

THE ELEPAIO

Journal of the
Hawaii Audubon Society



For the Better Protection
of Wildlife in Hawaii

VOLUME 31, NUMBER 2

AUGUST 1970

DISCOVERY OF THE NEST OF THE HAWAIIAN THRUSH*

By Andrew J Berger

One endemic genus of the thrush family (Turdidae) occurs in the Hawaiian Islands. Of the four main islands--Kauai, Oahu, Molokai, and Hawaii--that once supported populations of the Hawaiian Thrush (Phaeornis obscura), only Kauai and Hawaii claim this species today. Its status on Oahu and Molokai, is now unknown. A second species, the small Kauai Thrush (P. palmeri) that has always been confined to the island of Kauai, exists there now in the Alaka'i Swamp area in unknown numbers. We consider it rare.

In writing of the Hawaiian Thrush, Henshaw (1901:79-80) stated that "practically nothing is known of its nesting habits. The author feels assured that the bird nests far up in the tall forest trees, and that only by the merest accident will its nest be found."

Bryan (1908:86) wrote as follows about the Molokai race: "On May 1, I took from thirty feet up in an 'Ohi'a tree growing in the dense woods on the summit of Puualu, a nest which I have no hesitancy in referring to this species. In the locality was a pair of resident Olomao, evidently the owners of the nest....Externally it is over 6.00 inches in diameter by 3.50 inches deep. Small dead 'Ohi'a twigs form the foundation of the structure. Into this is placed a generous lining of moss and fine rootlets neatly woven together to form a substantial thrush-like nest. The hollow of the nest is 3.50 inches across by 1.50 inches in depth. The nest has evidently been used and deserted, though unmistakably of recent construction. It is singular that as yet nothing is known of the eggs of any of the species of the genus, save the reference by Henshaw (Birds of the Hawaiian Islands, p. 31) to the finding of a small fragment of an egg shell in the stomach of a Hawaiian Hawk (Buteo solitarius) which he suggests might be a portion of an egg of Phaeornis obscura of Hawaii."

The above quotations appear to be the only early statements in the literature about the nest of any race of the Hawaiian Thrush, and there is, of course, considerable doubt that the deserted empty nest found by Bryan was, indeed, a thrush nest.

Munro (1944:73,76) wrote that "one female had a well developed egg in her egg-duct," but added that "no eggs or chicks in the down have ever been found of which we have any record."

The following brief statement by Ord (1967) most certainly was based on Bryan's uncritical comments: "Nesting habits little known; builds a nest of twigs and leaves

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Cornell Laboratory of Ornithology, published November 1, 1969.

high in the treetops."

I observed my first Hawaiian Thrush on 20 December 1965, and made casual observations on the species thereafter when in suitable habitats. Because of my preoccupation with the Hawaiian honeycreepers (family Drepanididae), however, I did not make a concerted effort to learn more about the thrush until December of 1967. There appeared to be no reliable information in the literature on which one could base even a remote guess as to the breeding season of the thrush. I decided, therefore, to visit the study areas periodically and attempt to discover when the birds nested. I worked in the Saddle Road areas on the island of Hawaii at least twice a month during the following five months.

Very little is known about the season of song, and especially the relationship between singing and the breeding season, for endemic Hawaiian land birds; they definitely do not follow the pattern of North American passerines.

The thrushes on Hawaii begin to call and sing at least by October. The songs at this time often are whisper songs, given from a concealed perch in the interior of a shrub, thicket, or tree. Later the birds typically sing from exposed perches, often from the top of a tall dead tree. They also have a flight song. For the latter, a bird may fly from a dead branch 40 or 50 feet above ground, singing during its slightly arched upward flight. At the end of the upswing, the bird stops singing and dives quickly downward into the forest.

The Hawaii race (P. o. obscura) of the Hawaiian Thrush may be considered a fairly common bird in suitable habitat on Hawaii, the "Big Island." I have found it most common along the eastern part of the Saddle Road, which ascends from Hilo into the high "saddle" land between Mauna Kea and Mauna Loa; along the Kulani Prison Road on the eastern slope of Mauna Loa; and at the Thurston Lava Tube in Volcanoes National Park, as well as in similar rain forests adjacent to the Park. In addition, there are vast tracts of land on the island of Hawaii which have not been visited by an ornithologist for many years, and where the thrush probably still exists.

