'ELEPAIO

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OBSERVATIONS OF BIRDS IN THE MOLOKAI FOREST RESERVE, JULY 1975

by J. Michael Scott, David H. Woodside, and Tonnie L. C. Casey

Historically nine species of native forest birds occurred on Molokai (Bryan 1908); today only five native species are known to occur. They are 'Amakihi (*Loxops virens wilsoni*), Molokai Creeper or Kakawahie (*L. maculata flammea*), 'Apapane (*Himatione sanguinea*), 'I'iwi (*Vestiaria coccinea*), and Molokai Thrush or Oloma'o (*Phaeornis obscurus rutha*). There has been only one recent record of the thrush (Pekelo 1963b) and one of the 'I'iwi (Pratt 1974) since 1906 (Bryan 1908). We recorded three Oloma'o, two 'I'iwi and learned more about the occurrence and distribution of other forest birds during a five-day visit from 21-25 July, 1975. Our study area was the high forested area from Puu Kolekole cabin at 3800 feet elevation, north to Papaala Pali at about 4300 feet elevation, northwest to Pepeopae and east to Uapa. We made additional observations at 3800 to 4000 feet, approximately one mile east and west of Puu Kolekole cabin.

The weather in the daylight hours during our stay ranged from clear and sunny to moderate rains and winds up to 15 mph. Observations of birds were made during 68 ten-minute counts whenever weather permitted. During these ten-minute periods, all birds heard or seen were recorded. Additional observations of the rarer birds, 'Amakihi, Oloma'o, and 'I'iwi were made outside the ten-minute count periods.

We found eight species of birds in the study area. In order to facilitate comparisons of our data with those of future observers, we present our information in a variety of ways (Tables 1 and 2). We determined "abundance" based on the number of birds that an experienced observer might expect to hear or see in one day's birding under good conditions. We considered an abundant bird to be more than 100 birds recorded per day; very common, 50-100; common, 10-49; uncommon, 2-9; and rare, 0-1. We calculated the "relative abundance" of each species by dividing the number of each species observed during the ten-minute periods by the number of the most abundant species observed during these same periods. The "species frequency" is the number of periods during which a species was observed, divided by the number of counts during which it was found (Rottenberry and Wiens 1976); i.e. average number found, when they were found.

The area we visited was arbitrarily divided into high and low elevation study areas. The upper area extended from 4050 to 4500 feet. The overstory vegetation in this area was a closed canopy of 'ohi'a (*Metrosideros collina var. polymorpha*) 25-30 feet high. These trees had a large number of epiphytes. The understory was composed of 'olapa (*Cheirodendron gaudichaudii*), pilo (*Coprosma* sp.), and treeferns (*Cibotium* sp.). The lower elevation forest also had a closed canopy of 'ohi'a but far fewer epiphytes. The dominant understory vegetation was 'olapa and small treeferns with occasional patches of uluhe fern (*Dicranopteris* sp.) and pukiawe (*Styphelia tameiameia*). Neither area had a significant 'ohi'a bloom but there were more blossoms at lower elevations. Tables 1 and 2 contain specific information on the distribution and numbers of each of the species we observed.

SPECIES ACCOUNTS

Red-billed Leiothrix (*Leiothrix lutea*) - Common in the upper study area but uncommon in the lower (Tables 1 - 2).

Table 1. Birds recorded above 4050 feet in the Molokai Forest Reserve, Molokai, from 21-25 July 1975 during 43 ten-minute counts.

Species	Abundance	Total recorded	Relative abundance	Species frequency	Sepcies incidence
Red-billed Leiothrix	Common	17	.44	.29	1.42
Hawaiian Thrush	Rare	2	.05	.02	2.00
Japanese White-eye	Common	39	1.00	.43	2.17
'Amakihi	Rare	1	.03	.02	1.00
'Apapane	Common	39	1.00	.38	2.44
'I'iwi	Rare	1	.03	.02	1.00

Table 2. Birds recorded below 4050 feet during 25 ten-minute count periods.

