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HISTORY OF BIRD BANDING IN HAWAII

1. G. C. Munro's Reports to Bishop Museum

This is the second of a series of notes concerning the banding of birds in Hawaii and other Central Pacific Islands, assembled for recording in THE ELEPAIO by E.H. Bryan, Jr., Manager, Pacific Scientific Information Center. Note: Since preparing the first of the series, which stated that the bird banding records of Mr. Munro and other members of the Hawaii Audubon Society had been deposited in the Pacific Scientific Information Center, more of Mr. Munro's bird-banding reports and correspondence have been transferred from the Bishop Museum Library's "Manuscript Room" to the "Center."

Mr. George C. Munro was appointed an Assistant in Ornithology on the staff of Bernice P. Bishop Museum in 1919. The following year he was given the title of Associate in Ornithology, a relationship which continued until his death, December 4, 1963. His chief obligation was to present an annual report of his activities and achievements. Portions of these reports were published each year in the Annual Report of the Director of Bernice P. Bishop Museum. Those from 1938 to 1951 contain information concerning bird banding. The following are extracts from these annual reports.

1938. "George C. Munro...has worked on the organization of the notes on Hawaiian birds from his own and R.C.L. Perkins' old journals. He has devoted much time to birdbanding for the Biological Survey, and has helped in a campaign to arouse public interest in the protection of certain birds."

1939. "George C. Munro...reports that he assisted in getting a bill through the Legislature which gives two years' protection to 10 species of migratory birds that are on the list of game birds. Bird banding on the islands off the Oahu coast and noting returns of former bandings were carried out with good results. The banding record is 2,806 birds of three species, and 35 old bands changed. The record of the return of former banded birds reached 735. All banding returns and data were furnished to the Museum."

"Mr. Munro also reports that James E.A. Kinney, Colonist with the Department of the Interior, continued work in the Phoenix and Equatorial Islands stations. He banded 2,400 birds of 13 species on Enderbury Island and 2,100 of eight species on Jarvis Island. Colonists on Howland Island took 313 returns...A Red-footed Booby, banded by Kinney on Howland Island in October 1938, was seen at Atafu of the Tokelau group early in April 1939..."

"He further reports that Fred Hadden, entomologist with the Hawaiian Sugar Planters' Association, banded 90 full-grown young albatross...in July 1937. One was taken 300 miles from Laysan /this was corrected in 1940 to read, "from Japan"/ on December 12, 1937. None of these young banded albatross returned to Midway in

1938. Hadden also banded 126 adults of this species in 1938."

"The birds banded in Hawaii were mostly Wedge-tailed Shearwater. Returns show that the groups kept together at sea and returned together to the same island on which they were banded. Only nine birds were retaken on a different island to that on which they were banded. Six pairs banded in 1938 and recorded as pairs, were paired again in 1939. It was found that about five percent of this species are of the brown-breasted phase of plumage in this vicinity."

Acknowledgement is made of the assistance given by James E.A. Kinney on the southern islands; and of David Woodside, Walter Donaghho and George Tivey in Hawaii.

1940. "There were two cooperative banders on the equatorial islands, one on Midway, one on Wake, and one in the main group of the Hawaiian islands. As reported to November, 4,357 birds were banded on the equatorial islands; 1,056 on Hawaii /Oahu/, 749 on Midway, and 71 on Wake. This makes a total of 6,233 birds of 12 species on 10 substations or islands of the four stations mentioned, by eight cooperative bird-banders. Of birds of former bandings, 327 were recorded as returning to the islands on which they were banded. None were reported as taken at a distance from the banding station. On Hawaii station /Oahu/, 14 banding trips were taken, 9 by me and 5 by David Woodside, who has banded 902 birds and recorded 100 returns...James E.A. Kinney banded 3,200 birds of 7 species on Jarvis Island and other workers banded 1,000 more on Jarvis.

"Kinney made an investigation of the Wedge-tailed Shearwater...on Jarvis Island. Apparently few nest there. Their burrows are larger and longer than at other nesting places, probably because of the loose sandy soil. He banded 50 and took one return of this species. This was one of three nestlings I had banded in 1938...The brown-breasted phase is as common or more common there than on the islands off the Oahu coast.

