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97 SEP -8 A8:04

OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
September 5, 1997

AQUACULTURE DEVELOPMENT PROGRAM  
AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND ENVIRONMENTAL AFFAIRS  
CONSERVATION AND RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT  
WATER RESOURCE MANAGEMENT

Mr. Gary Gill, Director  
Office of Environmental Quality Control  
236 S. Beretania St., Ste. 702  
Honolulu, HI 96813

Dear Mr. Gill:

SUBJECT: Negative Declaration for Wildlife Habitat Improvement Project: Kekaha Game Management Area, TMK: 1-2-02, Kauai

The State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife, has reviewed the comments received during the 30-day public comment period which began on OEQC Bulletin Publication date June 23, 1997. The agency has determined that this project will not have significant environmental effect and has issued a negative declaration. Please publish this notice in the September 23, 1997 OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the final EA.

Please contact Mr. Thomas Ka'iakapu at (808) 274-3433 if you have any questions.

Sincerely,

MICHAEL G. BUCK  
Administrator

Enclosures

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1997-09-23-KA-PEA-Kekaha Wildlife  
Habitat Improvement

SEP 23 1997

FINAL ENVIRONMENTAL ASSESSMENT  
WILDLIFE HABITAT IMPROVEMENT PROJECT  
KEKAHA GAME MANAGEMENT AREA, KAUAI

Submitted in Accordance with  
Requirements for Chapter 343, HRS

Department of Land and Natural Resources  
Division of Forestry and Wildlife  
Kauai District

September, 1997

FINAL ENVIRONMENTAL ASSESSMENT

Proposed Action: Wildlife Habitat Improvement Project  
Applicant: Department of Land and Natural Resources  
Division of Forestry and Wildlife, Kauai District  
Location: Waimea, Kauai  
TMK: 1-2-02  
Determination: EIS REQUIRED \_\_\_\_\_ NOT REQUIRED X  
Approving Agency: Board of Land and Natural Resources

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Agencies and Organizations Consulted or Contacted  
in Preparing This Assessment

Federal: U.S. Fish and Wildlife Service, USDI  
Natural Resources Conservation Service, USDA  
State: Department of Land and Natural Resources  
Division of Forestry and Wildlife  
Division of Land Management  
Division of Aquatic Resources  
Division of State Parks  
Division of Historic Preservation  
Department of Hawaiian Home Lands  
Others: Amfac Sugar Kauai, Inc.  
Hawaii Audobon Society  
Garden Island Bird Dog Club  
Kauai Aquatic Life and Wildlife Advisory Committee  
Kauai Hunting Association  
National Tropical Botanical Gardens  
West Kauai Soil and Water Conservation District

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## SECTION I

### DESCRIPTION OF THE PROPOSED ACTION

A. Technical characteristics: The purpose of this project is to improve degraded game bird habitat on portions of the Kekaha Game Management Area. After many decades of rangeland cattle grazing, the area has been invaded by a number of noxious non-native weeds resulting in a degraded habitat for game birds. The Kauai Division of Forestry and Wildlife which manages the area for sustained-yield public hunting proposes to control the invasive weeds by mechanically clearing weedgrowth and establishing 400 acres of Pensacola bahia grass (*Paspalum notatum*) and Bermuda grass (*Cynodon dactylon*) mixture. The grass mixture will be planted in strips of 60-65 feet wide along the contour of the terrain leaving similar width untreated areas between the strips. This project will be conducted in 100 acre increments within a four year period. Planting strips would be established only on certain ridges within the Kekaha GMA that have level to gentle sloping ground, between zero and twelve percent slope, but averaging six percent (See Appendix A and B). Areas of high weed infestation will have the greatest priority for bahia and bermuda grass establishment.

Development will be conducted in three stages. First, the areas selected will be flagged and cleared of brush with a medium-sized dozer in strips. The removed vegetation will be piled on the down slope of each strip to create game bird nesting cover. Second, the ground will be prepared with a disc-harrow for grass planting. Harrowing may only be required where vegetation is dense. Third, the seed mixture will be sown using a tractor-mounted seeder and covered using a drag mounted behind the wheel-tractor. Planting will be done prior to the fall and winter months to take advantage of seasonal rainfall for good seed germination.

