KAHOOLAWE

1970s-1980s G.H. BALAZS FILE

Laura A. Carter
archaeologist

hmr

hawaii marine research
677 ala moana blvd., suite 200
honolulu, hawaii 96813

(808) 537-4051 or 536-6094

May 20, 1980

Ms. Cynthia H. H. Thielsen
Staff Attorney
Legal Aid Society of Hawaii
Suite 1100, 1164 Bishop Street
Honolulu, Hawaii 96813

Dear Cynthia:

Thank you for your letter of May 13, 1980 along with the Navy EOD memo of November 7, 1978 listing the sighting of 13 green turtles at Kahoolawe during September of 1978. These observations were of course included in my preliminary sea turtle report of November 1978 which was sent to you at your request over a year ago. The recording of turtles by EOD personnel took place as a result of a request that I formally made to Commander Gage.

Your letter seems to imply that I have somehow not been responsive or helpful to your requests for assistance and information. My records certainly show that this has not been the case. While I did have to cancel plans to visit Kahoolawe with your group, this was almost entirely due to the fact that you failed to provide me with full information (boat charter fee) when first making the invitation.

As I mentioned to you during a telephone conversation in February, to my knowledge the only other individuals in Hawaii with scientific expertise of sea turtles are Mr. Ron Walker (Division of Fish & Game), Mr. Ernest Kosaka (U. S. Fish & Wildlife Service) and Mr. John Naughton (National Marine Fisheries Service).

I wish you continuing success in your field surveys at Kahoolawe.

Sincerely,

George H. Balazs
Assistant Marine Biologist

mk
cc: Emmett Aluli, M.D.

University of Hawaii at Manoa

Hawaii Institute of Marine Biology
P.O.Box 1346 • Coconut Island • Kaneohe, Hawaii 96744
Cable Address: UNIHAW

March 14,1980

Captain L. T. Profilet
Kahoolawe Project Office
Commander Third Fleet
Pearl Harbor, Hawaii 96860

Dear Captain Profilet:

I regret that I must inform you that the sections on marine turtles in your Environmental Impact Statement for Kahoolawe Island are replete with inaccuracies, omissions and misrepresentations. Much of the information presented in these sections has been paraphrased from my paper "Sea Turtles of Kahoolawe Island - A Preliminary Report" (Nov. 1978), but unfortunately this was carried out in a manner that materially altered the meaning of my original writing. Furthermore, the listing of "George H. Balazs. 1979. Personal Communication" as a reference on page R-2 was done without my prior knowledge or permission. I am unable to determine what information this reference supports.

Under my present workload, I do not have the time or energy to correct these sections sentence by sentence, as should have been done by Navy biologists and private consultants prior to final publication. You will note from the attached correspondence that at an earlier date I was unable to obtain a draft copy of your document for review purposes. Nevertheless, for the historical record, I have deposited complete copies of my original sea turtle report with the University of Hawaii library system and several federal agencies.

I have always tried to cooperate with the Navy in whatever way possible, therefore I am sure you will understand my disappointment in this matter.

Sincerely,

George H. Balazs

George H. Balazs
Assistant Marine Biologist

GHB:md

Enclosure

UNITED STATES PACIFIC FLEET
COMMANDER THIRD FLEET
PEARL HARBOR, HAWAII 96860

IN REPLY REFER TO:
FF/3
16475,2
Ser 01K/ 519
24 APR 1980

Mr. George H. Balazs
Assistant Marine Biologist
University of Hawaii at Manoa
P. O. Box 1346
Kaneohe, Hawaii 96744

Dear Mr. Balazs:

Please accept my apology for the delay in responding to your letter of March 14, 1980 regarding the sections on marine turtles in the Environmental Impact Statement for Kahoolawe. I used the time to do some research on your comments.

The listing "George H. Balazs. 1979. Personal Communication" on page R-2 was the result of a conversation between yourself and an Environmental Impact Study Corporation staff member on March 26, 1979. The data from this conversation was used in the EIS on page 2-35, paragraph 1, in the sentence reading, "The total breeding population of the green turtle today is around 1,500 individuals (2.III.B.3)." The citation for this reference was inadvertently omitted from the references for Section 2. It should have appeared on page 2-101 under Marine Faunal References and should have read, "(2.III.B.3) Balazs, George. 1979. Personal Communication. Hawaii Institute of Marine Biology."

Much of the information on marine turtles in Section 2 of the EIS was paraphrased from your paper, "Sea Turtles of Kahoolawe Island - A Preliminary Report." However, since you mentioned no specific examples of altered meaning of your writing, it is not possible for me to respond in detail. But, I assure you, there was no intent by the Navy or its consultant to change the meaning of your writing.

The past association between you and the Navy has been fruitful and I hope it continues.

FF/3
16475.2
Ser 01K/ 519
24 APR 1980

Since I am leaving this assignment shortly, you may continue to contact this office by writing to Lieutenant James E. Davidson, same address.

Sincerely,

L. T. PROFILET
Captain, U.S. Navy
Kahoolawe Project Officer

Copy to:
CINCPACFLT (03J)
NAVLEGSVCOFF Pearl Harbor (02)
PACNAVFACENGCOM (09P)

University of Hawaii at Manoa

Hawaii Institute of Marine Biology
P.O.Box 1346 • Coconut Island • Kaneohe, Hawaii 96744
Cable Address: UNIHAW

April 28, 1980

Captain L. T. Profilet
Kahoolawe Project Officer
United States Pacific Fleet
Commander Third Fleet
Pearl Harbor, Hawaii 96860

Dear Captain Profilet:

Thank you for your good letter of 24 April 1980 which acknowledged and responded to my earlier correspondence of 14 March 1980. I should like to emphasize once again that all of the inaccuracies and out of context statements relating to sea turtles which appear in the Kahoolawe EIS could have been avoided if I would have been allowed to review this section of the document prior to publication (see my correspondence of 8/10/79 and U.S. Navy response of 8/15/79).

I wish you sincere best regards and aloha in your new assignment.

Sincerely,

GEORGE H. BALAZS
Assistant Marine Biologist

GHB:ec

LEGAL AID SOCIETY OF HAWAII
SUITE 1100, 1164 BISHOP STREET
HONOLULU, HAWAII 96813
TELEPHONE (808) 536-4302

MELVIN M. M. MASUDA, ESQ
Executive Director

May 13, 1980

George Balaz
Hawaii Institute of Marine Biology
Box 1346
Kaneohe, Hawaii 96744

Dear Mr. Balaz:

I am enclosing a copy of a Naval cover letter which was attached to the underwater ordnance survey of Kaho'olawe Island. You will note under item 5 that a total of thirteen green turtles were sited during this short survey. In addition, a turtle petroglyph was discovered in a valley west of Ahupu.

From your previous correspondence, I am unclear as to whether you wish to be involved in any activities on Kaho'olawe. Scientists from other fields, such as entemology and botany, have welcomed the opportunity to survey the various species on Kaho'olawe. I would appreciate your kokua at least to the extent of suggesting the name of a scientist with expertise in the area of turtles whom I could contact regarding work on Kaho'olawe.

Sincerely,

Cynthia H. H. Thielen
Staff Attorney

CHHT:jcs

Encl.

cc: Emmett Aluli, M.D. w/encl.

558-8291
KAMALO

University of Hawaii at Manoa

Hawaii Institute of Marine Biology
P.O.Box 1346 • Coconut Island • Kaneohe, Hawaii 96744
Cable Address: UNIHAW

April 30, 1980

Ms. Cynthia Thielen
Staff Attorney
Legal Aid Society of Hawaii
Suite 1100, 1164 Bishop Street
Honolulu, HI 96813

Dear Cynthia:

As requested during your telephone inquiry of 29 April 1980, I am sending you a copy of my comments to the U. S. Navy relating to sections on sea turtles in the Kahoolawe EIS. Based on a letter from Captain Profilet dated 24 April 1980, I expect to have additional discussions on this topic with Navy personnel when my schedule permits. Please note that I have no desire for publicity to result from this matter.

Sincerely,

George H. Balazs
Assistant Marine Biologist

mk

COPY

DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
(MAKALAPA, HI)
PEARL HARBOR, HAWAII 96860

09F:mm
Ser 5880

15 Aug 1979

Mr. George H. Balazs
Assistant Marine Biologist
Hawaii Institute of Marine Biology
University of Hawaii at Manoa
P.O. Box 1346, Coconut Island
Kaneohe, Hawaii 96744

Dear Mr. Balazs:

This is in response to your letter of 10 August 1979 in which you requested a copy of the Navy's report which discussed findings from your November 1978 report on sea turtles of Kahoolawe.

The newspaper article enclosed with your letter refers to a preliminary draft of the Navy's Supplemental Environmental Impact Statement (EIS) which was filed with the Court recently as part of the continuing litigation over the Navy's use of Kahoolawe.

As soon as the Supplemental EIS has been completed and released for distribution, you will be mailed a copy.

Sincerely,

J. M. STEVENS
CDR, CEC, USN
Special Assistant for Ecology

Copy to:
Mr. J. Caperon
Hawaii Institute of
Marine Biology

Friday, April 18, 1980 Honolulu Star-Bulletin A-5

Navy's Holding of EIS Comment Hit by Ohana

By Christy Schofield
Star-Bulletin Writer

The Protect Kaho'olawe Ohana yesterday protested the Navy's "official" refusal to give the ohana copies of comments the Navy has received on its final environmental impact statement on Kahoolawe.

At a news conference held at the University of Hawaii, the ohana also revealed the UH Environmental Center's comments on the Navy EIS.

The university center recommended that "bombing of the Island be greatly reduced next November and December and that bombing completely cease during January through April to protect the humpback whale until a thorough study is conducted to determine the exact effect on these marine mammals from naval exercises."

However, Navy spokesman Lt. Jamie Davidson responded that the comments received by the Navy on the final EIS on Kahoolawe "will be released, if that's the law."

Cynthia Thielen, attorney for the ohana, cited regulations of the National Environmental Policy Act and the Freedom of Information Act that require that "Agencies shall ... make environmental impact statements, the comments received, and any underlying documents available to the public ...."

THE NAVY, SUED by the ohana and others in 1976, was ordered by a federal judge to prepare an EIS on the Island it still uses as a bombing target.

The final version was filed with the Environmental Protection Agency last Nov. 30.

Thielen had requested the comments on the final EIS April 7 from Navy attorney Roger Wiegley. In a letter to her Tuesday Wiegley wrote, "There is no requirement for the U.S. Navy ... to provide copies of correspondence that has been received from the public regarding the final EIS."

Wiegley added, "If you are aware of some legal requirement that is not met by the Navy policy described above, please inform me of the source of the requirement."

Davidson charged that Thielen held a news conference and "made a show" instead of responding to Wiegley.

THE OHANA said the Navy has made "no commitment to conduct a thorough study during this last or the next humpback season in order to obtain firm conclusions about military impact on the humpback whales."

Davidson said the Navy made its first study in January using a small destroyer to send bouys equipped with radio receivers under water to test the effect of Naval gunfire from the boat on the whales.

According to Davidson, a plane above the boat that was picking up the radio signals reported that "the whales were singing louder than the sound of the gunfire," indicating that the whales were not affected.

He said, however, that the tests are only preliminary and "not all-inclusive" and that further tests will be done with the cooperation of the National Marine Fisheries Service.

"The business of the Navy is to conduct war at sea and not research," Davidson said.

LEARNING RESOURCE CENTER
University of Hawaii
KAUAI COMMUNITY COLLEGE

April 10, 1980

Mr. George Balazs
Assistant Marine Biologist
University of Hawaii (Manoa)
c/o Hawaii Institute of Marine Biology
P.O. Box 1346, Coconut Island
Kaneohe, Hawaii 96744

Dear Mr. George Balazs:

May we please have a copy of SEA TURTLES OF KAHOOLAWE ISLAND, A PRELIMINARY SURVEY? If there is a cost, please bill us. Thank you.

Sincerely,

Edith Hashizume

Edith Hashizume
Serials Assistant

AN EQUAL OPPORTUNITY EMPLOYER
RR 1, Box 216, Lihue, Hawaii 96766
Telephone 245-8311

Kaho'olawe, Vieques

Fishermen from the tiny Caribbean island of Vieques yesterday joined members of Protect Kaho'olawe Ohana in attempting to get the U.S. Navy to stop using small islands for target practice, the Associated Press from New York reported.

Both the populated island of Vieques, off the Puerto Rican coast, and the uninhabited Hawaiian Island of Kahoolawe have been used by the U.S. Navy for heavy artillery drills.

The two groups, Crusade to Rescue Vieques and the Hawaiian organization, held a news conference yesterday in New York announcing their united front against the Navy. They said they would concentrate first on Vieques.

In Hawaii, the latest action taken in the Protect Kaho'olawe Ohana's four-year campaign to stop the bombing was an attempt this week to dissuade ships of American allies

Saturday, March 1, 1980 Honolulu Star-Bulletin A-3

Groups Protest

from participating in the shelling.

THE GROUP sent radiograms of protest to the governments of Canada, Australia and New Zealand asking them not to participate in that part of the joint naval exercise known as RIMPAC 80, which is now under way in Hawaiian waters.

However, a U.S. Navy spokesman, Lt. Jaime E. Davidson, said the bombing would proceed, under control of the U.S. Marine fire control directors, and that the target area is not near archaeological sites on the Island.

The New York news conference revealed that 21 anti-Navy demonstrators were arrested on Vieques last May. They were charged with trespassing and shipped to Mainland prisons. Five still are jailed, according to group spokeswoman Lisa Wheaton.

DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
(MAKALAPA, HI)
PEARL HARBOR, HAWAII 96860

09P2:joh
11011
Ser 797
31 JAN 1980

Dear GEORGE BALDES:

Kahoolawe Training Area, Hawaiian Archipelago
Environmental Impact Statement (EIS)
Department of the Navy

Enclosure (1) is forwarded in accordance with your request.

Sincerely,

For T. C. KELLEY
Commander
Civil Engineer Corps
U. S. Navy
Head, Facilities Planning Dept.

Encl: (1 cy)
(1) EIS 209

LEGAL AID SOCIETY OF HAWAII
SUITE 1100, 1164 BISHOP STREET
HONOLULU, HAWAII 96813
TELEPHONE (808) 536-4302

MELVIN M. M. MASUDA, ESQ
Executive Director

February 21, 1980

Mr. George Balaz
Hawaii Institute of
Marine Biology
Box 1346
Kaneohe, Hawaii 96744

Dear George:

I am returning your Sea Turtle Sighting Reports. There was insufficient time on the February access to work on these.

I would suggest that you contact Hawaii Marine Research, Inc., at 537-4051 to request assistance in filling out these forms. It is my understanding that the archaeologists who have been working on the Island for the past several years have made numerous sightings of sea turtles in the waters off Kaho'olawe.

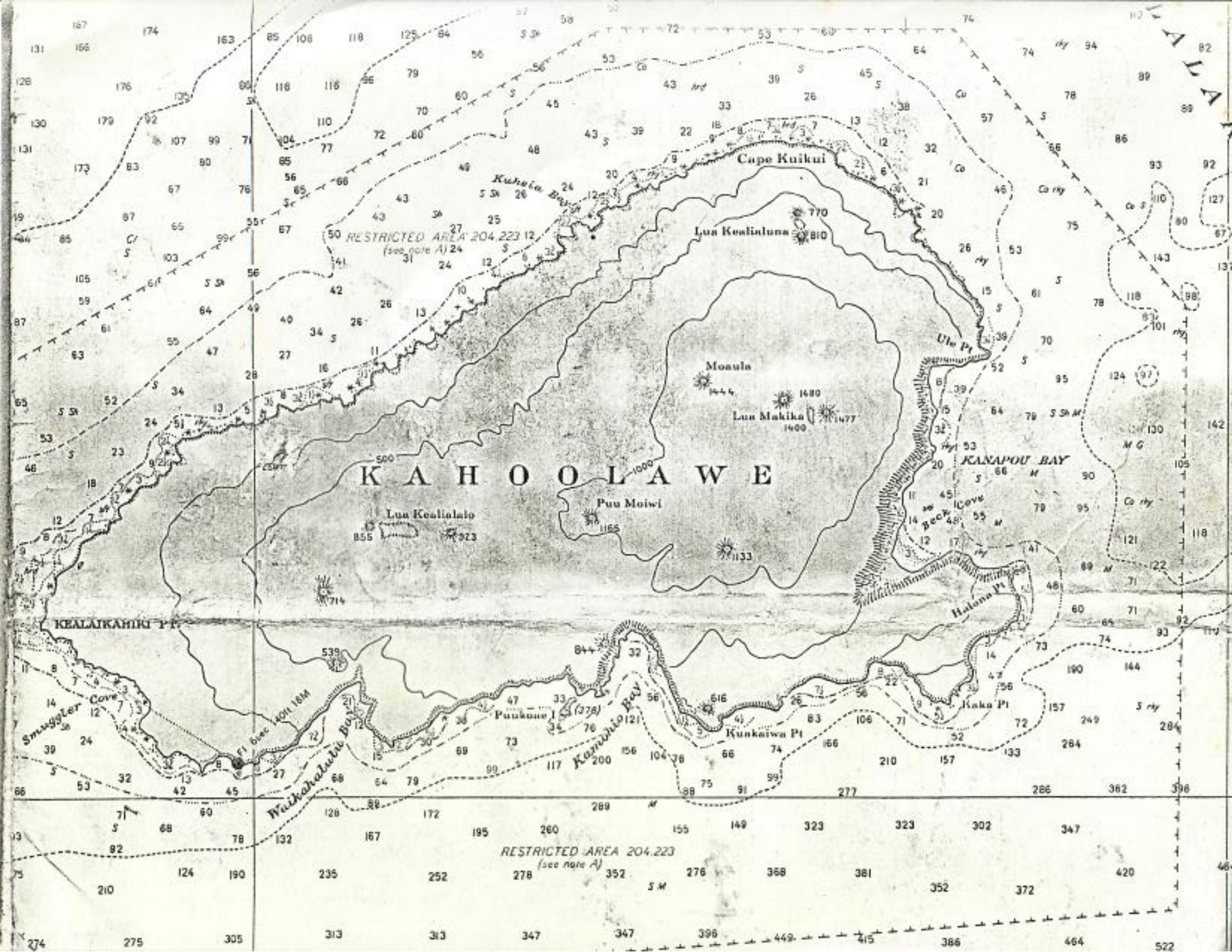
Sincerely,

Cynthia H. H. Thielen

Cynthia H. H. Thielen
Staff Attorney

CHHT:jcs

Encls.


KAHOOLAWE
Cape Kuikui
Kuhola Bay
RESTRICTED AREA 204.223
(see note A)
Lua Kealialuna
770
810
Moanula
1444
Lua Makika
1480
1477
1400
Ule Pt
KANAPOU BAY
Cove
Beach
Puu Moiwi
1165
1133
Lua Kealialalo
855
923
714
500
1000
KEALAIKAHIKI PT
539
844
616
Halona Pt
Kaka Pt
Kunkaiwa Pt
Punakoni I
(378)
Kanuhio Bay
Waikahalulu Bay
Smuggler Cove
Fl 6sec 140ft 18M
RESTRICTED AREA 204.223
(see note A)

LEGAL AID SOCIETY OF HAWAII
SUITE 1100, 1164 BISHOP STREET
HONOLULU, HAWAII 96813
TELEPHONE (808) 536-4302

MELVIN M. M. MASUDA, ESQ
Executive Director

February 8, 1980

Mr. George Balazs
Hawaii Institute of
Marine Biology
Box 1346
Kaneohe, Hawaii 96744

Dear George:

I have learned of turtle sightings at the following places in the waters off Kaho'olawe Island:

1. next bay from Hakioawa toward Ule Point (called "turtle bay")

2. heading away from Hakioawa, the other side of Hakioawa Iki

3. between Smugglers' Cove and the garbage dump - Kealaikahiki side

4. Ahupu area--especially Ahupu Iki

I am glad that you and your associate will be participating in the February access. Possibly you could bring a map with these sites marked on it.

Aloha,

Cynthia H. H. Thielen
Staff Attorney

CHHT:jcs

cc: Emmett Aluli, M.D.

More People Can Get EIS on Kahoolawe

The Navy said today it will distribute its environmental impact statement on Kahoolawe free to each of the 209 persons who testified at last year's hearings on the Target Island — providing they ask for it.

The hard-cover document, thicker than the Oahu telephone directory, cost $50 per copy to print. The Navy has printed 100 copies so far, and most of them have gone to government agencies.

Susan Sakaki, spokeswoman for the EPA in Washington, said today the federal Environmental Protection Agency had "retracted" the impact statement because of improper distribution procedures.

The retraction means the Navy did not meet the regulations for distribution and the statement is not yet considered officially filed.

NAVY SPOKESMAN Lt. Jamie Davidson said the Navy feels its hefty document is still sound and valid.

"But we are informing all those who testified that they can obtain a copy if they desire one," he said.

Earlier, the Navy sent copies to public officials, libraries and those who accompanied their testimony with written views. Now they are broadening that distribution, he said.

Sakaki said notice of the retraction will appear in the National Register.

Davidson explained the nuts and bolts of filing an environmental impact statement this way:

The Navy submits the document to the EPA which publishes it in the National Register. The public has 30 days to comment to the EPA.

SINCE THE NAVY didn't complete the distribution, when that is done another notice will be given the National Register and another 30 days will be available to the public for comment from the new date of the filing.

The impact statement was filed originally Nov. 30. Davidson said a new date for filing has not been set.

Cynthia Thielen, attorney for Protect Kaho'olawe Ohana, complained last week that there was an unfair, important time gap between the Nov. 30 filing and the time when the Ohana received its copy of the Navy document.

Thielen also said there are many flaws in the statement.

Honolulu Star-Bulletin Friday, December 28, 1979

34 Kahoolawe Sites Listed Eligible for Historic Register

The U.S. Department of the Interior has informed the Navy and the state of Hawaii that 34 archaeological sites on Kahoolawe are eligible for inclusion in the National Register of Historic Places.

U.S. Sen. Spark Matsunaga, D-Hawaii, had urged fast consideration of the 34 sites, which his office said are endangered by erosion and Navy military activities on the Island.

Matsunaga is a member of the Senate Energy and Natural Resources Committee, which has jurisdiction over matters concerning historic preservation.

MATSUNAGA SAID that a total of 574 sites were discovered during the Navy's archaeological survey of Kahoolawe and that the remaining 540 will be considered by the Interior Department as reports on the survey are submitted.

"This is highly significant as showing the quality of the archaeological findings on Kahoolawe," Cynthia Thielen, attorney for the Protect Kaho'olawe Ohana, said.

"The Navy now must take immediate steps to protect these sites, as the declaration of eligibility triggers the same protective measures as listing," Thielen said.

"Many of the sites are located in the area used by ground troops, for instance, Hanakanaea and Kealaikahiki, and contain ko'a (fishing shrines) and human burials," she said.

Lt. Jamie Davidson, Navy spokesman on Kahoolawe, said, "We initiated this survey and showed the concern for these 34 sites which were nominated—and that is a key word—for eligibility. Now we plan to spend money to protect these sites.

"IN SOME CASES it won't cost much—just adding another layer of dirt. As for the areas where ground troops operate, we've cordoned off these sites and told the men not to get close to them."

Thielen said the Navy is under a court order to submit the remaining sites before June 17 and that the "Ohana anticipates that all of these remaining sites will be declared eligible."

But It's Called 'Weak and Inadequate' by Ohana

Navy Report Details

During the past year on Kahoolawe, 11 military bombing targets were eliminated, 34 archaeological sites were identified, 1,200 trees were planted and 18,000 goats were eliminated, according to a report released yesterday by the U.S. Navy's 3rd Fleet.

The report came on the anniversary of the signing of a memorandum of understanding the state and Navy on the use of the Island.

The Navy also said it is continuing efforts to develop other programs for mutual benefit, including approving legitimate requests for visits to the Island by researchers and scientists.

It reported that a Hawaii Institute of Marine Biology survey showed that the Navy's activities are not endangering the sea turtle population in Kahoolawe and another study reported no endangered species of birds there.

TRAINING EXERCISES were modified to reduce noise problems for Maui residents and fishing in surrounding waters were permitted during 147 days since the memorandum was signed, the Navy said.

It said it had submitted forms for 34 archaeological sites to be nominated for the National Register of Historic Places and that there are still some 500 to 800 goats remaining on the Island.

Programs on Kahoolawe

The Navy year-end report was criticized as "weak and inadequate" by Haunani-Kay Trask, spokesman for the Protect Kahoolawe Ohana, which wants the Navy to stop its bombing of the Island and return Kahoolawe to the state.

Trask furnished a letter from Don Reser of the National Park Service in which he said that based on experience at Hawaii Volcanoes to eliminate goats there, "It's virtually impossible to clear the goats from an area completely unless you have unlimited manpower, money and resolve."

SHE SAID fences should be put up to confine the goats, the Navy's water survey is inadequate, the entire Island should be included in the national register, and the archaeological sites also should be fenced.

"The most important archaeological site, the Puu Moiwi Adz Quarry is in the main central bombing area," Trask said. "And why do they have to wait until the sites are registered to install permanent markers, when troop movements could destroy them before they are listed?"

"Our position is that no bombing should occur near archaeological sites anywhere," she said.

Friday, December 21, 1979 Honolulu Star-Bulletin A-13

Ohana Picks Holes in Kahoolawe Report

By Lyle Nelson
Star-Bulletin Writer

The Navy's long-awaited environmental impact statement on Kahoolawe is three inches thick—bigger than the new phone book—but it doesn't satisfy the Protect Kahoolawe Ohana.

Jacqueline Rossetti, spokesman for the Ohana, said the statement was filed with the Environmental Protection Agency Nov. 30 but that "copies of this long-awaited document were not distributed to persons, organizations or agencies which had submitted substantive comments on the draft EIS" until last week.

What's more, the Ohana faults the Navy for taking two years and three months to file the EIS ordered by the late Federal Judge Dick Yin Wong.

In response to the Ohana comments, a Navy spokesman today said the Navy is satisfied with the environmental impact statement.

"THE DOCUMENT was prepared by a competent Hawaii-based civilian firm and the time of filing was consistent with what a developer would need to accomplish the amount of work required," said Jamie Davidson, Navy liaison officer on Kahoolawe matters.

He said 100 copies of the EIS were sent to all concerned individuals and libraries. Regulations do not require the Navy to distribute it to all persons who testified at hearings on the matter, he said.

But Cynthia Thielen, attorney for the Ohana, was not satisfied with the Navy's distribution of the document, believing that most of the persons who took part in the hearings should receive copies of the IES.

She said a Navy lawyer brought the document to her last week. That delivery marked the beginning of a 30-day period in which those who commented at hearings in the Ohana's suit against the Defense Department can study and comment on the document.

Thielen said the Navy will extend the deadline for comment from the dozens of persons who testified at the hearings even though he Navy failed to comply with the distribution requirements.

The EIS—dated September 1979—was prepared by the Environmental Impact Statement Corp. of Honolulu for $100,000.

"IT IS ESSENTIAL that responsible scientists and individuals be able to examine and comment on this document," Thielen said, noting further dissatisfaction with its contents —especially as they pertain to humpback whales and birds.

"Whales are very intelligent and would stay away from areas where they felt harassed (by naval gunfire)," the Navy wrote.

Thielen called this "a ludicrous comment."

"Intelligence of humans must be used to ensure that activities are not conducted which would harass the humpbacks," she said.

The same goes for birds, she said. The report states that birds in the impact area will fly away when the bombs start falling.

Davidson said other studies done at Kahoolawe and in Bermuda show that whales are not bothered by Naval gunfire.

MEANWHILE, the Navy today finished its archeological site survey, which Davidson termed "a 100 percent effort done by walking around the Island."

Kahoolawe Development Put Under Maui Panel's Control

By Robert McCabe
Maui Correspondent

WAILUKU, Maui — The Maui Planning Commission last night amended its rules and regulations to extend special management area boundaries on Maui, Lanai and Molokai and over all of Kahoolawe.

The commission decided to include all regions makai of coastal highways in the management area, and at the urging of commissioner Charles Ota, the entire island of Kahoolawe.

Under the interim coastal zone management program, which the amended rules will replace after they are signed by Mayor Hannibal Tavares, only that portion of the shore which is 300 feet from the coastline came under the special management area over which the commission has developmental control.

With the adoption of the new rules vast areas of Kahului, Paia, Kihei and Lahaina that are some distance from the coast now have been brought under the shoreline management area controls.

VARIOUS SPEAKERS objected to the enlargement of the special management territory on grounds that it would increase development costs and cause undue delays in construction.

But the planning department argued that the new boundaries follow guidelines set by the state Land Use Commission in establishing urban district zones.

It was pointed out that the Kihei region will be affected most by the boundary change and that almost all projects planned in the area will be subjected to scrutiny by the commission before building permits are granted.

Ota proposed that Kahoolawe be included in the management area to give the commission authority in controlling possible growth there. Although the island is under military jurisdiction by executive order and is used as a bombing target it is a geographical part of Maui county.

Sunday
Star-Bulletin & Advertiser

Advertiser file photo

A Marine jet makes a pass over the target area in the west

Hawaii Report

★★ Honolulu, December 23, 1979 A-3

Kahoolawe study for Navy backs use for training

By VICKIE ONG
Advertiser Staff Writer

The U.S. Navy's massive, three-inch-thick bound volume assessing the environmental impact of military training on Kahoolawe ends up saying what the Navy has always contended:

- The bombing practice does not adversely affect shorebirds, humpback whales, dolphins or fish.
- Kahoolawe is the only place available for the kind of target practice required by the military here. Halting training at Kahoolawe is flatly ruled out.
- Clearing about half the island of unexploded bombs is "feasible" — but will cost $78.7 million to $127.4 million.

At the same time, the Navy seems more sympathetic to the cultural and historical significance Kahoolawe holds for some in Hawaii.

The impact statement, released Friday, departs from a strictly technical assessment to include long passages on Hawaiian history, the Hawaiian renaissance and the significance of *aloha aina*, or love for the land, as it relates to the Kahoolawe controversy.

In a section on "cultural impacts," the document says: "Kahoolawe has more importance than would initially appear, as it has largely become a symbol of the past and future to segments of the local community.

"This helps to explain the confusion and lack of communication between the military and these groups. No one is to blame, for they are involved in a clash between two cultural systems. Consequently, there is no right or wrong."

The resolution to the clash will come only with "cooperation and a joint sense of striving to understand the other culture," the report says.

The environmental impact statement, prepared for the Navy by the Environmental Impact Study Corp. of Honolulu at a cost of $100,000, was ordered by the late Federal Judge Dick Yin Wong in September 1977 in a civil suit brought by the Protect Kaho'olawe 'Ohana, among others.

The Navy came under heavy criticism during hearings on a draft impact statement in April 1978. Testimony at that time was almost unanimously against the Navy's continued use of Kahoolawe as a practice bombing site.

Cynthia Thielen, attorney for the Ohana, yesterday said she had not yet read the entire document but detected "flaws" in some parts of it.

Thielen was more upset with the distribution of the report. She said no copies were given to the more than 200 persons and private organizations which had made lengthy comments on the draft document.

