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## ENDANGERED BIRD SPECIES OF HAWAII

By George C. Munro

This article was written in 1940 on request of Mr. Edward G. Wingate, Superintendent of the Hawaii National Park, as part of the chapter concerning Hawaii for a book prepared by a committee of the National Park Service to be entitled "Endangered Species". Difficulty arose in connection with publishing the book and eventually it was decided not to include Hawaii and to name it "Fading Trails", under which title it was published in 1942.

The outstanding movements to protect birds in the Territory of Hawaii were : first, a law<sup>1</sup> passed by the Hawaiian Legislature in 1907 to protect the Nene or Hawaiian Goose and the native perching birds, excluding the crow - the goose was in danger of extinction and the Passerine birds were considered of value to the forests they inhabited; and second, a proclamation by President Theodore Roosevelt creating the Hawaiian Islands Reservation.<sup>2</sup> This bird reservation consists of a chain of small islands running over a thousand miles to the northwest of the main Hawaiian group, generally known now as the Hawaiian Chain. Neither law accomplished its object. Plume hunters in 1909 raided Laysan and killed many thousands of birds. This island<sup>3</sup> was the gem of the reservation, in 1891 a veritable bird paradise. Introduced rabbits then devastated its vegetation until by 1923 two of the five interesting land birds there were extinct. They were insectivorous birds and most insects need vegetation to thrive. The 1907 law protecting the forest perching birds was so strictly enforced that it defeated the end for which it was created. No bird collecting was permitted for 13 years and then under most rigid regulations. Until recently scientific investigation was consequently at a standstill and the birds disappeared.

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1 Act 104- and Act to provide for the protection of birds beneficial to the forests of the Territory and to define the same.

Approved this 25th day of April, 1907- G.R. Carter, Governor, Territory of Hawaii.

2 For information on Laysan see Biological Survey Bulletin No. 42-Henry W. Henshaw, Chief.-Report on expedition to Laysan Island in 1911 under the joint auspices of the United States Department of Agriculture and the University of Iowa. By Homer R. Dill, Assistant Professor in the State University of Iowa, and William Alanson Bryan, Professor of Zoology in the College of Hawaii.

3 " Bird life in Rock and Coral", by Dr. Alexander Wetmore, Assistant Secretary Smithsonian Institution. In the National Geographic Magazine- p. 77.--Wetmore visited the island in 1923 and his party exterminated the remaining rabbits.



without anyone trying to find the reason. Decrease in numbers of the common native birds and disappearance of others on the main forested islands still remain a problem in Hawaii.

Dr. R.C.L. Perkins, the greatest authority on Hawaiian birds, admits that the origin of the perching birds of the Hawaiian group is not quite clear. There is no doubt, however, about the following facts that "...one (and that by far the most richly represented) family, all of the 22 genera, excepting only *Corvus*, and all of the 48 species are peculiar to the islands."<sup>1</sup>

He believes that the earliest immigration, and also the last one, were most likely from the mainland of America. And three of four intervening were from the Australian side.<sup>2</sup>

His expressed opinion that the extremely thickbilled finchlike forms and the slender billed species were both descended from a common ancestral honeyeating species, met with much opposition from English ornithologists, but eventually it was accepted as correct by them and has not been disputed since Dr. Hans Gadow, who made anatomical examinations of birds brought to England in spirits by Mr. Scott B. Wilson, acknowledged that Perkins was most likely right.<sup>3</sup>

In defending his conclusions regarding the birds Perkins said, "It is only necessary to add that the views expressed in these remarks on the Drepanid birds have not been formed off hand but are the results of much study and observation extending over a period of ten years, six of which have been spent in the islands themselves, for the most part in the haunts of the various species. As the writer has had the opportunity of seeing many of the rarest forms - not a few individuals only but scores of hundreds - he has had ample opportunity for careful study of the habits without the need or desire to kill a valuable specimen whenever seen."