Pensacola bahia and bermuda grass are hardy, low growing, perennial grass species which have been shown to reduce the spread of undesirable weeds such as mollasses grass (*Melinis minutiflora*) and bushy beard grass (*Schizachyrium condensatum*) from becoming re-established at several experimental plots within Kekaha GMA. Because of their hardy characteristics, they improve and stabilizes the habitat by keeping undesirable weed species out. Pheasant, francolin and quail will benefit from the improved habitat. Another broadleaf variety of bahia naturally occurs in the project area, but does not apparently produce viable seed. The pensacola variety is approved for planting by the U.S. Department of Agriculture in Hawaii, and commercial seed is available. Bermuda grass naturally occurs in Kekaha GMA and is considered an indigenous specie.

B. Socio-Economic considerations: The primary economic benefit will be the initial clearing and disc harrowing of the sites. A contract must be developed and awarded by State procurement procedures to a qualified, licensed heavy-equipment contractor. This alone will provide jobs to the community. The cost of clearing, disc harrowing and planting the strips is estimated to be three-hundred fifty dollars per acre, or \$140,000 for 400 acres.

Long term economic factors may not be substantial, however, periodic mowing may be necessary until the grass becomes fully established. Contracting out to a qualified mower operator may be necessary at times.

Improved game bird habitat will mean an increased game bird population. An increased game bird population will in turn, increase hunter participation. Benefits will accrue to local businesses in the form of the hunter's dollar spent on fuel, food, hunting clothing, firearms, ammunition, hunting dogs, veterinary expenses, and etc.

Another benefit will be the added protection of thousands of acres of State Forest Reserve from potential range fires should they occur in the area. Because sugar cane is grown nearby on Amfac Sugar lands, a range fire resulting from cane burning is always a potential threat. Because the grass strips will be on elevation contours they will act as multiple "fire breaks" and will lessen the likelihood of catastrophic range fires. The low-growing characteristics of both grass species will slow down the velocity of a fire and may prevent it from "jumping" the grass strips. This will allow firefighters more time to stop a fire from spreading into the upper elevations of the Puu Ka Pele and Na Pali-Kona Forest Reserves.

C. Environmental characteristics: The project area is Hawaiian Homes Commission land, leased to Amfac Sugar Kauai, Inc. by the DLNR for range cattle pasturage. Its land use zoning is designated for agriculture. The Division of Forestry and Wildlife manages the 15,000 acre area for public hunting as Kekaha Game Management Area through a cooperative agreement with the lessee (Amfac Sugar Kauai, Inc.). There are presently 300-400 head of feral cattle on the rangeland under the control of Amfac Sugar.

Topography: The Kekaha GMA consist of gently sloping ridges and steep valleys and gulleys. The elevation ranges between 50 to 2,750 feet. Soils are moderately poor, falling within the Makaweli-Wahiawa-Niu silty clay loam series. Rainfall is low, averaging 27.4 inches annually.

Flora: Vegetation within the project area supports a highly degraded lowland dry shrub plant community. It has been highly altered from its native condition through past range fires, cattle overgrazing and noxious weed invasion. Dominant plants are lantana (Lantana camara), silk oak (Grevillea robusta), molasses grass (Melinis minutiflora), strawberry guava (Psidium cattleianum), koa haole (Leucaena leucocephala), false vervain (Stachytarpheta cayennensis), yellow foxtail (Setaria gracilis), pitted beardgrass (Andropogon pertusus), yellow guava (Psidium guajava), and pilipiliula (Chrysopogon aciculatis). Some of the non-native species mentioned above are declared noxious by the State Department of Agriculture. Six other pestiferous species spreading rapidly in the project area include: bushy beard grass (Schizachyrium condensatum), black wattle (Acacia decurrens), sacramento bur (Triumfetta semitriloba), sour grass (Tricachne insularis), hyptis (Hyptis pectinata) and thatching grass (Hyparrhenia rufa). A list of known plant species found on the proposed planting areas are in Appendix C.

