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PROBLEMS FOR HAWAIIAN BIRD STUDENTS, 1976 By Andrew J. Berger Professor of Zoology, University of Hawaii

In the March 1967 issue of the 'ELEPAIO, I discussed the many gaps in our knowledge of the biology of Hawaiian birds. Much has been learned about several species since that time (Berger, 1972), a new species of endemic forest bird has been discovered on the island of Maui (Casey and Jacobi, 1974), and a new exotic species has been found nesting on the island of Hawaii (Berger, 1975a). Berger ('ELEPAIO, August 1975:14-19) has written about the increase in range since the 1960s of the Red-whiskered Bulbul (<u>Pycnonotus jocosus</u>), the Red-vented Bulbul (<u>Pycnonotus cafer</u>), and the Java Sparrow (<u>Padda oryzivora</u>). Nevertheless, the opportunities for research on Hawaiian birds are still virtually unlimited, and the nonprofessional ornithologist should not be intimidated by the terms "research" and "scientific." Two basic ingredients for both are careful and accurate recording and unequivocal intellectual honesty.

Three groups of birds occur in Hawaii. <u>Endemic birds</u> are unique to the Hawaiian Islands; they are found nowhere else in the world. The geographical range of <u>indigenous</u> or <u>native birds</u> includes Hawaii and other parts of the Pacific region; these are the seabirds and the migrant species that spend their nonbreeding season on the Hawaiian Islands (a well known example is the Golden Plover (<u>Pluvialis dominica</u>). <u>Exotic birds</u> are foreign species that have been released intentionally or accidentally in Hawaii.

1. Exotic birds. The vast majority of all birds that one is likely to see in Honolulu and other lowland areas on all of the islands are introduced species. Some have been residents in Hawaii for more than a century: for example, the Common Myna (<u>Acridotheres</u> t. tristis), House Finch (<u>Carpodacus mexicanus frontalis</u>), Ricebird or Spotted Munia (<u>Lonchura punctulata</u>), and House Sparrow (<u>Passer domesticus</u>). By contrast, more than a dozen members of the weaverbird family (Ploceidae) have been reported as free-living birds, primarily in the Diamond Head area of Honolulu, since 1965 (see Appendix B in HAWAIIAN BIRDLIFE). The most recently reported escapee on Oahu is the Yellow-faced Grassquit (<u>Tiaris olivacea</u>) ('ELEPAIO, 35, December 1974:65-66).

It would be of special value to document the continuing spread in range of those species that have established breeding populations during the past 10 years, but also needed are studies of the distribution of each of the species that have become established on the main islands during the past century. The recent summary ('ELEPAIO, 36, August 1975:19-21) of the known distribution of the Japanese Bush Warbler (<u>Cettia diphone cantans</u>) on Oahu reveals how little is known about the range and habits of this exotic species that was liberated more than 40 years ago. The Japanese or Varied Tit (<u>Parus varius</u>) apparently has not been reliably reported on Oahu since 1968 ('ELEPAIO, 36, February 1976:103); does it still survive on Oahu or on Kauai? What is the status of the Red Munia (<u>Amandava</u> <u>amandava</u>) and of the Eastern Black-headed Munia (<u>Lonchura malacca atricapilla</u>) in the Pearl Harbor region of Oahu?; there are no published descriptions of the nests of these birds in Hawaii.

Even less has been written about the distribution of introduced birds on the other islands. Berger (1975b) summarized the scant information on the distribution of the Mockingbird (<u>Mimus polyglottos</u>) on Hawaii. Very little has been written about the distribution of the Cardinal (<u>Cardinalis cardinalis</u>), the Red-crested Cardinal (<u>Paroaria</u> <u>coronata</u>), or the Melodious Laughing-thrush (<u>Garrulax canorus</u>) on any of the neighbor

#### islands.

A detailed study of the total distribution of one or more species on any of the islands would be of far greater value than lists of the birds seen on field trips to frequently visited areas. Such reports typically provide no worthwhile information on the species listed, and they waste expensive publication pages.

We know even less about the breeding biology of most of the introduced species. These species offer interesting subjects for study, in part, because little is known of the nesting activities in their native habitat in Asia, Africa, or South America. For such North American species as the Mockingbird, House Finch, House Sparrow, and Cardinal, studies of their behavior and nesting cycles would make possible comparisons with the cycles in North America in order to learn if any changes have occurred in the Hawaiian populations. Johnston and Selander (1964) and Selander and Johnston (1967) found that Hawaiian House Sparrows differed in color and in bill length from sparrows in North America or Europe. It is possible that Hawaiian populations of other species differ in morphological, behavioral, or reproductive features. In much of its North American range, for example, the Mockingbird is noted for being an excellent mimic of the calls and songs of other birds; I have never noticed this behavior in Hawaii. Guest (1973a) observed a Japanese White-eye (Zosterops j. japonica) sing the territorial song of the Cardinal; she wrote: "Had I not been watching the White-eye, I would surely have mistaken it for a Cardinal."

The extreme variation in color of male House Finches in Hawaii was noted as early as 1902. Hirai (1975) summarized information on this color variation on the different islands and discussed the nesting behavior of this species on the Manoa campus of the University of Hawaii. van Riper (1974) described an unusually large nest of the House Finch that he found on Mauna Kea. The point here is that the breeding biology of only three introduced species has been studied, and all were two-year studies conducted primarily on the Manoa campus of the University of Hawaii: Common Indian Myna (Eddinger, 1967), Japanese Whiteeye (Guest, 1973b), and House Finch (Hirai, 1974). Similar studies are needed not only in different habitats on Oahu but also on each of the neighbor islands.

Many of the introduced birds live in residential areas, so that significant information can be obtained in one's own yard. Standard textbooks (e.g., Berger, 1971; Van Tyne and Berger, 1976) discuss courtship, nest building, egg laying, and care of the young. The following questions suggest some of the basic aspects of the life history of a bird.

1. Do the birds defend a territory? If so, do they defend it throughout the year or only during the nesting season?

2. Do both the male and the female build the nest? If not, which sex constructs the nest? Where is the nest built? Of what materials?

3. What is the color of the eggs? What is the average number of eggs in a clutch? What are the extremes of clutch size in nests that contain a complete clutch? Does clutch size vary with the time of year?

4. Which sex incubates the eggs? The female? The male? or both?

5. What is the incubation rhythm? That is, how much time does the incubating bird spend on the nest and how much time off the nest during the incubation period? Does the male feed the female on the nest (i.e., courtship feeding)? If both sexes incubate, which sex spends the night on the nest?

6. What is the length of the incubation period? The incubation period is the time interval between the laying of the last egg in a clutch and the time that all of the eggs have hatched. Do all of the eggs hatch on the same day?

7. How soon after they hatch are the young birds fed? How often are they fed? By the male? By the female? Does the number of feedings per day change as the young grow older? Do the adults eat the fecal sacs voided by the young (in passerine birds) or do they carry them away?

8. How long (that is, for how many days) after hatching are the young brooded by the adults during the daytime? At night?