In working out the evolution of the earliest arriving passerine birds Dr. Perkins says, "...such checks to increase in numbers as existed were probably chiefly due to the extent of food supply, competition being necessarily restricted to the individuals of a single species with practically uniform habits...through this contest for food the first new species were subsequently evolved. Later on as new species and new genera were produced with widely different habits...both the competition would become more severe, and the relation of species to species more complex." He goes on to show that there were not other influences of any importance to affect them. "Consequently the Hawaiian Passeres furnish excellent material for the study of evolution of species, on account of the comparatively simple problem presented in their case."<sup>4</sup>

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<sup>1</sup>Fauna Hawaiiensis, Aves, p. 369

<sup>2</sup>Fauna Hawaiiensis, page 371.

<sup>3</sup>Appendix to "Birds of the Sandwich Islands", by Wilson and Evans. Further remarks of the relationship of the Drepanididae by Dr. Hans Gadow, pages 1-7.

<sup>4</sup>Fauna Hawaiiensis, page 371-372.



Thus the Drepanids by competition for food supplies developed into insect and fruit eaters.

Species of all forms, except three, gradually lost their power of sustained flight and urge to go from island to island and so became isolated on different islands and changed into new species. The three mentioned were Drepanids, one of the thick billed form, the Ou (Psittacirostra psittacea) and two of the slender billed form, the crimson Apapane (Himatione sanguinea) and the scarlet Iiwi (Vestiaria coccinea). These three species frequented all the forested islands of the group. Other genera of this family have different species on different islands and a number of genera are represented by but one species in each genus. Another common genus most generally distributed, which will be referred to is Chlorodrepanis the Amakihi, a green and yellow bird. Of the Meliphagine family from the Australian side, one genus, (Chaetoptila) with one species, was already extinct in the eighties. The other, Acrulocercus, comprised four species on different islands. They were black birds with small spots of yellow or yellow plumes prized by the early Hawaiians for their feather cloak work. Of the thrush family, Amaui of the Hawaiians (Phaeornis), there were six species, two on one and one of each of four islands. The second one on Kauai, (Phaeornis palmeri), was much smaller and very rare, with a different Hawaiian name. The flycatcher. Elepaio (Chasiempis), is represented by three species on three islands. It, of all the native perching birds, is holding its own under all the changed conditions and appears to be immune of resistant to introduced diseases.

Despite the protective law of 1907 and careful protection of the forests, most of the native birds have been terribly reduced in numbers over all the islands of the group and it is likely that some species have become extinct since the law was passed. It is unfortunate not to have been able to preserve in numbers the most extreme form of Drepanids such as the yellow Akialoa (Hemignathus), a bird seven and one-half inches long with its beak taking nearly one-third of its length. Its beak is long, slender and curved with a brush tongue to match, ideal for extracting insects and grubs from crevices and holes in the bark of trees, and to such honey from deep tubular flowers. Of the four species each on a different island, that of Kauai may be a sole survivor. Pseudonestor, whose beak is like that of a parrot, capable of splitting hard twigs of the koa tree (Acacia koa) to get a certain kind of grub that bores in its center, may possibly yet survive on Maui. There is almost no hope of saving Chloridops, another small bird with a short, thick bill (the extreme opposite from the Akialoa) with which it cracks the hard seeds of the Naio or Aaka tree (Myaporum Sandwicense) for the embryo hidden within.

Had it been anticipated that these birds would continue to decrease and had there been a high isolated island where they might have been kept apart from foreign forms, these interesting birds could have been perpetuated. It was possible in the nineties to catch and transport them. The old bird catchers could then still ply their art. The last Mamo (Drepanis pacifica), famous for the



red feathers most prized in making the beautiful Hawaiian feather cloaks, was taken by a bird catcher. This was probably the only specimen taken in the last seventy-five years or more.<sup>1</sup> I saw in 1892 on Kauai five Hawaii Oos that had been caught on Hawaii.<sup>2</sup> However, the next best thing to do even at this late stage would be to make a determined trial in the most isolated forest of the group.

Most of the Drepanids, the Oos and Amaui, are now in a very precarious position. I fear that the only genus of the thick billed form of Drepanid that may eventually survive is Telepiza with two species on different islands of the Reservation. There is hope, however, of preserving some extremely interesting and beautiful intermediate forms as Apapane, Amakihi, Iiwi and possibly some others I almost despaired of a few years ago. This can most likely be done by adopting the policies of the Hawaii National Park Service on the highest peaks and ridges; viz., Keeping the surroundings as near as possible primeval, studying the effect of introduced birds whose exclusion is not practicable, and combating any detrimental effects they may have on the native species.

