'ELEPAIO

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FIELD NOTES FROM KAUAI, MAY 26-JUNE 2, 1976, PART I

By Alan D. Hart

Mr. Richard H. Davis, Joyce A. Davis and I backpacked from Mohihi Stream (Napali-Kona Forest Reserve) through the Alaka'i Wilderness Preserve to the summit region of Mt. Waialeale and out of the island's rugged interior via Waialae Stream and "Red Hill" in Waimea Canyon. We experienced approximately one full day of adverse weather in the form of light rains, fog and high wind, while remaining days were generally sunny with intermittent overcast.

Three days of intense bird observations were conducted in dense mixed 'ōhi'a rain forest in a restricted area of the upper Halehaha Stream where the greatest number of endemic bird species and individuals were located. Four Hawaiian avian members of the Department of the Interior's Red Book of rare and endangered species including the Kauai 'ō'ō, 'ō'ū, kāma'o and puaiohi were seen only in this area with the sole exception of kāma'o sighted by myself on a ridge approximately 1½ miles S.E. of the upper Koaie Stream (May 26). The other two endangered native forest birds, the nuku-pu'u and 'akialoa, were not observed, although the former has been sighted in the upper Halehaha region in recent years.

The following is a list of native passerine species observed in their order of abundance: 'apapane, 'i'iwi, 'elepaio, 'anianiau, creeper, 'ākepa, 'amakihi, kāma'o, 'ō'ū, 'ō'ō and puaiohi. Also pueo were seen occasionally soaring low over both open bogs and the forest canopy. One Pacific golden plover was heard in the large bog occupied by the U.S. Geological Survey cabin near Halepaakai Stream and one white-tailed tropicbird was seen flying high over a nearby bog heading in the direction of Waimea Canyon. From the geological survey cabin eastward to the summit of Waialeale, the endemic birds seem to decrease gradually in numbers of species and individuals until only 'apapane, 'elepaio and 'anianiau are readily seen or heard near the summit bog. No rare species were heard or observed in this luxuriant moss forest despite seemingly favoarble conditions.

Special highlights include the following: During the morning of May 26 on Kohua Ridge above Mohihi I caught the "tail-end" of the male 'anianiau's courtship display--a bit of honeycreeper behavior I was unaware of at the time. In a small tree along side the trail a male 'anianiau facing me hopped rapidly and laterally back and forth along a horizontal limb about 6 feet above the ground. His wings were drooping down and out to the sides thus exposing his relatively bright yellow breast. The female was perched several inches above the limb and facing the male. I don't recall the male's voice, but it easily attracted my attention. For a detailed description of this interesting display consult A.J. Berger's HAWAIIAN BIRDLIFE, 1972, pp. 131-132.

As always, the ubiquitous 'elepaio added many pleasurable moments to the trip. At one point I came to within 1½ feet of a young perched bird. 'Anianiau and the Kauai creeper will occasionally come almost as close.

On May 30 at 11:20 a.m. near Halehaha Stream I saw a puaiohi land in the lower branches of a medium-sized 'ōhi'a tree approximately 100' ahead of me. It remained there for about one minute before flying into low shrubby trees and out of view. The most striking difference between it and the larger kāma'o was the lack of a substantial color demarcation between breast and back. The legs were not black like those of the kāma'o, but an exact color could not be ascertained at that distance. The white patch above the eye was likewise undistinguishable. I found the bird's actual field appearance to be virtually identical to that depicted in the Wilson & Evans color plate of this species. Prior to the sighting, I

heard a native thrush sing in the understory near the stream and though some notes were similar to those of the kāma'o, it was unique in itself.

Five minutes later I watched an 'i'iwi feeding on an epiphytic lobelia, Clermontia clermontioides. It fed quickly on two flowers and then flew off. Although not absolutely clear at nearly 100', the angle of the hanging flowers and the tilt of the bird's head would suggest that the bird did not insert its bill into the tubular flowers but obtained nectar by piercing the base of the corolla. Later, Joyce found a yellow tubular flower of Scaevola glabra that was punctured in this manner.

At noon on the same day as I was observing two immature 'apapane feeding in the profusely blooming crown of an 'ōhi'a tree, a beautiful male 'ō'ū flew into my binocular's field of vision and landed in the lower branches of the tree. He stayed there, facing me somewhat, for at least 10 minutes and called lightly with his plaintive voice. A female joined him soon after he landed but hid in the thick foliage.

At 12:30, Joyce and I observed an 'ākepa "sunning" itself in the dense terminal crown of a medium-sized 'ōhi'a tree. It didn't perch on anything but actually nestled on the leaves. Once comfortable, it opened its mouth, fluffed its feathers and occasionally preened. It eventually moved to another tree and repeated this process in the bright sunlight for a total of perhaps $\frac{1}{2}$ hour.