"I visited six islands off the Oahu coast, one being Moku Manu, where I banded two of the Christmas Island Shearwaters (Puffinus nativitatus)...This species can now be considered a regular inhabitant of the main group of the Hawaiian islands.

"I wish to thank those who cooperated with me in banding birds for the Biological Survey in 1940--Richard Conley, James E.A. Kinney, David Woodside, Walter Donaghho, Lawrence Ching, Joseph K. Keliihananui, Albert Stillman, and others who helped in the banding and recording of returns. Most banders on the various outlying islands are temporary residents, hence there will be continued changes and more people interested in birds and bird studies."

1941. "George C. Munro, aided by volunteer workers, continued the banding of birds. Mr. Munro reported that observations on birds in Kauai were made by Walter Donaghho, who had banded several thousand birds on Midway. Joseph Keliihananui, who banded birds on Howland, was killed during the Japanese attack on that island in December."

1942. "Records of several thousand birds banded by colonists on islands to the south of Hawaii were lost through the death of Joseph Keliihananui, who was killed by Japanese shell fire on Howland island, and through the hurried evacuation of other islands at the start of the war. The same report mentions long distances flown by Brown Boobies and Red-footed Boobies, but without giving localities, probably for reasons of military security."

Note: The war greatly reduced the amount of bird-banding done by Mr. Munro and his associates. In 1943 he reported that a small amount of banding had been done on Moku Manu, during the one trip made to that pair of islands north of Oahu.

Mr. Munro made a trip to Midway, June 8 to 14, 1945. Prior to that Drs. Harvey I. Fisher and Paul H. Baldwin had searched for the Laysan Rail and Telespiza cantans, which had been transferred to Midway from Laysan, without finding any. But the wild house canaries still persisted on Midway.

1945. Mr. Munro reported no "startling" returns from banded birds, but thought

that they might have been withheld for military reasons. In October and November he made three visits to islands in Kaneohe Bay and observed the bird life. He banded some Wedge-tailed Shearwaters on Kapapa islet.

1946. Mr. Munro reported that he had turned over to the Hawaii Audubon Society the recording work in connection with bird banding. He said the Society had made a start in banding on Midway Islands in cooperation with the Commandant of the Naval forces there.

1947. He made 12 trips to Kapapa islet and banded 63 adult birds and 19 chicks. Only 7 returns of 1946 bandings were found. He noted that Chester Fennell had banded 1,511 birds at Ulupau Head and on Manana (Rabbit) Island.

Beginning in 1948, Mr. Munro confined his bird observations to the island of Oahu, and chiefly the vicinity of Kapiolani Park and his home on the slope of Diamond Head, near which he had developed an area of dryland native plants. In each succeeding annual report he stressed the good work being done by the Hawaii Audubon Society: on its bird walks, its Christmas bird counts, and the banding, particularly of Red-footed Boobies at Ulupau Head.

In 1951 he says: Some interesting returns of banded birds come in from time to time. Recently, one of the Black-footed Albatross, banded by Walter Donaghio in 1940 on Sand Island, Midway, and reported as caught on a fishing line off the coast of Japan in May 1941, was found again on Midway in November 1951.

BOOK REVIEW by Ronald L. Walker

MAMMALS IN HAWAII, A Synopsis and Notational Bibliography by P. Quentin Tomich
Bernice P. Bishop Museum Special Publication 57, Bishop Museum Press, Honolulu,
Hawaii, 1969. Price: \$5.00

Contents: Introduction-10 pages, Check List of Names and Origins-4 pages,
Species Accounts-103 pages, Some Perspectives in Hawaiian Mammalogy-21 pages,
Bibliography (notational)-86 pages, Index-12 pages; With frontispiece, 1 table,
45 figures including photos and maps and drawings by Marsha Tomich; Total: 238 pages.

As Dr. Tomich points out in the introduction, this is the first book written about Hawaiian mammals since Spencer Tinker's ANIMALS OF HAWAII which was published in 1938. Whereas Tinker's book covered all animals including birds and reptiles and offered only brief discussions of each species, MAMMALS IN HAWAII is restricted to mammalian forms and is the most comprehensive treatment of this subject that has ever been attempted. The reader will be impressed by the evidence of the meticulous research that preceded the writing. There has been so little of any substance written about Hawaiian mammals over the years, that it is a wonder that anything more voluminous than a pamphlet was produced. But Tomich has gathered together titles from books, government reports, magazines, journals, dictionaries and newspapers and succinctly given a synopsis of the contents. There are 10 pages of "Anon" authored articles alone, mostly from periodicals. The reader is cautioned to take the contents of the newspaper accounts with a grain of salt, however.