Some common native species found on the ridges are: aalii (Dodonea eriocarpa), pukiawe (Styphelia tameiameia), ilima (Sida fallax), kokoolau (Bidens sandwicensis) and naupaka kuahiwi (Scaevola gaudichaudii). Native species predominantly found on steep slopes and valley bottoms are: alahee (Canthium odoratum), akia (Wilkestromia uva ursi), hawaiian koa (Acacia koa), ohia lehua (Metrosideros polymorpha), wiliwili (Erythrina sandwicensis) and iliahi (Santalum ellipticum) and will not be affected by the proposed project. There are no known threatened or endangered plant species in the proposed project area.

**Fauna:** There are 23 known non-native bird species that occupy the project area. Nine are introduced game birds: These include the ring-necked pheasants (Phasianus colchicus), erckel's francolin (Francolinus erckelli), black francolin (Francolinus francolinus), grey francolin (Francolinus pondicerianus), chukar partridge (Alectoris chukar), spotted dove (Streptopelia chinensis), zebra dove (Geopelia striata), california quail (Callipepla californica) and japanese quail (Coturnix japonica). Other non-native birds found there are the barn owl (Tyto alba), japanese white-eye (Zosterops japonicus), common myna (Acridotheres tristis), northern mockingbird (Mimus polyglottus), house sparrow (Passer domesticus), house finch (Carpodacus mexicanus), chestnut mannikin (Lonchura malacca), nutmeg mannikin (Lonchura punctulata), northern cardinal (Cardinalis cardinalis), red crested cardinal (Paroaria coronata), cattle egret (Bulbulcus ibis), white-rumped shama (Copsychus malabaricus), hwamei (Garrulax canorus), japanese bush warbler (Cettia diphone) and jungle fowl (Gallus gallus).

Only two indigenous species, the kolea or American golden plover (Pluvialis fulva) and the pue'o or hawaiian short-eared owl (Asio flammeus) are commonly found on the project area. Two nene (Branta sandvicensis) have been reported in 1995 at a couple locations within the GMA, however these banded birds were from a recent captive release project in Nualolo valley on the Na Pali Coast, Kauai. Since then, no nene have been reported from the area.

Nine exotic mammals occur there, the feral cat (Felis catus), feral dog (Canis familiaris), feral pig (Sus scrofa), black-tailed deer (Odocoileus hemionus colombianus), cattle (Bos taurus), house mouse (Mus musculus), black rat (Rattus rattus), brown rat (Rattus norvegicus) and polynesian rat (Rattus exulans).

The only native terrestrial mammal in Hawaii is the Hawaiian hoary bat (Lasiurus cinereus semotus) which is known exist in good numbers on western Kauai.

Amphibians and reptiles known to exist within the area are the giant neotropical toad (Bufo marinus), tree gecko (Hemiphyllodactylus typus typus), mourning gecko (Lepidodactylus lugubris), metallic skink (Leiolopisma metallicum) and snake-eyed skink (Alblepharus boutoni poecilopleurus) all of which are non-native in origin.

There are no known or recognized archaeological or historic sites within the project area where clearing and planting is to be accomplished. (See attached; "Archaeological Survey" by Martha Yent, DLNR, Historic Preservation Division. February 1997).

In 1978, the Division of Fish and Game (presently DOFAW) completed an environmental impact statement on the same project area within Kekaha GMA. The project proposed to control the overgrowth of noxious shrubs: Lantana and silky oak on five hundred acres of the GMA with the use of aerially applied herbicides. The final EIS was reviewed and approved. It reported no endangered plant or animal species nor archeological or historical sites in the project area. The area was subsequently cleared of silky oak trees in 1979 by a contracted commercial operator. A negative declaration of impact was approved for that project.