9. What is the length of the nestling period? A bird is a <u>nestling</u> from the time it breaks out of the egg until it leaves the nest; after that the young bird is called a <u>fledgling</u>. Do all of the young leave the nest at the same age? Can the young fly when they first leave the nest? Young Cardinals and Japanese White-eyes, for example, cannot maintain flight on the day they leave the nest. Such birds should be left on the ground or placed in a shrub or tree where the adults will feed them. The newly fledged birds do

try to hop and flutter up the branches of shrubs, but all too many people pick up the birds and try to hand raise them or give them to someone else to care for. If left to the care of their parents, the young fledglings develop the ability to fly within a day or two.

10. How long is the fledgling fed by its parents? At what age does the fledgling begin to pick up some of its own food? When is it completely independent of the adults?

11. Where do the recently fledged birds roost at night? Where do the adults roost (both during and after the breeding season)?

12. Does the species raise one brood of young per year or more than one brood? In order to learn the answer to this question, however, the adults must be color-marked so that the identity of each bird is known positively. Studies of banded birds have shown that some species change mates for a second brood (and this may happen if a mate dies) and that one pair of birds may leave the territory after raising a brood to be replaced by a new pair of birds. Hence, one cannot assume anything about the identity of a given bird unless that bird is marked in a distinctive way.

The questions posed above may be intimidating to anyone who does not have unlimited time for bird watching, but accurate information on any of the points covered would constitute a contribution to our knowledge of any introduced species in Hawaii.

An unexplored method of studying the nesting activities of a few species of introduced birds in Hawaii is by the use of bird houses. Bird houses have not been of much use in Hawaii in the past because so few of the introduced species are hole nesters. The House Sparrow, however, readily uses nest boxes on the Mainland and undoubtedly would do so in Hawaii. Most bird watchers have little interest in such common birds, but the sparrow is an interesting species about which almost nothing has been written on its nesting activities in Hawaii. By studying color-banded House Sparrow in Michigan, I learned that one pair raised three broods of young in a bird house during 1955 (Table 1).

Table 1:	Three Successful	Nests of a	Pair of Color-ba	anded House Sparro	ws - 1955
Nest	Date First	Number	No. of Eggs	No. of Young	Date Young
Number	Egg Laid	of Eggs	Hatched	Fledged	Fledged
1	May 5	6	6	5	June 4 and 5
2	June 14	6	6	4	July 14
_3	July 29	4	4	2	August 29

During 1956, a pair raised two broods of young in the same nest box; the young of the second brood left the nest box during the morning of the day that they were 17 days old. At 1:10 p.m. the same day, an unbanded male entered the nest box, and an unbanded pair had taken possession by the next mroning; the banded pair was not observed at the box again. The first egg of the unbanded female was laid only three days after the fledging of the young of the banded pair (Berger, 1957). In this case, I had nailed the nesting box to a garage that was located so that the box could be seen from a kitchen window some 10 feet away. The nesting box had a hinged top so that the contents of the nest could be checked easily. (Nest boxes also can be constructed with a hinged front or side.)

Although I know of no published information on the subject, it is my guess that three other species of introduced birds might adopt bird houses for nesting if they were properly built and suitably placed: Shama Thrush (<u>Copsychus malabaricus</u>), Java Sparrow, and Saffron Finch (<u>Sicalis flaveola</u>). Each of these species may nest in cavities, and it would be worth the experiment to see if they can be attracted to nest boxes. Nothing has been published on the breeding biology of the latter two species in Hawaii and very little is known about the nesting of any of these species in their native habitat.

I suspect that, in Kapiolani Park, the Saffron Finch also may use the abandoned grass nests of House Sparrows for its nesting cycle. The Saffron Finch has been reported in other areas on Oahu: at Bellows Field Air Force Station during the Christmas count on December 17, 1972 ('ELEPAIO, 33, February 1973:85); "spreading toward Pearl Harbor" ('ELEPAIO, 35, June 1975:146); Diane Elliott saw two birds at Radford Terrace (near Salt Lake) on April 21, 1975, and three birds there on November 27. In such areas, experiments with nesting boxes could be rewarding.

Pin-tailed Whydahs (Vidua macroura) have been reported in the Kapiolani Park area since December 1969 ('ELEPAIO, 30, February 1970:73). This is a very interesting species of weaverbird because the females are parasitic, laying their eggs in the nests of other species of birds. In Africa, the eggs typically are laid in the nests of other weaverbirds, such as waxbills, firefinches, and mannikins. I suspect that, in Honolulu, they lay their eggs in the nests of House Sparrows and Saffron Finches, but there are other possibilities, and it would make an interesting project to learn what species the whydahs parasitize in Hawaii.

2. <u>Native birds</u>. Most Hawaiian seabirds nest on the islands of the Hawaiian Islands National Wildlife Refuge or on such offshore islands as Moku Manu and Manana. All are bird refuges so that permission to land on the islands must be obtained either from the U.S. Fish and Wildlife Service or the State Division of Fish and Game. There are places on the main islands where seabirds can be studied, and only these are discussed here.

Newell's Shearwater (<u>Puffinus p. newelii</u>) is known to nest on nearly inaccessible ridges on Kauai (Sincock and Swedberg, 1969; Berger, 1972). The Harcourt's Storm Petrel (<u>Oceanodroma castro cryptoleucura</u>) is thought to nest only on Kauai, but the nest and egg has never been discovered. White-tailed Tropicbirds (<u>Phaethon lepturus dorotheae</u>) nest in the mountains of the main islands, but, so far as I know, there is no published description of any nest in Hawaii. Munro (1944:32) wrote that he had seen "eggs and newly hatched chicks in August," but he does not state where. Red-footed Boobies (<u>Sula s. rubripes</u>) have established nesting colonies on Oahu (Kaneche Marine Corps Air Station) and on Kauai (Kilauea lighthouse). Wedge-tailed Shearwaters (<u>Puffinus pacificus chlororhynchus</u>) also nest at the Kilauea lighthouse area, and this species attempts to nest in the Black Point region of Oahu. The latter attempts apparently are unsuccessful because dogs, cats, and mongooses prey on the eggs and the adult birds. So far as I know, however, no one has conducted a serious study of this small population. It seems likely that shearwaters and some of the terns also nest on the other neighbor islands, and a search for such population would be worthwhile.

For those who are interested in an easier kind of bird watching, one can design studies to learn more about the distribution, feeding, and flocking habits of the wintering shorebirds and ducks. Such studies to have much meaning, however, should include more than listing the number of each species seen on field trips.

For reasons explained in HAWAIIAN BIRDLIFE (page 70), the Black-crowned Nicht Heron (<u>Nycticorax n. hoactli</u>) is listed as an indigenous, rather than endemic, species, even though it is nonmigratory. The food habits, roosting behavior, and breeding biology of this native heron have never been studied.