Species	Abundance	Total recorded	Relative abundance	Species frequency	Species incidence
Spotted Dove	Rare	1	.01	.04	1.00
Red-billed Leiothrix	Uncommon	4	.05	.17	1.00
Japanese White-eye	Abundant	73	1.00	.91	3.47
'Apapane	Very common	47	.64	.87	2.35
'I'iwi	Rare	1	.01	.04	1.00
Spotted Munia	Rare	1	.01	.04	1.00

This species was heard singing on several occasions during our visit. The Red-billed Leiothrix was not reported by Pratt (1974), who covered much of the same area we did. However, Pekelo (1963b) considered it abundant at mid and high elevations throughout the island.

Spotted Dove (*Streptopelia chinensis*) - This bird was rare in our study area. It was observed once in the lower forest and once on a drier ridge with a pukiawe understory and open canopy. It is considered abundant at low and mid-elevations (Pekelo 1964).

Oloma'o - rare - There has been only one record (of two birds) of the Molokai Thrush in recent years (Pekelo 1963b). Pekelo observed them 300 feet above Puu Haha, one mile west of the area where we had two sightings. T. Casey saw two perched on the top of a dead snag at 4460 feet, one-half mile east of Puuo Wahaulu, and a single bird was seen in this same area the following day by J. M. Scott. We failed to hear or see any other thrush during our stay in this area.

Japanese White-eye (*Zosterops japonica*) - The most frequently observed bird in both study areas. It generally traveled in small groups of two to four as suggested by its incidence rates. We found it to be abundant in the lower study area and common in the upper; it was also more widespread (found in 91 vs 43 percent of counts) in the lower elevations. Pratt (1974) found the white-eye in all areas he studied and considered it to be the only exotic bird that successfully colonized the rain forest. Pekelo (1964) found this species abundant at all elevations.

'Amakihi - rare - We saw only two 'Amakihi and heard only one more, although Bryan (1908) described the 'Amakihi as the second most abundant bird on Molokai. Apparently it was scarce 30 years later when Munro (1960) reported that the only native bird he saw during his 1935 survey was the 'Apapane. Richardson (1949) found five to eight 'Amakihi in three days of observations on Mt. Olokui which is less than three miles from our study area. Pekelo (1963a) saw only seven 'Amakihi in two days in the higher forest of west and central Molokai, but described it as common but localized in 'ohi'a forest along the Hanalilolilo, Waikolo Plateau, Papaaala Pali and the east Molokai Forest Reserve at Kanupa (Pekelo 1964). Pratt (1974) found the 'Amakihi to be not uncommon behind the cliffs of Kolekole and north and east of the bogs.

'Apapane - common to very common - The most abundant of the four endemic species of birds we observed (Tables 1 and 2). It was widespread in the lower elevations but

occurred in equal numbers when observed (species incidence) in both study areas. The larger numbers observed at lower elevations were undoubtedly due to the greater 'ohi'a bloom at these elevations.

During observations from the cliff edge in the late afternoon overlooking Pelekunu Valley, we observed very few 'Apapane moving up the cliff face from lower elevations. Bryan (1908) indicated that large numbers of 'Apapane could be seen from the high cliffs of Molokai as they flew over the valleys.

'I'iwi - rare - There has been only one record of the 'I'iwi since 1906 (Bryan 1907, Munro 1960, Berger 1972, Pratt 1974). We recorded two individuals: an adult flew overhead at 4460 feet, (H. D. Pratt) and an immature bird was seen feeding on 'ohi'a blossoms at 4000 feet immediately above the Puukolekole Forestry Cabin (H. D. Pratt and J. M. Scott). Recent observers (Berger 1972) have considered the 'I'iwi to be nearly extinct on Molokai. Our observations and those of T. Pratt (1974) indicate that it still exists in very low numbers. Whether these birds represent a resident population or vagrant birds from nearby Maui is unknown.

Spotted Munia (*Lonchura punctulata*) - rare - We observed this species only in the lower study area. It has been considered to be abundant at low and mid-elevations (Pekelo 1964).