Only two 'ō'ō were seen or heard throughout the length of the Alaka'i despite the fact that it calls actively, especially in the morning hours, and that its loud voice can be heard at least $\frac{1}{4}$ mile away in good weather conditions. At about 5:30 p.m. on May 27, Richard Davis saw two 'ō'ō feeding on 'ōhi'a lehua in a tree along the path we were on. The next morning Joyce and I heard an 'ō'ō calling for the first time across a small valley and from a direction that I was to hear the 'ō'ō calling from during my next three days there. At 10 a.m. after I had imitated the bird's call several times, I saw an 'ō'ō fly up a small gulch to my right. The most distinguishable field characters were the bird's relatively large size, generally blackish body and most especially, the very prominent white wing patches. The 'ō'ō's flight consisted of a pattern of rapid wing flaps followed by a brief glide and then more flapping. Generally, the flight path was straight and direct, like that of the 'ō'ū. It eventually landed in a small pelea tree and I was able to get within 50-60 feet of it for a good look from behind. I saw its yellow thigh feathers only as it left its perch to fly away. The most amusing (and brief) 'ō'ō sighting came shortly after 5 p.m. on May 30. After spending the entire day without seeing the illusive black bird, but hearing it call in the distance, Joyce and I were startled by the commotion caused by what appeared to be an irate 'ō'ō chasing two terrified 'apapane directly over our heads. The 'ō'ō landed in the 'ōhi'a tree above us for a split second and then dove into dense underbrush nearby not to be seen again that day. My last 'ō'ō sighting occurred at 7:25 a.m. on the morning of May 31. After hearing a bird's flapping wings as it landed in the 'ōhi'a tree I was standing under, I fortunately looked up to find my prized quarry about 60' above me preening in the sunlight. At this time I finally saw the pale yellow iris which gives the 'ō'ō its characteristic keen look. While listening to this species' melodic voice, several of the slurred notes reminded me of those made by the New Guinean moss forest honeyeater, Melidectes belfordi. The 'ō'ō's call is the most beautiful and haunting native bird sound I've ever heard in a Hawaiian forest and I hope other interested persons will have the profound experience of hearing and seeing this magnificent species in the distant future.

Among introduced bird species, jungle fowl were heard at various points early in the trip, particularly between Mohihi and Koaie Streams. White-eyes and the melodious laughing-thrush were observed or heard throughout the entire length of the Alaka'i plateau. One cardinal along with a small flock of linnets and a ring-necked pheasant (?) were seen or heard in the open bog near the geological survey cabin. Therefore, most of the exotic species share the same habitat as the 'ō'ō and other rare Hawaiian species. At Waialae cabin in somewhat drier and disturbed 'ōhi'a forest, mynas and doves were casually observed; more introduced species undoubtedly occur there. The solitary golden eagle was seen by all of us in the "Red Hill" area riding the updrafts with incredible grace and ease. It seemed quite wary as it always maintained a considerable distance from our party and immediately veered away several times after I called out to it.

Finally, I was rather shocked to see how far the exotic banana poka has spread into the Napali-Kona Forest Reserve since my last visit in May 1973. Exotic vegetation is also spreading upstream from the vicinity of Waialae cabin towards the fringes of the Alaka'i.

The Hawaiian land snail genus Carelia belongs to our only endemic snail family Amastridae. Of 21 described species, all but one are restricted to Kauai, the exception being the sub-fossil form C. sinclairi from Niihau. Most Kauaian species have a small geographical range. Ten species are known only from coastal or lowland sub-fossil deposits. The remaining 11 living species were very rare in the 1930's and only C. bicolor is currently thought to exist, according to Bishop Museum malacologist Dr. Yoshio Kondo (1970). Carelia lives on the ground under logs, stones, and leaf litter and feeds primarily on detritus and decaying organic matter. Many individuals of this remarkable group were endowed with exquisite shell shapes and colors. The sub-fossil species C. pilsbryi boasted the largest shell of any Hawaiian land snail with some shells exceeding 3 5/8" (93 mm) in length (G.F.A. coll.).

On June 4, 1976, I made an attempt to locate living Carelia bicolor based on information provided to me by Mr. George F. Arnemann, a local authority on Hawaiian land mollusca. He informed me that live individuals of C. bicolor had been collected in recent years along and near the Haena-Kalalau trail between Hanakapiai and Hoolulu valleys on the Napali Coast. During the summer of 1975, Mr. Stephen Seyb of Honolulu, searched for C. bicolor at my request and found 2 badly decomposed shells in this general vicinity. My own trip produced no trace of C. bicolor after an intensive search. However, I did find one living individual of Euglandina rosea, the infamous "cannibal snail" as well as many decomposing Euglandina shells in various places. Euglandina, a voracious carnivore with a 1½ to 2 inches pinkish elongate shell, was introduced to Hawaii from Florida by the State Department of Agriculture in the mid 1950's to control heavy lowland infestations of introduced giant African snails. Euglandina is equally at home on the ground or in trees and occurs in a wide variety of habitats from sea level to about 3000' in elevation.

The overwhelming field evidence that I have encountered (as well as others) and literary documentation by at least three professional malacologists indicates Euglandina's introduction to Oahu has had and continues to have a most catastrophic effect on remaining populations of endemic land and tree snail species of which Euglandina is known to actively feed on. Several native species have been driven to extinction and others seriously decimated since Euglandina's firm establishment some 20 years ago. No doubt the same is true for relatively low living endemic snails on the outer islands as well. With regard to its disastrous effects on Hawaii's native snail fauna, Euglandina's introduction here rivals the introduction of the mongoose as an outstanding example of a bad biological control solution.

Judging by Euglandina's long standing presence on this portion of the Napali Coast, it would be reasonable to assume that Carelia bicolor is extinct and perhaps, the entire genus Carelia.

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Region One NEWS, U.S. Fish & Wildlife Service, 30 April 1976: Threatened or Endangered Snails--Gauges of Man's Impact

Snails...are particularly valuable to ecologists because they serve as accurate indicators of the overall health of an ecosystem, be it a river, a desert, a prairie, or a forest. If their existence can be assured, then the health of the entire ecosystem can be gauged accurately on the microscopic, plant, fish, bird, mammalian, and aquatic organism levels. This enables man, who also is dependent upon healthy ecosystems for his continued well-being, to better guide his destiny.