The areas where I have studied the Hawaiian Thrush are regions of high rainfall--for instance, 100 inches annually at Volcanoes National Park headquarters. The region of the Saddle Road, lying between elevations of about 2,000 and 4,000 feet, boasts the highest rainfall, 300 inches, the results of the combination of prevailing northeast trade winds and the two large mountains of Hawaii, both of which tower more than 13,000 feet above sea level. This is the rain forest. The rainfall decreases above 4,000 feet elevation but is still ample for some distance--about 100 inches annually at 6,000 feet--to encourage the re-vegetation of lava flows and the growth of tree ferns and other moisture-loving plants.

A number of eruptions from the north flank of Mauna Loa have poured lava across the region of the present Saddle Road during the past 125 years. The amount of vegetation on these several lava flows varies primarily with the amount of rainfall in the area, which is in turn directly related to the elevation as discussed previously. Where the rainfall is adequate, the re-vegetation of lava flows by lichens, ferns--including tree ferns--and 'Ohi'a trees (Metrosideros collina) takes place in a relatively short time, and a passable native forest may develop in less than 100 years.

Molten lava flows like water, seeking the lowest level. It flows around hills and, sometimes, around mounds of older lava, thus leaving islands, "kipuka," which may be heavily forested. Because of a succession of eruptions from different vents in a rift zone, therefore, kipuka may be bounded by lava flows of different ages and in different stages of re-vegetation. Kipuka also may exist at the leading edge of a lava flow that stopped because the eruption came to an end. The kipuka are, in any event, good places to search for endemic plants and animals.

During the winter months, I discovered that singing thrushes were fairly well scattered over the very rough but relatively open lava flows where the 'Ohi'a trees

were only 15 to 25 feet tall. I thought that if the thrushes did, in fact, build their nests in 'Ohi'a trees, the finding of one in these low trees would be an easy matter. Although I spent many hours, often rainy hours, climbing slowly over lava flows with a series of ravines, 20 or 30 feet deep, where one had to test each lichen-covered block of aa lava in order to make sure that it would not roll or tip, I found no nests; and, as the season progressed, I could not even find females or pairs of birds. And, to be sure, when I found the first thrush nest, it was not on a lava flow at all but in the depths of a dense kipuka.

The kipuka was, in part, an elevated area bounded on the western, or upslope, side by a lava flow probably less than 100 years old, on which the scattered 'Ohi'a trees were of moderate height. On its eastern, or downslope, side, the land fell away steeply into a crater-like depression. Both the crater and the elevated portion of the kipuka supported a dense tropical vegetation, of which 'Ohi'a was the dominant tree. In addition to a variety of mosses, liverworts, and ferns, other plants included kolea (Myrsine sp.), pukiaue (Styphelia tameiameia), lapalapa (Cheirodendron sp.), kanawao (Brussaisia arguta), pilo (Hedyotis sp.), 'ohelo (Vaccinium calycinum and V. reticulatum), pioi (Smilax sandwicensis), and tree ferns (Cibotium sp.).

After some six months of searching in difficult terrain, I found the first thrush nest on 11 May 1968. I was working in a difficult place where mosses, other low ground vegetation, and tree ferns so concealed the gaping holes and crevices in the lava substrate that it was necessary to watch every step taken. The thrushes often led me into the luxuriant tropical vegetation and I had to move slowly and carefully along slippery and rotting, prostrate tree trunks that lay in profusion across the deep lava ravines. I kept returning to such areas because of their intrinsic beauty, as well as because I always entertained the hope that I would find the nest on the next trip.

