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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

The Editor,  
Smithsonian  
900 Jefferson Drive,  
Washington, D.C. 20560.

Dear Sir:

The beautifully illustrated warning appearing in the January issue of the "Smithsonian" by Jenkins & Ayensu entitled "One-Tenth of our Plant Species May Not Survive," is causing some wonder and criticism among its readers in the Hawaiian Islands. That our archipelago harbors a flora consisting "approximately of 2,200 kinds of plants" is absurd, and that the photograph of a silver-word on page 96 is that of Argyroxiphium kauense is ~~wrong~~. *correct identification*

As mentioned elsewhere (Phytologia 29:240-246. 1974.), the Hawaiian flora probably consisted of about 50,000 well recognizable species and varieties before the original Polynesians arrived a few thousand years ago with pigs, rats and chickens, and their cultigens. ~~Their~~ *From the Hawaiian natives* farming wiped out many of the lowland endemics particularly on the lee side of the islands safe from torrential rainfall. ~~while~~ Their introduced rooting pigs and gnawing rats, spreading from sea level to all but the highest mountain peaks, undoubtedly ravaged the endemic vegetation particularly of the rainforest into which native hunters with their primitive weapons seldom penetrated.

With the rediscovery of the Islands by Captain Cook in 1778, the ~~Hawaiian~~ *remaining* flora consisted of close to 30,000 species and obvious varieties. Due to ~~result~~ *the* Caucasian and Oriental introductions of food plants, farm and range animals, weeds and timber trees, insect and fungus diseases, animals prized by hunters, and the bulldozing of vast areas for golf courses and housing, today only about 20,000 of such taxa remain. Of this impressive number barely 3,000 have been adequately described.

An inkling of our present vast ignorance of the botanical riches about us is shown by a modern listing of cyrtandras native to the Hawaiian Islands:

ISLAND	Number of kinds known to date	Square Miles
Oahu	128	604
Mau	29	728
Hawaii	23	4,030
Kauai	22	555
Molokai	13	260
Lanai	6	141

Does it not seem strange that Maui with 728 square miles has only 29 known cyrtandras and Kauai with 555 has only 22, when Oahu with 604 has 128? In fact, <sup>assuming a density of about 1 cyrtandra per square mile</sup> Oahu with only 604 square miles has 128, when the <sup>of distribution</sup> remaining five islands with 5,814 square miles have only 91. The explanation for such discrepancy in this genus is not botanical, but HUMAN!

"Oahu has been the center of human botanical activity for nigh unto two hundred years. It is the seat of the capital, Honolulu, where the Bishop Museum and the University are located. Most visiting botanists resided there, and collected within easy walking, riding or driving distance of the city. Teachers - - - scoured Oahu with their students week-ends and holidays for its botanical riches. The 'outside islands,' in contrast, always have been neglected." If Oahu with about 600 miles averaged one cyrtandra for every four or five miles, could not the entire Archipelago with a combined total of 6,418 miles theoretically harbor 1,283? Even were we to reduce the "mileage" by half because of some inhospitable lava flows or alpine heights on Maui and Hawaii, our population of discovered and still undiscovered cyrtandra <sup>taxa</sup> plants would exceed 500. What applies to the genus Cyrtandra, relatively unknown in the Archipelago excepting on Oahu, applies more or less to the remaining genera. <sup>of Hawaiian genera</sup>

To propose a list of endangered, threatened and recently extinct species of higher plants is wise for the Continental United States. There the flora is well known. But to attempt one for the incompletely known Hawaiian Islands would be disastrous and would lull us into dangerous complacency. <sup>Such a</sup> list would describe a few gaudy endangered and threatened species known to us, and condemn the many thousands of <sup>more modest</sup> undiscovered ones. <sup>the risk of extermination</sup> What is needed is a blanket statement, like an "umbrella policy" in insurance, that ALL native Ha-

→ The ~~flora~~ <sup>flora</sup> ~~is~~ <sup>is</sup> ~~in~~ <sup>in</sup> ~~danger~~ <sup>in danger</sup> ~~that~~ <sup>that</sup> ~~any~~ <sup>any</sup> ~~plant~~ <sup>plant</sup> ~~not~~ <sup>not</sup> ~~known~~ <sup>known</sup> ~~could~~ <sup>could</sup> ~~be~~ <sup>be</sup> ~~destroyed~~ <sup>destroyed</sup> ~~without~~ <sup>without</sup> ~~loss~~ <sup>loss</sup> ~~with~~ <sup>with</sup> ~~certainty~~ <sup>certainty</sup>.

waiian plants are endangered and threatened with extinction EXCEPTING FOR A  
"Blue Book"  
LIST INCLUDING SPECIFIED PLANTS SUCH such as the beach morningglory, certain  
taxa of ohia-lehua, etc. of Kona, etc.

Islands of Maui  
Regarding the silversword, the writer camped within Haleakala for three  
weeks in 1927, studying causes for its decline. He noted chiefly  
of feral goats, and an unusual but not dangerous infestation of ~~insects~~  
~~an endemic fly of which the maggots were eating out the heads of flowers.~~  
At that time barely a hundred plants were visible on the cinder cones. Today  
thanks to the wide administration of the National Park Service, this species,  
known as Argyroxiphium sandwicense s.l., has ~~increased~~  
~~numbers~~ upward of ~~25,000~~ 25,000 plants! This is the species, ~~so~~  
so well known to residents and visitors alike, and shown in the January article  
of the "Smithsonian".

The Kau silversword, growing in ~~in~~ a very restricted, open,  
shrubby rainforest on the southwestern slope of Mauna Loa, Island of Hawaii,  
is an entirely different plant. The plant does not hug the ground as does  
A. sandwicense; nor ~~are~~ its leaves stiff and densely covered with sil-  
very hair. When ~~intensely~~ <sup>well</sup> studied and photographed last year, it numbered  
a scant 1,000 plants of all sizes. This species, the true Argyroxiphium kau-  
ense (Rock & MacNeal) Deg. & Deg., is truly ~~an~~ an endangered and threaten-  
species, particularly because hunter pressure induced officials in 1974 to  
liberate two ewes and a ram of ~~the~~ <sup>to breed and multiply</sup> ~~the~~ <sup>general</sup> ~~population~~ in the area. If goats ~~2100~~  
almost exterminated the Maui silversword in and about Haleakala in 1927, what  
will this wild sheep, originally native to Sardinia and Corsica do to the de-  
fenseless Kau silversword?

Jeremiah 2:7 in <sup>the Bible</sup>  
times described such folly:  
"And I



Threat to the Biota of Hawaii Volcanoes National Park

by

Otto Degener

Naturalist, Hawaii (Volcanoes) National Park, 1929

Collaborator in Hawaiian Botany, New York Botanical Garden

Resident, Volcano, Puna, Hawaii

Recap  
newspaper  
1/25/68

An act of supreme concern regarding the future welfare of the endemic plants and animals of Hawaii Volcanoes National Park has arisen January 10 of this year.

The Hawaiian Islands biologically are far more interesting than the Galapagos, long advertised to the World by Darwin's outstanding researches. Our Archipelago, though comparatively little-known scientifically, is more isolated and harbors a far greater number and percentage of endemics. In fact, except for some pantropic beach plants distributed by ocean currents, and a few montane species such as a rare sundew and some sedges, about 100% of the native Flowering Plants are found no other place on earth. This endemism, still remarkable though to a lesser extent, applies to the ferns and mosses also.

A similar high proportion of endemism applies as well to our invertebrate animals such as insects, snails and lesser groups; and to our few vertebrates such as a seal, a few bats, a few lizards, and numerous well-publicised kinds of birds of which some have already become extinct due to the destruction of their chief food plants and the introduction of avian malaria.

All these organisms have adjusted to one another over the millions of years that they have existed in the Hawaiian Archipelago, and have come to a certain equilibrium. One of the most charming and self-evident to the visitor is the modification of the beak of many of the endemic birds to the curve of the flower of the endemic lobelias from which they gain nectar and perchance secreted insects. This is just one glaring instance of interdependence of many yet obscure to man until he has had the time and wisdom to unfathom them. The visitor, whether lay or scientist, who will venture into the few remaining areas of unspoiled countryside will be amazed by what God hath wrought in this Paradise of the

Unfortunately, due to the coming of man, the idyllic state of conditions in the Hawaiian Islands is rapidly deteriorating. Most of this is justifiable due to human population pressure, but certainly not all. The greatest change is in the cities and towns; the least, in our National Parks. These last, safe-guarded by the Federal Government, are a haven for the visitor who wishes to study and to commune with Nature, and for the scientist who is eager to learn her laws for practical and for purely theoretical reasons.

The Hawaiian Islands, isolated in the Pacific, never harbored herbivorous mammals - they could not fly and it was too far for them to swim - and hence the native vegetation has never built up a partial immunity to the depredations of such animals as cattle, deer, goats, horses and sheep. Where these animals are permitted to roam, the native plant cover - whole forests even - disappears.

The State of Hawaii Department of Land and Natural Resources in 1964 announced a plan to introduce the axis deer, native to India, to the Island of Hawaii to encourage hunting. W.H. Greenwell, a rancher, brought suit to stop the plan, and March 6 of the same year former Circuit Judge John F. Dyer issued a temporary restraining order against their release. September 22 Circuit Judge Allen R. Hawkins issued, after a four-day hearing, a permanent injunction. The State of Hawaii next appealed Judge Hawkin's ruling to the Supreme Court. The supreme threat to the biota of Hawaii Volcanses National Park is the unanimous ruling of the State Supreme Court January 10, 1968 that "it is not an abuse of the State's Police powers to release the deer since studies indicate that it will promote the State's interests in hunting, recreation and economic development of the Big Island."

The writer believes with the five-man Court that the ruling will promote hunting in State-controlled land of deer, certainly in preference to wild goat. He fears the ruling, as it now stands, will do irre-

versible damage by browsing and trampling to the native plants and animals of Hawaii Volcanoes National Park, thus reducing the Park's attraction for Mainland visitors, a considerable source of revenue to both State and Federal branches of the Government. To avoid this danger, he hopes and prays the Honorable Court will amend its ruling to allow the liberation of deer or other herbivores only after the State has built a deer-proof fence to prevent such animals from trespassing onto National Park lands. He is releasing copies of this brief article to Mainland groups interested in conservation and in the National Parks in the hope that they will help finance the building and maintaining of a fool-proof fence. As resident and one of the tax payers of the State, he feels outside aid is justified.



**FORI IN THE AXIS DEER CONTROL FIRST**  
 Editor The Star-Bulletin: I noted with interest the answer to my letter written by Mr. William H. Hathaway. I have also noted other letters on the Star-Bulletin from him. **7/13/50**  
 I have been thinking of the small group here on the islands that choose to ignore the facts concerning the introduction of deer on the island of Hawaii.

He refers to, in his most recent letter, the opinion of conservationists, naturalists, etc.

His lawyers, have hired men who are qualified in these fields. They have recommended that these deer be introduced. Their recommendations are ignored by Mr. Hathaway and his group and instead they base all their claims on opinions of biologists, naturalists, etc. who have no first hand knowledge of the subject.

Mr. Hathaway in his letter of June 2, 1950, states that deer in Kaibab and New Zealand did great damage.

However the information at hand shows that the deer in both New Zealand and Kaibab have been brought under control by hunting.

Their claims and hysteria are all based on conditions that were rectified and the conditions would never have existed if it had not been for the conservationists, naturalists, etc., insisting that these deer not be hunted.

I gave the deer on Oahu and Molokai as examples. In his letter of June 2, 1950, Mr. Hathaway admits he has never investigated these animals.

Mr. Hathaway states that the members of our organizations are motivated by whims and fancies. I refer him to T. Gilbert Pearson, Washington lobbyist for the Audubon society. He feels that our groups are Nature's best friends. I further refer him to the records of our game birds in the territory where protection was given to them. In many cases introduction have been accomplished by our group.

The Hawaii Fishing Game association is for progress and has and will always fight to protect the natural resources of the territory.

Very truly yours,

**HAWAII FISHING GAME ASSOCIATION**  
 (By George W. Premo Jr., President)  
 849 14th Ave.

#### DANGERS IN DEER LOADED ON BIG ISLAND

Editor The Star-Bulletin: Although rather remote from the scene of debate as to whether Axis deer should or should not be taken from Molokai to Hawaii, I feel that it is my duty as a past student of the Hawaiian flora to support Otto Degener, the Hawaiian Forestry Association, the Hawaii Audubon society and other groups that the board of agriculture and forestry has been a trifle hasty in its decision.

Deer are known as enemies of the forest in most countries; in some they are kept because they are the darlings of the rich. In New Zealand, most deer ridden of countries it must be admitted that the Axis deer has not been a good offender, but only because the first groups introduced were destroyed by irate settlers as soon as their destructive habits were known.

According to Professor A. G. Tansley, greatest of British ecologists, a species of deer in Britain damage wild and planted forests and raid crops and gardens. Red deer are so pampered in Scotland that hunters suggested planting hardwood forests as winter feed for them; anything rather than severe quelling of the great herds!

The pattern of damage is monotonously the same: seedlings and shrubs are eaten, decayed, roots stripped, and everything opened to wind, destruction of soil and water. At first selective, deer eliminate the preferred species, until with overcrowding and hunger they become as voracious as goats. Where deer, goats, cattle and pigs have the run of the forests, you have the worst of situations—the New Zealand dilemma.

**LUCY CRANWELL SMITH** **7/11/50**  
 (Mrs. Watson Smith)  
 Botanist, 14 Francis Ave., Cambridge, Mass.

#### Axis Deer Bill Is Offered in House

A house bill presented yesterday by Rep. Noboru Miyake, R-Hawaii, and Rep. Joseph T. Yamachi, R-Hawaii, carries an appropriation of \$44,000 for stocking the game reserve at Pohakuloa, Hawaii with Axis deer and mountain sheep.

It was passed on first reading.

#### NEW ZEALAND SUFFERED FROM WILD ANIMALS

**7/14/50**  
 Cambridge, Mass.  
 July 12

Editor The Star-Bulletin: This adds to my earlier comment on the danger of losing deer from Molokai on the island of Hawaii.

In New Zealand ("Home" to me, incidentally), it has taken 30 years to reduce the power of those pests to get introduced animals against the vulnerable forests; only in the last 20 years has there been general recognition of the harm done by enthusiastic individuals and boards. Once government intervention became a fact, hundreds of thousands of red deer alone were killed by its employees. But World War II interrupted a gallant attempt to control the pests.

I think this all has bearing on the plea made in Hawaii that pleasure hunting alone would suffice as a check. Neither hunting (and the New Zealanders are keen hunters) nor lack of surface water (as on the rough volcanic island of Rangitoto near Auckland) has held back the deer in New Zealand. Will the record be better in Hawaii?

I am yours truly,  
**LUCY CRANWELL SMITH, botanist.**

(Editor's Note: Faced by considerable number of pointed protests, the territorial board of agriculture and forestry has held up action on the proposal to turn loose deer on the Big Island. It will "restudy" the proposal.)

#### AN AXIS DEER IS NOT A MONGOOSE

Editor The Star-Bulletin: As a member of the Hawaii Fish & Game association, I am mighty proud with the aims and doings of this organization. **7/16/50**

Our club does not contradict a certain Mr. Hathaway statement that we accept the findings of scientists only when they do not conflict with our personal whims and fancies. Aim number four reads "To foster fish and game because of their inestimable value to the education, health and recreation of the inhabitants of this territory."

An axis deer certainly doesn't look like a mongoose, but something that packs a lot of the finest eating meat in this state of world uneasiness, and for any future period of depression or a prolonged shipping strike, it's a good and practical thing to stock our ranges.

The losing of deer and other game animals should cause no fear as to their destructiveness, because facts have disproven it. As Mr. Biehl has said, just you try and get a permit to hunt the deer on Oahu, Molokai or Lanai. This fact alone should cast all doubts aside. Another food for thought is the strong tourist attraction with improved hunting opportunities.

Be a member of this fine organization whose membership is truly "Hawaiian." We meet every second Monday at the Waikiki Aquarium at 5 p.m. Yours for good hunting, **TOKIO WATANABE**, Member, Hawaii Fish and Game Association

**Captain Robert Metcalf** and the other four members of the Fair American crew

He did and made for an, had died quickly when empty double canoe lying on struck with the heavy wood the beach. **3/23/50**  
 en paddles of the Hawaiians, The Natives saw him and as quickly as he reached for Men in canoes struck at the outrigger platform a his head with their heavy native hauled him onto the paddles as soon as he bobbed platform, sat on his back and from under water. Fortunate tried to break his neck.

ly, most of the blows were Davis fought like a tiger. glancing. Often the paddle of Kameeiamoku was watch- one assailant would strike the light from the deck the paddle of another. of the Fair American. Like an Isaac Davis realized that all Hawaiians, he admired his only chance was to dive man of courage and sailed under water and swim away.

#### AXIS DEER FOR TOURISTS

Editor The Star-Bulletin: As a businessman, in Hawaii for the past 15 years, I would like to add a few new thoughts to the subject of introducing deer for hunting purposes on the island of Hawaii. Today tourism is our third largest "industry." We have just about reached our peaks in the first two, sugar and pineapple. There is little room for further expansion in these two fields for various reasons. However, our children are growing up, our population is increasing and all of us would like to continue and even increase our fine standard of living here in Hawaii. To do this, we must bring more dollars to Hawaii.

I say we haven't even started to tap the potential tourist dollars. This could and would be our biggest industry. We are only eight hours from the mainland, have wonderful climate and scenery — but have very little for the tourist to do after he gets here. This is fine for the older tourists who come here just to take it easy!

But how about the millions of young sportsmen in the mainland? Many of them spend up to a thousand dollars a year just to bag their annual deer. We not make Hawaii the Sportsman's Paradise that it could be.

We have tens of thousands of acres of unused government land in the mountains. Let's put it to work for us. Stock it with deer. Similar projects on the mainland have shown that eager hunters can do keep the deer under control.

Results? We will have one more good sales talk to give to prospective tourists. Hawaii can and should be the Sportsman's Paradise!

**SCOTTY GULETZ, Mr. South Sea Sales**

#### MORE REASONS AGAINST LOSING AXIS DEER

**7/13/50**  
 Waialua, Oahu, February 7, 1951.

Editor The Star-Bulletin: Mr. Biehl, vice president of the Hawaii Fish & Game Association, recently stated that "It's about time that this boom-alarm regarding Axis deer on Hawaii ended."

I agree with him. However, I am convinced that deer must be excluded from Hawaii and, incidentally, that Mr. Biehl's association should be encouraged to exterminate the wild goats, pigs and sheep on all the islands where they now occur.

Though I am not a butterfly chaser for recreation I have been, as Mr. B. expressed it, "picking flowers" professionally in the Hawaiian Islands since 1922.

I have seen what grazing and browsing animals do to our vegetation and the resulting damage to our swayed and broken trees and that peculiar beauty of our landscape that attracts tourists to our shores. But in spite of being a professional botanist, I am also a beef eater and want to protect cattle on Hawaii ranches. The introduction of deer can force prices sky high! Why?

— Deer will compete with cattle for feed.

— Right now cattle stomachworm occurs in some pastures in Kau and elsewhere, evidently spread by wild goats. This necessitates costly treatment of infected cattle and costly disease or disinfection of pastures. Deer jump over goat-proof fences and are travelers; ideal vectors or carriers of the disease.

— Right now "measles" of cattle occurs on Hawaii, caused by the human tapeworm (Cysticercus bovis). It is now carried by goats, pigs, horses and man. Recently 30 head of cattle from Hawaii were condemned in Honolulu by meat inspectors as unfit for food due to "measles." Deer jump goat-proof fences and are travelers; ideal vectors or carriers of the disease.

Deer likewise can spread other cattle diseases now on Hawaii like diarrhea, undulant fever and cryptosporidiosis. Men of Hawaii, ask your veterinarian if this is not true. An increase of cattle diseases will certainly not reduce meat prices.

**OTTO DEGENER, Naturalist in Hawaii National Park in 1929**

He did and made for an, had died quickly when empty double canoe lying on struck with the heavy wood the beach. **3/23/50**  
 en paddles of the Hawaiians, The Natives saw him and as quickly as he reached for Men in canoes struck at the outrigger platform a his head with their heavy native hauled him onto the paddles as soon as he bobbed platform, sat on his back and from under water. Fortunate tried to break his neck.

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## Heedless Propaganda 3/30/50

Propagandists who undertake to solve public problems of which they have only a long distance view assume a grave responsibility. This is true of the "Ecologists Union," an organization devoted to what used to be known as natural history, with headquarters at the national capital. This society has taken up a banner of local naturalists who have expressed opposition to the Hawaii Board of Agriculture and Forestry's plan to create an axis deer park on Mauna Loa on the Island of Hawaii.

Colin G. Lennox, president of the forestry board, has explained that these deer, long inhabiting Molokai and Oahu, will be surrounded by miles of waterless lava desert and have no chance for escape from the area of their confinement. There they will be studied as they increase with a view to determining whether they can be released in other sections without damage. If this cannot be done they will remain in the one area or be exterminated, which can be done easily by hunting.

But the "Ecologists Union" pays no attention to these precautions. It has broadcast circular letters saying the deer will "endanger Hawaii National Park," "the near-extinct nene goose" and the "highly endemic flora and fauna." None of this is true, according to Mr. Lennox. But the impression gets abroad, nevertheless, as is shown by the letters already coming in.

Probably the prize example is one from J. E. Potzger, Department of Botany, Butler University, Indianapolis, Indiana, who says gravely, "Your Island never had a large animal . . . so (axis deer will cause) great danger." We suggest that Mr. Potzger be invited to view Honolulu's Moanalua Garden herd of deer, or to hunt wild goats or pigs in the hills on any of the principal Islands.

### MUNRO ON WILD LIFE

Editor The Advertiser:

Your editorial in this morning's Advertiser is much to the point. Botanical gardens are a necessity if we wish to save our interesting flora. Natural conditions alone will exterminate some of our plants. They have to run their race and must give way to others. Only human care will save them.

To one like myself who has had to deal with wild goats and wild pigs a close season for them is unthinkable. If deer are to be released on Hawaii I would advise to first exterminate the other wild animals. No sportsman will want to hunt sheep, goats or pigs if there are deer to hunt.

Axis deer are less harmful to the Hawaiian forest than any of the other wild animals now there. But will the other animals be exterminated? It is, I am afraid, a vain hope as was my idea of controlling the deer on Lanai.

GEORGE C. MUNRO

### Hunters' Opportunity

Hon. Adv. 5/29/50

## Big Island Will Receive Axis Deer From Molokai

Steps to introduce deer to the Big Island to add to hunting opportunities there, are being taken following decision of the board of agriculture to move some Molokai deer to Hawaii.

They will be released in the saddle area between Mauna Kea and Mauna Loa and Hualalai.

The board decided to plant deer on Hawaii only after a study of the Molokai deer herd by J. Donald Smith, wildlife biologist of the board, and Joseph Medeiros, biologist in Maui county.

It was found that very little information is available about the life history of the Axis deer, either on Molokai or elsewhere. Smith has urged that a research project be set up to study the deer and their habits.

However, he believes deer would

INTERVIEWS of Molokai ranchers indicate that the deer do not cause any appreciable damage on that island because their numbers are kept down by hunting. The wild growth is sufficient for the surviving deer, and neither grass, forest, or agriculture is damaged.

"Apparently the Molokai deer do not prefer the forest as their major habitat nor do they cause extensive damage to forest trees," the game conservationists reported. "The deer are found in the forest margins going out to the kiawe and grass range in the evenings, and returning to the forest cover during the heat of the day."

"THE DAMAGE they do to forest seems largely limited to bruising the bark with the antlers during and just prior to the rutting season. Several persons interviewed were emphatic in stating that deer are much less destructive to forests than are goats."

"Mr. Medeiros found that deer damage sugar cane to only a slight degree. The conclusion is tentatively drawn that deer will not compete seriously with sugar production because it is not likely that the deer will invade the sugar producing regions."

"Evidence gathered on Molokai indicates that deer will not damage truck crops to an appreciable extent. A county agent and Hawaiian homes commission supervisor stated that complaints of truck garden damage by deer were unknown and that a penned deer under observation for a long period preferred weeds to vegetables while fed under captive conditions."

### OTTO DEGENER BACKS PROTEST AGAINST AXIS DEER SPREAD

Otto Degener, Honolulu botanist, believes that the introduction of axis deer on the island of Hawaii would be a great mistake. He supports the contention of many botanists, naturalists and others that the deer are likely to wreak great damage to trees, shrubs, flowers, grasses, etc.