One may wonder what some of the publication titles have to do with Hawaiian mammals such as the one on "Himalayan Thar in New Zealand", but as this is a discussion of a type of wild goat, perhaps the implications with the Hawaiian feral goat would be clear upon reading it.

The species accounts include the original description, type locality, native range, and range in Hawaii preceding a short discussion of each mammal from a historical and biological standpoint. The ardent ethologist will hunger for more details on life histories and habits, but not only is this beyond the scope of the book, but these details are just not available for many species.

The discussions of Hawaiian mammalogy are for the most part very objective,

although there is some editorilizing, especially in regard to the introduction of exotic animals. This is a very controversial topic, but Dr. Tomich has approached it unemotionally. The Blacktail deer is referred to throughout the book as the "mule deer" which may be confusing to the reader who is used to the former name in reference to the species introduced on Kauai. There is some disagreement among mammalogists as to whether the subspecies, Odocoileus hemionus columbianus differs appreciably from O. h. hemionus in form.

Although of minor consequence, there are a few omissions in the discussion of animal quarantine and accidental escapes of mammals. No mention is made of the inadvertent release of a crab eating macaque on the Big Island during the filming of the movie "Rampage" several years ago. Also, a species of monkey was reported loose on Green Island of Kure atoll by scientists of the Smithsonian Institute stationed there in 1968. And no reference is made to the black bear which has been roaming in the Koolau on Oahu for the last fifteen years.

But this is nitpicking. MAMMALS IN HAWAII is a very important publication. The professional biologist, amateur naturalist and Hawaiiana buff will want to add this book to his library for reference and light reading.

READERS NOTES:

THE AUK, Vol. 86, No. 2, April 21, 1969, pp. 183-187: The Nest and Eggs of the 'Anianiau by Andrew J. Berger, C. Robert Eddinger, and Sheila C. Frings.

The article includes not only the first published color photograph of the 'Anianiau's nest with four eggs but also the black-and-white photographs of another nest with three eggs and a well concealed nest in the terminal branch of an 'ohi'a tree.

As the article states that very little has been published on the breeding biology of the Hawaiian honeycreepers, and the eggs of the 'Anianiau have never been described or photographed, the following information is very important:

The 'Anianiau (Loxops parva) is a small yellowish bird with a short and slightly curved bill. This member of the Hawaiian honeycreeper family is limited in distribution to the Alaka'i Swamp region of the island of Kauai...

The 'Anianiau inhabits the rain forest where 'ohi'a is the dominant tree. The first nest of the 'Anianiau, containing three nestlings in pin feathers, was found 18 April 1900 by Bryan and Seale. Berger found the second nest, under construction, on 23 February 1964. Four additional nests were found in 1967 and two in 1968. Data thus far obtained suggests a nesting season extending from about the middle of February until the end of June.

All nests found to date have been built in 'ohi'a trees. The measured height above ground of three of the nests ranged from 17.2 to 24.4 feet and averaged 20.9 feet. Three other nests were estimated to be 15, 25, and 40 feet above ground. The nests tend to be asymmetrical in circumference and variable in other dimensions.... Analysis of the nest revealed that the bulk of the body and the lining of the nest was composed primarily of unidentifiable fine plant fibers. Woven among these, but primarily in the outer wall of the nest, were thin flat strips 4 to 5 mm wide, probably strips of bark; these strips were a dark reddish-brown on one side and a much lighter tan color on the other side. Also embedded in the outer wall of the nest were several dead branchlets of pukiaue (Styphelia tameiameia). The outer surface of the nest was covered by a layer of lichens. In addition to these nest materials, seven species of mosses and one liverwort were found woven among the other constituents of the nest....

The eggs have a whitish background with irregularly-shaped markings, which vary in color from tan to reddish-brown. Three clutches of eggs show considerable difference in the color, amount, and pattern of the spotting.... Two eggs from different clutches measured 17.6 x 13.1 mm and 17.9 x 13.5 mm respectively. Clutch size in two nests was three eggs; in two other nests it was four eggs.