I had searched unsuccessfully in two areas on 11 May and tried a third area, a kipuka, at noon after hearing a thrush giving its single, hoarse meow-like call note. Shortly after entering the kipuka, I saw a thrush fly up and alight on a branch some fifty feet away. As is characteristic of the species, the bird began to "quiver" its wings, repeating the single call note, which proved to be, in part at least, an alarm note. A second thrush flew up almost immediately. I sat on the ground at the side of a small tree fern and watched as the birds flew from tree to tree, giving their alarm notes. The birds followed one another in flight, and I got the distinct impression that the first bird wanted to return to its nest although I did not know where to look for the nest in the dense vegetation. I did feel that the nest probably would not be "high in a tree," as Henshaw had predicted. It occurred to me that the nest might be among the rich growth of roots along a nearby eight-foot-high bank. As I searched the bank, the first bird perched on a branch about thirty feet above the ground and preened its feathers, occasionally gathering what I presumed to be insects or larvae from both leaves and branches. Slowly the birds moved northward and out of my sight. I changed my position again and stood behind a large tree. Within three minutes the birds returned and began to utter their alarm notes. One bird, presumably the male, then flew off to another part of the kipuka; the other bird continued to give intermittent alarm notes. I decided to make a brief search for the nest and then leave the area so that the bird would come back to its nest. By returning later, I thought, there was a good chance that I might flush the bird from its nest. I had taken only a few steps, however, when I saw what I presumed to be the nest. It was.

The nest was 4.3 feet from the ground near the top of the trunk of a tree fern and was supported, in part, by the bases of both dead and living fronds. The dead leaflets of at least one dried frond had been molded around the exterior, thus serving to camouflage the nest.

The back of the nest, built against the trunk of the tree fern, was very flat and triangular in shape. It measured 7.5 inches from top to bottom, approximately 6.5 inches across the top, and tapered to a width of about 1.5 inches at the bottom.

The nest was also triangular in shape when viewed from the side. In front, the distance from the top of the nest rim to the tapering bottom was 5.5 inches. The back rim of the nest extended about 3.25 inches above the front rim.

The rim of the nest had a maximum thickness of one inch; the outside diameter at the rim was 4 inches; the inside diameters of the nest cup were 2.75 inches from side to side and 2.25 inches from front to back. The nest cup was 3 inches deep in back and only one inch deep in front.

The bulk of the nest, both the body and the lining, was constructed of unidentified rootlets and strips of bark. Woven primarily into the outer wall of the nest were a variety of mosses (Taxithelium mundulum, Leucobryum solfatare var. hawaiiense, Pseudosymbblepharis mauiensis), liverworts (Lophocolea sp., Herberta sp.), and ferns (Xiphopteris saffordii, Sphaeroclonium obtusum, Grammitis hookeri, Cibotium glaucum), as well as one 'ohelo (Vaccinium reticulatum) seedling, one pukiawe seedling, and several parts of leaves of an unidentified grass or sedge.

When I found the nest, at 12:45 PM, it contained one pipped egg. Through a hole, about 0.25 inch in diameter, the bill of the young bird protruded. The adult thrush, presumably the female, had been incubating the egg. At 10:30 AM the following day, the young bird, though active and calling faintly, still had not hatched. An adult was on the nest again at 11:30 AM when I had to leave.

I did not visit the nest again until 25 May. It was empty and I found no evidence of adults feeding a fledgling in the vicinity. Although I visited the kipuka several times during the following two months, I was unable to find another nest of this pair of thrushes.

SUMMARY

The Hawaiian Thrush is a common permanent resident in the rain forests of the island of Hawaii. During much of the year, the birds are widely distributed over very rough lava flows where low (15 to 25 feet high) 'ohi'a trees are widely dispersed. The first nest, containing a single egg, of the Hawaiian Thrush was found in a kipuka on 11 May 1968.

ACKNOWLEDGMENTS

I express my appreciation to Dr. Charles Lamoureux and Mr. William J. Hoe for identifying the plants in the study area and in the nest. A National Science Foundation Grant, GB-5612, supported this project.

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AXIS DEER

Have you seen HONOLULU STAR-BULLETIN, 29 May 1970, page B-8: TB Outbreak Fear Spurs State Check of Molokai's Deer?

The State Department of Agriculture is making plans to protect hunters from a possible outbreak of tuberculosis in axis deer on Molokai.

A deer shot several miles from the public hunting area on Molokai six weeks ago was found to have the disease. The last reported case of the disease--which can be passed on to humans and other warm-blooded animals--was in 1961.