He has written a four and a half page letter, voicing his protest, to the territorial legislature.

The letter was directed to Rep. Joseph R. Garcia, chairman of the house committee on agriculture, forestry and manufactures.

He says that the only people interested in the introduction of axis deer and mountain sheep to Hawaii are hunters.

He says that many others are opposed to the looting of these deer on the Big Island.

He says that the \$40,000 mentioned as the cost of putting the deer on the Big Island would be "an inexcusable waste of taxpayers' money."

He gives many reasons why the introduction of the deer would be a mistake.

Mr. Degener holds a master of science degree from the University of Hawaii. He taught botany at the university, and for a while naturalist at the Hawaii National park.

### A MOVE THAT THREATENS OUR FOREST

Editor The Star-Bulletin: I have just read a newspaper article announcing that Axis deer from Molokai will soon be released on the island of Hawaii. It is stated that they will be let loose in the "saddle area" between Mauna Kea, Mauna Loa and Hualalai.

I believe that this decision should be reconsidered. I have never been to Molokai, and thus I have not been in a position to judge the effects of deer there on the native vegetation.

I do know that deer unchecked by natural enemies such as large predatory mammals have done serious damage to the vegetation on such places as the Kaibab plateau on the mainland and the beech forests of New Zealand.

Furthermore, introduced grazing and rooting animals have done extensive damage to the forests of the Hawaiian Islands in the past.

I have seen the destructive effects of feral cattle and goats on the native forests of Hawaii and Kauai.

The damage done by large herds of cattle in the Waialeale mountains of Oahu is perhaps incalculable. Whole forests have been stripped into grassland, the formerly thick soil mantle has eroded away.

This wasteland was formerly a potential source of irrigation water for sugar cane and other agricultural crops.

Feral pigs still do untold damage to the higher rainforests of Oahu, uprooting trees and initiating landslides. Rabbits introduced at the turn of the century to Laysan Island have completely denuded that island of its once-flourishing vegetation.

One of the chief glories of the Hawaiian Islands is the magnificent flora. Of the 1729 known native seed plants, 1833 (94.4%) are native to the Hawaiian Islands. These plants are, of course, irreplaceable. Every effort should be made to save them for the enjoyment and study of future generations. They are a unique and precious resource.

It is, of course, unfortunately true that only a very limited proportion of the population of the territory is interested in its native flora and fauna. The hunters probably outnumber the naturalists.

I do not believe that this will always be the case. There seems to be evidence that people on the mainland are becoming increasingly interested in their natural surroundings, judging from the mounting attendance at state and national parks.

I believe that future generations of Hawaiians will be grateful for any efforts that are made today to preserve from destruction their native flora and fauna. Yours very truly,

WILLIAM H. HATHAWAY, Graduate Assistant, 1949-1950, Department of Botany, University of Hawaii

### HE CONTENDS AXIS DEER WOULD BE NO MENACE

Editor The Star-Bulletin: We read your editorial regarding the introduction of Axis deer to the island of Hawaii.

You referred to our great natural resource which is threatened. Our impression has been that natural resource is something that is or will be a benefit to the people of the territory.

We would like to have some one point out what benefit it is or will be gained from the Pahaia area in question. Our group feels that a totally unproductive area would be put to productive use by the introduction of game animals to this area.

You and others have continually referred to the Axis deer in New Zealand as an example of what deer do to forests. I would like to refer you to the case of the muia forest in the Kaibab forest which were protected and did great damage to the forest areas were opened to hunting. The deer population was quickly brought under control by hunting pressure.

If deer were released on Hawaii our problem would not be one of deer. Many deer, it is a question of controlling poaching so that a valuable resource could be built. Poaching has held the Mauna Kea deer herd on Oahu down to less than 20 animals.

In every single case in Hawaii animals have been brought under control in two years or less when subject to hunting.

Any contention that deer can not be controlled by hunters in any section of Hawaii or the United States has been proven to be utterly ridiculous. The facts so far set out spattering to a few individuals who do not know the facts and give the many thousands of hunters in Hawaii a worthy game animal.

HAWAII FISH AND GAME ASSN.  
By George W. Parnell, President

Star-Bull 3/12/51



mill he sends out his cutting crew.

Equipped with power saws, they fell the big koas in minutes. Then in come the track-laying machines, and the logs are laid on a pan and dragged to the mill a mile or so distant. The logs are cut into short lengths and lifted to the mill carriage where Jimmy slices them up for lumber.

The koa is trimmed and stacked, loaded onto trucks, carted to the Kailua wharf, loaded on a barge, and unloaded in Honolulu. There it is trucked to C. S. Wo's mill, dried and surfaced, made into furniture, and sent to Kaiser's hotels or to the stores.

It costs a great deal to harvest koa. An average stand in Kona has about 1,000 board feet of lumber to the acre. Even where the cattle have been excluded, 5,000 board feet per acre is considered excellent.

Consider the pine forests of the West where a lumberman

expects from 30,000 to 100,000 board feet of lumber to the acre. In such Mainland forests the cost of roads and equipment per

The issue of letting loose Axis deer on the island of Hawaii is temporarily quiescent.

The territorial board of agriculture and forestry some months ago, wisely decided not to proceed with its plan to "plant" the deer in the Pohakuloa region of the Big Island.

Members of the board laid the matter temporarily on the table because of protest that the deer might multiply to the point where they denuded the rich forest and its profusion of arboreal shrub and plant life. Now from another part of the world comes proof that Axis deer can and do cause extensive damage to such forest areas.

The Auckland Star carries a feature article on a little known, secluded and marvelously beautiful section of New Zealand—Dusky Sound.

This is a high, heavily-bushed and almost trackless country with a rainfall reaching 300 inches in a year at some spots.

A writer in the Auckland Star says that the deer in that region—a mixture of Axis, Red, Virginian and other deer—are doing enormous damage over an extensive area. The article says in part:

"Deer in the hundreds are stripping the flora from its shallow bed of soil so precariously held by the sheets of rock beneath. The presence of these animals in such numbers, even at this stage, is seriously interfering with the birds and the botanical balance."

"Twenty years ago the few deer there were in this area were doing little damage. Since then they have increased steadily until now they have reached almost every part on which they can gain foothold. Recently, over 200 were seen in the bush of the valley floor alone."

"Control is urgently necessary if the bird life and flora of the Fiordland National Park is to be saved. Lack of control can, in time, have only one result—the reversion of the country's structure to a state similar to that at the close of the Ice Age, when retreating glaciers left naked walls of smooth rock."

Among the first deer introduced in this region were Axis deer. Later these were followed by Red deer, Wapiti, Sika and Virginian deer.

Apparently, all of these have crossed with the Axis. Whatever the mixture, the deer are seriously threatening the natural beauties of Dusky Sound.

This provides another reason for the territorial board of agriculture and forestry to go slow in introducing deer into the upland areas of mid-Hawaii.

**MORE WARNINGS OF DANGER OF DEER TURNED LOOSE ON HAWAII**

Editor The Star-Bulletin: The Hawaii Audubon society wishes to add its note of protest to the plan to introduce deer to the island of Hawaii.

That the propagation and activities of the goat population on the same island could not be controlled was affirmed in an address to the society by a wildlife management expert employed by the territorial board of agriculture and forestry. And there is no reason to believe that any attempts to control the deer population will meet with any more success.

If such an introduction is carried out, the territory is risking not only the loss of many unique and valuable plants, but of upsetting the ecological balance of the island, which is usually precarious at best.

Otto Degener has written of the denudation of forests on Molokai by deer.

The introduction of rabbits to Laysan island is another classic example.

The island of Hawaii may profit by their example, before experiments are made which may result in irreparable damage.

Very truly yours,  
H. PAUL PORTER,  
President.



Haw. Holiday 6/2/57  
THIS GIANT KOA TREE in the forests of Kona on the Big Island is probably rotten in its center and some day will probably fall.

# TO DEGENER BACKS PROTEST AGAINST AXIS DEER SPREAD

Otto Degener, Honolulu botanist, believes that the introduction of axis deer on the island of Hawaii would be a great mistake. He supports the contention of many botanists, naturalists and others that the deer are likely to wreak great damage to trees, shrubs, flowering grasses, etc. *Star Bull.*  
He has written a four and a half page letter, voicing his protest, to the territorial legislature.

The letter was directed to Rep. Joseph R. Garcia, chairman of the house committee on agriculture, forestry and manufacturers.

He says that the only people interested in the introduction of axis deer and mountain sheep to Hawaii are hunters. *Star Bull.*

He says that many others are opposed to the loosing of these deer on the Big Island.

He says that the \$40,000 mentioned as the cost of putting the deer on the Big Island would be "an inexcusable waste of taxpayers' money."

He gives many reasons why the introduction of the deer would be a mistake.

Mr. Degener holds a master of science degree from the University of Hawaii. He taught botany at the university, and for a while naturalist at the Hawaii National Park.

N. 103

See p. 105

Star Bull. 10/2/50

3/12/51

Star Bull. 6/8/50



# Hawaii's Vanishing Native

By Dr. Otto Degener

Naturalist, Hawaii National Park, 1929

and Dr. Isa Degener

Author, Flora Hawaiensis, Book 6

AS FAMILIARITY breeds contempt, the average resident of the Islands thinks little about our native plants. They are nice, to be sure, but so are the introduced kinds.

Few of us realize that foreigners, ever since the time of Captain Cook, have been eager to collect plants peculiar to the Hawaiian Islands for study regarding their uses as fibers, foods, dyes, medicines, ornamentals, perfumes and timber.

Cook's botanist was David Nelson, Captain Beechey had his naturalists along, the U.S. Exploring Expedition had its naturalists, and during the last hundred years or so botanists from all civilized countries have come to our islands to collect native plants or had resident botanists send them samples for serious study.

SUCH PLANTS, properly dried and labeled as to collector, place and date of collection, and any other facts deemed of interest, mounted on sheets of stiff paper, are preserved in fire-proof cabinets of leading educational institutions, not too differently from books in a library. Thus they are readily available for reference and study.

An example of what is happening to



—Douglas Davidson Photo

Axis Deer

Destructive Beauty

our native flora is shown by a study conducted by Dr. Benjamin C. Stone, professor of botany, University of Malaya, Kuala Lumpur. Stone became interested in the fragrant mokiha of Kauai, and its many strongly scented relatives—known as alani scattered throughout our archipelago. The group belongs to the citrus family and is botanically known as Pelea, a name honoring the fire-goddess Pele.

According to his 200-odd page book, "The Genus Pelea A Gray," published July 31, 1969, the genus consists of 70 endemic species (kinds). He knows of 27 species from Kauai, 22 from Oahu, 6 from Molokai, 4 from Lanai, 18 from Maui, and 10 from Hawaii. The discrepancy in the total of 87 species occurring on the general islands separately when only 70 different species occur in the entire archipelago is due to one and the same species sometimes having been collected on more than one island.

IT IS SIGNIFICANT that one of these Pelea species has not been found since 1880; of the remainder known, five others have not been found since 1870; two others, not since 1920; 15 others, not since 1930; and six others, not since 1940. In summary, of the 70 endemic species 29, or over 40 per cent, apparently have been exterminated in less than 200 years!

The plight of mokiha and alani is not unique. Similar "death throes" apply to other groups of Hawaiian plants studied by American and foreign botanists. As a result, of all our 50 states on the Union, the State of Hawaii is outstanding for wrecking at incredible speed a God-given Paradise.

BIOLOGISTS throughout the world—and there are many, many thousands—know the main causes for such a holocaust. These are the introduction by accident and design of foreign plants, the introduction of foreign insects and plant diseases, and the bulldozing of vast areas of native vegetation to replace it with common foreign ornamentals so that about every tourist hotel in our islands is not at all in a Hawaiian setting but rather apes hotels in Bermuda, California and Florida.

Some of this damage to the native biota is of course justifiable as man's

population explosion competes for room to exist. But the most damaging and least excusable act of "civilized" man's vandalism is the introduction of antelope, goat, mouflon, sheep, black-tailed deer and in particular axis deer from India to the delicate Hawaiian Island vegetation that never developed a partial resistance to such herbivores by developing fecundity, unpalatability, poison or spines.

WE HAVE BECOME the laughing stock of the scientific world and are so dull—nay, lolo—in our island isolation that the fewest of us yet realize it. If we are not wrecking the Islands for tourism, we are recklessly speeding a "germ pool" of specialized organisms

## Plants

into oblivion that have the ability to produce fragrant ethereal oils (mokiha) and other substances far too complex and/or costly for the wisest chemist to duplicate.

How many of these extinct plants had potential value in medicine and industry?

To introduce trampling and browsing axis deer, now contemplated, to the Island of Hawaii (after noting their harmful effects on Lanai, Molokai, New Zealand and elsewhere) would be just one more example of our continued folly for tourists and scientists the world over to condemn. When will the State of Hawaii grow up biologically and not year after year open still another Pandora's box of irreversible blunders?

My first introduction to ground stems extend slowly so that you have a clump that is manageable. Running bamboos, on the other hand, grow all over the place. Their rhizomes (underground stems) are rampant, often sending up new culms 15 feet from the original plant.

Fundamentally there are two separate types of bamboo, the "clump" and the "running." Clump bamboos space their culms (stems) close together and under.

1651 Ala Moana Blvd.  
Honolulu, Hawaii 96815  
2 October 1970

Dear Mr. DeGow:

I am sorry to be replying to your letter of 13 Sept so late, but we have been extremely busy co-ordinating other noise control activities here. Pardon also this handwritten reply but to save time I am taking this liberty.

I can indeed sympathize with your situation - really I can. We over here are presently protected to a degree against such noise activities by our City & County Comprehensive Zoning Code. It has a very strict noise control section and I am sending you a copy of this ordinance. It is useless to you of course because you are not in the City & County of Honolulu. This would be all you need for protection.

However, even if this C&C section did apply I have a feeling that it would not accomplish what you are asking - namely to prevent noise producing activities before they are established. This Code we have allows for measurement of the offending noise and the issuance of court citations if the levels are excessive. You would assume that the hunt club will exceed certain levels and they probably would but there is no law that I know of presently on the books that would provide penalties to assumed noise offenders. They have to be actually caught in the act and measured at the time. Thus there is no presumption that they may exceed certain criteria. Yes, I agree with you that we can pretty well predict what the sound pressure levels will be for various firearms at various distances and they would undoubtedly be excessive of any criteria ever established. But the fact remains that the law is not written that way. Thus even our C&C would probably not be of assistance to your particular problem, would it?



Our City & County Planning Department used to enforce our CZC noise section earlier this year. But since June this has been given to the City and County Building Superintendent who now has this interim responsibility. I say interim because the Legislature recently passed a State Bill that gives the State Department of Health the authority to establish noise control regulations which will pre-empt all past ordinances and will be enforced on a State-wide basis. Then you'll be protected the same as we will.

However, I know Sadamoto Chirochiter whose responsibility this is and he assures me that such a code won't be ready for another year or 2 because of his small staff, no funds, and low priority that noise control commands at the State Department of Health. Thus the State won't have this in effect for quite some time. Meanwhile we here in Honolulu do have the CZC to protect us as an interim measure but the Bldg. Supt. has told me that they will investigate only written complaints on a case by case basis as time and \$ permit them.

Thus a remedy for you may appear to be pretty bleak. However, be informed that I've copied your letter and sent copies to the lawyer who drafted our Mayome Noise Committee Noise Code. This is Mr. George Ashford and I asked him to reply to you directly, with a carbon copy to me. Also, I sent copies to the City and County of Honolulu Corporation Council - a Mr. Paul Stevens and I asked him to also reply to you directly with a copy to me. In addition, I sent a copy to the State of Hawaii Attorney General with the same request. And lastly, I sent a 4<sup>th</sup> copy to the State of Hawaii Ombudsman since he may have ideas on this matter that transcend any of the others. I do hope that these 4 contacts net you something that you may be able to use in defense of your position.

I have only one additional suggestion on this problem of yours and that is to contact the Corporation Counsel for your County. I don't know who he is or where he is located but a little questioning and searching on your part should be able to turn this up for you. Also, getting the services of a lawyer for your group up there at the Volcano would be highly advisable. If someone in your group there has such experience, I would rapidly line him up. He will be of great assistance to you and shouldn't cost you much if he is offended by this same problem.

We earlier this year bought an acre of land up there in back of Volcano Lodge (Kilauea Avenue?) so when we retire we'll be up there with you. I would thus like the area to remain as quiet as when we were there in April. We know Herb and Doris Mann very well and they also live up there with you. I am not a lawyer but a scientist, engineer, technical type which is how I became interested in this problem of community noise control. Measurements, calibration of instruments, report writing on findings one right down my alley, but not the legal aspects.

One last comment. I have copies of all the current noise control laws scattered throughout the Hawaii State Laws and perhaps you can find a lawyer to help you apply some of those ~~as~~ via the courts. They are old but still in effect as far as I know until the State Board of Health pre-empted them all. (But not as yet, as explained earlier). I could send you some of these if you are interested. Let me know.

I hope this "shotgun" approach nets you something that will be of use. Let me know if I can be of additional use. (Our Conservation Council of Hawaii President was also given a copy of your letter, so he may have additional ideas).

Sincerely, Jack F. Allen

Waialua, Oahu 96791.  
Jan. 13, 1972.

Dear Steve:

As we see it, your present fight to keep axis deer from being introduced to the island of Hawaii is simply a continuation of our successful fight about 20 years ago. If you can get a couple of helpers down to the public library or archives, one looking chiefly through old copies of the Advertiser; the other, copies of the Star-Bulletin, you will get wonderful material to refute the silly idea that deer on Hawaii would be of advantage. Of course I have missed articles - these dates represent clippings I have kept.

Hon. Advertiser: 5/28/50, 5/29/50, 6/2/50, 6/6/50, 6/19/50, 6/20/50, 6/20/50, 8/3/50, 8/5/50, 8/18/50, 1/8/51, 3/3/51, 4/9/55, 4/14/55, 4/20/55, 12/21/55, 1/24/56, 12/31/55, 1/9/56, 2/3/56 It is letter, 2/7/56, 2/8/56, 2/10/56, 2/14/56, 5/29/56, 4/25/58, 5/25/58, 5/29/58, 11/29/69

Hon. Star-Bulletin: 6/2/50, 6/7/50, 6/2/50, 6/3/50, 6/5/50, 6/6/50, 6/7/50, 6/8/50, 6/22/50, 6/23/50, 6/24/50, 6/27/50, 7/11/50, 7/14/50, 8/16/50, 8/31/50, 12/29/50, 1/2/51, 1/26/51, 1/30/51, 2/3/51, 2/28/51, 2/13/51, 2/23/51, 2/31/51, 3/2/51, 3/3/51, 3/12/51, 7/25/58, 4/4/68, 10/9/69, 12/30/68, 2/16/70

A key argument for you is the "Resolution of American Society of Mammalogists." I evidently lent it to some one, who failed to return it or, if he had, I must have misplaced it. I apparently quoted it in a letter of mine to the Advertiser dated 1/9/56.

Hilo, Hawaii Tribune Herald 8/19/51, 8/12/51. Ecologist Union, Washington, D.C., 6/29/50. National Park Courier, Washington, D.C., Dec. 1969. "Why Axis Deer Should Not Be Introduced to the Island of Hawaii. Haw. Cattleman's Council, 8/22/68. Some issue of Hon. Star-Bull. in 1969 has "Axis Deer Transplant Postponed." Some local newspaper for 1969 has "Group Fights Axis Deer Release."

Of course many of the early signers of letters have died by this time, but we received much favorable publicity for keeping deer out of Hawaii from: Survival Service Commission, 1110 Morges, Switzerland; Nat. Parks Assoc., 1701 - 18th St., NW, Washington, D.C.; Welder Wildlife Foundation, P.O. Box 1396, Sinton, Texas; Dept. of Zoology, Univ. Wisconsin, Madison, Wis.; Pineapple Research Institute, Hon.; Dr. L.H. MacDaniels, Agr. Exp. Station, Cornell University; HSPA, Hon.; Nature Conservancy, 424 University Farm Place, Madison, Wis.; Wilderness Society, 1010 Mintwood Place, NW, Washington, D.C.; We. The Women of Haw.; Ecological Society of America, Rutgers University, New Brunswick, N.J.; Nature Conservancy, 1214 - 16 St., NW, Washington, D.C. (Seems to be another chapter); Forest Service, USDA Washington, D.C.;

We are not criticizing anyone's efforts to bring forth the best possible case for keeping axis deer out of Hawaii, but we do think it is extremely important that just a handful of individuals ever gets to know about it. The real way of getting results is to squeak like the wheel that needs the oil. Personally, when local politicians or others ignore us, we go over their heads. We did that with hapuu and other controversies. We swamped the US Senate with personal letters and mimeographs. We wish you luck; we did our duty in our generation. The world is your oyster now - do your best to earn a pearl.

Aloha,

Hunt Institute for Botanical Documentation



Feb. 5, 1972.

Dear Sir:

I read with considerable boredom in our newspaper that "The hotly disputed question of introducing axis deer to the Big Island for hunting has been taken up by the Animal Species Advisory Commission at the request of the Big Island commission member who favors the introduction." Nothing at all is mentioned about any Plant Species Advisory Commission that, I am quite sure, would be 100% opposed. It further states that the Commission Chairman Ronald J. Endrizal, an attorney and not a biologist, feels "It's a good objective commission which will be able to arrive at an acceptable solution."

This question of introducing axis deer to the Island of Hawaii is ancient history! Articles and letters appeared about it in the Honolulu Advertiser, of which I noted the following dates: 5/28/50, 5/29/50, 6/2/50, 6/6/50, 6/10/50, 6/20/50, 8/3/50, 8/5/50, 8/18/50, 1/8/51, 3/3/51, 4/8/55, 4/14/55, 4/20/55, 12/21/55, 4/24/55, 12/31/55, 1/9/56, 2/3/56, 2/7/56, 2/8/56, 2/10/56, 2/14/56, 5/29/56, 4/25/58, 5/25/58, 5/29/58 and 11/29/69. Similar ones appeared in the Honolulu Star-Bulletin 6/2/50, 6/3/50, 6/5/50, 6/6/50, 6/7/50, 6/8/50, 6/22/50, 6/23/50, 6/24/50, 6/27/50, 7/11/50, 7/14/50, 8/16/50, 8/31/50, 12/29/50, 1/26/51, 1/30/51, 2/3/51, 2/13/51, 2/28/51, 2/31/51, 3/2/51, 3/3/51, 3/12/51, 7/25/58, 4/4/68, 10/9/69 and 12/30/69. Of course other newspapers as well as periodicals dealt with the deer question. The above express the opinions held mostly by our parents, who were as wise or almost as wise as we. The concensus was against deer then. Why rehash everything over again? Waste time!

From study of the above, I find the arguments in favor of introducing axis deer to the Island of Hawaii to be:

1. Easier access for hunters to a preferred game animal.
2. A small increase in income for the State from hunting license fees.
3. A small increase of business for a few concerns selling sporting goods.

In contrast, I find arguments in opposition to the introduction of deer to the Island of Hawaii to be:

1. Ranchers feared competition from deer for forage for their cattle, and particularly the spread of cattle diseases from one paddock to another - deer are fence climbers.
2. Dairymen feared transmission of bovine tuberculosis. All axis deer in Moanalua Valley, Oahu, were infected; and the infection spread to the dairy herd.
3. Pineapple growers on Lanai showed photos of how deer had eaten out the hearts of pineapple plants; cane growers feared damage to cane; vegetable growers reported injury to vegetables.
4. Axis deer are grazers and browsers, and hence tend to destroy forests. The dry forest of West Molokai where I collected the native gardenia and other rare trees in 1928 is gone forever; the Kaneohe Forest of Lanai is now decadent and shrinking in area; East Molokai was so damaged many years ago by deer that hunters were hired to shoot and exterminate them.
5. Besides helping to destroy our native forests by browsing, deer cause injury and death by trampling roots with resultant soil erosion. They also kill trees during the rutting season by girdling them.
6. Axis deer are selective in their feeding habits. Continental plants (algaroba, klu, cactus, Christmasberry, pamakani, Hilo grass, etc.) have developed spines or poisons to discourage animals from eating them to death. Island plants, almost 100%



edible, are notoriously spineless and nonpoisonous and hence are preferred by axis deer and other introduced herbivores for food. Thus deer eat away the native Hawaiian plants, encouraging their replacement by noxious introduced weeds.

7. The introduction of deer takes hunter pressure off goats, which are presently our major destroyers of vegetation. What hunter will shoot goats when deer are available?