However, Lt. Jamie Davidson, the Navy's Kahoolawe spokesman, said 75 of the 100 copies prepared by Environmental Impact Study Corp. were distributed to government officials, interested government agencies, major state libraries and those who submitted written testimony.

Davidson said the remaining 25 copies will go to those who made substantive comments on the draft statement.

If it's necessary, the Navy will print additional copies of the report, at an estimated cost of $40 to $50 each, for others who made major critiques, Davidson said.

The impact statement weighs options to the continued use of Kahoolawe for target practice — and finds no acceptable alternative.

Stopping the bombing at Kahoolawe "would not accomplish the objectives and mission of the Pacific Command. Continued use of Kahoolawe for military training is necessary for the foreseeable future, because the island is the only place in the mid-Pacific where combined arms training can be conducted for conventional warfare," the report says.

The Navy also said it could not use sea-towed targets or a floating island, which would cost $360 million, in place of Kahoolawe.

Keeping the military here but having training practice elsewhere would be "prohibitively expensive," the Navy says. Keeping the military but reducing training is "not acceptable from a national defense point of view." And relocating Navy-Marine forces "is undesirable because it

See KAHOOLAWE on Page A-6

Kahoolawe report analyzes ecology

Continued from Page A-3

would increase steaming time to a crisis in the Western Pacific by five days and also would reduce U.S. presence in the Pacific."

In an 87-page section, the Navy dutifully reported the comments — oftentimes emotional and hostile — made at the public hearings last year and its reply.

For example, the report notes this comment: "The hurt to the Hawaiian soul every time a bomb drops is not taken into consideration."

Response: "The hurt to the Hawaiian soul by the continued military activities on the island of Kahoolawe is difficult to objectively argue. However, the Navy is sensitive to and aware of the cultural impacts of the continued military training activities on the Hawaiian people."

The report also discusses these areas:

• **Archaeological sites.** An archaeological survey of the entire island is expected to be finished soon and a management plan will be developed.

In the meantime, the Navy says, identified archaeological sites have been marked and it is trying to avoid disturbing these areas. Eleven targets have been eliminated, vulnerable areas are marked by poles and personnel are ordered to stay at least 25 meters from markers.

• **Animals.** "Military activities on Kahoolawe do not appear to have deterred the humpback whales from frequenting the waters around Kahoolawe," the Navy says. The Navy does not expect to need special measures to protect the whales during training exercises.

Similarly, the report says, dolphins appear to be unaffected by the bombing practice.

• **Plants and birds.** The report says the effect on kiawe trees and shorebirds is minor since they are outside of the target area.

• **Coral.** Some coral reefs off Kahoolawe have been "severely impacted by silt and runoff from erosion." The Navy is trying to stem the erosion by planting trees.

• **Air quality.** Dust is kicked up when ordnance explodes and can blow from the island. The report says no immediate action can be taken to minimize the dust but that there is, after all, no one living on Kahoolawe.

• **Erosion.** Although wind and water erosion are natural phenomena, the Navy says it already has a tree-planting program and is working with other agencies to study the erosion problem.

• **Noise.** Under certain conditions, the Navy says, bombing on Kahoolawe can result in loud rattling of doors and windows on another island. The Navy has found a way to predict when noise might be a problem and forbids use of large bombs at those times. However, the blast from naval guns cannot be quieted.

Navy Is Told to Redistribute Kahoolawe Impact Statement

Because of improper distribution, the federal Environmental Protection Agency today officially retracted the environmental impact statement for Kahoolawe, according to Cynthia Thielen, attorney for the Protect Kahoolawe Ohana.

Thielen said the EPA notified her by telephone that the impact statement, which was filed by the Navy on Nov. 30, was being retracted because "it was not made available to those who made substantive comments on the draft environmental impact statement."

The retraction means that as far as the EPA is concerned, the impact statement has not been filed, Thielen said. The Navy will have to print and distribute more copies to comply with EPA regulations, she said.

Thielen said the Navy has been informed and notice of the retraction will appear in the Federal Register.

HOWEVER, Lt. Jamie Davidson, the Navy's Kahoolawe spokesman, this morning said the Navy here had not been informed but would check on the matter.

Davidson earlier said that 75 of the 100 copies prepared by the Environmental Impact Study Corp. were distributed to governmental officials, interested government agencies, major state libraries and those who submitted written testimony. He said the remaining 25 copies were to be distributed to those who had made substantive comments and if necessary the Navy would print additional copies.

Davidson said letters will be sent to all people who made comments at the earlier hearings asking them if they would like a copy of the environmental impact statement.

Printing costs for the three-inch-thick bound volume assessing the environmental impact of military training on Kahoolawe have been estimated at $40 to $50 for each copy.

THIELEN CONTENDS that full distribution of the environmental impact statement is essential so that those who criticized the draft may determine whether the final statement adequately examined and responded to the criticisms made at the hearings.

Thielen said a serious flaw has been found in the section on environmental impacts on the humpback whale. She said no scientific study was done on whether the impact from Navy gunfire and ship maneuvers in the waters off Kahoolawe harassed the whale.

The impact statement section on the whale concludes, "Whales are very intelligent and would stay away from areas where they felt harassed," Thielen said.

But, she said, "the intent of governing laws is not to rely on the intelligence of whales to move out of the path of danger but to mandate that the intelligence of humans be used to ensure that activities are not conducted which would harass the humpback."

A-2 Honolulu Star-Bulletin Thursday, December 27, 1979

STATE OF HAWAII
Department of Land and Natural Resources
DIVISION OF FISH AND GAME

KAHOOLAWE FISH SURVEY

July 30 to August 2, 1972

INTRODUCTION

The Division of Fish and Game, Department of Land and Natural Resources, conducted underwater surveys at four selected sites along the southern and northwestern coast of the Island of Kahoolawe during July 30 to August 2, 1972 (Figure 1). Fish counting stations were occupied at Kaimohio Bay, Kealaikahiki Point (Kuia Shoal), Kuheia Bay and off a small inlet about one-half mile southwest of Kuheia Bay. Records were compiled of species composition, standing fish crop densities and physical underwater features at the different locations using SCUBA gear.

METHODS

Personnel

Division of Fish and Game personnel who participated in the surveys were Kenji Ego, Henry Sakuda, Eric Onizuka, Henry Okamoto and Dennis Shinno. The surveys were conducted with the support of the fishing sampan, Ola.

Survey Procedure

Fish counts were conducted to determine the species composition and standing crop densities of the fish population. The counts were made by a pair of divers swimming along a 250-yard long weighted cotton transect line, previously laid on the ocean bottom from the Ola. The divers, equipped with SCUBA gear, carried plastic slates on which they recorded the species, numbers and estimated lengths of all fishes encountered within a width of 10 feet along both sides of the line. The approximate weight of each fish counted was then calculated by multiplying the cube of the fish length by a previously determined species constant that had been derived from known length-weight relationships of each of the species involved. The estimated standing crop, expressed in terms of pounds per acre, was then calculated by multiplying the total weight of the species observed in the transect area by the ratio: 43,560 square feet (or one acre) /area (in square feet) covered by the fish count.

RESULTS AND DISCUSSION

Kaimohio Bay

Kaimohio Bay located along the southern coast of Kahoolawe is a large bay bounded by very high, steep cliffs surrounding a narrow shoreline shelf composed of solid rock and a few short sections of boulders on which many opihi (Patella sp.) were found.

An underwater fish counting station was occupied along the western slope of the bay over a narrow ledge of boulders covered primarily with Porites corals down to a depth of 30 to 40 feet (Figure 2). Beyond this depth, the bottom slopes steeply to a depth of 90 to 100 feet with scattered coral growing on some of the rocks. The bottom below the steep slope appeared to level off and was composed primarily of mud with some mixture of sand.

During the fish count, 57 species were enumerated for an estimated standing crop density of 627.3 pounds per acre (Table 1). In terms of weight, the major species were the opelu kala (Naso hexacanthus), black damsel (Chromis verater), weke-'ula (Mulloidichthys auriflamma), kahala (Seriola dumerilii), a'awa (Bodianus bilunulatus) and maikoiko (Acanthurus leucopareius). The opelu kala was the dominant species accounting for nearly 54 percent of the total density.

The water in the bay was very calm and clear during the underwater survey.

Kealaikahiki Point (Kuia Shoal)

The Kuia Shoal extends seaward from Kealaikahiki Point on the western most end of Kahoolawe. A fish count was conducted along the southern end of this shallow shoal where the bottom was composed primarily of hard sandstone with a few scattered patches of sand interspersed with rather sparse coral growth. A few unexploded ordinance (bombs and rockets) were observed on the bottom. The transect line traversed a ridge of large boulders running in a somewhat southerly direction with Pocillopora corals (Figure 3) covering the boulders. Fish were very abundant in this area (Figure 4) giving an estimated density of 475.8 pounds per acre for the 62 species of fishes recorded in the area (Table 1). The major species, in terms of weight, were the kala (Naso hexacanthus and N. lituratus), nenue (Kyphosus cinerascens), u'u (Myripristis berndti), kaku (Sphyraena barracuda) and the banded snout uhu (Scarus perspicillatus). The opelu kala (N. hexacanthus) was again the dominant species at this site. Two specimens of the introduced grouper, the roi (Cephalopholis argus), was sighted just beyond the transect area.

The water was clear providing excellent visibility during the underwater survey.

Kuheia Bay

Kuheia Bay is located along the northwestern coast of Kahoolawe near the remains of an old ranch house. An underwater survey that was conducted along the eastern shoreline of this bay revealed lush coral growths of Porites and Pocillopora corals which formed a continous, massive coral reef (Figure 5). The bottom in the center of the bay, however, was composed of mud. The shoreline was composed of coral, mud and two short beaches (mixed sand, mud and olivine) while the remaining greater portion of the shore was composed of rocks and low cliffs.

A total of 47 species of fishes was observed during the fish count for an estimated standing crop density of 311.7 pounds per acre (Table 1). The maikoiko (Acanthurus leucopareius), humuhumu-'ele'ele (Melichthys buniva), pualu (Acanthurus mata), u'u (Myripristis berndti), nenue (Kyphosus cinerascens) and the kala (Naso unicornis and N. lituratus) contributed the greatest weight at this station. The maikoiko accounted for nearly 50 percent of the total poundage. Many toau (Lutjanus vaigiensis), an introduced snapper, were observed within this bay.

The water was clear in the transect area, but became quite murky along the western and middle portions of the bay.

Southwest of Kuheia Bay

A survey was conducted off a small inlet approximately one-half mile southwest of Kuheia Bay. The shoreline along this area was composed of rocks, boulders and sandy pockets. The water was very murky with the bottom composed primarily of mud. A transect conducted approximately 500 yards offshore revealed that the bottom in this area was also composed of mud (approximately 10 inches thick) with a few protruding rocks and coral (Figure 6).

Due to the absence of shelter, only five species of fishes were counted along the entire 250 yards of the transect line and these were only found near the few scattered rocks and coral protruding above the mud bottom. The sparse total count of 18 individual fishes accounted for an estimated standing crop density of 6.9 pounds per acre. The humuhumu-uli (Melichthys vidua) contributed nearly 95 percent of the estimated standing crop. Four specimens of the introduced snapper, the taape (Lutjanus kasmira) were also observed during the fish count.

Summary of the Fish Counts

A total of 93 different species of fishes was observed along the transect lines at the four locations. Discounting the station one-half mile southwest of Kuheia Bay at which site only five species of fishes were observed, 20 different species were present in common at the other three stations (Table 2).

COMMENTS

The most striking aspect of the underwater surveys was the unusually large quantities of silt and mud observed on the bottoms of all of the bays surveyed. This is due apparently to the extensive and prolonged erosion that has been taking place on the Island of Kahoolawe.

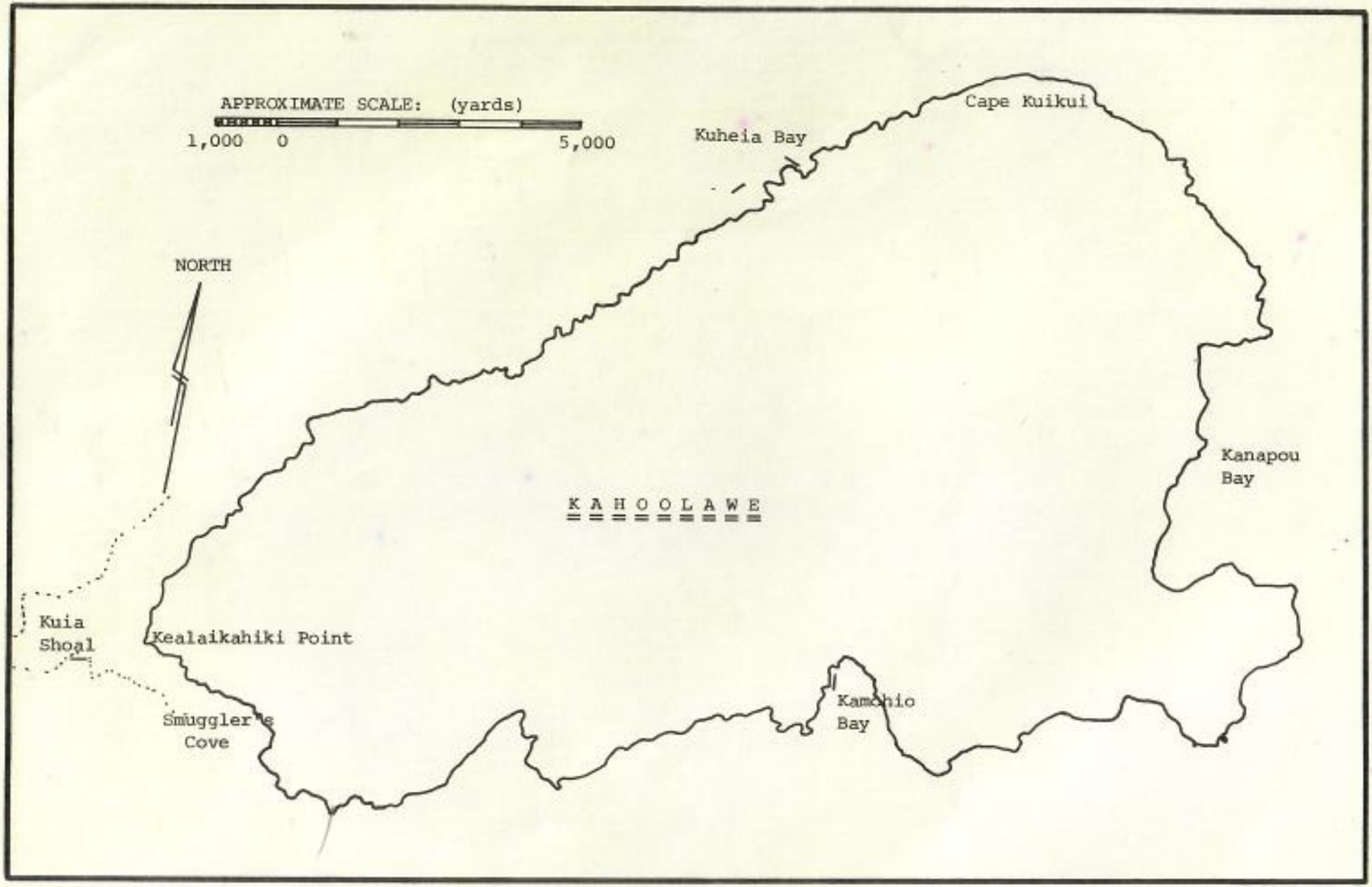


FIGURE 1. Approximate locations of the fish counting stations (-) at Kaimohio Bay, off Kuia Shoal, Kuheia Bay and one-half mile Southwest of Kuheia Bay, Kahoolawe.

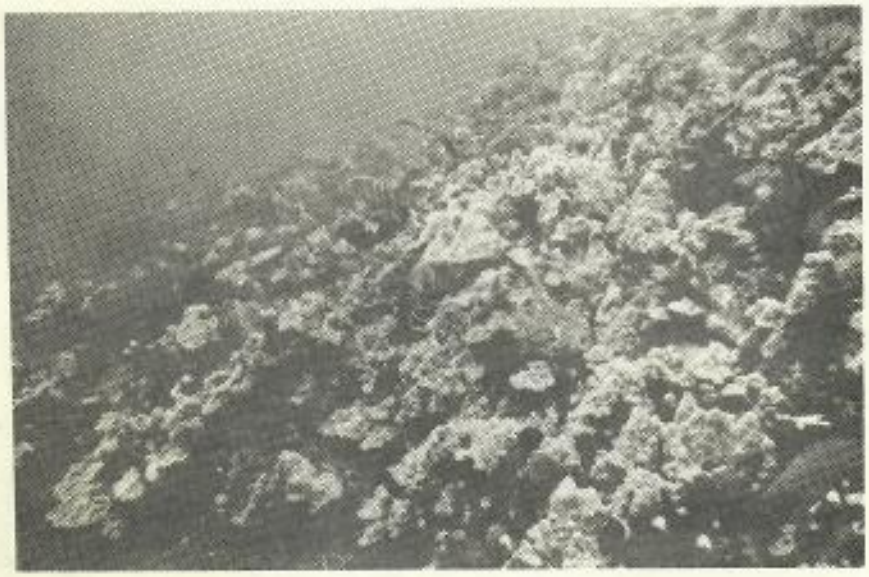


FIGURE 2. Narrow ledge of boulders and rocks with growths of corals at Kaimohio Bay, Kahoolawe.

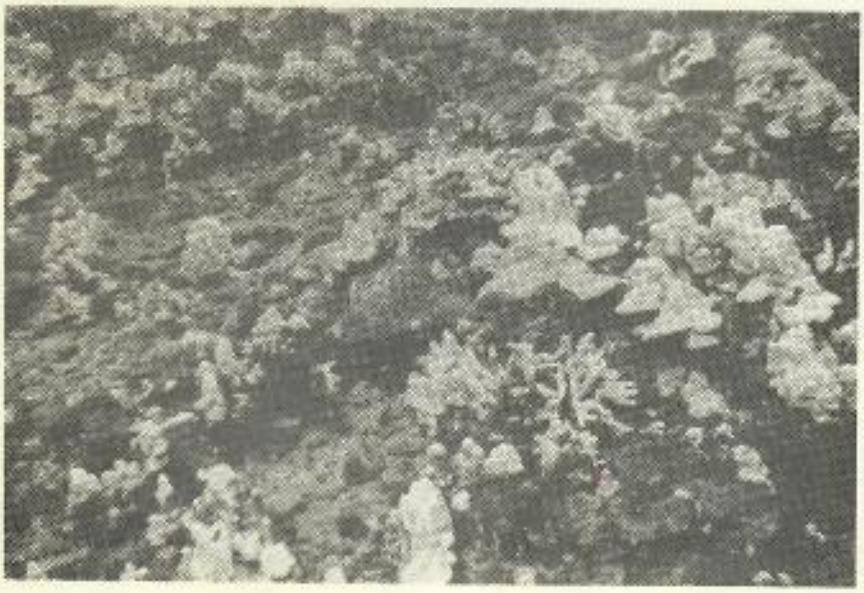


FIGURE 3. A portion of the ridge formed by large boulders near Kuia Shoal off Kealaikahiki Point, Kahoolawe.

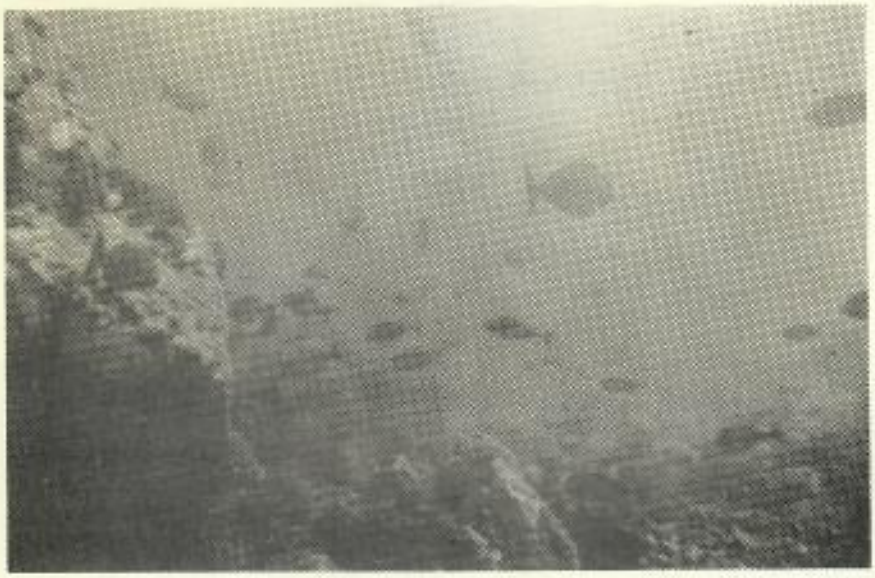


FIGURE 4. Large school of the nenue (Kyphosus cinerascens) observed during the fish count near Kuia Shoal off Kealaikahi Point, Kahoolawe.

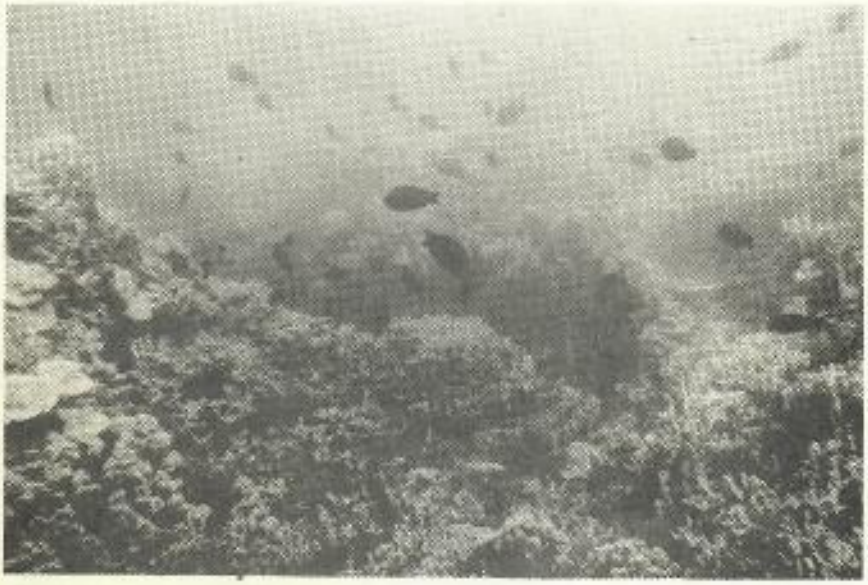


FIGURE 5. Lush coral reefs located at Kuheia Bay, Kahoolawe.

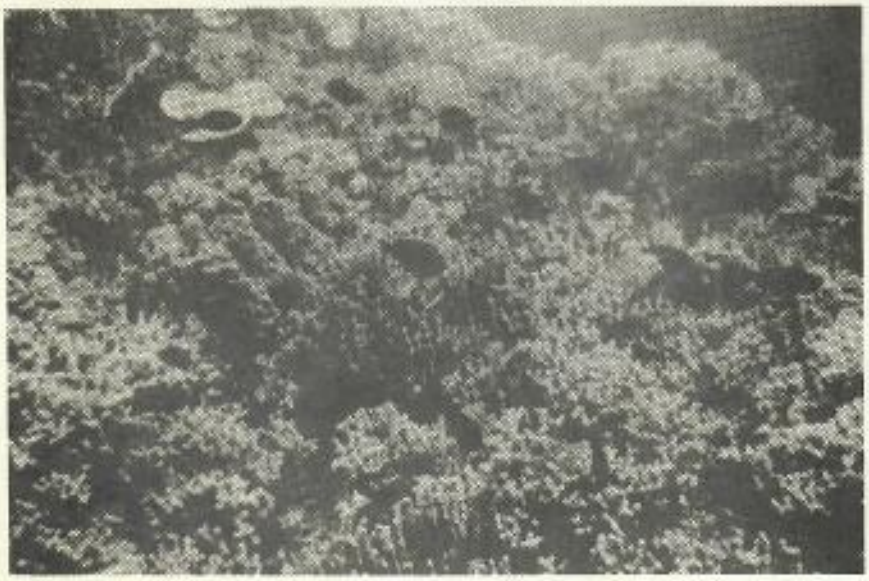


FIGURE 6. Two small individuals of the introduced snapper, the taape (Lutjanus kasmira), sighted during a fish count made about one-half mile southwest of Kuheia Bay, Kahoolawe. Note the isolated rock protruding above the mud bottom.

TABLE 1. Results of the fish counts at Kaimohio Bay, Kealaikahi Point, Kuheia Bay and 1/2 mile Southwest of Kuheia Bay, Kahoolawe, July 31 to August 2, 1972.

Common Name	Scientific Name	Kaimohio Bay	Kealaikahiki Point	Kuheia Bay	1/2 Mile SW of Kuheia Bay
Puhi paka	Gymnothorax flavimarginatus		14.46		
Cornet fish	Fistularia petimba	.10			
Nunu	Aulostomus chinensis	.30			
Alaihi	Holocentrus ensifer			.91	
Alaihi	H. xantherythrus	.34			
Alaihi	H. spinifer		2.18		
Alaihi	H. sammara		.36	1.82	
U'u	Myripristis berndti	.83	42.38	7.57	
Kaku	Sphyraena barracuda		40.65		
Upapalu	Apogon menesemus				.08
Maka-'a	Malacanthus hoedtii		3.02		
Kahala	Seriola dumerilii	24.09			
Opelu	Decapterus pinnulatus	(1)			
White ulua	Carangoides ajax	(2)			
Uku	Aprion virescens		6.97		
Gurutsu	Aphareus furcatus	9.03	.89		
Taape (Introduced)	Lutjanus kasmira				.20
Weke-'a'a	Mulloidichthys samoensis	1.78			
Weke-'ula	M. auriflamma	24.53	5.26		
Weke-'ula	M. pflugeri	1.30			
Malu	Parupeneus pleurostigma	.42			
Kumu	P. porphyreus	.36	2.46	1.66	
Munu	P. bifasciatus		1.49	.55	
Moano	P. multifasciatus	14.96	5.81	2.08	
Moano kea	P. chryserydros	4.99	3.99	.53	
Mu	Monotaxis grandoculis		26.80	.35	
Nenue	Kyphosus cinerascens		53.72	6.45	
Black-white angel	Holacanthus arcuatus	.41	.21		

Note: (1) - School sighted in area) not included in transect
(2) - Two sighted in area)

Table 1 (continued)

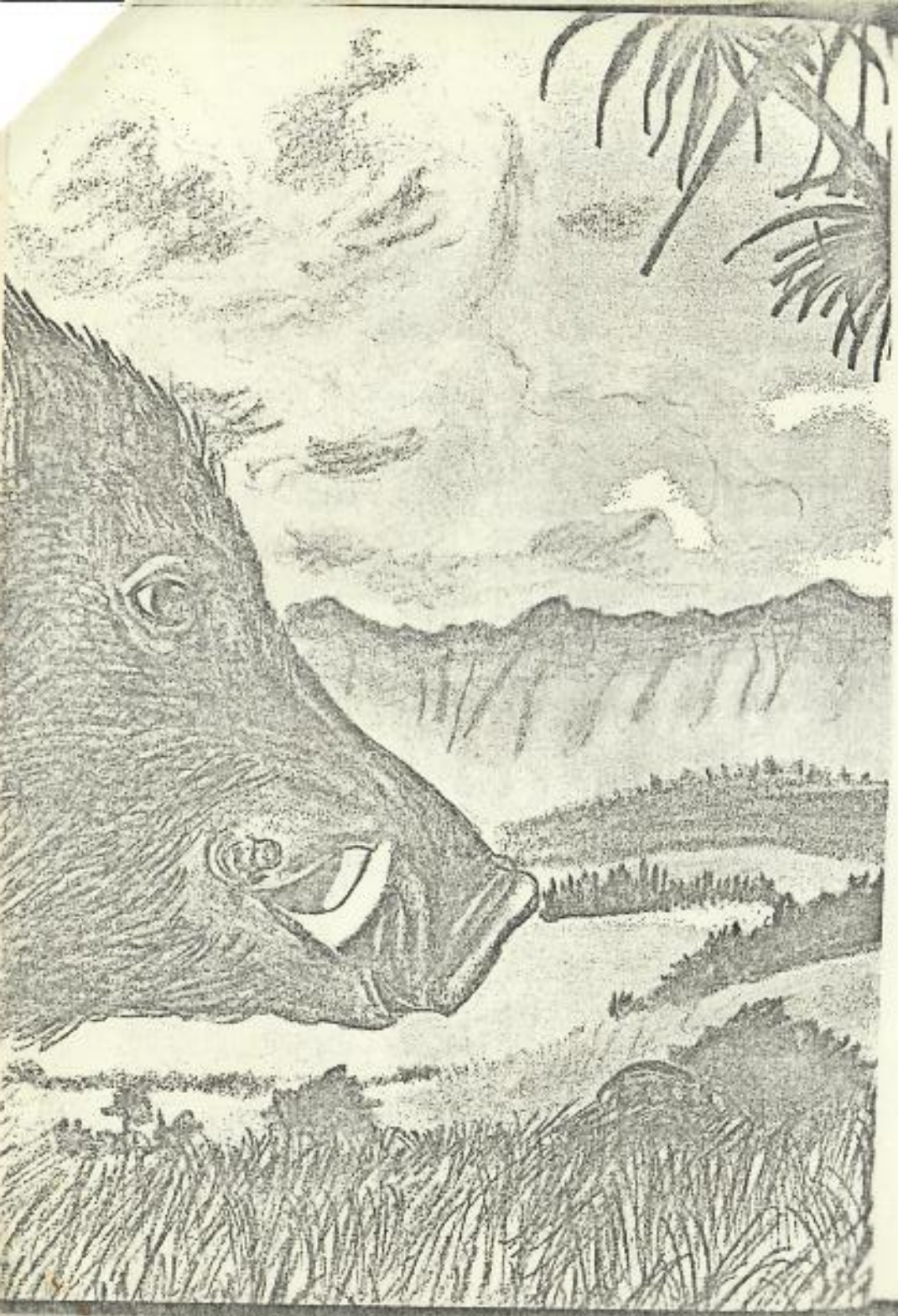
Common Name	Scientific Name	Kaimohio Bay	Keelaikahiki Point	Kuheia Bay	1/2 mile SW of Kuheia Bay
Potter's angel	Centropyge potteri	1.31	.04	.87	
Lau-wiliwili-nukunuku-oi'oi	Forcipiger longirostris	.92	.17	.07	
Heniochus	Heniochus acuminatus		.19		
Orange striped butterfly	Chaetodon ornatissimus			1.46	.08
Blue striped butterfly	C. fremblii	.18	.26		
Butterflyfish	C. multicinctus	1.22	1.45	.24	
Butterflyfish	C. unimaculatus			.30	
Butterflyfish	C. lunula	.40	4.15	.20	
Butterflyfish	C. quadrimaculatus	.88	.98		
Butterflyfish	C. corallicola	1.15	.12		
Butterflyfish	C. miliaris	4.37		.53	.02
Piliko'a	Paracirrhites cinctus			.07	
Piliko'a	P. forsteri	1.30	1.76	.02	
Piliko'a	P. arcatus	1.36	.42		
Po'o-paa	Cirrhitus alternatus		.25	1.19	
Maomao	Abudefduf abdominalis		6.72	.60	
Kupipi	A. sordidus		.12	.23	
Damselfish	Pomacentrus jenkinsi	3.69		1.48	
Aloiloi	Dascyllus albisella	2.38		.18	
Damselfish	Plectroglyphidodon johnstonianus	.27			
White tailed damsel	Chromis leucurus	.55		.27	
Black damsel	C. verater	40.56			
Blue damsel	C. ovalis	2.34			
Damselfish	C. vanderbilti		.09	.38	
A'awa	Bodianus bilunulatus	19.99	3.41	1.01	
Hinalea'i'iwi	Gomphosus varius	.30	.09	.60	
Hinalea lolo	Coris gaimardi	2.40	.88		
Hilu	C. flavovittata		.32		
Wrasse	C. venusta			.55	
Opule	Anampses cuvieri		.22		
Wrasse	A. rubrocaudatus		.24		
Nabeta	Iniistius pavoninus		.14		
Labroides	Labroides phthirophagus	.13		.03	
Hinalea lauwili	Thalassoma duperreyi	3.49	1.25	3.57	
Hinalea luahine	T. ballieui	5.65	.28	1.13	
Ohua	Stethojulis albovittata	.50	.15		
Omaka	S. axillaris	.61	.08		

Table 1 (continued)

Common Name	Scientific Name	Kaimohio Bay	Kealaikahiki Point	Kuheia Bay	1/2 Mile SW of Kuheia Bay
Po'ou	Cheilinus rhodochrous	2.50		3.33	
Uhu	Scarus dubius	16.73		2.82	
Band snout uhu	S. perspicillatus		33.41	6.30	
Uhu	S. sordidus	5.58			
Sleeping uhu	Calotomus sandvicensis			4.07	
Kihikihi	Zanclus canescens	.96	.68	1.36	
Paku'iku'i	Acanthurus achilles	.94	10.71		
Maikoiko	A. leucopareius	19.43	4.66	155.39	
Maiko	A. nigrofuscus	3.02	.48	1.21	
Maiko	A. nigroris	1.26	2.15	1.26	
Na'ena'e	A. olivaceus	16.18	2.09		
Manini	A. sandvicensis		.13		
Palani	A. dussumeri		17.23	2.12	
Pualu	A. xanthopterus		4.02		
Pualu	A. mata		.70	15.05	
Kala	Naso hexacanthus	338.72	86.25		
Kala	N. unicornis		11.90	6.42	
Kala	N. lituratus	15.02	54.26	6.42	
Lau'i-pala	Zebrasoma flavescens	4.07	2.08	1.64	
Kole	Ctenochaetus strigosus	18.80	4.44	1.75	
Humuhumu	Balistes bursa	2.79	4.99		
Humuhumu-uli	Melichthys vidua			6.54	
Humuhumu-'ele'ele	M. buniva	.61		65.42	
Humuhumu-nukunuku-a-pua'a	Rhinecanthus aculaetus	.37	.50		
Humuhumu-nukunuku-a-pua'a	R. rectangulus		.38		
Triggerfish	Xanthichthys ringens	.74			
O'ili uwiwi	Pervagor spilosoma	.09	.03		
Moa	Ostracion lentiginosus	.11			
Spotted puffer	Canthigaster jactator		.26		
Pao'o kauila	Exallias brevis			.19	
	Total species:	57	62	47	5
	Total pounds per acre:	627.31	475.78	311.65	6.92

TABLE 2. The species of fishes occurring in common at all of the transect stations excluding the station one-half mile southwest of Kuheia Bay.

