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KANAHA POND BIRD STUDY
(excerpts from Final Report)
By Andrew J. Berger
Second and Final Installment

7. Development Plans for the Kahului Airport Complex

Three development plans are pertinent for consideration here: ...

a. The Bush report, 1963 is now outdated..., but it contains recommendations for a boathouse, park concession, picnic area, botanic garden, and live bird display. ...

b. Kanaha Pond Improvements plan (Job No. 37-MM-7, July 13, 1971). I see two major weaknesses in the plan. ...

(1) The moat...does not completely encircle the proposed refuge area; there are several gaps in the moat. Any gap in the moat would virtually destroy the entire purpose for which the moat was designed because mongooses, dogs, and cats could gain access to the shores of the pond through those water gaps. ...

The moat should be expanded to include, at least, the southernmost of the three impoundments (mostly dry during the summer of 1972) that lies just north of the major east wing of Kanaha Pond. If surrounded by a moat, and if an adequate water level were maintained, this impoundment, with its small islands, could serve as an important nesting habitat for the stilt. It is probable that an inadequate number of safe nesting sites is a major limiting factor for an increase in the population of Black-necked Stilts throughout the State.

...Any plan that does not take into consideration the critical problem of excluding predator mammals from the refuge area will not improve the pond as a breeding area for the waterbirds.

I believe that it cannot be emphasized too strongly that, unless an adequate moat is constructed, it would be better (that is, more effective) simply to construct a dike around the area to be designated as a wildlife sanctuary, maintain a suitable water level throughout the year, and build a large number of islands in the pond.

(2) Because of the cost of the proposed improvements (and a probable shortage of funds to do a complete and effective job), the plan to destroy the present observation booth and construct a new one seems totally unwarranted at this time. The critical objective is to improve the pond as habitat for rare and endangered waterbirds--and not for the benefit of bird watchers. Moreover, the present booth meets the needs of tourists and any local residents who are interested in birds.

After the moat has been constructed and contains water, it is essential that water levels within the pond be regulated throughout the year. This undoubtedly will mean that suitable water (i.e., water not containing pesticide or herbicide residues) will have to be pumped into the pond during periods of low rainfall.

Pollution from human excrement also should be avoided. The Maui chapter of the Conservation Council for Hawaii sent a resolution to Major Elmer Cravalho during March 1972 which opposed any development within the boundaries of the Kanaha Pond Registered National Natural History Landmark, and called attention to possible pollution from the proposed Kahului-Wailuku sewage treatment plant adjacent to Kanaha Pond. ...

It seems pertinent to emphasize again that Kanaha Pond has been declared a Registered

National Natural Landmark and that the Conservation Council for Hawaii, other conservation groups, and the State Legislature have expressed strong feelings for preserving and improving Kanaha Pond as a wildlife refuge for Hawaii's rare and endangered waterbirds. Moreover, Act 49 of the 1972 State Legislature charges the Department of Land and Natural Resources to take all necessary steps to study and preserve the endemic and native species. Unfortunately, I am unaware of any similar statement of intent on the part of the Administration of the County of Maui to preserve and improve Kanaha Pond. That is, I have not yet seen any published statement from that Administration that demonstrates any recognition of the value and significance of Hawaii's endemic waterbirds, nor any strong statement in support of the preservation and improvement of Kanaha Pond as a wildlife refuge. This lack of an official statement on Kanaha Pond by the County Government is regrettable because the endemic birds and the pond have value in terms of education, environment, and tourism.

During my first inspection trip (July 4, 1972), the water was very low in the major east wing of Kanaha Pond, and there was virtually no water in the most important (southernmost) of the impoundment areas. Islands that had been constructed purposely to serve as safe nesting sites for the stilt in the impoundment area were, therefore, useless for protecting the eggs and young of the stilts from predators, and there were, at that time, no active nests in the area. Safe nesting sites apparently were so scarce during the 1972 nesting season, that one female stilt laid eggs on top of a rock in the east wing of Kanaha Pond, a fact which suggests considerable difficulty in finding a suitable nesting site. Only two addled eggs were found on the rocks on July 5; whether or not this nest was successful in producing any young is unknown. Never have I seen, or heard of, a stilt nesting in such a site.

The pump was repaired, and pumping operations began on July 5. By July 7, clear water was running through the drainage ditch and through the dense growth of Bermuda grass; very little water had actually entered the east arm of Kanaha Pond, however. During my field trips in August and September, I found a fair level of water in the east arm, and a considerably greater amount than on July 4. How much of the time the pump was in operation between July 5 and September 15, I do not know. A letter I wrote to the Division of Fish and Game on August 16, 1972, requesting this information, has remained unanswered as of September 19.

c. Kahului Airport Development Plan-1985. This plan makes little mention of Kanaha Pond but does include the following statement (page 51): "For the maximum protection of the approach to Runway 5, the existing Kanaha Pond and Bird Sanctuary and adjoining areas to the northeast should be retained within the Airport boundaries. ...These areas would be well suited for the development of a public recreational facility, such as golf courses and public parks, which could benefit the residents of Kahului as well as providing a source of income generation to the Airport." ...