SUMMARY

Our five-day intensive survey of the birds of two areas of the Molokai Forest Reserve was successful. We saw eight species of birds, five of them native. Our observations as well as those of other recent observers on Molokai (Pekelo 1963a, 1963b, 1964, and Pratt 1974) suggest that a limited variety of native birds still exist in very low numbers. Future studies are planned to document more fully the distribution and abundance of birds in the native forest of Molokai, and their habitat preferences.

ACKNOWLEDGMENTS

We wish to thank Joe Medeiros, Hawaii Division of Fish and Game, and Wes Wong, Hawaii Division of Forestry, for providing logistic support and assisting in the census effort. Their knowledge of the Molokai Forest made our visit far more productive than it would have been without their support and guidance. Douglas H. Pratt accompanied us during the survey and contributed appreciated observations.

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VOLUNTEERS NEEDED TO HELP THE SOCIETY

Several volunteers are needed to help with various aspects of the Society's work. If you have some spare time to devote, please contact Bob Pyle (262-4046) or any board member. We need the following:

1. An indexer for the 'Elepaio, a monthly task of a couple of hours.
2. A liaison person with National Audubon (to transmit information on matters of concern to Hawaii).
3. An archivist to help maintain the Society's files at the Bishop Museum.
4. Mailers, staplers, folders, etc. to assist the committee in getting out the 'Elepaio one day a month.

OHIA TREES ARE DYING

An article in the Honolulu Star-Bulletin, 7 March 1977 by Harry Whitten

Ohia Lehua, the most common native teee in the Hawaiian mountains, is the pioneer tree on new lava flows. It is thus associated with life.

But there is another aspect to ohia. In ancient Hawaii the first man killed in battle was called the "lehua." In this fashion it was associated with death.

Ohia lehua is associated with death also in a mysterious epidemic that has resulted in trees dying on thousands of acres on the Big Island. So far scientists are stumped in their efforts to find the cause for the epidemic, termed the "ohia decline" or dieback.

The last indication of the problem's complexity was the publication last month of a report by a University of Hawaii graduate student, Shin-Chuan Hwang of the Department of Plant Pathology. *Phytophthora cinnamomi*, a fungus often found on ohia is often associated with other forest tree diseases. Hwang's study indicates it is not a primary cause of the ohia decline.

However, Dr. Charles Hodges, plant pathologist with the U. S. Forest Service's Institute of Pacific Islands Forestry, points out that it could be a contributing factor under certain circumstances.

Attention has also been given to a beetle, *Plagithmysus bilineatus*, associated with declining trees on the Big Island. Whether this insect has a relationship with ohia decline has not yet been determined.

Since serious study began in 1970, the ohia research has involved at least 20 scientists, working full or part-time, plus consultants. The last major aerial reconnaissance showed a few places on Maui, Molokai, Oahu, and Kauai where ohia trees had died recently.

But the Big Island is where the decline has been most severe. Aerial photos taken of a 197,000-acre study area in the Hilo, Upper Waiakea, Upper Ola'a, Ola'a, and Kilauea Forest Reserves and Hawai'i Volcanoes National Park show spread of the decline.

In 1954 only 300 acres of the forest had severe decline whereas 75,500 acres were classed as healthy. By 1972 85,000 acres had severe decline and only 32,500 acres were still classed as healthy.

"Virtual elimination of the ohia forest within the study area is possible within 15 to 25 years if the present rate of damage continues," according to a publication written in 1975 by Edwin Q. P. Petteys, Robert E. Burgan, and Robert E. Nelson of the Institute of Pacific Islands Forestry.

The same paper said that "Even if the epidemic stops, regeneration of the native forest is not a certainty ."

Dr. Dieter Mueller-Dombois with the University of Hawaii Botany Department explains there are two hypotheses. One is that there is a causal agent, such as a pathogen or an insect. The other is that the dieback is a recurring phenomenon; there is evidence it occurred in East Maui in the 19th century.

This succession hypothesis would view the death of ohia trees on the Big Island as a normal phenomenon in the rain forest ecosystem.

The scientists disagree about what may cause the ohia decline but they don't disagree on the need for more investigation and for its continued funding. Involved in the research is a cooperative program of the forestry institute, the University, and the Bishop Museum.