Common Name	Scientific Name
U'u	Myripristis berndti
Kumu	Parupeneus porphyreus
Moano	P. multifasciatus
Moano kea	P. chryserydros
Potter's angel	Centropyge potteri
Lau-wiliwili-nukunuku-'oi'oi	Forcipiger longirostris
Butterflyfish	Chaetodon multicinctus
Butterflyfish	C. lunula
Piliko'a	Paracirrhites forsteri
A'awa	Bodianus bilunulatus
Hinalea'i'iwi	Gomphosus varius
Hinalea lauwili	Thalassoma duperreyi
Hinalea luahine	T. ballieui
Kihikihi	Zanclus canescens
Maikoiko	Acanthurus leucopareius
Maiko	A. nigrofuscus
Maiko	A. nigroris
Kala	Naso lituratus
Lau'i-pala	Zebrasoma flavescens
Kole	Ctenochaetus strigosus



Hawaiian Land Mammals

by Raymond J. Kramer

With illustrations
by Khan Pannell

Charles E. Tuttle Company
1971

The Feral Sheep

Ovis aries

On February 22, 1793, Capt. George Vancouver landed two ewes and a ram at Kealakekua Bay, on the island of Hawaii, as a gift for Kamehameha I.* Since that time, the feral and domestic sheep have probably wrought more changes in the original Hawaiian ecosystem than any other animal, at least on certain areas of Molokai, Lanai, Kahoolawe, and Hawaii. Because of a complete lack of knowledge of the precarious system of checks and balances that go into the make-up of an insular environment such as was originally present, we cannot really blame either the individuals who introduced sheep to the various islands, or the government agencies who allowed these animals to range freely and in ever growing numbers, at least for the first 150 years. During the last two or three decades foresters, biologists, botanists, and conservationists (including many avid hunters) have all been keenly aware of the desperate need to, if not totally eliminate this species from the wild, at least keep their numbers reduced to a point where vegetative reproduction

* There is a possibility that Vancouver was not the first to introduce sheep to Hawaii. On page 45 of the 1850 *Transactions of the Royal Agricultural Society*, Vol. 1(1), is the comment that: "Captain Colnet left a ewe and ram on Kauai before the arrival of Vancouver."

can begin to repair the scars of past years. Unfortunately, public apathy and ignorance, combined with specific political pressures by a small number of self-serving and politically powerful hunters, have continually thwarted, or at least hampered, all recent efforts by professional game and range managers to reduce sheep numbers to a proper balance.

The story of sheep in Hawaii can really be little more than reportage of scattered statistics; the assumption has always been made that the life history of the animal was almost exactly that of any domestic sheep (and that the data could be gleaned from any handbook of commercial sheep production), and the ecology has never been studied, partly because of the rugged terrain, and partly due to a lack of available manpower in the agencies charged with the management of this species. Not being a particularly glamorous animal, these "mountain maggots" (as they are called by their detractors) have not excited the curiosity of out-of-state naturalists or ecologists, who might well have obtained grants to study these animals; as a result, management has been mostly of the "count and shoot" nature—count them and, if numbers are high, increase the bag limit; if numbers are low, close the season; count them again next year —a relatively unscientific, but highly effective, technique.

HISTORY

Just 11 months after Vancouver first landed sheep on Hawaii, he returned to Kealakekua Bay and, on January 15, 1794, presented Kamehameha with ten more animals, five rams and five ewes (Henke, 1929). The variety of sheep is unknown.

Kamehameha I put a *kapu* (taboo) on these animals, and they were apparently left to wander where they chose. No further mention of sheep can be found until 1822, when the Reverend Joseph Goodrich, while climbing Mauna Kea, noted: "Very near to the summit, upon one of the peaks I found eight or ten dead sheep; they probably fled up there to seek a refuge

from the wild dogs; I have heard that there are many wild dogs, sheep and goats" (Tinker, 1941). Thus we see that in the intervening 28 years, the sheep herds must have increased considerably (perhaps with the unrecorded introduction of greater numbers of sheep); it is just about 40 miles "as the crow flies" from Kealakekua to the summit of Mauna Kea, and there were certainly many additional miles to traverse as the animals passed over the slopes of Mauna Loa and Hualalai.

When the first governmental body was formed, the wild sheep became the joint property of the king and the government, and permission was needed from the government before animals could be killed, captured, or shipped to other islands. From 1822 until 1845 there is a lapse in the records, but we know that in this latter year sheep were present on Kauai (Henke, *op. cit.*). This same year, the first pureblood Merinos were introduced to the islands; it was rapidly becoming evident to the local residents that, since feral sheep could survive so well, there might be money to be made by starting a sheep industry. By 1851, Bishop (1852) estimated that there were at least 3,000 wild sheep on Hawaii, as well as uncounted numbers on Maui, Molokai, and Kauai.

By 1853 Saxon and Southdown breeds were introduced, and in 1862, the emperor of France presented "four picked rams from the Royal flock at Rambouillet to the King of Hawaii" (Henke, *op. cit.*).

Early in 1858, a scouting trip was made to Kahoolawe for the express purpose of evaluating potential sheep pasturage. In a letter (Allen, 1858) to Messrs. Wyllie and Allen, pasturage was considered ample for 20,000 sheep (on an island area of only 28,700 acres), and later this same year, Robert C. Wyllie obtained a 20-year lease for a fee of $505 per year. The venture failed one year later when "scab" (*Psoroptes equi ovis?*) became rampant (Hollingsworth, 1938). The 1859 population is recorded as being 2,075. Presumably most if not all these animals were left to forage for themselves.

A sheep ranch was started on Lanai sometime after 1861, and on April 4, 1864, permission was granted to ship 3,000 sheep from Molokai to Niihau (Henke, *op. cit.*).

Now that all islands had received a supply of "blooded" sheep, ranching was pursued with vigor, and the wild sheep were ignored, except by a few hungry hunters and wild dogs. Between 1879 and 1884, Henke (*ibid.*) records between 101,000 and 121,000 sheep being raised annually, and then shows a continual decline in production until 1928, when he estimated only 25,000 domestic animals left. Lanai is recorded as having had up to 50,000 animals prior to 1910, when the Lanai Company, Ltd., started a switch to cattle raising, and the sheep population on that island dropped from 20,588 in 1911 to 860 in 1920. On Molokai, there were almost 16,000 animals in 1900 (the same year the Tunis sheep was introduced to the islands), about 17,000 in 1907, but only about 200 by 1928; the abandonment of sheep raising on this island was attributed to a combination of sheep and cattle overpasturing and the fact that *kiawe* (*Prosopis chilensis*) thorns on the ground caused too much lameness (Henke, *ibid.*).

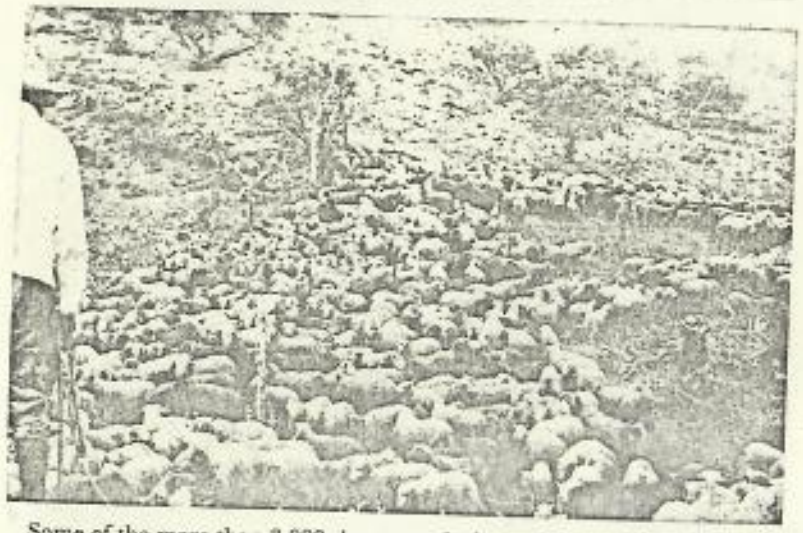
From 1928 on, sheep raising in Hawaii has been primarily carried on by Parker Ranch (which went out of commercial sheep production in 1964), and by the Robinson family on Niihau (with a present-day population estimated at 13,000 animals, on this 46,000-acre island).

MAUNA KEA SHEEP

As mentioned earlier, the feral sheep were all but forgotten in the rush to start domestic herds and on the high mountains of Hawaii the herds grew larger and larger. In 1937, there were an estimated 40,000 feral sheep ranging the slopes of the Mauna Kea Forest Reserve; this 80,000-acre reserve encompasses the 13,764-foot-high summit of Mauna Kea and extends down on all slopes to about the 7,000-foot level. Just below this surveyors' boundary was private ranchland, mostly belonging to Parker

Ranch, which itself raised some 30,000 Merino sheep. Feral sheep were also present in uncounted numbers on the lava flat areas of Mount Hualalai and Mauna Loa, as well as the saddle between these two mountains. Foresters had been aware for some years of the tremendous damage that the feral sheep were doing to the native vegetation and in particular to the endemic *māmane* trees (*Sophora chrysophylla*); in some sections there had been no natural reproduction of these trees for years and, as Bryan (1937) noted: "If this state of affairs was allowed to continue it would only be a matter of time before our mountains would be without a protective covering." Up until 1935 the territory had been too poor to finance the building of a 50-mile-long fence around the lower border of the forest reserve, but with the advent of the CCC, work was begun on the fence. This sheep and (supposedly) pig-proof fence took about two years to complete, but in the meantime, the Territorial Division of Forestry, in cooperation with local ranchers (Parker Ranch in particular), undertook the job of shooting or driving sheep off the mountain. As Bryan (1950) records control by shooting, he said: "Men were at one time employed for this purpose and did nothing but shoot goats and sheep. The sheep were formerly so plentiful and easy to shoot that shotguns loaded with buckshot were sometimes used and it was not uncommon for the hunter to kill more than one animal with a single shot."

Driving the animals was a more effective technique and Bryan (1937) tells of a drive conducted in late December 1936, when 3,113 sheep were caught; "Parker Ranch . . . provided 30 cowboys and all riding animals needed. This drive covered an area of between 10 and 12 square miles. . . . The actual drive required only six hours. . . . The actual killing of over 3,000 sheep is quite a problem. It must be done quickly and in a humane manner. Shooting is out of the question on account of the expense and danger to those around. It is not a pleasant job at best but a sharp knife, properly handled, is one good method. The animal is captured by driving small numbers into an inner



Some of the more than 3,000 sheep caught in a one-day drive on Mauna Kea in 1936. Note the heavily browsed and dying *mamane* trees in the background. Archives of Hawaii.

pen, quickly stunned by a sharp blow on the head and then dispatched." It took 25 CCC boys two 13-hour days to kill the sheep. Over 300 carcasses were given to the Salvation Army, and the CCC boys consumed their share, but the majority of carcasses were thrown away; the huge pile of bones from this slaughter can still be seen today at the site of the old pen between Puu Nanaha and Puu Laau.

Other drives were held, shooting continued, and poisoning programs were attempted, but the population still remained high; in the period from 1921 until 1946, 46,765 feral sheep were removed from Mauna Kea alone, and an additional 24,703 were killed on other forest reserve lands (Bryan, 1947). From 1947 thru 1949, over 5,400 more sheep were killed on the "White Mountain," mostly by individual sportsmen. At this time, the Territorial Division of Fish and Game assumed management responsibility for the area, and was shocked to

find that a census of the mountain showed only about 200 sheep left. Since the divisions of Forestry and Fish and Game had never contemplated total extermination, but had felt instead that the sheep herd could be kept in balance with vegetative regeneration, the hunting season was immediately closed. This closure stayed in effect until 1953, when another census indicated that there were about 1,000 sheep present, a fivefold increase in three years.

Within two more years this population had doubled and in the years from 1957 through 1960, sheep counts showed almost 3,000 sheep and estimates of the total population approached 4,000. Despite the killing of 7,044 sheep by hunters during this period (Kosaka, 1966), a head count in May 1961, showed 2,418 animals. In this year more sheep were harvested by hunters (2,499) than were counted (2,418), but despite this, 1,835 animals were seen on Mauna Kea in March 1962.

In 1964, Nichols felt that both range and forage conditions were showing improvement on Mauna Kea and that the herd should be kept, through manipulation of hunting seasons and bag limits, at about the 1,300- to 1,500-animal level. Pressures by some hunters did not allow this, and the Mauna Kea herd once again began its upward swing on the cycle. The State Division of Fish and Game constructed six animal exclosures about this time, in an attempt to eventually visually prove to the public the damage done by overstocking. Excerpts from a report (Kosaka, March 1967) show ". . . there is good evidence of mamane sprouting within the exclosure [Puu O Kau]—none on the outside." For the Kaluamakani area he notes: "The area outside of the exclosure is almost denuded of ground cover with no new mamane sprouts. Vegetation within the exclosure is noticeably denser and consists of scattered herbs and grasses, and good sprouting of mamane"; for Puu Kole, "this exclosure shows excellent evidence of recovery with good sprouting of mamane and various annuals. . . . In contrast . . . there is no sprouting of mamane and annuals and [there is] some erosion

on the outside." As evidenced by these reports, and the photographs which accompany them, the sheep population is still beyond the mountains' carrying capacity and it is likely that this sad process will continue until some irate faction of Hawaii's citizenry marshals sufficient political backing to successfully overcome the forces which presently dictate their policies to the Department of Land and Natural Resources.

KAHOOLAWE SHEEP

As noted earlier, the first sheep were taken to Kahoolawe in 1858. The next lessee took sheep there again in 1863 and Judd (1916) records that in 1890 the third lessee pastured 12,000 sheep on the island. In 1909 there were 3,200 sheep remaining on the island (Judd, *ibid.*), and because of the damage being done to the island by stock (there were also about 5,000 goats on the island at that time), the government canceled the private lease and designated the Board of Agriculture and Forestry to reseed the land and kill off the remaining stock. Forbes (1913) states that there were still 300 sheep present in 1913 and Judd (*op. cit.*) notes that all but 150 sheep had been eliminated by 1916. The island was withdrawn from forest reserve status again in 1918 (Bryan, 1931) and was leased as a cattle ranch, but sheep were still present. In 1932, Zschokke reviewed past and present conditions on the island and noted that ". . . soil and subsoil to the depth of 15 feet have been blown into the ocean."

No statistics on the sheep are available since 1918, but we do know that attempts were made up until World War II to eliminate both sheep and goats from that island. Tinker (*op. cit.*) thought that the sheep had disappeared from the island by 1939 but noted that ". . . they have left a mark of desolation which will take many years to remove." Unfortunately, there were still a few scattered bands of animals left and, with the coming of the war, at which time the island was turned over to the Department of Defense and used as a practice bombing and shelling range, human access was denied and the sheep population began to increase. Even though Kahoolawe is to this day used as a bombing range, and untold numbers of sheep and goats have been killed by such action, the sheep population has fluctuated from peaks reckoned at 5,000 animals to lows of 200 to 300. In recent years this island has become the private hunting ground for members of various military branches and it is not uncommon for helicopters to return from the island bearing the hindquarters of 30 or 40 sheep and one or two goats.

DESCRIPTION

Mauna Kea sheep, being possessed of the mixed blood of a variety of domesticized breeds, have never really been looked upon as worthy of carefully documented description. The most that can be said for them is that their woolly bodies are of mixed coloration: black, brown, gray, white, and many hues between. Their horns are also either black or yellow-white. Kahoolawe sheep, on the other hand, are mostly white with a few gray animals found from time to time, but all have yellowish-white horns. Rams will sometimes weigh over 100 pounds, but most average 70 or 80 pounds with the ewes being somewhat smaller. Animals that are seen with part wool and part fur coats are hybrid crosses from the mouflon sheep.

BREEDING

Ewes are capable of breeding the first time at an age of about five months; they usually bear only one lamb at this age, but from then on ewes produce one or two offspring twice a year. In late winter or early spring the major lambing peak occurs on Hawaii, but there is a second, smaller peak in late summer; and smaller numbers of newborn lambs can be found every month of the year. No breeding data are available for the Kahoolawe sheep.

PARASITES AND DISEASE

Dr. Joseph Alicata, in his *Parasitic Infections of Man and Animals in Hawaii* (1964), has listed a number of organisms infesting sheep; the reader is referred to pages 86 and 87 of that book for further information. The species list presented below is from page 115 of Dr. Alicata's work.

Name of Parasite	*Location*	*Intermediate Host (if any)*
ROUNDWORMS:		
Cooperia punctata	small intestine	
Haemonchus contortus	fourth stomach	
Nematodirus spathiger	small intestine	
Trichostrongylus colubriformis	stomach and small intestine	
TAPEWORMS:		
Moniezia expansa	small intestine	Acarina: species of oribatid mites.
Taenia hydatigena	larval stage attached to liver, mesentery, and omentum	pig, *Sus scrofa*
FLUKES:		
Fasciola sp. (gigantica?)	liver	Gastropoda: *Fossaria ollula*
ARTHROPODS:		
Chrysomyia megacephala	in wounds and external	
Melophagus ovinus	external	
Oestrus ovis	nasal cavities and sinuses of head	
Otobius megnini (larvae and nymphs)	ear canal	
Psoroptes equi ovis	skin	

The mouflon sheep has been found to have suffered from enterotoxemia (*Clostridium perfringens*), malignant edema (*Clostridium septicum*) and "blackleg" (*Clostridium chauvoei*), and it is highly likely that if these diseases were not present in the sheep before the late 1950s, they are now.

THE FUTURE

At this stage of development of game management in Hawaii it is impossible to make any predictions about the future of feral sheep. Even if the Department of Defense were to return Kahoolawe to state jurisdiction, the agreement would probably include a clause noting the vast numbers of live shells scattered over the island, and for that reason would exclude the public until these explosives had been rendered harmless. Since this would require an expenditure of hundreds of thousands of dollars, it is probable that the state will never allow public hunting on the island as a means of reducing or eliminating feral mammals.

The sheep on Mauna Kea and four other nearby game management areas must be kept under some semblance of control if forest regeneration is to take place. The future of the endemic bird known as the *palila* (*Psittirostra bailleui*) hinges upon the abundance and distribution of the *māmane* forests (upon whose seeds it feeds), and there can be no excuse for ever again allowing any Hawaiian bird to become extinct. Citizens of the state must realize the vast scientific interest in this bird (it having been likened along with its relatives to "the Darwinian finches" of the Galapagos Islands), and that the state, through its Division of Fish and Game, is not in the sole business of providing a free butcher shop for its residents.

Certainly there is a place on Mauna Kea for a controlled number of feral sheep; they do provide a rugged and pleasant hunting experience as well as tasty meat, but until such time as professional biologists' opinions are heeded, and the herds kept in control, the sheep situation must be regarded as forceful

evidence of the Hawaiian citizens' lack of interest in their own physical landscape.

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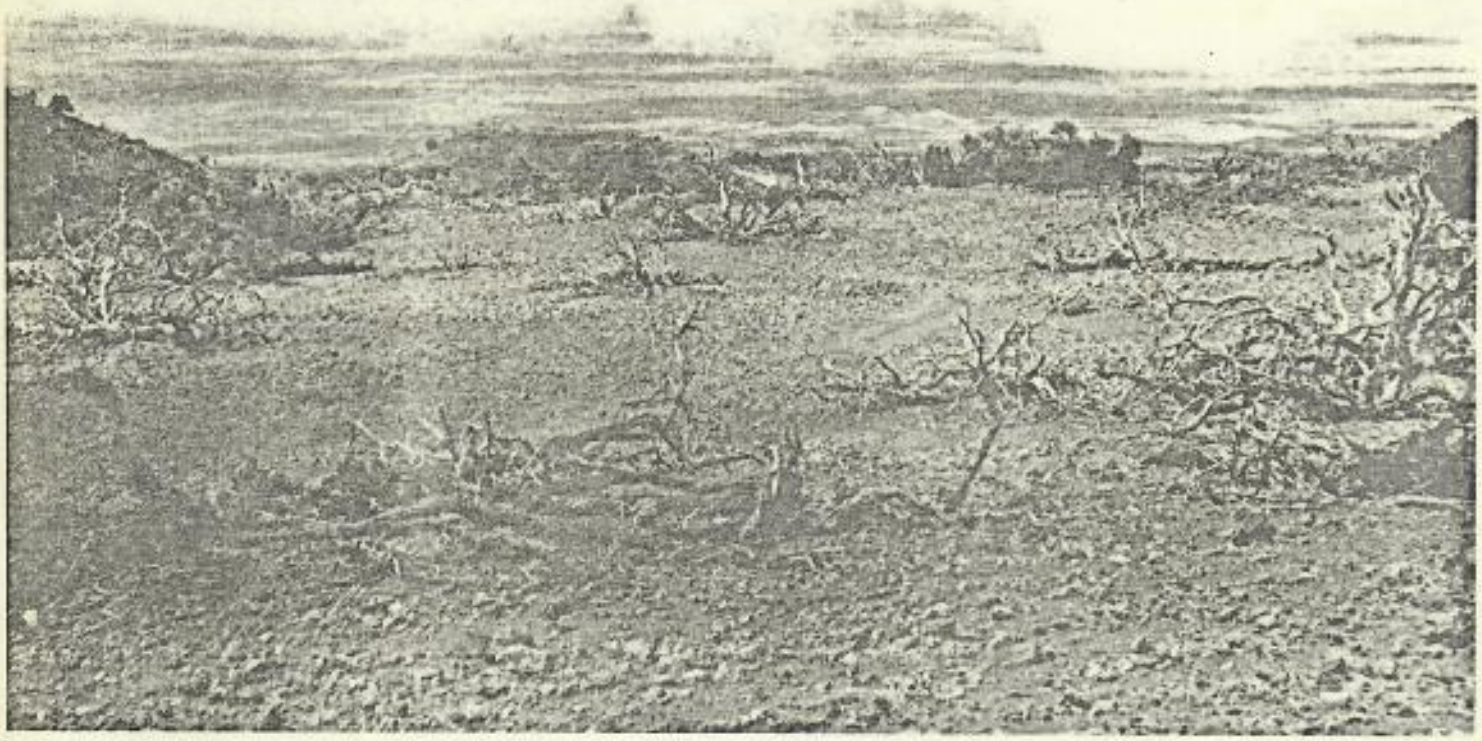
A FOREST DIES ON MAUNA KEA



Treeline above Puu Laau, 9,500 feet up the slope of Mauna Kea. Rocks, bare earth, and dead trees are all that remain of a once "highly picturesque and sublime" region. (All photographs by the author)

How Feral Sheep Are Destroying an Hawaiian Woodland

RICHARD E. WARNER

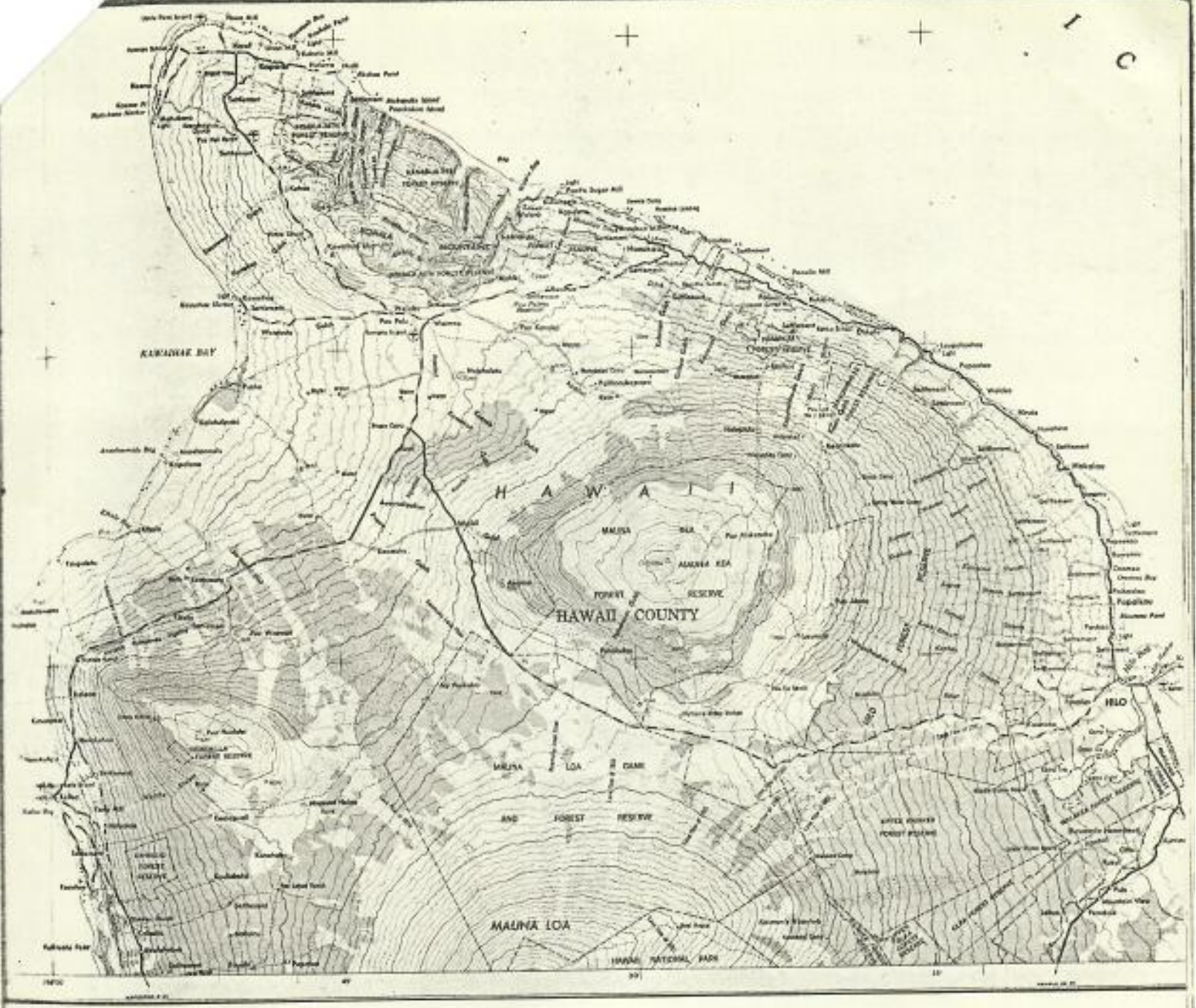
CONSERVATION

MAUNA KEA, highest of the great Hawaiian volcanic peaks, thrusts its cindercone- and lava-encrusted bulk 13,784 feet into the cold, thin upper air of the tradewind belt. Despite its proximity to the Equator (20° north latitude) the higher reaches of the mountain experience freezing nighttime temperatures the year around, and for months during the winter season snow hangs on the bare, windswept upper slopes.

The lower flanks of the great peak, especially on the windward sides between sea level and 6,000 feet elevation, are clothed by dense stands of native Ohia (*Metrosideros collina*), and Koa (*Acacia koa*) with a lush understory of several types of ferns and shrubs. Rainfall is so heavy that the wild pig is the only mammal living here.

Above 6,000 feet the plant growth changes abruptly. The dense forest dwindles to a ragged edge, and is replaced by an open woodland of Mamane (*Sophora chrysophylla*), Koa, and in the drier regions Naio (*Myoporum sandwicense*) together with the associated understory shrubs and grasses. This open woodland continues up the slope to approximately 9,500 feet where it abruptly gives way to bare lava and cinder slopes dotted with Puakeawe (*Styphelia tameiameiae*) shrubs.