Kanaha Pond lies at the extreme western end of Segment XVI (exhibit C in the 1985 Plan), for which no specific recommendations for development are made in the Plan other than those referred to above (for a golf course, etc.). It seems likely that, because of funding problems in the foreseeable future, no specific plans for the development of segment XVI will be completed for perhaps as long as 10 years from the present. When plans are initiated, personnel of the State Division of Fish and Game should, without fail, be included in the planning team.

8. Conclusions

As a result of my study, and of Mr. Kridler's earlier studies, of Kanaha Pond, I believe that the following conclusions will be shown to be justified by the passage of time:

A. The construction of an adequate moat around the Kanaha Pond Bird Refuge will prevent any further deterioration of Kanaha Pond as habitat for the endangered, endemic Hawaiian waterbirds--assuming that water will be pumped into the pond during periods of low rainfall in order to maintain optimum water levels for the birds and their food organisms.

B. The improved circulation in Kanaha Pond, resulting from the construction of a moat and an outlet drainage system (plus pumping of water during the summer months), will eliminate the stench that has been characteristic of Kanaha Pond during certain periods of the year.

C. The proposed improvement will not in any way affect the behavior of the birds that use Kanaha Pond; this statement applies to both the permanent residents and the migratory wintering species.

D. The proposed improvements will increase the value of Kanaha Pond as a breeding area for the Hawaiian Stilt and the Hawaiian Coot, but I do not foresee any major change in the size of the populations that inhabit the pond. Kanaha Pond, like any other habitat, has a given carrying capacity, that is, it can support so many pairs of breeding birds (because of the territorial habits of the birds and their food requirements during the breeding season). Birds beyond a certain maximum number that the pond can support will move to other areas. Tables 1 and 2 demonstrate the considerable differences in population size of Stilts inhabiting Kanaha Pond from year to year and from month to month. The pond obviously can support more feeding birds (that is, during the nonbreeding season) than it can breeding birds. I would not expect any drastic increase in the numbering of breeding stilts or coots as a result of the improvements, but I would predict a much higher nesting success. That is, more birds would be produced than under present conditions. The excess over present production, as already mentioned, I believe would move to other habitats, both on Maui and on other islands. This is one of the main goals of all programs dealing with rare and endangered species.

E. I do not predict any major change in the populations of wintering waterbirds, either ducks or shorebirds. Tables 2, 3, and 4 demonstrate a significant difference in the numbers of ducks and shorebirds that inhabit Kanaha Pond from year to year and from month to month. I believe that these differences are due primarily to these factors:

1. The numbers of these birds that reach Hawaii from their nesting grounds in Alaska or Siberia. The annual production of young in these areas vary from year to year due to differences in climatic and other factors. Consequently, the number that winter in Hawaii would be expected to vary from year to year.

2. Even though we do not yet have proof from observations of banded birds, it seems certain that some of the migratory birds that are recorded at Kanaha Pond during July and August, for example, merely stop there for a few days enroute to wintering grounds farther to the south. See, for example, Table 2 and the considerable reduction in number of Ruddy Turnstones that I observed during August and early September 1972.

3. Kanaha Pond also has a carrying capacity for the number of ducks that it can support; that is, the pond can produce food organisms only for a certain number of ducks, shorebirds, and endemic birds. I would suggest that those maximum numbers have already been recorded at Kanaha Pond (see Tables 3 and 4). Populations of 500 to 1,500 ducks on Kanaha Pond (as has been reported frequently in the past) already represents a very dense population of birds for the size of the pond, both at present and as it would be when the moat has been constructed. The increased area that would be under water in the improvement plan would not increase significantly the carrying capacity of the pond for ducks because the water would be too shallow for them; the water level there would be only a few inches deep, a requirement for the Hawaiian Stilt. Ducks would still congregate in largest numbers in the westernmost of the ponds, as they do now, and that branch of the pond cannot support for long periods any great increase in numbers of ducks.

F. Improvements of Kanaha Pond for the benefit of the endemic waterbirds will not have any affect (that is, will not result in either an increase or a decrease in numbers) on the introduced land birds that occupy the surrounding vegetation. Nor will it have any influence on the kinds or population sizes of introduced land birds (or the Golden Plover) that occur at Kahului Airport itself.

G. The writers of the Kahului Airport Development Plan were, of necessity, concerned primarily with runway requirements for the air traffic that is anticipated by 1985, and with the corresponding buildings and services that will be necessary to accommodate both airline personnel and passengers.

At the same time, it seems obvious to me that:

1. The planning team ignored completely the status of Kanaha Pond as a wildlife refuge and as a Registered National Natural History Landmark, both of which designations resulted because of Hawaii's rare and endangered waterbirds, and that

2. The planning team did ignore Kanaha Pond because "ideally, all lands within the 'critical' approach areas (one to three miles) to runways planned to accommodate substantial volumes of air carrier aircraft traffic should be under the absolute control

of the Airport and included within the Airport boundaries," even though runway 5-23 is to be extended "some 1,500 feet to the northeast," that is, in the opposite direction from Kanaha Pond.