3. Endemic birds. It is now generally known that the majority of endemic Hawaiian birds are classified as rare and endangered. Special permits (both State and Federal) are required for doing any kind of research other than that conducted by simple observation. Moreover, the really challenging problems involving forest birds are found in two very difficult areas to work: the Alaka'i Swamp on Kauai, and the rain forest on the northeast slope of Haleakala Crater, Maui. Nevertheless, many interesting problems remain to be solved about the biology of the nonendangered land birds. These species include the Pueo (Asio flammeus sandwichensis), Hawaii Thrush (Phaeornis o. obscurus), and the 'Elepaio (Chasiempis sandwichensis), which occurs on Kauai, Oahu, and Hawaii. There is one twoyear study of the breeding cycle of the Oahu 'Elepaio in Hanoa Valley (Frings, 1968), but similar studies should be repeated both on the Manoa Valley population as well as on other populations on Ochu (such as those in Hoanalua Valley, North Halawa Valley, and the Aiea Loop trail), on Kauai, and on Hawaii. Also of interest would be a thorough study of the total distribution of the 'Elepaio on Oahu and on Hawaii; such studies might deal with the kinds of habitat occupied by the birds, altitudinal limits, and the other species of birds that occupy the same habitat.

Very little has been published on the ecology, food habits, behavior, or breeding biology of three endemic waterbirds: Hawaiian Gallinule (<u>Gallinula chloropus sandvicensis</u>), Hawaiian Coot (<u>Fulica americana alai</u>), and Hawaiian Black-necked Stilt (<u>Himantopus h.</u> <u>knudseni</u>). Two short papers were published more than 20 years ago (Schwartz and Schwartz, 1951, 1952); Allen and Lum (1972) discussed the seasonal and daily distribution of stilts at Paiko Lagoon.

Again, a study of these species would provide information essential to an understanding of the limiting factors that are detrimental to the populations of each species. These limiting factors may well differ from island to island so that multiple studies would complement each other. The absence of the mongoose from Kauai and its presence on most of the other islands raises the question of its effect on ground-nesting and shrub-nesting birds that can be clarified only by careful studies. There are no published papers on the

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effects of pesticide and herbicide residues on any Hawaiian bird.

There seems little doubt that safe breeding grounds are essential to the welfare of the Hawaiian Stilt. By "safe breeding grounds" we mean nesting habitat that is secure from predation on eggs, flightless young, and adults by dogs, cats, or mongooses. Audubon Society members on Oahu could perform an important service by studying <u>systematically</u> two areas that have been designated as stilt sanctuaries: that is, a section of West Loch Pearl Harbor and Paiko Lagoon.

The Hawaii Audubon Society took a strong position opposing the construction of the reef runway (see, for example, 'ELEPAIO, 34, September 1973:32-33; 'ELEPAIO, 34, October 1973:44). The suit to halt construction of the runway facility was lost ('ELEPAIO, 35, July 1974:7), but the reef runway plans specified that replacement habitat for the stilt be constructed in the Pearl Harbor area; details are given in the July 1974 issue of the 'ELEPAIO (pages 7-8). Not until the December 1975 issue of the 'ELEPAIO (page 69), however, do we find that, during a field trip, "interest expressed by most of the group prompted a side trip to West Loch to inspect the area bought to replace shore bird habitat destroyed by the construction of the reef runway.

"After negotiating a six-foot high chain-link fence, we found ourselves in a series of islands separated by nearly dry water courses. A thorough head-scratching on the suitability of the area for shore birds did nothing more than raise a little dandruff and a lot of ire."

When one reads the issues of the 'ELEPAIO for the past five years, one is impressed by the large number of detailed, highly critical "position papers," "testimonies," and "comments" on many legislative bills and management plans. One also is impressed because there are no papers in the journal written by those same spokesmen for the Society that present the results of any studies designed to answer any of the questions raised in their critiques, or which advance our knowledge of Hawaiian birds.

In view of the Society's strong moral and legal opposition to the reef runway, why do the officers of the Society not organize and conduct a continuing study to monitor the effectiveness of the replacement habitat for the stilt in the Pearl Harbor area? Does the replacement habitat actually meet the specifications as designed?

Similarly, there are repeated (unwarranted) references in the 'ELEPAIO to the importance of Paiko Lagoon to the welfare of the stilt (e.g., Tseu, 1975; but see William P. Hull's comments in 'ELEPAIO, 31, March 1971:85-86), although it is generally known that there has been a drastic reduction during the past 10 years in the number of stilt that use the lagoon. For example, 47 stilts were seen in the lagoon during the annual Christmas count on December 26, 1966 ('ELEPAIO, 27, February 1967:70-71). By contrast, William Prange ('LEPAIO, 34, February 1974:91) wrote about the census on December 16, 1973: "Of particular concern was the dramatic decline in Hawaiian Stilt in Paiko Lagoon. Only two were sighted, by far the lowest count in memory. ... This is the first Christmas count since the State of Hawaii attempted to improve the mudflat habitat by dredging and bulldozing." Erika Wilson wrote as follows about the count on December 22, 1974 ('ELEPAIO, 35, February 1975:88): "Two visits were made to Paiko Lagoon, one in the late morning, and the other in the late afternoon when the tide was out. In general, the counts were higher in the evening when the mudflats were exposed, but on neither occasion did we see any Hawaiian Stilt in this new bird refuge." To be sure, the stilts still use Paiko Lagoon, but here is an opportunity for the Society to organize and conduct studies to determine the importance of this habitat for the stilt, to evaluate the changes made by the State in its efforts "to improve" the habitat, and to evaluate the effectiveness of State Division of Fish and Game Regulation 38, "Concerning the establishment, protection, and regulation of the Paiko Lagoon Wildlife Sanctuary, Kuliouou, Oahu." It is common knowledge that the mere passage of a law or the enactment of a regulation does not automatically create the results desired.

It is of historical interest to note that Harold T. Cantlin, (1945) wrote as follows in 1945: "Some time ago an interesting project was suggested for the members of our society--one in which all can take a very important part. The objective of the project is to establish a detailed picture of the distribution of all the birds found in the Honolulu area. Interested members will be asked to send in frequent reports on the varieties and numbers of birds seen throughout the city. These reports will then be entered on maps thus showing the different localities where the birds were seen. Miss Hazel Peppin has consented to accept the reports and once a month will enter them on maps which have been especially prepared. Once a year it is hoped to issue a supplement of the 'ELEPAIO which will contain the results of the project. ...

"Special attention must be paid to birds we may consider too common, such as the mynah, barred doye, etc. There may be a tendency to overlook their great numbers in the residential areas/all observers are urged to get a close estimate of them.

"If this work is successful it will be of great interest to bird students in years to come, in comparing the increase or decrease of certain species. Movements of certain groups of birds may also be noted as they invade new territories or abandon old ones."

How unfortunate that the members did not send their reports to Miss Peppin; I know of no published results of this admirable project. Very little is known about the Orangebreasted (Leclancher's) Bunting (<u>Passerina leclancherii</u>), which is known in the petstore trade as the Butterfly Bunting, the Mexican Rainbow Bunting, and Leclancher's Nonpariel Bunting. Bryan (1958:24) commented simply that it was "introduced to Oahu 1941, 1947; breeding in Manoa, 1950." According to 'ELEPAIO (13, October 1952:25), 107 pairs were released on Oahu between September 1941 and February 1950; "some have been released at Olinda, on Maui, also." Although this bunting was reported "as breeding in Manoa," no details were given ('ELEPAIO, 11, November 1950:30), and nothing seems to have been written about the fate of these birds thereafter.