Above 11,500 feet plant life all but ceases; an occasional silversword may be seen glistening in the alpine



sunlight, but even the hardy and tenacious Puakeawe finds the environment too rigorous.

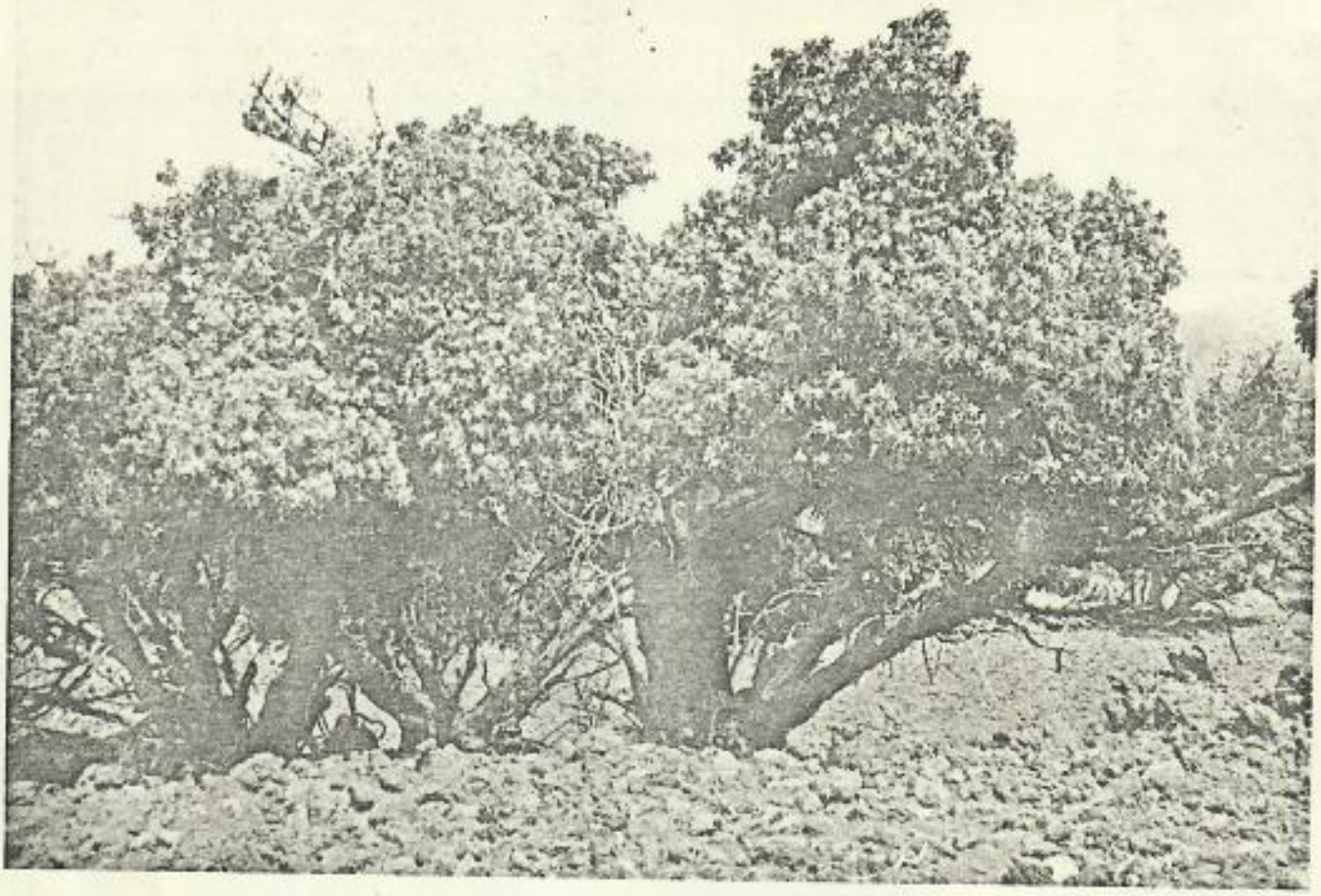
Because of the many changes in the flora which have occurred over the century and a half following the introduction to the area of cattle, sheep, goats, and horses which ultimately multiplied to enormous populations, it may prove interesting to note some of the observations made by naturalists while Mauna Kea still retained much of its primeval appearance. The following are excerpts from the journal of the famous plant explorer David Douglas, who hiked into the area in 1834. The passage begins as he emerges from the Mamane forest above either Hilo or La Pahaehoe on his way toward Mauna Kea's summit:

Jan. 7, 1834.—The wood terminates abruptly, but as the lodge of the cattle-hunter was still about a mile and a half farther up the clear flank of the mountain, situated on the bank of a craggy lava stream, I delayed ascertaining the exact altitude of the spot where the woody region ends (a point of no small interest to the botanist) [sic] until my return, and sate down to rest myself awhile, in a place where the ground was thickly carpeted with species of *Fragaria* (strawberry), some of which were in blossom, and a few of them in fruit.

—According to report, the grassy flanks of the mountain abound with wild cattle, the offspring of the stock left here by Captain Vancouver, and which now prove a very great benefit to this island.

Jan. 12, 1834.—The line of what may be called the Woody Country, the upper verge of which the barometer expresses 21.450 inch; therm. 46° at 2 pm (9,300 feet ±)

Hawaii, northern part of the island. Shaded areas are forest and shrub cover. Stipple pattern denotes lava flows. Contour interval, 200 feet. (Part of USGS map "Hawaii North," edition of 1959; Hawaiian Islands 1:250,000 series; reduced here to approximately one half, or 1:500,000 [1.25 inches = 10 miles].)



is where we immediately enter on a region of broken and uneven ground, with here and there lumps of lava, rising above the general declivity to a height of three hundred to four hundred feet, intersected by deep chasms, which show the course of the lava when in a state of fluidity. This portion of the mountain is highly picturesque and sublime. Three kinds of timber, of small growth are scattered over the low knolls; with one species of *Rubus* (blackberry) and *Vaccinium* (huckleberry), the genus *Fragaria* (strawberry) and a few Gramineae (grasses), Filices (ferns), and some alpine species. This region extends to barometer 20.620 inches; air 40°, dewpoint 30° (10,500 feet ±).

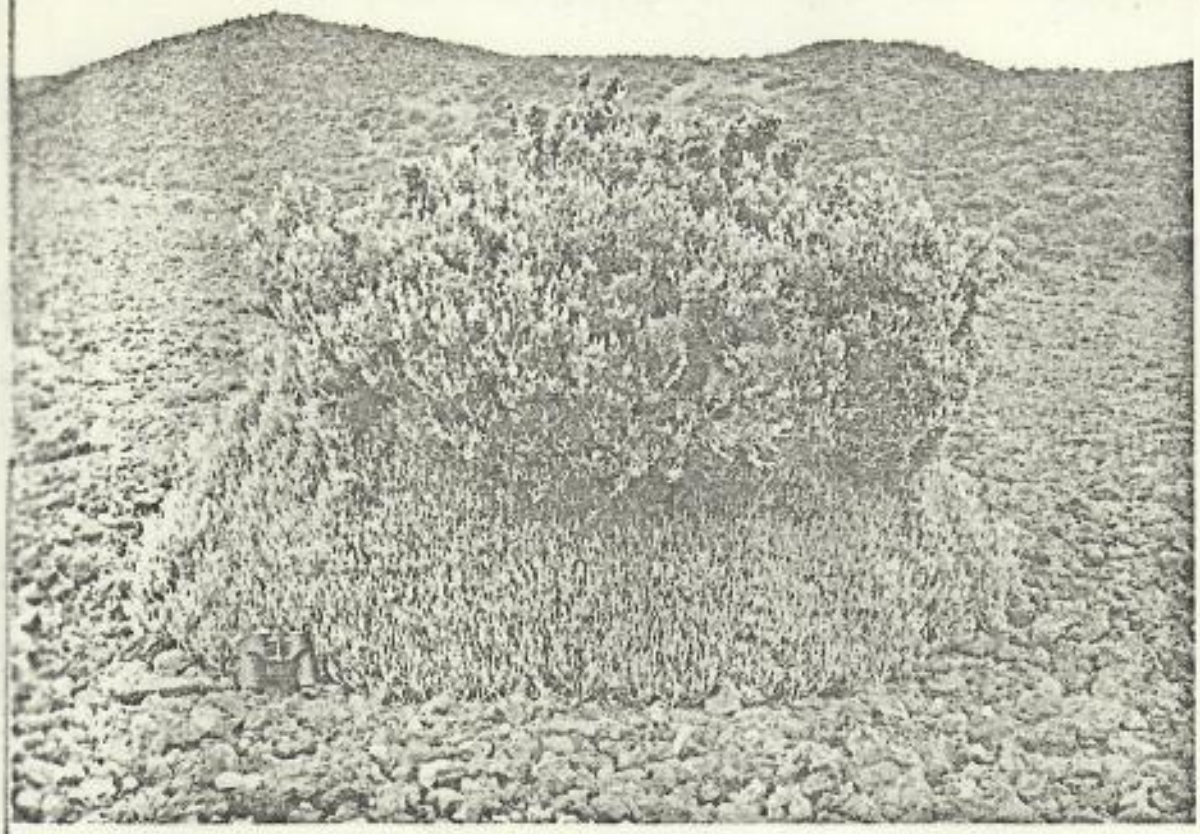
We know from his comments that botanist Douglas had knowledge of the growing populations of feral livestock, brought originally to the Islands around 1800 by Captains Cook and Vancouver, which abounded on the slopes of Mauna Kea. The Kapu (tabu) placed on the animals at the time of their initial introduction had just a few years previously been lifted, permitting Hawaiian commoners for the first time to take them for food. Perhaps fortunately for the botanist's peace of mind it was yet too early for even a trained eye to discern the evidences of overbrowsing and forest destruction which ultimately would become the hallmark of the exotic species.

The years passed and the introduced livestock populations, unhampered by predators and only occasionally disturbed by man, multiplied with enormous rapidity. The weather was mild, the food supply only suggesting the first signs of exhaustion.

By the end of the nineteenth century the exotic species were beginning to eat themselves literally out of house and home. Food became less readily available, forcing the now huge populations of feral stock to travel considerable distances to find sufficient forage. The land too began to show symptoms of stress. Erosion gullies appeared. Flash floods began carrying away vast quantities of the fine, ashy topsoil. The Mamane forest commenced to take on a ragged, sickly appearance.

Around the turn of the twentieth century the upper portion of Mauna Kea was declared a "Forest Reserve" by the Board of Agriculture and Forestry, and incorporated into a territory-wide system designed to protect the forests from further abuse and effect their restoration. Of the 82,600 acres within the boundaries of the Forest Reserve, 29,930 acres are actually covered by some type of forest; the remainder being bare, unproductive lava and cinders. However, of these 29,930 forested acres, only 19,500 acres are used to any extent by the feral populations. This is partly because over 6,000 acres of the south slope of Mauna Kea are very densely wooded with the Naio tree, which

↑ Extraordinary browse pressure on mature Mamane, west slope of Mauna Kea, 1958. Note the prominent browse line and dead lower branches. All ground-covering plants have long since been destroyed and the topsoil washed away by rainfall.



Puakeawe bushes are rounded off to mushroom shapes as sheep turn to less palatable fare, and eventually reduced to skeletons.

is unpalatable to sheep and hence of slight value in wildlife production, and partly the result of continued activities by man in the Pohakuloa Flat area during recent years which effectively frighten the sheep away. It is therefore the remaining 19,500 acres of Mamane forest which must bear the pressure of any population of herbivores allowed to inhabit the area.

Unfortunately, during this period the inadequacy of manpower, funds, and scientific understanding of the nature of the devastation being wrought resulted in a policy of continued neglect. Desultory efforts were made by the Hawaii forester to reduce the number of animals, but the effect was negligible. Activities during this early period of government control were also hampered by poor roads and primitive automotive transport. It was the era of the Model T; and most of Hawaii's roads were either axle-deep in powdery volcanic ash or quagmires of mud.

In 1935 a fence was constructed around the lower boundary of the Mauna Kea Forest Reserve using C.C.C. labor. Ironically enough, the motive for the project was to prevent the vast numbers of feral animals from descending from the forest into the adjacent pastures of the Parker Ranch Company, where they were competing heavily with domestic livestock for food. At the time the fence was built there were

an estimated 40,000 sheep within the Forest Reserve, as well as several thousand goats and an enormous number of wild pigs. The last cow had been removed in 1928, the last horse in 1935.

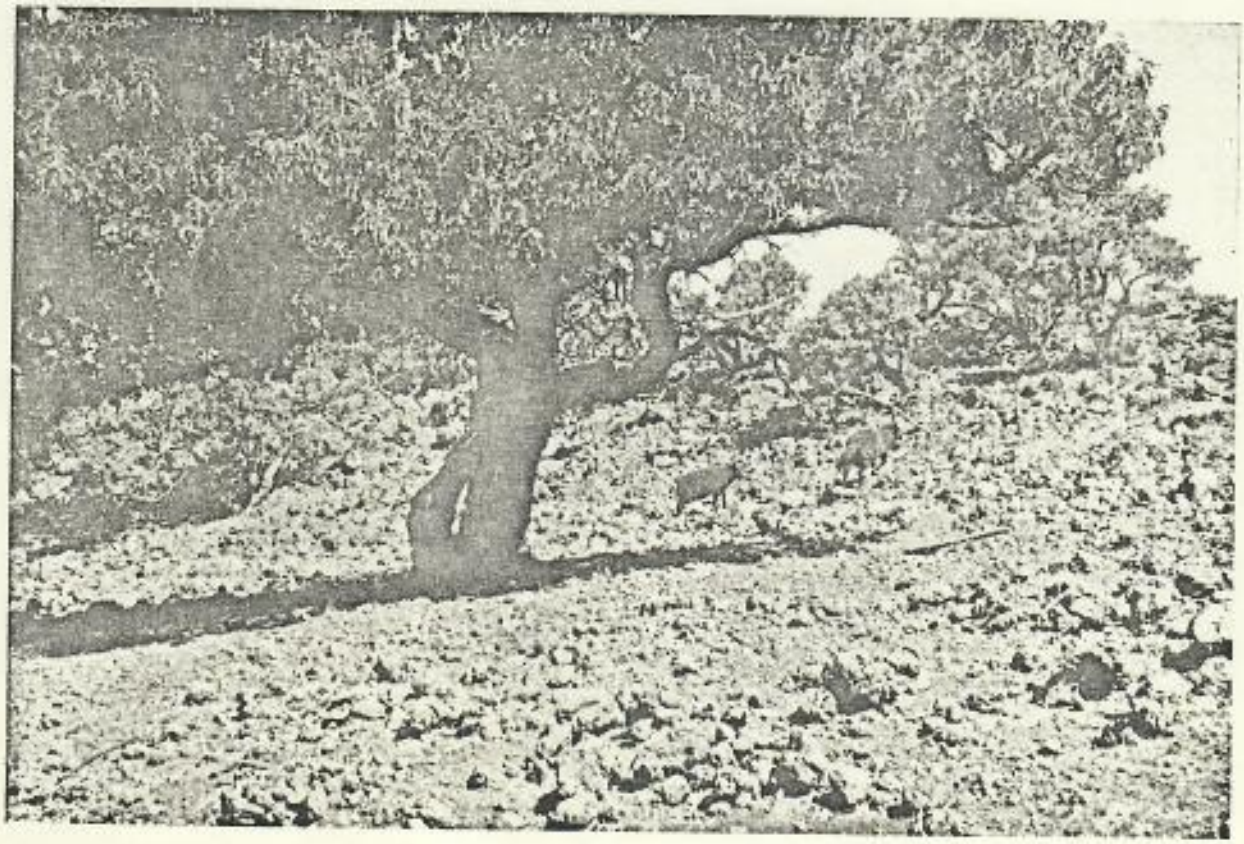
Today, after a century of degradation, the face

of the land is vastly changed. Persons familiar with the mountain in its present state will recognize the areas to which Douglas referred in his journal, but mainly through the geological descriptions. The "upper verge" of the woody country is no longer "highly picturesque and sublime" as Douglas found it, with small timber, strawberries, huckleberries, and grasses. As can be discerned in the accompanying photographs the "upper verge"—or in contemporary terms the Mamane treeline—now presents a stark, nightmarish scene of devastation and ruin. Where once Douglas "sate down to rest" among carpets of strawberries one has no choice now but to scuffle about in a waste of rocks, dusty subsoil, and the writhing limbs of dead trees which were unable to withstand the abuse of untold thousands of feral animals.

Conditions are uniformly distressing over practically all of the forested areas: 90 per cent of the topsoil is gone; over 40 per cent of the trees of the Mamane forest are dead, an additional 20 per cent dying. Natural reproduction of Mamane through seedlings or basal sprouts has been so long suppressed by overbrowsing that over most of the mountain there is no young stock whatsoever, either for browse or as replacements for the dead and dying mature trees. Grass production in all but the most favorable areas is limited to a small circle beneath individual trees. It is impossible to state with certainty, but it is estimated that the present carrying capacity of the land is less than 5 per cent of what it was when domestic animals first entered the area.

The Mamane forest itself, lying principally between the elevations of 6,500 and 9,500 feet in a mountain-encircling band, still contains vestiges of the pre-herbivore state sufficient to allow some deductions about its ecology. The Mamane trees, which reach a mature height of 25 to 30 feet, form a medium for condensing moisture contained in the damp fogs which regularly blow up from the warm, humid lower elevations. Condensing on the leaves of the Mamane trees, the moisture drips through the foliage onto the ground below. It is this "fog-drip" which supplies the bulk of the water requirements both for the Mamane trees and the understory grasses and shrubs, as rains are infrequent and often occur as deluges over short periods of time.

The evidence also indicates that the trees themselves are dependent for life upon the microenvironment which they produce around their roots as a result of this condensate water source. The sequence of plant destruction which has ultimately upset this microenvironment occurred as a stepwise process, being the result of a peculiar trait in the feeding habits of wild herbivores. The insistence of these species upon feeding on the one or two most palatable plant forms in the habitat (in wildlife management



Beating a retreat across a rockpile they made of once grassy hillside, these feral sheep were a moment earlier seeking out any leaves that might have still reached below the Mamane browse line which is at the height sheep can reach standing on their hind legs. This is at 7,800 feet elevation.

With holding soil gone, thousands of Mamane trees topple over in death.

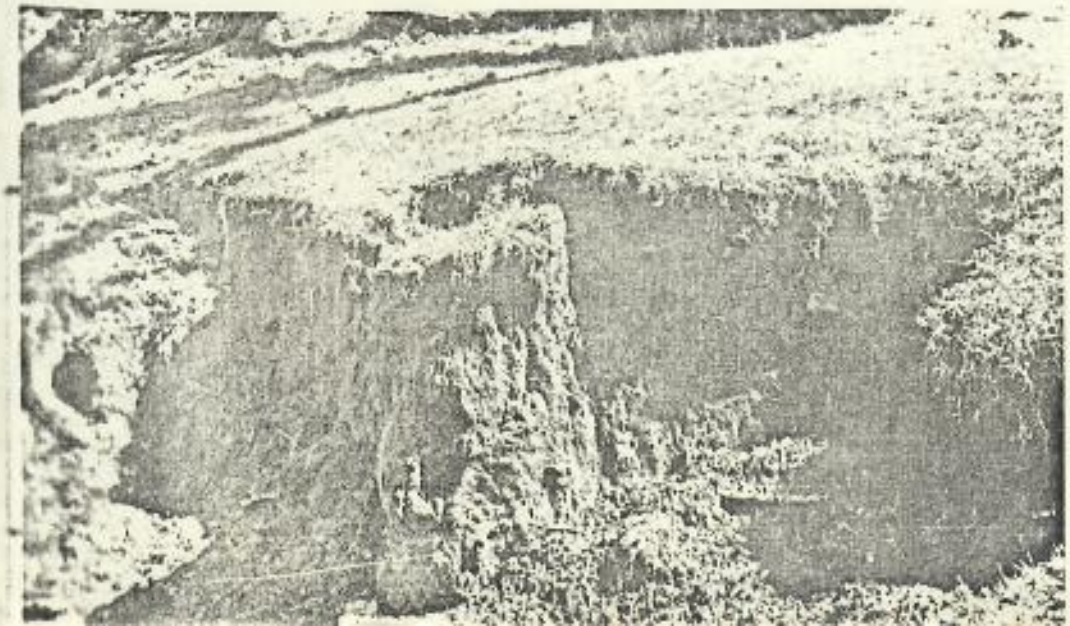
referred to as "ice cream" plants) to the exclusion of the less tasty or nutritious forms, places a heavier browse-pressure on some species than on others. If the population is large enough it may at length consume all the available vegetation produced by the ice cream species, at which time hunger forces the animals to shift to the less palatable forms and repeat the process of selective denudation.

And because the Mamane has the rather dubious distinction of being the most palatable plant species still extant on the mountain, there is not and cannot be any natural reproduction of regrowth of this basic element of the native forest. Consequently when an old specimen finally succumbs—made sickly and weak by the combination of unremitting browse pressure, exposure of the root system through erosion to drying, and freezing temperatures—there are no replacements to spring up and fill the gap. Year by year the tree line creeps downward from the point where Douglas sat among the strawberries, leaving behind the bones of a once lush and beautiful woodland.

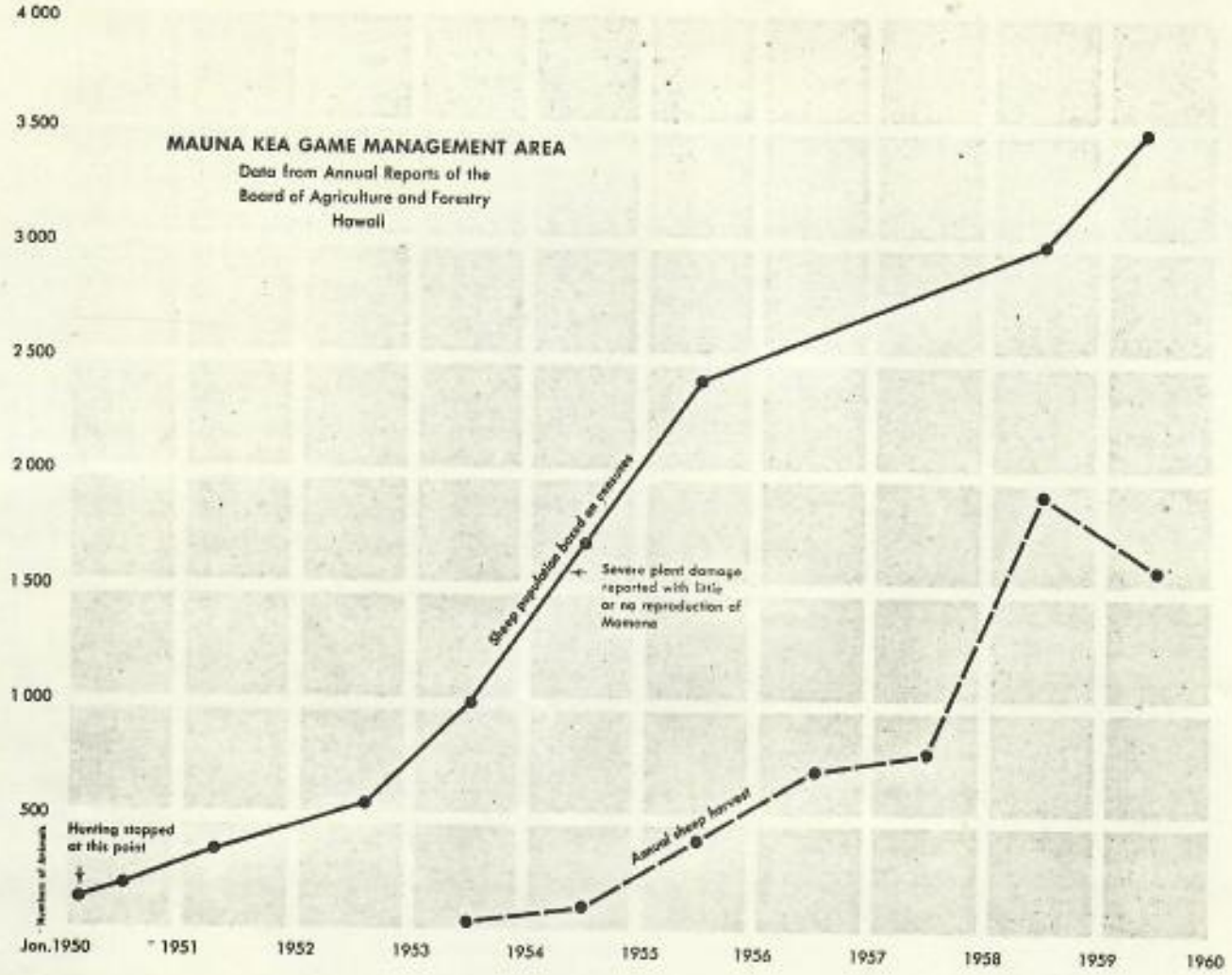
Destruction of the forest will inevitably result in the loss of its associated endemic bird life; for unlike the highly adaptable human species which seems to be able to persist practically anywhere, birds are extremely specific in their environmental needs. The tremendous changes resulting from an extinction of the Mamane forest would far exceed the adaptive capacities of most or all of the native bird species.

The endeavor to control numbers of sheep on Mauna Kea, for the purpose of protecting the forest from destruction, has been inadequate and ineffective for various reasons. In the early years of the Forest Reserve, lack of manpower and of access roads precluded any effective hunting of the sheep population. But in the 1940's sport hunting of the sheep by the public brought about a substantial reduction in numbers of animals. Perhaps likewise there was an epizoötic disease in the herds; such has been suggested but data are lacking. In any event, the herds declined until in 1946 the estimated population was down to 5,000 and in 1950 down to 200.

At this point when prospects for restoration of the Mamane forest were brightest, there occurred an ironic reversal of the policy of sheep extermination. The Forest Reserve was turned over to the Division of Fish and Game and renamed the "Mauna Kea Forest Reserve and Game Management Area." The public had developed a taste for sheep hunting and



A remnant of the deep, rich soil that covered Mauna Kea to a height of 11,500 feet or more. The close-up graphically shows how the soil turns to dust, to be swept away by wind and rain, once sheep hooves and teeth have chopped up the turf.



Graph showing relationships between sheep population growth and harvest by hunting, and between sheep population increase and the condition of the Mamane forest.

Standing among a litter of dead Mamane trees, this carefully fenced pine planting has escaped the fate of the sheep-ravaged native forest just outside the barrier. Above Puu Laau, at 8,800 feet elevation.

Next to the Puu Laau Forestry cabin is an example of what can be achieved in rehabilitation. Kept free of sheep for many years by hunting pressure, this small section of forest at 7,400 feet is gradually recovering.

the Division elected to protect the sheep as a game animal—a policy which led to dramatic resurgence of the depleted herds. As a result of virtually complete protection from 1950 to 1953 and close regulation of shooting in more recent years, the remnant of 200 sheep in 1950 has grown to a herd of 3,500 in 1959. The accompanying graph shows the rate of increase in the population, based on careful censuses conducted annually by the Division; also shown is the increasing hunting kill, which reached 1,900 animals in 1958 and 1,600 in 1959. Despite a 40 per cent harvest, the sheep herds are increasing steadily today.

This raises a basic philosophical question as to the purposes of management of the Mauna Kea area. Before 1950 the orientation had been toward the forest and its preservation; feral animals were considered extraneous to the habitat and to be removed whenever possible. The new philosophy of management may accurately be defined as a policy of "hunter-direction." It is well-typified by this excerpt from a 1955 Monthly Report of the Division of Fish and Game:

> The hunters are very apprehensive about overshooting the population on Mauna Kea and creating a similar situation to 1949 which resulted in a five-year closed season. If such a long closed period again becomes necessary through overharvesting, the hunting public will be highly critical, and properly so.

It should perhaps be pointed out that the problem of hunting interests demanding the maintenance of dangerously high herbivore populations is not peculiar to Hawaii. Rather it is a universal problem, one with which many states are presently coping. The overabundance of deer in many parts of the United States, with the attendant problems of overbrowsing and habitat destruction, is in almost every respect identical to the situation on Mauna Kea and elsewhere in Hawaii where excessive herbivore populations are maintained to satisfy the immediate demands of the

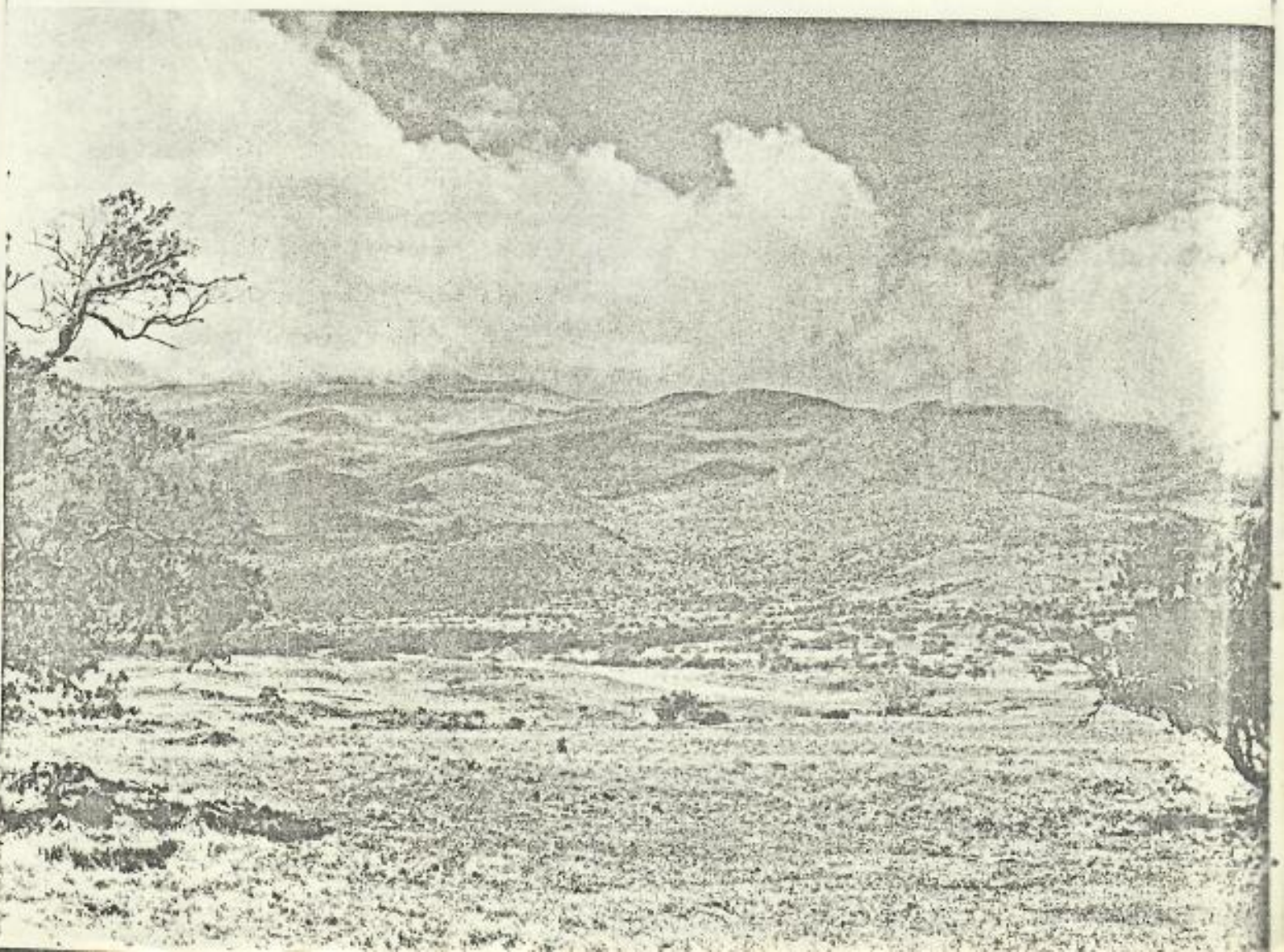
hunting public. It was this philosophy of hunter-direction which in 1950, despite all the evidence of habitat destruction, prompted the Division of Fish and Game to recommend closing Mauna Kea to sheep hunting in order to "permit the population to rehabilitate itself."