In other words, it was easier to avoid any serious consideration of Kanaha Pond as a wildlife refuge and as a Registered National Natural History Landmark merely by citing general policies for continental airports rather than bothering to undertake a thorough investigation of Kanaha Pond and the actual conditions existing at the Kahului Airport.

Therefore, in view of the findings presented in this report, I see no justification for any further delay in removing Kanaha Pond from the Kahului Airport complex and for transferring completely and permanently the entire jurisdiction of Kanaha Pond from the State Department of Transportation to the State Department of Land and Natural Resources.

H. I also conclude that it would be the highest form of dereliction of State-mandated duty and responsibility if the State Department of Land and Natural Resources did not take immediate action to comply with both the spirit and the letter of Act 49 of 1972 in relation to the endangered waterbirds of Kanaha Pond (and the entire State) and in relation to all other rare and/or endangered endemic flora and fauna. The endemic fauna cannot be saved unless the endemic forests and waterbird habitats are preserved.

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HONOLULU STAR-BULLETIN, 26 June 1973, page D-8: Kanaha Pond Improvements to Start Soon

The State and federal government have signed an agreement to improve the Kanaha Pond wildlife sanctuary on Maui, Gov. John A. Burns announced yesterday.

Kanaha Pond, registered in 1971 as a natural landmark, has been a designated wildlife refuge since 1952. It and Diamond Head are the only two such officially recognized natural landmarks in Hawaii.

Under the agreement, improvements will include construction of protective moats and nesting places, particularly for the endangered Hawaiian waterbirds, the stilts and coots.

Bids for the project have already been received, and work is expected to start next month. The project will cost about \$78,000, the work aimed at isolating the waterbirds'

nesting places by surrounding them by water and moats, thereby discouraging predators.

Letter to Governor Burns from William P. Mull, 30 June 1973

It is great news that the State and the Federal Aviation Administration have signed an agreement that will permit the long-planned improvements to Kanaha Pond to proceed!

I want to thank you for your concern for Kanaha Pond, for releasing the necessary funds, and for your efforts in bringing about a reconciliation among the different agencies involved.

The improvements to the pond are an important first step toward maintaining Kanaha as a viable habitat for Hawaii's endangered waterbirds. The next essential step is transferring jurisdiction to the Department of Land and Natural Resources, which also requires FAA approval. The Society encourages you and your staff to work toward this goal so that, eventually, Kanaha Pond will be declared a permanent and inviolate Wildlife Sanctuary by Executive Order.

One major improvement that will be underway soon is to activate the State well for recharging the pond--to increase circulation and keep a constant water level. In connection with this, the disposal wells for the proposed sewage treatment plant at Kanaha would inject wastewater effluent into the lava beds under the pond. This fresh-water effluent would naturally rise above the underground sea water and some would occupy the ground-water lens just under the caprock. Since the State well draws from the same ground-water lens that the effluent will rise to, contamination of the ground water by the effluent is recognized as a distinct possibility. Under these circumstances, polluted water would be pumped from the State well into the pond. Considering the volume of wastewater effluent over a period of time, the potential threat to the pond's ecosystem must be considered seriously.

We think the State has made a wise long-term commitment to Kanaha Pond as a wildlife refuge, but we view the proposed treatment plant and disposal system as a clear threat to the success of that commitment. The pond truly would be insured against pollution if the plant and disposal system were located at a different site.

We respectfully request that you continue your efforts to protect Kanaha Pond, and the State's investment in it, by urging those concerned to find another site for the sewage facility. Hawaii's people will be grateful many years from now.

Excerpts from statement presented at the Environmental Protection Agency (EPA) public hearing on the proposed sewage plant and disposal system at Kanaha Pond by Robert P. Bruce, 23 February 1973: Project No. WPC-Hawaii-45 RE: (see page 40 *) ...

Shoreline Erosion: As an environmentalist and volunteer professional consultant for the Hui Manu and the Maui chapter of the Conservation Council, I have been asked by these organizations to present my views on the long range impact of locating the sewage treatment plant on the narrow sand dune area between the Kanaha Pond and the ocean. I have been told by some of the Maui County engineers and their consultants that shoreline erosion, poor foundations, tsunami danger and sand dune destruction have nothing to do with the EPA or the environmental impact of the proposed location of the sewage treatment plant on this site. From the long range view point, I disagree with this position unequivocally, and am presenting the following statement to substantiate my position.

I am familiar with, and have personally observed, and can verify, erosion of plus or minus 200 feet inland, since 1946, of the shoreline at the base of the natural barrier sand dunes along the shore in the vicinity of the proposed County sewage treatment plant site. A&B were the original owners of all the Spreckelsville beach ocean frontage and as land agent for the former owners I have had frequent occasion to observe shoreline erosion and tsunami destruction which caused costly property damage. I will be glad to walk along the shoreline fronting on the County's proposed Kanaha sewage treatment plant site and show anyone the definite evidence of this extensive shoreline erosion. Starting at the west end of the proposed site, you can see the former Kanaha Pond water level control drainage pipes, which used to go through the sand dunes and under the beach and discharge a continuous flow of surplus pond water quite close to the shore. As the shoreline eroded and the beach receded, these pipes had to be extended landward and anchored down by driving rails into the sand and coral on both sides, forming a rough 'A' frame to protect the outlet pipes from wave damage. All these structures are now in the sea offshore,

completely separated from the land and at some distance from the shoreline, presenting mute evidence of the relatively rapid beach erosion in this vicinity.