To be continued.

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<sup>1</sup>The "Avifauna of Laysan and its adjacent Islands with a complete history to date of the Birds of the Hawaiian Possessions". By Walter Rothschild.

<sup>2</sup>G.C. Munro's Journal, March 22, 1892 - not published.

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#### EXCURSION TO ORAKEI KORAKO by Walter Donaghho

Sept. 23, 1934: The day dawned cloudy today, which made me, as I prepared for breakfast in the dining room of the Mansion House in Rotorua, decide to call off the proposed six-lakes trip that I had planned. Instead, I decided that I would go to the Orakei Korako thermal regions. That was a decision that I was never to regret. After a hearty meal of bacon and eggs, two marines who were staying at the hotel and I set out for downtown and the Road Services office, where the buses would be waiting. The air was full of the putrid smell of sulphur from the Whaka thermal regions on the outskirts of the town. Boy, did Rotorua stink!

At nine o'clock, "all aboard" was given and the bus started up the road towards Whaka. We turned off just before getting there and proceeded up the other side of the little valley in which the geysers and hot springs were located. All three of the geysers were playing, reminding me of the eruption of Kilauea. In another pot, the mud had built several fine cones about four feet in height, resembling bee hives.

The road passed through rolling sheep country, which gave way finally to rolling hills covered with pines. Soon we were passing down a valley between the pineclad hills. A large rock rose ahead, which the guide identified as Pohaturua (Pohakuloa, as the Hawaiian would say it- great rock). We descended a smooth and gentle



slope and came out on the banks of the Waikato river at its narrowest point, according to the guide. Here, swollen, rushing green, foamy water surged under the bridge and down the gorge, whose sides were covered with green pines, to disappear around a bend under Pohaturua peak. The scene from the bridge was of a quiet peaceful river flowing lazily among pine clad hills. Weeping willows overhung the bank at the edge of a pasture in which sheep grazed.

The road followed the slope above the river, which got higher and steeper, and the road climbed higher, until at one point we got out to look at the rushing Rainbow rapids several hundred feet below. Then we came out of the pine forests and descended into a flat bottomed valley. We drove through scrub vegetation, in which I expected to see deer, as it looked like good deer country. Sure enough, at a distance I saw a small herd of six making off up the slope. We came to the Waikato again and followed it, passing some roaring rapids, where the waters tossed angrily. The valley closed in, and wisps of steam arising from the hills on the opposite side told me that Orakei was just ahead. Soon after, we drove into a driveway and parked in front of a small green and white house. Here we were greeted by Mrs. Crombie, who was to be our guide for the afternoon. We had lunch on the lanai, overlooking a beautiful view of the Waikato which disappeared up the valley in among the browgreen hills.

We descended to a pier by the river's edge, not, however, before I watched several grey warblers feeding in some ohia like trees along the way. One of them burst into a sweet tinkling song that seemed to descend the scale, and then go back and do it again.

We got into a flat bottomed boat that Mrs. Crombie called her "invasion barge". Loaded with guests, it certainly did look like an invasion as the boat tied to a wheel that travelled along a cable, was pushed across by the current. The force of the current pushed against a rudder on the bow and the boat was thus pushed across the river.

Organizing at the trail start, we were led through an interesting and weird region of geysers, mud pots, silica terraces and hot springs. Orakei is a hot water thermal wonderland with no traces of sulfur, as at Whaka, except in two small vents up on the hillside. I fail completely to find adequate words with which to describe the awesome weirdness and beauty of this fascinating region. It is something the memory of which I shall cherish the rest of my life. Mrs. Crombie's interesting lecture and descriptions arrested our attentions from the start and held us spellbound, as we wandered in sort of an awesome daze through this great work shop of nature.