By 1957 any gains which the flora had made during the brief ebbing of pressure in the early 1950's were erased. Coarse, shrubby Puakeawe again became the dominant part of the sheep diet; the brief spark of recovery had been effectively snuffed out. Except for a few roadside strips where hunting pressure forces away the encroaching animals and creates a somewhat illusory impression of recovering habitat, Mauna Kea continues to ulcerate and sicken. Consciously, deliberately, a forest is being destroyed; a rare and unique flora is being needlessly sacrificed.

The science of wildlife management has demonstrated that with proper study and application, most habitats can support both a rich natural flora and an herbivore population. The concept of multiple land use is a valid one, but is successfully applied only when the biological necessities of an area are properly understood. Preservation of the Mamane forest is essential to the maintenance of sheep hunting as well as being a moral obligation in itself. If it is deemed in the public interest to maintain a huntable sheep population on Mauna Kea, the numbers should be limited to what the flora can support on a sustained yield basis.

Continued neglect of the present situation can have only one outcome: the ultimate and complete destruction of the habitat. When that occurs we all shall have lost—hunter and conservationist alike. The mountain will then no longer support either sheep or native plants or birds. Modern man will have produced, to his eternal shame and discredit, another biological desert.

The open grasslands of commercial sheep and livestock range on Mauna Kea's east slope at 6,000 feet dominate this scene; in the distance, the dark green scattering of Mamane woodland. The uncontrollable loss of native forest from these adjacent private lands underscores the vital need for safeguarding the flora contained in the forest reserve. Rising beneath the clouds are the cindercone-dotted upper slopes of Hawaii's great mountain.



DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
(MAKALAPA, HI)
PEARL HARBOR, HAWAII 96860

09F:mm
Ser 5880

15 Aug 1979

Mr. George H. Balazs
Assistant Marine Biologist
Hawaii Institute of Marine Biology
University of Hawaii at Manoa
P.O. Box 1346, Coconut Island
Kaneohe, Hawaii 96744

Dear Mr. Balazs:

This is in response to your letter of 10 August 1979 in which you requested a copy of the Navy's report which discussed findings from your November 1978 report on sea turtles of Kahoolawe.

The newspaper article enclosed with your letter refers to a preliminary draft of the Navy's Supplemental Environmental Impact Statement (EIS) which was filed with the Court recently as part of the continuing litigation over the Navy's use of Kahoolawe.

As soon as the Supplemental EIS has been completed and released for distribution, you will be mailed a copy.

Sincerely,

J. M. STEVENS
CDR, CEC, USN
Special Assistant for Ecology

Copy to:
Mr. J. Caperon
Hawaii Institute of
Marine Biology

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE (142)
P. O. BOX 3830
HONOLULU, HAWAII 96812

July 20, 1978 FSW1/JJN

TO: Doyle E. Gates, Administrator, WPPO

FROM: John J. Naughton, Fishery Biologist

SUBJECT: Kahoolawe site inspection

On June 23, 1978 I participated in a site inspection of Kahoolawe target island with Mr. Jerry Swedberg, Environmental Specialist for the U.S. Navy, and Mr. George Balazs, marine biologist with Hawaii Institute of Marine Biology. The main purpose for the site inspection was to survey the beaches and nearshore waters of Kahoolawe for marine turtles. In addition, information was obtained from Navy, Marine and civilian personnel on humpback whale sightings around Kahoolawe during the past several whale seasons.

We were transported via Marine Corps helicopter from Kaneohe Marine Corps Air Station to Kahoolawe. Before landing we circled the coastline of the island at approximately 250 feet altitude to look at the few sand beaches for signs of and/or potential for turtle nesting. We also scanned the nearshore waters for turtles resting at the surface. No turtles or signs of turtles were seen on this cursory survey. The only significant marine life seen was a large manta ray at the surface several miles west of Kealaikahiki Point.

From the air it appeared that the only beaches suitable for turtle nesting were those in the Smuggler Cove - Kealaikahiki Point area. The beaches at Kanapou Bay and in the bays and gulches of the north coast appeared to be mainly comprised of terrigenous material washed down from the slopes above. The turbidity of the nearshore waters along the north coast, particularly from Kuikui Point to Kuheia Bay, was dramatic and appeared to come from the badly eroded gulches in this area.

After landing at Smuggler Cove we looked at the beaches nearby and hiked to a number of beaches located northwest of the camp. These beaches were comprised of a clean calcareous sand, however, a recent large south swell had overtopped most of them and it was felt that the chance of a population of turtles nesting here on a sustained basis would be remote.

Before departing Kahoolawe we overflew several stretches of coastline and again no turtles were seen in the nearshore waters.

It should be noted that this survey was quite brief and that no positive conclusions can be drawn from it as to turtle utilization of the beaches and nearshore waters of Kahoolawe. Further site investigations, including underwater surveys, should be conducted during various times of the year in order to determine the importance of the area to marine turtles.

cc: Gary Smith, PSW3
Naval Facilities Engineering Command
Atten: Code 11440
George Balazs, HDMB ✓

DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
(MAKALAPA, HI)
PEARL HARBOR, HAWAII 96860

29 June 1979

Gentlemen:

This letter is to inform you that, effective 29 June 1979, CDR Joseph M. Stevens, CEC, USN, will relieve CDR T. C. Kelley, CEC, USN, and assume the duties of the Special Assistant for Ecology, Pacific Division, Naval Facilities Engineering Command (Phone 471-3942). Please direct your calls and inquiries to CDR Stevens.

For your information, CDR Stevens (Jay) served on the staff of the Administrator of EPA in the Office of Federal Activities from January 1971 to September 1973 as the Defense Liaison Officer and has done graduate work in sanitary and municipal engineering.

I want to thank you for your support and assistance and hope that you will provide the same fine support and assistance to CDR Stevens. I will remain at the Pacific Division as the Planning Officer and look forward to future dealings with you in this capacity.

Mahalo,

T. C. KELLEY
CDR, CEC, USN
Special Assistant for Ecology

Distribution:
(on pages 2 and 3)

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Denise Patton
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Room 12
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Regional Administrator
Environmental Protection Agency
Region IX
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San Francisco, CA 94105

Environmental Protection Agency
Region IX Pacific Islands
Contact Office
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District Chief
Water Resources Division
Geological Survey
U.S. Dept. of the Interior
P.O. Box 50166
Honolulu, Hawaii 96850

Mr. George H. Balazs
Hawaii Institute of
Marine Biology
P.O. Box 1346
Kaneohe, Hawaii 96744

assemble previous correspondence

poss-

6 June 1978

DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
(MAKALAPA, HI)
PEARL HARBOR, HAWAII 96860

09F:mm
Ser 3239

4 May 1978

Mr. George H. Balazs
Assistant Marine Biologist
Hawaii Institute of Marine Biology
P.O. Box 1346
Coconot Island
Kaneohe, Hawaii 96744

Dear Mr. Balazs:

In response to your letter of April 17, 1978, your proposed research work for the State of Hawaii concerning Hawaiian sea turtles has been reviewed. The Navy will be able to support your work on Kahoolawe during the summer of 1978.

There will be access to the island between 22 and 26 May when it will not be in use for training purposes. During this period air transportation to Kahoolawe and an opportunity to fly around the island for an aerial survey of all sand beaches, which may provide nesting sites, can be provided. It should then be possible for you to determine how much time you will need on the island to complete your work during July, August and September which you have indicated is the remainder of the nesting season.

It is requested that, on completion of your work and not later than 15 October 1978, a written report be provided on the results of your research, including the occurrence and frequency of turtles on the island and the potential impact of Navy operations on the various turtle populations which you may locate on the island. It is requested that this report be as objective as possible to permit its possible use in completion of the Environmental Impact Statement Supplement for Kahoolawe as required by the Environmental Protection Agency. Please contact Mr. Gerald Swedberg, Natural Resources Specialist, Pacific Division, Naval Facilities Engineering Command, telephone 471-3948 for further arrangements.

Sincerely,

T. C. KELLEY
LCDR, CEC, USN
Special Assistant for Ecology

Copy to:
(on page 2)

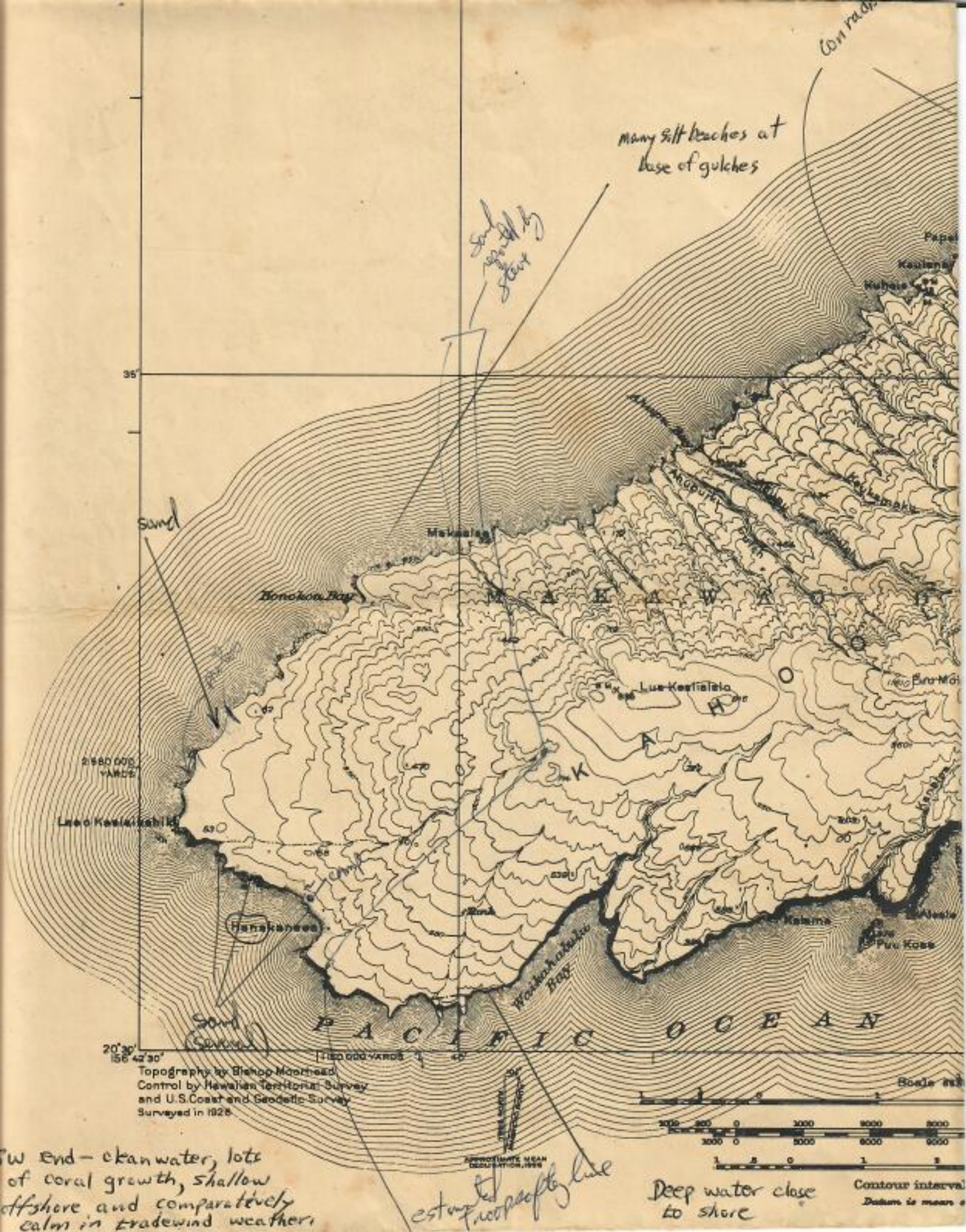
09F:mm
Ser 3239

Copy to: (w/Apr 17, 1978 ltr)
CINCPACFLT (Code 03J)
COMTHIRDFLT (Code 01K)
COMFOURTEEN (Code 002)

Polyconic projection. Hawaiian datum
5000 yard grid based upon U.S. zone system, but with central meridian 158°

Miles
Yards
Feet
Kilometers

KAHOOLAWE, HAWAII
Edition of 1929
reprinted 1947
N2030—W15830/15 X 12.5



SW end – clean water, lots of coral growth, shallow offshore and comparatively calm in tradewind weather.

HEADQUARTERS
FOURTEENTH NAVAL DISTRICT
BOX 110
FPO SAN FRANCISCO 96610

IN REPLY REFER TO:
002:114:GS:sh
Ser 1400

18 JUL 1977

Mr. George H. Balazs
Jr. Marine Biologist
Hawaii Institute of Marine Biology
P.O. Box 1346
Kaneohe, HI 96744

Dear Mr. Balazs:

In reference to your letter of 22 June 1977 and our previous meetings, I believe that we have a general understanding of the requirements of your state-sponsored study of the Green Sea Turtle.

Where operations permit, you will be notified of opportunities to accompany conservation personnel on Navy trips to the various areas of possible interest.

Please contact Mr. Gerald Swedberg, Natural Resources Specialist, Pacific Division, Naval Facilities Engineering Command, telephone 471-3948, for further arrangements.

Sincerely,

R. P. NYSTEDT 474-2103
CAPTAIN, CEC, USN
DISTRICT CIVIL ENGINEER
BY DIRECTION OF THE COMMANDANT

University of Hawaii at Manoa

Hawaii Institute of Marine Biology
P.O.Box 1346 • Coconut Island • Kaneohe, Hawaii 96744
Cable Address: UNIHAW

May 18, 1977

Captain R. P. Nystedt
CEC, District Civil Engineer
Headquarters
Fourteenth Naval District
Box 110
FPO San Francisco 96610

Dear Captain Nystedt:

This letter is in reference to your correspondence dated 17 November 1976 (48A:FWD:cdg, Ser 2679) concerning my appointment by the Governor's Marine Affairs Coordinator to conduct a management study of the Hawaiian green sea turtle.

At this time, I would like to respectfully request the Navy's support and assistance in the conduction of aerial surveys to locate and census aggregations of green turtles in the near shore waters of the Island of Kahoolawe. Additionally, I would like to survey on land as many of the island's sand beaches as possible to identify any possible nesting activity which may be taking place.

I believe it would be advantageous for me to meet with you in person in order to fully discuss this request. When your schedule permits, I would be most appreciative if you would telephone me at 247-6631 to arrange for a meeting date and time convenient to both of us.

Sincerely,

George H. Balazs
Jr. Marine Biologist

GHB:md

cc: Mr. Michio Takata, Director
Division of Fish and Game

University of Hawaii at Manoa

Hawaii Institute of Marine Biology
P.O.Box 1346 • Coconut Island • Kaneohe, Hawaii 96744
Cable Address: UNIHAW

June 22, 1977

Captain R. P. Nystedt
Headquarters, Fourteenth Naval District
Box 110
FPO San Francisco 96610

Dear Captain Nystedt:

This is to set forth in writing the salient points of my request for the Navy's support in conducting surveys of marine turtles at Kahoolawe, as discussed during our meeting of 16 June 1977. Written background material covering my overall marine turtle research project in the Hawaiian chain has previously been made available to your office in correspondence dated 10 June. It seems appropriate to again emphasize that the work I am proposing for Kahoolawe represents a component part of the far longer project that is now in progress.

The proposed work at Kahoolawe encompasses two phases. The first phase would consist principally of direct observations from low flying (500-800') aircraft in order to survey sand beaches for signs of nesting and nearshore waters for the presence of feeding aggregations of turtles. Available information suggests that nesting in the major Hawaiian Islands would be most likely to occur from June through September. Any Navy support for such observations would therefore have to be provided during these months, either in 1977 or 1978 but preferably during both years. Support for observations of feeding aggregations could be provided during any time of the year. However, in order to account for variations in the presence of such turtles due to season, stage of tide, sea conditions, and other factors, it would be highly desirable to make such aerial surveys of nearshore waters at approximately four month intervals or less for at least a one year period.

The second phase of the work would be entirely dependent on the findings which result from phase one. If nesting activity is identified, land surveys of beaches should be carried out in order to determine the species and numbers involved. If sizable aggregations of feeding turtles are identified, underwater surveys should be made to gather information of a more detailed nature on size categories represented and food sources utilized. This may also involve capture and tagging activities as

provided in my State of Hawaii, Division of Fish and Game Scientific Research Permit No. 7744.

I fully understand that any support the Navy may provide will be on a mission congruent basis and not require added expenditure of Navy funds. I also fully understand that any support the Navy may provide for phase one of my proposed work does not obligate them to support work in phase two. However, should such work be warranted, I would ask that the Navy give due consideration to offering further assistance within the framework of existing missions.

I want to express my appreciation to both you and your associates for taking the time to meet with me and for giving consideration to this request for assistance.

Sincerely yours,

George H. Balazs

George H. Balazs
Jr. Marine Biologist

GHB:md

Jan 5, 76 Advertiser

A target of bombs, criticism

By DAVID TONG
Advertiser Staff Writer

Yesterday's symbolic occupation of Kahoolawe is another chapter to a history of controversy over the use of the island by the Navy as a bombing target.

Naval authorities have been at odds with citizens and public officials who want the small island re-

behind the news

turned to the State of Hawaii and restored to its original condition.

A MOVE to review the use of Kahoolawe was made recently when President Ford signed a bill in November directing the Pentagon to study the possibility of returning the island to the State. The feasibility report will take a year to complete.

The Navy's position has been that bombing practice at Kahoolawe plays an important role in defense. Furthermore, the Navy has argued that so many unexploded bombs, shells and other ordnance have been dropped on the 45-square-mile island that it cannot be returned to civilian use.

One of the goals of the feasibility report will be to estimate how much it will cost to clean up the island.

KAHOOLAWE is about 8 miles southwest of Maui. It is 10.9 miles long and 6.4 miles wide, and its highest point is at 1,472 feet above sea level.

From 1830 to 1843, the windswept island was used as a penal colony.

For the remainder of the century, the arid island was leased to various politicians, businessmen and ranchers in an attempt to turn Kahoolawe into grazing land.

These attempts proved to be unsuccessful.

In 1910 the Territorial governor made another abortive attempt to

See CRITICS on Page A-4

Critics zero in on

From Page 1

put Kahoolawe to better use by proclaiming it a forest reserve.

PROBABLY the most successful attempt to use Kahoolawe's resources was made by Maui rancher Angus MacPhee, who believed the island's vegetation could support cattle ranching.

In 1918, MacPhee was given a 20-year lease to Kahoolawe. That lease later was extended to 1953.

By 1938, MacPhee — who later took on Harry Baldwin of Maui Agricultural Co. as a partner — had 600 head of cattle on the island. A total of $190,000 was invested in the project, called Kahoolawe Ranch.

MacPHEE saw his plans interrupted by the start of World War II in 1941, when the island was subleased to the Navy and used ever since for aerial and shore target practice.

The ranch was supposed to return to MacPhee after the war, but the Navy persuaded Territorial authorities that the nation's defense was more important than cattle ranching.

MacPhee filed a $80,000 suit in 1948 against the Navy when it appeared the Federal Government would not compensate him or return his leased land. The rancher died in 1948 without being able to regain his holdings.

IN 1947, Colin G. Lennox, president of the Territorial Board of Agriculture and Forestry, proposed to end private and government leases and transfer Kahoolawe to his department's control.

That proposal went aground with the start of the Korean War, when Lennox proposed that the U.S. Department of Defense take control of Kahoolawe.

An executive order in Feb. 20, 1953, gave the Navy full control of the island.

Over the next two decades, naval spokesmen kept insisting that Kahoolawe was essential to the nation's defense.

THAT ARGUMENT was attacked by citizens and public officials seek-

Target Island use

ing a halt to the bombing of Kahoolawe.

Persons critical of the bombing complained about reverberations from explosions on Kahoolawe that could be felt on Maui. They also said bombs fell off target by as many as 19 miles.

One of the most outspoken critics has been Mayor Elmer Cravalho, who found an unexploded 250-pound bomb on Sept. 27, 1969, on Maui across the channel from Kahoolawe.

Cravalho has made several unsuccessful bids to have the island returned to the jurisdiction of Maui County.

IN FEBRUARY 1973, Charles Maxwell, president of Aloha Association, demanded Kahoolawe be returned to the Hawaiian people.

"Now (that) the Vietnam conflict is over, the island is not needed for military purposes and can be returned to the Hawaiian people, who are the rightful owners," he said.

Federal legislation was introduced early last year by Rep. Patsy Mink and Sen. Daniel Inouye for the return of Kahoolawe to the State.

In October, Inouye, a member of a House-Senate conference committee, was able to include a resolution in the 1976 military construction appropriations bill that called for a study of the use of Kahoolawe.

On signing the measure, President Ford has issued a directive calling for a one-year study into the feasibility of restoring and returning Kahoolawe.

Observers noted that it was the first time the matter has gone as far as the President.

Jan 13, 1976 S-B

Henry Medeiros

Old Cowboy Says

Kahoolawe Good Only for Cattle

By Leslie Wilcox
Star-Bulletin Writer

A man who worked on Kahoolawe almost four decades ago when cattle and sheep were raised there says the Island is a beautiful place for cows, but not for people.

Henry Medeiros, 53, who helped with cattle round-ups for a few weeks each year from 1937 to 1941, said cattle raising is just about the only thing the Island is good for.

"At that place, we used to have the most beautiful brood cows," Medeiros said.

But he said the Island is largely a dusty wasteland that cannot support human life.

"You'll die there," he said.

ranch quarters drank from cattle troughs.

The water's surface was sometimes covered with thousands of dying bees and goat droppings, he said, and parched paniolos would have to push the intruding entities aside to get relief.

struction foreman for Vincent & Brill Inc., disagreed with the reports of two young Hawaiians who "occupied" the military-controlled isle for two days last week.

They found Kahoolawe to be a "beautiful Island" that has been desecrated by Navy bombing and are among activists who want to reclaim the land from the federal government for the Hawaiian people.

"Those Hawaiians are crazy," said Medeiros, who called the Star-Bulletin to object to the reports.

"The only things to eat there are opihi and fish. Hardly anything grows because there's no water."

MEDEIROS, who was interviewed by the Star-Bulletin at his Waipahu home this week, said the only way Kahoolawe could become productive is with massive investments in a water system that would fill cattle troughs.

However, only 900 head of cattle could subsist there comfortably, he said, and during a dry spell, the rancher might have to take the cattle across six miles of ocean to Maui for water.

Cattle formerly squeezed into the shade of stunted kiawe trees on one side of the Island and ate the pili grass that grew in scattered stretches, he said.

The Kahoolawe Ranch Co. provided water for the animals with the aid of water tanks and troughs that were destroyed by bombing after the company bowed to the federal government's wishes and left in 1941.

Medeiros has not been back to the Island since.

He remembers seeing "thousands" of pheasants and many goats and cats on the 45-square-mile Island.

THE ISLE'S southern portion was very dry, he said, with wind-whipped red dust from which cowboys used to protect themselves by wrapping their handkerchiefs around their faces.

After the Island's annual rainstorm, the dust became as slippery as ice, he said.

Medeiros said that cowboys whose canteens were empty after a day of fence-fixing and other chores away from the

Firings Date Back to World War II

Navy Will Search out

Navy divers will go fishing for torpedoes along the shores of **Kahoolawe** soon, reports Lt. **Jamie Davidson** over at **Ford Island.**

Ordnance specialists from **West Loch** will do the underwater torpedo survey at the end of this month along the north shore of Kahoolawe while archaeologists work the south shores looking for more historical sites.

A torpedo survey on the south shore will follow.

The torpedo firing at the Target Island dates back to World War II when Adm. **Chester A. Nimitz** ordered boat commanders to get rid of their excess "fish" before coming back into Pearl Harbor.

Divers will work along the bottom using lines put down to make large grids so that they always know where they are and what they've seen. Many torpedoes, the duds that didn't explode, by now should be well camouflaged by marine growth.

Three other things are happening, Davidson reports. The **U.S. Geologic Survey** will do a water source survey, the Navy will shoot off small charges and monitor the noise on Maui to learn more about sound propagation and military riflemen, in October, will make one last, grand sweep in an effort to eliminate the estimated 130 goats still on the Island.

Composite Squadron One at **Barbers Point** now has two women flying the **TA-4 Skyhawk** which tows targets off **Barking Sands** for fleet surface units. The ladies, Lt. (j.g.) **Lucy Young** and Lt. (j.g.) **Andrea Rice** reported here in June.

More good news on the **Arizona** shoreside

E.O.D. – Lt. Com. C.C. Gogel
→ 684-6213

'Dud' Torpedoes off Kahoolawe

project. The **Fleet Reserve Association's** appeal to veterans groups for help netted $10,000 from **Disabled American Veterans** headquarters.

But the bad news at Pearl Harbor concerned the submarine **Swordfish** which needed shipyard work because somehow a 54-cent paint scraper got jammed into a torpedo launcher. It only cost an estimated $171,000 to get it out, the **Shipyard Log** newspaper reported.

How it got there is anybody's guess.

Traffic problems caused the **Army** to plan a $500,000 highway improvement job for the **Aliamanu Housing** project. Work will be on the west access road where widening was felt necessary to increase traffic safety, especially for pedestrians walking to work or school.

Army investigators are looking into **TLA**—**Temporary Living Allowance**—ripoffs locally where some soldiers are known to pad living expenses before finding something more permanent on Oahu, according to the **Tropic Lightning News.**

Retired Adm. **John S. McCain Jr.**, former CINCPAC commander, was a speaker at a recent **Fil-American Friendship Day observance** at Champ Aguinaldo in the Philippines. The admiral said World War III is coming and the preliminaries are going on in Africa.

The admiral also said he thought **China** poses a threat to the security of the **Philippines** and therefore it is important for the United States to have **Subic Bay** and **Clark** to operate from in that part of the Pacific.

The Armed Forces

By Lyle Nelson

Cost-Factors in Asbesto Work

Destroyer Used as

A guinea pig of sorts is the guided missile destroyer **Goldsborough**. It is having all asbestos insulation in the forward fire and engine rooms ripped out by the **Pearl Harbor Naval Shipyard**.

Point of the 100 percent ripout in those two areas, with yard workers dressed in suits and respirators as if they were taking a walk on the moon, is to consider cost factors and compare this procedure with what the Navy has been doing to combat asbestos worry in other naval units.

John Zielinski, shipyard industrial relations director, said the work on the Goldsborough, expected to be completed by mid-November, aims at insuring safety and control considerations.

Normally when small amounts of asbestos insulation is disturbed during a repair project at the yard the material is replaced with fiberglas.

Navy ordnance specialists from **West Loch** used little powered sleds to propel themselves underwater around Ahupu Bay and Smuggler's Cove on **Kahoolawe** while making a torpedo count.

A SPOKESMAN AT **Ford Island** said the divers saw some unexploded ordnance down to 10 fathoms off shore and some torpedos but a lot of runoff silt obscured much of the bottom despite clean water. Marine life appeared normal, the Navy said.

What the divers found will go into an Environmental Impact Statement and the Navy plans to make periodic public reports on what's going on in Kahoolawe.

In a September report on field survey work by archaeologists, **Maury E. Morganstein** of Hawaii Marine Research reported the major finding was rediscovery of the **Stokes-McAlister** archaeological site first located in the early part of the century.

Scientists were pleased that many sites were relatively unspoiled. Bombing today is confined to the central third of the Island, the red crown.

Scientists have surveyed 60 percent of the Island since April and each month military operations will be stopped for 7-10 days to allow further field survey work.

Capt. **Leo T. Profilet**, 3rd Fleet project officer, says, "The Navy is spending a lot of time, money and talent on the study of the environment of Kahoolawe. We want to do our level best to comply with National Environmental Protection laws on Navy controlled property.

"Although this work causes complications in our combat training schedules, we believe it is worth the effort," he said.

The **Navy** has asked the **Army Corps of Engineers** for a permit to construct a rock revetment within the mouth of Halawa Stream to stabilize and protect the shoreline where the new **Arizona** dockside facility will be built.

Because Halawa Stream floods at times the Navy wanted to avoid

The Armed Forces

By Lyle Nelson

Guinea Pig in Test

building any boatdock system that would mess up stream currents in times of heavy rain.

SOIL AT THE ARIZONA project site is not the best either so that the contractor will not use pilings in the construction of the theaters and other buildings at the facility.

Soil testing down to 200 feet was done, Capt. **L.H. Ruff**, a Navy engineer, reports and the new buildings will be designed to sort of "float" on the site something like **Frank Lloyd Wright's Imperial Hotel** in Tokyo, a survivor of the 1923 earthquake.

The **U.S. Labor Department** has asked that **James Martin Jr.** and the **Service Management Corp.** be banned from providing security guard service at **Barbers Point** and the **Air Force's Palehua Solar Observatory** for refusal to pay its workers the minimum wage and fringe benefits.

The investigation was conducted by **Thomas Moriki**, area director for the Wage and Hour Division of the **Employment Standards Administration.**

The **Air Force** has identified the first remains shipped to the **Central Identification Laboratory** at Kapalama from Laos as those of Maj. **Wallace Wiggins.** All those remains brought from Vietnam have been identified and moved on to the Mainland for processing by survivors. Now three MIA remains from Laos are still to be identified.

Tom Tompkins a Navy journalist at **Pacific Fleet** headquarters, has produced a labor of love, a profile on **Nohea O.A. Peck**, a veteran of the Navy in World War I and Army in World War II and Korea who held high Masonic posts in Japan in recent years.

Before returning to Hawaii in 1974, Peck was **grand secretary of the Grand Lodge of Japan.**

Kaho'olawe

Tales of Old Hawaii

By Russ and Peg Apple

KAHO'OLAWE'S HISTORY conveniently divides into three periods.

These historic periods can be named "Hawaiian," "Exploitive" and "Bombing."

Kaho'olawe's first period lasts from prehistoric times through about 1863. It is characterized by typical Hawaiian use by Hawaiians for Hawaiian purposes.