8. The National Park personnel (Mr. Oberhansley, for example) deplored the threatened introduction of axis deer.

9. The late Governor Samuel Wilder King in a letter dated to me January 6, 1956, stated in part: " - - - as far as I am personally concerned, I would not approve of it (liberation of axis deer) either administratively or legislatively."

10. Mrs. DeGenerer and I visited New Zealand for a few months two years ago, a country not unlike our own. The damage by unwisely introduced deer was so great that paid bounty hunters were engaged to "cull" them.

11. The biologically educated World knows that isolated Hawaii's native plants and animals are intimately associated with one another for survival - destroy one link, and the chain breaks. For example, 70 kinds of bird species once lived in the Islands. Now 24 are extinct. Of the 46 bird species threatened with extinction in the United States, 23 are Hawaiian. This is a shameful record for which we are to blame. With their specialized food plants gone, they tend to starve to death. The same type of extinction pertains to other groups of Hawaiian plants and animals. The American Society of Mammalogists, comprising experts from all the States including the Territory of Hawaii, met in Yellowstone National Park June 25-28, 1950. In their Resolution they expressed strong disapproval of the introduction of axis deer to the Island of Hawaii. They even used the word "folly," a word easily translated into the Hawaiian language by every one of us.

Were the Italians to tear down the Colosseum for building blocks, the Greeks to burn the Parthenon for quick lime, the Egyptians to bulldoze the Pyramids for a hotel with sunny golf course, or the French to paint out the illusive smile of da Vinci's Mona Lisa that may conceal a broken tooth, the entire civilized World would be aghast! Similarly, if the most juvenile State of the Union were to introduce deer to the Island of Hawaii to exterminate endemic plants and animals that Nature or God in His infinite wisdom has created on the Island of Hawaii and here alone, the civilized World would be similarly aghast at such vandalism. May God have mercy on the Souls of those who make the wrong decision. Hitler with the aid of gauleiter practiced genocide on the Jews and Gypsies in Europe. Will a petty Hitler with the aid of axis deer practice genocide on the endemic plants and animals created in Hawaii?

As the axis deer question is of World interest to the biologically educated, I am mailing copies of this letter, modified to fit the recipient, to legislators and to museums and educational institutions throughout the World. Such letters may stimulate the coming of scientists and tourists to see Hawaii's natural wonders before their possible destruction by one of the pupule follies threatening the Twentieth Century.

Aloha,

*Dr. Otto DeGenerer*

University of Hawaii, Class '23, Faculty '25-'27  
Naturalist, Hawaii National Park, 1929  
Collaborator in Hawaiian Botany, N.Y. Bot. Garden 1933-  
Author, Flora Haw., Plants Haw. Nat. Park, etc.

See p. 105,

## THE ELEPAIO

Journal of the  
Hawaii Audubon Society



For the Better Protection  
of Wildlife in Hawaii

VOLUME 32, NUMBER 11

MAY 1972

### DISCOVERY OF THE NEST OF THE MAUI CREEPER

By Charles Van Riper III

The Creeper (*Loxops maculata*) is a member of the Hawaiian honeycreeper family (Drepanididae). Different races of this bird inhabit, or have inhabited, six of the major islands in the Hawaiian chain. Today it is common on Maui and Kauai and rare or extinct on the remaining four islands.

The Maui Creeper (*L. m. newtoni*) is a small bird, about four and one-half inches in length. It is greener above and pale yellow below, and has a fairly straight bill. This bird is found on the northeastern slope of Haleakala Crater, Maui, in the upper rain forests where 'ohi'a (*Metrosideros collina*) is the dominant tree.

Although this bird is fairly common in the above mentioned region of Maui, there appears to be no reference to its nest or nesting habits. Henshaw (1902) mentions that adult birds were commonly seen leading young about in June. All of the Maui Creepers in juvenile plumage at the Bernice P. Bishop Museum in Honolulu were collected during the month of June except for one young male obtained on February 24th. All other references to the nesting habits of this bird are confined to other islands.

On Kauai, Rothschild (1898-1900) mentions that Perkins shot a female Creeper with greatly enlarged ovaries on March fifth. During their stay on Kauai, Richardson and Bowles (1964) observed most of the Creepers in loose postbreeding flocks in the late summer months. They collected a Creeper in juvenile plumage on July 19.

During June, on the island of Molokai, Perkins observed a young male being fed, and another bird in down of the nestling stage (Munro, 1944). Bryan (1908) obtained three "fairly well identified" nests of the Molokai Creeper in 1907, but only one was an active nest. On April 30 he found an uncompleted nest with the bird still carrying nesting material. On May 27 and June 9 he found two nests that he assumed belonged to the Creeper. About the nest of May 27 he wrote: "It appeared to be just completed. It is made up of moss neatly woven together, and measures 4.00 inches in diameter by 2.75 inches deep. The interior is lined with the blackish root-like stems of dead moss and a few fibers from disintegrated 'Is'ie leaves. The bowl is just over 2.00 inches across by 1.50 inches deep."

Munro (1944) found a nest on April 19 which he thought to be that of the Lanai Creeper. He writes of the nest: "I found a nest that had been blown out of a tree which I thought belonged to the Lanai Creeper. It was different from the other nests I had examined. It was a neat little ball built compactly of very fine grass stems and skeleton leaves alternately, 1.75 inches across the bowl, .75 inches deep, sides .5 thick." Munro also states that Perkins collected young birds on this island during July.

P.O. Box 154, Volcano,  
Hawaii 96785, USA.  
June 19, 1972.

Sehr geehrter Herr Dr. Schreiber:

Wie Sie wissen, sind beinahe alle einheimischen Phanerogamen endemisch - natürlich die an der Küste sind vom Ozean beinahe überall verschleppt. Wir brauchen Hilfe von Ihnen und Ihren Kollegen JETZT, nicht später wenn es schon zu spät ist!

Da sind nur Paar Botaniker im Staat von Hawaii und viele Jäger (viele, aber natürlich nicht alle, ungebildet die in einer Pflanze keinen Wert finden wenn sie nicht essbar ist und von Tieren gefressen werden die von den Jägern gegessen werden können). ~~XXXX~~ Die Jäger wollen jetzt dass die Regierung Rehe auf der Insel Hawaii einführt! Dieses meint dass die delikaten Endemiten die nie Pflanzenfressende Tiere hatten, vernichtet werden. Natürlich würden alle endemische Tiere auch exrinkt.

Die Politiker wollen vom Publikum wieder gewählt werden und darum werden wir paar Botaniker verlieren wenn nicht hauptsächlich unser Gouverneur Burns so denkt wie wir. Das Interesse von Europäern würde sehr imposant sein. Kann München einen Brief schreiben zu zeigen das die ganze Welt entsetzt ist? Göttingen und Nagoya haben es getan. Wir haben 100 Kopien von den Briefen machen lassen und in Hawaii ausgeschickt.

Wir sind furchtbar schokiert und traurig.

Aloha,

Otto Seegener



Dr. Otto Degener

Waialua  
Oahu / Hawaii 96791  
U S A

6/8/72

Dear Mr. Degener,

With consternation we have heard of the plan to introduce Axis deer to the islands of Hawaii. The plant world of these islands is a unique document of independent evolution that has gone on for a long time. This led to the formation of numerous plants and animals that exist only in this archipelago. Many of these plants and animals have already fallen a victim to strong human influences and plans had to be made to conserve several plant species at least in Botanical Gardens. These Hawaiian native plants are objects of research which can not be replaced and their conservation for this generation and the generations to come is a duty to all who have responsibilities.

One of us (A.P.) visited last year several islands of the archipelago and the two national parks to see the renowned endemic plants. He was very impressed by the difficult task of the administration of the parks to repair at least a small part of the damages, which have been caused by disturbance of the natural equilibrium, especially since the introduction of goats. The history of the silverswords is only one case best known to the public.

The dangers of introducing large herbivorous animals are well known by now, and it is incomprehensible that an idea like this can be advanced, which will threaten the existing remnants of the original vegetation of Hawaii. The advocates of such plans can be sure of a worldwide rebellion not only by some experts. The treasures of the natural vegetation of the archipelago are better known than is perhaps imagined in Hawaii.

We hope and expect that it will be possible to make clear to all who have to decide what their responsibility is.

Yours sincerely

H. Ellenberg A. Pirson G. Wagensitz  
Prof. Dr. H. Ellenberg Prof. Dr. A. Pirson Prof. Dr. G. Wagensitz  
(Lehrstuhl für Geobotanik) (Pflanzenphysiologie) (Lehrstuhl für  
Botanik) (Pflanzenphysiologie) (Lehrstuhl für



11/8/64  
PACIFIC

*Orchid Society*  
OF HAWAII

P.O. BOX 1091, HONOLULU 5, HAWAII, U.S.A.  
(This is for official mail, but as an  
associate editor, I get my mail at home.  
2627 Kaaipu Av., Honolulu 96822.

Nov. 8, 1964.

Dear Doctors Otto and Isa:

This will acknowledge your letter of Oct. 2, Otto. Sorry we did not meet up in the foyer of our new theatre and concert hall. Perhaps it was our mental and physical state, but we did not enjoy that concert very much, first half too modern and the second too repetative. Better luck next time, and perhaps we will see you there. If not, when we get reorganized (Ada had just returned from 3 months on the mainland, we will hope to have you here.)

As to your paper on Hawaii orchids for the Bulletin of our Society, I hope that by now you will have received the galley proof which Mrs. Warne promised to send you. I phoned her immediately upon receipt of your letter, so I have not been quite as negligent as it might appear. We (especially DDM) thought you should see the galley before we printed it and it will appear in one of the numbers for 1965, perhaps no. 1. No one else has written anything on the endemic orchids of Hawaii, to our knowledge.

Mr. Ted Green of the Foster Garden tells me that they have growing in their gardens all three of the native orchids and that they are readily available both in the Waianaes and the Koolaus. Mr. Green seemed to think that Mr. Weissich knows you better than he does. May I suggest that you get in touch with Mr. Weissich and find out just what you want to know about getting some blossoms to dissect, or additional plant material to examine.

When I phoned Mr. Green last week, he stated that the Anoechtchilus had a spike but it wasn't very good looking.

Incidentally, Mr. Kirsch has told me that he was not successful in raising the specimens that you sent over from Lanai. I took my houseguest Miss Fairbairn from New Zealand, and a former student and staff member, Mrs. Helen Yonge Lind over there for three days and promptly caught myself a bug from the Desha daughter. Mrs. Desha seems to know you both quite well. She took us up the mountain road, along and down again one morning in their jeep.

I doubt if anyone else is writing about the Hawaii orchids in any journal, but Mr. Weissich might possibly know. Certainly there has been nothing in our ~~year~~ Bulletin.

Please phone me, if you have not received the galley proof from Mrs. Warne.

Sincerely,

Waialua, Oahu, 96791.  
Oct. 10, 1970.

Dear Mr. Hertlein:

Your Oct. 2 informational letter was forwarded to us to our beach place on Oahu - Mrs. Degener is getting ready to fly to Germany to visit her parents - and we expect to be back at Volcano shortly after Christmas.

We had pertinent letters xeroxed, of which we here enclose copies. We <sup>will</sup> send one only of yours as we doubt it should be distributed among Volcano residents because we feel you are writing to us as an official as well as an owner of Volcano property.

Here are the highlights so far as the Degener Family is concerned:

1. We purchased our house and acre, fee simple, at Kilauea & Iiwi Streets, Volcano, four years ago, partly because of the neighboring unspoiled tree-fern jungle. This on the US Geol. Survey map "photographs taken 1954 and 1963" is in green and labeled "Kilauea Forest Reserve." Being professional botanists and having a state permit allowing us to botanize, we explored for plants in the area. Shortly after, bulldozers wrecked the place, and we concentrated on trying to save for museums some of the rarest Hawaiian endemics.
2. The last time we were in the area, we were accused of trespassing by some one connected with Blair & Co. We showed our permit & US. Geol. Survey map, and the misunderstanding was resolved. Further access to the place was then permitted by Blair's agent for our researches.
3. As we understand from hearsay, Blair & Co., leased the area from the Bishop Estate and bulldozed it, an area now overrun as a result with weed grasses and similar worthless plants. The area, we heard, was then offered for sublease as pasturage, but there were no takers. Of course, we and other residents of Volcano may have missed a published notice in the newspaper about a public hearing, but we doubt one was ever held and suspect the bulldozing was performed contrary to regulations <sup>for a Conservation zone.</sup>
4. We have seen a photostat of a prospectus of the "Mama Lea Hunting Club," to be established on the "Blair Lease" (what we know as Kilauea Forest Reserve). Miss Elizabeth Walker is the representative in the Volcano area, and the club is being formed by the Spalding Company, Ltd., of which Mr. Rufus P. Spalding, Jr., P.O. Box 5, Kailua-Kona, Hawaii 96740, is partner. The club, apparently, is to concentrate on pheasant and pig hunting, and skeet shooting. Membership is \$750, and limited to 100 families.
5. Again, as in the case of the bulldozing of the Kilauea Forest Reserve, we have read no notice about a public hearing. We believe that as owners of real property and as tax payers the Board of Land and Natural Resources of our State owes us a written summary regarding the legal and/or illegal steps by which this area has been so drastically changed from untouched jungle to potential pasture; and a summary regarding the apparent imminent threat of unusual noise pollution and the possible danger to ourselves and property by the use of firearms and perhaps other weapons. Incidentally, we are not against hunting per se, but are convinced that an area of residences, <sup>a residential community with</sup>



lic highways, a golf course and a public school must not have a hunt club with its concomittant activities in the vicinity.

IN SUMMARY: As property owners in Volcano, Hawaii 96785, we herewith protest the establishment of a club or any other group involved in noisy and potentially dangerous hunting or similar activity in our vicinity and herewith call upon our Department of Land and Natural Resources to deny a permit for such purposes.

Aloha,

*Dr. Otto Degener*



# Botanists Protest Axis Deer on Hawaii

By CHARLES E. HOGUE

Island botanists went into action yesterday to protest a project of the board of agriculture and forestry to transplant a herd of axis deer from the Island of Molokai to Mannaioa game preserve on the Island of Hawaii. They said the introduction of deer onto the Big Island would imperil native seed plants, 1,735 of which grow nowhere else in the world.

Chas. G. Lennox, president of the board, said this danger had been taken into consideration and that the herd of deer would be kept under close observation for a period of four or five years and would be destroyed if it was shown to be a menace to native flora of the islands.

**PROTESTS AGAINST** the introduction of deer to the Island of Hawaii were made by William H. Wainwright, graduate assistant, department of botany, University of Hawaii, and Otto Degener, botanist and former Hawaii National Park warden. Aid of the National Parks Service in opposing the project would be sought, Degener said.

One of the chief glories of the Hawaiian Islands is the magnificence of its flora. Botanist Hainwright said, "Of the known 1,735 na-

tive seed plants, 1,633—94 per cent—are found here only. They are irreplaceable. Unfortunately, hunters probably outnumber the naturalists. I do not believe this always will be the case. There is increasing public interest in state and national parks. I believe that future generations of Hawaiians will be grateful for any efforts that are made today to preserve from destruction the native flora and fauna."

**"IT HAS** taken millions of years for plants to adjust themselves to the peculiar conditions found in the Hawaiian Islands," Naturalist Degener said. "As a result 98 per cent of the native plants have become different from plants elsewhere in the world. And many of them are known only on a lava oasis along the Saddle Road on the Island of Hawaii. Among these is

the primitive sedge *oreobolus*, the "missing link" called *koko* and the simple leaved "mamani."

Both botanists stressed the value of the seed plants as earth cover that attracts rain and augments Hawaii's water supply. Mr. Degener said he had made personal observations on Lanai and Molokai that gave evidence that deer destroyed native plants. He said he was told by old Hawaiians that the grassland areas of Western Molokai were formerly forests, and that *nesoluma* and native *gardenia* trees he had seen there in 1923 were gone when he re-visited the area last year. Deer and cattle had destroyed them.

**BOARD PRESIDENT** Lennox said his department's experience with goat control on the Big Island and the fact that two professional hunters, with dogs, were able to control deer on Molokai when they became too numerous, convinced him that the Hawaii experiment can be undertaken safely. "The herd will be placed on a kipu—an area of lava on which vegetation has reappeared—from the Saddle Road and separated by miles of barren lava from the Hawaii National park area," he said. "We will have to install water tanks there before the undertaking can start, and we are going to ask the legislature for authority to make hunting regulations, such as those which now apply to birds. Thus we can prevent an over-abundance of deer through the creation of hunting seasons as they are required."

Mr. Lennox has worked successfully in the past to wild goats and sheep on the Big Island. Since we started our program of trail building and guide service for hunters the goat population has been reduced so materially that we were compelled recently to declare a six month closed season.

"The axis deer is a tropical animal which does not lead in the highland forests and does not multiply as rapidly as *Arctomys* species of the deer family. It has only one fawn a year. There is a sufficient hunting interest to keep its control, I am sure. However, the first herd, introduced here in 1914, were on a lava, waterless lava, will be carefully studied before deer are planted elsewhere on the Big Island."

**"BECAUSE THE** axis deer feeds in the forests, in what is known as the 'O' zone, we took into consideration the possibility of crop damage. A field party made a study on Molokai and received assurances from the residents there that the deer were not a pest."

Vernon K. Beck, chief of the division of the board of agriculture and forestry, said the board of agriculture and forestry


culture and love of the ancient hunting seasons is properly protected. This confidence of deer is as there are to look in such of National Parks Division on land

Dr. Otto Degener  
68617 Crozier Drive  
R R 1 Box 8G  
Waialua Oahu Hawaii 96791

I have read in the local Hawaii newspapers about plans to liberate axis deer on the island of Hawaii. I believe that there are more hunters than botanists on the Hawaiian Islands, but I am also firmly convinced of the fact that even so, the benefit of a relatively few hunters must not be considered important enough to validate this liberation. The Big Island is unique not only in the Pacific but also in the whole world: its flora, including perhaps more endemic species than any other area in the world, is partly millions of years old and yet it offers wonderful examples of recent adaptation to various environmental circumstances. An animal like axis deer will undoubtedly greatly destruct the original vegetation, even if the control will be successful. The axis deer can hardly be restricted outside of the National Park area.

The effects of axis deer on the original nature will not restrict to vegetation and eradication of endemic plants, but will also extend to birds, insects, and all other animals. The ecological balance is so delicate, that introducing a foreign element almost necessarily means a serious menace to the whole system. I have botanized on all the major islands, and I have seen numerous shocking examples of the effects of thoughtless introductions. This must not happen again: the transplantation of axis deer must be prevented.

I am fully convinced that most people of Hawaii will stand against axis deer liberation on the Island of Hawaii.

  
Yrjö Mäkinen

Associate Professor of Botany  
Department of Botany  
University of Turku  
SF-20500 Turku 50, Finland

(Assistant Horticulturist  
University of Hawaii, 1965-1966).

## 2

THE STATE OF HAWAII BOARD OF LAND AND NATURAL RESOURCES. SUNAO KIDO, CHAIRMAN

It is understood that during its 1972 deliberations the Board of Land and Natural Resources may soon be considering the proposal to liberate Axis Deer on the Island of Hawaii.

We, the undersigned people of all Hawaii, are firmly convinced that for various reasons, both economic and ecologic, the liberation of Axis Deer on the Big Island would definitely not serve the best interests of our State.

We, therefore, urgently and respectfully request the Board of Land and Natural Resources to disapprove the impending proposal to liberate Axis Deer on the Island of Hawaii.

ADDRESS

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Berlin-Dahlem

~~Berlin-Datien~~

1000 BERLIN 33

Königin-Luise-Straße 6-8



Berlin, den 20. Juni 1972

Die Mitglieder des Botanischen Vereins der Provinz Brandenburg, gegr. 1859 e.V. möchten auf die Kunde, Axis-hirsche auf den Hawaiischen Inseln auszusetzen, ihrer großen Besorgnis darüber Ausdruck geben und vor diesem Versuch warnen. Die Hawaiischen Inseln sind ein letztes, in manchen Teilen noch fast unberührtes Gebiet, von dessen reicher Pflanzenwelt etwa  $\frac{3}{4}$  aller dort heimischen Arten in ihrer Verbreitung auf diese Inselgruppe beschränkt sind. Nach den bisher gemachten Erfahrungen mit Tierarten, die in andere Gebiete gebracht wurden und sich dort ungehindert vermehren konnten, bildeten diese eine ernste Gefahr für die ursprüngliche Pflanzenwelt, und es wäre ein unersetzlicher Verlust, wenn die durch das Aussetzen von Hirschen gefährdeten Pflanzenarten in wenigen Jahren nur noch in wenigen Herbarexemplaren auf der Erde vorhanden wären. Wir bitten daher, von der Besiedelung der Inselgruppe mit Hirschen Abstand zu nehmen und die dort heimische Pflanzenwelt in ihrer Ursprünglichkeit zu erhalten.

V. Denckmann

Prof. V. Denckmann  
Vorsitzender

Big Isle farm  
groups are  
introducing deer

Hilo - Three Big Island Farm Bureau have joined to oppose introduction of Axis deer - experimental conditions - Herd or other - Hawaii Bureau. One president - ex-County Council - production of crops and livestock - our livelihood - take any additional risks of this nature which will endanger our sole income. The tri-county organization represents units from Kona, Kohala-Maui and Hilo. Opposition to the deer introduction previously has been registered with the Council by sugar, macadamia and cattle industry representatives as well as numerous conservation and scientific spokesmen. Support has come from hunters and archers.

*Help! 02.*

## BERNICE P. BISHOP MUSEUM

Kamehameha Day  
June 12, 1972

P.O. Box 6037, Honolulu, Hawaii 96818 • Telephone 847-3511

Dear Friend of Hawaii,

As we mentioned in earlier letters, last January the State Division of Fish and Game was requested by a group of hunters to re-initiate the proposal to release and maintain Axis Deer on the Island of Hawaii, solely for the purpose of providing a supply of animals that they could shoot for sport.

During the past six months the response of Hawaii's people opposed to this ecologically indefensible and economically senseless proposal has been tremendous. Your opposition can continue to be very effectively made known by means of a letter to Governor Burns and to the State Board which will be making the final decision in this crucial matter. Address:

✓ Honorable John A. Burns, Governor  
Executive Chambers, State Capitol  
Honolulu, Hawaii 96813

and:

✓ Mr. Sunao Kido, Chairman  
Board of Land and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

RECEIVED

JUL 31 1972

HUNT INSTITUTE

The State Division of Fish and Game, which has announced that it is neutral in this matter, has now been required to prepare an Environmental Impact Statement covering all of the possible consequences of releasing and maintaining Axis Deer on Hawaii. The initial Impact Statement may be ready about July of this year; and organizations or individuals who feel they might be significantly affected if Axis Deer were ever turned loose on the Big Island may arrange to review and comment on the forthcoming Impact Statement by contacting:

✓ Dr. Richard E. Marland, Director  
Office of Environmental Quality Control  
Room 436, State Capitol  
Honolulu, Hawaii 96813

if they are not already on the Standard Mailing List of the Office. Copies of the initial Impact Statement will also be available for inspection in all Hawaii State Branch Libraries.

The Petition Campaign Against Axis Deer Introduction is still going full swing !! -- and will be for at least the next few months. The stacks of Petition sheets containing thousands and thousands of signatures continue to grow daily. Please keep up your great work in collecting as many new signatures as possible, and continue to send in filled Petition sheets, as convenient, to the address on the back of the Petition. (Plenty more Petition sheets available--if you like more da' kine, just call or write !)

Again, all of the many primary Co-ordinators of Citizens Against Axis Deer Introduction want to thank each of you personally for the deep concern you share with us and for your direct help in saving the priceless natural heritage of Hawaii !!

Aloha,

*Wayne C. Gagne*  
Wayne C. Gagne  
Entomologist

Hunt Institute for Botanical Documentation

P E T I T I O N

THE STATE OF HAWAII BOARD OF LAND AND NATURAL RESOURCES. SUNAO KIDO, CHAIRMAN

It is understood that during its 1972 deliberations the Board of Land and Natural Resources may soon be considering the proposal to liberate Axis Deer on the Island of Hawaii.

We, the undersigned people of all-Hawaii, are firmly convinced that for various reasons, both economic and ecologic, the liberation of Axis Deer on the Big Island would definitely not serve the best interests of our State.

We, therefore, urgently and respectfully request the Board of Land and Natural Resources to disapprove the impending proposal to liberate Axis Deer on the Island of Hawaii.