Further along the shore, one can note the partial destruction of the protective barrier sand dunes by the County at the site of their test injection well on their lot. This is the County's first construction activity on the proposed site and already demonstrates adverse impact on the environment as I will explain later. Beyond this point, whole dead ironwood and kiawe trees, root systems and all are littered along the beach where they have been thrown from the tops of the sand dunes by the normally high tidal waves during storms, and the extraordinary tsunami waves striking this portion of the shoreline during recurrent earth quakes. The ironwood trees were planted around housesites in which people lived before World War II. A little to the east, a complete army pill box can be seen, partially submerged, out in the ocean at least 100 feet from the present shore. This pill box was constructed on the sand dunes inland from the shoreline for Maui's coastal defense from Japanese invasion during World War II. There is another pill box submerged in the ocean to the east and considerably further out in the water. The shoreline, of course, was still further out from their present positions when these pill boxes were built on the former sand dunes. This is further positive proof that the shoreline has receded inland in this vicinity close to 200 feet since that time.

Kaa Point is an excellent example of how much beach erosion has occurred since World War II. The Sea Bees who constructed the Kahului Naval Air Station late in World War II, after the Puunene Naval Air Station became too crowded, dumped thousands of tons of rocks along the beach front, constructed revetments, and built jetties out into the sea to divert the along-shore current and collect the sand in special spots for swimming beaches for base officers' beach homes. The revetments are still there, but all it took was a few tsunami waves coming from the right direction, and washing in over the shore stabilization and protection structures they had constructed, to completely destroy the beach homes and other improvements then in existence on this critically exposed portion of the Spreckelsville beach. ...

Sand Dune Destruction: The longrange impact of locating the sewage plant with its raw sewage holding pond, and other facilities and improvements on the inner sand dunes, will be the gradual elimination and eventual complete destruction of the vitally important primary barrier sand dune which has been the natural protection of the pond since its formation from the encroaching sea. The elimination of the pond's natural barrier dune will have a severe environmental impact, and change the ecological balance in the pond itself.

The natural barrier dune is being constantly eroded along its shoreline, by the sea, but the continuous strong on-shore trade winds blow new sand from the beach on and over the dune and into the area of the inner dunes. The immediate impact of constructing the plant as proposed, is to eliminate the inner sand dune area, on to which the outer barrier dune must be allowed to drift to protect the pond's environment.

The cost of replacing this natural, massive, primary, drifting sand dune barrier with some man-made stationary seawall supposedly strong enough to resist the critical erosion of normal tidal wave action, and also the destructive forces of the recurring tsunamis which strike this shore would be prohibitive. Considering the extremely unstable soil situation revealed by the test drilling on the site, there is a strong indication the construction of any such protective sea wall would be virtually impossible and should not even be attempted. ...

Filling in periferal area around the pond and extensive filling for ammunition storage and access roads in the pond itself by the Navy during W.W. II caused much silting and plugging of former underground springs. Complete abandonment of the former water level control structure during W.W. II also made it impossible to regulate the pond water, causing it now to dry up to dangerously low levels a considerable portion of the time.

The Hui Manu arranged with an adjoining private well owner to donate well water to the State to prevent the serious drying up of the pond. Even this emergency pumping during drought periods was insufficient to properly supply the pond, so the Hui Manu is trying to get the State to install a pump in their deep well across the pond from the proposed sewage plant site, and run this pump at full capacity continuously, because even

that amount of water, will be barely sufficient to restore the former and necessary natural water circulation in the pond. However, if the County injects the proposed large quantities of polluted sewage, effluent fresh water into their deep injection wells on their proposed site, this water definitely disperses under the pond and will rise up into the same layer of ground water which supplies the State's well, which was drilled to replenish the diminishing source of spring water entering the pond.

Continuous injection of relatively large quantities of polluted effluent water displacing a normal part of the ground water lens supplying the pump water which will be required in the future to replenish the pond will greatly increase the chance of sewage effluent from the proposed county disposal wells being pumped into the pond.

Conclusions: ...The actual Pond area itself has been reduced to less than half the size it was around 100 years ago, before Claus Spreckels and the Kahului Railroad Company, and latterly the U.S. Navy, brought modern industrial and commercial and warfare development to the port town of Kahului. The critical shoreline erosion is clearly illustrated by the great recession of the beach from the finger-like jetties on Kaa Point marking the beach location during W.W. II. The easily erodable slopes of the windblown sand dunes, and the unstable foundation conditions under the sand dunes themselves are one of the main causes of the critical shoreline erosion. The particular conformation of the relatively shallow ocean bottom offshore from the pond tends to direct the tremendous force of the destructive tsunami waves directly into the eroding beach front. ...Finally, the eventual destruction of the primary sea barrier sand dune along the pond frontage by the elimination of the interdune area by the sewage plant is one of the most serious adverse environmental impacts of placing this multimillion dollar plant on the inner dunes. ...The bottom of the ocean offshore of the worst eroding area is covered with the light wind-blown sand from the eroding dunes. The vegetative cover over the barrier dunes is scarred by the force of the strong trade winds, blowing about 90 per cent of the time, and carrying the constantly replenished beach sand onto and over the barrier dunes...through the wind directed vegetation into the inner dune area where it builds up a new barrier dune drifting slowly inland. This is a necessary natural protection for Kanaha Pond. It is my considered opinion that because of the long-term impact of the proposed placing of the sewage plant on the Kanaha Pond site, and other aspects of this proposal which were evidently ignored that an impact statement should be made.