Non-Hawaiians (who might be citizens of the Kingdom through birth or naturalization) controlled Kaho'olawe's use through the second or exploitive period. They used it for foreign purposes, that is purposes which were not native to the Islands —' sheep and cattle ranching, goat herding and hunting, and some tree planting attempts.

The exploitation of the island due to controlled and uncontrolled grazing resulted in a loss of much of the vegetation that had grown on Kaho'olawe through all but the last of the Hawaiian period. This exploitive period is when Kaho'olawe earned its reputation for barrenness. Even during the Hawaiian period, however, the island had not been worth fighting for, for its vegetation and water supplies were always marginal.

KAHO'OLAWE'S last period begins in 1940 with the bombing and shelling of an unoccupied island by the U.S. Armed Forces, principally the Navy.

Historians of the future may look back on 1964 as the beginning of a transition to a fourth period. In that year some feeble local attempts were made to halt the bombing and return Kaho'olawe to civilian control.

In this transition time, if such it be, 1976 may be a turning point — ethnic Hawaiian activists occupied the island for short periods to protest the bombing. Such bombing, they say, is a sacrilege to the Hawaiian land of Kaho'olawe and destroys structures and sites sacred to their ancestors.

OTHER FORCES were also at work in 1976. America's national historic preservation acts and presidential orders are forcing the Navy to inventory and evaluate any archeological or historic sites which remain on the island. The Navy may have to nominate eligible ones to the National Register of Historic Places.

Sites on the National Register receive some protection. A thorough local and national review is made before any federal agency undertakes to do anything to them, or even work in their vicinity.

Kaho'olawe may have a number of sites still existing which meet the criteria — remains of the first period, perhaps some from the second, and certainly craters from the third.

Perhaps a few craters should be saved, in case there is a fourth period.

In 1976, the Navy and the historic preservation officer of the State of Hawaii are beginning the inventory. Evaluation by archeologists and historians will follow.

NONE OF THE three historic periods was pure, without invasions from other influences. The goats, first imported by Capt. James Cook in 1778-1779 and then by later voyagers, found their way, perhaps in Hawaiian outrigger canoes, to Kaho'olawe late in the first period.

In 1813, the American sailing vessel *Lark* was wrecked on Kaho'olawe and a number of haoles were ashore for a few days. In 1847, George Morgan, a haole, was banished to Kaho'olawe. He had been convicted of stealing money. The Hawaiian period includes use of the island for a male penal colony.

In the exploitive and bombing

—3 Periods of

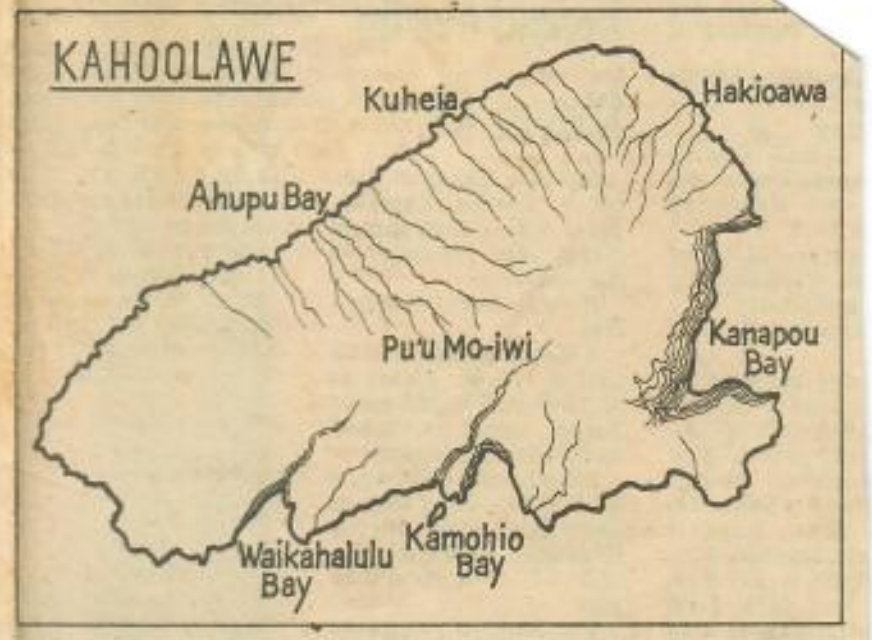
periods, some Hawaiian uses from the first period continued. There was a long interval in the third period, however, from 1941 to 1967, 26 years, when Kaho'olawe's land and waters were off limits to civilians. Starting in 1967, on some weekends the waters off the island were opened by the Navy to civilian fishermen.

IN 1972, the Navy permitted a civilian party ashore to plant about 1,500 trees and shrubs, an exploitive period activity, an attempt to hold the soil.

In that same year, the Navy reduced the weight of individual bombs authorized to be dropped from 1,000 pounds to 500.

The resort communities on adjacent Maui Island were growing uneasy with ordnance exploding just eight miles away.

Maui residents first started to be uneasy when a 500 pound unexploded



Kaho'olawe may be entering transition to a fourth period, after periods that can be termed "Hawaiian," "Exploitive" and "Bombing."

bomb was discovered in 1969 in a Maalaea pasture leased by Maui Mayor Elmer Cravalho, a leader in the move to return Kaho'olawe to civilian control. It had fallen, the Navy later explained, unfused from an aircraft in 1968.

ALL THREE historic periods were cursed by Kaho'olawe's position in the lee of the 10,000-foot high bulk of Haleakala volcano on nearby Maui Island—a position which usually eliminates the trade winds and the rains they bring.

Winds do blow and rains do fall on Kaho'olawe — winds can be violent and the seasonal kona storm rains can come in deluge proportions. The island averages about 25 inches of rain a year. The few wells dug for watering stock always turned brackish.

From about 1920 on, Kaho'olawe cattle rancher Angus MacPhee hauled fresh water regularly from Maui to fill his two 10,000 gallon cisterns. After some heavy rains, water also stood for a while in some natural craters on the island's higher parts.

Overgrazing in the exploitive period probably made Kaho'olawe as barren as it is today. Those goats Cook brought started the heavy grazing late in the Hawaiian period; the goats, sheep, cattle and horses on the island in the second period all competed for greenery to eat.

UNTIL GOATS went to work eating up Kaho'olawe's vegetation, the island appears to have been inhabited by a small number of permanent Hawaiian residents, and many visitors, all Hawaiian. Certainly the prisoners confined to the island by the 1840s found Kaho'olawe a harsh place to live. By then, the goats may have been roaming and multiplying up to 60 years.

Tales from Maui indicate the prisoners once swam the eight-mile channel, stole food, and stole canoes to take the food back to their starving companions. Then the stolen canoes may also have been used to rescue female prisoners from the women's colony on Lana'i island and take the women to Kaho'olawe.

In the Hawaiian period, years up to 1863 (when the first grazing lease was issued), and perhaps longer, the plentiful fish in the waters surrounding Kaho'olawe were justification enough for living on the island or just visiting. On parts of the island itself, the Hawaiians raised sweet potatoes, yams, sugar cane and gourds, all Hawaiian plants, and later the introduced melons.

According to the Hawaiian historian David Malo, taro, from which the staple poi is made, would not grow on Kaho'olawe.

IT IS THE STRUCTURES left over from the Hawaiian occupation that interest the archeologists as well as present day Hawaiians.

J. Gilbert McAllister's survey in 1931 for the Bishop Museum found 50 archeological sites in a week's time. He found numerous house sites, a family shrine, fishing shrines and two temples "for propitiating the fish deities and assuring good catches."

At site 29 (the Hawaiian place names have been lost) at the 1,000 foot elevation on Pu'u Mo-iwi, are thousands of sharp basalt flakes which mark a prehistoric quarry for making adzes.

IN 1938, Jack Porteus, an archeological student of the Bishop Mu-

History

seum's Kenneth P. Emory, found adz makers' shrines at Site 29 similar to those in the adz quarries atop the Big Island's Mauna Kea. The Kaho'olawe shrines had been missed in the 1931 week-long survey.

Emory himself was on Kaho'olawe in 1915—not to hunt for artifacts but to shoot goats. His Hawaii National Guard company was sent ashore with each man given 1,000 rounds of ammunition. This was when Kaho'olawe was a forest reserve (1910-1918) and the goats were hindering reforestation.

KAHO'OLAWE'S second period is marked by goat drives. More than 5,000 goats were killed during the forest reserve period, and rancher MacPhee killed more than 13,000 between 1918 and 1922.

Goats, of course, ate vegetation better eaten by cattle.

By 1932, MacPhee is said to have gotten the feral goats down to 15 individuals, and the sheep down to 20. Left alone, without hunting pressure or other limiting activities, such small herds can grow again to large numbers quickly.

In 1933, MacPhee's lease for Kaho'olawe was reissued by the Territory for 21 years, to expire in 1954.

Then in 1940, MacPhee subleased part of Kaho'olawe to the Navy for use as a target. That was when the bombing period started.

KAHO'OLAWE was seized shortly after Dec. 7, 1941, "Pearl Harbor Day," by the military government under martial law so that the entire island could be a target. MacPhee, family, and ranch hands had to abandon the Kaho'olawe Ranch immediately. Fences, walls, cisterns, dwellings, corrals, cattle, horses, and personal possessions were left behind when the Navy took over.

MacPhee's 1946 suit against the federal government for $80,000 in damages for the asssets lost is still pending. MacPhee died in 1948.

Since 1941 the Navy has held to its position that Kaho'olawe is essential to train the personnel of the Armed Forces in the Pacific in the use of live ordnance. Some citizens of Hawai'i now question this position. What may have been true once, they say, may not be true today.

Navy says it needs island

By MARK ANDERSON

KAHOOLAWE, Hawaii (UPI) — The Navy jet screams in low over the island. Its bombs tumble toward the concentric rings of stone below.

Artillery fire booms toward a nearby ridge. Flares light up the sky.

A war zone? No. It's the Navy's practice island of Kahoolawe, just six miles away from the luxurious resorts on the Hawaiian island of Maui.

For more than three decades, the 45-square-mile island has been pounded by explosives. Now there is a movement to bring the destruction to a halt.

A group called the "Protect Kahoolawe Ohana," made up mostly of native Hawaiians, wants the Navy to clean it up and turn it over to the state, perhaps for a park.

The word Kahoolawe in Hawaiian means "blowing red dirt" and it is hard to imagine a more fitting name. Even from the air, Kahoolawe obviously is not one of Hawaii's more hospitable islands. The red dirt and the kiawe bushes contrast sharply with the lush green vistas of Maui across the channel.

The wind whips across the island's barren plains and leaves a residue of red dust. It weaves itself into the fabric of clothes, it clings to hair and it insinuates itself into the lines at the corners of the Marines' eyes.

The island has been controlled since World War II by the U.S. military, which uses it for artillery and air bombardment practice. It is normally off limits to all but military personnel, but recently a group of reporters was allowed to visit the island for a tour.

Marine Gunnery Sgt. G. L. Thomas, a part-Hawaiian, probably has spent more time on Kahoolawe than anyone else. To his friends he is known as the "mayor of Kahoolawe."

Thomas and others noted that the military has eliminated about 200 areas on the island as targets — mainly because possible historic sites have been discovered in those places. And indeed, as one travels about the island, numerous yellow markers designating historic sites can be seen.

To the untrained eye, the sites look like a jumble of rocks. However, the discoveries were made by archeologists and if the prevalence of the markers is any indication, there must be a considerable number of historic artifacts on the otherwise desolate island.

The Marine Corps emphasizes that it needs Kahoolawe, the only area in the state where pilots can practice bombing runs and close air support. If it were not available, training would probably have to be conducted somewhere in the western United States, 3,000 miles away from the strategic base at Pearl Harbor.

NOV 12, 75 5-B

It's a Beautiful Island, Former Resident Says

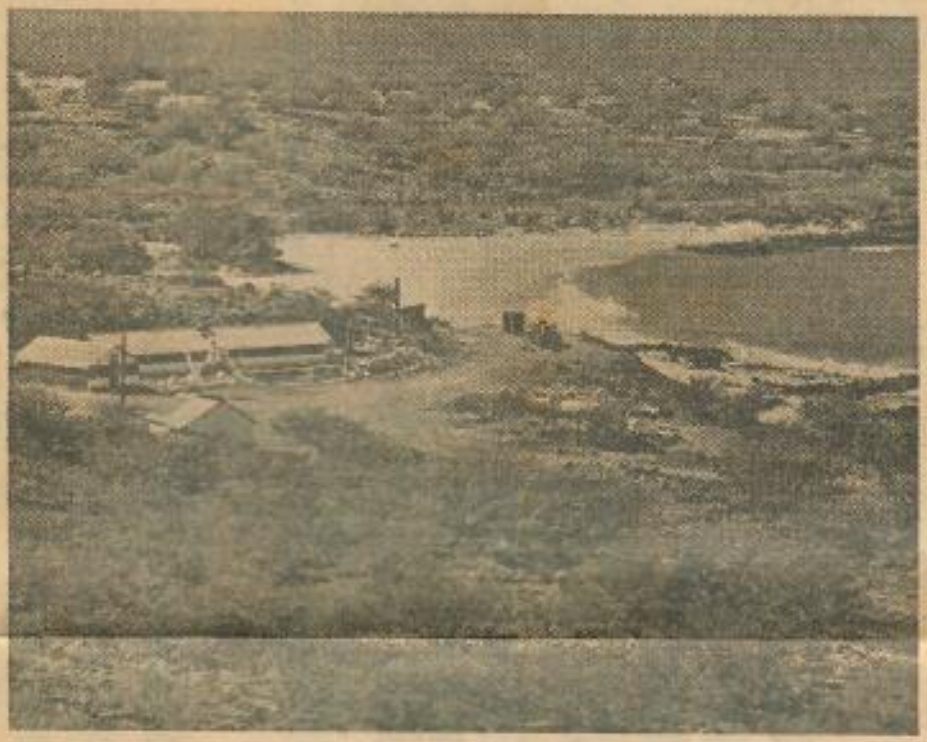
Most proponents of a complete return of Kahoolawe to civilian use will tell you that all the Island needs to become a part of the Paradise of the Pacific is water.

And, of course, freedom from the Navy.

That would mean ridding large portions of the Island of unexploded bombs, goats that destroy the ground cover, and rusted vehicles that serve as practice targets for Navy bombers.

Water, they say, could be made available for irrigation by desalination of sea water, or it could be piped from nearby Maui.

INEZ ASHDOWN, whose father, Angus MacPhee, ranched on the Island from 1917 to 1941, is elated at the prospect that the Island where she once lived may someday be returned to civilian use.



One view of Kahoolawe.

"I am very glad they are doing something about it," she said today. "It's high time that action is being taken to return the Island to civilian use. It is a great pity to waste so much land.

"The Island still could be beautiful and productive.

"It was barren when we first went over in 1917. By 1930 we had established a going ranch. The ranch had 900 head of cattle.

"The Island could become a wonderful horse and cattle ranch."

Mrs. Ashdown, a well-known historian from Maui, suggested that one way to speed up clearing Kahoolawe of the bombs dropped by the Navy over the past 30 years would be to introduce 100 or more pigs.

MAUI MAYOR Elmer F. Cravalho was equally happy at the prospects for Kahoolawe.

"This calls for a miniature celebration," he said today.

"The Congressional delegation is exerting the kind of leadership and influence I know it is capable of in this particular case.

"I think we are on the way to getting the Island back. The feasibility study will give the State of Hawaii, the County of Maui and everybody else an opportunity to be heard.

"This is a good thing."

In 1970, when the State experimented with poisoned alfalfa bales as a way to rid the Island of its goat population, Mrs. Ashdown offered another alternative.

She suggested hiring a couple of sheepherders, with trained sheepdogs, and she estimated that within six months the goats could be tamed and herded. Then they could be sold for meat at a nice profit, she said.

"At the Kanapou side of the Island there has been no bombing," she said. "Therefore there would be no danger from unexploded shells."

She proposed that the sheepherders camp in that "no-bombs area" and supplied by helicopter. Mrs. Ashdown even offered to be the first applicant for such a job, though she suggested that Mexican sheepherders might be the best.

CRAVALHO HAS proposed a park on the Island — suggesting the area around Smuggler's Cove, where the Navy now maintains buildings and some facilities. He earlier has indicated a desire to construct such a park — even if the Navy stays on the Island.

"But I prefer to have them out completely," he said at that time.

Cravalho suggested that such a facility could be used on weekends, with caretakers and other necessary personnel going to the Island just on weekends.

"It's an ideal place for just lying around, swimming or fishing," he said. "It's a beautiful place . . . a beautiful place."

Most visitors to the Island — and, since going ashore is illegal without Navy permission, there have been few — find it barren and forbidding. But they also find it beautiful and quiet.

The coastline is mostly a combination of hanging valleys and partly-drowned valleys. The waters around the Island — now restricted by the Navy — are described by many fishing authorities as probably the best in Hawaii.

There are scenic points and beautiful beaches, uncluttered by man. Aside from the frequent bombing and the constant bleating of goats, all is quiet on the 45-square-mile Island.

The Island's slopes are corrugated with gulches 50 to 200 feet deep.

STIFF tradewinds blow nearly every day; dust storms are common. The winds blow from the east rather than the northeast because they are deflected by the 10,000-foot dormant Haleakala Volcano on nearby Maui.

And because the highest point on the Island is less than 1,500 feet, too low to cause winds to lose much of their moisture, water is scarce.

and Hawaii (Balazs, 1978a). Nesting by leatherbacks has not been reported for any of the Hawaiian Islands. Based on existing information, the ecological importance of the habitat provided by the major Hawaiian Islands to each of the sea turtles can be listed as follows: Chelonia - presence of acceptable nearshore feeding pastures, resting areas and island masses for possible use as migratory aids; Eretmochelys - presence of acceptable nearshore feeding pastures and resting areas; Dermochelys - presence of acceptable offshore feeding areas and island masses for possible use as migratory aids.

(Acknowledgements)?
37 years

29 miles coastline

— since 1941 , Eisenhower — 1953 — Navy - complete control.
45 square mile — 6 miles SW of Maui

forgot since 1917 — Culebra — Puerto Rico (1,400 residents)

president of Hawaii Marine Research
Maury Morgenstein — (artifacts?)

1937
> 1927 sole cowboy for Angus MacPhee
the Maui Cattle rancher
Maui historian — Mrs. INEZ Ashdown

VC-1 Squadron

Concussions — Shock wave
chemical pollution
mechanical
— shrapnel?
Fragments of metal

neither Hawaii nor

5.8
6.7
4

Ahupu Bay — "rich physical cultural finds"

discharge of ordnance in waters

However
This prelim study represents a step
length of coastline

March 1976 HONOLULU

goats and sheep → IN the establishment

"unexploded ordnance in waters" (torpedos)

accelerated erosion

Cropping
Fluctuations Seasonal

145 cave deposits

10.9 miles long
6.4 miles wide
1,472 high

1830 - 1843
Penal Colony

1918 MacPhee lease 20 years, ht
extended to 1953

"Kahoolawe Ranch"

— Need Kaholawe folder —

SEA ~~MARINE~~ (Newspaper)

preservation worthy

TURTLES OF KAHOOLAWE Island

-A Preliminary Survey-

Introduction [Background]

→ FG Pubs

→

16.5%

÷46

7.6km

16.5

83.5%

To GO

Nesting season

38.4km

29 miles coastline = 46 km or ~4%

Historical (Aspects)

? — McAllister

— Mottelet Bryan Map

— Munro

Survey Methods

Nesting

Offshore

Adverse?

Aspects of the Activities of ~~Armed~~ military services

Human Usage

Results

[Future Needs?]

References — Caro Culebra

—

(Typed from photocopy of original manuscript written by Inez Ashdown, 1976. Copied precisely as written. Where corrections are necessary, they are contained in small brackets: [correction]. Original consists of eight pages of script.)

Ashdown - Place names on Kahoolawe (according to list sent; plus what was taught to me from 1908 at Ulupalakua and 1916 by Eben Parker Low, Louis von Tempski and Jack Aina and other paniolo. [)]

AHUPU BAY

The Ahupu Gulch comes from Pu'u Mo-iwi in Ahupu-nui, south of Puu Moa'ula and across the head of Kaukamoku gulch. Since these old stream beds flow full in heavy rains, my father built the four-hundred-thousand gallon cistern there at Ahupu. He hired Antone DeCambra and crew to make a "dam across the muliwai area at its mauka part, and some distance up the sides of the stream bed of Ahupu-makai. Too much sand was used, the cistern filled to overflowing, and the walls collapsed and went like drifting head stones to the sea. ["?]

That was when Papa had no more capital beyond our 40 000<u>00</u> already invested, so he asked Harry Baldwin, then Delegate to Congress (1922) (Replaced our beloved friend Prince Kuhio Kalanianaole), to buy us out and go ahead with what we had hoped to achieve. Instead, "Uncle" Harry bought in with us for one dollar and that was to legalize the deal and we became the Kahoolawe Ranch Company.

I had been attending Dana Hall in Wellesley, Massachusetts and came home to Ulupalakua to teach at the school there, in Aug 1922. Uncle Harry gave me a choice of horses at Grove Ranch and I chose a grey gelding he had bought from Charley Smith in Kaupo. I named the horse "Pardner" because Papa, Harry and I were pardners and they said Lorna and Errol von Tempski and I, (always ["]Blood Brothers" since our Spartan blood ceremony at Haleakala rance [Ranch] in 1915), would work the ranch when Papa & Harry retired.

We had a wili makani (windmill) between Ahupu cistern and our houses & warehouse at Kuhe'eia. (This is misspelled on maps. Uncle Eben Low named his one sampan for it, and he knew language. Kuhe'eia means like "where the fish run"; or, if you think another way, "the octopus stands firrm [firm or firmly] here and drives away the fish." He'e is to race or run; hee is octopus. Ku is to rise or to stand firmly. I'a is any kind [of] fish. [)]

There are 2 lae (Points) at Ahupu. The sea along this coast is called as [known as] Lua ka ulua with [which?], on the 2 points having 1 ko'a each, point to the deep sea fishing off here. Ka Lama Pt is to south side of Ahupu and the other Pt is Na Kohola (The whales) or Ke Ala Kohola because the whales going to "Hanaka naia" (as it now is spelled) is where the calves are born on that beautiful white sand beach and the Naia (Porpoise) guard the whales from sharks and other dangers. Ai'ai, son of Kuulakai of Hamoa, set up the Ko'a to Ku'ula on the island. Whale mothers also calve at other places such as the Kai Kane and Kai'o'o south of Puu Keha'a where the Sheraton Maui hotel is standing now at the hill's summit where stood the heiau etc because Puu Kekaa [Keha'a?] (Turning Point Hill) was the 'uhane lele of West Maui or the "head of Maui" composed of Mauna Kahala Wai, the mt range Blessed with Waters --. Maka 'Alae or Maka'alae, is just south of Lae Ka Lama [Kaho'olawe].

KuHeeia is Maui side of Ahupu and the 2 lae are Hilukea to East, and Hilu'ula to West. The little gulch to west of Heeia [Kuhe'eia] is Olohia so we also called that tiny bay as Kai Olohia. It means tranquil, or a place where you accept your trials in life and commune with God for acceptance & peace of mind. This is where that beautiful vine with its big white blossoms made the area fragrant and the 'a'a'a breeze made it cool and brought the tang of the limu and the sea. No one could tell us the name of that plant and I never have seen one like it since.

Where we had the 10 000 gal redwood tank in the next gulch on Maui side of Ku Heeia is Kaipapa'u Bay where Kanaloa (the god or man) lived and here was the old stone-paved well. Kealialalo rains come down to Heeia etc. Kaulana Bay is next to Maui side of Kaipapau and during rainy times the water from Kealia'ula and "Lua Makika" flowed & turned the sea red.

Lae Kukui is next, and Waaiki is mauka in Papakanui.

Hakioawa comes next and 3 rain catching places form a stream to this Bay. Here were the heiau, the house sites, Hale o Papa, and in one sense, the name means where the awa was prepared and offered by the Kahuna. Off here in the sea is Pohaku Ule, a phallic stone, where women prayed to have children & for ease during the pangs of childbirth. This stream & 3 upper areas come from below Moa'ulanui via Moa'ulaiki, and Makeha. Just beyond, and Hakioawa side of Lae o ka Ule is Kohe o Hala which was a womens place & has a legend associated with Pohaku Ule & the blessing of conception of the ova & sperm or Twin Waters of Life. Lae o ka Ule is the north Pt of Kanapou Bay and Lae Halona is the opposite (south) point. All along this coast is Ke Kai Alalakeiki or Weeping Child sea.

Halona area goes on to what now is spelled Lae o Kaka but we called Lae Koko because of 2 reasons. 1= Blood flows when childbirth occurs; and 2, when King Kalanopuu (Kalaniopu'u) did his bloody work at Kaupo etc he and his warriors also killed people and did other sins here.

Next comes Lae o Kuaka'iwa where the Iwa birds preceeding a coming storm, or leaving from there, made shadows (aka). The Iwa is associated with Pele's travels & her Hiiaka Family and the Iwa can take off only from cliffs. This is one point of Kamohia (Kamohio) Fishing Shrine & Bay, and the opposite (western) point is Puu Koa'e, for the birds of that name also associated with Pele & as "bird messengers of the gods." The Koa'e is the only bird which builds nests in Pele's crater cliffs on Hawaii, above the fires, but no smoke ever goes there because Pele and family love the Koa'e. Puu Moiwi is just mauka and that hill also has to do with the Iwa birds.

From Moiwi a stream flows in rain time into Waikahalulu Bay. It passes by Ka Hua and the heiau named Hale o Moo'alii or, if you say the name of Pele's shark king brother to mean he is Representative and in charge of his sisters & brothers, Kamohoalii. You can say this name as Ka moho 'alii, or as Kamo hoa lii, depending on what is meant, or so Alice Aki has told me, and she now lives with her daughter in Makawao. Alice Aki, her sister Lily Alameda (all of the Makehau family as is my other dear friend, Iolani Luahine, and Pelahi Paki, are my helpers for translations. Of course my dear friend Kawena Pukui whose father and my Papa were very close friends also, is the Authority on language. But she is so busy and all, that I seldom ask her very much these days. (:)

Next comes "Hana ka Naia" which, if you figure the Porpoise do work to protect whales, should be Hana o ka Naia. Actually, according to the old paniolo working with us, it should be Honu ka nae nae. This cave, point & Bay between Waikahalulu is where Ai'ai set up the ko'a and blessed this area for the Honu (turtles) to lay their eggs, and for kohola (whales) to be safe. Honu, the sacred turtle, protects the cave also. The paniolo knew an oli (chant) about Ka nae nae and it was a prayer or Kahea (call) to Ke Akua (God) and to 'aumakua (ancestral spirits) whose form seen is the Honu. There also is a certain hula, ("Hula Honu" done to this chant. One time Jack Aina chanted and danced it. He also made Errol "Poli" von Tempski the Kahu of the cave. Aina took Poli by moonlight and took him into the cave and blessed him to take care on (of) it and its priceless ancestral contents. Aina was old, did not trust anyone but Poli to guard this secret and all the secrets of Kahoolawe and Poli was to be, with his own sister Lorna "Hauki" and me, his adopted in blood sister Ke Aka, (The Shadow of my own Kahu Kina'u at Ulupalakua, and of Uncle Von and of my father. But also "Jackie, Keaka (") except among ourselves.)

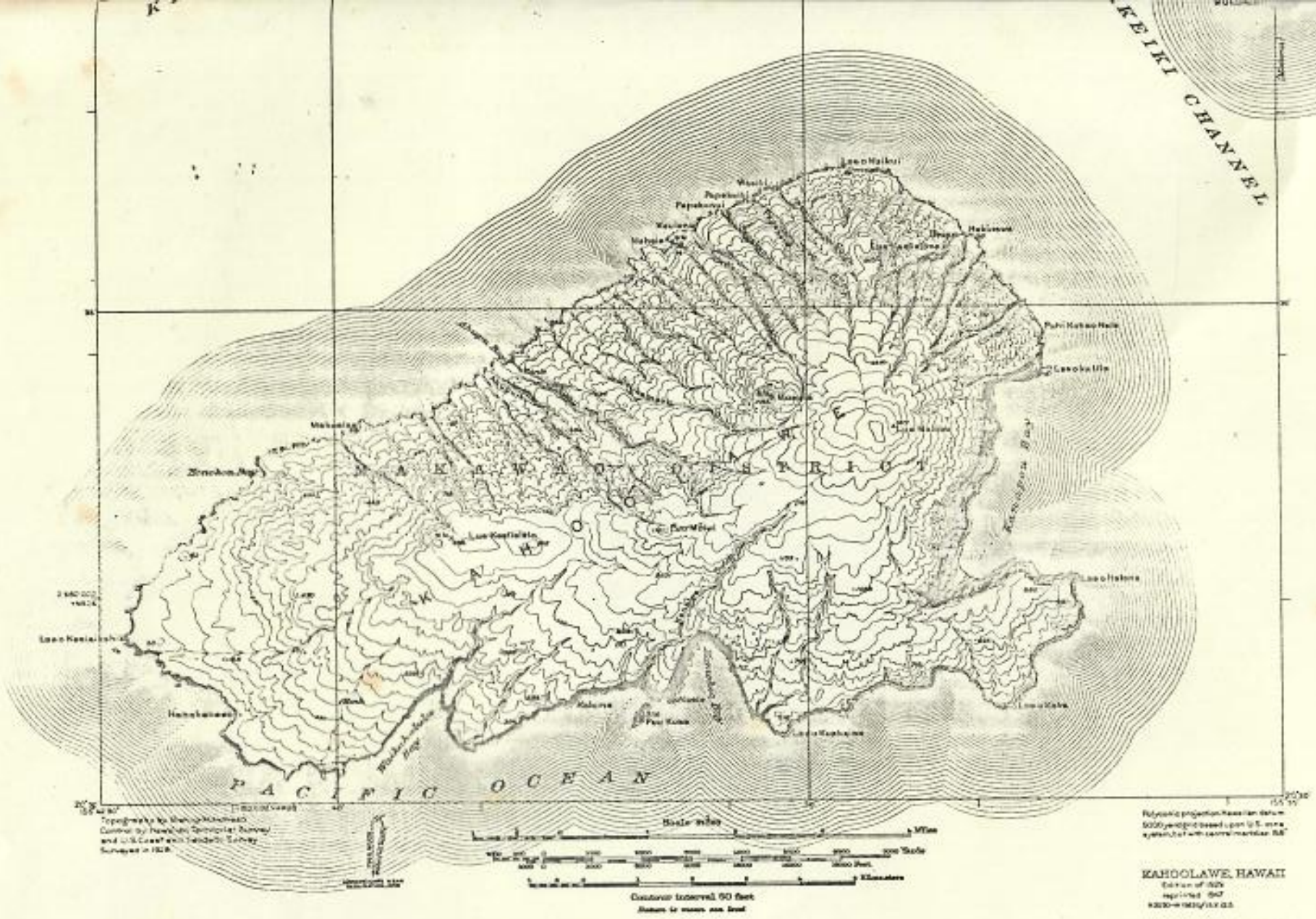
I was the Shadow Sister and child of our families and our trusted paniolo. There are many things the old folks asked us not to reveal, but now I give you all I am allowed to share, and hope it helps because I want Aina o Kanaloa to be loved and to be a sacred, protected Parkland, now, with proper Hawaiian Kahu to live there. And no more bombing. No "Las Vegas" -- This island is a place of purity and love of God as Life. (Kane) (Lono Sleep [?] & death (Kanaloa). It must not be desecrated any more. It must not be gathering drift Wood any more. It must be again the Ahu, the Altar to Ke Akua and His Kanawai Aloha or Love of God and love of His children and all He created. This is my own Kahea.