Snails are an indispensable part of the living world. Land snails are particularly significant in the life cycle of many bird species, and freshwater snails are important in the fish world's food chain.

Recently these creatures also have been recognized by chemical zoologists as uniquely adaptable organisms that may very well hold a substance that could contain a cure for cancer. Snails and other mollusks rarely get cancer, and chemical zoologists have isolated a substance named Mercenene from a clam. This substance is thought to cause the metabolic and biological defense against this disease in certain mollusks and it is felt that similar substances are present in other mollusks, including snails. ...

In addition to these properties, research on snails also has shown them to be remarkable organisms whose systems can produce a wide variety of poisons, antibiotics, tranquilizers, antispasmodics, and antiseptic chemicals. Lodged in one place and restricted in food source and movements, the species that have survived to the present day are remarkable for their abilities to adapt to natural environmental changes such as fires or floods, but not acid

mine wastes, municipal wastes, soil runoff, pesticides, and other man-caused threats to their existence.

...The Interior Department's U.S. Fish and Wildlife Service has proposed 32 land and freshwater snail species native to California, the Southeast and the Southwestern United States for inclusion on the list of threatened and endangered species. This proposal appeared in the April 27, 1976, issue of the Federal Register. ...

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The 1975 annual meeting of the American Association of Botanical Gardens and Arboreta was held on Kauai this past September. The following semi-popular article was published in their journal to serve as an orientation for those members who participated in the Koke'e State Park field trips. By special permission, reprinted from the AABGA BULLETIN, Vol.9, No.3, July 1975, pp.49-52.

AN INTRODUCTION TO THE HAWAIIAN FLORA by Derral Herbst

The word "Hawaii" may evoke images of lush tropical vegetation for countless millions of people, but the ubiquitous flora that represents the Islands in the eyes of visitor or resident alike could hardly be called native.

Most people in Hawaii see fewer than a dozen native plants, most of which are found near beaches throughout the Pacific. The rest of the plants commonly associated with Hawaii --like coconut trees and the flowers in your first lei--consist of plants carried intentionally or unintentionally by man to nearly all the tropical or subtropical areas he inhabits. Yet Hawaii has one of the most unique floras in the world. More than 97 percent of Hawaii's native plants are found nowhere else; of these, nearly half are rare and endangered species. Habitat destruction by man and the animals he brought with him has decimated the lowlands of their original vegetation and resulted in its replacement by introduced species. At present, native vegetation remains only in remote areas.

How did Hawaii acquire such a distinctive flora? Although there is no definitive answer, a brief discussion of the geography and geological history of the Islands and an understanding of the role they play in plant speciation will provide valuable insight.

At present, the "hotspot" theory is the most widely accepted explanation for island-chain formation. Along with the theory of plate tectonics, it is believed that the earth's crust is composed of moving rigid plates; as a plate moves over a hotspot--that is, a point of upwelling from the lower mantle of the earth--molten rock is brought by convection to the surface. Layer by layer, this rock accumulates; when it rises above the sea, an island is born. The amount of material involved may be staggering. For example, Mauna Loa, a volcano on the Island of Hawaii, rises nearly 30,000 feet above the ocean floor and nearly 14,000 feet above sea level. Mauna Loa is estimated to have a bulk of 10,000 cubic miles; its volume is 100 times that of Mt. Shasta, and it is probably the largest single mountain in the world.

As soon as an island appears, the forces of nature begin to destroy it. Once the constructive volcanic activity has abated, massive erosive forces predominate and the island is worn down until it is again below the level of the sea. Biological activity, usually in conjunction with subsidence and ocean-level changes, may intercede and the island becomes capped by coral and coralline algae. If this occurs, the island usually is destined to become an atoll. It is while the island is still a high island, but strongly eroded, that it is biologically most interesting, for it is in this state that plant population most readily become isolated from the rest of their kind and develop into distinctive forms.

Isolation is the key word in the explanation of Hawaii's unique flora. Occasionally, reproductive isolation may occur--as it does among the green swords of Kauai. The two species of this native genus of tarweeds grow side by side, but one flowers in the spring and the other in winter. In addition, there are two species of sandalwood on Kauai which flower during the same season but which are sexually incompatible; my attempts to hybridize them resulted in consistent failure. However, it appears that the great majority of Hawaiian plants will form natural or artificial hybrids when related species are brought together. In actuality, hybridization probably has had a very dynamic role in speciation as it has occurred in the Hawaiian flora. The specificity of pollinators is an effective isolator in some areas, but this aspect of the Hawaiian flora is virtually unknown and probably of relatively minor importance if one considers the flora as a whole.

Geographical barriers are by far our most important isolating mechanism. Consider the location of Hawaii: The Islands are at least 2,000 miles from the nearest high island or continental land mass. It seems almost impossible that a viable seed would ever find its

way to such a small, isolated region of the vast Pacific. But about 265 species of flowering plants became established, out of an unknown number that arrived here but failed to survive. The 265 founder species can account for all the 2,750 or so native species and varieties of flowering plants. By a conservative estimate, a single successful arrival and establishment every 40,000 years could account for the present flora.

By accident, ancestors of our native plants were introduced onto these islands. For example, our native sundew is a species of circumpolar distribution. Undoubtedly it came in as a seed attached to the feet or feathers or in the intestines of the golden plover, which annually migrates to Hawaii from the northern regions. Conceivably, non-migratory birds could have been blown out to sea during an unusual storm and eventually found their way to Hawaii; as far-fetched as it may seem, a North American eagle /golden eagle/ has been seen in the Waimea Canyon of Kauai, and apparently it got there on its own power.