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### BIRDING IN NEW ZEALAND Trip to Otago Peninsula By Walter R. Donaghho

Feb. 25, 1971: A lovely morning this morning, although misty conditions were forecast, as the front was still over South Island.

Mrs. Reed picked me up shortly after 8:30, and we descended the hill into town. We were going out to Taiaroa Head to see the small colony of Royal Albatross, for which the Wildlife Department in Wellington had kindly issued me a permit.

We crossed the isthmus and wound up into the hills at the bottom of the Otago Peninsula, passing through the eastern residential areas of Dunedin. Presently, we left the city behind and were climbing higher up a long hillside that sloped down to the Otago Harbor below. Hists covered the wooded peaks beyond, and I was again struck by the beauty of the mountain-fringed sound, with the squares of brilliant green sheep- and cow-paddocks, bordered with brush or evergreens. Strongly like Scotland. (I have since been to Scotland, and do not change my mind!)

Soon we crossed over the summit and dropped down the other side, and Mrs. Reed turned off on a gravel road running towards the sea. I could see a lovely bay below, with grassy headlands, but we turned to the right presently, and drove south. We soon parked on a summit, as she said we would have to back all the way uphill, and it would be better to walk.

The road became sticky dirt, and my shoes threatened to slip. Finches flew up from the roadside; a large flock of redpolls; several greenfinches; goldfinches. Once a rich brown striped bird with a half inch lark-like bill flew up and perched on a fencepost and I asked what it was. She wasn't sure, but finally said it may be a brown creeper, but one away from its usual habitat, open brush. There was some of this in the bottom of the draw into which we were descending. And here were a pair of creepers.

We descended a steep sandy grade through lupines, crossed over a fence and followed a small watercress choked stream to a wide beach which curved from one bluff to a higher headland to the south. Blackbirds flew up as we went down the creek. Black-backed and black-billed gulls were on the beach, with a pair of black oystercatchers. Hrs. Reed said most of the small gulls we saw were black-bills, and that there were only a very few redbilled gulls down here. We walked through grass behind the beach, heading north, then dropped to the sands and proceeded under the steep slopes to a large patch of flax.

"They nest in the flax," she said. "Look for tracks."

We soon picked up penguin trails crossing the beach to the flax, some quite fresh. She went first into the flax, and it wasn't long before she said, "Here's one."

I scrambled up to her and looked down into a small ravine where she pointed and picked up a young penguin, yellow-eyed species, with its large comic bill and a big yellow eye. There were faint yellow feathers over the eyes, its crest. Soon I was busy snapping pictures.

Scrambling on up the slope, we came to another one, but it scrambled higher, and we lost it. I dropped back to take more shots of the first penguin, then up the grassy slope to take the whole habitat. I ran out of film and dropped down to where I left my stuff to change rolls. Hrs. Reed had returned to the beach, and soon said, "There's one coming out of the surf."

When the new roll was in, I went down to the beach, looked north, and saw it, an adult bird, one foot in height, halfway up the beach from the surf. Armed with the telephoto lens, I sneaked up to some boulders which hid me and enabled me to photograph the bird. Then I got behind another rock closer to the bird, which sat, preening itself. Through with pictures, we exposed ourselves. The penguin walked up a few feet, then became alarmed over our presence, turned, and made for the surf.

We climbed up into a larger patch of flax, where we saw a few more young birds and another adult, which I was able to photograph.

It was time to return to the car and head for Portobello, and the ranger's house. We returned to the main road, drove up to a road heading downhill from near the road to the Larnacks Castle. This brought us to the coast highway, and we were soon at Portobello and the home of Alan Wright.

After a short visit with his wife, we headed for the Head. The road climbed from Otakau, the last village, to the top of the Pass between the Head and the next hill inland. To the right were seacliffs on which spotted shags nested. There weren't many in the colonies; we only saw six.

The fence surrounding the albatross colony was on the left, and ran upslope to the top, just to the left of the houses of the lighthouse colony. We entered the gate and followed a wide grassy path that ran around the brow of the grassy hill and into a shallow basin. We paused and looked down onto a steep ridge dropping into the bay, where several bronze-colored large shags sat on their nest hollows on the bare brown slope. These were the dark phase of the Stewart Island shag. Later, I saw a dark-colored shag fly into this point with white wing patches, like those of ducks. Alan said it was the light phase, and later, I saw it among the dark birds. It looked like a different bird with its clean white breast and underparts.

We went on, and Alan stopped once and pointed to a large gooney nest with a white egg on it. "An artificial egg," he said. "Placed in the nest to try to encourage albatross to nest there." The nest was twice the size of the Laysan albatross nest.

We rounded a ridge and brought up suddenly to a magnificant white headed and fronted royal albotross, sitting on a small white, down-covered chick. We gasped at the suddenness of seeing the beauty of this magnificent bird with its large pink bill. Like the Laysan albotross, it held fast to its chick as we went right up to it, nodding its head and clapping its bill with its concern. The chick reached out and clattered its bill in true gooney style!

We were busy for a few moments with photography, then went on. The path wound on up the ridge, which overlooked a bay bordered by steep cliffs on which black-backed gulls were perched. The lighthouse and buildings were on top of the ridge on the opposite side. Soon, we approached another albatross on its chick, a female. A third was farther on, a little higher. Back in the shallow "valley" was the last one, a male. It was noticeably larger, and had black flecks above the black portion of the wing.

Overlooking the valley was the observation hut of the Wildlife Department, overlooking the last bird. Alan said usually at least one bird nested within sight of the hut. By the hut was an old concrete gun emplacement, which was planned to be used for an observation post for visitors. Until then, permits were strictly limited to scientists, mostly V.I.P.s. I consider myself very fortunate to have been able to walk among the birds!

When the visitor's observation post is ready, the Department still intends to limit their visits to bi-yearly visits; no visits to be allowed on alternate years.

We walked to the edge of the cliffs on the seaward side of the pass, and up into a tussock grass field where we saw burrows in the sandy soil, those of the muttonbird, or sooty shearwater. However, they were at least ten feet deep, so it was hopeless to try to find any bird.

We took the coast road back to town, stopping once to see the "grebe" I swore I saw floating on the bay just offshore. It dived like one too. Mrs. Reed was skeptical, as New Zealand grebes just didn't inhabit salt water, as a rule. When we got out for a good look, it "dissolved" into a spotted shag.

!/e passed a small shack next to the water with a flock of black-billed gulls and pied oystercatchers sitting on the roof. Usual for the gulls, but not for oystercatchers!

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HONOLULU STAR-BULLETIN, 1 July 1976, page A-12: Rescused Dolphin Doing Vell

Apart from adjusting to captivity and battling a minor infection, the newest addition to Sea Life Park is doing well, Ed Shallenberger, park vice president and operations director, said yesterday.