When Hawaiiloa came here or named the islands and used the navigational triangle from Lae Ke ala i Kahiki and the saa of that name between Kanaloa and Lana'i, we cannot know. That he was here, we do know.

To us, learning from paniolo, Lae Keala i Kahiki and Ke Kai o Keala i kahiki, and the cave of burial, all have to do with Kanaloa (God) and Death, Kahiki Ku the Horizon, and Kahiki Moe where the sun "dies" in the west, only to rise anew at Manaao, each new Dawn. So do the Ha, the living spirit or 'uhane, come from the Creator, return to Him, and rise like La the Sun, to new "day" (life) of Eternal Life in Na Moku Huna o Kane.

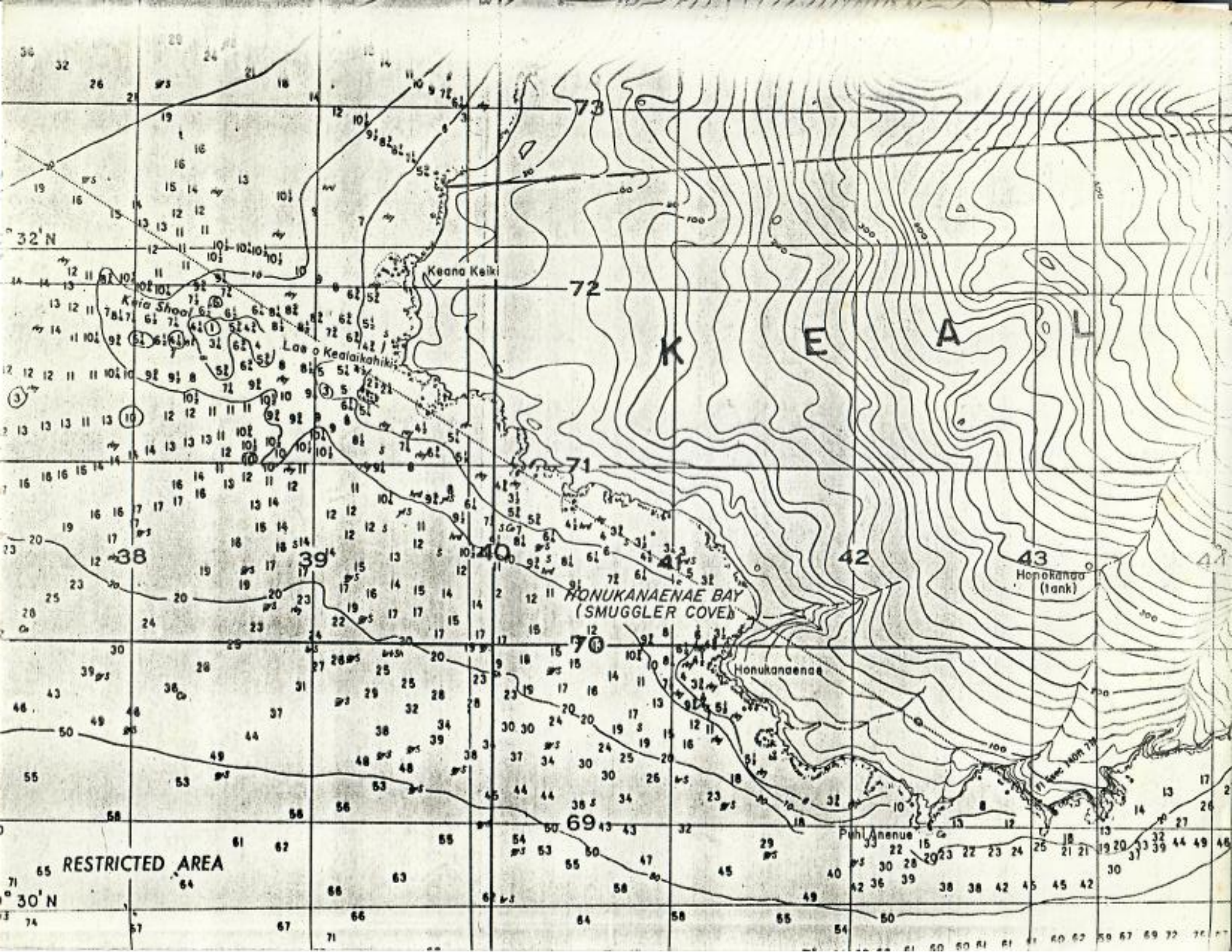
Ashdown - Part 1 - Kahoolawe place names to go with your [EH Bryan's] cards.

Pacific Scientific Information Center
BERNICE P. BISHOP MUSEUM
P. O. Box 6037, Honolulu, Hawaii 96818



KAHO'OLAWE

97


Keana Keiki
Kaia Shoal
Lae o Kealaikahiki
K E A L
HONUKANAENAE BAY
(SMUGGLER COVE)
Honukanaenae
Honokanaa
(tank)
Puhi Anenue
RESTRICTED AREA
32'N
30'N
38
39
40
41
42
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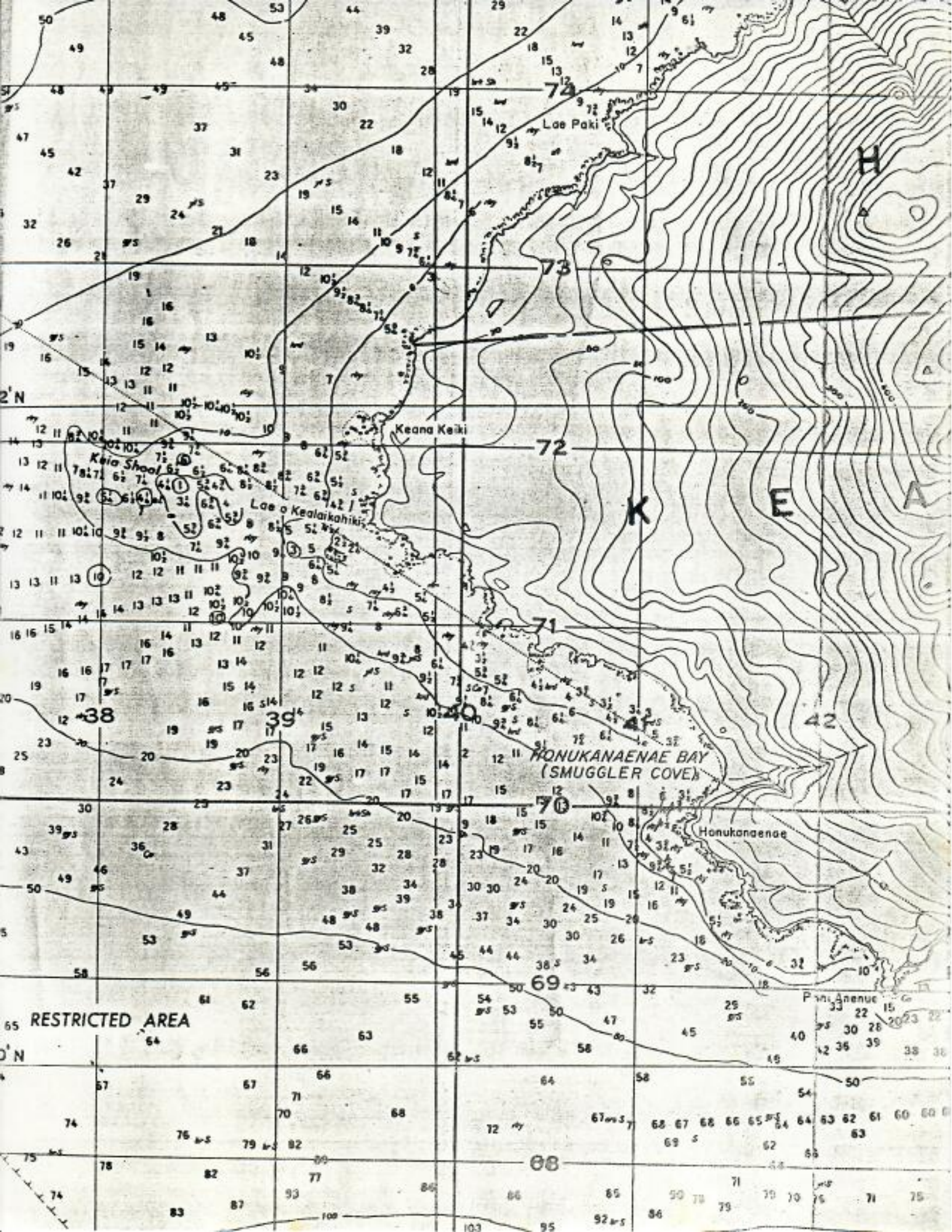
69
70
71
72
73


Lae Paki
Keana Keiki
Kaia Shoal
Lae o Kealaikahiki
HONUKANAENAE BAY
(SMUGGLER COVE)
Honukanaenae
RESTRICTED AREA
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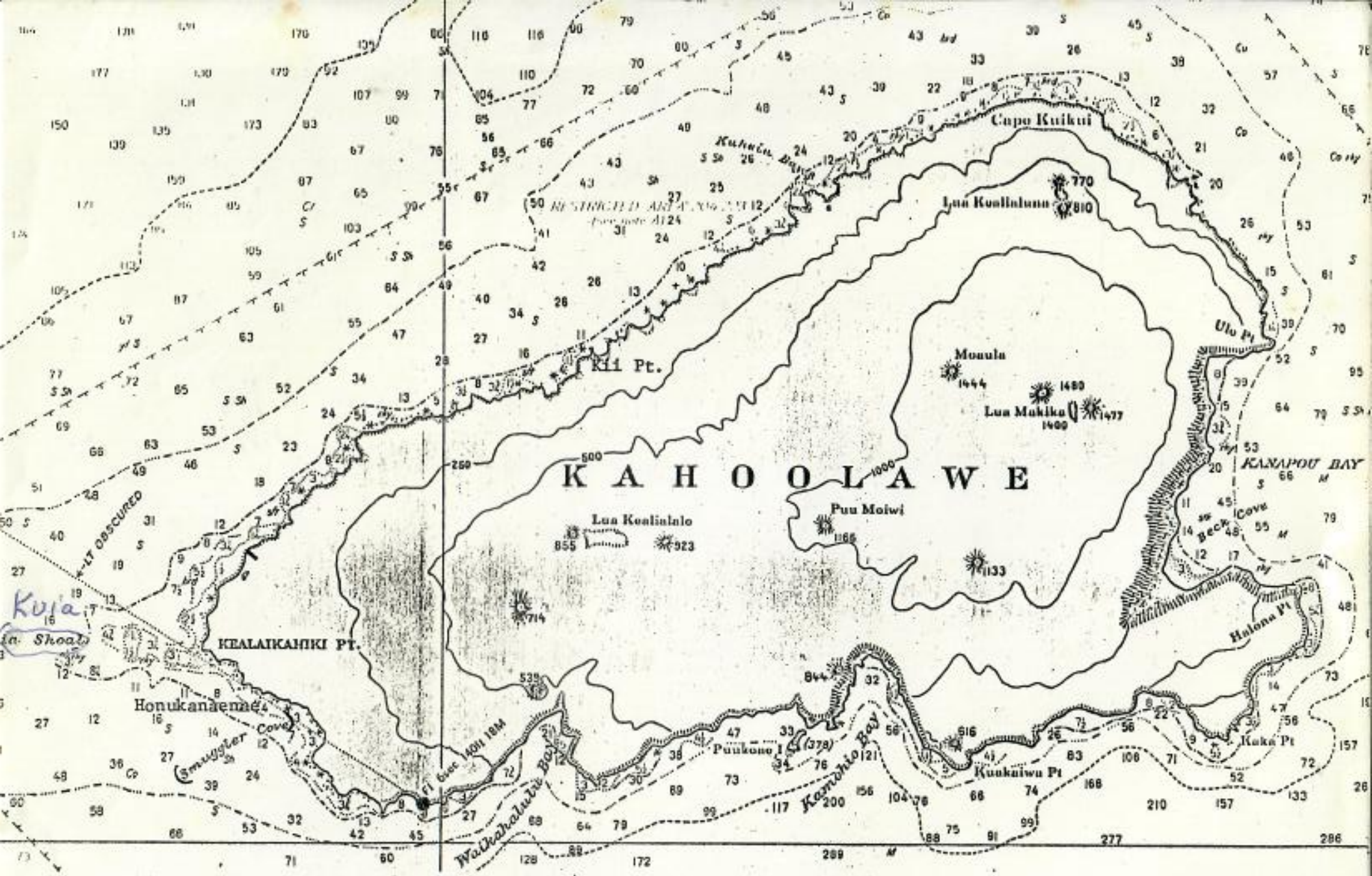


Figure 1. Kahoolawe Island. (from C. & G.S. 4130, soundings in fathoms)

DEPARTMENT OF THE NAVY
EXPLOSIVE ORDNANCE DISPOSAL
MOBILE UNIT ONE
BARBERS POINT, HAWAII 96862

40:MAC:ds
8027
Ser 211
14 NOV 1978

From: Commanding Officer, Explosive Ordnance Disposal Mobile Unit ONE
To: Mr. George H. BALAZS, University of Hawaii

Subj: Kahoolawe Island; underwater survey of

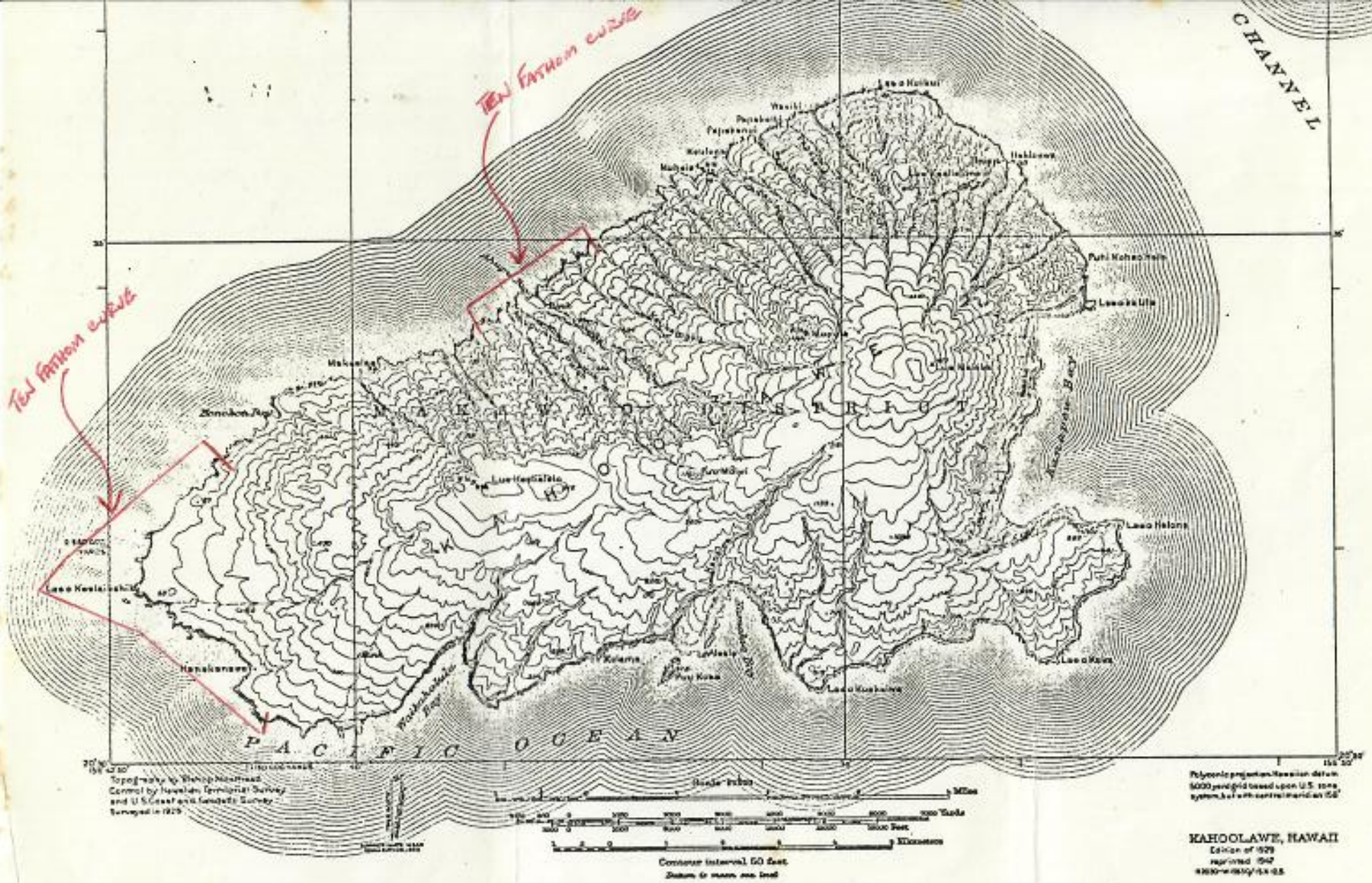
Encl: (1) Paragraph five from cover letter of Third Fleet report
(2) Chart indicating areas surveyed.

1. In response to your letter of 01 November 1978, enclosures (1) and (2) are submitted for your information.

C. C. GAGE, JR.

5. Marine life was abundant in the Smuggler Cove area. There was a lesser concentration of marine life in the Ahupu Bay area probably because of the lack of coral for feeding and protection, and the presence of silt "run-off" which greatly restricted visibility and had a "blanketing" effect on the bottom. A total of thirteen green turtles of various sizes were sighted and the continuous presence of porpoise schools were noted throughout the eight day period. Sporadic sightings of octopus and moray eels were also reported.

ENCLOSURE (1)



KAHO'OLAWE

97

ENCLOSURE (2)

'ELEPAIO

Journal of the
Hawaii Audubon Society

C. John Ralph, Editor
3467 Alani Drive
Honolulu, Hawaii 96822
Phone (808) 988-6921

2 September 1979

Dear George:

I find that I won't have time to rework this MS the way I would like to before I leave in 2 days. What I would suggest you do is revise it if you wish, then submit it the way you think it would be best for publication, and we'll go through the usual process. I think that would be the most efficient.

I look forward to seeing it. Carol's handling things while I'm gone.

Warmest regards,

Before sending letter check report statements vs. Pers. Com. section

EIS Kahoolawe

2. Existing Conditions

"out of context"

At present, the top of the island is largely bare. So far, wind action has been emphasized as an agent of erosion on Kahoolawe, but soil is also being removed by rain wash during occasional heavy rains.

effects of bombs?

II. WATER RESOURCES

The possiblility of developing a reliable source of potable water on Kahoolawe appears to be highly questionable in the light of existing knowledge of rainfall and ground water.

III. MARINE OCENAOGRAPHIC/BIOLOGICAL CHARACTERISTICS

A. Description of Shoreline, Nearshore Biology, and Nearshore Substrate

Several marine habitats around the Island of Kahoolawe are periodically subjected to environmental stresses resulting from land erosion and subsequent runoff. Although localized areas of siltation occur around the Island (with the possible exception of Puhi Anuenue and Lae Paki), the most heavily affected coastal area is the sector between Lae Paki and the Waaiki Gulch area.

The center of the impacted coastline is Ahupu Bay, which has the least inshore coral cover and the highest percentage of silt in the offshore sediments.

B. Marine Turtles

Three species of marine turtles are found in Hawaiian waters: the green turtle or honu (Chelonia mydas), the hawksbill turtle or 'ea (Eretmochelys imbricata) and the leatherback turtle (Dermochelys coriacea). The first of these was recently listed (Sept. 1978) as a threatened species under provision of the Endangered Species Act of 1973. The other two have been listed as Endangered Species since 1971. The green turtle and the hawksbill would be most likely to visit the waters off Kahoolawe.

inhabit

g.t. known to inhabit inshore waters

It is unlikely that either of the two species of sea turtle (green and hawksbill) known to breed in the Hawaiian Archipelago would find any of the silt beaches acceptable as nesting habitat.

but possible nesting could occur on white sand beaches at west end

C. Marine Mammals

1. Humpback Whale

The National Marine Fisheries Service (NMFS), was given responsibility for protection of the humpback whale under the Marine Mammal Protection Act of 1972, as well as under the Endangered Species Act of 1973.

The State of Hawaii has declared the humpback whale to be the official "State Marine Mammal". In addition, Maui County has designated December and January as "County Whale Reserve Months".

The whales' winter range is apparently restricted to the waters around the main islands from Hawaii to Kaula where they confine themselves to bank areas and coastal waters generally shallower than 100 fathoms. Varying estimates of the Hawaiian population range from 300 to approximately 600 whales. Humpbacks can be found in Hawaiian waters from November through May, however the peak months are January through April - their mating and calving season.

Surveys show that humpback whales consistently utilize the nearshore waters of Kahoolawe, with the exception of the precipitous south coast which lacks the requisite broad, shallow shelf. These data are substantiated by aerial surveys and observations by fishermen and other boaters.

The nearshore waters off Smuggler's Cove, including Kuia Shoal, the northwest coast from Kealaikahiki Point to Kuikui Point, and the Alalakeiki Channel area between Kuikui Point and Ule Point appear to be especially desirable humpback whale habitat bordering Kahoolawe Island. Groups of whales sighted in these areas often include calves, indicating their possible importance as nursery grounds.

Seals

The Hawaiian monk seal (Monachus schauinslandi) breeds only on Necker Island, French Frigate Shoals, Laysan Island, Lisianski Island, Pearl and Hermes Reef, and Midway and Kure Atolls off the northwestern (leeward) Hawaiian Islands.

Impacts

Absence of the Hawaiian monk seal on the island of Kahoolawe precludes adverse impacts to this species.

Mitigative Measures

No mitigative measures are required.

b. Turtles

Three species of marine turtles are found in the Hawaiian waters - the green turtle (Chelonia mydas), the hawksbill turtle (Eretmochelys imbricata) and the leather back (Dermochelys coriacea), the latter two species being less abundant. Of these three species found in the Hawaiian Islands, it is believed that most of the turtles sighted off of Kahoolawe are the green turtle (Chelonia mydas).

Impacts

Current information indicates that the green sea turtle does not nest on the beaches of Kahoolawe, so continued military activity will not have a significant adverse impact on the turtle.

Mitigative Measures

Since turtle nesting sites are not found on Kahoolawe, no mitigative measure is required.

Mice and Rats

There have been periods when the island's rodent population increased to the extent that is posed serious health and other problems.

Goats

Adverse impacts to the goat population are not anticipated by continued use of Kahoolawe for military training.

2. Marine

a. Mammals

Adverse impacts on the Humpback whale, dolphins, and seals by continued military use of Kahoolawe is not expected.

b. Turtles and Fish

Adverse impacts on the fish population by continued military use of Kahoolawe is not anticipated to be significant.

E. Restrictions

Continued military use of Kahoolawe Island for training will place restrictions on the island itself, the adjacent waters and the airspace above the island.

1. Land

Restriction placed on the island limits the use of the island to authorized personnel. This restriction is necessary due to types of training conducted on the island and due to hazards associated with unexploded ordnance.

2. Adjacent Waters

When military training activities are conducted, waters surrounding Kahoolawe are placed under restricted status to preclude nearshore activities by commercial or pleasure fishermen. This restriction is to insure protection of the fishermen. However, when the island is not used for training activities, the waters off of Kahoolawe are open to fishermen.

Bay and Puu Koae stations are located close to major gulches.

Coral coverage at the remaining 9 stations ranged from 80.5% at Kalapakea to 46.1% at Lae o Kaka. In general, these 9 stations are not closely associated with large gulches that may periodically flush quantities of fresh water and silt into the adjacent marine environment. The variation in coral coverage at these stations is probably the result of shoreline configurations and wave forces that impinge on the shorelines and adjacent marine biological communities.

Coral coverage at Kii (73.4%) is much higher than that at Ahupu Bay (29.7%) even though bottom types are similar and the stations are only one mile apart. Kii also has a 10% higher coral cover than the transect station at Kuia Shoal, which is not affected by siltation, but where the coral growth may be limited by wave surge.

Offshore sediments around Kahoolawe fall into two general groups: a clean, tan-gray sand extending from Lae O Kukui clockwise around the island to Lae Paki. This sector comprises approximately three-quarters of the coastal area. The one notable exception to this generalization is at Beck's Cove, where the sediment in shallow water is brown and silty and appears very similar to the material off the northwest coast. The northern transition zone starts in the vicinity of Lae o Kukui.

B. Marine Turtles

Three species of marine turtles are found in Hawaiian waters: the green turtle or honu (Chelonia mydas), the hawksbill turtle or 'ea (Eretmochelys imbricata) and the leatherback turtle (Dermochelys coriacea). The first of these was recently listed (Sept. 1978) as a threatened species under provision of the Endangered Species Act of 1973. The other two have been listed as Endangered Species since 1971. The green turtle and the hawksbill would be most likely to visit the waters off Kahoolawe.

With the exception of the leatherback, most sea turtles reside in shallow water areas adjacent to land masses. They utilize beaches for nesting, incubation and hatching of eggs, and movement of hatchlings to the ocean. Offshore they feed on algae.

1. Historical [2.III.B.1]

Numerous fishing shrines around the island indicate that the early Hawaiians used Kahoolawe for this purpose. McAllister reported the presence of turtleshell fish hooks and fragments of turtle shell at such a shrine at Kamohio Bay. This may have been obtained from a locally captured turtle, or imported from another island.

A former resident of Kahoolawe from 1916 to 1941, Mrs. Inez Ashdown, daughter of Angus MacPhee, notes that her father's cowboys reported seeing turtles nesting at Smuggler's Cove. In addition, she indicates that this area was known to the Hawaiians as Honukanaenae, which means "chant for turtles."

The Navy's Natural Resources Specialist has made no observations of turtles, nor were sightings made during a survey by the Hawaii Division of Fish and Game in 1972.

2. Current [2.III.B.2]

Archaeologists working on Kahoolawe in 1978 reported that small numbers of turtles were occasionally sighted, but as of November, 1978, no signs of nesting were seen.

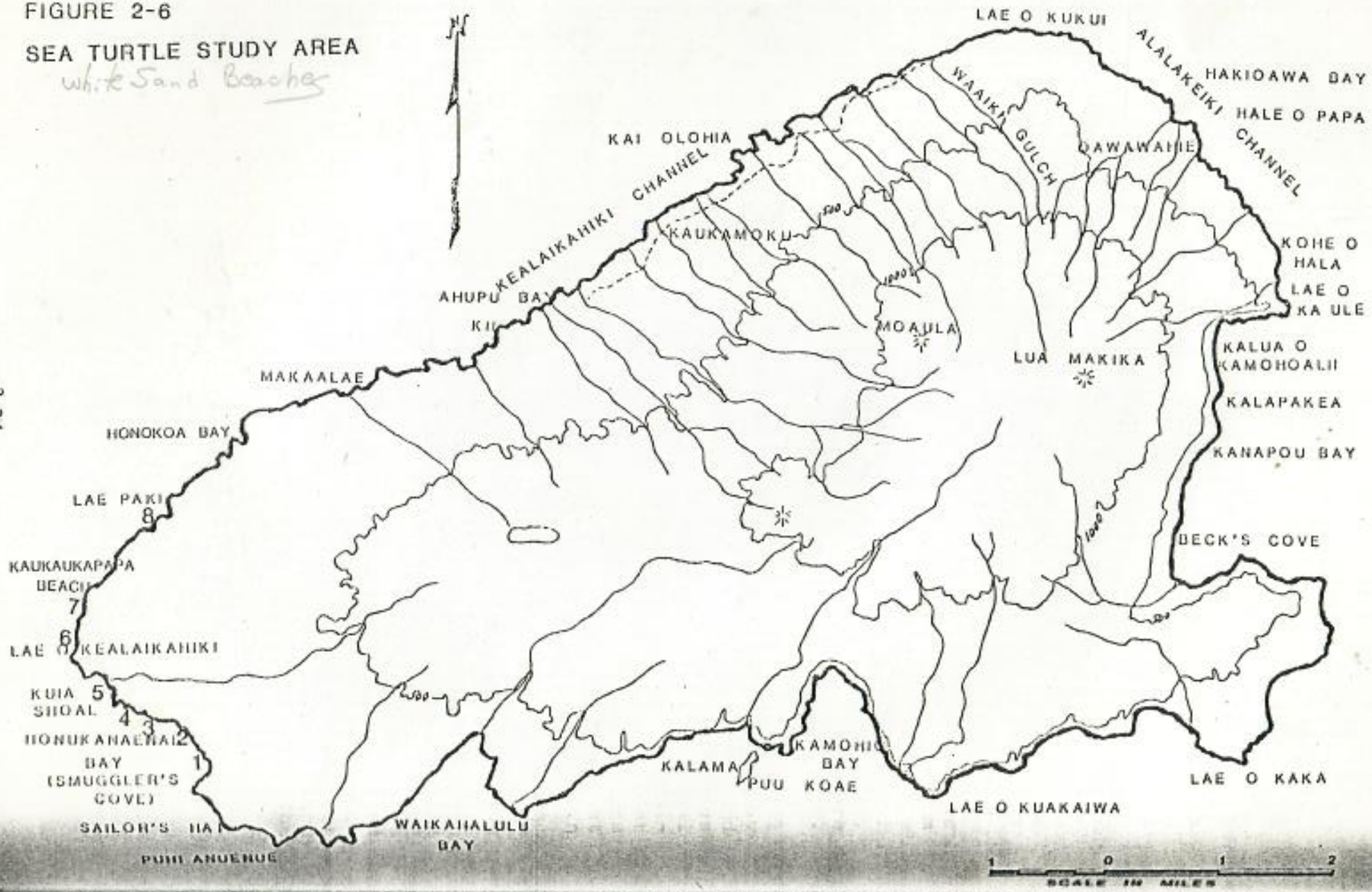
On June 23 and August 23-25, 1978, surveys of sea turtles were made by a member of the Hawaii Institute of Marine Biology. These surveys consisted of aerial reconnaissance, direct observations on land, underwater observations and collection of algae. The June 23 aerial survey covered most of the island's coastline and the three-day survey concentrated on the west end of the island [Figure 2-6].

In addition, Navy personnel filed turtle sighting report forms in conjunction with ordnance surveys conducted September 22-27, 1978 in Kahoolawe's northwestern, western and southern

FIGURE 2-6

SEA TURTLE STUDY AREA

white Sand Beaches



coastal waters. A total of 13 turtles were sighted, within the water, five within the study area. Figure 2-7 shows the location of these turtle sightings. The total breeding population of the green turtle today is around 1,500 individuals [2.III.B.3].

a. Nesting Habitat

Most of the white sand beaches are located on the western end of the island within the study area shown in Figure 2-6. Other beaches on the northwestern and eastern sides of the island appear to consist primarily of silt mixed with sand or rocks.