Some seeds may have floated to Hawaii or caught rides on logs and other debris that did. Exposure to salt water will kill most seeds. But some remain unaffected; and for others, like the beach naupaka, such treatment may increase the germination rate.

The fact that strand species are widespread throughout the Pacific indicates that seabirds or flotation or both are effective dispersal agents for some kinds of plants. Abnormal storms may have blown the seeds to Hawaii, or carried them into the jet-stream, from which they later rained down on land and ocean--effective dispersal, provided they can withstand the freezing temperatures of that elevation. Small seeds,as those of our native Metrosideros, can remain airborne in winds as low as 6 miles an hour--hardly an unusual storm. Atolls and submerged islands once were high islands, and may have acted as stepping stones in plant migration.

If all this sounds too improbable, remember that only a single successful establishment every 40,000 years would be sufficient to give us our present Hawaiian flora.

When a plant species arrives on an island, the environment is usually without natural predators and competitors. Until balance can be restored, a successful arrival usually can be expected to produce enormous numbers of offspring which move into any and all available space. Often some are able to survive in environments totally alien to their ancestors. When their numbers are brought into check, small colonies completely isolated from the mainstream sometimes are found. With their limited gene pool and through the accumulation of the expected changes in their genetic makeup, they soon become very different from the "norm" and may be recognized as new varieties or new species. Bizarre forms at times are maintained simply because there is nothing more successful or efficient competing with them.

Islands are a very different slice of life from most continental areas, especially if the islands are very isolated. But islandlike conditions in continental areas also exist. These may be a small mountain range in the middle of a vast prairie, for instance, or isolated valleys in large mountain systems. Biologically, these areas may be much more interesting than their surroundings--as is often the case with islands.

Evolution in island ecosystems is well illustrated by the genus Euphorbia (Chamaesyce) in Hawaii. Our native 15 species and 52 varieties are believed to have evolved from a single ancestral introduction, probably similar to the small-strand subshrub Euphorbia atoto. In most areas, the chamaesyces are almost entirely herbs or subshrubs of low, dry wastelands. In Hawaii, however, their habit ranges from subshrubs to shrubs to scandent, vine-like shrubs to large trees. They grow from sea level to 8,000 or more feet in elevation and are found in arid regions, moist forests and bogs. How better can you define "adaptive radiation?" ...

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Letter to Governor George R. Ariyoshi from Mae E. Hull, 22 June 1976: A number of Big Island residents are concerned that plans are in progress in Honolulu to bulldoze native forests on the Hamakua side for conversion to foreign timber plantations. Several events over the last year have contributed to a growing apprehension that the State is encouraging exploitation of large areas of the remaining native forests on this island.

On behalf of the Hawaii Audubon Society and a number of Hamakua residents, I am asking you for information on the status of plans for eliminating native forests and planting exotic timber crops on both public and private lands in the Conservation District.

Deeply concerned about rumored plans to bulldoze the native forest, a caravan of about forty people visited the Laupahoehoe Forest Reserve on Sunday, June 6. We stopped at several places in that beautiful 'ōhi'a-koa forest to enjoy the beauty of native Hawaiian plants and birds. We remarked on the vigorous regeneration of koa along the jeep

road and where selected harvesting of koa had been done by Blair Ltd. After observing the swamping effects of banana poka, we asked ourselves, why doesn't the State give priority to a search for a specific biological control agent to control that aggressive, introduced Passiflora vine that smothers native trees and ground cover?

At lunch in the forest, this ad hoc group shared facts about plans for the commercial exploitation of Hamakua forests: (1) We know that Capital Wood Chip Company is far ahead of its ten-year schedule in harvesting and chipping the 1,178 acres of blue-gum eucalyptus stands on State-owned Paauilo Mauka lands, selling the product to Japanese paper companies. (2) We know that Capital Wood Chip Company is seeking to expand its operations on the Big Island. Manager Bernie Brooks told some of us this. (3) From newspaper stories, we know that representatives of Marubeni Corporation, Oji Paper Company and Capital Wood Chip Company have been examining Hamakua forest lands and negotiating with public and private owners for long-term leases to establish a major wood pulp industry on the Big Island. (4) From the 1976 Plan called "Forestry Potentials in Hawaii," we know that the State advances three alternatives for increasing development, each of which calls for "conversion" of substantial acreages of diversified native forest to exotic monoculture timber plantations. We want to know the present status of these four activities.

We are greatly disturbed by the misleading statements in the Forestry Potentials Plan concerning the "environmental benefits" of timber plantations after "noncommercial" native forest cover is eradicated. In fact, environmental losses will result. Replacing native forests with "fast growing" foreign species is destructive of the natural environment. It means the permanent loss of integrated ecosystems with the diversity and interdependence of unique Hawaiian plant and animal species. Decision makers need to know that monoculture plantations create barren ecological deserts. Such agricultural operations as tree farming do not "protect" wildlife, as the Plan says. Decision makers should know that exotic tree farming parcels are inhospitable habitats to sustained populations of native wildlife species, as well as to introduced game mammals.

We are not opposing reforestation of suitable pasture and ranch lands, abandoned cane fields, or other marginal agricultural lands. The Hawaii Audubon Society continues to support the establishment of a sustained industry in native koa on such lands. But a program for bulldozing publicly-owned native forests is likely to elicit strong protest. With less than one-fourth of Hawaii's original forest remaining, and with knowledge of the federal and State Endangered Species Acts, residents and conservationists must seek better protection of this island's unique and irreplaceable forest ecosystems.