* See page 38: RE: Long Range Environmental Impact of locating the proposed multi-million dollar sewage treatment facilities on the 1500 foot long, relatively narrow, beach front site on the unstable foundation of the underground water and ooze of the pond; windblown, shifting sand dunes; a site subject to continuing critical shoreline erosion and repeated tsunami inundation

Field Notes from Mae E. Mull: Observations at Kanaha Pond

On the morning of February 23, 1973, a party of six (E. Kridler, J. Cook, M. Taylor, W. Mull, F. Tamaye, and the writer) visited Kanaha Pond and adjoining areas. The County of Maui and the Environmental Protection Agency have proposed siting a sewage treatment plant adjacent to the pond on a strip of sand dunes between the pond and the ocean. Effluent from the treatment plant is proposed to be injected under pressure into four deep wells to be drilled through the clay caprock below the pond. The Environmental Protection Agency held a public hearing in Maui the same afternoon and evening to receive testimony for inclusion in an environmental impact statement, including possible effects of the proposed project on the pond and its birdlife.

Kanaha Pond is the most important waterbird refuge in the State, a major nesting grounds of the endangered Hawaiian Stilt and Hawaiian Coot, and is registered by the U.S. Department of the Interior as a National Natural Landmark. The significance of Kanaha Pond as key habitat for the endemic Hawaiian Stilt is suggested by the count of nearly 300 birds on this day, which comprises from one-fourth to one-third of the total estimated population for Hawaii--and for the world.

Ten of the Black-crowned Night Herons observed were counted at the man-made stabilization pond near Kanaha that services the Kahului Airport, as were four of the coots and two of the shovelers.

We first sighted the unusual Common Tern at the stabilization pond on the opposite

embankment. We watched the tern for several minutes after it took to the air, circling, banking and diving to the surface of the water. A short time later we saw the Common Tern again flying along the shore of Kanaha Pond about twenty feet above the water. This tern was in nonbreeding plumage with an incomplete black cap extending from the eyes to the back of the head. The light gray mantle and wholly white underparts distinguished it from the Arctic Tern.

Our party made observations at several vantage points, and Eugene Kridler made counts of species identified, assisted by William Mull. The results were corrected for possible overlap and are recorded as follows: Black-crowned Night Heron 12, Pintail 76, Green-winged Teal 3 (1 male, 2 female), Shoveler 412, Lesser Scaup 12 (7 male, 5 female), Hawaiian Coot 74, Golden Plover 50, Ruddy Turnstone 2, Lesser Yellowlegs 1, Wandering Tattler 1, Sanderling 11, Hawaiian Stilt 297, and Common Tern 1.

Observation of Least Tern on Oahu, August 8, 1973

By Eugene Kridler

While participating in the joint Bureau-State annual endangered waterbird survey on August 8, 1973, I observed a small partially black-capped tern resting on a mudbar on the makai pond of the Nuupia Ponds located on the Kaneohe Marine Corps Air Station, Oahu. Close scrutiny with 7x35 power binoculars revealed it to be a Least Tern (Sterna albifrons). A few minutes later it was joined by another bird of the same species. The second bird was more deeply colored, and its black cap was more complete. As I approached to within about 50 feet, both birds flew toward me and passed about 15 feet overhead and then flew out of sight over Kailua Bay.

They were very small and flew with rapid wingbeats. The back and wings were soft gray, and the forward ends of the wings and the tips were much darker, almost blackish. The white tail was not deeply forked. The eyestripe and the back of the head were black. The bill was black and the underparts white.

Least Terns have been observed in Hawaii before. On July 13, 1966 I observed one at Kanaha Pond on Maui (ELEPAIO Vol. 27, No. 4, p. 32). William and Mae Mull reported seeing one bird of this species on August 30 and 31 and also September 1 and 3, 1969 at Walker Bay on the Waipio Peninsula on Oahu (ELEPAIO, Vol. 30, No. 4, p. 37).

Field Notes from Kojima: Plover

On 12 August 1973 I heard my first plover flying in from makai toward mauka at 725-A 8th Avenue, Honolulu. A wonderful feeling of gratitude to hear that plaintive call from high above. I prayed that Oahu is still suitable for the plover to spend the winter with us. My prayer was answered when I saw two handsome plovers, one still with enough black feathers left to conspicuously show the white band over forehead and down the sides of its neck. They were feeding at the Waikiki end of the Palm Circle, Fort Shafter at about 0645, 4 September 1973. What a peaceful way to start work! I must do everything possible to save and pass on this peace and beauty to the coming generation.