Occasional Papers of Bernice P. Bishop Museum, Vol. XXIV, No. 1, August 29, 1969, pp. 8. The Breeding Season of the Hawaii 'Amakihi by Andrew J. Berger.

The first paper in the E.H. Bryan, Jr., honorary volume (See THE ELEPAIO, Vol. 30, No. 5, Nov. 1969, p. 50 for more information) illustrated with the first color photograph of the nestling Hawaii 'Amakihi gaping for food on the cover, and it also includes the first published colored photograph of the nest and eggs of the Hawaii 'Amakihi.

The paper states that the first serious collection and study of Hawaiian birds did not occur until the last two decades of the 19th century. Those collectors and writers were justifiably concerned primarily with the discovery of new species. Few found nests and they did not comment on the breeding season of Hawaiian birds.... We still know very little about the breeding biology or the length of the nesting season of the living species. Baldwin's study (1953) of three species of honeycreepers in the vicinity of Hawaii National Park on the island of Hawaii is the only reliable published paper on the breeding biology of these birds.... Baldwin saw his first fledgling 'Amakihi in the middle of May, but he added that, based on all of the information at his disposal, he would "interpret this as meaning not that fledglings do not appear before May but rather that most nesting in this species is done in late spring and early summer."

Another complicating factor in the study of Hawaii's native land birds, therefore, is the lack of specific information on the breeding season. One has only a vague idea of when he should be looking for nests....

My own attentions were focused on late winter and early spring as the probable nesting season for the honeycreepers by my experiences in 1964, when on February 23 I found nests under construction by the 'I'iwi and the 'Anianiau, near the Alaka'i Swamp on the island of Kauai. I witnessed copulation by a pair of Kauai 'Amakihi that same day. I also found a nearly completed, but empty, nest of the Hawaii 'Amakihi on the Dillingham Ranch on Hawaii on May 9, 1964.

I visited the Kaohae Game Management Area on the southwestern slope of Mauna Kea for a short time on May 20, 1966, and saw a female 'Amakihi carrying nesting material at that time. I returned to the area on June 13, and found two active 'Amakihi nests. A female 'Amakihi was incubating two eggs in one nest. The other nest held one nestling in pin feathers and one unhatched egg. I spent July 10 and 11 in the area again, but found no active nests....

The only way to discover an essentially unknown breeding season is to visit the study areas periodically throughout the year until the question is answered. I made my first "postbreeding" visit to the Mauna Kea study area on November 3, 1966, spending two days there. The male 'Amakihi appeared to be in full song, I was, nevertheless, somewhat surprised to find a female 'Amakihi adding lining material to a nest on November 3. I found two more nests that day: one under construction and another with one egg. I found two additional nests the following day. A female 'Amakihi was incubating three eggs in one of the nests. The other nest held three nestlings, which I estimated to be three or four days old. The latter nest, of course, indicates that some 'Amakihi on Mauna Kea begin to nest by mid-October.

During the following nine months, I visited the study area on the slopes of Mauna Kea 13 times, spending from one to three days observing the 'Amakihi on each trip. I found a total of 40 active nests during this period. I discovered that not only did the breeding season begin by mid-October in 1966, but also that the season is, indeed, a protracted one, having extended from October to at least May 1967. How much variation there may be from year to year remains to be determined by continuing studies on the area....

Some 'Amakihi nests...are very well concealed, and may be barely visible from only one position on the ground. The birds, also, often build their nests so near the tips of small and brittle branches that it is impossible to check the contents of the nests or to measure their height above the ground. I found the average measured height above ground of 28 'Amakihi nests to be 13.4 feet, with a range from 7.4 to 19.2 feet. I estimated the height of several nests I could not

reach to be at least 25 feet above the ground. Of 41 nests 32 were built in mamane (*Sophora chrysophylla*), and 9 were in naio (*Myoporum sandwicense*). One nest which Dr. Charles Lamoureux analyzed for me was composed primarily of mamane (including leaflets, petiole and rachis of leafstalks, and one seed pod), runners of a grass, and the whole plants of the lichen *Usnea*. There also were a few bits of thistledown (the pappus of *Cirsium lanceolatum*), as well as a few feathers....

None of the early workers apparently found enough nests to permit comment on the clutch size of the 'Amakihi. In my nests, the clutch was two eggs in seven nests, and three eggs in sixteen nests. I also found one nest with four eggs; this was on March 14, 1967....