"WE DON'T know the degree--if any--of infestation in the entire deer population." said Ronald Walker, district wildlife biologist with the Division of Fish and Game.

"We hope the hunters will be able to help us determine that when the season

opens," he said.

Hunters will be provided with plastic bags to bring the viscera of all deer they shoot to the State meat inspector. The inspector will examine the meat at the site to see if the deer has contacted tuberculosis. The disease is usually found in the lungs or liver, and sometimes in the meat.

But Walker said it may be quite awhile before the hunting season will open. The season has already been postponed because of dry weather on Molokai and the summer months promise more of the same.

"There may not be hunting until fall," he said. "If that happens, we're going to have problems getting samples from the population."

He said the Division of Fish and Game may be called on to take samples for study if the hunting season is postponed much longer.

The last Legislature passed a bill creating a panel to strictly control any distribution of axis deer on other Islands. Gov. John A. Burns has not yet taken action on the bill.

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The following are excerpts from George C. Munro's manuscript notes on axis deer:

AXIS DEER ON MOLOKAI AND LANAI (Property of Conservation Council) circa 1952

Referring to the recent [late 1940-early 1950] controversy in the public press on the proposed introduction of axis deer to the island of Hawaii I want first to make it clear that I am not in favor of establishing deer on that island, in that there are dangers that cannot be ignored. At the same time I have much sympathy with the sportsmen and also feel that in the interests of historical and scientific fact that I tell of my experience with this species. It came within my province to reduce the number of deer on the Molokai ranch and I confess that they gave me and many others fine sport for the seven years I was there. Dropping a fine antlered buck as he ran up an opposite hillside was an exciting experience. The hunting took me into out of the way places where otherwise I might not go and so gave me information that was of value to the ranch. It was partly on my suggestion that deer were taken to Lanai. I class that as the greatest mistake I made on that island. The deer have now become so prized by residents of the island as a recreation source that any effort towards their extermination will meet vigorous opposition. That would be one of the detriments in taking them to Hawaii. However, the forest on Lanai is not in danger from them if properly safeguarded. I could not foresee that Lanai would change hands, the depression, the crisis through which the pineapple plantation would have to pass and the war which caused all hunting to be stopped for a time. It was the war to a great extent that allowed the increase of deer in New Zealand that has been so much quoted recently. There are also a number of species of deer in New Zealand and some of the forests of that country are very large, over rough country and remote from human population. Deer certainly are a curse there.

No one is more enthusiastic in reverence for the Hawaiian flora and its forests than myself and no one would go further to avoid injuring them, yet for commercial reasons I injured the ecological balance of the Lanai forest in improving it as a waterholding forest by introduction of foreign trees. I had the excuse, of course, that the balance had already been upset. Mr. Lydgate who accompanied Dr. Hillebrand on Lanai in 1870 described the Lanai forest as a somewhat moth-eaten remnant. It may be a remnant but it is not moth-eaten now. I was forester and firewarden on Molokai ranch under the Board of Agriculture and Forestry for most of the time I was manager of those two properties. It was trying work getting the wild cattle out of the mountain bog of the Molokai ranch and the goats and wild sheep out of the Lanai forest gulches. The last wild cow in the Molokai ranch forest fell to my rifle as also did the first deer shot on the western end of the island.

When I took over the management of the Molokai ranch in 1899 two hunters with hounds were engaged in killing the deer on the borders of the rain forest. We could not hope to exterminate the deer on Molokai as there were other landowners there who wished to perpetuate them--the deer on Molokai--for a food supply and later for

hunting concessions. Then legislation was introduced giving the deer a closed season. So if the deer are introduced to Hawaii there will be little hope of ever getting them out again, just as it is with wild goats and sheep. Their arrivals were a curse to the forests of Hawaii for many years, but now when they have been reduced within measureable distance of extermination they are given a closed season to increase again. However, so long as Mr. Colin Lennox is President of the Board of Agriculture and Forestry and no war breaks out or the population decrease they may not be a menace to the forests of Hawaii though from what I have heard from travellers on Mauna Kea I fear that reproduction of mamane trees will suffer.