Please KOKUA:

For many years we have been encouraging members, especially the junior members, to send in field notes. The response is very poor. At this time, for our records and to help a graduate student in the Animal Science Department at the University of Hawaii we are asking for your immediate help. We need plover watchers to send in field notes. The following information is needed: 1. Date, time 2. Location 3. Weather condition 4. Number 5. Plumage 6. Behavior (feeding, fighting for territory, sitting, standing on one foot) 7. Also, any sightings of plover on roof tops and in trees, especially at night, or any information on roosting.

Please send in your notes to Kojima, 725-A 8th Avenue, Honolulu, Hawaii 96816. This is a standing request.

READERS NOTES:

Most important nesting information on the 'Apapane is reported by Charles van Riper, III in THE WILSON BULLETIN, Vol. 85, No. 2, June 1973, pages 238-240: The Nesting of the 'Apapane in Lava Caves on the Island of Hawaii

He says that although most authors said that 'Apapane nests high in the 'ohi'a or

suitable trees, he found nests not only in tree fern but also in lava tubes on both Mauna Loa and Hualalai.

He says, "The area was on the southwest slope of Mauna Loa at an elevation of approximately 5,300 feet. ...The nesting site presumably had been used by the same bird on four different nesting occasions. Each new nest was superimposed directly on top of the last, and an accumulated height of $5\frac{3}{4}$ inches had been reached."

On 9 August 1971 he found six deserted nests in five different lava tubes on Mt. Hualalai. On 12 February 1972 he found nest directly above the opening of a lava tube. The following is the description of the nest: "The nest was seven feet five inches from the ground, supported by a lava ledge overhanging the entrance to the tube. The back of the nest, built against the wall, was flat while the front sloped downward to the base. The nest measured 2 inches from top to bottom on the backside and 5.8 inches on the inclined front side. This declivity was due to an accumulation of three separate nests placed one on top of the other with each consecutive nest situated closer to the wall.

"The width across the top of the most recent nest varied from 3.5-4.8 inches; the rim of the nest, from 0.6-1.3 inches; the inside diameters of the nest cup were 1.5 inches on the narrow side and 2.8 inches from front to back. The nest cup had a depth of 1.5 inches.

"Both the body and lining of this nest were primarily composed of grasses. There were a few large 'ohi'a twigs around the base. Interwoven throughout the main part of the nest were fine dark rootlets, one strip of 'ohi'a bark, and a few pieces of moss. The bottom nest had a base composed of mosses."

The nest contained two eggs and contour feathers with crimson tips. Forty-five minutes after he climbed out of the lava tube, the 'Apapane returned to incubate the eggs.

On 19 February the 'Apapane was still incubating the eggs, but on 28 February he found both eggs broken and the nest deserted.

What a find! We hope he'll continue to report from his study area. Good luck!

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HONOLULU STAR-BULLETIN, 25 August 1973, page B-4: Marine Ecology Efforts Cited

The Kaneohe Marine Corps Air Station is flying a green ecology flag today. The Station received the Secretary of the Navy's 1973 Environmental Protection Award and the Commandant of the Marine Corps 1972 Conservation of Natural Resources Award in ceremonies yesterday. Competition was with other Marine bases under 5,000 acres in size.

The good deeds in ecology: Nuupia Ponds were preserved as a nesting area for the Hawaiian Stilt, an endangered species. More than 100 were sighted there last December by U.S. Fish and Wildlife Service officials.

The K-Bay Rod and Gun Club trapped 350 mongooses last year. The animals eat the eggs of the Stilt. The animals were given to the University of Hawaii for research.

Firebreaks were cleared around Ulupau Crater to prevent brush fires from devastating the only land accessible to a colony of Red-footed Boobies on Oahu.

The entire Marine station is a bird and game sanctuary. Hunting is prohibited and fishing controlled.

Open burning of solid wastes was discontinued in 1970 in favor of landfill operations. Firefighting training was reduced in frequency and cleaner fuels used when burning was done.

A wonderful news item with a Marine Corps photo of a stilt standing by its nest.

Congratulations and MAHALO NUI LOA to the Marines.

Excerpts from minutes of Hawaii Audubon Society general meeting, 21 May 1973. ...

van Riper Palila Research: Mr. Mull announced that Charles van Riper, III, currently studying the Palila and 'Amakihi on Mauna Kea, has resigned from the Board. Mr. van Riper has received financial support for his research from an anonymous donor through the Society.

Peacock Flats Field Trip Report: Mr. Mull reported that approximately 25 people attended the May 13th Field Trip to Peacock Flats. The... 'Apapane, 'Elepaio, and 'Amakihi were seen as expected. He added that Bush Warblers were...very vociferous. ...

Midway Trip: Dr. William Wingfield reported on a field trip which he, Wayne Gagne, Florence Hendrycy, and Mae Mull took to Midway for four days. They saw many kinds of seabirds and some chicks. W. Gagne added that the presence of ants and other introduced

insects appears to be detrimental to the native insects. Few native insects were found. Mae Mull noted that the group received excellent treatment from the Navy. ...She remarked that the Navy's attitude has changed from one of destruction of birds to thinking of the birds as a "prized possession." She added that the "immigrant" bird others saw in early May on Midway was a 8-12 years old Steller's Albatross.