In 1996, the U. S. Fish and Wildlife Service conducted a rare and endangered species survey within the Kekaha GMA for the Hawaii Army National Guard as part of a environmental assessment to allow infantry training excersises there. The draft interim report indicated no rare endangered plant species were found. However, the hawaiian hoary bat was seen in the Puu Opae section of the GMA.

In the 1950's-60's, range cattle numbers were high. At the peak of Kekaha Sugar Company's cattle operations, there were an estimated twelve hundred head of cattle within the Kekaha GMA. Non-native species such as molasses grass, lantana and silk oak were not considered to be problems then. However, the opposite is true today along with a long list of other invasive species already established in the area, because cattle numbers have declined, and less palatable grasses have moved into the area.

## SECTION II

### DESCRIPTION OF THE AFFECTED ENVIROMENT

This section is covered under SECTION I (C) above and SECTION III (B) below.

## SECTION III

### IMPACTS AND ALTERNATIVES TO THE PROPOSED ACTION

Impacts of the project that should be considered are: (A) Effects on wildlife and range cattle; (B) Effects on habitat and; (C) Effects on public hunting.

#### A. Effects on wildlife and range cattle:

Short term impacts are the effect of machine generated noise and strip clearing of existing vegetation on wildlife and feral cattle. Some nesting cover and food plants will be removed for grass planting, however, clearing one hundred acres a year on a 15,000 acres of Game Management Area will have a negligible impact on wildlife and cattle. Birds of prey such as the pue'o and barn owl may find the grass strips more attractive for hunting due to the openings created.

Long term effects on wildlife and cattle will be positive as the grass strips become fully established. The grasses will prevent invasive weeds from becoming re-established. Wildlife and range cattle will benefit by the improved forage quality and in turn, will help maintain the grass strips.

a. Alternative: One alternative to improving and protecting habitat quality from weed invasion is biocontrol which has proven to be expensive, slow and not always a sure method of control. Biocontrol research is currently ongoing on certain noxious species, but not all the listed noxious species found in the project area are being studied. Grasses such as molasses and bushy beard grasses are not likely to be specifically targeted by a biocontrol agent.

b. Alternative: Periodic mowing is another consideration; however it is not considered desirable, because it does not remove the weedy species but only temporarily knocks it down. Over time, continual mowing would be expensive, and have short term benefits.

c. Alternative: Herbicide application is another consideration, but is not desirable. Herbicides were tried on a small portion of the GMA to control lantana in the 1970's. The results were excellent, but eventual reinvasion of the same species occurred within several years. No specific herbicide exists that would effectively control the range of target pest plants effectively and the results would produce only short term benefits. The environmental concerns with broad scale application of herbicides would likely be unacceptable to hunters. There is an uncertainty residual effects of herbicide on wildlife, particularly game species which are hunted and consumed by local sportmen. Also, this method, like alternative (b), would not effectively prevent weed species from becoming re-established, but would only temporarily suppress them.

d. Alternative: Take no action. The eventual outcome of this alternative would result in further habitat degradation. As molasses grass, bushy beard grass, lantana and other weed species become more firmly established, the value for recreational hunting, wildlife and cattle pasturage would deteriorate. Furthermore, there would be an increased fire hazard with an increased fuel load supplied by the overgrowth of ungrazed grasses. On the other hand, the advantages of the proposed project are: It will prevent noxious weeds from re-establishing and improve game habitat and pasture quality.

#### B. Effects on habitat:

The short term impact on habitat will be the removal of existing weedy vegetation for grass planting. Although, the proposed project will primarily focus on the removal of non-natives species, some common native species such as aalii and pukiaawe will also be affected to some degree. Mechanically, it would be impossible to remove weeds without affecting some native plants. The less common native species such as akia, iliahi, alahee, wiliwili, koa and ohia lehua are predominantly found on the steep slopes and in the valley bottoms and will not be affected by the proposed project. Less than 5% of the total area within Kekaha GMA will be treated.