(On Molokai) the deer seemed much at home at about 3300 feet elevation. They had been on Molokai for many years but had not even then penetrated to any extent into the boggy rainforest. Dr. R.C.L. Perkins who camped for some time in that forest in 1902 told me that no deer frequented it at that time and there were almost no signs of deer there in 1899. I found that after rain was a good time to find wild cattle and deer out in the open. I concluded they disliked the dripping of water off the trees. There were no deer known to be on the western end of Molokai in 1899. They evidently went there to avoid the hunters' hounds. They found the fringe of kiawe trees in the south shore-side gulches to their liking for shelter and the many miles of fine pili grass which covered the southwest end of that part for fodder as they seem to have to a great extent abandoned the borders of the wet forest. Axis deer had nothing to do with the denudation of the forest on the western end of Molokai. There was no forest on the southwest slopes when Vancouver passed the island in 1792, according to Menzies, Vancouver's surgeon. There was a small remnant of a dryland forest in the valleys near Mauna Loa, the highest point on the western end 1381 feet Puunana. The Hawaiian who stated that he had to cut his way through it must have referred to the rain forest at the other end of the ranch. It is extremely unlikely that any living man ever saw the original xerophytic forest on Mauna Loa, Molokai, and I doubt if he would have to cut his way through it when in its prime. After we fenced off about 10,000 acres of the southwestern corner of the island and were engaged in removing the last of the wild cattle off it the pastures had very much of a rest for about a year. It was then that a wealth of plants grew up among the pili and there was obtained a great part of a rough collection of the ranch vegetation that Mr. Jared Smith kindly determined for us in 1902. I don't think there was any other botanist capable of doing it on these islands at the time. I still have these determinations and wish I had the physical endurance to traverse those lands now and collect seed of some of the rare species. The pili grass was so thick that a mass of dead leaves formed a mat under the bunches that was valuable for holding moisture after the heavy nalu sudden showers/summer showers that occurred on those wet parts. The western end of Molokai was far from being barren land in the early 1900s when the axis deer first invaded it. I shot a good many deer on Molokai but have no notes on the contents of their stomachs but from my observations it has always been my opinion that they were grass feeders and used the forest for shelter in the daytime. Also that the chief damage they do to the forest is in rubbing the bark off single trunked young trees. On Molokai there were many 'ohi'a trees that branched from the ground and these though much scored by the antlers of the deer were not killed as the animals could not bark them all around. Axis deer are certainly not desirable in any Hawaiian forest but not nearly so destructive as cattle and goats and perhaps even hogs. As I have before stated the Hawaiian forests are safer without any four-footed animal. Even rats and mongooses destroy the native birds which are beneficial to the forests.

From my experience on Lanai and Molokai it is my opinion that if the deer escaped from the kipuka on Mauna Kea, they would not resort to the humid wet forests but would take up their quarters possibly on the dryland cactus country near Kawaihae, on the Parker ranch, if they found it. There they would be secure from hunters unless they used hounds to drive them out. The deer on Lanai kept away from the forest which was close by till the cactus shelter was destroyed. Those that took shelter in the forest then were hunted out by a hound. A properly trained bloodhound does not chase the deer but follows the scent of them, at a moderate pace, baying

loudly. The deer work round in a circle and all the hunter has to do is wait on some part of the radius of the circle till they are passing him. One of the most beautiful sights of animal life I have seen was a small band of axis deer running from the baying hound in a valley and stopping rigidly on the top of the ridge alert with twitching ears and the long white hairs of the under part of their upraised tails spread like a fan. It certainly would be difficult to hunt deer in the wet forests of the Hamakua coast without a hound and perhaps even difficult with one.

In 1899 it was impossible to form any estimate of the damage the deer had done to the large area of partially destroyed forest on Molokai. Wild cattle, sheep, hogs and goats also swarmed on those lands but after they were cleared out the forest returned in wonderful condition on most of it.

So long as Mr. Colin Lemnox remained as President of the Board of Agriculture and Forestry or no war break out I would not fear that the deer would do much damage on Hawaii. His splendid handling of the goat and sheep problem on Hawaii attests to this. I well remember the anxiety they gave the late Mr. Charles S. Judd while he did a hero's job seeing to the safeguarding of the Territorial forests and elimination of cattle from them.