The valuable functions that native forests now serve deserve wider recognition; essential watershed, soil stability, natural erosion control, recreation (hunting, hiking, wilderness experience), nature education, habitat for rare and endangered species, and stability of the natural environment through native ecosystem diversity. Conversion to plantations means the decline or loss of these functions. It should be recognized that timber monoculture, as any agricultural operation, is vulnerable to drought, erosion problems, disease, and attack by introduced insects.

State and County officials here on the Big Island cannot answer the questions we have asked about forest industry plans. We fear that decisions are being made in Honolulu and even outside the State on the future of our native forests, without the knowledge and participation of Big Island residents.

We appreciate your assistance in the past when we have written to you with questions and problems. Now we respectfully ask for your help in getting frank and candid information on commercial forestry plans for the Big Island.

Reply, 22 July 1976: ...There has been interest expressed for a long-range commercial tree planting operation jointly by Capitol Wood Chip and a Japanese paper company. In December of 1975, they conducted a preliminary field survey of over 50,000 acres of private and State lands within the Hamakua, Kohala and North Kona areas. In March 1976, they also conducted an intensive on-the-ground feasibility study to verify soil types and vegetation inventory. Their findings and decisions to embark on a long-range commercial tree planting program have not been submitted to the State. At this point and time, no negotiations have been made to lease State forest lands for this purpose. When their decision and proposal are submitted to the State, you can rest assured the Board of Land and Natural Resources will thoroughly analyze the documents before making any decision. As you are

aware, any commercial use (except for utility purposes) within the Conservation District requires a public hearing by the Board of Land and Natural Resources, and if deemed necessary, they may even require an Environmental Impact Statement. Therefore, I believe the general public will have ample time to express their views relative to your concerns.

In regard to the banana poka, the Division of Forestry entomologist is actively contacting scientists throughout the world who are working with Passiflora species and their herbivores. Our dilemma is that the banana poka is closely related to the commercial variety. Therefore, under the stringent tests of the Department of Agriculture, most of the bio-control agents for banana poka will also feed on the commercial poka, thus not permitted to be introduced.

I sincerely respect your views and concerns regarding the issues on the environment. Nevertheless, I believe the State should pursue a parallel program as it relates to our environment and our socio-economic structure. They cannot be separated and the direction of both must be considered and dictated by forecasted needs of all the people in Hawaii, at least for 30-50 years from now. I don't agree that every native forest must be preserved. Examples of distinctive forest ecosystems should be preserved; however, at the same time, all forest resource uses must somehow be integrated and balanced in the limited land area of Hawaii. I am confident that this can be done, but it will require constant vigilance and effort by all resource managers and users. ...

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Letter to Senator Hiram L. Fong from Mae E. Mull, 9 July 1976: On July 6, 1976, West Hawaii Today carried a news item headed "Aid Voted for Hawaii Native Life." The article said in part: "The Senate Appropriations Committee approved $261,000 for use in Fiscal Year 1977 to protect Hawaii's endangered flora and fauna at the urging of Sen. Hiram L. Fong." We applaud your efforts at seeking better protection of Hawaii's unique plant and animal species.

I am writing to ask if you would send me a breakdown of the Appropriations bill for the Department of the Interior that includes the budget for Hawaii. I would also appreciate receiving the testimony before the Committee on this subject and a copy of your press release.

We hope that the recognition by the Appropriation Committee of Hawaii's dire need for protection of its endangered species will influence the U.S. Forest Service to give higher priority to wise maintenance of Hawaii's native forests. ...

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Reply, 20 July 1976: ...Enclosed for your information are one copy each of my three press releases (Nos. 178, 205, 225) regarding my efforts to obtain more funding for the protection of Hawaii's many endangered species. Also enclosed is a copy of the questions I submitted to the U.S. Forest Service and its response, before the Senate Appropriations Subcommittee on the Interior.

I regret that a breakdown of the Interior Appropriations bill (H.R. 14231) is not available, however, I am enclosing a copy of the House-Senate conference report (H.Rept. 94-1330), the Senate Appropriations Committee report (S.Rept. 94-991) and the House Appropriations Committee report (H.Rept. 94-1218) on this legislation.

The full House and Senate are expected to act upon the conference version of the Interior Appropriations bill in the next few days. ...

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Senator Hiram L. Fong's press release No. 225: Washington, July 1, 1976--Senate and House conferees today approved of $261,000 for use in FY 1977 to protect Hawaii's endangered flora and fauna, Senator Hiram L. Fong reported.

The work, to be conducted by the U.S. Forest Service, was earmarked an increase of $150,000 from the original $111,000 in President Ford's budget at the urging of the senior Senator from Hawaii. Fong, in requesting the additional money, told Senators on the Appropriations Committee that 53 per cent of America's endangered or threatened birds are found in Hawaii while among plants threatened or endangered, more than 1,100 species or about one-third of the Nation's total, are native to Hawaii. White House.

The bill now is expected to be acted upon by both houses of Congress and sent to the/

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The first part of questions submitted by Senator Hiram L. Fong to the U.S. Forest Service and its response, before the Senate Appropriations Subcommittee on the Interior, on threatened or endangered species in Hawaii, June 1976:

Q I understand that 53 percent of the Nation's threatened and endangered birds are found in Hawaii and many of these inhabit Hawaii's forests. Additionally, over 1,100 species comprising 1/3 of the Nation's plants designated as threatened and endangered by the Smithsonian Institution are indigenous to Hawaii; these account for almost 50 percent of Hawaii's native flora. Last year, U.S. Forest Service testimony indicated that protection of Hawaii's endangered species would require an annual appropriation of $450,000 for fiscal year 1977. The budget request for Hawaii for fiscal year 1977 is $111,000, the same amount approved for last year. Please give a breakdown of the use of these funds including a list of the specific projects to be undertaken.