NAME

ADDRESS

Mitsuo Nishimura

Dept. of Biology, Faculty of Science,  
Kyushu University, Fukuoka, Japan

~~Takashi~~ HISOKAWA

Tsuo MIYATA

Makoto OMURA

Yasuaki Sugi

Eiko HAMADA

Hiikiyo HARAGUCHI

Dear Dr. Degener,

Your letter on the back of your reprint on the Illustrated Hawaiian Flora fills me with shame. I only glanced at the first part when it came, and as I was very busy seeing my book on Joseph Banks through the press, it got placed on one side until the time when I was able to go through the arrears that have piled up over these last years.

Please forgive me, and first of all I do hope that you were successful in preventing the importation of Indian axis deer. I am a New Zealander by birth, and am only too familiar with the disasters brought about by deliberate importation of exotic species. The N.Z. Govt. is now warring using aerial sprays against the opossums, and try to convince people that the poisons used are selective and do not harm any other wild life.

As regards kks/references to pineapples, do not remember ever having seen any descriptions or drawings that might be concerned with these plants. You will

Yours sincerely,

*Averil Lysaght*  
(Averil Lysaght)

6, Cumberland Gardens,  
Great Percy St., W.C.1.

12th July, 1972.



Back on Oahu Aug. 1 - hope verax await us. Sept & Oct. in Europe. (Ed.)

KYUSHU UNIVERSITY

FUKUOKA 812, JAPAN

FACULTY OF SCIENCE  
DEPARTMENT OF BIOLOGY

RECEIVED

JUL 28 1972

HUNT INSTITUTE

July 11, 1972

Dear Legislators:

As a biologist who visited Hawaiian Islands many times and as a friend of many citizens of Hawaii, I am firmly convinced that the liberation of axis deer on the Island of Hawaii would not serve the best interests of your State.

The introduction of axis deer as a game animal would mean a irreparable damage to native plants and birds, and would seriously threaten the natural beauty of your State. The liberation of axis deer on the Big Island can threaten the delicate balance of ecosystem, can be disastrous to agriculture and can be perirous to the unparalleled natural beauty of your State.

Aloha,

M Nishimura

Mitsuo Nishimura, Ph. D.  
Professor of Biology  
Kyushu University

ハワイ州議員各位:

ハワイの島々を幾度も訪問した生物学者として、また多くの  
ハワイの市民の友人として、私はハワイ島に axis deer を放つ  
計画はハワイ州の利益に合致してはいらぬと思いません。

狩りの目的のために axis deer を導入する計画はハワイの  
自生の植物や鳥類に取りかえしのつかぬ影響を与え、また  
ハワイの自然の美しさを著しく損うおそれがあります。 Big  
Island に axis deer を放つことは生態系 (ecosystem) の  
微妙な釣り合いを乱し、農業にも危害を加えられる、  
比類のないハワイの自然美を損うおそれがあると思ひます。

アロハ

西村光雄  
九州大学理学部教授

BOTANISCHE STAATSSAMMLUNG  
MÜNCHEN

Direktor: Prof. Dr. H. Merxmüller

8000 München 19, 9-6-1972/  
Za.  
Menzinger Straße 67  
Telefon 574033

Herrn  
Dr. Otto Degener  
68-617 Crozier Drive  
W A I A L U A , O A H U 96791  
HAWAII - USA

Sehr geehrter Herr Dr. Degener,

vor einigen Tagen ist Ihre Pflanzensendung gut bei uns  
eingetroffen, der auch 7 Sonderdrucke beige packt waren. Für  
alles möchten wir uns verbindlichst bedanken.

Mit allen guten Wünschen für Sie und Ihre verehrte Frau  
Gemahlin und mit ergebenen Grüßen

Ihre

*Annelis Schreiber*

(Dr. A. Schreiber)

im Auftrag des Direktors



P.O. Box 154, Volcano, Hawaii 96785  
May 11, 1972.

Dear Mrs. Muhl:

Mrs. Degener & I are greatly disturbed about the danger of introducing deer to the Island of Hawaii. We wish to have as many copies of THE ELEPAIO, Vol. 32, No. 11 (May 1972) as you can spare for the enclosed 10 cheque. We would distribute this number to museums and botanical gardens of the World, ALL of which are interested in the preservation of the extraordinary Haw. biota. It is truly a World Treasure, not simply the private property of a handful of hunters to destroy.

Perhaps my little protest on page 105 may stimulate help. At least 50 institutions in America, Europe, New Zealand, Australia, and Japan should be interested as all are receiving excess duplicate Haw. herbarium specimens from us as gifts. Some, like the New York Botanical Gardens and the University of Mass., have been getting them from me since 1922 to an aggregate of 10,000 to 25,000 individual numbers. Many of these plants preserved in these herbaria are now actually extinct in the Hawaiian Islands.

Confidentially, Mrs. Degener & I believe the introduction of deer to the Island of Hawaii to be imminent from a report of the recent Hilo meeting we just heard from a participant. Mr. Endrizal, according to the report, seems prejudiced in favor of the hunters. Curiously enough, most of these at the somewhat roudy meeting were of Portuguese rather than Oriental ancestry, and quite loquacious, thus drowning out in some disorder more studious arguments. For example, they ignored any evidence of deer damage on Lanai and Molokai, stating they were not interested in those islands but only in the Island of Hawaii. The leading hunter, whose name is well known to all, replied to one pertinent argument against the introduction that he (spokesman for local hunters) "was not interested in logic, but in the introduction."

Though I had mailed Mr. Endrizal a copy of Mr. Munro's list of Kanepuu, Lanai plants, he evidently never had bothered to note it, as he asked in the meeting for the deer opposers to prove what plants had been growing there! My informant then told him about the letter I had sent him.

Personally, of course I may be wrong and unjust, I fear the commission has been picked somewhat to be against us conservationists. Reasoning is simply ignored by the majority of the hunting fraternity, but certainly not all of them (Mr. Mitchell & others).

Aloha,

*Elle Degener*  
Collaborator in Hawaiian Botany, N.Y. Botanical Garden.



For the Better Protection of Wildlife in Hawaii  
**HAWAII AUDUBON SOCIETY**

P. O. Box 5032  
HONOLULU, HAWAII 96814

May 22, 1972

Dr. Otto Degener  
P. O. Box 154  
Volcano, Hawaii 96785

Dear Dr. Degener:

We are pleased that you want to send copies of the May issue of THE ELEPAIO to botanists and herbariums who would support our cause of defending the native biota from the onslaught of axis deer.

The Editor, Miss Unoyo Kojima, kindly ran off 99 copies of the May issue from the original stencil, and we have packed them to mail to you today. Thank you for the check for \$10.00 to cover the costs of paper and postage.

All of the Concerned Citizens Against the Axis Deer Introduction appreciate your continuing efforts.

If you are in Honolulu the first Friday of the month, you may want to attend a meeting of the Animal Species Advisory Commission — open to the public. Several of us will be attending the June 2nd meeting here.

With best wishes,

*Mae E. Mull*  
Mae E. Mull  
Secretary

2 *4/21/72* *elce*  
\$10.00

May 24, 1972.

Dear Miss Mull:

I received your May 22 letter the same day I, in panic, mailed a letter to Dr. Ziegler of the Bishop Museum. I had feared the Elepaio copies had been mailed to our beach place at Waialua and I would not get them in time for the June axis deer meeting in Hilo. Dr. Ziegler was to ask Miss Titcomb, whose office is in the same building as Dr. Z's.

Being at our mountain cottage at Volcano, I lack my notes, correspondence, etc. But the Elepaio, not only warns about danger to endemic plants in my letter, but also gives pertinent information about our endemic birds which depend upon our plants. Thus at least some of the copies to Universities should reach some zoologists as well as botanists. Of course copies mailed to Bot. Gardens won't reach zoologists.

Mrs. Degener & I wish to send copies of the Elepaio to some key officials - those involved in meetings, especially. We will NOT tip in, as I had carelessly written Dr. Ziegler, a letter I wrote as it is controversial. But such a letter (partly to save postage) we plan to place in some of the same envelopes with the Elepaio and any other reprints we may happen to have ready for distribution.

As you know, Mrs. Degener & I are NOT members of the Audubon Society, so anything we do we do as botanists and private citizens paying taxes on land we own on Hawaii which MAY BE INVOLVED by any hasty liberation of weeds or pests.

Mrs D., I wish to thank Miss Kojima and you for your kindness in running off extra Elepaio copies for us and selling them to us. That is where your responsibility ends.

At a May meeting in Hilo, a leading hunter remarked his group was "not interested in logic; we want deer." If logic is ignored, perhaps ridicule will attract attention.

Aloha,



P.O. Box 154, Volcano,  
Hawaii 96785, USA.  
May 25, 1972.

Dear Sirs:

As too large a segment of the population evidently cannot distinguish between loud-mouthed eloquence and logic, statehood for juvenile Hawaii and Alaska, according to my opinion, was premature and hence seems a failure. Vast areas of mauka, or upland, Kauai could have been saved from devastation if the residents had turned it over to the Federal Government for making into a National Park. Now the native forest is beyond saving, if we can believe a recent report by a local forester printed in the Honolulu Star-Bulletin. This devastation is largely the result of the foolish introduction and negligently permitted spread of the prickly Mainland blackberry by a sugar plantation luna and by the almost criminally stupid introduction of the black-tailed deer for eloquent but illogical hunters. Now that they have them, these deer have increased to a greedy herd of 400-500 animals IN SPITE OF HUNTER PRESSURE!

As in the case of the threatened destruction of the hapuu forest in Princess Pauahi's former rainforest lands, I concentrated in my plea for logic not to Honolulu, where it might not have been understood, but to ALL members of Congress in Washington. That helped bring action, I believe, by men who know of early delinquencies in ecology in their own States and therefore could give us wise <sup>early</sup> advice. *S*

The continuous threat of liberating axis deer on the Island of Hawaii and the continuous vain attempts to white-wash these attractive brown animals as harmless before perhaps gullible listeners, is a logical argument for placing all Island of Hawaii forests above the rainforest at about 5,000 feet elevation under Federal jurisdiction to be administered by the Dept. of the Interior. This can be done readily by simply enlarging the boundaries of our local National Park. This is my plea to all Senators and Representatives in Congress. Why not follow my example with tiki airmail letters to them, giving your own, not my reasons for keeping the island free of such "varmints"? Incidentally, you will get interesting and instructive replies. Among mine is one signed by Senator Muskie. So many of these men have visited our National Parks as tourists or while in one of the Services during World War II. Simply address your letters:

Hon. John Doe, U.S. Senate, Washington, D.C.

Hon. John Doe, House of Representatives, Washington, D.C.

Any public librarian will be glad to give you a complete list of their names, with the States represented. If you are not a citizen of the United States, you can write your Ambassador or Consul stationed in Washington to intercede for the sake of World Science. The topic would be timely and safe for any diplomatic dinner.

Field Enterprises Educational Corporation" is now working on a hard cover, beautifully illustrated book. "SCIENCE YEAR has an annual printing of about 500,000 copies and is directed toward students from advanced elementary grades through the first two years of college. We have found also that many adults - parents and teachers - get a great deal of information and enjoyment from reading the book." I have been contacted April 6 "in regard to a photo essay for the 1973 edition of SCIENCE YEAR, the annual science supplement to the World Book Encyclopedia." I gave my report which, in all fairness, was very bleak indeed. It explains, among other things, why tourists in increasing numbers are skipping Hawaii Nei for less devastated islands farther south. We have been the laughing stock of the scientific world for our speed in wrecking a World treasure. But how many people in Hawaii Nei are akamai enough to understand this?

Aloha;

*Otho Segeuer*

University of Hawaii, M.S., 123; Faculty '25-'27  
Naturalist, Hawaii National Park, 1929  
Author, Flora Haw., etc.

RECEIVED

JUN 5 1972

HUNT INSTITUTE



For the Better Protection of Wildlife in Hawaii  
**HAWAII AUDUBON SOCIETY**

P. O. Box 5032  
HONOLULU, HAWAII 96814

May 26, 1972

Dear Dr. Degener,

How thoughtful of you to send Miss Kojima and me copies of your book, *NATURALIST'S SOUTH PACIFIC EXPEDITION: FIJI*. We'll treasure the author's inscription in Fijian !

Bill, my husband, immediately read the chapter on cannibalism and found it intriguing. I recently received my Master's degree in Sociology, so the culture of that society interests me, as well as the ethnobotanical.

We hope you have received THE ELEPAIO bundle now. We surely are pleased to have our journal circulate in the botanical scientific community. The April issue also had some good axis deer material, especially on the disease aspects. I'm sorry that I don't have an extra copy at home to send you.

I enclose a copy of Hawaii's Endangered Birds and Mammals Act, signed by the Governor last week. It is far from perfect, but we hope it will be a useful tool to save threatened native ecosystems.

With best wishes to you and Mrs. Degener,

Sincerely yours,

*Mae Evelyn Mill*  
Mae Evelyn Mill  
Secretary

13

It is understood that during its 1972 deliberations the Board of Land and Natural Resources may soon be considering the proposal to liberate Axis Deer on the Island of Hawaii.

We, the undersigned people of ~~all Hawaii~~, are firmly convinced that for various reasons, both economic and ecologic, the liberation of Axis Deer on the Big Island would definitely not serve the best interests of our State.

We, therefore, urgently and respectfully request the Board of Land and Natural Resources to disapprove the impending proposal to liberate Axis Deer on the Island of Hawaii.

ADDRESS

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20-22 lines visible. The paper appears slightly aged or off-white. There is no handwriting or printed text on the page.



## AXIS DEER TO THE BIG ISLAND??

A PROPOSAL HAS BEEN MADE THROUGH THE STATE DIVISION OF FISH AND GAME THAT AXIS DEER BE INTRODUCED TO THE BIG ISLAND AS A GAME ANIMAL TO BE SHOT BY HUNTERS. ONCE INTRODUCED IT WILL NOT BE FEASIBLE TO ELIMINATE THESE DEER, AND DISADVANTAGES AND DAMAGE WOULD BE OVERWHELMING COMPARED TO POTENTIAL BENEFIT TO A FEW INDIVIDUALS.

## IRREPARABLE DAMAGE TO NATIVE PLANTS & BIRDS

AXIS DEER WILL DESTROY TREES, SHRUBS, AND HERBS BY BROWSING AND TRAMPLING. WE POSSESS A UNIQUE NATURAL HERITAGE IN MANY PLANTS FOUND ONLY HERE; IT IS SCIENTIFICALLY DOCUMENTED THAT LARGE ANIMALS LIKE DEER ARE DEVASTATING TO VEGETATION OF OUR ISLANDS. NATIVE FORESTS ARE THE REFUGE OF THE WONDERFUL NATIVE BIRDS, AND DAMAGE TO FORESTS BY DEER WILL DESTROY THE BIRDS' ONLY HABITAT. DEER WOULD INVADE HAWAII VOLCANOES NATIONAL PARK AS WELL AS OTHER NATURAL AREAS.

## DESTRUCTION OF AGRICULTURE

AXIS DEER WILL NOT BE PRACTICALLY EXCLUDED FROM LARGE AREAS BY FENCING AND WILL DAMAGE CANE PLANTATIONS, FORAGE CROPS, ORCHARDS, NURSERIES, AND TRUCK CROPS. BESIDES CAUSING IMMEDIATE LOSS, THEY WILL SERIOUSLY THREATEN THE STATE'S FUTURE ECONOMIC GROWTH BY PLANNED DIVERSIFICATION OF AGRICULTURE.

## CARRYING TRANSMISSIBLE DISEASES

AXIS DEER WILL FORAGE AMONG DOMESTIC HERDS, COMPETING FOR FOOD, AND SERVE AS POTENTIAL RESERVOIRS AND DISSEMINATORS OF DISEASES THEY SHARE WITH CATTLE AND OTHER LIVESTOCK. DEER CARRY TUBERCULOSIS, UNDULANT FEVER, LEPTOSPIROSIS, ANAPLASMOSIS, PARASITIC WORMS, AND OTHER DISEASES AFFECTING CATTLE AND SOME TRANSMISSIBLE TO MAN. SOME OF THESE DISEASES ARE NOW IN HAWAII AND COULD SOON BE SPREAD BY DEER; OTHERS WOULD BE FAR MORE DIFFICULT TO CONTROL AND IMPOSSIBLE TO ERADICATE IF INTRODUCED IN THE PRESENCE OF DEER.

## WHO BENEFITS

AXIS DEER WILL SERVE AS TARGETS FOR THE SMALL FRACTION OF HAWAII'S POPULATION THAT WILL HUNT THEM - LESS THAN ONE PER CENT. THIS WOULD BE SLIGHT COMPENSATION FOR THE GREAT LOSS TO OUR WHOLE STATE! FURTHERMORE, AXIS DEER ARE PRESENT ON THE ISLANDS OF MOLOKAI AND LANAI AND HUNTERS CAN SHOOT THEM THERE. DEER DAMAGE TO THE ENVIRONMENT IS SIGNIFICANT ON THESE ISLANDS, BUT FORTUNATELY LESS THAN IT WOULD BE ON THE BIG ISLAND. THOSE AGAINST THE PROPOSED INTRODUCTION INCLUDE AGRICULTURISTS, RANCHERS, CONSERVATIONISTS, NATURALISTS, SCIENTIFIC SPECIALISTS, AND MANY OF THE STATE'S OTHER CITIZENS.

THE INTRODUCTION OF AXIS DEER TO THE BIG ISLAND WOULD BE A DESTRUCTIVE ACTION THAT IS BIOLOGICALLY WRONG, UNSCIENTIFIC, AND ECONOMICALLY WASTEFUL.

## BLOCK AXIS DEER INTRODUCTION

SEND PETITIONS TO:

PLACE  
STAMP  
HERE

CITIZENS AGAINST AXIS DEER INTRODUCTION

P. O. BOX 5032

HONOLULU, HAWAII 96814

P.O. Box 154, Volcano,  
Hawaii 96785, U.S.A.  
June 15, 1972.

Dear Dr. Tavares:

Mrs. Degener & I need your help, really help to save a World Treasure from destruction.

The population of the State of Hawaii is made up of about half Orientals (mostly of Japanese origin) and half Occidentals. Many of these are Portuguese from your colonies, like Madeira. Most of the early immigrants have died of old age by this time, but their children and grandchildren are very important in local government, business, farming and ranching. They are mostly hard working and of the Catholic faith. They are musical and artistic, but not very scientific.

There are many hunters in the State of Hawaii and very few botanists. Now the hunters want our State Government to liberate deer on the Island of Hawaii. To do so will mean that the delicate native plants (never evolved to withstand trampling and browsing by mammals) will be exterminated. We are trying our best to convince our Legislators that to bring in deer would be a terrible mistake. Our Portuguese people would feel terrible if some famous artist's painting or statue were destroyed. But they do not realize that deer would destroy far more precious creations than those made by man. They were made by Nature or God!

Could you and your colleagues in Portugal (like the scientists of Göttingen and Nagoya), write a letter of protest or advice? I could have it reprinted and sent to our Legislators. They may not listen to me who lives in Hawaii. But a letter from Lisbon should help convince them that the World is watching: they should not open a Pandora's box of trouble.

Aloha,

P.O. Box 154, Volcano, Hawaii 96785, USA  
June 18, 1972.

Dear Prof. Tavares:

Mrs. Degener & I need your help - really help to save a World Treasure from destruction.

The population of the State of Hawaii is made up of about half Orientals (mostly of Japanese origin) and half Occidentals. Many of the last are Portuguese mainly from your colonies like Madeira. Most of these early immigrants have died of age by this time, but their children and grandchildren are very important in local Government, medicine, business, farming and ranching. They are chiefly hard working, frugal and of the Catholic faith. They are musical and artistic by Nature rather than scientific.

There are many hunters in the State of Hawaii and very few botanists. Now the hunters want our State Government to liberate deer on the Island of Hawaii. To do so will mean that the delicate native plants (never evolved to withstand trampling and browsing by mammals) will be exterminated. We are trying our best to convince our legislators that bringing in deer is a terrible mistake. Our people of Portuguese ancestry particularly would feel terrible if some famous artist's painting or statue were destroyed, but they do not realize that the bringing of deer would mean that God (or Nature's) far more precious creations would be destroyed forever.

As you know about 99% of our Phanerogams are endemic, and the animals depending on them also. Could you and your colleagues in Portugal (like the scientists of Göttingen and Nagoya) write a letter of protest, particularly to our Governor Burns? I could have it reprinted and sent to our Legislators. They may not listen to me who lives in Hawaii. But a letter from Lisboa scientists should help convince them not to do a dangerously foolish thing like opening the box of Pandora.

Aloha,





## NEST OF THE MAUI CREEPER





THE OUTDOOR CIRCLE

200 No. Vineyard, Honolulu, Hawaii 96817

June 15, 1972

Dr. Otto Degener  
P.O. Box 154  
Volcano, Hawaii 96785

Dear Dr. Degener:

We followed your instructions of May 30 and sent the Hunt Botanical Library, Carnegie-Mellon University, Pittsburgh, Pa. "Keep Hawaii Green" and the tear sheet from the May 24 Star Bulletin. We were not able to enclose photographs as we do not have suitable ones at the present time.

Will give Horace a copy of your letter - Thank you for your compliment on "Keep Hawaii Green".

Sincerely,

Mrs. John T. Humme, Chairman  
Landscaping and Planting

JH:aa

Kaneohe Outdoor Circle  
Box 32—Kaneohe, Hawaii 96744

Kona Outdoor Circle  
Kailua-Kona, Hawaii 96740

Lahaina Outdoor Circle  
Lahaina, Maui, Hawaii 96761

Lani-Kailua Outdoor Circle  
Box 261—Kailua, Hawaii 96734

Maui Outdoor Circle  
Box 402—Kahului, Maui, Hawaii 96731

Wahiawa Outdoor Circle  
Box 187—Wahiawa, Hawaii 96786

Wai-Momi Outdoor Circle  
Box 1—Wai-Momi, Hawaii 96795

6/20/72

Botanischer Verein der  
Provinz Brandenburg  
Berlin-Dahlem  
Königin-Luise-Str. 6.9

Berlin, den 20. Juni 1972

Die Mitglieder des Botanischen Vereins der Provinz Brandenburg, gegr. 1859 e.V. möchten auf die Kunde, Axis-hirsche auf den Hawaiischen Inseln auszusetzen, ihrer großen Besorgnis darüber Ausdruck geben und vor diesem Versuch warnen. Die Hawaiischen Inseln sind ein letztes, in manchen Teilen noch fast unberührtes Gebiet, von dessen reicher Pflanzenwelt etwa  $\frac{3}{4}$  aller dort heimischen Arten in ihrer Verbreitung auf diese Inselgruppe beschränkt sind. Nach den bisher gemachten Erfahrungen mit Tierarten, die in andere Gebiete gebracht wurden und sich dort ungehindert vermehren konnten, bildeten diese eine ernste Gefahr für die ursprüngliche Pflanzenwelt, und es wäre ein unersetzlicher Verlust, wenn die durch das Aussetzen von Hirschen gefährdeten Pflanzenarten in wenigen Jahren nur noch in wenigen Herbarexemplaren auf der Erde vorhanden wären. Wir bitten daher, von der Besiedelung der Inselgruppe mit Hirschen Abstand zu nehmen und die dort heimische Pflanzenwelt in ihrer Ursprünglichkeit zu erhalten.

V. Denckmann

Prof. V. Denckmann

Vorsitzender

Big Isle farm  
group, the  
introducing  
into - These  
can harm the  
of the Ameri-  
under Axis deer  
permanently  
Herbert Oie  
the Hawaii  
Bureau, his  
County Coun-  
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production  
investigat-  
to take any  
of this nat-  
danger our  
The tri-  
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has been  
and oppo-  
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resistant  
saccharine  
entirely  
has come  
archers.



7/27/72

# British Columbia Provincial Museum

*July 27, 1972*

*W*



July 27, 1972

Dr. Otto Degener,  
Waialua, Oahu,  
Hawaii, 96791

Dear Dr. Degener:

I am truly concerned at the news of the proposal to introduce Axis deer onto the Island of Hawaii. This is playing with ecological dynamite in a real way. The fuse may be a long one, but that does not justify the match.

The kind of damage that follows such an introduction has been amply demonstrated elsewhere in many well-known instances. Here, the introduction of deer to the Queen Charlotte Islands, and the consequent damage to forest regeneration is a well-known case. Similar situations have arisen in New Zealand through introductions of herbivorous animals where no appropriate predators exist to act as population controls. As predators, hunters are inefficient in regulating game populations. In the absence of wild predators an uncontrolled explosion of deer can be predicted. They will become an epidemic in the truest sense of that word.