Mudflats in Mokuleia: Mr. Alan Hart told of a substantial mudflat area he and Wayne Gagne had recently discovered in Mokuleia on a Sierra Club hike. They counted about 24 Stilts, many Black-crowned Night Herons, and Cattle Egrets in the area behind Dillingham Airfield.

Reef-Runway Suit: M. Mull reported that an appeal has been filed, and the National Audubon Society has joined in an amicus curiae capacity on the side of the plaintiffs. It is felt that a more complete examination of the alternatives mentioned in the Environmental Impact Statement is needed.

Draft E.I.S. on Wailuku Sewage System at Kanaha Pond, Maui: M. Mull reported that a draft Environmental Impact Statement on the Wailuku Sewage System was received by the Society. She noted that the alternatives have not yet been developed in any depth.

The Red Book--Threatened Wildlife of the U.S., 1973: This publication was reported as a disappointment. Many peripheral species are omitted, and it is in general poorly edited. The approach is apparently more generalized than in previous years.

Draft Regulation 6: It was announced that there will be a public hearing on June 30 on Regulation 6. The Society will testify at that hearing. Regulation 6, a part of Act 49, which includes protective measures for wild birds, is under repeal.

Mr. Gagne introduced the evening's speaker, Dr. Frank Radovsky, head of the Department of Entomology at Bishop Museum. Dr. Radovsky spoke on "Parasites and Diseases of Wild Birds in Hawaii." ...

18 June 1973 by J. Yoshida, Acting Recording Secretary ...

Waahila Ridge Field Trip Report: Dr. Fred Dunn reported that 12 people participated. The participants began at the Waahila Park area, and continued up the western ridge for about 2 miles to the junction with the Woodlawn trail. From there, they descended the Woodlawn trail to the head of Manoa Valley.

Twelve species of birds and a probable Oahu creeper were seen. The following birds were seen: 6 'apapane, 3-4 'elepaio, a good number of 'amakihi, a Japanese bush warbler, shama thrushes, 1-2 ricebirds, and other introduced birds. Dr. Dunn noted that above the parking area of Waahila Park, no barred doves, house sparrows, nor mynahs were seen. No leiostrix were heard or seen throughout the trip. House finches, however, were seen to the junction of the Woodlawn trail.

Mae Mull reported on the sighting of a probable Oahu creeper. Near the end of the Waahila Ridge trail, she saw a bird which was decidedly different from an 'amakihi. It had a straight bill, and two wing bars. It was feeding on lantana flowers. At that time, Mrs. Mull noted that the bird's feeding behavior was not typical of creepers, but it has a creeper-like appearance. However, earlier, William Mull had seen a bird exhibiting creeper-like behavior in the same vicinity. It was noted that the Oahu creeper is on the list of U.S. Endangered Birds.

William Mull reported that he found one predaceous caterpillar on the trip. It is the first predaceous caterpillar found south of Tantalus on the Koolau. Several species of lobelia, and native hibiscus in bloom were also seen. ...

New Book Chairman and Field Trip Chairman: The resignations and departures of Dr. William Wingfield and Charles van Riper, III were noted. ...

Hawaii's Birds, the Society's Publication--A Raise in Sale Price: President Mull reported that W.W. Distributors, the distributors of HAWAII'S BIRDS, had recently requested a raise in the price of the book to meet increased costs. After some discussion and negotiations with the company, an arrangement to raise the price of the book was reached. ...

...Hawaii All-Breed Cat Club Show: The Cat Club Show in November has as its theme: "Endangered Species in Hawaii." Michelle Richie, of the Cat Club, contacted President Mull about the Society's possible involvement in the show. Ms. Richie stated that members of the Cat Club feel that pets should be kept under restraint at all times, and that Club members disapprove of feral cats. President Mull reported that the Audubon

Society will be involved in presenting a display on endangered species at the Cat Show.

Rep. Anson Chong's Request for Reprints of Green Sea Turtle Paper: It was reported that the Audubon Society recently sent 20 reprints of the Archie Carr paper, "Great Reptiles, Great Enigmas," published in AUDUBON, to Rep. Anson Chong upon his request.

Nature Conservancy: President Mull reported that the Executive Board of the Society voted to support the activities of the Nature Conservancy for the purchase of native forest areas for preservation purposes. The Society will be assisting the Conservancy by providing them with graphic and written materials on Hawaiian native forests to be used in presentations on the Mainland.

Audubon Support Voted by Executive Board for:

1. Use of federal Pittman-Robertson Funds by the Division of Fish and Game for the restoration and protection of native wildlife and native habitats.
2. New hunting regulations that are based on the protection of habitat and ecosystems from wasteful damage by game animals. Regulation 23 (sheep on Mauna Kea) and Regulation 28 (pigs on Oahu) are being revised now.
3. Implementation of Act 49, Endangered Species Conservation Act, by the Division of Fish and Game.