ALOHA!
C. FRED ZEILLEMAKER MIGRATES EAST

Our Kauai Island representative, C. Fred Zeillemaker left in late July for a new position with the Fish and Wildlife Service in western Nebraska. As many members know, Fred was the assistant refuge manager stationed at Kilauea Lighthouse and was in charge of the Hanalei National Wildlife Refuge. When Fred and his wife Melly came 3 years ago, they rapidly established a close rapport with the taro farmers who maintain the refuge's attractiveness for the endangered coots, stilt, and gallinules. Fred and Melly provided a warm and cheerful welcome at the lighthouse to many visiting naturalists as they showed off the site's spectacular view and abundant birds. Fred is an avid birder and contributed many observations to the pages of the 'Elepaio and to the Hawaii Regional Report in American Birds.

The Zeillemakers' enthusiasm and expertise will be much missed among their many friends, and in Hawaiian ornithology. Aloha 'oe, a hui hou kākou!

POAMOHO TRAIL FIELD TRIP REPORT

by Francis G. Howarth
(with the aid of notes from R. L. Pyle)

The 12 June 1977, Hawaii Audubon Society field trip went to Poamoho Trail, Koolau Mountains, Oahu. Prior permission was received from the military, and 15 birders were hiking on the access road by 8:30 A.M. and on the trail itself by 9:00 A.M. The weather was not ideal. The skies were mostly cloudy over the mountains and passing light rain squalls alternated with warm sunshine.

One Kolea (American Golden Plover) was seen in the pineapple fields along with the exotics, Common Myna and Black-headed Munia. On the access road Japanese Bush Warblers and Japanese White-eyes were abundant, and a few 'Apapane, Northern Cardinals, 2 Shamas, and a Spotted Dove were noted, mostly from their calls.

On the Poamoho Trail the Japanese White-eye was the most abundant bird, followed by the Japanese Bush Warbler. A heartening number of 'Apapane (20+) were seen and another 20 were heard. Five Oahu 'Amakihi were seen. Several 'Elepaio were heard, and some birders got good views of them. The quest of the day, the 'I'iwi, called right on cue, just as the group re-assembled at the appropriately called "'I'iwi spot" on the trail. Mike "fastest binoculars in Hawaii" Ord got a brief glimpse of the bird. 'I'iwi also were heard at two other spots on the trail and at the "'I'iwi spot" on the way back, for a total of four records (or one lonely bird following us). Also noted on the trail section were Spotted Doves (by call), Shama (by call), 15 Spotted Munia, and Northern Cardinals (several by call).

The group assembled for lunch on the wind and drizzle-soaked crest of the Koolau's near noon. The trail was muddy in spots, and most observers practiced fancy dance steps to stay dry (upright). A few, however, were noted spread-eagle on their backs on the trail. "All the better to see birds over-head," they said. People-watching by birds must have been equally good!

At one mud hole, I am sorry to report, some arrogant hiker had used the leaves of Lo'ulu, the rare endemic fan palm (*Pritchardia* sp.), in a vain attempt to stay dry. This species is being rapidly decimated by rats destroying the fruits. That one of the two accessible trees along this trail was sacrificed in Sir Walter Raleigh fashion was sickening. And now there is one.

On the way back Nancy and I came upon a clatter of angry chirping just ahead on the trail. We cautiously approached to 6-8 m before determining the source as two agitated Japanese Bush Warblers scolding us. They remained skillfully concealed, flitting quickly from twig to twig in the underbrush to stay out of sight, but when Nan moved beyond them, they could not hide from both of us and we got some long, excellent, close-up views, sometimes within 2 m. At the edge of the trail at this spot, I found a fresh but unoccupied bird's nest. It was formed mostly of 'Ie'ie leaves in a tightly woven ball ca. 15 cm in diam., and had apparently recently toppled down the embankment above the trail. The nest, presumably a Japanese Bush Warbler's, is in the Bishop Museum.

We were out to the cars by 4:00 P.M.