Perhaps if the hunters could be assessed the estimated costs and damages that will accrue through the loss of forest regeneration (I understand that the Koa tree is particularly palatable to herbivores; and how about Sugar cane?), the loss of grazing for the livestock raisers, the cost to farmers of erecting deer-proof fences around their cane fields, and the loss of the unique native flora, they might see the matter in a different light.

It is generally agreed that it is the responsibility of a Government to maintain the greatest good for the greatest number of residents of the territory under its charge. To carry out a project that will affect the ecology and economy of the whole island at the instigation of a lobby representing only one percent of the population is surely a betrayal of administrative responsibility and a political tampering with the residents' environment that cannot in any way be justified. Surely such a small group should not be given the right to do so much damage affecting so many people.

Sincerely,

*T. C. Brayshaw*

T. C. Brayshaw,  
Associate Curator of Botany.



The massive horns on this mouflon ram in Lanai are a prized trophy for hunters, but hunting of the sheep will not be permitted until a good population builds up.

Ten wild, slick-coated mouflon sheep are being acclimatized to Hawaii in the Naupaka area of the Lanai Game Management area.

The animals were flown there last week from Oahu after ship arrival from the Open Diamond Bar Ranch in Chatsworth, California.

If the Territorial Division of Fish and Game succeeds in building up a good population of these animals here, a spokesman said, Hawaiian hunters can try for a rare and prized trophy unavailable to the public anywhere else in the U.S.

#### HUGE HORNS

The rams' horns—prized trophies—are enormous, curving back and down similar to those of Rocky Mountain Bighorn sheep.

There are no new wild herds of mouflon available to hunters in the nation except on one of two private hunting reserves. They are usually found only in zoos and private game farms.

Although they are ancestors of the woolly domestic sheep, the mouflon have coats of hair with only a thin undercoat of wool, giving

them a slick appearance.

**HELD IN PEN** The five rams, three ewes and two lambs that arrived in Lanai will be held in a pen for several weeks before release into the wild.

The Fish and Game Division has made several other mouflon releases on Lanai and some of the sheep are starting to have lambs in the wild.

Eventually, the herds will provide top-flight hunting for local sportsmen, a division spokesman said.

Is the water in immature or mature coconut as high in saturated fat as the coconut meat is? *How Star-Bull*

The water inside the coconut does not contain saturated fat. It is almost fat free.

However, coconut milk made by soaking grated coconut meat in water and squeezing out the liquid is very high in coconut oil. *3/11/70*

#### OTTO DEGENER BACKS PROTEST AGAINST AXIS DEER SPREAD

Otto Degener, Honolulu botanist, believes that the introduction of axis deer on the island of Hawaii would be a great mistake. He supports the contention of many botanists, naturalists and others that the deer are likely to wreak great damage to trees, shrubs, flowers, grasses, etc.

He has written a four and a half page letter, voicing his protest, to the territorial legislature.

The letter was directed to Rep. Joseph R. Garcia, chairman of the house committee on agriculture, forestry and manufacturers.

He says that the only people interested in the introduction of axis deer and mountain sheep to Hawaii are hunters.

He says that many others are opposed to the loosing of these deer on the Big Island.

He says that the \$40,000 mentioned as the cost of putting the deer on the Big Island would be an inexcusable waste of taxpayers' money.

He gives many reasons why the introduction of the deer would be a mistake.

Mr. Degener holds a master of science degree from the University of Hawaii. He taught botany at the university, and for a while naturalist at the Hawaii National park.

the statement that Gov. Burns said Niihau's flora, birds and marine life are among the best examples of natural life in Hawaii. The above very likely applies to the marine life, but so far as native plants and birds are concerned the statement is unfortunately untrue. *How Star-Bull*

From study of comparable low islands and from past records and a few moderately modern observations of Niihau, this island, next to Kahoolawe, is the least important of our once populated islands regarding native Hawaiian plants and birds. Cut off from most rain clouds by lying lee of Kauai and barely 1,300 feet high at its summit, it was anciently clothed with some patches of dry forest and otherwise covered with pili grass, naio or bastard sandalwood, williwili trees, aalii, Canthium, nehe, kokolau or Hawaiian

tea, a few cucumber relatives and mints, etc. With the introduction of European mammals such as goats, horses and cattle the past native vegetation found only on Niihau and no other place on earth, has become as extinct as the dodo of Madagascar and the passenger pigeon of the Mainland United States. With the disappearance of the Niihau plants upon which certain specialized birds depended for food, these last also have become extinct.

Were the browsing and trampling herbivores removed from Niihau, perhaps a few seeds of endemic plants lying dormant in the soil for 50 to 100 years might just possibly germinate and reproduce their kind. But such a hope is very visionary indeed. The fact remains that the endemic biota is gone, and to try to replace it would be far more difficult and costly—actually impossible—than it was sending our men to the moon.

Now that we have practiced genocide, with the aid of our herds of goats and cattle, on the biota of Niihau we cannot bring it back. All the king's horses and all the king's men cannot put Humpty Dumpty together again. Niihau is broken like Humpty Dumpty, the egg in an ancient lullaby.

There is, however, a future for both Niihau and Kahoolawe. These islands are largely waste land covered with kiawe, weeds and grasses of modest forage value for game animals. If Gov. Burns wishes to promote the further existence of native plants and animals

—may the good Lord have mercy on the souls of those who practice genocide on His creations—he should organize the destruction of such organisms by reducing the number of goat, axis deer, blacktailed deer, sheep, mouflon and pronghorn on those islands where the endemic vegetation and the animals associated with it are still possible to save. These are the higher islands with rainforests. Presently, the State of Hawaii is the laughing stock of biologists and ordinary citizens throughout the world for the inane fumbling with God-given natural resources.

Denuded Niihau

SIR: In the Star-Bulletin Feb. 11 is

DR. OTTO DEGENER



## Deer and Pines

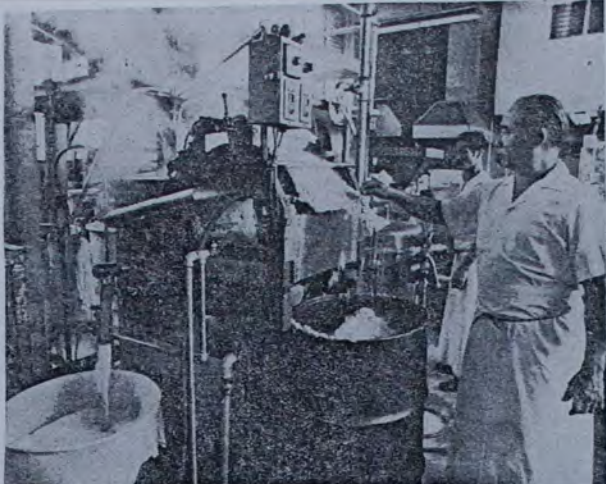
SIR: Two articles, outstanding from a biological standpoint, appeared in the Dec. 4 Star-Bulletin.

The fact that "Diseased Cattle are Destroyed" on Molokai is certainly commendable. But the \$10 bet by William Fernandes, deputy to the State agriculture chairman that the "cattle tuberculosis problem" would be licked by January, is a bit rash. It is true that some love-sick, tubercular, feral bull will no longer be free to nuzzle a coquettish, receptive heifer through the fence. But until fence-jumping axis deer, the most prevalent vector for bovine TB, are exterminated on Molokai to prevent their grazing all night long in cattle pastures and paddocks, infection of cattle with TB may reoccur practically at any time in the future. Please, Mr. Fernandes, mail a cheque for \$10 to the undersigned.

"Are Pines Best?" so well written by the University student Nengah Wirawan, is also being questioned by many European foresters. They tend to favor a "mixed forest." Broad-leaved trees and underbrush do not litter the ground with poisonous, oily needles; but produce a healthy, moisture-retaining duff. Perhaps it is a blessing in disguise that the foreign pine aphid is beginning to overrun our exotic pine (*Pinus*) plantings, thus again opening up areas for healthy, native broad-leaved vegetation.

It is true such biological control of culling out planted weed trees may not be favored by the local lumbermen. Yet such rejuvenation of our badly mauled native forests is increasingly favorable to the study of the natural sciences. These actually constitute a major industry manned not only by specialists studying conspicuous flowering plants but by soil bacteriologists, algalogists, bryologists, lichenologists, mycologists and a host of unfamiliar other "ologists" in the field of botany; and by entomologists, malacologists, mammalogists, ornithologists and numerous other strange "ologists" in the field of zoology. These men and women are attracted from far and near to a world-famous, truly unique, island paradise. All bring together more foreign and U.S. currency to bolster the Islands' economy than the cleverly advertised but ruinous lumber industry.

DR. OTTO DEGENER



Milk, extracted from cooked soybeans, pours out of spout at left. Okara or pulp, leaving extractor at right, is sold to hog farmers.



TOFU STILL is made the old fashioned way at Kanai Tofu Factory, founded 50 years ago on Fort Street by the late Hiroyuki Kanai. The factory, now in its third location on Ward Avenue, is operated by Mr. and Mrs. Kaneda, their daughter and two sons, seven other employees and two part-time employees.

There's no longer an employee meal service because Kaneda changed the tofu making hours a few years ago.

Richard K. Kaneda Jr. lifts box of pressed tofu.

"When I got married I and now owns the Kanai didn't know beans about Tofu Factory 7/19/72 cooking," said Mrs. Richard K. Kaneda. "In the olden days," Mrs. Richard K. Kaneda said the tofu workers were served breakfast both about beans and about and lunch at the factory. She promptly learned cooking. Her husband has "When I got married, my been making tofu — from job was to feed them," she soybeans — for 31 years explained with a laugh.

In the earlier period, the tofu making started at 9 p.m. and continued throughout the night so the tofu would be ready when the markets opened.

THERE WERE complaints about sour tofu. Kaneda began experimenting with a new schedule which begins about 8 a.m., involves refrigeration overnight so the tofu is "really cold" and then early morning deliveries.

"There were no more complaints. I don't think anyone works in the evening anymore. They're following my husband," said Mrs. Kaneda.

Tofu is a boon to the

## Haleakala Active Between 1786-93

Editor, The Tribune-Herald:

The belief, even occasionally expressed in print, that Haleakala was last active in 1750, must be revised. According to the geologist B. L. Oostdam (Bull. Geol. Soc. Amer. 76:393-394, 1965.), the bulge of Cape Kinau, south of Ulupalakua, was not present when La Perouse anchored in the bay May 29, 1786,

named in his honor. But when Vancouver anchored in the same area in 1833, it was a conspicuous feature of the landscape. Obviously, Haleakala was last active between 1786 and 1793 along its southwest rift zone, NOT IN 1750.

OTTO DEGENER  
Volcano



JARDIN BOTANIQUE NATIONAL  
DE BELGIQUE

Domaine de Bouchout

B-1860 MEISE (Belgique)

N/réf.

Degener  
Waialeale  
Hawaii

Monsieur,

J'attire votre sérieuse attention sur le fait  
que, depuis le 1er septembre 1973, le Jardin botanique  
national de Belgique a été transféré dans ses nouveaux  
locaux

Domaine de Bouchout

B-1860 MEISE (Belgique)

Je vous saurais gré de bien vouloir désormais  
faire parvenir toute publication ou toute correspondance  
à cette adresse.

Veuillez agréer, Monsieur, l'expression de  
mes sentiments distingués.

Le Directeur,



Colégio Monte Maria  
Apdo Postal 1121

Guatemala, G.A.

21 March 1972

Dear Dr. Degener —

It was good to hear  
from you. I always  
enjoy your "nudging" me  
about "my" God! I  
really don't believe you  
are an atheist — altho' you  
always sound proud  
that you are. You are  
too good a scientist to be  
an atheist!

I was sorry to hear  
about your recent stay in  
the hospital & Mrs. D's  
surgery. I sincerely hope  
you are both feeling better.

I will do as you asked me,  
& write to my friends  
in Hawaii about the  
threatening plant extermination.  
I was sorry to hear  
about it.

Your story of Mrs D's  
WW II experiences upset me  
very much. Something like  
that is the most horrible  
thing I can imagine.  
Although this earthquake we  
just experienced was beyond  
description, I felt there was  
no human make attacks  
to it, such as the make  
produced during wars.  
You mentioned sending Harra  
a check — that's war



very thoughtful of you.  
Thank you for sending  
me help also - altho' I  
have not rec'd the \$25.<sup>00</sup>  
yet - I am sure it will  
reach me before very long.

I've been spending these  
days with a 10-lb. sledge  
hammer & shovel trying to  
do my share in the clean  
up. It is sad. Entire towns  
have been destroyed. We are  
all trying hard.

Thank you for caring  
about us. I'll keep in  
touch with you -

Sister Margaret

Monographs of  
Hunt. Hellescue

Waiakua, Oahu,  
Hawaii, U.S.A.

Dear Sister Margaret:

Isa & I are relieved that the cheque reached you - too bad there was such a delay.

Isa & I never ridicule people for their sincere beliefs, as we are convinced there are many ways to reach the summit of a mountain. I just wanted to say that in the previous letter that though we are atheists, we are not idiots. We sincerely believe plants are sacred & holy. I do not mean the killing of individual plants and animals is bad or sinful - we must eat, etc - but the extermination of any species is truly evil. I think all the of us feel the same way.

You won't agree with us, but we feel that what we consider laws of Nature, others personify as a Supreme Being. Perhaps we simply do not look as far as you do.

Isa & I appreciate your praying for us in cause of your sincerity.

By the way, we have a friend in the Island whom we run into once or twice a year. He is presently in Africa on some project. He is the retired entomologist Bianchi. He is Guatemalan & has been with the Sugar Planters Exp. Station for 40 years or so. His grandfather as uncle was once President of S.

Isa joins in sincere and appreciative aloha.



Colegio Monte Maria

March 25

Dear Doctor Degener  
Today your \$25.<sup>00</sup>  
reached us. How  
deeply grateful I am to



you. Our ways of life  
are so very different -  
yet I feel very close  
to you.

I will pray for you,  
altho' you'll probably  
laugh at me. God bless  
you. Sister Margaret James

## 'ELEPAIO

p. 3

Journal of the  
Hawaii Audubon Society



For the Protection of  
Hawaii's Native Wildlife

VOLUME 36, NUMBER 12

JUNE 1976

REPRINT FROM PAGES 149-152

Mauna Kea Plan by Harry Whitten (HONOLULU STAR-BULLETIN, 19 April 1976, page A-21)

Mauna Kea, the 13,784-foot peak that is the highest insular volcano in the world, hasn't erupted in recent years. Arguments concerning Mauna Kea, however, have erupted with increasing frequency in recent years. More arguments can be expected, now that the draft plan for the Big Island mountain has been completed. Work on a master plan for Mauna Kea was begun in 1974, after conflicts began heating up over diverse uses of the mountain.

Last week the Hawaii Audubon Society called on the Board of Land and Natural Resources to hold public hearings in Hilo and Honolulu on the draft plan. Mae Mull, Big Island representative of the society and a member of the Mauna Kea Advisory Committee, said that there has been no mention yet of public hearings, although the draft plan was released March 23 by the DLMR planning office. She cited a memorandum that Gov. George Ariyoshi sent Sunao Kido, former Land Board chairman, on Nov. 1, 1974 directing that public hearings be held on the master plan before it is adopted by the Land Board. The Land Board is expected to consider review procedures at its meeting Friday in Honolulu.

A major issue concerning Mauna Kea has been the feral sheep introduced to Hawaii in 1793 by Capt. George Vancouver and which had become well established on the mountain by 1822. The sheep have furnished sport for hunters who say the mutton is a welcome addition to their tables and who also prize the "rack" of horns from rams. The sheep have also been blamed for destruction of the māmane-naio forest which furnishes habitat for the palila, an endangered bird, the 'akiapola'au, another rare honeycreeper, and the pueo or Hawaiian owl, 'elepaio, and 'amakihi.

The māmane is a legume, the young plants of which sheep find delicious. The tree line used to be between 10,000 and 11,000 feet on Mauna Kea; it now ends at 9,300 feet. Alan Ziegler, vertebrate zoologist member of the Animal Species Advisory Commission, says that because of sheep the upper forest is receding at 10 to 15 feet a year.

The sheep population has varied from a high of 40,000 in 1937 to a low of 250 in 1950, the population drop resulting from extensive hunting. Hunting groups in recent years have brought pressure that resulted in closed hunting periods in order to restore the sheep population. Conservation groups such as the Audubon Society say the only way to protect the mountain is to remove feral sheep entirely, as well as feral goats and probably the mouflon sheep, introduced in 1962.

The māmane-naio forest not only furnishes habitat for such endangered birds as the palila; it is essential ground protection for the mountain. When the forest is gone, conservation groups say, the mountain won't support anything, so the hunters would lose out completely.

A compromise has been suggested that would provide for putting a fence around 25% of the māmane forest for endangered species habitat protection while permitting hunting in the other 75% of the forest. This proposal was recommended by four of the seven members of the Mauna Kea Advisory Committee. Mae Mull, in a letter to Christopher Cobb, Land Board chairman, said she was "chagrined that the minority positions of members were not conveyed in the committee report sent to the department." The Legislature has so far declined to appropriate funds for the fencing.



Mull said the Audubon Society agrees with the multiple-use concept to the extent that pig hunting and game bird hunting should continue. The mountain is a rich game bird area.

"A few hunters are protesting the loss of sheep, but sustained yield sheep hunting will continue on large acreages of State land at Puu Anahulu and Pohakuloa flats," Mull said. "Those ranges can be improved to support a larger herd. We need public access to sheep hunting areas on Hualalai and in the saddle between Hualalai and Mauna Loa."

A newsletter from the Department of Land and Natural Resources says, "The position of the DLNR...is clearly to ensure the livelihood of the forest."

Prospects are considered good for regeneration of the māmane-naio forest if sheep and goats are removed. A plot on the mountain was fenced off 12 years ago; slides shown at a Sierra Club meeting on Thursday showed good māmane growth in the protected area, while the area right outside of the fence was barren.

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Following resolution was sent to Christopher Cobb, Chairman, and members of the Board of Land and Natural Resources; Senator Jean S. King; Representative Russel Blair; & news media:

Introduced game mammals, primarily sheep and goats, on Hawaii's Mauna Kea are unquestionably and totally incompatible with the survival of the mountain's native māmane-naio forest ecosystem.

The treeline on Mauna Kea continues to retreat downhill an average of ten feet or more per year under the relentless onslaught of these hoofed plant-eating animals, which are maintained there solely for the pleasure of hunters.

Each year that this forest destruction is allowed to continue, irreversible wind and water erosion of the thin exposed soil mantle results in permanent loss of ever-increasing amounts of all plant and animal life on this publicly owned mountain.

A recommendation of the Planning Division of the Hawaii Department of Land and Natural Resources, in its March 1976 Plan for Mauna Kea, calls for total elimination of sheep and goats from the mountain. This recommendation is based upon long-term studies and staff expertise of both the State Division of Fish and Game and the State Division of Forestry, as well as those of the United States Forest Service.

In view of the foregoing, it is resolved that the Hawaii Audubon Society respectfully urges the Hawaii Board of Land and Natural Resources to authorize prompt implementation of this pertinent recommendation, with any attendant Public Hearings to be held in both Hilo and Honolulu.

This resolution was unanimously passed at the 19 April 1976 general meeting of the Hawaii Audubon Society.

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Letter to about 30 groups and persons in Honolulu and Hilo who are concerned with the wise use of Mauna Kea's natural resources from Mae E. Mull, 12 April 1976:

The draft document, "A Plan for Mauna Kea," was presented to the Board of Land and Natural Resources on March 23, 1976 coordinated by Ronald Mortimore in the DLNR Planning Office. It contains two sets of recommendations; one by the DLNR staff, and one by the Mauna Kea Advisory Committee that met in Hilo. There are substantial differences between them on three major issues: 1. feral sheep versus endangered species habitat, 2. number of telescope-observatories at the summit, and 3. power for the summit.

The DLNR staff recommendation calls for the elimination of feral sheep and goats from Mauna Kea through persistent hunting, while permitting feral pig and game bird hunting to continue as at present. Management of the māmane-naio forest ecosystem would be aimed primarily at recovery and protection of the native forest and preservation of rare and endangered species. This recommendation is consistent with the Palila Recovery Team definition of the whole māmane forest encircling the mountain as critical habitat, and with Hawaii's responsibility under the National Endangered Species Act and the State Act 65 to insure that federal or State actions do not jeopardize the continued existence of endangered species.

The Hawaii Audubon Society gives strong support to the DLNR recommendation. For this sound biological position to prevail in the final master plan, outspoken support is needed from a substantial segment of the conservation community. It would be most helpful if you adopted a resolution or wrote a letter in support of the elimination of sheep and goats from Mauna Kea and sent it to Mr. Christopher Cobb, Chairman, Department of Land and Natural Resources, P.O. Box 621, Honolulu, Hawaii 96809.

Hunt Institute for Botanical Documentation



On the other two issues, the Society supports the Advisory Committee recommendations that the number of observatories at the summit be limited to the six already approved by the Board, with further expansion to be assessed when the master plan is reviewed after five years, and that on-site generators with emission-control devices be used to meet electrical power needs.

Thus far there has been no mention of public hearings on the draft plan. We are asking the BLNR to schedule two public hearings: one in Hilo and one in Honolulu. It is essential that the Board receive input from the public in Honolulu, as well as in Hilo, because of the major impact of the plan on long-term land uses of that publicly-owned mountain, all in the Conservation District. A Honolulu hearing would provide balance in the testimony because the Hilo hearing is likely to be dominated by a group of vocal, protesting sheep hunters. Please request that the Board hold a public hearing in Honolulu and Hilo.

We appreciate your consideration and action on these vital Mauna Kea issues.

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Following letter of 1 April 1976 from Drs. Otto & Isa Degener on Sheep on Mauna Kea was also published in the HONOLULU ADVERTISER, 14 April 1976, page A-15:

We noted the keen observation by the President of the Hawaii Island Fish & Game Association in the HONOLULU ADVERTISER article (3/30/76) concerning the "lack of rainfall in recent years, diseases and environmental changes that are affecting the forests" of Mauna Kea. But we regret he omitted mention of the prime cause: feral sheep!

For many years we have been noting the relict māmane forest about the old Humuula sheep station, mauka Hamakua. The grass will be sear and yellow everywhere except immediately under the few remaining māmane trees. When driving past, note this striking difference of healthy green grass under such miniature kipuka. For those who drive from Hilo to Volcano, they can notice one large māmane growing in the rainforest makai of the Belt Road near the Hilo entrance of the National Park. Here the grass under the māmane is healthier than that under neighboring trees. The explanation is simple: Clouds carried against Mauna Kea and the "rainforest" area of Volcano do not always drop rain. But as fog, the clouds almost daily drench the vegetation to such an extent that leaves as well as moss- and lichen-covered branches through which the fog sifts cause condensation that falls as "fog drip" to the ground. This is general knowledge apparently unknown to many of us in Hawaii Nei. According to studies in the Bavarian Alps, "forests there produce 170% more water from fog than is provided by the annual rainfall."

We recommend interested readers to study H.W. Vogelmann's article about "Rain Making Forests" in the March 1976 number of Natural History Magazine. In Vogelmann's words, "When fog and clouds swirl through mountain trees, they leave their moisture to irrigate the land."

Streams are not so full, the watertable is not so high and the remaining plants of Mauna Kea and the Islands as a whole are not so lush because of feral four-legged sheep, axis and black-tailed deer, mouflon, goats, pronghorns and four-wheeled bulldozers nibbling away at our God-created native forests in this mauled Paradise of the Pacific. No wonder more distant lands can compete favorably for the tourist trade.

Removing the feral sheep entirely from Mauna Kea should prevent the almost certain extinction of the palila. Incidentally, absence of sheep would also save the expense of buying, constructing and patrolling a fence extending many miles; not to mention improving the water resources of the entire mountain down to sea level. This would include all of Hamakua to Hilo, the Saddle road area and, in Kona, from Kiholo Bay to Kawaihae.

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DRS. OTTO & ISA DEGENER  
P.O. Box 154  
Volcano, Hawaii  
96785 U.S.A.

July 28, 1976

Mr. William Kennedy,  
Hawaii Tribune-Herald,  
Kinohi Street, Hilo.