SeaFlite, a rough-toothed dolphin, was rescued Sunday and taken to thepark by hydrofoil when a group of the uncommon deep-water dolphins beached themselves at Maalaea, Maui, apparently to die. Of the 17 dolphins that reached the shore Sunday and Monday, eight died.

It is believed that some of the dolphins headed inland because they were suffering from an inner ear infection. It is not unusual for dolphins to strend themselves to die when ill but this was the first documented case for the rough-toothed species.

SeaFlite, named for his rescue vessel, is doing "far better than is to be expected" for an animal new to captivity, Shallenberger said. "He's eating, which is a good sign. But his problem is to adjust to captivity. This is a difficult time in his life because of the psychological adjustment."

But SeaFlite, one of two rough-toothed dolphins in captivity, has a new friend which may help him. The three-ter-old youngster is penned next to a park veteran, so at least "he has someone to talk to," Shallenberger said. "You can't hear most of what they have to say because it's above our frequency. But it's pretty obvious they know each other are there." Shallenberger said. ...

HONOLULU STAR-BULLETIN, 15 July 1976, page D-16: Florida Dolphin Beaching Told

... By the dozens, the spinner dolphins have been beaching themselves here, near Sarasota on the Gulf Coast, since Tuesday. Scientists say they don't know why, but it may be because some of the animals have an epidemic disease. Such beachings are rare among spinner dolphins. By late yesterday at least 22 had died on the beach. ...

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Letter from William P. (Pat) Dunbar, USNS Navasota, 23 June 1976

The above ship operates out of Subic Bay, Philippines. While at sea during early spring and migration time we have occasional visitors; the enclosed pictures are of one, which I'm unable to identify. I have no reference on birds of the Philippines or S.E.Asia. Possibly someone in Hawaii Audubon Society might know. ...

The first two pictures are of an alert bird that is ready to leave, if I get any closer, it did. I am always happy to see them go. (I have one reason which I'll mention later.) The second two pictures are taken about a month later, same species, and it stayed aboard.

My reason for speedy departure of such visitors--if they stay very long they starve to death. I was on a ship operating between Portugal and the Azores. We had many migrants stop, some briefly, others not so. I was continuously finding corpses that didn't seem to weigh more than a handful of fluff. There was one exception, a starling. The crew would throw bread and sometimes fruit to visiting birds. Starlings were the only ones to feed. Ships at sea are generally fairly insect free and, of course, seeds and fruits are practically non-existent, so there is no way to feed them. By the time one can catch them by hand they are too weak to survive. I believe that is what happened to the bird in Nos. 3\* and 4. When it first came aboard, it was alert ready to fly when anyone got close. It would leave, then return. Soon it wouldn't leave, just fly to another spot, and finally just flutter a few inches out of the way. If not disturbed it would stay motionless for long periods of time. Both birds were graceful flyers; the shape of their wings were slightly suggestive of those of a swift. Had a forked tail and a white patch at the base.

\*Notes on the back of No.3: 22 April 1976, unidentified bird, USNS Navasoto T-A0 106 Noon position-Lat 18'00"N, Long 124'24"E...At time of picture bird had been aboard several days. ...I think at this time it was close to starving, would only flutter a few inches when approached.

One day I walked out on the bridge and saw what I thought was a puff of black smoke, about a half mile away; it turned out to be a flock of ducks flying rapidly in the opposite direction to which we were going.

Ashore I have seen several beautiful birds. One in particular stands out. A bright yellow body with black or dark wings. Took movies of two or three of them heckling crows, trying to drive them away from the area. They were a bit larger than a myna and seemed to favor the tops of trees. There is a handsome kite that is fairly common around the harbor. Possibly as large as a seagull, with broad wings. In the sunlight it's a very reddish brown with a white head and body. It flys and glides back and forth, drops to the surface of the water to grasp something with its feet, then feeds on what it has picked up as it continues its flight. I have seen the black-eared kite in Japan behave in a similar fashion.

The pictures will be displayed at the general meeting.

Tentatively identified by David Woodside, Wildlife Biologist, State Fish and Game Division, as belonging to the family Pratincole (17 species).

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The Oahu Fish & Wildlife Advisory Committee is an advisory body to the Fish & Game Division. It is not a policy making body. On 23 September 1975 interested groups were given an opportunity to express their concern on fishing, hunting and conservation. Following is the Testimony on Conservation Matters Pertaining to Oahu to Chairman John K. Obata from President Mayne C. Gagne:

<u>Military Impact Areas</u>: There exists a hazard to native forest, watershed and wildlife from ground fires started in the ordinance impact areas of Schofield and Makua Valley. Hardly a year passes that there is not a fire which destroys more of this resource. Surely, it is within the capabilities of the huge military budget that adequate firebreaks be

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placed around these areas. In the absence of such protective measures, common sense should call a halt to firing during prolonged droughts. I hope that your committee will point out that the Department of Defense could find itself in violation of the Federal Endangered Species Act of 1973 should such activity continue.

Exotic Plant Control: Much concern has been voiced about the devastating impact of the introduced weed, Koster's curse (<u>Clidemia hirta</u>) on the native flora especially in the Koolau Mountains. We wish to also alert your committee as to the potentiality of several other introduced shrubs to become noxious weeds. These are Juniper berry (<u>Citharexylum caudatum</u>), Hen's eye (<u>Ardisia crisps</u>) and a Himalayan melastome (<u>Oxyspora paniculata</u>). We need improved biological control for Koster's curse and the inception of some control and/or eradication methods for the others, before the situation becomes almost hopeless. There needs to be research on the roles that exotic birds and pigs play in the spread of these weeds. But, all of this will be for naught if we don't exercise much stronger controls over those importing all manner of exotic ornamentals, from which these weeds seem to have their origin. Your committee needs to take a close look at the Federal Noxious Weed Act of 1974 to see how it might help to protect our natural resources from further transgressions.

<u>Carrying Capacity of Feral Manuals</u>: In drafting regulations for environmental impact statements, the State Environmental Quality Commission expressed that there was a need to determine the carrying capacities of the various kinds of introduced animals that are hunted so that the habitat would not be degraded. Then hunting seasons could be adjusted accordingly. Fish and Game is ignoring this job and seem to be operating on a "squeaky hinge gets the oil" approach. Instead we should be asking whether highly destructive animals such as feral goats can have any place in our fragile forests without continuing to degrade them.

<u>Conservation of Closed Watershed</u>: In Hawaii the only significant impact on pig populations is from the hunter; no natural enemies exist. The Honolulu Board of Water Supply seems to have ignored this when they declared such watershed off limits to hunting. Your committee needs to keep asking whether high, unharvested pig populations pose a greater threat to the watershed instead of allowing entry to hunters with watershed permits.