We first passes a hot pool, the bottom of which was covered with fine, buff colored silt. "This", she said, "is the birth of a hot pool; one of those lovely ones that we will soon come to." Going on up the trail, we came to a cave with sides of a beautiful red. Steam poured forth from its depths, and a deep rumble of an invisible geyser within was audible to our ears. "Te Koro Koro O Te Taipo, or the throat of the devil,"



she said. It certainly looked like the devil's mouth. I entered, standing on his gums, (St. Peter had knocked out his teeth during a recent fight!) and he swore at me! Afraid that he was going to spit on me, I quickly withdrew! A terraced stream of black, algae covered stone, silica deposits, flowed from the mouth of the cave. Mrs. Crombie explained that this was the beginnings of a terrace. Algae formed in the hot water that flowed over the terrace and held back the deposits of silica that built up a dam surrounding a small pool. These pools overlapped; the dams grew higher, until several large terraces were formed. Going on, we passed through an area of Manuka scrub, among which were many interesting and beautifully colored hot springs. Hot water flowed about everywhere, and at one place the ground trembled and sagged under our feet, threatening to cave in and plunge us into scalding water just underneath! I began to wonder whether this was preferable to the foxholes of Guadalcanal! The bottom of one of the pools we passed was covered with fiery red silt. "Red lead," Mrs. Crombie said, as she stirred up the mud. The water became cloudy with the red color, just like the paint which is made from this mud. Next came Robinson Crusoe's foot where it had gone through. This had happened after he had drunk a drought from the "wine cup" which was a little cone filled with deep red wine colored water. Coming to a bank of multicolored clay ranging from a delicate pearl down through oranges and pinks to rich cherry red, Mrs. Crombie grabbed a stick and stirred up the bottom of several pools on the bank. "The Beauty Parlor" she exclaimed. The waters of the pools turned the colors of various cosmetics.

Rounding a bend, we came upon the most thrilling sight of the tour; the beautiful terraces. These were situated in a shallow valley, and consisted of a small white terrace on top of an immense one that resembled a frozen Niagara. A smooth yellow river of stone flowed from its foot to plunge down the slope in a beautiful pink, white, gold and brown cascade at the foot of the valley. A river of stone gushed out of the bank halfway down the valley and, cascading down a fifty foot bluff, spread out in white, bordered with gold and brown folds, over the stone floor of the valley. Further up along the bank of the valley, in a snowy white crater, tinged with a delicate pink, played the Diamond geyser. Once it spurted briefly up to a height of twenty feet. A river of multicolored stone flowed from the geyser, down a ravine, and spread out over the floor of the valley.

Mrs. Crombie told us to hurry to a vantage point to view the big Mini O Mai Terangi geyser that was playing at that moment. This was situated on top of a flat twenty feet above the river on the opposite bank. The snowy white plume of the geyser was most beautiful as it shot out of its crater in the middle of a white silica pan. It rose over eighty feet into the air. The banks of the Waikato about here were composed of "beauty clay"; cherry red clay with veins of yellow and grey.

The flat above the main terrace was filled with the steam of another geyser that was then playing. We descended the slope and walked out over the hot stone floor of the valley bottom. Mrs. Crombie told us of a fat woman who had gone through the thin crust upon



which we were now walking, and had been scalded so badly that she spent months in the hospital. "That hole over there," she said, and we followed her pointing finger with gasps of horror to a yawning cavity not three feet from our feet! The lady in front of me had dimensions of alarming proportions, and she spent a few moments in a vicious battle with her conscience, pondering further. We safely crossed over however, thus depriving some physician of some sorely needed practice, and climbed up the bank at the end of the small snow white terrace. We looked down into the crater of a small geyser nestled up under the terrace. The sides of the crater were a beautiful and delicate pink. Above the terrace was a large rock pan covered with numerous pools and basins of many shades of blues, greens and yellows. This was the frying pan flat, and the many colored pools were a sign of normal activity. "Should these pools dry up, then anything could happen." Mrs. Crombie told us. The pink geyser, as I call it, was a safety valve to the whole region. A beautiful river of yellow and brown stone flowed out over the floor of the flat from a crevice in the opposite bank.

Leaving the little valley, we walked through a beautiful area of manuka scrub with pine trees scattered about and were brought to the brink of Aladdin's cave, a 100 foot deep yawning cavern of hardened "beauty clay". At the bottom was a hot pool. The ladies descended the winding path to make a wish while they dipped their hands into it. At several places along the sides, the rock was white, glossy and smooth, with red veins running through it; virtually porcelain. Several glowworms glowed on the roof of the cavern, just above the pool. They resembled glistening drops of dew.