Dear Sir:

A professional Naturalist years ago, I was unusually interested in Sunday's article about our 40-acre Zoo being built in Panaewa. The proposal to have an Amazon deer or two in the simulated South American rain forest, however, frightens me. Upper Manoa valley on Oahu has an attractive assemblage of exotic birds for local and tourist attraction. Though properly caged, some species have managed to escape and are now reproducing and spreading, I have noticed, as far ~~as~~ makai as lower manoa. Such escapes pose a threat to our native birds. What if Amazon deer should escape their enclosure into the fastnesses of our jungles and help destroy our endemic plants and the endemic animals depending upon them for food and shelter? Such introduction of deer, I feel, is not worth the risk.

Instead of deer of any kind in Panaewa, I should like to see a few camels and a few famous "Kona nightingales," two animals known to so many children from stories told them by their elders yet never seen. Camels and donkeys would never escape. Moreover, they would be suitable for carrying children on their backs for short rides about the zoo for a modest fee.

Aloha,

Hawaii Tax Payer

(Dr. Otto Degener)



1110 university avenue  
suite 507  
honolulu, hawaii 96814

August 5, 1976

Mr. Otto Degener  
68-617 Crozier Drive  
Waialua Hawaii 96791

Dear Mr. Degener:

Mel Kuraoka and Associates has been engaged as planning consultants by the Department of Land and Natural Resources, Division of State Parks, State of Hawaii, to prepare a Recreational Master Plan for an area encompassing Kaena Point. This plan would become a policy document formulated to guide the long range use and development of this area, to meet the needs and aspirations of Hawaii's residents. The study area encompasses an area from Kaneana (Makua) Cave to Dillingham Airfield, from the mountains to the sea. The total area involved in this study is + 15,670 acres, ranging from low lying coastal areas, valleys and mountainous uplands.

We are presently conducting background research on this project, and wish to solicit your comments to assist us in developing goals and objectives and identifying specific concerns for the use of this area. Your response will be most welcome. If there are any questions, please feel free to call me at 955-6074/947-4327.

Sincerely,

Dennis S.Q. Kim  
Planner

encl. - study area map



Volcano, Hawaii 96785  
Aug. 8, 1976

Mr. Dennis S.Q. Kim,  
Kuraoka Associates,  
1110 University Ave.,  
Honolulu 96814.

Dear Mr. Kim:

Mrs. Degener & I are professional botanists, I receiving my Master of Science degree from the University of Hawaii in 1923 and teaching Botany there in 1925-27.

We are very much in favor of the area shown in the map accompanying your August 5 letter because of the wealth of Hawaiian plants and animals endemic to it. Those that I knew in the '20s - Haw. caper, sandalwood, kokoolau, nehe, sesbania - from the flats, more or less along the old railroad right of way however, have been nearly exterminated but can still be saved from extinction. But mauka is replete with rarities deserving labeled Nature Trails.

Several of the trails that can be resurrected and that I have taken are 1.) over the divide from Makua Valley; 2.) up the terminal ridge from Kaena Point where World War II gun emplacements, etc., would have historical value - the view from these concrete structures gives a wonderful view at times even of Kauai and often almost on the level of iwa soaring about; 3.) the old Pringle Road used to haul pineapple grown on the flats above until the concern went bankrupt; and the trail to the top 4.) from the Billingham Quarry.

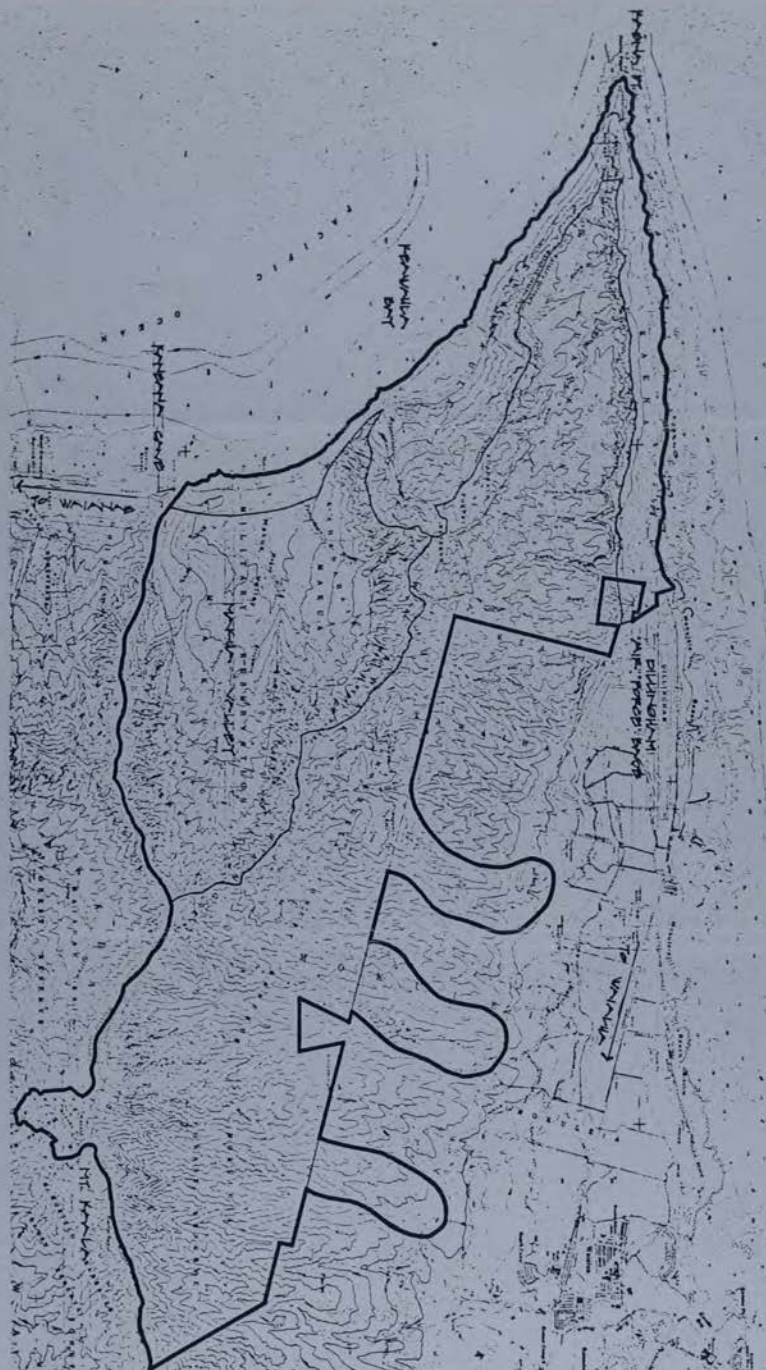
But, as mentioned before, we are in business, like you. I shall be glad to mail you Vols. 1-6 of our "Flora Haw." and "Plants Haw. National Park" on receipt of your cheque for \$50.

If you are a planner, you should become acquainted with some of our Haw., plants.

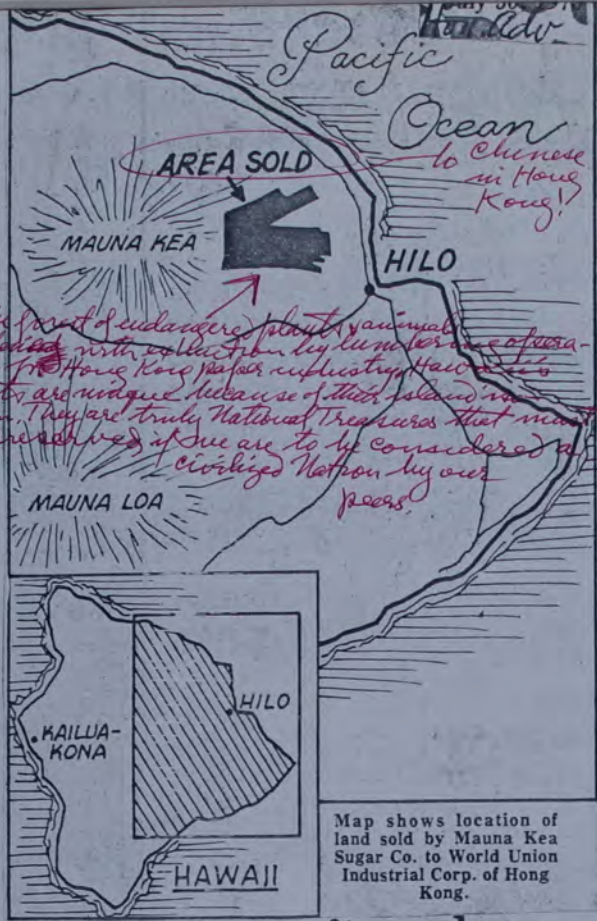
Aloha,

*Mrs. Otto & Iva Degener*

# PROJECT STUDY AREA MAP







Map shows location of land sold by Mauna Kea Sugar Co. to World Union Industrial Corp. of Hong Kong.

# Hong Kong firm buys Big Island forest land

A C. Brewer & Co. Ltd. subsidiary announced yesterday it has sold 32,550 acres of forest lands above Hilo to World Union Industrial Corp. of Hong Kong for "over \$6 million."

*A cancer weakening our*

The seller, Mauna Kea Sugar Co., wholly owned by Brewer, has never used the fee-simple parcel for growing sugarcane. Under terms of the sale, however, Mauna Kea Sugar retains options to lease up to 3,000 acres for sugarcane, should it choose to boost production. Also, water rights have been reserved to maintain present and future operations of Mauna Kea, the announcement said.

Furthermore, some 450 acres of the land have been reserved for eventual dedication as a public park by Mauna Kea Sugar.

adjacent to State lands that include Akaka Falls Park.

BREWER PRESIDENT John W. A. Buyers said the company will report some of the proceeds from the sale this year and the balance during 1977. The gain will help to offset this year's financial reversals stemming from lower sugar prices and cost overruns at discontinued marine construction operations in Texas.

World Union has yet to reveal plans for the 32,550 acres. One possibility would be a tree farm, to produce timber and pulp.

In June 1975, Brewer revealed it had granted an option to another party to purchase the acreage for an unspecified price. However, that would be buyer never identified, allowed the option to expire.

Germany and former manager of the Mauna Kea Beach Hotel, has been appointed vice president and general manager of the Hawaiian Regent Hotel. He succeeds Georg Rafael, who resigned two months ago to join Regent International Hotels as Hawaii-based vice president. Since last year Klotz had been with Princess Hotels International in Mexico as regional vice president. He was with the Rockresorts chain for a decade prior to that. The 690-room Hawaiian Regent, opened in 1971, is owned by Tokyu Corp. of Japan. A 600-to-650 room expansion is under way. *Adv.* way. 8/7/76

*Another cancer weakening our Nation.*

*to Chinese in Hong Kong!*

Dear Senator ---  
Born in New Jersey in 1899, I may be old fashioned. Nevertheless, I should like to know the answers to the following questions:  
1. Would our founding fathers 200 years ago have classified as patriots or as traitors the sellers of our unique forests & since actually our best hotels to foreigners "for keeps"?  
2. Did Congress grant Hawaii statehood prematurely?  
3. If the state of Hawaii is drifting ever farther away from becoming an integral part of the Union, should citizens of ---- allow the taxes they pay to our Federal Government go to the State of Hawaii to help its many aliens compete with its American citizens?  
Much of such ---- money through Washington would drain eventually from the State of Hawaii to the



Nations to which the aliens owe allegiance, Why not plug such leaks?

4. Should not our Federal Government determine how much of the State of Hawaii has already slipped into alien ownership (paying particular attention to alien assets held by Judas American citizen dummies)? Such investigation should of course ignore instances where aliens own the houses in which they actually live. Much relevant information is in the records of the Bureau of Conveyances in Honolulu.

5. If "Banana Republics" south of the Border are now wise enough to nationalize U.S. assets such as oil, minerals, etc., which greedy or foolish foreigners like those of the U.S. are we not stupid if we do not nationalize alien holdings in the U.S.?

6. Is not Hawaii's Watergate much more clever than Nixon's because everything is done properly and legally?

7. With the U.S. infected in my State with cancerous spots of foreign owned lands, hotels, etc., can't Congress cure the "disease" by merely imposing a Federal Excise Tax to increase each year by 1-3% on such holdings? Would not such economic stress induce their eventual return to citizens of the U.S., no matter whether white or black, yellow or red?

8. Did we not really lose World War II in the Pacific and have you, Senator ----, not thought otherwise in distant ----?

Alloho,

D. Otto Degener

# Endangered plants list draws fire

By BRUCE BENSON  
Advertiser Science Writer

State Forester Tom K. Tagawa has accused the U.S. Fish and Wildlife Service and the Smithsonian Institution of withholding data on a plan to limit the use of rural land in Hawaii.

Tagawa said the Smithsonian and the wildlife service are taking a "capricious and arbitrary" position in declining to provide data on how a controversial list was compiled on endangered and threatened plant species.

The national list enumerates such species for each State. Hawaii's position is by far the worst, with more entries—639—than any other state.

Congress ordered the list, the Smithsonian wrote it and it was released in preliminary form last summer. When made final, lands where endangered and threatened plants occur will fall under strict Federal conservation measures.

In Hawaii, State Planning Director Hideto Kono is encouraging the conversion of 5,000 rural acres each year into plantings for commercial lumber operations. His policy almost certainly would be impaired if not thwarted by adoption of the Hawaiian plant list in its present form.

**TAGAWA ISSUED** his criticisms in a speech prepared for the annual meeting of the National Association of Conservation Districts. Four thousand people are attending the session in Waikiki.

Congress ordered the plant list in order to start implementing the Endangered Species Act of 1973. Tagawa said in Monday's speech:

"The State Division of Forestry is very concerned with the administration of the act because the entire forest or portion of agriculture land may be locked up as a 'critical habitat' or 'range' for the sole purpose of not conservation, but preservation of the endangered and threatened flora and fauna."

He defined conservation as planned management of a resource to prevent its destruction. Preservation, he said, emphasizes keeping a resource exactly as it is without change.

"If Hawaii is to retain the present standards of living and remain viable, we must further develop our growth potential in the area of diversified agriculture," he said.

**"THEREFORE,** we must be permitted to modify and develop our native forest. We must be allowed a parallel program of economic development and preservation of our ecosystem."

Gov. George Ariyoshi is backing the concept of a "parallel program" or multiple use on the lands in question.

Tagawa said he asked the Smithsonian last April how they decided which plants to put on their critical list. "Instead of receiving a response..." he said, "they camouflaged the issue by accusing the Division of Forestry activities (of causing) much of the endangerment of native fauna and flora in Hawaii..."

"We believe the power of the Endangered Species Act places a tremendous responsibility on those compiling the endangered species list. Care and selectivity must be used when nominating species because of the major impact and restriction the endangered plants and their habitat will have on such activities as pasture improvements, forestation, game management, conversion of forest lands for other agricultural use and even forest recreation."

**TAGAWA ALSO** contended that the list is defective because "very little other than basic taxonomic work has been conducted for much of Hawaii's native flora."

That position was challenged late last year when the Hawaiian Botanical Society testified at a State Senate hearing that the Smithsonian's list should be accepted as it stands. Final acceptance will be a Federal, not State, decision.

"This list was carefully prepared by botanists who have had many years of experience with the Hawaiian flora and who were extremely careful in preparing the list, taking care to include only those species in real danger of extinction," society members Ruth Gay and Sheila Conant testified.

Some of the most outspoken opponents against saving our peculiar native forests are not listed in "Mele & Women of Hawaii". I doubt they ever studied Botany or Ecology. Even so, they will not list.

in the experts in these subjects. It is something like having a quack tell a cancer specialist how to treat his patients.



HILO—Mayor Herbert Matayoshi yesterday said he is checking into the nature of the Hong Kong company that last week purchased 32,550 acres of Big Island forest lands from C. Brewer and Co. Ltd. *Hawaii*

Matayoshi, at a press conference at his campaign headquarters, told reporters he had "never heard of them" and had been informed by Brewer of the purchase the day before it was announced on Thursday.

Once contact is established with World Union Industrial Corp., Matayoshi said, he will invite company officials to "come in and discuss their intentions with us." *8/4/76*

HE SAID there are land uses he would permit but also "things we do not want them to do."

He said he will not permit any activity that would threaten water resources and he is in favor of preserving any rare trees in the area.

He said he is not concerned by the renewal of foreign investment in Big Island land.

"It's their development and how they develop," he declared.

Although the Mayor said State land-use laws can serve as some guide toward use of the forest lands on the upper slopes of Mauna Kea, he said he regrets that the County has no jurisdiction over conservation lands.

"We have no say," he noted, calling reporters' attention to his testimony last month before the State Reorganization Commission for County controls over such lands.

"It is unfortunately under the State Department of Land and Natural Resources. . . The State has the controls. . . the full say."

THERE HAS BEEN no statement by World Union, the purchasers in the Big Island's largest single land deal of this decade. In Brewer's sale announcement in Honolulu, nothing was revealed about the future use of the property.

There has been wide speculation that the company might seek to clear the lands of native vegetation and replant the area with fast-growing exotic trees as the first step to establish a timber products industry.

Such an industry has been advocated for more than a year by Gov. George Ariyoshi and Hideto Kono, State director of planning and economic development.

In a major policy address to the 17th annual Forestry Conference held here in October, Kono called for annual planting of 5,000 acres of commercially useful trees on the island.

He said a "reasonable number of acres" could be set aside for preserving native forests.

In March, his department released a report claiming a potential for \$10-million-a-year industry providing 1,900 jobs in the next 30 years.

Ariyoshi noted his support for a "vigorous program" of forestry in the state in the foreword of the Kono

Report.

Matayoshi said the County has no one among some 1,000 employees with forestry training or expertise. But he said the planning and research director, Clarence Garcia, has enough field and academic experience to ensure that natural resources are protected and that soil conservation is practiced.

# Mystery 8/11/76 Surrounds *Hawaii Tribune-Herald* Land Sale

By Larry Bereman

*Tribune-Herald Staff Writer*

A C. Brewer official who negotiated the sale of some 32,000 acres of land above Hilo to a Hong Kong company said Saturday he has "no idea" what type of business the company is engaged in or what it intends to do with the land.

Rollie Herberg, senior vice president in charge of land management, told the

Tribune-Herald that he negotiated the sale directly with officials of the firm, but that he has no knowledge of its operation or plans.

Herberg refused to identify the people who said they represented the World Union Industrial Corp. of Hong Kong, saying, "I'm not so sure they really want to give that out."

Meanwhile, county officials maintain they know nothing about the planned use of the land or the nature of business World Union Industrial Corp. is involved in.

Both Mayor Herbert Matayoshi and county Planning Director Raymond Suefui told the Tribune-Herald that they were notified by C. Brewer just before the sale was made, but that no information was given to them concerning the firm itself.

Matayoshi said Saturday he told Brewer officials that his major concern was for the preservation of the watershed. He said he will be looking into the firm's intent and said he hopes to meet with officials from the company soon.

The Tribune-Herald has learned that the company was registered in Hong Kong in 1971 and has a capital of \$100,000, U.S.

Principal share holders are Chin Choren, a director, Wu Ching-Yuan and Wei Ying-ke. None of the three are listed in the Hong Kong phone directory.

The Associated Press in Hong Kong

said Saturday that it has been unable to obtain any information on the nature of business.

The company bought the land for \$6 million, according to a press release from C. Brewer last week. All but about 1,300 acres are in state conservation district, under the jurisdiction of the Board of Land and Natural Resources.

According to a letter dated July 22, 1976 to Mrs. Mae E. Mull by Governor George Ryoichi Ariyoshi "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."

*John H. (C) Searles*



# Half of Isles' Plants Nearly Extinct

By Arlene Lum  
Gannett News Service

WASHINGTON — More than 900 of Hawaii's native plants, about one-half of all the plant life found in the State, were named yesterday as endangered species on the brink of extinction by the U.S. Fish and Wildlife Service (FWS). *4/15/76*

The Hawaii plants were also one-half of all the plants — 1,700 — named yesterday as near extinction in the United States by the FWS which last week proposed a set of regulations to protect such plants. *6/18/76*

Under provisions of the Endangered Species Act of 1973, the Smithsonian Institution issued a January 1975 report, listing 3,187 plants endangered (critical) or threatened with extinction (serious) in the United States. In this report, 1,100 Hawaii species were named in the two categories.

WHILE LAST WEEK'S proposed FWS rules deal mainly with prohibitions against interstate or international commercial dealings in endangered plants such as cacti found in the Southwest, they did not prohibit "taking" by collectors, intrastate sale of such plants or noncommercial interstate movement of such plants.

The rules also don't deal with a more serious question concerning Hawaii State officials — that of a balanced approach to preservation as well as land use planning and development.

An Interior Department news release yesterday said that "most of the plants concerned have extremely limited

ranges and are often confined to specialized habitats such as bogs (small wooded areas), marshes, river banks, mountain tops, canyon rims and similar inaccessible areas."

WITH MORE THAN half of the State's plants involved, however, every time a citizen turns around he could destroy yet another specimen, causing potentially serious problems in agricultural and forest activities, housing and commercial development and even in stringing telephone lines on mountain ranges.

In an exchange of correspondence with members of the Hawaii's congressional delegation as well as Smithsonian and FWS officials over a period of months, Gov. George R. Ariyoshi and Christopher Cobb, chairman of the Hawaii Board of Land and Natural Resources, expressed concern that regulated protection of such plants — if they are indeed endangered — must come as a result of detailed scientific research and evidence, missing, they said, from the initial Smithsonian report.

Ariyoshi and Cobb maintain that the State needs financial assistance in such research activities, and they have said that preservation of the plants is only one use of Hawaii's "very limited," forest area and "must be kept in perspective."

THEY BOTH suggest that the burden of proof lies on FWS, but in its announcement in the June 7 Federal Register, the service places the burden on the 46 states involved. The states must provide

seven categories of detailed information either in writing by Aug. 16 or at one of several public hearings on the matter this summer. An FWS spokesman said that although the hearings have not yet been scheduled, Hawaii is certain to be one state where hearings will be conducted.

John McGuire, director of the U.S. Forest Service at the Department of Agriculture, estimated that research activities in Hawaii would cost \$300,000 annually, but President Ford's 1977 fiscal year budget only asks for \$110,000 for the State.

Sen. Hiram L. Fong, wrote Sen. Robert C. Byrd, D-W. Va., chairman of a Senate Appropriations Committee, on Wednesday, asking that \$750,000 be appropriated for the 1977 fiscal year, including \$450,000 for research on Hawaii's endangered animals.

FONG SAID THAT although Hawaii's endangered plants represent more than 50 per cent of such plants in the nation, the administration budget calls for only 18 per cent of the budget request for research activities in the nation as a whole.

Sen. Daniel K. Inouye, had written to Sen. Gale McGee, D-Wyo., chairman of another Senate appropriations subcommittee, on the matter in April and received assurances that additional funding would be considered.

But a more disturbing prospect was voiced by the Forest Service's McGuire in a letter to Inouye. McGuire notes that the law "has the potential of significantly impacting," states involved. One of the possible problems,

he said, is that "any citizen can sue in his own behalf to stop any action alleged to be detrimental to endangered species."

## Flora, fauna & tourism

*Hon. Advertiser 4/16/76*  
The present letter is only the second letter to the editor that I have written in the past half century, but we feel so strongly about this matter that it seems we must write it.

The Hawaiian Islands rank with such other islands as Mauritius and Madagascar in the high percentage of endemism among their flora and fauna. In Mauritius and Madagascar thoughtless men have just about completely decimated their natural heritage (which explains in part why so few scientists, and tourists in general, visit them anymore).

The Hawaiian Islands, with 90 per cent native endemism, still "enjoy" a good tourist trade, but this will certainly taper off rapidly if its chief attraction is ruined. My entire family has visited the Islands again and again and hope to continue, but if "5,000 rural acres each year" are converted into commercial timber plantings then the charm of the islands will be gone for us very soon, as it will for thousands of tourist members of the Sierra Club, Audubon Society, bird clubs, nature clubs, and garden clubs throughout the country.

The Smithsonian list of endangered species is exactly correct and scientists throughout the world applaud this effort finally to do something effective to slow down the destruction of our environment, whose destruction ultimately means the suicide of the human race.

HAROLD N. MOLDENKE  
Publisher, Co-editor Phytologia  
Bronx Park, New York, N.Y.



# Endangered Hawaii plants dominate list

Hon. Advertiser 6/18/76

In a sweeping action that could have major economic implications, the Interior Department said in Washington yesterday that it will list 1,767 plants as endangered species.

According to a Washington Post report, more than half the species on the list are located in Hawaii, where rapid urbanization has had a devastating effect on rare flora.