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Conservation and Hunting Policies from Dr. Sheila Conant, Assistant Professor, Department of General Science, University of Hawaii: As an ornighologist and concerned citizen I strongly urge the Division of Fish and Game to protect and enhance endangered waterbird habitat on Oahu as well as other islands. With the possible exception of the Hamane-Naio (<u>Sophora chrysophylla-Myoporum sandichense</u>) forests on Hauna Kea, wetlands are more imminently threatened than any other endangered bird habitat in Hawaii because of their great potential for economic development. Action should be taken now to effectively preserve and protect what remains of wetland habitat, and to take positive measures to enhance such habitat when possible. For example, a thorough study of Kawainui Harsh as an ecosystem should be conducted before any plans for the development of recreational facilities are made. Such developments in Kawainui, as well as elsewhere in the State of Hawaii, should be planned to give maximum protection of native endangered waterbirds and their habitat.

One of the most serious threats to the continued existence of native Hawaiian forest birds is habitat destruction and/or alteration. The Division of Fish and Game could be very effective in slowing both of these processes by stepping up hunting of feral ungulates, which are extremely harmful to native forests. For these reasons I urge the State Division of Fish and Game to open new forest areas to hunting on both State and, where possible, private land. I particularly urge that measures be taken to open the Kulani Project to pig hunting. I further recommend that feral ungulates be exterminated by hunting or, if necessary, other measures, from habitats essential to the continued existence of endangered Hawaiian plants and animals ("critical habitat"). First priority should be given to the elimination of sheep from the manane-naio forests on Mauna Kea because of their extremely poor condition and precarious future, and because this is now the only area in which the Palila (<u>Psittirostra bailleui</u>), an endangered Hawaiian honeycreeper, exists.

Ornithologists are aware that many other problems besides habitat destruction by game animals may contribute to the decline of Hawaiian forest bird populations. Rats and disease are two excellent examples. The Division of Fish and Game cannot realistically expect to eradicate rats or eliminate bird malaria and avian pox. However, the Division can protect forest birds by protecting and enhancing their habitat, and by adopting a policy which permits no new introduction of game animals, including both birds and big game, to the State or islands in the State. I would also like to urge that the Division step up its efforts in the area of public education with the intent of increasing appreciation of native plants and animals among the citizens of Hawaii and its many visitors.

Testimony: HB 2210, Hawaii's Endangered Species Act, to House Committee on Water, Land Use Development, and Hawaiian Homes from President Sheila Conant, 25 February 1976. ...We urge this committee to vote in favor of House Bill 2210, with the following revisions: (1) On page 3, line 21, the words "threatened species and" should be inserted after the word "of" at the end of this line. This revision is suggested to provide protection for those species which are not now considered "endangered," but whose existence is jeapardized at present. If these species are not given adequate protection, they could eventually become endangered or even extinct in the near future. (2) On page 3, line 22, the following phrase should be inserted, after a comma, and after the word "species:" "or result in the destruction or modification of habitat of such species which is determined by the department to be critical to their survival." This revision is suggested because the present law would then correspond even more closely than it does at present with the "Or result in the destruction or modification of habitat of such species which is determined by the department to be critical to their survival." This revision is suggested because the present law would then correspond even more closely than it does at present with the wording of the Endangered Species Act of 1973 (federal law). Furthermore, should the U.S. Endangered Species Act of 1975 be weakened by an amendment that does not specifically provide for the protection of habitat essential to the survival of endangered species, then Hawaii will have its own law to provide for this. The Department of Land and Natural Resources could make their own determination of "critical" habitat or follow the recommenda-tions of the "recovery teams" (under the auspices of the Endangered Species Office of the word "indigenous" should be inserted after the word "those." This revision is suggested so that native Hawaiian species will be given priority for protection over species con-sidered endangered elsewhere in the world. We are aware that officials of the Department of Land and Natural Resources have had the present bill (HB 2210-76) checked by federal officials to bring it into compliance with existing federal law. We feel that the minor changes we have suggested will only strengthen the present Hawaii law. These changes are patterned after wording in the U.S. Endangered Species Act of 1973 itself, and so we feel such revisions could not possibly conflict with federal regulations, and thus would not incur federal disapproval of the revised version of Hawaii's Endangered Species legislation. \*\*\*\*\*\*

Testimony: SB 1822 and SB 2437, Relating to Conservation Districts, to Chairman Francis A.

Testimony: SB 1822 and SB 2437, Relating to Conservation Districts, to Chairman Francis A. Wong, Senate Committee on Economic Development, from Francis G. Howarth, 2 March 1976. ...We support SB 2437 and recommend its passage. Of the 2 bills, SB 2437 and SB 1822, which propose to ammend chapter 183 governing management of State conservation lands, we find SB 2437 to be the more acceptable and it corrects many of the reservations we had on SB 1822. Specifically, we agree that utility companies, correctly, should go through the procedures in chapter 91 in order to use conservation lands for utility purposes. Also, SB 2437 amends section 205-2 to bring that section into conformity with chapter 183. We believe that amendment to be very beneficial. The lengthy amendment detailing enforcement powers to carry out this act seems reasonable. But we call your attention to SB 2912, which establishes a single enforcement division within DLRM under which all other conservation enforcement officials would come, including the enforcement branch defined in SB 2437. We do have reservations: (1) The provision on page 13, line 6 and following, allowing automatic approval for a permitted use application by a landowner if the board does not act on it or even notify anyone for at least 180 days, is in error. Such a provision could allow a secret pocket approval of land use changes within conservation zones. We concur that land owners must have adequate recourse if their application is not acted upon in a reasonable time, but we strongly recommend it not be automatic approval. (2) Certain of the permitted commercial activities (on page 5, lines 8 and 9), e.g. intensive agriculture and grazing, can substantially alter the character of the land and degrade it severely. In fact, the watershed reserves were originally established primarily to prevent overgrazing in these areas to conserve their watershed values. This reservation may be counterpoised by the guidelines and the requirement for annual review of permits stated elsewhere in th

the guidelines and the requirement for annual review of permits stated elsewhere in the bill. We commend the originators of this law for wading through the various proposals and bringing them into line with good conservation practices, and we urge its passage. ...

Letter: HB 2210-76 Relating to the Conservation, Management and Protection of Endangered or Threatened Species of Wildlife or Plants to Rep. Richard Kawakami, Chairman, and Members of the Committee on Water, Land Use Development and Hawaiian Homes from Mae E. Hull, 13 March 1976.

The Havaii Audubon Society gives its support to the amendments to the Hawaii Endangered Species Act that are proposed by the State administration in House Bill 2210 and in the corresponding Senate Bill 1823. The purpose of these amendments is to enable the State to qualify for a cooperative

agreement between Hawaii and the Department of the Interior under the National Endangered Species Act of 1973. The amendments do not commit the State to any cooperative agreement. The amended State Act would give Hawaii the option of entering, or of not entering, into negotiations with the Department of the Interior for a cooperative agreement that is

mutually satisfactory to both parties. The State loses none of its authority and relinquishes none of its jurisdiction in the amendments. The important point is that an amended State Act would give Hawaii the option

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for a cooperative agreement. It surely would be in the State's interest to have that choice. If the door is slammed on the amendments in House Bill 2210, then the State has no choice. To reject the amendments means to deny the State the opportunity to explore

choice. To reject the amendments means to teny the second sense to keep open the federal funding in concrete terms. Doesn't it make good economic sense and good conservation sense to keep open the description on federal matching funds under a cooperative agreement? alternative for discussions on federal matching funds under a cooperative agreement? While the funding formula is on the basis of two-thirds federal and one-third State, I understand that for some endangered species programs the State share could be the value of the State-owned land where the cooperative project takes place. In such cases no State funding would be needed.