Pohakuloa on the Saddle Road of Hawaii is approximately 10 miles, as the crow flies, from the study area on Mauna Kea. Pohakuloa is at an elevation of about 6,500 feet. Here the monthly variation in temperature (difference between maximum and minimum temperatures) varies from 41° to 56° F., and averages about 51°....The maximum temperature at Pohakuloa during October, 1966, was 78°F.; the minimum temperature was 31° F. This was the month that at least one pair of 'Amakihi built their nest and incubated a clutch of three eggs; these hatched on or about October 31. Moreover, the other 'Amakihi which nested throughout the winter of 1966-1967 were exposed to even lower temperature (27° F. in December, and 22° F. in January)....In tolerance of low temperatures we must...view the 'Amakihi on Mauna Kea as hardy birds. Several intriguing problems for future study immediately come to mind. What factors trigger the initiation of the breeding cycle during October in the Mauna Kea 'Amakihi when the days are growing shorter? Are these the same factors that stimulate breeding of the 'Amakihi that nest in the 'ohi'a forests on Mauna Loa? How rapidly does temperature regulation develop in nestling 'Amakihi that are hatched when below-freezing nighttime temperatures are commonplace?

Because of the high endemism of its plants and animals, Hawaii has been described as the "most unique" land area in the world. It is recognized as an outstanding natural laboratory for the study of evolutionary processes. We may hope that enough of the native vegetation is preserved long enough for many scientists to search for answers to the innumerable intriguing and unanswered biological questions in the Hawaiian Islands.

THE WILSON BULLETIN, Vol. 81, No. 3, September 1969, pp 333-335: The Nest, Eggs, and Young of the 'Elepaio by Andrew J. Berger (Grenville Hatch's contribution)

Dr. Berger states that the 'Elepaio an endemic Hawaiian species of the Old World flycatcher family exhibits a peculiar and unexplained distribution in that separate races occur on Kauai, Oahu, and Hawaii and yet no evidence to suggest that the species ever inhabited the islands of Molokai, Lanai, and Maui.

He further states that although more is known about the life history of the 'Elepaio than of any other endemic Hawaiian land bird, there appears to be no published photograph of the eggs or young of any race of this species.

His observations are that on Kauai and Hawaii, the 'Elepaio is a fairly common permanent resident in the native 'ohi'a forests, which are area of high rainfall. On Oahu, where much of the native forest has been replaced by exotic vegetation, the 'Elepaio is found in both introduced and mixed forests. By contrast, the 'Elepaio is one of the few endemic land birds that nests in the relatively dry mamani-naio forest on the slopes of Mauna Kea at elevations of approximately 7000 to 9000 feet.

He illustrates his notes with photographs of an active nest with two eggs of the Hawaii 'Elepaio in a mamani tree, Kaohe Game Management area, Mauna Kea, Hawaii, 30 April 1967 and a nest with three well-feathered nestlings of the Kauai race, photographed 30 May 1966 in the Alaka'i Swamp, Kauai. These are the first photographs taken of the eggs and nestlings of this species.

FIELD NOTES from Charles G. Kaigler:

Friday, February 20, 1970, West Loch, 2-3 p.m., tide falling. Observed 3, possibly 4 western sandpipers, a black-bellied plover, a semipalmated plover, as well as some 250+ golden plovers, 40+ stilts, 17+ sanderlings, 6 black-crowned night herons and a wandering tattler and several ruddy turnstones feeding on the still exposed flats.

All of the first three listed were observed through a 30 power scope at less than 25 yards, and both golden plover and sanderling were adjacent for comparison. The longer bill with definite droop was observed on the sandpipers, and their feeding habits were quite different from the sanderlings. The black-bellied plover was noticeably larger than the golden, grayer above with white rump. The semipalmated plover was unmistakable.

From Walter R. Donaghho: 18 February 1970

With Unoyo Kojima saw the female Sparrow Hawk at Fort Shafter at noon. It flew out from the bougainvillea "tree" onto a horizontal limb of the jacaranda, where it sat in plain view while we approached within ten yards. Then it flew to the large kiawe on the lower parking lot at the foot of the slope where it sat on a bare limb on the upper part of the tree. All these observations were made on the lawn to the right of the main gate into the Post.