The listing — including wildflowers, cacti, shrubs, grasses, ferns and trees found in 46 states — could affect more than 70 Federal agencies which build roads, dams and housing projects, manage public lands, and promote agriculture, according to the Post.

IN HAWAII, Gov. George Ariyoshi has expressed a fear that the list could hamstring land management policies throughout the Islands. The

State Division of Forestry also has criticized the way recommendations for the list were compiled, saying its own personnel weren't fully consulted.

State Forester Tom T. Tagawa said earlier this year that he was "very concerned" about the size of the recommended list for Hawaii. In a speech he said "the entire forest or portion of agriculture land may be locked up as a 'critical habitat' or 'range' for the sole purpose of not conservation, but preservation of the endangered and threatened flora and fauna."

Conservation, he said, is planned management of a resource to prevent its destruction, while preservation is keeping something as it is without change.

"If Hawaii is to retain the present standards of living and remain viable, we must further develop our growth potential in the area of diversified agriculture," Tagawa said.

THE PLANTS to be listed by the Interior Department are the first U.S. species proposed under the Endangered Species Act of 1973. Under the act, the department has provided Federal protection for 538 animals.

Keith M. Schreiner, assistant director of the Interior Department's Fish and Wildlife Service, told the Washington Post: "Most people write off plants when they think of endangered species. Yet there are

many rare insects, snails and birds which have dependent relationships with plants.

"If the plant goes, so does the animal — and the ultimate effect on the ecosystem could be severe."

Under the Endangered Species Act, no Federal agency may authorize, fund or carry out any action that would jeopardize the existence of listed species.

Once the plants are listed officially — after public comments are received — the Interior Department may designate "critical habitat" areas that must be preserved to protect the plants.

"You can picture 1,700 little red circles on the U.S. map," Schreiner said. "It will be like big red flags to Federal agencies. They must consult with us before building projects in critical habitats."

BIOLOGISTS have estimated that roughly 10 per cent of the world's 600,000 species are endangered, mostly by people's destruction of their habitat. The Smithsonian Institution has recommended that 3,187 species be granted Federal protection.

Plant habitats are destroyed daily by strip mining, overgrazing, timber harvesting, suburban development, road construction, flooding irrigation, steam channeling, fire and the drainage of marshes.

Many of the species proposed for listing could not survive three or four more years without Federal protection, Schreiner said. The critical habitat may be only a small section of a riverbank or a corner of a mountain forest.

SCHREINER SAID the Interior Department will "try to implement the (Endangered Species) Act judiciously."

"We are not out to stop all progress. We will try to stop extinction by cooperation. But if a Federal agency wants to work in an area where there are endangered plants, it will have to consider not doing it. That's going to be a little traumatic."

Schreiner said, "I'm sure some of these plants are in the path of urban

development, highways and dams. But there is no way of estimating how many, he said.

Hon. Advertiser 2/20/76  
Unrecognized asset

Six-thousand botanists from over 50 nations attended the XII International Botanical Congress held last July in Leningrad. Unusual dismay was expressed by many delegates regarding the rapid extermination of the Hawaiian flora, considered by them not so much an American national treasure, but rather as an international one in the custody of the State of Hawaii.

It is common knowledge to them, but hardly to the kamaaina, that U.S. Mainland and foreign botanists come to the Islands to study our remaining native plants. But to write and publish their various monographs of plant groups, these botanists spend most of their time in Mainland and European museums.

Only there can they find the plants, to be sure only in the dried and preserved state, that have been exterminated since the time Captain Cook rediscovered the Islands. Such plants had been collected by the botanist David Nelson while on Cook's voyage, and by other botanists and naturalists of later exploring expeditions. In fact, many plants collected by Chamisso on the Russian expedition under Kotzebue during Kamehameha's reign are highly prized and carefully preserved in the Komarov Botanical Institute in Leningrad.

Can the lack of appreciation by so many of us kamaaina for our unique endemic plants and animals that use them as food and shelter be blamed on our school system? Perhaps it is not at all strange for a population consisting of an unusually large proportion of boys and girls who have been graduated from school without knowing how to read and write. Such boys and girls, some highly educated and others not, are now grown men and women with the privilege of acting like God and voting the destruction of God's remarkable creations for a paltry handful of shekels. To my horror in 1928 such duller types did not even sense the significance of a magnificent heiau near Pukoo, Molokai, beyond its use as a handy supply of fill or road metal.

We recommend residents of the Islands to get the Christmas number of the magazine Defenders, published at 1233 Nineteenth Street NW, Washington, D.C. 20036, \$2. Its 75 or so pages concentrate solely on the Hawaiian Islands. Those of us who can, should read the text; while those who cannot, should look at the colored pictures, almost 100 of them. This issue shows why the proposed "conversion of 5,000 rural acres each year into plantings for commercial lumber operation" (Advertiser, 2/4) would be a ghastly blunder.

DRS. ISA and OTTO DEGENEY  
Volcano Hawaii

Estimate has risen since 2/20/76



Mr. Neil Abercrombie,  
Room 440, State Capital,  
Honolulu, Hawaii, USA

2 May 1976

Hon. Adv.  
7/15776

Дорогой сэр!

В газете "Honolulu Advertiser" от 4 февраля 1976 года я прочёл статью научного обозревателя Bruce Benson's "Endangered plants list draws fire" в которой высказывается тревога в отношении судьбы Списка растений гавайской флоры, подлежащих охране, составленного Смитсоновским институтом. Судя по статье, на Гавайях существует сильная оппозиция этому Списку. По мнению главного лесничьего Тома Тава, 639 видов растений, находящихся под охраной, являются неотъемлемой частью гавайской флоры.

By Helen Shiras Baldwin

Special to the Tribune-Herald

AS I pointed out last week, though a great many ohia trees in our native forests are dying, many more survive, especially on the younger lava flows. The rest of the forest is still there with a all its wealth of other tree species and its ferns, vines, shrubs herbs, together with its birds, insects and other invertebrates. None of these is injurious to man. Taken as a whole, the native forest is of invaluable benefit to man.

The sheer number and variety of native species are astonishing, especially when you consider they either came here without man's help or their ancestors did over many centuries. Most evolved here from a comparatively few ancestral stocks and are found nowhere else in the world. Many are found in only one small part of our island such as a single ridge or gulch or elevation.

They are our state and national treasure to be conserved not exploited; to be protected and appreciated for their own sake, no matter how large or small species themselves or the lands around they are. Nor can this be adequately them done by turning over small tracts here and there as sanctuaries then turning over the rest to other uses.

A SINGLE lava flow in some places, a single fire, the invasion by a single exotic plant like banana poka will annihilate some or all native species in one of these reservations. Repeated disasters will destroy native wildlife in others.

Yet this is what our state Department of Land and Natural Resources is permitting right now. Tracts of state forest land are earmarked for protection as sanctuaries for certain species or as natural areas; but these are scattered and many are comparatively small. Some are only a few acres in extent while others may have hundreds of acres or a thousand or more. These are fine as far as they go, but they are not a harmonious whole which

This is how the original Russian letter looked.

## Russian urges preservation of Hawaiian plant species

Anatol Galushko was a Russian with a warning yesterday at a public hearing on what to do about several hundred native Hawaiian plant species facing extinction.

"All Hawaiian species must be preserved," he said. "To connive at the destruction even of a small part of it spells an international crime."

Galushko, a professor, is a member of the Central Council of the All-Union Botanic Society of the Academy of Sciences of the Soviet Union.

His testimony was submitted in writing by State Rep. Neil Abercrombie. Galushko wrote Abercrombie after reading of the endangered plants controversy in a Honolulu

Advertiser article.

THE STATE'S official position on the issue apparently was summed up yesterday when State Forester Tom K. Tagawa concluded his remarks with a quote from the late John A. Burns.

"Being a part of the environment, our system demands that we consider human economics together with biological ecology," quoted Tagawa.

Galushko, however, said that Hawaii's native flora are of international importance, imposing upon scientists of Hawaii and the Mainland "a particular responsibility to save the flora in the name of science."

works for its mutual interest in catch water from the clouds, hold it on and in the soil, and prevent it from tearing away the soil and its fertility during downpours.

NO MAN planted forest can equal it in this soil and water conservation role. Nor is introduction of foreign trees into the native forest for future harvesting a good idea. Foreign species do not as a whole mesh well with native species. Least of all do does periodic tree cutting fit in the native forest's life. For too long a time we have looked upon timber harvesting as an allowed use for conservation lands.

Nowhere is this more apparent than on the windward slopes of Mauna Kea and Kohala. This is our maximum rainfall belt. Annual precipitation in the present forest belt averages over 250 inches per year for much of it from the Waialeale to beyond Hanalei. Some years, it is

the Makalea area has almost 400 inches of rain. More than ninety inches is known to have fallen in one month. For the sake of our water resources alone we should make our lava and zoning regulations fit the native forest which is the cheapest and most efficient guardian of our precious soil and water resources.

Representation



CONSERVATION COUNCIL FOR HAWAII

A General Meeting will be held on Thursday, August 19th,  
at 7:30 in College Hall 7, UH. That is the room where  
we had the last meeting in June.

Jim Juvik will give a slide presentation and talk entitled:  
MADAGASCAR AND THE MASCARENE ISLANDS \* A WARNING AND A  
CHALLENGE FOR HAWAII.

Everybody is welcome. Come and bring your friends.

# 'ELEPAIO

Journal of the  
Hawaii Audubon Society



For the Protection of  
Hawaii's Native Wildlife

VOLUME 38, NUMBER 8

FEBRUARY 1978

## 1977 HONOLULU CHRISTMAS BIRD COUNT

Robert L. Pyle, Compiler

The 34th annual Honolulu Christmas Bird Count, conducted this year on Sunday December 18, recorded 15,542 birds of 52 species, compared to 16,393 birds of 55 species last year. Thirty-seven observers working in 18 parties spent 103 party-hours in the field, which also was down somewhat from last year. The weather was less cooperative than in 1976. Cloudy skies with occasional light showers affected the entire Count area, while on the higher ridges strong gusty winds and rain severely hampered observations.

Fewer party-hours spent in valley and lower mountain forests this year resulted in much lower totals for Japanese Bush Warbler, Japanese White-eye, Shama and Melodious Laughing-Thrush. Party-hours in other habitats were about the same as last year.

Redhead (duck) and Black-headed Munia were new species for the Count this year, and Red Munia (Strawberry Finch) had been found only once before. Red-vented Bulbuls are still increasing explosively. The 744 recorded this year compares to 453 in 1976 and 212 the year before. More than 400 were found by the Waimanalo party alone. Only a few Red-whiskered Bulbuls were tallied this year, but probably does not represent any real population decline. On the other hand, a reduction in numbers of Red-eared and Orange-cheeked Waxbills from their peak highs of two years ago may represent a real population fall-off, possibly related to the near drought conditions of the past two years on Diamond Head.

A few birds seen by the Count participants are clearly escaped or released cage-birds that are not known to have reproduced in the wild, and hence cannot be classed as established species maintaining themselves as a viable population. Such species cannot

be included in the official Count, but it is worthwhile to record the observations of these birds to document their current status and to help in determining trends in their numbers. Such birds seen on this year's Count include: 2 feral Mallards in Kaneohe; 2 Red-crowned Parrots and a Nanday Conure leaving the Waikiki Aquarium area noisily in early morning, headed toward Kahala; a Rose-ringed Parakeet (Indian Ring-necked Parrot) and another long-tailed green parrot in the Waimanalo area; 3 Indian Hill Mynas at the Lyon Arboretum, a remnant of the dozen or more released there some years ago; and 2 Bishops in winter plumage at Kapiolani Park, presumably males of either the Red or the Golden Bishop, both of which have been frequently seen in splendid summer plumage in this area in recent years.

### Sectors Covered

- 1- A Aiea Trail: John Obata  
B Halawa Ridge: Omer Bussen, Frank Howarth.
- 2- Sand Island, Salt Lake, Moanalua to Nuuanu: Rey Larsen, Jack and Alice Mitchell.
- 3- A Makiki, Tantalus, Punchbowl: Bill Burke and Larry Hirai.  
B Puu Ohia, Pauoa Flats: John Walters.
- 4- A Lyon Arboretum, Woodlawn Trail, Upper Manoa: Sheila Conant, Peter Ballaway, Margit Anonsen, and Leilani Pyle.  
B Manoa Park, University campus: George Campbell.  
C Waioli Tea Room: John Walters.  
D Mid-Pacific Institute, Lower Manoa: Bill Bigler.  
E Waahila Ridge Trail: Maile Stemmerman, Harry and Ruth Whitten.

Hon. Adv.  
11/19/79

## obituaries

### Earl Pacheco, *Anti* conservationist

Earl Joseph Pacheco, 49, of 29 Akea St., Hilo, a major figure in most of the environmental disputes on the Big Island in the past decade, died Wednesday.

Pacheco, a superintendent for Hilo Coast Processing Co., was a leader of the island's Puerto Rican community and played a key role in the 1972 election campaign of Gov. George Ariyoshi.

But Pacheco was best known for his efforts on behalf of the state's hunters.

He battled unsuccessfully for 20 years for the introduction of axis deer to the Big Island. He served as

#### More obituaries on Page C-12

an outspoken minority member of the state Animal Species Advisory Commission.

In later years, Pacheco was the moving force behind an alliance of sportsmen and conservation groups that forced a halt to the development of observatories at the summit of Mauna Kea until the state completed a master plan on the multiple use of the site.

Friends may call 6 to 9 p.m. Friday and 8 to 9:50 a.m. Saturday at Memorial Mortuary. Rosary at 8 p.m. Friday. Mass at 10 a.m. Saturday at St. Joseph's Catholic Church. Burial at Hawaii Veterans Cemetery.

He is survived by wife, Lillian; sons, Paul, Gary and Russell; daughter, Mrs. Derrik (Earlene) Pacheco; brothers, Peter of New York, Abraham and Clayton of Oahu, Stanley, William, Patrick, Edwin and Walter; one grandchild.

*The men involved in the conservation movement are the ones who are the most responsible for the state's environmental problems. They are the ones who are the most responsible for the state's environmental problems. They are the ones who are the most responsible for the state's environmental problems.*

## Kahoolawe target Hon. Adv. 11/19/79 of tree planters

A tree-planting conservation project has gotten under way on the Navy target island of Kahoolawe.

State forestry officials and the Navy recently went to the island to begin planting near the summit of Lau Makika on the eastern half of the island.

The project was started as part of the soil conservation provisions in the "memorandum of understanding" signed by the Navy and the state administration last year.

State forestry crews went to the island earlier this month to select the site and stake out windbreak lines. Naval explosive ordinance crews blew holes in the hard surface to help facilitate planting.

State Forester Libert K. Landgraf said the species used for the windbreak plantings is tamarisk. These trees, he said, have proven to be adaptable and wind resistant. In addition, the tamarisk appears to be unpalatable to feral goats living on the island.

"The main thrust of this conservation project is to bring about a direct halt to the present soil erosion problems on Kahoolawe," Gov. George Ariyoshi said. He described the tree-planting as a small but significant step toward rehabilitating the island.

After planting the windbreaks, the state intends to plant other trees, shrubs and grasses. Earth dams and systems to retain water are also planned.

The state is eventually planning to plant 68,000 seedlings on Kahoolawe.

According to the state, the 1,000 trees now on Kahoolawe are not in danger from military training operations. The windbreak is on the eastern safety buffer part of the island where training exercises are banned.

*As it adds vegetation (windbreaks) it needs trees to compete with.*

### CLASSIFIED WANT ADS

## 521-9111

*still actively growing exotics growing on K. or dormant as seeds in its soil.*



FOR FEB 75 ISSUE OF  
THE ELEPAIO

VOLCANO, HAWAII CHRISTMAS COUNT  
14 December 1974

OTTO + ISA,  
For your records!  
upen.

A R E A S

	1	2	3	4	5	6	7	8	9	TOTAL
White-tailed Tropicbird	.	3	.	.	.	.	.	.	.	3
Hawaiian Goose	.	.	.	2	.	.	.	.	.	2
Hawaiian Hawk	.	.	.	2	.	2	1	.	2	7
California Quail	.	.	.	1	.	.	.	.	.	1
Blue Pheasant	.	.	.	14	1	.	.	2	.	17
Pacific Golden Plover	12	8	.	36	2	13	.	.	.	71
Spotted Dove	.	.	.	.	.	16	.	.	.	16
Barred Dove	.	.	.	1	.	.	.	.	.	1
European A Skylark	2	1	.	8	5	.	.	.	.	16
Red-billed Leiothrix	1	.	.	40	.	13	3	8	19	84
Hawaii Thrush ('Oma'o)	.	3	5	217	.	7	318	120	32	702
Hawaii 'Elepaio	3	1	.	74	4	1	45	17	24	169
Common Mynah	7	4	.	19	.	62	.	.	.	92
Japanese White-eye	32	53	2	31	9	99	78	6	20	330
Hawaii 'Amakihi	5	2	32	83	27	1	28	21	2	201
Hawaii Creeper	.	.	.	11	.	.	.	2	.	13
Hawaii 'Akepa	.	.	.	9	.	.	.	6	.	15
'Akiapola'au	.	.	.	14	.	.	.	6	.	20
'Apapane	94	131	14	909	32	357	1,443	7793	120	3,893
'I'iwi	4	.	2	188	5	4	129	91	1	424
Spotted Munia (Ricebird)	5	1	.	.	5	81	.	.	1	93
House Sparrow	.	5	.	1	.	.	.	.	.	6
Cardinal	8	.	.	20	6	5	.	3	.	42
House Finch	.	.	.	45	5	3	.	.	1	54
No. of Individual Birds:	173	212	55	1,725	101	664	2,045	1,075	222	6,272
No. of Species:	11	11	5	21	11	14	8	12	10	24

Total hours on foot: 38

Total hours by car: 13

Total miles on foot: 34

Total miles by car: 69

Count taken within 15-mile-diameter circle centered on Kulani Cone summit (19°31'N, 155°18'W), as previously described.

Weather: clear to cloudy, occasional rain; temperature 55°-73°F; wind NE, 0-10 m.p.h.

Following are the areas covered (as distinguished in the above tabulation of results):

1. Bird Park (Kipuko Punulu) in Hawaii Volcanoes National Park (Kaye, Katahira, J. Lockwood)
2. Rim of Kilauea Crater (Kaye, Katahira, M. Lockwood)
3. Mauna Loa Trail, 6,600-8,200' elevation (Reeser, Tomich)
4. Keauhou Ranch (P. Banko, Landsberg, Mitchell, Scott, van Riper)
5. Mauna Loa Strip Road, 4,000-6,600' elevation (Reeser, Tomich)
6. Volcano community (Cabral, C. Davis)
7. Kulani Road and Puu Mokaala (W. Banko, Nulls)
8. Kilauea Forest Reserve (P. Banko, Landsberg, Mitchell, Scott, van Riper)
9. Olaa Tract (Ball, Cooray, J. Davis, Jacobis, Warshauer)

Twenty-two observers in eight parties: Frederick Ball, Paul Banko, Winston Banko, Dennis Cabral, Ranjit Cooray, Clifton Davis, Joyce Davis, James Jacobi, Zoe Jacobi, Glen Kaye, Larry Katahira, Susan Landsberg, Jack Lockwood, Marty Lockwood, Nick Mitchell, Mae Null, William Mull, Donald Reeser, Michael Scott, Quentin Tomich, Charles van Riper, Frederick Warshauer

#### HIGHLIGHTS OF THE 1974 VOLCANO, HAWAII CHRISTMAS COUNT

by William P. Mull, Compiler

This year, we had more people (22 vs. 18 last year), spending more time (51 party-hours vs. 31.5 last year), traveling more miles (103 party-miles vs. 58.5 last year) and covering more areas (e.g., Area 9, the 9,754-acre Olaa Forest Tract under National Park Service administration, was added as a new count area) within our Count Circle, with the result that we counted more birds (6,272 vs. 4,554 last year). Notably, though, we didn't add to the species list -- and, in fact, got one less (24) than in the past two years (25) of our revived Volcano Count, mainly because we didn't get the single Ring-necked Pheasant logged in the past two counts, a deficit of no consequence. The only significant deficiency in our first three new Volcano Counts is that we've yet to get the Hawaiian Owl (Pueo) and the 'O'u, both of which have been sighted within the Count Circle during the past year. Win Banko almost recorded the 'O'u this time, but his brief glimpse of a pair of short-tailed birds -- one with sunlight glinting off its yellow head (!) -- just wasn't enough to convince him.

This year we had new-high counts for <sup>15</sup>~~16~~ species (8 native, <sup>7</sup>~~8~~ introduced) and new lows for 3 (one native, 2 introduced), in terms of the 3-year history of the present Volcano Count Circle. Because of the brief history of our new Volcano Count and because of the variability factors involved, none of these new-high and new-low counts can be regarded as valid indications of increasing or decreasing populations

of the species involved within the Count Circle. We are still in the process of establishing base lines for our area; our numerical highs and lows for species populations <sup>this year</sup> must await future hindsight to realize much of their value. Nevertheless, it was a rewarding experience to count 3,893 Apapane (3,061 last year, 3,269 the year before), one of which was an unusual individual whose plumage is almost entirely white; 702 Hawaii Thrushes (284 last year, 382 the year before), 5 of which are part of an unusual population living in alpine scrub habitat near the 8,000' level on Mauna Loa (not recorded on the previous two counts); 424 'I'iwi (161 last year, 246 the year before); and 169 'Elepaio (<sup>68</sup>88 last year, 75 the year before).

Among the fragile endangered endemics, the species most deserving of attention within our Count area, it was exciting to count new highs of 15 (13 the previous two years) for the Hawaii 'Akepa and 7 (4 last year, one the year before) for the Hawaiian Hawk. Though the 20 'Akiapola'au was more than twice the 9 of last year, it did not equal the 30 of the year before. It was a thrill to record a new high of 13 (3 last year, one the year before) for the elusive and cryptic Hawaii Creeper, a most-deserving nominee for endangered status. The new low of 2 (4 last year, 6 the year before) for the Hawaiian Goose is more symbolic than firmly indicative of the plight of this long-suffering bird, whose population in the wild is failing to reproduce at a viable rate for the species despite man's efforts to bolster the wild population with continuing releases of pen-reared birds.

The sole indigenous breeding species that occurs within our Count area, the White-tailed Tropicbird, achieved a "new high" of 3, vs. 2 the past two Counts.

As for the exotics, folks who've been following the ups and downs of the Red-billed Leiothrix populations in Hawaii in recent years may be interested in the new high of 84 (vs. 13 and 16 the past two years). The other <sup>6</sup>new-high counts for exotics are: Blue Pheasant 17 (vs. 12 and 9), Spotted Dove 16 (vs. 6 and <sup>2</sup>15), Common Mynah 92 (vs. 41 and 19), Japanese White-eye 330 (vs. 239 and 169), Spotted Munia (Ricebird) 93 (vs. 21 and 76), Cardinal 42 (vs. 22 and 19), and House Finch ~~54~~ (vs. ~~31~~ and ~~50~~). The two new lows for exotics are Ring-necked Pheasant 0 (vs. one and one) and Barred Dove one (vs. 18 and <sup>11</sup>2).



9-23/58

18  
*Referring from  
G. Munro*

GROWTH PATTERNS OF SOME NATIVE PLANTS  
AT NA LAU HAWAII IN 1958  
By George C. Munro

After experimenting for five years and ten months at Na Laau Hawaii with the Hawaiian puakauahi or awikiwiki bean (Canavalia galeata) we seem to have reached success as we now have three plants flowering profusely and producing fine seed pods. Last year one of them matured two very poor looking beans. They ripened just when the rains started and one seed was planted as taken from the pod. It germinated at once and has grown into a nice plant. Of many ripe and dry seeds planted at various times only a few have germinated.

We found that when we watered plants of this species during the dry season they died when the winter rains started. The three flowering now have never been watered and having struck a favorable year are producing. If the seeds mature when the winter rains start seed will be planted over all of Na Laau Hawaii to establish it quickly. We do not now work with nursery plants as we did in the first years at Na Laau Hawaii. We had but little success as there was no water supply and no time to use it effectively.

The flower of these plants is produced up to six in a cluster, two of which are open at a time. One is a very delicate white with an extremely light tinge of pink; the other, apparently the older flower, is pink.

About 1915, before the pineapple lands were plowed, I found at about 1300 feet elevation, where pineapples now grow, two or three plants of this variety of the species. I did not find it elsewhere on Lanai. Seed was gathered and planted on the borders of the Kaneupuu dry forest. They became established on the small areas there and withstood the grazing and trampling of cattle from 1935 till 1950 and are still there. It is from these that we got seed in 1953 for Na Laau Hawaii.