Would be needed. Nine states have enacted qualifying endangered species acts and entered into coopera-tive agreements with the Department of the Interior. Because of Hawaii's exceptional need for recovery of its endangered fauna and flora through conservation management of key habitats, it can be expected that a substantial portion of the \$2 million available in federal matching funds could be assigned to projects in these islands. The State would have a strong voice in the location and type of projects under that program. With legislative approval of the amendments in HB 2210 and SB 1823, the door will be open for future negotiations on a State-federal cooperative agreement. \*\*\*\*\*\*

Comments and Recommendations on the Draft Rules and Regulations Governing Geothermal Exploration and the Mining and Leasing of Government-owned Geothermal Mineral Resources in the State of Hawaii to Hearings Master Daniel Lum, Board of Land and Natural Resources from Mae E. Mull, 6 May 1976.

... It is timely for the State to establish regulations for orderly exploration of geothernal resources and protection of the public interest in the leasing and mining of

geothermal resources and protection of the public interest in the results in the resources. In effect, all State lands would be considered available for geothermal mining leases where that resource exists with the exception of lands designated as natural area reserve. An additional exclusion should be given serious consideration. Should all lands within the coastal zone management area be unavailable for mining leases? Are there particularly sensitive shoreline areas that should be excluded permanently from exploration and mining? Under Rule 4 concerning the lease application (page 14), the lease is required to submit a description of the mining proposal, including "protection of ground water and other natural resources, and the environment." In effect, the lessee is allowed to determine how he will protect the environment. This is wholly inadequate. The regulation should spell out specific and detailed environmental standards for all

drilling and mining operations on both public and private lands. The General Terms under Rule 7 on Exploration and Mining Operations (pp. 19-23) are too vague and susceptible to varying interpretation as far as environmental safeguards are concerned.

The regulation should establish specific controls to minimize environmental pollution and degradation in these areas: Design construction and landscaping, waste water disposal, noise, drilling dust, generator siting and construction, noxious gases, steam jets. It would be valuable to examine the California model regulation governing geothermal

fuel production in the Geysers area of northern California.

The following HONOLULU STAR-BULLETIN articles on Seabird Sanctuary are by Helen Altonn: 12 November 1975, page E-7: Proposed Seabird Sanctuary Would Regulate Use of Islets, Rocks. A Hawaii State Seabird Sanctuary has been proposed to protect bird colonies and regulate activities of intruders on numerous islets and rocks off Island shores.

regulate activities of intruders on numerous islets and rocks off Island shores. Michio Takata, State Division of Fish and Game chief, said only four Islands now are designated bird sanctuaries and covered by State regulation: Moku Manu, Mokulua and Manana (Rabbit Island) off Oahu and Mokuhooniki off Molokai. "We are proposing to include other Islands, changing it to a marine bird sanctuary system," he said...."It involves more than the protection of seabirds," he added. He explained that the Small Islands constitute unencumbered State lands over which there is no control now and the sanctuary system is intended to bring them under the juris-diction of the Department of Land and Natural Resources. He said there is nothing now to prevent littering or overnight camping on the Islands and rocks and they bear considerable traffic. "People swim across. They go by surfboard and boat," he said. David H. Woodside, State wildlife biologist, said the land department has been criti-cized because of trespassing in the bird sanctuaries, especially Manana Island. But he said management of the Islands is difficult because they are popular with fishermen and opihi-pickers and subject to no regulations. It has been a question who has jurisdiction

opihi-pickers and subject to no regulations. It has been a question who has jurisdiction over the offshore Islands, he said, but it's assumed the land department does because of its responsibility for conservation districts. He said the proposed regulation would give sanctuary status to about 33 Islands and rocks in addition to the four already named. It would prohibit certain activities on them.

Woodside said the division has frequent complaints about people camping on the Islands, particularly transients staying "weeks on end" during the summers. There are no sanitation or other facilities for campers and they create a "mess," he said. ... He said some policy guidelines must be developed under the proposed regulation to make it workable. The regulation would prohibit any damage or disturbance to the bird colonies and vegetation, landing of any aircraft or vehicles, introduction of plants and animals, camping or con-struction of any structure, littering or trespassing in "no trespassing" areas. Violators would be subject to up to one year imprisonment or a fine of up to \$1,000 or both. The regulation...must be approved by the State Board of Land and Natural Resources before it takes effect. 14 May 1976, page A-16: Seabird Sanctuary Meets Opposition.

Some Kaneohe residents are distressed about a proposal for a State Seabird Sanctuary

which would include a sandbar, called Ahuolaka, and an island, Kapapa Island, in Kaneohe Bay that are heavily used for recreational activities. ... Ronald L. Walker, chief of the Wildlife Branch of the State Fish and Game Division,... said, "There is a lot of misinformation circulating. Everyone thinks we are closing to the islands to access, which is not true." ...Access will be allowed on most of the islands, but...there will be restrictions on activities.... He acknowledged that the islands in Kaneohe Bay "support an enormous amount of recreational use....We are concerned about the camping activity on the birds." He said, "...It's a value judgment...."

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Comments: Proposed amendments to Regulation 7 (concerning seabird sanctuary establishment, protection, and regulation) to Director Michio Takata, State Division of Fish and Game from Robert J. Shallenberger, 27 May 1976: I have been asked by the Board of Directors of the Hawaii Audubon Society to submit comments on the proposed amendments to Regulation 7. You are well aware of my long-standing interest in the offshore islets and my earlier correspondence and discussions with you and your staff. The long letter I wrote to you in 1970 (in your files)/see 'ELEPAIO, Vol.31, No.10, Apr 1971, pp.91-97/ is as valid today as it was then, perhaps even more so. I submit it as well in support of this regulation. The informational signs posted onshore Oahu were all torn down soon after your staff erected them and trespassing on Manana is still a serious problem. I do, however, commend your staff for their efforts and particularly for the time and thought that has gone into the proposed amendments to Regulation 7.

informational signa posted onshore Oahn were all torm down soch after your staff erected them and trespossing on Hanama is still as serious problem. I do, however, commend your staff for their efforts and particularly for the time and thought that has gone into the proposed mendments to Regulation 7. We feel that the proposed changes in Regulation 7 can be well defended on biological frounds and we support the Regulation as proposed. We do, however, feel that the islet, Mokolii (Chinaman's Hat) be included in the State Seabird Sanctuary. It is the only known pesting site of the Witz-tailed Topichicd on any of the offshore islets. Anyone yislting the offshore islets, particularly robbin and the Mokulus, can readily see how priented the garbage problem is out of control. Divenses of the grass for daytime human use. There are no facilities for sanitation and the garbage problem is out of control. Divenses of the grass for daytime human use. There are no facilities for sanitation and the garbage problem is out of control. Divenses of the grass for daytime human use. This particularly true when nests are exposed to the want. Until chicks are old enough to regulate their own body temperature, extremes of both heat and cold are both destructive. It is also true that grastest mumbers of all species, particularly the shearwaters and petrels, are in their nesting colonies at night, so the disturbance factor is, in many ways, greater. It is far more difficult to avoid crussing eggs, chicks and old enough to regulate their own body temperature. Observer whil, reporting how muman disturbance in guil colonies decreased hatching success and increased chick mortality. The authors cits guilar results of studies involving penguins, garnets and other guil species. One study (Asimole, 1963) with Sooty Terns, indicated that "mortality caused by "Worker study were success to the restrictions inposed by the amended increased chick mortality. The species with shearwaters in Hawai indicate sinilar impact of human disturbance. Seve

