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HAWAII'S BIRDS IN THEIR HOMES: HOW TO SAVE THEM FROM EXTINCTION

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I. Birds Numerous in Hawaii

Often strangers coming to the Territory of Hawaii, remark on the scarcity of birds to be seen. They have lived in parts of the United States where large numbers of perching birds stop for a time in their migrations north and south. Or perhaps where large numbers of water fowl pass as they migrate. They may have read of the large flocks of parrots and parakeets in parts of Australia, of the mating congregations of birds of paradise in New Guinea, when all the birds of one species in the neighborhood congregate in one tree for two or three days where the males display their gorgeous plumage and mates are chosen. Or may be they have heard of the large assemblages of birds in the Arctic during the long summer days.

It must be remembered, however, that birds increase only up to their food supply and that these assemblages generally last only a short time. As for instance, during periods of extra abundance of food supplies, when mating and rearing their young. Some birds go habitually in flocks, but in Hawaii this is more on shoreside lagoons and open country.

Unfortunately only those who have access to their habitat realize the myriads of sea birds on the little double island of Moku Manu, three quarters of a mile from Mokapu point (on Oahu). Here nine species of birds nest from April to November and some of these species occur in countless thousands. Yet, only one of two of the species there frequent the coast of Oahu. The others range the open sea for food and return to their island nests. On one occasion when I visited the island, I walked around one vast assemblage of sooty tern chicks for fear I would injure them if I walked through the mass of young fledglings.

I have visited a number of oceanic islands and have never seen as many noddy tern on any island as are to be seen on Manana (or Rabbitt Island as it is generally called) for a great part of the year. I recently spent a week on one of the two small islets where there is a naval base. On no other island visited by me have I seen so many of the little white tern or love bird, and of the red-tailed tropic bird. A recent estimate came near tens of thousands for both of these birds on the two islands. There are eight or nine colonies of sooty tern on the two islands and an estimate of their numbers runs into hundreds of thousands. There are at least 10 more sea bird nesting islands in the Territory of Hawaii and on one of these there are probably more sooty tern than in this estimate. So it can be seen that there are a vast number of sooty terns in the Hawaiian group for about eight months of the year. These three, the red-

tailed tropic bird, the white and sooty terns are all beautiful and interesting birds. To see them in their daily flight from 11 a.m. to 5 p.m. on sunny days is an unforgettable sight.

The Hawaiian forest birds in their heyday (alas, now perhaps gone forever!) put up a show that has not often been excelled. Most of these birds are honey eaters. The honey bearing trees native to Hawaii, flower at different times at different elevations. The birds used to follow the flowering of trees, gathering in great numbers. The brilliant red iiwi and apapane were conspicuous by their varied calls and songs, flying up and down with loud burring of wings, hopping about amid the foliage, visiting the flowers. It was this animated scene I saw in the Kauai forest in 1891 and Dr. Perkins described it as in Kona in 1892 with the addition of the beautiful Hawaii oo, also a high flying and beautiful bird.

Though many of the Hawaiian birds are almost gone or completely extinct, these assemblages, though fewer in species, may be brought back. The Hawaii national park service is conducting an investigation, unfortunately 50 years late, which may result in the reestablishment in a number of some of these birds.

II. Some Beautiful Birds of Hawaii

A peculiar fact about the perching birds of the Hawaiian island forests is that all but three species have long since lost their power of sustained flight. They can not keep on the wing long enough to cross the channels separating the islands. They become isolated on different islands, where they changed sufficiently to be classed as different species or subspecies as the case might be.

Thus we have five thrushes, three elepaio, four oo, four akialoa, three nukupuu, four akepa and five creepers, making 28 species and subspecies all derived by isolation and divergence from seven species.

The iiwi, apapane and ou were stronger and higher fliers than the other species and able to fly from island to island, or at least to keep on the wing if the wind blew them over the channels. There is perhaps no direct evidence that this was the case except that storms often carried the apapane to Niihau. Niihau was unsuitable to it and it did not become established there. But evidently by continual mixing these three maintained their type on all the forested islands.

The Himatione and Telespiza of Laysan are relatives of the apapane and ou of the main group and may have developed from them or forms near them. Had the apapane in its present form been carried there it could hardly have survived since it can not survive on Niihau.

There are several genera consisting of a single species each, the intervening forms have been submerged and disappeared. These isolated species are also in danger of sharing the same fate.