It might be opportune at this time to call the situation of botanists to other dangers to our endemic flora. I have not noticed any apprehension as to the effect on our endemic flora of the introduction of foreign trees into the Hawaiian forests, especially of strangler figs and the spread of foreign seeds over the forests by airplane. I would advocate that legislation be introduced to stop the latter practice. A few of our mountain tops may still have the ecological balance untouched and these should be kept so as long as possible. The airplane is surely a menace to them.

STORY OF LANAI (Property of Bishop Museum Library) Chapter VII: Wildlife, p. 124

Deer. I have always regretted my suggestion to the Baldwins that they bring Axis deer from Molokai to Lanai. I intended should we release the animals on the western end of the island that we keep them well down in numbers. Early in 1920 the Molokai cowboys at a favorable opportunity made a good catch with the lasso. Twelve deer were crated and brought to Lanai in a launch during the night. They were freed in the water at Manele to swim ashore. They took refuge in the thick cactus in the Palawai Basin and bred there. As we had no hound to drive them out, they did not furnish much sport. I soon realized the danger to the forest if future owners did not take the necessary precautions. The pineapple company did not want wild animals on the land, so I set the cowboys to work to destroy the deer, when the cactus cover was being crushed out to prepare for pineapples. We killed over 300 of them but did not get them all. Through the outbreak of World War II and for other reasons, the wild animals increased. Eventually another raid was made on the deer and goats by giving permission to plantation employees to hunt. This created an army of Lanai sportsmen hunting under license from the Board of Agriculture and Forestry and brought both animals to near extinction on the island. But hunting has become such an important source of recreation that the hunting areas on the island have been turned over to the Board of Agriculture and Forestry which controls the animal population by closed seasons. As far as the deer are concerned this is not disastrous. Unlike the goats, if they take to the forest they can be run out of cover with a hound. We did this with some that took refuge in the fringe of the forest when the cactus was destroyed.

Field trip to Koko Head, 14 June 1970

On Sunday morning, June 14th, fourteen members and guests trudged over the hill and out to the tip of Koko Head, hoping for a look at the fairy terns that have been seen there in recent years and that nested there last year. It was a stimulating climb in beautiful weather, with spectacular views of turquoise Hanauma Bay and ultramarine open ocean--but the fairy terns apparently had gone fishing for the morning. Our group had to content itself with glimpses and songs of cardinals (both

kinds), Japanese white-eyes and spotted doves as we made our way down the lava slope, and with a panoramic view of fly-bys of shearwaters, petrels, boobies, sooty terns and a lone red-tailed tropicbird from our high perch atop the cliff at the point of Koko Head.

William P. Hull

Field notes from Charles G. Kaigler: Kauai, July 3 - 13, 1970

A stay on the island of Kauai should be on the program of anyone interested in the endemic birds of Hawaii--or for those just interested in quiet beauty for that matter. It isn't even necessary to go all the way into the Alaka'i Swamp to enjoy the bird life, although one should, if he wants to find the really rare species. Koke'e Park itself and its trails are rewarding enough. We found that the Alaka'i Swamp Trail to the edge of the swamp had been recently reworked and was not too difficult a day's walk in and out.

A walk on the Camp Ten or Mohihi road, which is driveable for about six miles in a standard car in good weather is even easier. The number of 'i'iwi, 'apapane, 'amakihi and 'anianiau to be found is thrilling, particularly so if one is there at the season (now) when the young have not yet attained mature plumage. The green to vermilion color combinations of the young 'i'iwi are fascinating. The creeper is not too hard to find, and we spotted three 'akepa. The 'ona'o sang off the trail, but we could not locate him. We also observed one owl for about ten minutes from about twenty feet. He didn't move until we tried to get closer. Actually the pueo seems quite common about Koke'e. We did not spot the famous Kauai golden eagle.

White-eyes and mynahs, house sparrows and house finches are everywhere, of course, as are the doves, but we were quite surprised at the number of Chinese thrush and shama. We stayed in the Kapaa area and saw and heard them every day. The white-tailed tropicbird seems to be sailing in every valley and we saw them every day too.

