of the Island. It is stated that the blue-faced booby feeds primarily on flying fish, the brown booby on "a variety of herring-like fish" and the red-footed booby on squid but little on fish. The taxonomic problems presented by the different color phases of the red-footed booby and the wedge-tailed shearwater are discussed. The publication contains many excellent photographs, including aerial photos of the island and close ups of several species of the birds.

Joseph E. King

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FIELD NOTES

From Hilo: The Hermes and I thoroughly enjoyed the trip to the Black Sands and along the Puna coast. (This dated January 26) We did not go as far as we did with Joe King and party, for Mr. Hermes wanted to stop continually and take pictures. I think we spent a full hour in the Keauohana Forest Reserve. The strange bird calls still haunted us but the maker of them, as usual, continued to elude us and I am still not sure if it is the o-u, the akiapolaau or some other rare species which makes them. They are definitely not the calls of the common species, or we would hear them elsewhere.

So while Mrs. Hermes and I tried to locate the birds, he took pictures of the jungle -- ieie vines in bloom, tree ferns, ohe-ohe trees and the more common kopiko and lama and a lot of other things. We were all in good clothes so we could not pursue the birds off the road. The orchids on the lava flows had to be photographed, and the lehua flowers and the naupaka and of course the lava flows themselves. Then we came to the sea. I don't think I ever saw anyone happier than those two at the Black Sands and along the coast line. Everything fascinated them and had to be photographed - the Black Sands from many angles, the hala trees, the monkeypods with their bird's nest ferns, and the sea crashing against the lava cliffs or rolling in with long swells that invite surf riding as at Isaac Hale Park (named for the first marine of Hawaiian blood to be killed in the last war).

Unfortunately it was too dark for pictures by the time we reached the Park. Also, Mr. Hermes was soaking wet from a big wave which sloshed over him while investigating a tide pool. So we turned inland under the long avenue of fern-laden mango trees back to Pahoa, Olaa and Hilo, with the colors of a really flaming sunset brightening the sky. Mr. Hermes wasn't interested in sunsets. He said red sunsets are a dime a dozen in Florida and he had many pictures of them. Still, I think a breadfruit tree silhouetted against that red sky would have made a lovely picture, but then I wasn't wet and didn't have to go clear to the Volcano House for supper over a road I had never been on before and had to travel after dark.

Mrs. Helen S. Baldwin

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Bird Walk - February 13, 1955: Waipahu Flats - Kahuku

Sunday morning was cloudy and threatening and the wind was blowing briskly when we met at the Library. Six people were on hand: Joe King, Bill Ohmstede, Bob and Leilani Pyle and two guests, Miss Halliburton and Mr. Lucas. Upon checking our tide calendar, we found that conditions looked right from about 9:00 on, so we decided to stop first at the Damon Pond. We arrived about 8:45 and found a lone tattler sitting quite still on an old rubber tire. We've seen him there before but usually on his favorite old box. In the adjoining pond were two healthy gallinules and a single coot. The gallinule's red frontal plate seemed to almost cover its face, with a small yellow tip to the beak. There was some white on the sides and tail. Along the road were a pair of cardinals, both spotted and barred doves and a few mynahs. As we were leaving, a heron flew across the pond and landed in a mangrove tree. This startled another heron which apparently was

already occupying the tree, and it flew up and back across the pond to the far bank.

At 9:15 we reached our next stop, East Loch. Although the tide was going out and leaving newly exposed mudflats, only eleven plovers and two tattlers were seen. We decided that the stilts must all be at the Waipahu flats, which was our next destination. Arriving there about 9:30, we admired the pink blossoms on the cotton bushes along the dirt road to the shore. Out on the mud was a large bird with a very interesting silhouette. Its feathers, wings and tail seemed to stick out in all directions, apparently quite ruffled. Bob Pyle thought at first it was a duck. The writer got enthusiastic and joined in with the thought that it was an albatross. Joe King added "A Laysan Albatross!!!!". Our speculation ended suddenly when the bird smoothed out its feathers and turned into a sleek trim night heron.

We worked our way out on a peninsula covered with mangrove and pickleweed, or akulikuli kai. The flats were wet and the tide was still going out. The clouds were low, but the light was good and there was an abundance of birds, all intent on eating. Fifty or more little grey and white sanderlings were scurrying across the mud, stopping suddenly to peck at something, and then off again. We estimated more than two dozen turnstones, ruddy above and with white fronts still clean in spite of all the mud. Golden plovers were everywhere -- 200 was a very conservative guess. We saw one or two black-bellied plovers. When near enough to a golden for close comparison, the black-bellied seemed slightly larger and was gray and white rather than brown and buff. We finally encouraged one to fly up, and were rewarded with good views of the black patches under its wings and the white tail.

Scattered all about us were night herons -- we counted more than 20 including both adults and immatures. We counted 84 stilts, but there must have been many more out of sight. We were able to approach quite close to a few shoveller ducks, foraging about in the mud. Their green heads, white breasts and ruddy brown sides made them quite handsome. As we drew closer, one flew straight up in the air like a helicopter: straight off the ground with no forward takeoff or gradual climb. More than 100 pintails were feeding in the water at the edge of the mudflats. There were at least ten coots, a couple of tattlers, and one lone Hawaiian noddy. In all, eleven species of waterbirds were represented. The mangrove was in bloom, its blossoms showing yellow outer petals and hairy pale yellow inner petals. These inner petals drop off and a small brown bean grows out to as much as 10 or 12 inches in length.

Moving on to Kahuku we found quite a bit of water standing in the field and many sanderlings, plovers, stilts and turnstones. There were a pair of tattlers and six or eight night herons, but the ducks were not there this day.

We decided to continue on around the island to Kahana Pond, where there was a coot and a pair of gallinules. Near one of the gallinules was a smaller very dark bird which we glimpsed only briefly, but which might have been a juvenal gallinule. We skirted the pond to the far side hoping for a better look, but with no success. It had disappeared into a small clump of grass, and although the other gallinules drifted gently toward the high reeds in the center of the pond, this third bird remained hidden in the grass. Being a good little gallinule, it probably had been trained to lie low in its small grassy island. But it is encouraging to think that perhaps the gallinule population at Kahana is growing.

We returned to Honolulu by way of the Pali Road, and in the stiff wind along the Nuuanu cliffs we saw not one but three upside down falls going strong. As we returned to the Library, I think we all agreed that this had been a very pleasant day, well-spent, well-worth remembering.

Leilani Pyle

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APRIL ACTIVITIES

FIELD TRIPS: Field trips will be taken on the Second and Fourth Sundays - April 10 and April 24.
Destination to be decided later.

MEETING: April 18 - At the Aquarium at 7:30 p.m.

AUDUBON SCREEN TOUR: April 20 - At Mabel Smyth Auditorium
Dr. Olin Sewall Pettingill, Jr., will present his film, "In the Hills of Gold".

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