Mrs. Crombie passed out soda water from a little box that she had built in the bank. Many birds were chirping and singing, and I made an effort to see some of them. In a typically elepaio fashion, a fantail flycatcher came down to look us over. A grey warbler sang from the brush somewhere. A white-eye sang from the top of a tall silver oak up the hill. Suddenly I heard several flute like notes. "A bellbird", exclaimed Mrs. Crombie. Thrilled with the prospects of seeing one, I stalked it. As I approached a small clump of trees, a large green bird flew out and into the manuka. Then it hopped to the top, in plain sight, sang another passage of flute like notes, and disappeared. I had seen the bellbird.

We descended to the river, and followed it. The trail passed many beautiful pools of many different colors. One was a delicate emerald, another the color of the sky, while another was of the deepest ocean blue. Still another was the color of champagne, and fizzed. Finally the trail came back to the starting point and we recrossed the river to the house and to tea. So ended a memorial day.



## APRIL BIRD WALKS

The bird walk on April 14 began at 2 P.M. up the Alewa Heights trail. The afternoon was warm and sultry and few birds were in evidence. Several cardinals were heard whistling sweetly, and their clear song brought back memories of other bird trips to the Mainlander. Hawaiian climate seems to agree with the cardinal, for he achieves a glorious brilliancy seldom seen in the eastern states.

Some white-eyes made themselves known to the observant listener, and soon the little fellows came to see who was stamping up all the dust.

The thrill of being in the hills, the pleasant scenic views, and the friendliness of Honolulu birders made a thoroughly enjoyable afternoon for the visitor.

On the descent, a temporary state of confusion occurred when we accidentally misplaced the trail. We marked a certain turn on the ascent by a tent alongside the trail. Making the proper turn on the descent, we were amazed to find ourselves in the underbrush. After a hurried conference with the owners of the tent (3 small boys), we found that they had moved it and placed it squarely on the trail.

We then returned to our starting point, Miss Hatch pointing out the song of the Chinese Thrush on the way.

Jerome L. Fechtner

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Makiki valley has been added to the repertoire of Audubon Society hiking areas, and may be regarded as a fortunate discovery. On Sunday morning, April 22, nearly a score of members and visitors started out on a four hour outing along a narrow trail following closely the heavily vegetated floor of the valley, which now and then in its gradual ascent offers an open view out to sea. It was an easy trip, terminating at a high waterfall above a dense grove of kukui nuts, guava (with ripe fruit!), and mountain apple.

The bird count was relatively small, the woods being filled chiefly with singing cardinals. There were frequent white-eyes, several ricebirds, elepaos only far up the valley and less friendly than usual. There was one probable Chinese thrush near the head of the valley, one report of an amakihi, and hill robins were heard but not certainly seen.

Mary Ellen Rudolphi



## MAUI REPORT:

We are happy to print the following report from Mr. C. S. Childs of Maui, the first, we hope, of many to follow.

I have seen no unusual birds this year. The usual number of pintail and mallard ducks have been at Kanaha Pond all winter in spite of the encroachment upon the Pond by Naval construction. Also the usual number of Alae Keokea, upland golden plover, Akekeke and Ulili and Auku. The Kentucky cardinal has increased tremendously as has also the Japanese or Himalayan robin and the White-Eye.

As far as I know no geese have been seen this year on Kanaha Pond. Mr. Stein reports, after a trip to Molokai, in the "old rice paddy E of Kaunakakai 25 + Hawaiian stilt (*Himantopus L. Knudseni*) on the mud flats east end of Molokai near Kamalo 3 Hawaiian Gallinule (*Gallinula Chloropus Sandwicensis*)"

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June Bird walk: To Tantalus, on June 10th. Meet at Punahou and Nehoa at 10:00 A. M.

MEETING OF THE AUDUBON SOCIETY. On June 18th, we will have a meeting in the auditorium of the Library of Hawaii, at 7:15. Dean Amadon will speak, and Miss Peppin will show her colored motion pictures of birds.

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## HONOLULU AUDUBON SOCIETY

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