BIRD OBSERVATIONS NEEDED

As the migration season is upon us, we need birders to be on the alert for arriving birds. Observers should send reports of unusual birds to Dr. Robert L. Pyle (741 N. Kalaheo Ave., Kailua 96734, or telephone: 262-4046). Especially needed are observations from the neighbor islands. All observations will be edited by Dr. Pyle and included, when possible, in the 'Elepaio. They will also form the foundation of the Hawaii Regional Report in American Birds, edited by C. J. Ralph and Dr. Pyle.

Observations are needed not just on rare vagrant species which seldom reach the islands, but also on the changes in abundance of non-migratory residents, both native and exotic. To be most useful, such observations should be taken regularly over a given time period. For example, the value of such regular observations was shown by the Honolulu Christmas Bird Count which, this past year, documented the incredible rapid increase that had taken place in several species, including the Red-vented Bulbul and Java Sparrow. Other observations, more short term in nature, are extremely interesting and should also be reported.

ENGINEERS VS PELE
LET'S HAVE AN IMPACT STATEMENT

Excerpts from correspondence between H.A.S. Big Island representative, Mae E. Mull and Governor Ariyoshi.

March 9, 1977

Dear Governor Ariyoshi:

Based on the historical record, Volcano Observatory geologists predict the probability of a Mauna Loa eruption by the summer of 1978. Apparently it cannot be predicted in advance on which rift zone the flank eruption will take place, or the direction or magnitude of the expected flow.

Since Mauna Loa flows on the northeast rift have reached the outskirts of Hilo in historic times, you directed the State Department of Defense to prepare a contingency plan on the feasibility of protecting Hilo from a flow. Sketchy newspaper references indicate that major aspects of the plan are being developed and capability procedures of various lines of defense are being worked out.

However, there is no indication that the impact of the plan on environmental resources is being evaluated. To correct this oversight, the Society seeks your assistance. What is needed is a directive from the Governor to the agencies involved to conduct an environmental assessment of the proposed actions in compliance with the Environmental Impact Statement [EIS] Regulations of the Environmental Quality Commission.

Following the assessment, the lead agency would file a notice of determination with the Commission to either prepare an EIS or, if the findings warrant, file a Negative Declaration. Through this lawful procedure, other agencies and the interested public would be informed of the anticipated effects of the proposed actions and would have the opportunity for orderly participation and contribution to contingency planning.

It appears unlikely that an environmental assessment will be conducted unless you direct it to be done, because of the uncertainty surrounding the natural event and the varying responsibilities of the State, Federal, and County agencies involved...

A case at hand illustrates the need for an environmental evaluation of the contingency projects. Following the filing of a Conservation District Use Application [CDUA] of August 9, 1976, the Board of Land and Natural Resources issued a permit on August 27 to the applicants, the State Department of Defense and the U. S. Army Corps of Engineers, for construction of experimental lava barriers in the Upper Waiakea Forest Reserve.

Apparently based on the "emergency" nature of the CDUA, the Department of Land and Natural Resources determined that the ripping and bulldozing tests constituted an "exempt action" -- excluded from the EIS procedure. That determination was made on a CDUA that failed to give a description of the test sites or information on existing uses, vegetation or topography. Site locations were not pin-pointed on a map nor was a bulldozing time schedule provided. There was conflicting information on the size of the construction sites. To call the bulldozing of approximately 109 acres of undeveloped public land in the Conservation District an "exempt action" is ill-use of the State's environmental protection laws and EIS regulations. Destruction of emerging ecosystems on historic flows (Powerline Road) and of 'ohi'a forest communities (Tree Planting Road) on such a large acreage cannot rationally qualify for exemption as "basic data collection, research, experimental activities, and resource evaluation activities."

By such a procedure, the public and other interested agencies, such as the Office of Environmental Quality Control, were not informed of the project. In our view, the CDUA permit was issued in unwarranted haste and without justification for bypassing EQC regulations. The "emergency" nature of the test project is questionable since six months have elapsed and the experimental barriers have not yet been constructed...

Concerning the second line of defense at mid-elevations, an August 1976 map by the State Department of the northeast Mauna Loa slopes indicates six transect lines for lava barriers and trenches that add up to about 13 miles in length. The elevation range of the barrier system appears to be from 5800 feet in the Ainahou Nene Sanctuary mauka of Powerline Road to about 2700 feet in the native rain forest makai of Tree Planting Road. An intensive biological survey should be made along and adjacent to the transects to identify any rare endemic plants and endangered birds that occur in those areas ...