HONOLULU STAR-BULLETIN, 14 June 1976, page A-11: Forest Fire Season by Harry Whitten. The warm days of summer have arrived; the forest fire season has also arrived. Forests are of much importance to the State, primarily for protection of the water supply but also for recreation. Approximately 30 per cent of Hawaii's land area, or more than one million acres, are in forest reserve. Already this month the Molokai Forest Reserve has been closed to hunting and recrea-tion activities a move made necessary by the dry conditions according to Wesley Wong.

tion activities, a move made necessary by the dry conditions, according to Wesley Wong, district forester.

There have been two forest fires this year, one in April on Lanai and a 250-acre fire May 22 in the Kawaihae-Kohala area of the Big Island. On Oahu the Honolulu Fire Department has reported a buildup of responses to brush

fires, especially in the Waianae area. Forestry officials are emphasizing the need for great care to avoid starting fires, especially on the part of hikers, hunters, campers, military men on maneuvers or others who use forests away from roads.

They also emphasize the need for care by anyone driving near forest or brush areas; a cigarette thrown from a car into dry grass can start a fire. In Hawaii fires almost always are caused by people; the lighting fire danger is almost non-existent here, according to William H. Sager, protection and development forester. ... Southern California sometimes gets "Santa Ana winds", dry winds out of the desert that

to William H. Sager, protection and development forester. ... Southern California sometimes gets "Santa Ana winds", dry winds out of the desert that can spread fire fast. Dry winds funneled through the Saddle may hit areas near Kamuela on the Big Island in a fashion somewhat like the Santa Ana winds, Sager said. An inversion may occur, with the air becoming very dry, on the high mountains of Mauna Loa, Mauna Kea and Hualalai, causing extreme burning conditions at night, he said. Under these conditions, fire fighters have sometimes been surprised by the fire roaring back to life at night, after they had believed it under control in the day. Sager said that the catalytic converter on new cars may create a new fire hazard. There is no danger if the car is in good condition, but if it needs a tune-up, the converter may heat up to a temperature of more than 350 degrees after the engine has been turned off. There have been documented cases where this heat has started fires.

13 April 1974, page A-10: There's a chart at the State Forestry Division offices on which are plotted the forest and brush fires since 1967. The fires are expensive; in the 1967-72 period about 85,000 acres of forest and brush-land were burned in the State. It's difficult to put a dollar figure on the environmental damage, but the task of fighting the fires is expensive in itself. The chart shows comparatively few fires from January to April, an increase usually starting this month, the June-September period as having most fires, and a decline starting in September. As might be expected, weekends and holidays are the times when fires are reported each year. The map of Oahu, on which are outlined the forest fires since 1967, shows that most of the fires have started along the forest reserve boundary lines. The boundary is the area most accessible to people and most vulnerable if the weather is dry. People must be blamed for almost all fires in Hawaii....There is on record only one fire started by lightning in Hawaii, according to Jerry D. Pelly, assistant Oahu district forester. On Oahu 1970 and 1972 were both bad years for fires. There was only one major fire in 1973, the Helemano fire which burned 480 acres. Corrigende: Vol 36 No.12 June 1976 p 151 pere 7 line 1 letter: change Degner to

Corrigenda: Vol.36, No.12, June 1976, p.151, para.7, line 1, letter: change Degner to Degener. Vol.37, No.1, July 1976, p.1, para.1, line 1 & para.5, lines 2 & 3: change Honokahou to Honokahau.

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Donation: MAHALO! Hector G. Munro has generously donated \$50.00 with the note, "Please accept this donation in memory of my uncle George C. Munro, pioneer in Hawaiian ornithology and botany and was a life member of the Hawaii Audubon Society." MAHALO NUI LOA for your concern and generosity.

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In Memoriam: After a short illness, Mrs. Jean G. Stemmermann died 14 July 1976. We extend our deepest sympathy to her husband and her children, Lani and Maile, who are also members of the Society. \*\*\*\*

ALOHA to new members: Dorothy M. Fujii, 4463 Sierra Drive, Honolulu, HI 96816 Teresa K. Lau, 1374 Makaikoa St, Honolulu, HI 96821 Jean E. Maka, 1668-E Stillman Lane, Honolulu, HI 96817

Please report all bird sightings to field observation recorder, Dr. Robert L. Pyle, 741 N. Kalaheo Ave., Kailua, Oahu 96734, telephone 262-4046.

When you find a bird's nest, please call Dr. Andrew J. Berger at the Department of Zoology, University of Hawaii, telephone 948-8655 or 948-8617.

HAWAII'S BIRDS, a field guide, is now available. Price per copy: \$3.00 + postage & tax (sorry we can't continue to absorb). Postage: U.S. 21¢ book rate, 57¢ first class(airmail); foreign-variable, weight 50zs; sales & mailing in Hawaii-add 12¢ sales tax. Send in orders to: Book Order Committee, Hawaii Audubon Society, PO Box 5032, Honolulu, HI 96814.

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AUGUST ACTIVITIES:

- 14 August Field trip to the upper Kahuku Ranch in the Ka'u District of the Big Island to observe the Ka'u Silversword colony and rare forest birds. Bring lunch, water, binoculars and HAWAII'S BIRDS. Meet at 7 a.m. at the Visitor Center parking lot in Hawaii Volcanoes National Park. <u>Reservations required</u>.
  15 August Field trip to Manana Island. Make reservations with Robert Pyle, 262-4046, by <u>31 July</u>. Alternate date: 29 August. Swimming ability required.

No board nor general meeting. \*\*\*\*

HAWAII AUDUBON SOCIETY EXECUTIVE BOARD: President-Dr.Sheila Conant; Vice Presidents-Charles van Riper III & William F. Burke; Secretaries-Catherine R.C. Unabia & Lani Stemmermann; Treasurer-Timothy A. Burr; Board Members-Drs. F.G.Howarth & R.L.Pyle Representatives: Mae E.Mull, Big Island; James M.Bradley, Midway; Dr.Warren B.King, Wash., D.C. 'ELEPALO: Editors Charlotta Hoskins, Unoyo Kojima MAILING ADDRESS: P.O. Box 2032, Honoiulu, Hawaii 96814 DUES: Regular-\$3.00 per annum; Junior, 18 years & under-\$1.00 per annum; Life-\$100.00