A The statistics given on the numbers of endangered and threatened birds and plants in Hawaii are essentially correct. They indicate the uniqueness and severity of the problem. The Forest Service has plans for a program of research on the endangered and threatened animals that would require $450,000 per year. The budget for fiscal year 1977 provides $111,000; these funds are being used to study the Palila on the island of Hawaii and to begin research on one of the many endangered species of honeycreepers inhabiting the forests on that island. Research on endangered birds at the $450,000 funding level would provide for an expansion of the research program to the full level of six scientists plus the supporting personnel that are required to work on the many endangered birds inhabiting forests on the five islands of Hawaii. A long-range program of research on endangered Hawaiian plants is estimated to cost about $300,000 per year.

Q What would be the impact of the Endangered Species Act of 1973, particularly the provisions relating to designation of critical habitat, on Hawaii's forest management? How are geographic limits determined for critical habitats for threatened and endangered species?

A The Endangered Species Act of 1973 can have a very significant effect on the management of the State and private lands within Hawaii's Forest Reserves. Critical habitats for threatened and endangered species are designated by the Secretary of the Interior. Proposed critical habitats are delineated after suitable study of the species and its habitat. The Forest Service serves as a reviewer of the proposed critical habitat where forest or rangeland habitats are concerned. The Act requires Federal agencies to use all of their authorities in furtherance of the purposes of the Act. The Forest Service uses its research expertise in wildlife to help meet the Act requirements. If portions of the State Forest Reserves are designated as critical habitat for a species, then practices judged to be adverse to the species or its habitat could not be carried out under Federal funding such as cooperative forestry assistance. Furthermore, if these practices harass or harm endangered wildlife species, then under the law, they cannot be carried out at all. Any citizen, on his own behalf, can sue to prevent activities alleged to be detrimental to a threatened or endangered species.

Q How do Hawaii needs in threatened and endangered species research relate to the rest of the Nation? What is the nationwide budget request for fiscal year 1977 for protection of endangered species? Is Hawaii's share of the budget request commensurate with its disproportionately large share of the Nation's endangered species?

A Hawaii contains a disproportionate number of the Nation's threatened and endangered species; thus, the amount of research needed in Hawaii is substantial. The fiscal year 1977 budget request for threatened and endangered species research by the Forest Service is $631,000. Of this, $111,000,or roughly 18 percent, of the total is directed to research on problems in Hawaii.

Q In cooperation with the Hawaii State Division of Forestry, the Institute of Pacific Island Forestry of the U.S. Forest Service has begun a modest research program on endangered species. I am advised, however, that this program is inadequate in light of the large number of endangered species in Hawaii. The Hawaii Division of Forestry advises me that too little is known about endangered birds in Hawaii regarding their population, distribution, critical habitat, food requirements, migration patterns, nesting requirements and breeding data. What is the current level of research on endangered birds in Hawaii? What research program on endangered birds does the Forest Service plan to undertake in the next fiscal year and at what funding level?

A Current Forest Service research on endangered birds in Hawaii consists of two scientists funded at $111,000. Three Fish and Wildlife Service scientists also work on endangered birds in Hawaii. Forest Service funding for this work in fiscal year 1977 will be the

same as fiscal year 1976. Current research focuses on the habitat of the Palila, an endangered native bird in the māmane-naio forest. This habitat is declining apparently because feral sheep and domestic cattle overbrowse the forest type. In cooperation with the Fish and Wildlife Service and the State of Hawaii, the Forest Service also will assist in identifying critical habitat of one of the several honeycreeper (endangered native birds) using the 'ōhi'a-koa-treefern forests.

Q As stated in his March 5 letter to me, a copy of which is attached for the hearing record, State Forester Tom Tagawa lists several areas of plant protection which are in great need of accelerated research and surveys. Would you please comment on each of the needs stressed in Mr. Tagawa's letter. What is the current level of research on endangered plants in Hawaii? What research programs on endangered plants does the Forest Service plan to undertake in the next fiscal year?

A The areas identified by State Forester Tagawa as needing research all are important and deserve priority. They are included within our overall analysis of research that is needed on endangered plants nationwide. Hawaii has a disproportionately high number of threatened plant species. The Forest Service has research planned on threatened and endangered plants to be initiated as soon as the fiscal situation permits.

Q The need for adequate funding for endangered species programs in Hawaii is emphasized in the March 9 letter to me from Governor George R. Ariyoshi, a copy of which is attached for the hearing record. Does the U.S. Forest Service anticipate increasing its budget request for protection of Hawaii's endangered species in fiscal year 1978? Please provide a breakdown of funds that the Forest Service anticipates will be needed in the next budget request.

A The Forest Service has developed a long-range program of research to provide the technology necessary for protecting Hawaii's endangered species. Conducting the necessary research will depend upon appropriations. The budget for fiscal year 1977 provides $111,000 for research on endangered birds in Hawaii. Long-range plans for funding the necessary research require $450,000 or an increase of #339,000. Long-range plans on endangered plants in Hawaii are estimated to require $300,000 annually.

Q The Hawaii State Division of Forestry has stressed the need to develop standards and criteria to classify flora and fauna as threatened or endangered. Does the U.S. Forest Service have any plans to develop such criteria, possibly in cooperation with the U.S. Fish and Wildlife Service and the Smithsonian Institution?