While it is unknown whether efforts to manipulate Madame Pele can be successful, an environmental assessment undertaken at your direction will provide decision makers with more guidance than they have now.

We appreciate your help in the past and your thoughtful consideration of the present issue.

With Aloha,
/s/ Mae E. Mull

April 5, 1977

Dear Mrs. Mull:

Thank you for your letter of March 9, 1977, regarding the possible lava flow diversion of Mauna Loa. It brings out certain questions regarding environmental protection which I am glad to see raised. Be assured that we intend to provide every possible protection to that area.

The recent experimental work was done only to determine the possibility of and the difficulties which would be encountered if either *a'a* or *pahoehoe* lava were to be bulldozed to form lava flow barriers. The work was preceded by a competent environmental assessment. Before the project was undertaken, I was advised that the conclusion was reached that the impact of that experimental work on Mauna Loa's environment would be negligible, therefore, not requiring an environmental impact statement.

As the information gained from the experiment is collated, the contingency plan to protect Hilo from volcanic lava will develop. As that plan takes shape, its environmental effects will be assessed in accordance with Chapter 343, Hawaii Revised Statutes. Following that, and other planning procedures, the contingency plan will be completed.

We are pleased with the help we have received from the U. S. Army Corps of Engineers in conducting the assessment and doing the experimental work. Their work on this project reflects good environmental conscience. I am confident that this spirit of cooperation will continue.

Efforts to avert a possible catastrophe in the event a lava flow should threaten Hilo must, necessarily, be flexible so that any of several alternatives could be used. The environmental impact of these alternatives will be assessed, to the extent that the alternatives can be reasonably defined.

I am grateful to you for providing me with your views, the facts you have assembled, and your demonstrated concern for Hawaii's environment. Our system of checks and balances in government encourages the assumption of this kind of responsibility by private citizens. You deserve praise for discharging such responsibilities in a professional, credible manner.

With warm personal regards, I remain,

Yours very truly,
/s/ George R. Ariyoshi

PROGRESS FOR THE NENE ON MAUI

As reported by Roy Nickerson in the Christian Science Monitor (8 June 1977), there was reason to fear that Nene reproduction in the 1976-77 breeding season was poor. Each year since 1972, scientists in Haleakala National Park have kept three female Nene and their clutches of eggs in an enclosure near park headquarters. Each year at least some of the eggs have hatched, usually right around Christmas. This past winter, the three clutches of five eggs had not hatched by February, long after the 31- to 34-day incubation period was up. When Park Superintendent Hugo Huntzinger had the eggs candled, 7 of the 15 proved to have started developing but for some reason died. Two of the geese laid second clutches, which also failed to hatch. Trying to explain this failure, Mr. Huntzinger hypothesized that the eggs need moisture from the ground, but this past winter never delivered the storms that normally provide that moisture.

No one knows yet whether this hypothesis is true, but field observations show that the Nene breeding in the wild in Haleakala fared much better than those at park headquarters. Edwin Andrade of the State Division of Fish and Game found five Nene nests in the wild this year, and at least one egg hatched in each. Two of the pairs were seen later with fairly well advanced goslings. Nest records are too few to compare this breeding success to that of other years. However, Andrade told the 'Elepaio that he has good evidence the wild population is increasing on its own. Geese that hatched in the wild can be distinguished from those released into the wild because they lack colored leg bands. This last winter Andrade saw a flock of 43 geese, of which 23 (over one-half) were unbanded.

- C. P. Ralph

RULES REGULATING ENDANGERED PLANTS RELEASED

When the Smithsonian Institution composed a list of plant species rare enough to be considered for possible inclusion in the U.S. Fish and Wildlife official list of endangered species, approximately one-half of the species were from Hawaii. In the latest version of this list, published in the Federal Register on 16 June 1976, 894 of the 1782 plant species are Hawaiian. One of these species, the Hawaiian Vetch *(Vicia menzesii)*, will soon be the first of these to be given official endangered status by the F&WS. Hawaii will obviously be deeply concerned with the rules recently adopted by the F&WS for regulating endangered and threatened species.