12 March: Went up Aiea Heights to Mrs. Adele Dodge's residence to check on a strange bird she saw in Norfolk pines near her home several days ago.

Showing her the book on caged birds, she turned to the section on finches, and pointed at a Whydah Finch. Her description was, 1 foot long, $\frac{1}{2}$ of which was tail. This was fluffy and droopy, with 1 inch wide feathers, that hung down. The bird was black, or dark brown, with the bill black.

She pointed to the Red-naped Whydah, but said that she didn't notice any red, which, I think would be fairly prominent. This fact would then make the bird out to be a Long-tailed Black Whydah.

14 March: Saw a strange duck on the makai pond (Mokapu Ponds) which, I believe, could only be a Ring-necked Duck or a Goldeneye. The duck, imperfectly seen at a distance across the pond with a 7 power glass, had a black head, black back, and a large white area on the wing. There seemed to be a black line above the large white area, with either a white bar above, which would identify it as a Common Goldeneye, or white spots, making it the Barrow's. Or it may have had a black front, which would identify it as the Ring-necked. Further observations are needed to pin it down.

Most of the Red-footed Boobies have completed nests and are beginning to lay. At this time, less than 10% of the colony are on eggs. This estimate is based on the observations made in the colonies along the upper road. One of the birds here was noted with a band around its leg.

FIELD TRIP to Salt Lake, Walker's Bay and Kahuku, 11 January 1970:

The first field trip of the new year, 11 January, was both rewarding and disappointing for the 16 members and guests who participated. The rewards started with the first stop at Salt Lake and this one consisted of a female bufflehead. Two female scaup (lesser?), 24 pintail, a shoveler, and numbers of coot, stilt, golden plover, dove, ricebird as well as three wandering tattler and a pair of ruddy turnstone completed the count.

The next stop at Walker's Bay on Waipio peninsula was unrewarding because of the high tide and the high wind. Sixteen shoveler and several plover and stilt hugged the flats near the mangroves and a few white-eye and house finch the bordering shubbery, while a small number of turnstone flew overhead as did three cattle egret, but there was no sighting of the green-winged teal that has been in the bay all winter.

Kahuku provided the last rewards by way of a female American widgeon and a pair of gallinule in addition to more than 100 pintail and a number of shoveler, coot, plover, stilt and turnstone and one black-crowned night heron. A torrential

rain then brought the day's activities to a quick close. On the way home Bill Mull found the gallinule at the Nuuanu Pali reservoir at the closest range that it has been seen to our knowledge.

To Aiea Loop Trail, 8 February 1970:

We had an almost perfect day for our February field trip over the Aiea trail which was enjoyed by some 30 participants. As is usual on all of our mountain trails, we heard a great many more birds than we saw. The calls of the 'elepaio and the 'amakihi were almost as numerous as those of the house finches, white-eyes, doves, and cardinals. All of the group observed the 'elepaio at close range. We found at least a dozen individual birds, and people got good looks at the 'amakihi, the 'apapane, and the shama thrush.

We spent about four hours on the trail, ate lunch at the picnic grounds and then repaired to the West Loch flats behind Waipahu for a quick check of the shore bird activity at the low tide.

The birds were numerous and active. Over 250 golden plover and 40 stilt were counted on one flat and there were just as many on the adjoining area. Cattle egrets, ruddy turnstones, sanderlings, pintail and shovelers worked over the exposed flats as did a number of black-crowned night herons. We were unable to find the little blue heron that had been seen two days earlier by Charles Kaigler but did find one immature glaucous-winged gull and three (perhaps four) ring-billed gulls--the first gulls we have found this winter.

Charles G. Kaigler

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To Salt Lake, Walker's Bay and West Loch, 8 March 1970:

On March 8, eighteen members and guests of the Hawaii Audubon Society visited Salt Lake, Walker's Bay (by the airstrip on Waipio Peninsula) and upper West Loch (Pearl Harbor) to observe ducks and shorebirds on our monthly field trip. In all, twenty-two bird species were seen.

Our first stop, at Salt Lake, was rewarded immediately by the arrival of a pair of koloa (Hawaiian ducks), which alighted on the water opposite us when we first got out of our cars. Present also were a female scaup and a female bufflehead that have been in residence there the past three months. Twenty-one pintails bobbed on the waves well out on the lake. The normal complement of American coot (50+), Hawaiian stilt (9), American golden plover (25+), wandering tattler (4) and ruddy turnstone (3) were feeding in their favorite areas there under the bright morning sun. Flocks of ricebirds (totaling over 100) swirled up from grass patches by the roadside to signal the arrival and departure of our caravan.