Seventy-five of the native birds of the Hawaiian group are endemic in the islands, that is, they are found nowhere else. The Drepanine family is itself endemic. Included in it are 43 of the endemic species. They all have characteristics which indicate that they are descended from one or at most two original immigrant species, probably honey eaters, which likely reached Hawaii from the other side of the Pacific. They diverged to such an extent from each other that technical ornithologists were considerably puzzled about their classification and there were some disputations about it. One section of the family includes birds with long curved bills and long tongues developed to reach the honey at the bottom of deep tubular flowers. One of these has a bill one-third of its total length. Another section includes birds with short bills,

some of them thick and strong like a finches. Others are hooked like those of parrots. One of the long billed species, the nukupuu of Hawaii, has developed its lower mandible like a pick which it uses somewhat after the manner of a woodpecker. The reason for this is that there was a close competition between members of the original species.

In the effort to obtain food not attainable by the others, divergences of structure took place. One section adopted the habits of finches and fed largely on seeds; another that of parrots and split open koa twigs to get a grub concealed therein. The nukupuu of Hawaii, still to be seen in the Hawaii national park, taps and digs the bark of decayed wood. It breaks away loose parts to uncover its food, grubs, insects, spiders and pupae. Their beaks and muscles were gradually developed to enable them to accomplish these acts with facility.

Most of the Hawaiian endemic birds were singers. The quality of the song differing on different islands in birds of the same genus but of different species. For instance, the thrushes of Hawaii, Molokai, Oahu and Kauai were singers of high quality, but the species on Lanai had only two notes which it repeated incessantly. The divergence of song are not so easily explainable as divergence in structure and remain a question.

To be continued

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RECENT LITERATURE

Murchie, Guy. Song of the Sky. MacMillan, C1954. Reviewed by Dorothea Taylor

This air age has brought forth a long book, entitled "Song of the Sky" by Guy Murchie published in 1954 by Houghton Mifflin Co., Boston. Mr. Murchie is an experienced aviator. He has made a study of weather, clouds, winds, stars and all elements that affect flying an Aeroplane.

Chapter 11, in this volume of over 400 pages, is on his observations of birds. The chapter is entitled "Of Feather and Wing" (page 294). For us students of birds, it may interest us to quote a few paragraphs from this chapter:

"Of the birds that we see flying around us every day, it is important to remember that they are only the surviving ten per cent or so of much larger numbers that hatch from eggs, who in turn represent far less than one per cent of all that would be hatched if the extinct birds survived in their former numbers. In other words, our present birds are a very select bunch, being only the top-flight athletes from among the few hardy survivors of the multitude of struggling pioneers. They are truly champions who have won the flying tournament of evolution by their prodigious feats of soaring, of diving at terrific speed, plunging deep into the sea, or fighting in the air.

"Can you imagine any better example of divine creative accomplishment than the consummate flying machine that is a bird?" ----

"The flesh ---- is pneumatic and in some species there are air sacs around viscera, muscles and where balance and streamlining permit, fairly large areas immediately under the skin. The lungs are not just single cavities as with mammals but whole series of chambers around the main breathing tubes, connected also with all the air sacs of the body including the hollow bones. Thus the air of the sky literally permeates the bird, flesh and bone alike, and aerates it entire. The circulation of sky through the whole bird acts as a radiator or cooling system of the flying machine, expelling excess humidity and heat as well as exchanging carbon dioxide for oxygen at a feverish rate."

---- "Flight demands greater intensity of effort than any other means of animal locomotion and so a bird's heart beats many times per second, its breathing is correspondingly rapid, and its blood has more red blood corpuscles per ounce than any

other creature." ----

"The main flying motors fed by this bird fuel are the pectoral muscles, the greater of which pulls down the wing against the air to drive the bird upward and onward, while the lesser hoists the wing back up again, pulling from below by means of an ingenious block and tackle tendon. This extraordinary halyard which passes through a lubricated pulley hole at the shoulder is necessary because the heaviest muscles must be kept at the bottom of the bird so it will not fly top-heavy." ----

"The most distinctive feature of all in a bird, of course, is its feathers ---- They serve simultaneously as propellers, wings, ailerons, rudders, shingles, and winter underwear ----- as camouflage against an enemy ---- advertising the owner's charms to a prospective mate. ---- The growth of a feather is like the unfoldment of some kinds of flowers and ferns." -----

"Each main shaft or quill sprouts forth some 600 dowls or barbs on either side to form the familiar vane of the feather. But each of the 1200 barbs in turn puts out about 800 smaller barbs called barbules each of which again produces a score of tiny hooks known as barbicels. The complete interwoven mesh of one feather thus contains some thirty million barbicels, and a whole bird normally is encased in several hundred billion barbicels." -----

"One of the first facts revealed by close observation and the high-speed camera was that wings do not simply flap up and down. Nor do they row the bird ahead like oars. The actual motion is more like that of sculling a boat or screwing it ahead by propeller action, a kind of figure eight movement. ----- The powerful downstroke that obviously lifts and propels the bird also is a forward stroke, so much so that the wings often touch each other in front of the breast and almost always come close at take-off and climb! ----

"The tail is of course intended primarily for steering - steering up and down as well as to right and left. ----- The variety of bird tails never ends, nor does its multiplicity of functions. Furled to a mere stick or fanned out 180 degrees and skewed to any angle, tails serve for everything from a stabilizing fin to a parachute, from a flag to a crutch." -----

"When birds migrate they often fly in a V formation and for the same reason that the Air Force does. It is the simplest way to follow a leader in the sky." ----

"Of all birds the hawks have probably contributed most toward teaching man to fly - through their example of soaring over the zones of theearth where most men live."