It is unlikely that either of the two species of sea turtle (green and hawksbill) known to breed in the Hawaiian Archipelago would find any of the silt beaches acceptable as nesting habitat.

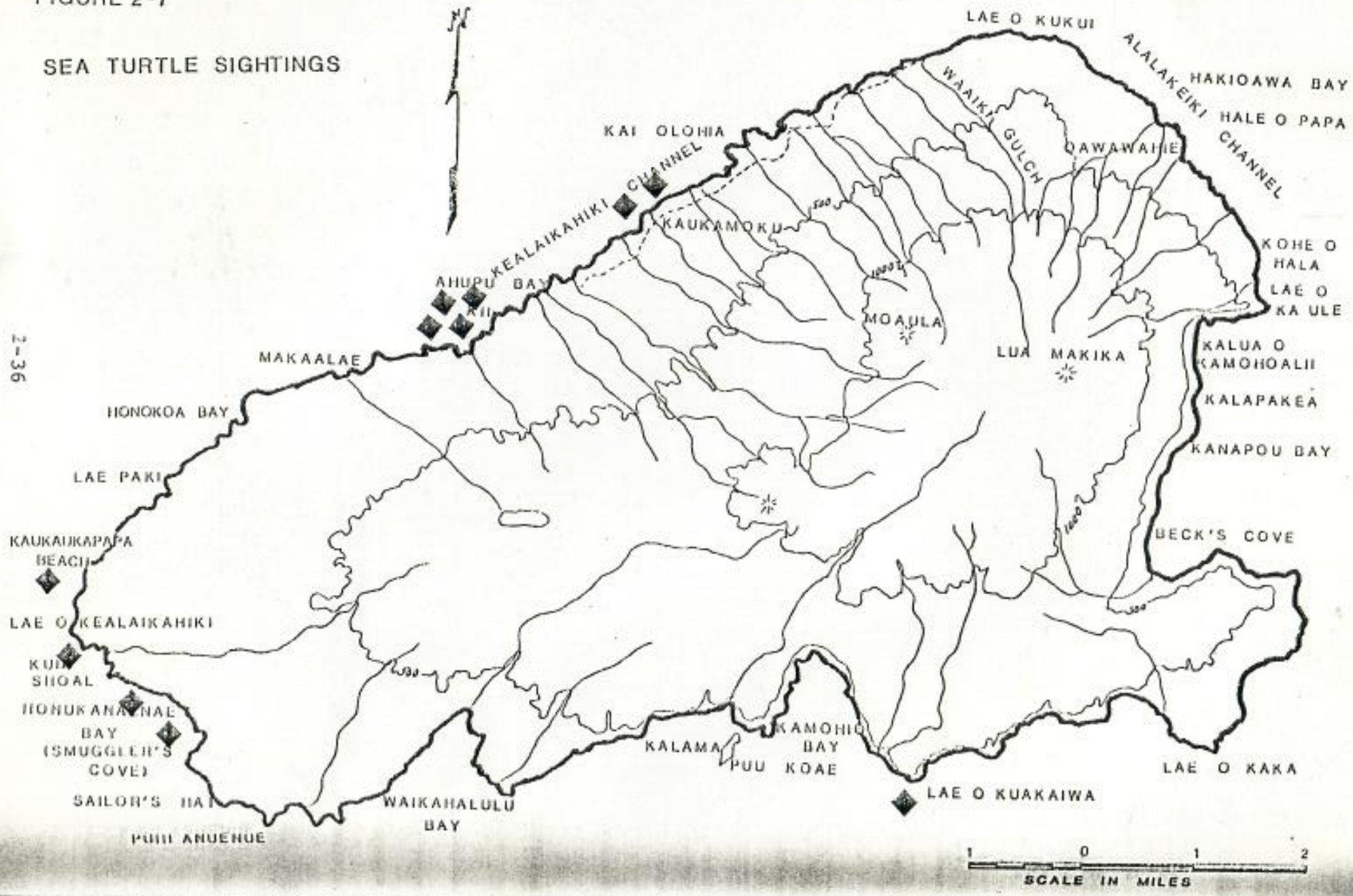
Close inspection of each of the eight sand beaches revealed no signs of nesting activity. Beaches 2, 4 and the northwestern portion of beach 1 contain rocks above the high tide line at the beachtop platform where nesting normally takes place. The other beaches (1, 3, 5, 6, 7, and 8) contain underground root systems of the kiawe tree and amounts of fine red soil. The suitability of these areas for turtle nesting is unknown.

b. Feeding Habitat

The two species of turtle which might utilize the waters off Kahoolawe have differing feeding habitat requirements. The green turtle primarily feeds on benthic algae, which was not found in either great abundance or diversity at any of the sites examined. The most abundant area of algal growth was between Kealaikahiki Point and Beach 6, where 11 different kinds of algae were collected. One of these (Amansia glomerata) falls within the favored genera (Pterocladia, Codium, Amansia and Ulva) of green turtles.

FIGURE 2-7

SEA TURTLE SIGHTINGS



Four turtles were observed during the surveys made from land, all green turtles. Two were located in the vicinity of Beach 3 and did not appear to be feeding. Two others were located between Kealaikahiki Point and Beach 6, and appeared to be feeding. Underwater observations confirmed that, as one was seen grazing on a thin mat of the alga Gelidium.

The hawksbill turtle is primarily carnivorous, utilizing various species of sponges. During the underwater observations, several kinds of rock-encrusting sponges were noted, but not in great abundance.

C. Marine Mammals

1. Humpback Whale

The Humpback Whale (Megaptera novaeagnliae) is found in almost all oceans from tropical waters to the edge of the polar ice pack in both hemispheres. It makes extensive seasonal migrations between high latitude summering grounds and low latitude wintering grounds.

Three geographically isolated populations are recognized, one in the North Pacific Ocean, another in the North Atlantic Ocean and a third in the Southern Hemisphere [2.III.C.3]. Each population is comprised of several almost entirely separate stocks.

The current estimated world population of humpback whales is 6,750 [2.III.C.4], with the North Pacific population estimated at 850 individuals [2.III.C.5]. Of these, approximately 500 spend the winter and spring months (November to May) around the main Hawaiian Islands.

a. Historical [2.III.C.6]

The original population size of the North Pacific Ocean was about 15,000, although how many of these wintered in Hawaii is unknown. We know only that the whales were present by the 1840's and 1850's, during the peak of North Pacific whaling. Examination of ancient Hawaiian legends, ceremonies, rituals, petroglyphs and even the

(1) Impacts

Absence of the Hawaiian monk seal on the island of Kahoolawe precludes adverse impacts to this species.

(2) Mitigative Measures

No mitigative measures are required.

b. Turtles

Three species of marine turtles are found in the Hawaiian waters - the green turtle (Chelonia mydas), the hawksbill turtle (Eretmochelys imbricata) and the leather back (Dermochelys coriacea), the latter two species being less abundant. Of these three species found in the Hawaiian Islands, it is believed that most of the turtles sighted off of Kahoolawe are the green turtle (Chelonia mydas).

A preliminary survey conducted by Balazs on June 23, 1978 and a three-day survey commencing on August 23, 1978, and a Navy survey in September 1978, showed most of the turtles found around Kahoolawe occurred around the northwestern portion of the island's water. All of the turtles were seen in nearshore waters, but at no times were turtles seen on the beaches or females nesting on the beach area. Four turtles were observed in August and 13 in September [4.II.D.2.b.13].

It is unlikely that either of the two species of sea turtles (green and hawksbill) known to breed in the Hawaiian archipelago would find any of the beaches of Kahoolawe suitable as a nesting habitat. This is primarily due to the silt and presence of rocks on the high tide line of the beach top platforms where nesting normally takes place. For those beaches that possess appropriate platforms, underground root systems of the kiawe trees

have established obstacles that would probably be discouraging to nesting attempts. [4.II.D.2.b.14].

Environmental conditions existing on Kahoolawe beaches basically are not suitable for a green sea turtle nesting habitat. Furthermore, benthic algae, the principal food of green turtles in Hawaii, were not found in great abundance nor diversity at any sites examined in 1978. Previous studies conducted at other nearshore areas in the major Hawaiian Islands indicate that significant aggregations of green turtles are usually only found in association with rich pastures of algae, particularly those composed of the green Bterocladia, Codium, Amansia and Ulva.

The environmental conditions observed off Kahoolawe are similar to that of the Polihua of the Island of Lanai. During the late 1800's and up to the 1920's numerous beaches in the major islands were known to host green turtles. Polihua Beach provided nesting sites for the turtles. Other sea turtle nesting sites included the Na Pali Coast off of Kauai, Mokapu and Lanikai on the Island of Oahu and several beaches on the Island of Molokai. Besides loss of the turtles from extensive exploitation, much of the former habitats have become unsuitable for nesting due to soil erosion and siltation, and growth of kiawe trees [4.II.D.2.b.15].

Based on existing information, the only significant nesting site remaining in the Hawaiian archipelago is French Frigate Shoals, a small atoll containing several low, sand islets and located approximately 480 miles northwest of Honolulu, Hawaii. The turtles that have migrated to French Frigate Shoals for reproduction have been partially protected because of the area's remoteness, hazardous reefs and the National Wildlife Refuge status. However, current data shows that the number of nesting females are low, and it is possible that the population is so low that disease or natural disaster could eliminate them.

(1) Impacts

Current information indicates that the green sea turtle does not nest on the beaches of Kahoolawe, so continued military activity will not have a significant adverse impact on the turtle.

(2) Mitigative Measures

Since turtle nesting sites are not found on Kahoolawe, no mitigative measure is required.

c. Fish

(1) Impacts

Adverse impacts on the fish population by continued military use of Kahoolawe is not anticipated to be significant. A fish survey conducted at 13 stations (Table 6, Appendix B) showed varying populations of fish and fish species and no endangered fish species were observed.

When the data was compared to other transects conducted by the State Division of Fish and Game, it indicated that the total number of species of fish observed at Kahoolawe compared favorably with other areas listed as Marine Life Conservation Districts (MLCD). There are more or comparable fish species observed around Kahoolawe (107 species) than Hanauma Bay, Oahu (82 species), Honolua Bay, Maui (82 species), and Kealakekua Bay, and Honaunau Bays, Hawaii (93 species), Halopoe to Manele Bay, Lanai (108 species) and Molokini Island (75 species).

Considering the range of number of fish species observed at each transect, Kahoolawe also compares favorably with other areas. The observed range

Mice and Rats

There have been periods when the island's rodent population increased to the extent that is posed serious health and other problems.

Goats

Adverse impacts to the goat population are not anticipated by continued use of Kahoolawe for military training.

2. Marine

a. Mammals

Adverse impacts on the Humpback whale, dolphins, and seals by continued military use of Kahoolawe is not expected. However, the following precautions are being taken:

1. Targets on Kahoolawe are confined to the central third of the island. Military aircraft using targets in the center portion of the island approach the island from the south and complete their training runs within the boundaries of the island itself. Therefore, they do not directly fly over areas frequented by Humpback whales and other marine mammals.

2. Operating procedures during emergency situations is to jettison any live or practive ordnance outside the 100-fathom area. Ordnance is jettisoned only during an emergency and released disarmed, not armed nor able to detonate on impact.

b. Turtles and Fish

Adverse impacts on the fish population by continued military use of Kahoolawe is not anticipated to be significant. Current

information indicates that the green sea turtle does not nest on the beaches of Kahoolawe, so continued military activity will not have a significant adverse impact on the turtle.

E. Restrictions

Continued military use of Kahoolawe Island for training will place restrictions on the island itself, the adjacent waters and the airspace above the island.

1. Land

Restriction placed on the island limits the use of the island to authorized personnel. This restriction is necessary due to types of training conducted on the island and due to hazards associated with unexploded ordnance.

2. Adjacent Waters

When military training activities are conducted, waters surrounding Kahoolawe are placed under restricted status to preclude nearshore activities by commercial or pleasure fishermen. This restriction is to insure protection of the fishermen. However, when the island is not used for training activities, the waters off of Kahoolawe are open to fishermen.

3. Airspace

The restricted area and the associated warning area for the Kahoolawe Island restricts free movement of air traffic above the island when the island is used for military training activities. To mitigate some of the potential air traffic congestion, the military attempts to avoid scheduling restricted and warning areas at the same time. Also, military aircraft are required to enter the restricted area from the south and exit the area to the south. And all military aircraft fly under instrument flight rules and under the direction of the FAA Air Traffic Control System.

F. Archaeological Sites

Recently conducted archaeological surface surveys indicate that the island is a prime source information

RESPONSE

A recent biological survey of the Island of Kahoolawe indicates that the Dark-rumped Petrel and the Newell's Shearwater and other rare seabird species do not occur on the island of Kahoolawe.

COMMENT

B.IV.4 Do the Hawaiian Monk Seals and/or Green Turtles live or nest on Kahoolawe, and what actions have been taken to protect them?

Also note radioactive question - answer does not address past

RESPONSE

The Hawaiian Monk Seal and the Green Turtle do not live or nest on the island of Kahoolawe. Additional information is found in Section 4 of this report.

Ian Lind A.F.S.C. ?

COMMENT

B.IV.5 The Humpback whale has not been addressed in the Environmental Impact Statement.

RESPONSE

The Humpback whale has been discussed in detail in Section 4 of this report.

V. Marine Resources

COMMENT

B.V.1 Does the Navy plan an extensive evaluation of the marine resources around the island, to be included in the EIS?

B.V.2 The lack of information on marine waters may result in the under valuation of the natural resources of the area.

B.V.3 Shore and reef habitats may be more hospitable now, since the Navy is using inland targets.

B.V.4 The EIS does not cover the marine restricted areas, such as location or size.

Barking Sands
expansion —
50 To 1000 Miles
of area

(Short)
letter to Profilet

Kahoolawe Island Bomb Target

Navy's private consultants
Navy biologists

Report
pers. comm.
courtesy
misused — misquoted - and left out sections
errors
erroneous
Deputy Chairman
IUCN/SSC M.T.G

materially altered content

evident to anyone reading
— taking time to read through
time nor energies to
correct and rewrite these
sections for you

deposit copies for historical record
unscientific
unscholarly fashion
unjustified manner
inaccuracies

— did not grant permission
— in error

DEPARTMENT OF THE NAVY
EXPLOSIVE ORDNANCE DISPOSAL
MOBILE UNIT ONE
BARBERS POINT, HAWAII 96862

40:MAC:ds
8027
Ser 208

7 NOV 1978

From: Commanding Officer, Explosive Ordnance Disposal Mobile Unit ONE
To: Commander Third Fleet
Via: Commander Explosive Ordnance Disposal Group ONE

Subj: Kahoolawe Island; underwater ordnance survey of

Ref: (a) COMTHIRDFLT 062023Z Jul 78

Encl: (1) Smuggler Cove Survey
(2) Ahupu Bay Survey
(3) Beck Cove Survey
(4) Southern Shore Area Survey
(5) Description of search method used (Smuggler Cove area)
(6) Description of search method used (Ahupu Bay area)
(7) Survey Statistics
(8) Photo bomb, MK 81, 250 lb
(9) Photo bomb, MK 82, 500 lb
(10) Photo rocket, 2.75"
(11) Photo bomb, MK 82, 500 lb
(12) Photo bomb, general purpose, 750 lb
(13) Photo projectile, 8 "

1. Reference (a) tasked Commander Explosive Ordnance Disposal Group ONE with conducting an underwater ordnance survey in the surrounding waters off Kahoolawe Island. Explosive Ordnance Disposal Mobile Unit ONE (EODMUONE) personnel with augmenting personnel aboard the designated support ship, the USS BEAUFORT (ATS-2) completed the survey during the period 22-28 September 1978.

2. The three areas to be surveyed were Smuggler Cove, Ahupu Bay and Beck Cove. However, only Smuggler Cove and Ahupu Bay were surveyed due to unsuitable wind and sea state conditions encountered in the third and smallest area, Beck Cove. The Beck Cove and Southern Shore survey reports of March 1976, enclosures (3) and (4), are provided for additional information.

3. The two areas surveyed, Ahupu Bay and Smuggler Cove, measured 625,000 square meters and 2,500,000 square meters respectively. Both areas were surveyed from the ten fathom curve to the low water mark. Enclosures (1) through (4) report the detailed survey findings, ordnance densities and ordnance types in each area.

4. The survey technique of laying 2500 meter "running jackstay" line with reference buoys every 250 meters, and employing the use of the MK IV Diver Propulsion Vehicles (DPV's) proved most successful and greatly reduced the predicted time required for the survey. Enclosure (5) and (6) describe the survey techniques employed and enclosure (7) provides a breakdown of the survey statistics.

5. Marine life was abundant in the Smuggler Cove area. There was a lesser concentration of marine life in the Ahupu Bay area probably because of the lack of coral for feeding and protection, and the presence of silt "run-off" which greatly restricted visibility and had a "blanketing" effect on the bottom. A total of thirteen green turtles of various sizes were sighted and the continuous presence of porpoise schools were noted throughout the eight day period. Sporadic sightings of octopus and moray eels were also reported.

6. Enclosures (8) through (13) are forwarded to provide a sample of the ordnance sighted and its condition.

C. C. GAGE, JR.

Kahoolawe Ceremony Is Refused

By Nadine W. Scott
Star-Bulletin Writer

The Navy yesterday denied Hawaiian activist Walter Ritte Jr. permission to conduct religious ceremonies on Kahoolawe this weekend.

Ritte said he wanted to take a group to the Island Saturday and to remain overnight for the Sunday services.

The Navy issued a statement saying: "After careful consideration, Mr. Ritte's request has been denied due to the inability of guaranteeing the safety of anyone on the Island because of the very real danger from the presence of unexploded ordnance."

RITTE, who twice invaded the Island in recent weeks to protest its use by the military for target practice and to demand its return to native Hawaiians, is already under orders to stay off Kahoolawe.

U.S. Magistrate Thomas Young ordered Ritte not to set foot again on the Island when he was arraigned Tuesday on a trespassing charge.

Ritte is to be tried without a jury before Federal Judge Samuel P. King on April 13.

The trespassing charge is a petty offense, punishable by a maximum of six months in jail and a $500 fine.

The United States attorney's office is backing up the Navy, saying that entry to Kahoolawe is prohibited by federal law and that violators will be fully prosecuted.

AND THE U.S. Coast Guard has pledged to remove boats that refuse to leave waters surrounding the Island.

Ritte, a 30-year-old part Hawaiian, first occupied the Island along with Dr. Emmett Aluli for two days early this month. They were removed by the Coast Guard Jan. 4 and warned not to return.

On Jan. 12, Ritte returned to the Island with his wife, sister and Aluli to stage another occupation ... this time for five days.

Ritte was arrested by the FBI on trespassing charges after the group returned, with the help of the Coast Guard, to Honolulu. The others were not arrested. Ritte is free on personal bond.

In its statement yesterday, the Navy said it is "actively cooperating" with the State historic preservation office in arranging for a survey in the near future of historic sites and significant archaeological areas that might exist on Kahoolawe.

Representatives from the Council of Hawaiian Organizations may be included in the survey.

In a separate release today the Navy said waters around Kahoolawe will "Remain closed as long as there is reason to believe further attempts to gain unlawful entry" to the Island may be made.

McDonald's Leads in TV Violence

Newhouse News Service

WASHINGTON — McDonald's Corp., the hamburger king, sponsored the most violence on television during a test week's programming in 1974, says a survey reported in the Journal of Communication.

The study also buttressed arguments that violence is particularly frequent during children's primary viewing hours.

Researchers at the University of Washington counted the number of violent episodes in TV programs, and noted the sponsors of the shows. Only 65 companies which sponsored at least an hour of air time during the week were listed.

"OVER the entire week of television programming on the three major networks, a total of 2,796 violent episodes were observed during 376.08 hours of monitoring, yielding 7.43 violent episodes per hour," wrote the researchers.

The researchers logged only the violence that was actually portrayed, not just threatened, and was directed at animate targets. Throwing a vase at a wall didn't count; throwing a vase at a person did. Simultaneous actions — like a firing squad firing 20 shots — counted only once.

McDonald's was logged for 68 violent episodes in 182.5 minutes, for an average of about 22 violent episodes per hour, the report said. Rounding out the top five were Golden Grain Macaroni Corp., Skippers Fish & Chips Inc., Great Western United Corp. and Chesebrough-Ponds Inc.

At the least violent end of the list — working backward — were Sperry-Hutchinson Co. with no incidents in 90 minutes of programming, followed by Patrick Cudahy Inc., Rapid American Corp., Block Drug Co. and Johnson & Sons.

THE RESEARCHERS said it is "unlikely" that these rankings would be the same from week to week.

"Television advertising time is typically sold according to the size of the 'market' — that is, the number of viewers, as estimated by Nielsen ratings of each program," they wrote.

"Most companies buy advertising time on the basis of these ratings alone, without regard to the content of the particular programs being sponsored. Thus, most companies fail to exercise their option of actively selecting a particular kind of program with which to associate their products."

The researchers also said there were more violent episodes on Saturday's television schedule — heavily viewed by children — than on other days during the week.

Looking at the schedule hour by hour, violent episodes were reported heaviest in programs between 4 and 6 p.m. and between 9 and 11 p.m. The report was conducted before networks adopted the "family viewing hour" concept designed to restrict violence and "adult themes" to programs aired after 9 p.m.

Hunter Tells of 1918 Ordeal

Some Rugged

By George Conitz

It was Monday, April 1, 1918, and the La Paloma, an 18-ton schooner, lay at anchor in Honolulu loaded with provisions and ready for a trip to the Island of Kahoolawe for a goat-hunting expedition.

I do not remember how I met Fred Looney, a Honolulu butcher, but we became acquainted and he told me that on the Island of Kahoolawe there were thousands of goats. He said he would give me $2 for each live goat I could bring into Honolulu. And he would put up the money necessary for an expedition to the Island.

He said that years ago an expedition had gone there and brought back lots of goats and that the trap and corral they used was still on the Island. He said it was an easy matter to get the goats; we could just round them up and run them into the corral.

I was very interested and looked up Mike Henry, a good friend of mine who had been my shipmate on our trip aboard the Boston from Seattle to Honolulu just a week earlier. (That stormy trip took 18 days instead of the usual eight days for such a crossing.)

Mike was interested, so we went to the Seaman's Hall and rounded up 10 more men.

We learned that a Hawaiian, Mr. Paiko, owned the schooner La Paloma and that he would be willing to rent it out for a couple of weeks. He wanted $100 and was willing to take the job as captain.

We made arrangements to leave on Monday, the first of April.

• • •

Conitz told of getting permission from Jimmy Crane, who he said leased the Island from the government, and of Looney arranging for supplies and getting the necessary customs clearance.

The La Paloma sailed at 4 p.m. and, after weathering one of the worst storms the captain had ever seen, the group found themselves in calm, windless seas off the coast of Maui the next morning.

One attempt to land at Lahaina was aborted when the weather again turned rough and during the second night at sea the vessel nearly ran aground on the tiny Molokini — between Maui and Kahoolawe. It was on the afternoon of Wednesday, April 3, before the weather settled and allowed a landing on Kahoolawe.

• • •

We made a landing about three o'clock in the afternoon on Kealaikahiki Point. Our supplies, including a barrel of water, were safely taken ashore and we put up our tent and rigged up a temporary camp for the night. Our clothes were wet and so we went to bed shivering and cold. The rain kept up all night.

We lost our anchor in landing and so we made a new anchor, using some pig iron from the ballast in the ship and wrapped it up with canvas.

We thought it might not hold, so Mr. Paiko and a sailor named John stayed on board. During the night the anchor came loose and the La Paloma floated out to sea — carrying only the two men. They steered it back to Honolulu.

• • •

A Star-Bulletin headline the following day chronicled the event: "Eleven hunters are marooned on Kahoolawe Isle."

The story told how the ship had blown to sea, was nearly swamped in a gale and, after its mast gave way, was carried by wind and currents to Oahu. The vessel sprung a leak and was nearly swamped before someone in Waianae telephoned Honolulu Harbor and a tug rescued the ship and towed it into port.

"The 11 hunters are still on Kahoolawe waiting for their ship to come in," the article said.

Meanwhile, Conitz and his companions were safe on the Island. They had their supplies and decided to make the best of it — doing what they set out to do.

Conitz described the Island in detail and told of finding a large shallow lake on the north side where the goats got their water.

* * *

But the lake was inaccessible to man because there was about 100 yards of mud and brush around the lake.

On Friday, April 5, we made arrangements for four men to go to the east end of the Island and camp there during the night. The next morning they would scatter out and drive the goats as far as the canyon, where they would be met by five more men who would slip in behind the goats after they crossed the canyon and bring them down to the corral. Because the men on the east side of the canyon would not be able to come through the canyon, they would have to go around to the north and would not be in the final drive.

Two men remained at the camp.

Mike, Dutch, Gust and I started for the east end after packing cold food for a day's supply. Each of us had a small bottle of water, although we depended mostly on rain water.

* * *

Conitz told of reaching a high point on the east end of Kahoolawe where the men had a good view of the Island as well as Lanai, Molokai, Maui, Molokini and the Big Island. They had no bedding and slept on the hard ground. Then at the crack of dawn they were spreading out to comb the Island in a westerly direction.

* * *

In a half hour we began to find goats — they were towards the south side of the Island and along the canyon. On the south side of Kahoolawe there was a drop-off of about 300 feet.

As we came closer to the canyon, we could see goats by the thousands. On seeing us, they ran along the edge of the cliff and into the canyon.

They were making their way down the canyon to the west but they were packed so thick that all of them could not get down by the time we caught up with them. In their hurry to get down, some were crowded off to the south and fell into the ocean.

From the edge of the cliff, we saw them fall into the water below. As we came up to the edge of the canyon, we saw a sight that will live forever in our memory . . . about 3,000 goats climbing up the west side of the canyon. It was 300 feet almost straight up. A man would not be able to climb more than 10 feet.

The goats were moving in single file like a bunch of cattle on a cattle trail in North Dakota. There were three such files and more than 3,000 goats.

* * *

Conitz said the men spent the next three weeks making such drives from the east end to the canyon, with the other men taking over from there, herding the animals into the pens.

On April 11, the Kukui, a government inspection boat, stopped to investigate and took inventory of the hunters' equipment and supplies.

* * *

We gave them two goats. They were on their way to Hilo so we sent along a message asking that a boat be sent to pick up our goats.

* * *

Conitz recalled that it was the Hana Maru that showed up a few days later to pick up both men and some 480 goats. Back in Honolulu, the men rushed to the Alexander Young Hotel to clean up and get a decent meal — their first since April 1. They settled up with Looney, and Conitz got a job on the transport Thomas, sailing for Seattle.

As he left the hotel, he spotted a Honolulu Star-Bulletin lying on a chair with a story headlined: "ELEVEN HUNTERS ARE MAROONED ON KAHOOLAWE ISLE."

He took it with him to North Dakota, a souvenir of his visit to Hawaii and his days on Kahoolawe. It is that clipping, pictured here, that prompted Conitz to offer his story to this newspaper — at a time when the Island once again is in the news.

Days on Kahoolawe

KAHOOLAWE COWBOYS—This group of cowboys, headed by foreman Jack Aina (center with lasso) worked on Kahoolawe, helping Angus MacPhee round up some 12,000 goats and sheep. A year before MacPhee started his operation, a small group of men—including North Dakotan George Conitz—spent a week on Kahoolawe and captured nearly 500 goats for sale in Honolulu.

In 1919, Wyoming rancher Angus MacPhee left his job as a manager of Ulupalakua Ranch on Maui and moved to Kahoolawe. He had obtained a lease to that uninhabited Island, with an agreement that he would remove all of the goats and sheep that roamed wild, eating all of the ground cover and leaving the Island barren and blowing away in periodic dust storms.

Within two years, MacPhee's 12 cowboys, under the direction of foreman Jack Aina, managed to slaughter or capture and sell some 12,000 of the animals. They left only a few that found refuge in caves and cliffs.

Though more successful, theirs was not the first such hunting expedition on that desolate Island.

In the accompanying article, George Conitz of New Salem, N.D., tells of a hunting trip to Kahoolawe in 1918. He was one of the hunters. The expedition was confirmed from microfilm files of Star-Bulletin newspapers of that time.

Since Conitz' story was written considerably longer than space would permit, it was edited by Keith Haugen, Star-Bulletin state editor, who visited Kahoolawe in 1969 and 1970 while serving as the paper's Maui bureau chief.

George Conitz in 1918

HONOLULU STAR-BULLETIN

ELEVEN HUNTERS ARE MAROONED ON KAHOOLAWE ISLE

Marooned on Kahoolawe Island and dependent on some passing ship to rescue them from their fate, is the predicament of eleven Honolulu men. Their ship was blown to sea, was nearly swamped in a heavy gale, and has not returned to rescue the men.

The eleven shipwrecked hunters set out for the island last week aboard [illegible] Paloma. The party was landed on Kahoolawe, but during the night the yacht's anchors gave way and the little craft headed for the open sea. There were several of the party aboard. They headed the La Paloma toward Maui, but the mast gave way, and after being driven about for hours, the boat beat steerage way and scooted toward Oahu. After beating up and down leeward Oahu for hours, the La Paloma sprung a leak and was nearly swamped. Finally telephone calls from Waianae sent a tug rushing up from Honolulu harbor, and the La Paloma was rescued and brought to port. She is now on the drydock.

This is the second time the La Paloma's decks have been under water in a month, the former time having run aground on the reefs at Waikiki while returning from a turtle hunt. And as far as local mariners know, the eleven hunters are still on Kahoolawe, waiting for their ship to come in.

Honolulu Stock Exchange

Thursday, April 11.

MERCANTILE—
Alexander & Bald. ltd ....
C. Brewer & Co. .....

LA PALOMA HELD A DAY FOR SCRUTINY

Yacht Is First Vessel Given Close Examination Under New Port Rule

In keeping with the inter-island shipping regulations last week by the customs and navy officials, after the sailing of the motor ship Pele for Kailua with an enemy alien aboard, the two-masted yacht La Paloma was held in port for nearly a day after the time she had intended to depart and her crew of thirteen men and her cargo carefully examined.

This was said to be because of the following of the regulations which now makes it necessary for all inland vessels and all persons aboard to submit the closest of scrutiny by customs and navy inspectors before being allowed to clear from Honolulu.

Because of the fact Thomas Keaven, who was [illegible] charged with being [illegible] the Islands as warfare [illegible] aboard ship [illegible] Paloma, it gave [illegible] this was cause [illegible] examination. Keaven's brother, Harry, is also one of the thirteen men in crew.

The La Paloma which is now owned Captain Paike, a Hawaiian, is to to Kahoolawe Island for goats, according to the information the owner [illegible] the navy and customs men. [illegible] vessel was permitted to sail on

1918 CLIPPINGS—These clippings, from the writer's personal collection, tell about the hunters marooned on Kahoolawe and the fate of the ship that took them there.