From the Kilauea Lighthouse we did see both the red- and white-tailed tropicbirds, the frigatebirds, the red-footed boobies, and the wedge-tailed shearwaters, as well as a school of about twenty porpoise below us in the bay, several of which entertained by spinning jumps.

We found the Newell shearwater at dusk, flying from the sea toward the mountain ridges where they presumably nest, and found one dead on the highway near the airport.

The North American cardinal is much more prevalent than the Brazilian. The koloa, the stilt, the coot and the gallinule can be found. I only heard one meadowlark, and we did not find the mockingbird which has been reported, but we were not actively searching for them.

As for those, who just want peace and quiet, the island itself, to us the most beautiful of them all, is rewarding enough.

Moku Manu

Bob Shallenberger reported at last night's (20 July 1970) meeting a nesting frigatebird on Moku Manu. He had a beautiful photograph of the approximately 4 to 5 weeks-old chick. This is the first report that I know of of confirmed nesting on Moku Manu. He also found nests of Christmas Island shearwaters in numbers, and those of brown boobies.

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Field notes from Hildegard Kaigler: White-tailed tropicbird

On Saturday, 6 June 1970, I saw two white-tailed tropicbirds high over the valley (somewhere over Manoa School) disappearing into clouds over Tantalus. The second sighting was on Friday the 19th of June. This bird headed toward the St. Louis Heights ridge. Half an hour later the same or another bird was sighted again by me and Chuck in the middle of the valley. It also disappeared over the St. Louis Heights ridge. This was our first sighting of white-tailed tropicbirds since we moved to Manoa four years ago.

Field notes from Hildegard Kaigler: Fairy Terns on R & R from Koko Head

Four fairy terns (not white pigeons--there are a few of them in the area) were observed in the afternoon on the 16th and 17th of July 1970 at Fort DeRussy for two hours flying about the trees and over the beach, often very low. On the 18th and 20th only one was sighted.

Have you seen "The Hawaiian Islands of Birds" by George Laycock on pages 44 through 61 of the January 1970 issue of AUDUBON magazine? The photography is very realistic that the birds seem to radiate life and motion. There are no words to express the excitement the pictures evoke. You must see for yourself. Also, in the March 1970 issue he writes on the "Haunted Sands of Laysan." The article is well illustrated with black and white photographs.

BANDING

Please report doves and pigeons caught with plastic leg bands (blue, red, and green) to Mr. Rodney C.P. Go, Department of Genetics, University of Hawaii 96822 or telephone 944-8552. He is undertaking a population genetics study of these birds, and needs recapture data to measure the home range of each species. Gene frequency estimates will be made for each population under study, using various biochemical and morphological markers.

Excerpts from the minutes of Hawaii Audubon Society general meeting, 18 May 1970:

...Mr. Throp reported on the field trip of May 17 to Peacock Flats above Hukuleia. The hikers saw three 'apapane and numerous 'amakihi, 'elepaio, and bush warblers. No leiiothrix were seen or heard. It was reported that a leiiothrix has been heard in the Pupukea area....

It was noted that the American golden plover have now left the islands for their summer breeding grounds.

Mr. Robert Shallenberger discussed his project on the breeding behavior of the wedge-tailed shearwaters. He is working on Manana Island. The birds are breeding now and are expected to return in June to lay their eggs. Mr. Shallenberger expressed concern over the number of persons illegally landing on the island. He noted, also that a storm in April probably destroyed 4,000-5,000 eggs!

Mr. William Mull observed that the last shovelers left around the first week in May. Golden plover were in breeding plumage during the first week in May, and had disappeared by the second week. He did see two golden plovers today at Salt Lake that were not in breeding plumage. Mr. Mull also observed wandering tattlers in compatible pairs--an unusual sight at this time of year.

Our speaker tonight was Mr. Pete Holt; topic was "Cactus Country." The slides and talk were, as always with Mr. Holt, exceptional....

15 June 1970:

...President Charles Kaigler announced that the following people have been nominated for honorary life membership: Margaret Titcomb, W. Michael Ord, E.H. Bryan, Jr., and Charles Dunn. The membership will vote upon this nomination at the next general meeting.