---- "The form of the wing is obviously another basic factor in flying effectiveness and birds have adopted a great variety of special shapes just as have the airplane designers after them. There are the narrow, pointed wings of the fast and strong flyers: the falcons and swallows, the swifts and hummingbirds ... There are the bent-wrist wings of the slow soarers, the red-shouldered and red-tailed hawks ... the short rounded wings of the woodland darters: grouse, quail, the small sparrows and finches... Gulls and albatrosses also have narrow, pointed wings, theirs however, adapted specially to long-range sliding and soaring over the open ocean." ----

The author has much more to say in his long book, and only portions are too technical for the average reader. It is well written, most informative about the sky above us.

HAWAII AUDUBON SOCIETY
Minutes for July 18, 1955

The July meeting, held in the Aquarium Auditorium, was called to order by Grace Gossard, first vice-president, in the absence of Bob Pyle.

The minutes of the previous meeting were read and approved.

Grace Gossard spoke of having received a letter from Sol Lesser Productions, Inc., asking if any members of our Society had nature films which would be suitable footage for commercial films.

Someone suggested that Mr. Wm. Ward of the Bank of Hawaii might have such films.

Grace Gossard said Lincoln School had notified her they owned a tape recording made by a Swedish firm which contained the song of the skylark. They asked if the Audubon Society would care to take this part off for its files. This was considered too good an opportunity to miss and Grace Gossard was requested to find out how it could be done. Unfortunately, our Society has no tape recorder.

It was reported that Cornell University is willing to buy any good recordings of island bird songs.

Margaret Titcomb's progress report of the work of the Conservation Committee to date was divided among its members:

Hazel Peppin reported that she went to the DPI to find what material was available on birds or Hawaiian natural history and found very little. The Audio-Visual Dept. has 14 slides of birds made by Spencer Tinker. These are only available on Oahu. Her suggestion was that the Audubon Society copy all the good slides they can get and supply these to the schools with descriptive material recorded.

The 14 kodachromes made by Bob Pyle were considered the best yet made, though half of the birds were extinct.

Mr. Bryan suggested getting in touch with Colin Lennox, who is chairman of a committee on Natural Science for Youth, with headquarters at Bishop Museum.

Mr. Stoopes and Mr. Hanson reported on Publictiy and Communications: KGMB would put on radio spot announcement and would be glad to arrange an interview program on TV. Boy Scouts and other organizations would welcome a good program to help in preparation for the Bird Merit Badge.
Telephone Co. would put our slogan on time signal.
Editorials in newspapers could be secured.

Grace Gossard suggested an appeal through the Elepaio for slides and films showing Hawaiian birds.

Margaret Titcomb said she was hoping to write stories for children on the life of the early Hawaiians.

Mr. Bryan suggested that we look to the region from which our introduced birds came when we are searching for material about them. For instance, pictures and slides of the mejiro and other oriental birds might be found in Japan. Good pictures of the Kentucky cardinal may be obtained from the American Museum. Slides can be made for twenty-five cents apiece. Bishop Museum gets them made by the hundreds forthis price.

After adjournment of the business meeting, Hazel Peppin showed films of bird life which she had taken and had presented to the Hawaii Audubon Society.

Respectfully submitted,
Secretary

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FIELD NOTES:

On a recent trip to Kalalau Valley, Kauai, with the Hawaiian Trail and Mountain Club, a few tropic birds were flying along the cliffs, but none were close enough to permit determination of the species. A few sooty terns had nests in a cave at the west end of the beach. Above the large dry cave along the beach were at least two nests of a land bird slightly larger than a white-eye and grayish brown in color. Its peep, peep-peep was heard almost constantly during the day, but only a fleeting glimpse was obtained as the bird flew from one puka in the cliff to another one close by.

At Kilauea lighthouse several occupied burrows of shearwaters were observed in the red soil just outside the railing above the cliff. Numerous boobies and terns were seen on the rocky islet a short distance off the point.

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SEPTEMBER ACTIVITIES

FIELD TRIPS: September 11 - To Manoa Valley. Meet in front of the Library of Hawaii at 8:00 a.m. Transportation 25¢

September 25 - To Kahuku to observe shore birds. Meet in front of the Library of Hawaii at 8:00 a.m. Transportation 75¢

MEETING: September 19 - At the Aquarium at 7:30 p.m.

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