The long term impacts will, in our opinion, be greatly outweighed by the benefits of the project because the established grass strips will help protect the area from catastrophic range fires.

a. Alternative: Biocontrol; covered under Section III A:a

b. Alternative: Mowing; covered under Section III A:b

c. Alternative: Herbicide; covered under Section III A:c

d. Alternative: Take no action; covered under Section III A:d

C. Effects on public hunting:

Because the proposed project is designed to improve wildlife habitat, public hunters will benefit from this project. The short term impacts; however, caused by the disruption of the initial clearing and planting, may force hunters to go elsewhere until the project is completed in the area. The cooperative agreement with Amfac Sugar Kauai does not allow non-hunters or unlicensed persons to enter the Kekaha Game Management Area. There are no established public hiking trails within the GMA.

Long term impacts on hunting will be positive as the grass strips become fully established, it will improve habitat for game birds. As the habitat quality improves, game bird carrying capacity will increase. Hunters in turn, will benefit from the improved hunting.

SECTION IV

MITIGATION MEASURES PROPOSED

A. Mitigation for wildlife and range cattle:

To minimize the impacts to wildlife and range cattle, the Kauai District will limit the project to one-hundred acres per year over a four year period.

B. Mitigation for habitat:

To minimize the impact to habitat, we propose to conduct the project only on level and gently sloping ground. Areas of high weed infestation will get highest priority for clearing and planting. Because this project is aimed at controlling noxious weeds, native plant species will be protected where possible. Less common native species within the area although predominantly found outside the proposed planting sites, will be identified and avoided during the clearing and planting operations.

C. Mitigation for public hunting:

To minimize the impact on hunting, the Kauai District will limit the scale of the project to one-hundred acres per year within four years. This, in our opinion will have a very small impact on public hunting.

APPENDIX C  
List of Plants found on the Proposed Planting Areas  
Kekaha Game Management Area, Kauai, Hawaii

SCIENTIFIC NAME	COMMON NAME	RELATIVE ABUDANCE*
<b>GRASSES and SEDGES</b>		
<i>Andropogon pertusus</i>	Pitted beard grass	A
<i>Bromus racemosus</i>	Brome grass	S
<i>Bromus rigidus</i>	Rippgut grass	U
<i>Cenchrus echinatus</i>	Sand bur	U
<i>Chloris divaricata</i>	Star grass	S
<i>Chloris inflata</i>	Swollen finger grass	S
<i>Chloris radiata</i>	Radiate grass	S
<i>Chrysopogon aciculatus</i>	Pilipiliula grass	A
<i>Cynodon dactylon</i>	Bermuda grass	S
<i>Cyperus rotundus</i>	Purple nutsedge	S
<i>Cyperus brevifolius</i>	Kyllinga	U
<i>Eleusine indica</i>	Wire grass	U
<i>Hyparrhenia rufa</i>	Thatching grass	S
<i>Melinis minutiflora</i>	Molasses grass	V
<i>Paspalum conjugatum</i>	Hilo grass	S
<i>Paspalum dilatatum</i>	Dallas grass	U
<i>Paspalum orbiculare</i>	Rice grass	S
<i>Paspalum sp.</i>	Broadleaf bahia grass	S
<i>Schzachyrium condensatum</i>	Bushy beard grass	A
<i>Setaria gracilis</i>	Yellow foxtail grass	V
<i>Sporobolus indicus</i>	Smut grass	S
<i>Sporobolus africanus</i>	Rattail grass	U
<i>Trichachne insularis</i>	Sour grass	U
<i>Tricholaena repens</i>	Natal redtop grass	M

\* U=Uncommon, S=Spare, M=Moderately Abundant, A=Abundant, V=Very Abundant

List of Plants found on the Proposed Planting Sites (continued)