Current Status of the Reef Runway Suit: Mae Mull reported that on June 11, the Ninth Court of Appeals granted a temporary injunction, pending court hearing in August, on the merits of the court suit. Thus, all construction must be temporarily halted. Recently, airline companies have come out openly against the Reef Runway. These companies are paying the major share of the runway costs and they feel alternative ways of alleviating noise, etc., should be investigated further. An editorial on this issue in this morning's ADVERTISER was identified as being particularly significant and timely.

Response to FRESH Report: The Society will be a co-plaintiff in the federal court suit to enjoin the military services in Hawaii to prepare Environmental Impact Statements with full disclosure of environmental effects from changes in land use. The Society's liaison in the suit will be Wayne Gagne.

Natural Area Reserves System Open Symposium: A symposium, open to the public, on "Natural Areas, Ecological Reserves, and Wilderness Areas in Hawaii, the U.S. and the Pacific Basin" will be held tomorrow, June 19, at the State Capitol. It is co-sponsored by the Hawaii Natural Area Reserves System Commission and the U.S. International Biological Program. Members were urged to attend....

Cape Kinau-Ahihi Bay, Maui: It was announced that this area has been approved as a Natural Area by the Division of Land and Natural Resources. It is a marine shoreline habitat.

Visit of U.S. Forest Service Investigation Team: William and Mae Mull met with the team on May 30, and discussed the Audubon position on forest management in Hawaii. ...

Hawaii Center for Environmental Education: It was announced that Julia Yoshida, Vice President for Education in the Society was appointed a Director on the Board of the Hawaii Center for Environmental Education.

van Riper Research: Charles van Riper, III has been the recipient of several research grants. Funding from two foundations and one private donor amount to nearly complete support of his monetary needs for field studies of the Palila on Mauna Kea. It was noted that the mamane-naio habitat of the Palila is threatened with destruction by sheep and goats. The bird is an endangered species.

Society's Support of Studies of Endemic Forest Birds on Mauna Loa: Paul Banko is financially supported by the Society for his studies on the biology of endemic forest birds on Mauna Loa. ...

Society's Support of State Department of Agriculture's Attempt to Control Exotic Birds: On June 11, the Board of Directors voted to support the Department of Agriculture's attempts to control the importation and local establishment of exotic birds. At that time, the Board appointed W. Gagne and Dr. Ziegler to draft a Resolution stating the Society's position. This Resolution was read to those present at the General Meeting by W. Gagne.

Dr. Ziegler added that continual community education is necessary, as the rationale for the control of specific exotic bird species must be explained if it is to be appreciated. He and Mr. Gagne noted that, on the Mainland, the elimination of destructive introduced birds, e.g., the bulbul in Florida and monk parakeet in

New Jersey and New York, is aggressive.

In response to discussion about minor changes in terminology, it was suggested that these alterations be done by Gagne and Ziegler. ...The members present unanimously approved the Resolution.

Speaker of the Evening: The speaker, Wayne Gagne,...is an entomologist at the Bishop Museum, and a field worker with extensive knowledge of biology and conservation in Hawaii. He presented highlights of a recent trip to Midway Island. Members of the "expedition" were Gagne, M. Mull, F. Hendrycy, and W. Wingfield. This presentation was artfully illustrated by slides taken by Mr. Gagne and W. Wingfield.

CORRIGENDUM

THE ELEPAIO, Vol. 34, No. 2, August 1973, page 14, Tropical Seals by G. Causey Whittow, third paragraph, lines 2 and 3, "Eugene Kridler and Dave T. Olsen of the U.S. Fish and Wildlife Service (now the National Marine Fisheries Service), Hawaii" should read: Eugene Kridler and Dave T. Olsen of the U.S. Fish and Wildlife Service, Hawaii.

The U.S. Fish and Wildlife Service formerly consisted of the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries. Several years ago, the Bureau of Commercial Fisheries was transferred from the U.S. Department of Interior to the U.S. Department of Commerce and assumed a new name, The National Marine Fisheries Service. The Fish and Wildlife Service remained in the Department of Interior. Eugene Kridler and Dave T. Olsen are still members of the Bureau of Sport Fisheries and Wildlife, Fish and Wildlife Service.

ALOHA to new members:

James St. Amant, Associate Fishery Biologist, Department of Fish and Game,
350 Golden Shore, Long Beach, California 90802

E. Robert Smythe, Hoku Ula Homestead, Kamuela, Hawaii 96743

HAWAII'S BIRDS, a field guide, is available for \$2.50 postpaid, Airmail 50¢ extra. Send in your orders to: Book Order Committee, Hawaii Audubon Society, PO Box 5032, Honolulu, Hawaii 96814.

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OCTOBER ACTIVITIES:

- 8 October - Board meeting at McCully-Moiliili Library, 6:45 p.m. Members welcome.
- 14 October - Field trip to study shore birds. Bring lunch, water, and if possible your car. Transportation cost (\$1.00) to be paid to the drivers. Meet at the State Library on Punchbowl Street at 8:00 a.m. Leader: Dr. Robert Shallenberger, telephone 261-3741.
- 15 October - General meeting at the Waikiki Aquarium Auditorium at 7:30 p.m. Speaker: Alan D. Hart
Topic: Birds of West Alaka'i Swamp (color slides)

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