The current rulemaking was proposed June 7, 1976, and takes into account the many pertinent comments received since then as well as those made during the course of four public hearings held last summer on the proposed regulations and two proposed plant listings.

Adoption of these regulations now clears the way for the U. S. Fish and Wildlife Service to list certain plant species as endangered or threatened.

The regulations, published in the June 24, 1977, Federal Register, are somewhat different from those which apply to listed animals and place restrictions on their interstate and foreign commerce, importation, and exportation. The prohibitions also apply to plant seeds, roots, and parts.

"These regulations recognize the important contribution made by hobbyists, commercial growers, botanical gardens, scientists, and others who propagate or deal with endangered plants," Keith Schreiner, Associate Director of the USF&WS said. "They are encouraged to continue and expand their activities, providing they do not endanger the survival of any species in the wild. We have adpoted a somewhat flexible permit system with a minimum of red tape so as not to impede legitimate activities".

Since plants and animals are so different, regulations for the two groups are different. These regulations impose no restriction on the "taking" of plants since that prohibition under the Act applies only to animals. Also, as with animals, there is no restriction on the intrastate sale of plants. However, some local and State governments as well as Federal agencies may have such prohibitions on lands they administer. In addition, no Federal agency can jeopardize such a species or destroy habitat critical to its survival.

Commercial propagators, amateur hobbyists, scientists, and others who cultivate or deal with endangered and threatened plants will have an easier time obtaining permits for restricted activities than they would for wildlife. However, activities involving listed plants taken from the wild will be strictly regulated, Schreiner said.

Application requirements for permits for restricted activites with herbarium specimens or plants obtained from seeds and cultivation are simpler than for those obtained from the wild.

Permits can be issued for a single activity or a series of activities over an extended period of time.

ALOHA TO NEW MEMBERS

We welcome into the Hawaiian Audubon Society the following people: Mrs. Arthur S. Allen, Los Angeles; Ms. Dawn Breese, Hawaii National Park; Ms. Janet Grosseto, Kailua; Mr. John Hegele, Honolulu; Ms. Darlene J. Leonhardt, Honolulu; Ms. Marlee Penner, Waimanalo; Mr. Ralph Penner, Waimanalo; Ms. Tracy Penner, Waimanalo (Junior member); Mr. Daniel E. Snider, Kaneohoe.

MARIANAS MALLARD GIVEN ENDANGERED STATUS

Our own Hawaiian relative of the Mallard (*Anas platyrhynchos*) is the Hawaiian Duck or Koloa (*A. wyvilliana*), which has been on the endangered species list for some time. In July, a South Pacific relative, the Marianas Mallard (*A. oustaleti*), which lives in Guam, Rota, Saipan, and Tinian, was also declared endangered. This duck looks much like the Koloa. Its population is being hurt by continuing, extensive drainage of wetlands.

MEMORIES OF 'BIRD LADY'

Many Hawaiians can thank Mrs. Anne Powlison for introducing them to the world of birds. She was active in Hui Manu and for many years a Hawaii Audubon member. Because of her proselytizing of birdlore, she was affectionately named "Bird Lady". We would like to take this opportunity to celebrate her fruitful life, which ended recently after 88 full years.

GLEANINGS FROM THE TECHNICAL LITERATURE

DAM BUILDING AND FOSTER PARENTS IN LAYSAN ALBATROSS

Laysan Albatross Breeding Behavior,
by Eugene A. Lefebvre, The Auk
94:270-4, April 1977.

The author studied on Midway Island the adaptive value of the species' "post relief tossing" behavior that occurs after an incoming bird has persuaded its incubating mate to reluctantly relinquish the nest. The relieved bird tosses material back towards the nest, creating (with the help of the bird now on the nest) a "dam" around the nest. This probably serves to protect the young from flood-induced mortality when rain falls during the nesting season.