Mr. William Mull reported on yesterday's field trip to Koko Head to view the white terns. Members were afforded views of shearwaters, two species of boobies, one red-tailed tropicbird, and sooty terns. Mr. William Prange, who was at the Outrigger Canoe Club on Sunday morning, was apparently the only Audubon member to see the white terns!

Mr. William Mull reported that ruddy turnstones and tattlers may still be seen at Salt Lake.

It was decided to hold the Koko Head trip next year in July instead of in June.

...Mr. Jack Throp introduced Mr. Jerome Pratt. Mr. Pratt, who is with the Department of the Interior, is the author of WHITE FLAGS IN APACHE LAND, a book

describing the characteristics and environment of the white-tailed deer in Arizona. Mr. Pratt is also co-founder of the whooping crane conservation association.

Mr. Pratt emphasized the importance to the Hawaiian stilt of Kanaha Pond on Maui. If this pond is destroyed, the stilt may become extinct. The pond is owned by the airport and is not presently zoned as conservation land.

Mr. Warren King, from Cornell University, is working on the biology of the dark-rumped petrels in Haleakala Crater.

It was announced that the Department of Land and Natural Resources has a new publication titled ALOHA AINA.

Mr. Russell K. LeBarron spoke this evening about the birds--and other living creatures--of the Falkland Islands. These are a group of islands off the south-eastern coast of South America. Mr. LeBarron's talk gave us a really fascinating and engrossing glimpse of a group of islands as unlike our own as can be imagined....

Mr. George DuBois, executive director of the Hawaii Wildlife Federation, appeared at the meeting last night, 20 July 1970, and he invited Audubon members to join the Hawaii Wildlife Federation in order to add the weight of their votes against the introduction of Axis deer to the Big Island. He suggested that we write to the National Director of the Federation: Dr. James H. Shaeffer, 100 N. Main St., Parker, South Dakota. He invited the Hawaii Audubon Society to the Wildlife Federation meeting to be held 16 August at noon in the Royal Hawaiian Surf Room. Reservations should be made with Harriet Linn, 537-6574.

ALOHA to new members:

Junior: Barbara Mull, 3202 Woodlawn Drive, Honolulu, Hawaii 96822
Regular: Mrs. Madge Haines, 1040 Lunaai Place, Kailua, Oahu 96734
Mrs. Hilda H. Krigbaum, 640 A-5 Ulukahiki St, Kailua, Oahu 96734
Steven Montgomery, 1914 University Ave, Apt 303B, Honolulu 96822

HAWAII'S BIRDS, a field guide, available for \$2.00. Send in your orders to: Book Order Committee, Hawaii Audubon Society, P.O. Box 5032, Honolulu, Hawaii 96814.

AUGUST ACTIVITIES:

- 9 August - Field trip to Manana to study seabirds. Trip will be limited to Society members. Boat fare is estimated at \$3.00. Bring lunch, water, and if possible your car. Transportation cost (50¢) to be paid to the drivers.
Meet at the State Library on Punchbowl Street at 8:00 a.m.
Leaders: William W. Prange, Jr. and Robert Shallenberger
Reservations required. Telephone 239-7187, Bill Prange.
- 10 August - No board meeting.
- 17 August - General meeting at the Waikiki Aquarium Auditorium at 7:30 p.m.
Program for the evening: David H. Woodside will show BIRDS OF HAWAII (films)

HAWAII AUDUBON SOCIETY EXECUTIVE BOARD:

President:	Lt.Col.Charles G.Kaigler	THE ELEPAIO: Editors
Vice Presidents:	Miss Margaret Titcomb	Miss Charlotta Hoskins
	Jack L. Throp	Miss Unoyo Kojima
Secretary:	Mrs. Virginia Cone	
Treasurer:	William W. Prange, Jr.	MAILING ADDRESS: P.O. Box 5032
Board Members:	William P. Mull	Honolulu, Hawaii 96814
	David H. Woodside	

DUES: Regular-\$3.00 per annum, Regular out of State-\$2.00 per annum, Junior (18 years and under)-\$1.00 per annum, Organization-\$2.00 per annum, Life-\$50.00