A The responsibility for developing standards or criteria to classify flora and fauna as threatened or endangered has been assigned to the Secretary of the Interior. The Forest Service and other Federal agencies are making an input to the standards and criteria as they are being developed. ...

Q What is the State of Hawaii contributing to threatened and endangered species research?

A The State of Hawaii is a full partner with the Forest Service and other agencies in developing and carrying out research studies on threatened and endangered species. The State exchanges technical assistance and equipment and provides appropriate consultation for solving the problem identified. Hawaii, through the Division of Forestry and the Division of Fish and Game, provides funds in support of the research on threatened and endangered species. ...

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HONOLULU STAR-BULLETIN, 27 June 1976, page C-4: Saved from Extinction by Gregg Takayama

For more than 30 years, it was thought that a unique strain of grass found only on Chinaman's Hat off Oahu's Kualoa Beach was extinct, a victim of chickens that once foraged there. Then, while studying the tiny island two weeks ago, biologist Derral Herbst discovered 12 of the light green plants growing. That grass will join about 900 other native Hawaiian plants that are endangered or threatened with becoming endangered.

The Federal government is working on a list of such plants that, when legally adopted, will protect them from man's encroachment and other threats to their survival. More than half of all the plants on the U.S. Fish and Wildlife Service's list of 1,700 are from Hawaii. Already, 255 plants that once grew in Hawaii are extinct, no longer found anywhere, compared to 100 in the entire continental United States (including Alaska). ...

Botany Prof. Dieter Mueller-Dombois said, "People may say, 'What do I care about a grass that grows on Chinaman's Hat; how does it help me?' The thing is that it's very possible that something may be discovered in the plant that may be very useful to man. Like quinine. For a long time the cinchona tree was allowed to become very rare in South

America, then, when it was discovered that quinine (used for fighting malaria) could be gotten from the bark, the U.S. Army had to pay botanists to look for the trees." ...

Some local plants on the endangered list are: (1) The 'ōhai, an attractive plant with gray leaves and crimson or pink flowers, found only at Kaena Point on Oahu and Nihoa and Necker islands, both bird sanctuaries. The coastal plant, once found on all Hawaiian Islands, is run over by motorcycles and grazed upon by cows at Kaena, according to Herbst. (2) The Tetramolopium, a small plant with daisy-like flowers. It was last collected in 1869 and thought to be extinct until last year, when it was found on a Waianae mountain ridge by John Obata, a Kawananakoa Intermediate teacher, and Herbst./see 'ELEPAIO, Vol.36, No.8, Feb.1976, p.102/ (3) The tree thistle, which has unusual large flowers actually formed by a cluster of smaller flowers. Only 12 to 18 plants are thought to exist in the Wahiawa bog on Kauai. (4) The Ka'u silversword, a brother to the more famous Maui silversword. It is found above the 6,000-foot level on the Big Island, where it is a victim of goats and sheep. About 300 to 400 of the plants, which blossom once then die, are known to exist. It was once found around the Volcanoes National Park. (5) The kokia tree, a relative of the hibiscus and cotton plants, found in low dry areas. Its bark was used to dye fishnets by Hawaiians, but has been decimated by grazing. It is now found in Puuwaawaa on the Big Island, Kauai's Napali Coast, and one plant is growing on Molokai's Spalding Ranch.

The reasons for the reduction of the plants are numerous. They begin, Mueller-Dombois said with the fact that a plant's population is limited because of the Hawaiian Islands' limited size. Then grazing animals such as sheep and cattle were introduced, in addition to other domesticated animals which later ran wild. The extinction of plants has accelerated in the last 75 years, with the expanded usage of land for cultivation and housing, especially on Oahu, say scientists.

The endangered plants act was passed by Congress in 1973, four years after a similar law for animals. "People are more aware of the animals' list than they are of the plants' Herbst said.

"Plants are organisms; they grow from a seed, then they die. Unless the reproduction cycle is completed, they are destroyed...Sure, plant seeds can be taken out of their natural habitats and domesticated, but what applies to animals also applies to plants. Monkeys don't act the same in a cage. With plants, you affect their evolutionary growth, and they aren't given the chance to change," Mueller-Dombois said.

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Field Notes from Patrick and Sheila Conant: Honokohau Harbor, Big Island

After reading Mark Collins' article in the July 1976 'ELEPAIO describing his observations of the Yellow-billed Cardinal (Paroaria capitata), we were eager to see this species in the field. After getting directions from Mark, we set out for Honokohau in north Kona on Sunday, July 11, 1976, to look for the bird in the kiawe (Prosopis pallida) thickets immediately east of the harbor. After only a few minutes of walking along the edge of the relatively dense thickets, we saw an adult Yellow-billed Cardinal (possibly two) feeding two large fledglings. The fledglings had well-developed plumage (fully grown wings and tails) and were able to fly well. Their heads were brown, just as are those of immature Red-crested Cardinals, but, of course, they lacked the crest. We had only brief looks at the adult, but it was obviously a Yellow-billed Cardinal. Both adults and immatures have a hint of a crest, especially when the head feathers are erect, but it is much reduced and rounded in outline.

I watched one fledgling for several minutes, and it hopped about in the branches, then sat and preened. Although it made what appeared to be foraging attempts, it did not appear to pick up any actual food items.

After losing sight of the first groups of birds, we later caught a brief glimpse of two adults in a kiawe tree at a distance of about 50 meters. None of the adult birds we observed sang, but only gave the soft call-note, "int," described by Collins in his article. We heard a few food-begging calls of the young birds. These calls were similar to those of young Red-crested Cardinals but much softer, and somewhat less harsh.