At Walker's Bay, all had a good look at the male common teal that has been wintering there since New Year's Day. A line of male shovelers on the mudflat confronted the morning sun--and us--with their strikingly-white breasts, in company with an equal number of their drab brown females (22 in all). The resident mallard drake was taking his leisure in the shade of a mangrove, next to a dozing black-crowned night heron. At the edge of the mudflat, a second heron fished intently--with its red eye glinting in the sunlight and its white head-plumes waving in the gentle trade winds that swept over the bay and rippled the shallows at its feet. Three black coot plodded about on the mudflat; and two white cattle egret floated by overhead on measured wingbeats--headed toward the Waipahu city dump. Three stilt, one tattler, two turnstone and about thirty American golden plover rounded out the shorebird population there. Three Japanese white-eye and an American cardinal were singing-on-territory in the bushes bordering the airstrip, which also yielded the soft calls and fleeting glimpses of a dozen or more black-headed mannikin.

Our brief stop at the nearby settlement basin area produced eight cattle egret, a scattering of plover and the discovery that the area has just been completely regraded into a series of four or five new basins--which should provide a considerable area of favorable habitat for ducks and shorebird migrants next fall.

Our final stop, following lunch, was at upper West Loch, where the early-afternoon incoming tide still left exposed large areas of oysterbeds and mudflats, which were dotted with hundreds of feeding and resting birds. A dozen-or-so pintail squatted, stood or waddled about on the distant mudflats, while a few more dabbled and dipped in the adjacent tidal shallows. Those waters teemed with mullet, whose flashing jumps and underwater antics monopolized the attention of a half-dozen feeding black-crowned night heron, while a half-dozen more heron on the mudflat stood unconcerned or strode slowly about with occasional half-hearted pecks at inhabitants of the many small tidal pools there. Nine coot, twenty-odd stilt and may be 200 plover were scattered over the flats. Among them, we could make out through our binoculars and scopes six turnstone, eighteen sanderling and two tattler. The ubiquitous white-eye was represented by three of its number singing in the mangroves by the shore; two cattle egret flew their slow, straight course over the water; and one male house sparrow chattered a raucous monologue from the eaves of the rug-cleaning works behind us, as we squinted through our artificial optics at choicer targets on the loch.

Barred dove and mynah were seen at every stop and spotted dove at the first two, but we kept no record of their numbers.

William P. Mull

Excerpts from the minutes, Hawaii Audubon Society General Meeting, 17 November 1969:

...Our speaker for the evening, Dr. Alison Kay is a malacologist in the Department of General Science at the University of Hawaii. The topic of her talk was "We know not what we do." She discussed the question of what happens when man disrupts the flow of energy in a viable ecosystem--when he tampers with the cycle of nutrients in a food chain. She gave us such examples as the waterfowl which once swarmed in Waikiki, the mollusks once abundant off the shores of Oahu, the decrease in certain algae now occurring because certain high-rise buildings cast shadows onto the reef, and, more ominously, the proliferation of the Crown-of-Thorns Starfish (Acanthaster planci) throughout the tropical Pacific.

The central point of Dr. Kay's presentation was that we should not try to save a particular species; we must, instead, attempt to save the environment in which that species lives. We must work with the entire ecosystem. Seabirds die when oil pollutes an area of ocean, but seabirds alone are not important. Such an oil spill affects the ecosystem of the entire region--from microscopic plankton to marine mammals. The loss of or change in one species affects all others, the degree of influence being directly dependent, with the exception of man, on its position in the food chain--the lower in the food chain (for example, the algae), the more critically important the organism is to other living creatures.

Dr. Kay also emphasized that, in a community containing many species, the organisms balance one another. The more diverse the biological community, the more stable the living things in it. Everything man does, whether deliberately or not, tends to decrease diversity.

Indeed, we know not what we do--but we do it anyway!

Dr. Andrew Berger asked Dr. Kay, after her talk, of what value the reef is to the terrestrial environment. Dr. Kay replied that we lose the island when we lose the reef.