The author also describes a case of apparent foster parenthood when the parents of a chick about 35 days old disappeared. The chick continued to prosper for the next 33 days and completed its nesting stage with the help of at least six adults. The author observed the bird being fed at least daily (the usual rate for the species), and upon one occasion, six times in a day. This is a rather astounding observation since the adult bird feeding the chick does not benefit in an evolutionary sense...it is not perpetuating its own genes, but somebody else's, who either died or deserted its own chick!

HOW SEABIRDS SHARE THE SEA'S RESOURCES

The diets of *Sula dactylatra*, *Sula sula*, and *Fregata minor* on Christmas Island, Pacific Ocean

by R. W. Schriber and D. A. Hensley
Pacific Science 30(3):241-248
July 1976

The authors analyzed the regurgitated food of adult and young Blue-faced Boobies, Red-footed Boobies, and Great Frigatebirds. They found that although these species fish in much the same places, they are not competing for the same foods. In general, the larger species ate the larger fish and squid. This meant that in their diet the two species of boobies differed more from each other than from the frigatebird. Perhaps the boobies have diverged evolutionarily from each other due to more intense competition in the past.

C. P. and C. J. Ralph

CONTRIBUTIONS TO THE SOCIETY

Mr. and Mrs. Frank Midkiff made a generous contribution to the Society in loving rememberance of Mrs. Anne Taft Powlison who recently passed away. Mahalo nui loa for your kokua in memory of a wonderful person.

Donations were also received from Ms. Janet Grosseto, Kailua, and from Ms. Betty L. Schmidt, Tucson, Arizona. Mahalo!

PUBLICATIONS OF THE SOCIETY

HAWAII'S BIRDS by the Society (1975). This is the best field guide to our birds, and includes colored illustrations of all native and well-established exotic species.
(Postpaid, add 32¢ for airmail) $3.25

FIELD CHECK-LIST OF BIRDS OF HAWAII by R. L. Pyle (1976). A pocket-size field card listing the species recorded in Hawaii with space for notes of field trips.
(Postpaid). 25
(ten or more, 10¢ per copy)

GUIDE TO HAWAIIAN BIRDING by members of Society and edited by C. J. Ralph (1977). Where to go and some idea of what you are likely to see. For the islands of Hawaii, Maui, Molokai, Lanai, Oahu, and Kauai.
(Postpaid). 50

PRELIMINARY LIST OF THE BIRDS OF HAWAII by R. L. Pyle (1977). An authoritative compilation of all species naturally occurring in Hawaii as well as those introduced by man currently established as viable populations. Gives an excellent summary of each species' status.
(Postpaid). $1.00

POSTER: "We care about Hawaiian Wildlife Habitat". A joint effort of H.A.S. and other conservation groups, this colorful poster illustrates native waterbirds overlaid on a map of the island chain.
(Postpaid) 50

HAWAII AUDUBON SCHEDULE OF EVENTS

Sept. 11. Field trip to waterbird localities. As migrants begin to arrive, Dr. Robert Pyle (262-4046) will lead a trip to various areas, especially around Pearl Harbor to observe water and shore birds. Meet at the State Library on Punchbowl St., at 7 a.m. Bring binoculars and telescope (if available), lunch, water, and, if possible, your car. Transportation cost ($1) to be paid to drivers.

Sept. 12. Board meeting at Waikiki Aquarium Auditorium, 7 p.m. Members welcome.

Sept. 19. General membership meeting. "A Tour of Wetlands and Waterbirds of the Hawaiian Islands". Dr. Robert J. Shallenberger recently completed an inventory of all the wetlands of the State, except those on Niihau. He will show us slides and talk about many of the seldom-visited wetlands that the State still has. All are welcome to what promises to be a very interesting talk at the Waikiki Aquarium Auditorium at 7:30 p.m.

Oct. 9. Field trip to a forest locality, details to be given in the next 'Elepaio.

Oct. 10. Board meeting at Waikiki Aquarium Auditorium, 7 p.m. Members welcome.

IF NOT A MEMBER, PLEASE JOIN US.

Regular Member	$ 3.00
Junior Member (18 and under)	1.00
Life Member.	100.00
(Payable in $25 annual installments)	

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