We observed several other bird species in the area: Spotted and Barred Doves, White-eyes (numerous), Common Mynas, House Sparrows, Spotted Munias, and Cardinals. We found two old White-eye nests in kiawe trees. Though the habitat seemed suitable for them, we saw no House Finches.

Earlier in the day (about 1230) we had seen three Frigatebirds soaring just inland of Hapuna beach about 30 meters above the ground.

Our observations at Honokohau were made between 1300 and 1430, and we found this insufficient time to make good observations of the Yellow-billed Cardinals. We hope to return to see the species again in the near future.

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From Kojima: Frigatebird & Plover

Please send in sightings of frigatebirds. I have been observing the beautiful frigatebirds since the middle of July in Kaimuki. On 22 July at 0745 seven of these magnificent birds were flying so very low that I was afraid for their safety, and on 6 August at 1715 I counted 17 of them gracefully heading toward Koko Head. If you too are fortunate enough to see the beautiful sight of these black birds against the deep intense blue sky with puffs of white clouds accentuating the white breast and throat of the females gracefully riding the current with occasional flapping of their wings and adjusting of their deeply forked tails, please share your experiences by writing to Kojima, 725-A 8th Ave, Hon.,HI 96816.

Also, please send in notes on the plover. A memorable farewell was on 21 April at 1855 in Kaimuki by a single bird in its splendor of breeding plumage giving a single plaintive call heading makai. Because of this call I was able to witness a very peaceful sunset, a very fitting background for a farewell. An exciting moment was a fleeting sight of a plover on 8 August at 1120 at Waikiki School grounds on Monsarrat and Leahi. The

first sight of the plover back from their breeding grounds always gives me a feeling of gratitude that the Honolulu ecosystem still includes the plover. Mahalo!

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Bicentennial is over, but man-made problems will always be with us. Are we capable of handling the challenge of making Hawaii a place of harmonious living with the unique ecosystem? Constant vigilance and compassionate actions are required. Let's begin by realizing that to bring about a better world, an unselfish concern for all must be spontaneously expressed and a single cause and effect involves a much larger ecosystem--the entire universe.

No amount of words can take the place of convictions. Somehow we must live ecologically. We must be aware that we are interdependent and that survival means concern for not only animate but also inanimate surroundings.

Maybe we were too busy making a living and didn't take enough time to be with a youngster long enough for him to realize that he is a member and not a master of his ecosystem. Somehow we missed passing on the good feeling of seeing a beautiful sunset, smelling a pungent and yet sweet ginger, or hearing that plaintive call of a plover at night. We must try harder, so that all, including politicians and businessmen, will be conservationists and weigh the consequences of their actions within the ecosystem.

We in Hawaii are blessed with natural beauty and must do our best to at least keep this unique ecosystem instead of destroying it. Ecological vigilance is hard work, but I pray that Hawaii Audubon Society will always be ready to accept any challenge to harmonize man within his ecosystem. The quality of the Society depends on each member. You must act. Many times you'll stand alone, but if you act compassionately, you'll always find a helping hand. Let's accept the challenge of making Hawaii a beautiful and peaceful place to live. Kojima

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Corrigenda: (1) Vol.37, No.2, Aug 1976, p.27, Corrigenda, line 3, should be: Honokahou to Honokohau. Honokohau is the name of the area where Aimakapa pond is located, so when you refer to the pond please use the name Aimakapa instead of Honokohau. (2) Vol.36, No.10, Apr 1976, p.119-'eha-ko; p.125-Streptopelia & dove, spotted: change chiensis chiensis to chinensis chinensis.

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Donation: MAHALO! Rep. Patsy T. Mink has generously included with other useful materials on endangered plants requested by Mae Mull a copy of "Help Save Our Endangered Plants," published by the National Parks & Conservation Association with a note, "I thought you would be interested in this." The copy will be displayed at the general meetings for your use. We are very grateful for her keen interest and generous contributions. MAHALO NUI LOA.

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ALOHA to new members:

Junior: Catherine A. Fuller, 1490 Kalaniiki St., Honolulu, HI 96821

Regular: Dorothi Curtis, P.O. Box 1050, Kaunakakai, Molokai 96748
Nancy B. Fuller, 1490 Kalaniiki St., Honolulu, HI 96821
Dr. Charles H. Lamoureux, Dept of Botany, Univ of Haw, 3190 Maile Way, Honolulu, HI 96822 (Reinstated)
Evelyn Mott-Smith, 45-090 Namoku St., Cottage M, Kaneohe, Oahu 96744
C. John & Carol Pearson Ralph, 2934 Loomis St., Honolulu, HI 96822
Linda Streitfeld, P.O. Box 915, Kaunakakai, Molokai 96748
Gary A. Winans, Dept of Zool, Univ of Hawaii, 2538 The Mall, Hon.,HI 96822

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

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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.

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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 5ozs; 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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SEPTEMBER ACTIVITIES:

12 September - Field trip to study waterbirds. Meet at the State Library on Punchbowl Street at 7:00 a.m. Bring lunch, water and if possible your car. Transportation cost ($1.00) to be paid to the drivers. For information call evenings: Tim Burr 235-4036 & Dr. Sheila Conant 988-6522.

13 September - Board meeting at Waikiki Aquarium Auditorium, 7:00 p.m. Members welcome.

20 September - General meeting at Waikiki Aquarium Auditorium at 7:30 p.m. Program: Birds of Micronesia by H. Douglas Pratt, Jr.

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