Mrs. William Mull asked how we can influence the legislature. Dr. Kay suggested that we write to our legislators and congratulate them when they do something "right."

Unoyo Kojima announced that THE ELEPAIO needs articles dealing with local ecology. She is opening the pages of this journal to any articles coming from the University of Hawaii of which the public should be informed.

A suggestion was made that we print some of the term papers from the Natural History of the Hawaiian Islands course being taught at this time by Dr. Charles Lamoureux and Dr. William Gosline....

15 December 1969: Miss Titcomb reported that Lorin Gill told the Conservation Council that he learned nothing from either the anti- or pro-deer advocates at a

meeting in Hilo at which the introduction of Axis Deer was discussed.

Miss Titcomb reported that Ted Green is optimistic about the future of Paiko Lagoon. The city plans to dredge around the edges, but it may become a bird sanctuary.

Walter Donaghho addressed the members to explain his proposed expedition to look for rare birds in the Kohala Mountains of the Big Island. Mr. Donaghho believes that certain species, now believed extinct, may be found there. He asked the Hawaii Audubon Society to give encouragement to this project and, possibly, to assist financially. The project will be discussed at the next board meeting....

19 January 1970: ...Our speaker this evening was Mr. Russell LeBaron of the Division of Forestry, Department of Land and Natural Resources. Mr. LeBaron showed his unusually vivid slides of the birds of Uruguay, and described the characteristics and behavior of some of these birds.

Miss Titcomb discussed with interested members the possible publication of Mr. George Munro's account of his years on Lanai....

16 February 1970: ...Mr. Kaigler announced that the Bishop Museum is requesting \$300,000 from the state legislature at this time. Unlike museums elsewhere, the Bishop Museum does not receive state funds for its maintenance. Inasmuch as the Hawaii Audubon Society is not permitted to lobby as a society, Mr. Kaigler suggested that our members write individually to their representatives.

The Hawaii Audubon Society has been asked for assistance from the Committee for the Preservation of the Tule Elk, 5502 Markland Drive, Los Angeles, Calif. 90022. Concerned members should write to their national representatives about this.

We have also been asked for support from the Ohlone Audubon Society, 2754 Olive Ave., Fremont, Calif., 94538, in their efforts to establish a national wildlife refuge in the south San Francisco baylands....

Mr. Kaigler reported the results of the February 8 field trip to Aiea Trail and to the flats by the shore at West Loch. Three or four Ring-billed Gulls (Larus delawarensis) and a Glaucous-winged Gull (Larus glaucescens) were seen....

Mr. William Mull reported seeing a European Teal (Anas crecca) in excellent winter plumage at Walker's Bay on Waipio Peninsula.

Miss Unoyo Kojima reported the presence of a single female Sparrow Hawk (Falco sparverius) by the main gate of Fort Shafter off the freeway. Although the bird appears to have an injured right wing, she is able to fly. She is very tame, so much so that she will approach within a yard of Unoyo. (Ed.Note: First citing 27 Jan. 1970, last citing 10 March 1970. BIRDS OF NORTH AMERICA by Chandler S. Robbins, et al identifies the sparrow hawk as the smallest and most common falcon in open and semi-open country. The only small falcon with two "whiskers" on each side of face and the only one with a rusty back. Hunts from poles or trees; frequently hovers. Eats insects primarily. Call, a sharp killy killy killy.)

...The title of this evening's presentation was "Consider the Mushroom," and Mr. William Mull, by the force of his talk, threatened to make mushroom watchers of all of us. His slides depicting various species of fungi...were stunningly beautiful....

APRIL ACTIVITIES:

- April 12 - Field trip to Ulupau Head to study the boobies. Bring lunch, water, and if possible, your car. Transportation cost (75¢) to be paid to the drivers. Meet at the Library of Hawaii at 8:00 a.m.
Leader: Charles G. Kaigler, telephone 988-3195.
- April 13 - Board meeting at the Zoo entrance bldg at 7:30 p.m. Members welcome.
- April 20 - General meeting at the Waikiki Aquarium Auditorium at 7:30 p.m.
Speaker: Mrs. Mona Cunningham
Topic: Birds of Australia (Additional colored slides)

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DUES: Regular-\$3.00, Regular out of State-\$2.00, Junior-\$1.00, Organization-\$2.00, \$50.00