Seed of the other two varieties are in the ground at Na Laau Hawaii but no plants have so far matured there. When they do it will be interesting to compare them when growing under the same conditions in the same locality as the other bean. I do not know if their flowers are light colored when first open. The shoreside variety always had pink flowers and the one I saw blooming near the forest always had purplish flowers.

It is probably from the habit of some of the seed lying dormant in the ground for long periods that it survived, with other of the dryland plants I brought there, such as the tree form of Hibiscus brackenridgii and Abutilon eremitopetalum. The latter has recently been rediscovered there. It is not known if either of these are now to be found in their original habitat on the Kalulu lands on the east side of the Lanai mountains; cattle and deer may have destroyed them.

Regarding the Hawaiian poppy, puakala (Argemone alba var glauca) of which we had two plants last year that flowered from April till December, one produced much seed, all of which was saved; the other flowered heavily but was infertile. Instead of dying as I expected they started flowering again in March this year and are now about four feet high and still flowering but apparently near the end.

The puakala is a plant of the kula and does not thrive in shade but we will plant the seed over all of Na Laau Hawaii as at some future time conditions will favor it in some localities. A mass of it flowering on the hill side will be spectacular from Waikiki. It and the awikiwiki bean would make fine garden plants if they can be grown in cultivation.

The kakonakona grass (Panicum cinerium) which we did not expect to be flourishing this season was in greater quantity than usual in its off years but grew only about two feet high. It seeded and dried out completely early in 1958. These three are all endemic to Hawaii.

The mao (Abutilon incanum) (indigenous but not endemic) which in the early 1950s was flourishing and was set back later by droughts and blights has made a wonderful recovery in the last two years. Bunches of this much branched ornamental shrub are now about three feet high covered with seed capsules and leaves still fresh.

The kukui tree (Alurites moluccana) that grew from seed of a freshly ripened fruit is still thriving without any care. It is now passing through its third dry season. Where this tree will grow under the conditions at Na Laau Hawaii many others of our dryland trees and smaller plants will thrive when seed we have planted germinates.

June 20, 1958.

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#### SEPTEMBER ACTIVITIES:

FIELD TRIPS: GRENVILLE HATCH WILL LEAD SEPTEMBER TRIPS.

September 14 - To Kalena. We have not been on this trip for some years. Birding here used to be very good. We shall not cover much distance, but there is a very steep climb through brush at the beginning.

September 28 - To West Loch and Salt Lake, for shore birds.

Meet at the Library of Hawaii at 7:00 a.m. for each trip.

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MEETING: September 15 - At the Aquarium auditorium at 7:30 p.m. "Bird Cities of Oahu," slides in color, with a few in black and white, will be presented by Mason Rutherford, narrator, Rex Elliott, and Bill Ward. Some seldom-visited nesting areas will be shown.

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#### HAWAII AUDUBON SOCIETY OFFICERS:

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DUES: Regular - \$2.00 per annum  
 Junior (18 years and under) - \$1.00 per annum  
 Life - \$50.00

Part of list of plants collected by G. C. Munro for the Bishop Museum  
and Hawaiian Sugar Planters Association  
With a few additions

- Cocculus ferrandianus  
Argemone ~~sp.~~ albavar. glauca  
Lepidium owahiense  
L. virginicum  
Senebiera didyna  
Gynandropsis pentyphyllum  
Capparis sandwicensis  
Viola helena
- A tall plant used to be at top of steep drop from Lanaihale.  
Two violets from the mountain bog of West Maui flowered at Lanaihale
- Xylosma hillbrandii var. A tree was in head of valley by top of Keomuku road, north side  
Pittosporum confertifolium This and probably the following were in valleys near Kanepuu for  
P. terminaloides  
P. hosmeri A tree at Waiakakua from Hawaii. Given by Rock.  
Silene gallica  
Schieaea mauiensis I do not remember this. Seed might be good for N. L. H.  
S. nuttali This also  
Cerastium vulgatum  
Portulaca sclerocarpa  
P. lutea Only one place seen, near the sea in pali of Maunalei Valley.
- Malva rotundifolia  
Malvastrum tricuspidatum  
Sida fallax  
S. cordifolia  
S. meyeniana  
Abutilon menziesii Grown at Kanepuu from Maluae  
A. incanum  
A. erimtopetalum Grown at Kanepuu from Kalulu  
Hibiscus tilaceus In valleys on edge of forest  
Hibiscus brackenridgii Treelike form on east side of mountain  
H. brackenridgii Low form from Keomuku road to Kaena Point  
E. brackenridgii Shrubby form about Naupaka gulch west side  
Hibiscadelphus hualaensis Plant from seed from Puuwawaa, Hawaii flowered at Koele  
Thespesia populnea  
Gossypium tomentosa  
Kokia drynoides or cookei Plant grew and flowered at Kanepuu  
Waltheria americana  
Erodium cicutarium  
Tribulus cistoides  
Geranium humile  
Erodium cicutarium  
Oxalis corniculata  
O. martiana  
Pelea clusiaefolia  
P. molokaiense  
P. elliptica  
P. volcanica lanaioides  
P. oblongifolia  
Zanthoxylum kauaiense Not common  
Z. mauienne var.  
Melia azaderach A tree grew below bank on west side of Kanepuu. others in gulches  
below on west side. At former watermelons grew and fruited yearly  
Byronia sandwicensis



- Perrottetia sandwicensis*  
*Alphitonia ponderosa*  
*Dodonea viscosa*  
*Crotalaria saltiana*  
*Medicago intertexta*  
*Indigofera anil*  
*Tephrosia piscatoria*  
*Sesbania tomentosa*  
*Desmodium trifolium*  
*Erythrina sandwicensis*  
*Canavalia galeata*  
*Vigna sandwicensis*  
*V. oahuensis*  
*Phaseolus semierectus*  
*Sophora crysophalla*  
*S. crysophalla glaberata*      Rock described this. I did not see it.  
*Caesalpinia bonicella*      N.L.H. could use some seeds of this  
*Cassia gaudichaudii*  
*C. laevigata*  
*C. chamaecrista*  
*C. mimosoides*  
*Acacia koa*  
*A. koaia*      South corner of Palawai Basin opposite A, koa  
*Miconia kauaiense*      From Hawaii, flowered at Waiakeakua  
*Leucaena glauca*  
*Mimosa pudica*  
*M. semierectus*  
*Osteomeles antkyllidifolia*  
*Broussaisia arguta*  
*Bryophyllum calycinum*  
*Metrosideros polymorpha*  
*M. tomentosa*      From New Zealand. Tree in valley below Waiakeakua  
*Eugenia sandwicensis* var.  
*Psidium guayva*  
*Lythrum maritimum*  
*Jussiaea villosa*  
*Sicyos pachycarpus*      Now in Maunalei Valley  
*S. hispidus*      This or other used to drape trees at north end of open space Kanepun  
*S. cucumerinus*      sed to be where pineapple fields are now.  
*Daucus pusillus*  
*Chierodendron gaudichaudii*  
*Perrottetia dipyrrena*  
*Tetrasandera mianandra*  
*T. hawaiiensis*  
*T. lanaiense*  
*Rehderia sandwicensis*  
*Kadua grandis* var.  
*K. remyi*  
*K. laxifolia*  
*K. grandis*  
*K. glomerata*  
*K. acuminata*

## Continuation of partial list of Lanai plants

- Goldia coriacea*  
*Gardinia brighamii*  
*Bobea elata* var.  
*B. sandwicensis*  
*B. hookeri*  
*Plectronia odorata*  
*Morinda citrifolia*  
*Straussia*  
*Coprosma pubens*  
*C. foliosa*  
*Morinda trimera*  
*Veronica cinerea*  
*Adenostema viscosum*  
*Ageratum conyzoides*  
*Tridax procumbens*  
*Erigeron albidus*  
*E. canadensis*  
*Tetramolopium remyi*  
*T. chamissonis* var. *luxurians*  
*Gnaphalium japonicum*  
*G. sandwichium*  
*Acanthospermum brasiliense*  
*Verbesina encelioides*  
*Lipochaeta connata*  
*L. lavarum*  
*L. integrifolium*  
*L. hastata*  
*L. idens pilosa*  
*B. hawaiiensis*  
*B. mauiensis*  
*B. micrantha*  
*Wilkesia gymnoxiphium* Tree grew in Kaiholenalili Valley. Seed from Kauai  
*Daubatia plantaginea*  
*D. laxa* var. *hirsuta*  
*Railardia molokaiensis*  
*R. linaris*  
*Senecio vulgaris*  
*Anthes ~~sp.~~ cotula*  
*Artemisia australis* In Maunalei gulch pali seed needed for W. L. H.  
*Hesperomannia arborescens* Only one plant known when last seen. A little mauka of where belt of *Eucalyptus robusta* comes up out of Kaiholena Valley a little down a small valley on east side opposite Kaiholena valley.  
*Lobelia hypoleuca* Along old trail going over the top of Lanaihale  
*Trematolobelia macrostachys* " " " " " " " " " "  
*Clermontia arborescens* " " " " " " " " " "  
*C. grandiflora* " " " " " " " " " "  
*C. micrantha* " " " " " " " " " "  
*Cyanea grimesiana* Along trail in bottom of Kaiholena Valley  
*C. augustifolia* " " " " " " " " " "  
*C. gibsonii* On top of Lanaihale. At head of Kaiholena Valley. Middle of Hookio Valley and at its head just below steep drop from Lanaihale  
*C. baldwinii* One original plant only at bottom of above in extreme end of Hookio VAL  
Plants grew at Lanaihale but not robustly. Fine plants grew, also *C. gibsonii* in patch of trees at top of ridge from Waiakeakua. Could be easily reached from road above. I have photos of them but not very good.

- Scaevola cylindracarpa*  
*S. gaudichaudii*  
*S. frutescens* or *koenigi*  
*S. coriacea*  
*Vaccinium penduliflorum*  
*V. penduliflorum* var.  
*Cyathodes tameiameia* var. *macreuna*  
*C. tameiameia*  
*Maba sandwicensis*  
*Sidroxylon sandwicense* var. *auratum*  
*S. spathulatum*  
*Chrysophallum polynesieum*  
*Suttonia sandwicensis*  
*S. lessertiana* var.  
*S. lanaiensis*  
*Emelia pacifica*  
*Lysimachia hillibrandi*  
*Suttonia lessertiana* var. *vicarpa*  
*S. lanaiensis* var. *coriacea* Kanepuu dry forest  
*Plumbago zeylanica*  
*Labordia tinifolia* var.  
*L. molokaina*  
*L. hirtella*  
*Rauvolfia sandwicensis* Tree by entrance to Maunalei cliff trail. Seed needed  
*Lephocarpa* sp. Noted by Hillebrand as on Lanai but not seen in this collecting.  
*Alyxia olivaeformis* An old vine seen halfway between the Kanepuu dry forest and Kaena  
It was still alive growing in a dead walahee tree.  
*Asclepias curassavica*  
*Nama sandwicensis*  
*Olea sandwicensis*  
*Solanum incompletum* var.  
*S. sodomum*  
*S. nigrum*  
*S. acutissimum*  
*Nothocestrum latifolium* Stands above other trees in Kanepuu forest. Seed needed  
*N. latifolium*  
*Lycium sandwicensis*  
*Nicotiana glauca*  
*Ipomoea tuberculata*  
*I. pes caprae*  
*I. congesta insularis*  
*I. tuboides*  
*I. bona-nox*  
*I. pentstemonifolia*  
*Jacquemontia sandwicensis*  
*Breweria menziesii* A fine vine in puua trees in from the old halapepe trees at the  
end of where the dust stream was burying the puua trees before the  
windbreak was made on the east side. Several others on Lanai. needed  
*Cuscuta sandwicensis*  
*Cordia subcordata*  
*Heliotropium curasavicum*  
*Cryptandra grayana*  
*Myoporum sandwicense*  
*Vitex trifolia* var. *unifolia*  
*Cleistanthus fragrans*  
*Plectranthus australis*  
*Haplostachys munroii* Kanepuu forest. Was in from where the Hibiscus now stands about  
opposite the middle of the large open space on east side. Also  
grew from scattered seed along trail near the most southern sand dune  
seed was spread along trail near the most southern sand dune



## Continuation of partial list of Lanai plants

- Phyllostegia hispida*  
*Stenogyne calaminthoides* Grew and flowered at Lanaihale. Seed from Maui  
*Plantago ~~calaminthoides~~* Grew at Lanaihale from Maui  
*pachyphalla mauianse*  
*Boerhavia diffusa*  
*Boerhavia diffusa vargetrandra*  
*Pisonia sandwicensis* A tree of this out in the open on Paomai land near the escarpment  
*Acranthos splendens* From Maunalei grew and seeded at Kanepuu forest by old hala tree  
*Nototrichium sandwicense* One tree at head of Kahua gulch. Seed wanted  
*Charpentaria ovata*  
*Humex patentea*  
*Chenopodium sandwicense*  
*Atriplex semibraccata*  
*Cassytha filiformis*  
*Wicstroemia foetida*  
*W. elongata*  
*W. bicorata*  
*Santalum ellipticum*  
*S. freycinetium* On a ridge west of Manele  
*S. lanaiense* On east side on ridge of forest. Kahinahina?  
*S. freycinetium var lanaiense* At Kanepuu  
*S. cuniatum*  
*Exocarpus branchystachys*  
*Viscum articulatum*  
*Euphorbia lorifolia* var. In the memory of three persons in the early 1900s this tree covered thousands of acres in an almost unbroken forest now occupied by pineapple fields. Only three trees remained then.  
*E. lorifolia*  
*E. multiformis*  
*E. pilulifera*  
*Claoxylon sandwicensis*  
*Recinus communis*  
*Aleurites molaccana*  
*Phyllanthus sandwicensis*  
*Antidesma platyphallum*  
*Pseudomorus broussoniana* not common  
*Broussonetia papyrifera*  
*Urera glabra*  
*Pilea pepeloides*  
*Boehmeria stipularis*  
*Pipturus albidus*  
*Touchardia latifolia*  
*Piper* No awa plants found on Lanai  
*Peperomia reflexa*  
*P. mauianse*  
*P. latifolia*  
*Liparis hawaiiensis* Near Lanaihale  
*Anoetochilus* " "

## Continuation of partial list of Lanai plants

Hedyctium coronarium	
Canna indica	
Cordyline terminalis	
C. austrakia	Along mountain trail. Seed from H. S. Munro in New Zealand
Dracaena aurea	
Astelia veratroides	
Dianella veratroides	
Dianella ensifolia	
Prichardia lanaiensis	Culches at head of Maunalei Valley
P. elliptica	On side of Hookio Valley
Pandanus odoratissimus	
Freycinetia arborea	
Musa sapientum	Half a dozen varieties in forest.

I collected a large number of sedges, grasses and ferns but cannot give much information on them and many were not determined by the botanists and the list was never finished. Forbes died before the collection was finished and something else came between us before the Hawaiian Sugar Planters Association collection was finished. I don't know at present where that collection is but probably at the University of Hawaii. It ran up to 950 specimens. I started collecting for Bishop Museum and Forbes determining the specimens in July 1913

0/0/57

Notes taken by G. C. Munro in his rounds

May 6, 1921

On the open flat of Maunalei on the south side of the gulch I found a plant new to me, probably a form of *Solanum incompletum*. ....  
 May 8 1921 Found *Bidens mauianensis* very common in large bunches between Awalua and Kanaele about a mile from the beach. *Tetramalopium renyi* had one plant with a bud and a seed head with a few seeds.  
 March 1922 Have been in the forest a good deal lately. Found *Hesperomannia arborescens* ... on side of valley next to Kaiholena. One of them about four feet high and one inch in diameter at the base probably the one from which Forbes took specimens a few years ago after which it apparently died. After I cleared round its roots it evidently sprang up again from its roots. It had a cluster of buds six in number I took as a specimen. There were a number of other clusters in a later stage. I found another tree close at hand with about 12 leaf clusters several groups of buds and some old seedheads still on the tree and some on the ground. It was straggling through other trees branches about 10 or twelve feet long and about one inch or less in diameter, leaves larger than o on the other tree. ... Mann found one tree on the highest ridge. Hillebrand saw about 8 Perkins two and Forbes two. Rock did not find it. Forbes told where to find his. This is just mauka of the belt of eucalypts coming up out of Kaiholena Valley in a little valley on the east side of the ridge. I went through a patch of staghorn fern into the little valley down a little way from the trail on top of the ridge. (It is now a long time since I was there so my directions may not be very good)  
 April 7, 1922: Lately have been over considerable of the dry lands. Found large patch of probably over 20 trees of *Hibiscus brackenridgii* flowering, some stems over four inches thick at base and between 8 and 10 feet high in a gulch below Kehewai....  
 Saw several patches of *Abutilon erimotopetalum*.  
 Jan. 1919 Found flowering above Awalua a specimen of *Hibiscus brackenridgii*. It had entire leaves almost circular. It stood on a bare crumbling bank and was over one inch in diameter at base. Since I saw a number of plants mostly not a foot high growing singly on the black earth by the sea near Kaena Point. (My notes did not mention its height but as I remember it it was quite a low straggling plant.)  
 May 7 1919 In a trip over the stony country on the east side, country that had been rested, I saw *Vigna sandwicensis* the very small fineleaved variety growing luxuriantly in the rocks near the kiawes and up the hillside. Saw *Hibiscus brackenridgii* one large plant and some small together. *Tetramalopium renyi* in various places one patch flowering and seeding. Saw also two patches of koaia and one tree of *Scaevola gaudichaudii*. I have seen koaia in Palawai, Puhielilu, and Kehewai by Keomuku road and *Hibiscus brackenridgii* in Miki, Kamao, Kahimano and Keomuku road. *Tetramalopium renyi* at Kahinahina, Puhielilu, Kahimano and Kaohai. Lately on going through the patches of dryland trees on Paomai I have seen some trees of *Pittosporum* and one maile vine.  
 Oct. 19 1916 Got flowering specimen of *Pterotropia dipyrena*. The tree stood in a dryland forest of pua, lama, Palea etc.. The trunk was upright and symmetrical about 8 or 10 inches in diameter and 20 feet high, top spreading all around. It was on a blind spur running into the gulch between Puhielilu and Kehewai. Rock reported not having seen it on Lanai. It was named from Lanai but is rare there now.

April 22 1917 Yesterday I found close to the Keomuku road on the dry country a group of about 30 plants of *Hibiscus brackenridgii*. Some of the plants were flowering, the last of the season, so I got specimens. The leaves seem to be divided when the plant is young and when flowering the leaf is almost entire. Later I found plants in two other places in the same watercourse. (It was the first watercourse from the road.) I failed to find them when visiting Lanai I think in 1952 but they may show up later. (The Brenners found them in 1957) It is of the creeping form that we want so badly for N. L. H.  
 April 13, 1918 In a tramp across the middle zone on Kalulu, across two gulches I saw a leafless plant of *Hibiscus brackenridgii* in a dense patch of heavily seeded *Abutilon erimotopetalum*.



Some additional Notes

For Drs Degener

April 13 1918 On a dry hillside near Kanaile a thick scrubby bush with suckers coming up all around it. I believe it is a koaia. The dry forest at Kanepuu has been fenced from cattle. ( That plant was perhaps a Sesbania found afterwards by Hobby & Leehman who got seed from it for N. I. H.)

October 1920 On middle lands Kalulu , central ridges examined dry forest patches dying out large branched gardinia trees nearly all dead. Rauvolphia flourishing one very nice tree trunk about a foot in diameter. Two or three patches of Abutilon eremitopetalum in thick groves under other trees, such as wiliwili, standing up about to about 8 feet high with no leaves but plenty of seed capsules.

Feb. 6, 1921 Before the end of last year I found a patch of Hibiscus brackenridgii well below the forest line below Kehiawai ridge near the trail from Puhielilu ~~Hale~~. This variety grows a straight stem and does not straggle about on the ground as the other variety which branches close to the ground and has a brownish stem and branches whereas this has light colored bark. Mr Gay had told me he had seen a white variety in that vicinity but I never saw a white hibiscus on Lanai.

March 20 1921 Made a tour of the Kaena lands, down Awalua road, along sand to Halelono and up through the rocky country to Kapahu. About a mile above Awalua I found a patch of Bidens mauriensis flowering and seeding and at the same spot a large number of young plants of Tetramolopium probably remyi about two inches high and an old dead branching plant about 18 inches high. It had seeded heavily, hence the young plants. I had not seen either of these plants on this country before. The former not nearer than Maunalei and the latter than Kahinahina. Lipochaeta probably connata is more common amongst the rocks above Halelono. Saw large bunches and numerous young plants and old bushes seeding heavily. Some years ago Lipochaeta was rare there. Also saw alot of Hibiscus brackenridgii on the very hard ~~black~~ ~~soil~~ blackish soil in the rocky country.

The following undated note was taken early in my Lanai experience.

To the west of Puumamane on the Paomai Mahana section I found in one patch of trees over a space of 65 by 40 feet Olea, Borea, Tetraplasandra, Cassytha, Gardinia, Maba, Sydroxylon, Chrysophallum, Breweria, and in other places Nototrichium, Nothoesstrum, Suttonia, Santalum, Pandanus. ( I remember pacing this patch but am not certain where it was. I think it was on the side of a little valley alongside one of the windbreaks running east. I think it was the greatest concentration of species that I saw on all that section.

My maps do not show ~~Puumamane~~ Pui mamane but on Kenneth Emory's numbered map it is No 213 and Puumahana shown on your map is 216. It is about the 1100 foot level about one third of the way between the old pipeline and Puumahana, a little to the south of east from Puumahana and Pukawelo on your map. As I remember it was a nice compact grove that I used to drive past on my way down that side to the pipeline. The patch in the little valley had Pittosporums in I am pretty sure. You will find them all worth going over.



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PUBLIC MEETING/PROGRAM:

Thursday, May 22  
7:30 p.m.  
Waikiki-Kapahulu Library  
400 Kapahulu Avenue

Opening Address:

THE NATIONAL WILDLIFE FEDERATION  
AND ITS PARTNERSHIP IN HAWAII

by Fred Scroggin, M.D., President,  
National Wildlife Federation

Program:

MANAGEMENT OF STATE FOREST LANDS  
IN 1980

by Libert Landgraf, State Forester,  
Division of Forestry and Wildlife

Note: A brief business meeting and  
annual election of officers will  
precede the speakers.

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We are fortunate to have Dr. Scroggin visiting the Islands to give an opening address outlining the current projects of the National Wildlife Federation, which now has a membership exceeding 4.5 million. Most of the 30 million dollar yearly budget of NWF is spent on environmental education, but court actions and lobbying on behalf of the nation's resources have been increasingly effective. NWF's broad base of members (including 49 other state groups like CCH), includes both hunters and non-hunters and gives it real influence with policy makers. Responding to CCH requests, the Washington, D.C. headquarters has helped in the Stop H-3 suit, Mauna Kea Master Plan, and endangered plant listings, and has awarded four graduate research fellowships to Hawaii students.

As interest in Hawaii's forest environments expands, the role of the state in habitat management is becoming increasingly important. With this in mind we have invited Libert Landgraf, the head of the newly reorganized Division of Forestry and Wildlife,

to outline the summer tree planting plans, interactions with ranchers to promote koa silviculture, current endangered species projects, and other activities of interest.

ELECTION OF OFFICERS

The May 22 meeting will be the annual elections meeting for the Oahu Chapter, and the Nominations Committee is looking for candidates. Serving as an officer is good experience and is a good way to keep informed on conservation-related matters, and members are encouraged to offer their services.

Interested Oahu members should contact Steve Montgomery (941-4974) or any present Oahu Chapter officers. Interested Big Island members should contact Jim Jacobi (967-7561) or other Chapter officers.

Nominations will be accepted from the floor on the night of elections.

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BIG ISLAND CHAPTER MEETING:

Big Island members will be receiving special notice of the time and place of the annual elections meeting.

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NATURAL SCIENCES CONFERENCE

The Third Conference in Natural Sciences will be held June 4-6 at the Hawaii Field Research Center, Hawaii Volcanoes National Park. It is sponsored by

The objectives of these biennial Conferences are to bring together the many scientists and natural resource managers working in Hawaiian or Pacific Island natural history and related subjects for presentations of papers and discussions on topics of mutual interest.

The \$8.00 registration fee includes a copy of the Conference program, abstracts, and Proceedings. Low-cost accommodations have been made available. Contact National Park offices for more information.

Conference sponsors are the National Park Service, Hawaii Volcanoes National Park;