SCIENTIFIC NAME	COMMON NAME	RELATIVE ABUDANCE*
FORBS		
<i>Acanthospermum australe</i>	Star-burr	U
<i>Bidens pilosa</i>	Spanish needle	S
<i>Bidens sandvicensis</i>	Kokoolau	S
<i>Cassia leschenaultiana</i>	Japanese tea	A
<i>Cassia occidentalis</i>	Coffee senna	U
<i>Cirsium vulgare</i>	Bull thistle	U
<i>Crotolaria incana</i>	Fuzzy rattlepod	U
<i>Crotolaria mucronata</i>	Smooth rattlepod	U
<i>Crotolaria spectabilis</i>	Kolomona	U
<i>Desmodium uncinatum</i>	Spanish clover	M
<i>Desmodium sp.</i>	Unknown desmodium	S
<i>Elephantopus mollis</i>	Elephantopus	U
<i>Erigeron bonariensis</i>	Hairy horseweed	S
<i>Erigeron canadensis</i>	Canada fleabane	S
<i>Erigeron karvinskianus</i>	Daisy fleabane	U
<i>Euphorbia hirta</i>	Garden spurge	S
<i>Hypochoeris radicata</i>	Hairy cat's ear	U
<i>Hyptis pectinata</i>	Hyptis	U
<i>Indigofera suffruticosa</i>	Indigo	S
<i>Malvastrum coromadelianum</i>	False mallow	S
<i>Passiflora edulis</i>	Purple passion fruit	U
<i>Plantago lanceolata</i>	Narrow-leafed plantain	A
<i>Phytolacca octandra</i>	Pokeweed	U
<i>Portulaca oleracea</i>	Purslane	U
<i>Pteridium aquilinum</i>	Bracken fern	S
<i>Oxalis corniculata</i>	Yellow wood sorrel	S

\*U=Uncommon, S=S parse, M=ModeratelyAbundant, A=Abundant, V=Very Abundant

List of Plants found on the Proposed Planting Sites (continued)

SCIENTIFIC NAME	COMMON NAME	RELATIVE ABUNDANCE
<i>Sida fallax</i>	Ilima	S
<i>Sida spinosa</i>	Prickly sida	S
<i>Solanum nigrum</i>	Popolo	U
<i>Sobchus oleraceus</i>	Sow thistle	S
<i>Stachytarpheta cayennensis</i>	False vervain	A
<i>Triumfetta semitriloba</i>	Sacramento bur	U
<i>Verbana litoralis</i>	Verbana	S
<i>Vernonia cinerea</i>	Little ironweed	S
<i>Waltheria americana</i>	Walteria	M
<i>Xanthium saccharatum</i>	Cockle bur	U
<b>SHRUBS</b>		
<i>Acacia farnesiana</i>	Klu	S
<i>Dodonea eriocarpa</i>	Aalii	V
<i>Lantana camara</i>	Lantana	V
<i>Leucaena leucocephala</i>	Koa haole	M
<i>Opuntia megacantha</i>	Prickly pear cactus	U
<i>Pluchea odorata</i>	Sour bush	U
<i>Scaevola gaudichaudii</i>	Naupaka kuahiwi	S
<i>Styphelia tameiameia</i>	Pukiawe	M
<b>TREES</b>		
<i>Acacia decurrens</i>	Black wattle	S
<i>Acacia koa</i>	Hawaiian koa	U
<i>Eucalyptus robusta</i>	Swamp mahogany	U
<i>Eugenia cumini</i>	Java plum	U
<i>Grevillea robusta</i>	Silky oak	V
<i>Psidium cattleianum</i>	Waiwi guava	A

\* U = Uncommon, S = Sparse, M = Moderately Abundant, V = Very Abundant

List of Plants found on the Proposed Planting Sites (continued)

SCIENTIFIC NAME	COMMON NAME	RELATIVE ABUNDANCE
<i>Psidium guajava</i>	Yellow guava	A
<i>Pinus taeda</i>	Loblolly pine	U
<i>Prosopis palida</i>	Keawe	U
<i>Schinus terebinthifolius</i>	Christmas berry	U

\* U = Uncommon, S = Sparse, M = Moderately Abundant, V = Very Abundant

**APPENDIX D**

**ARCHAEOLOGICAL RECONNAISSANCE SURVEY:**

**KEKAHA GAME MANAGEMENT AREA,  
WAIMEA, KAUA'I  
(TMK: 1-2-02)**

Prepared by:  
Martha Yent, Archaeologist  
Division of State Parks  
Department of Land and Natural Resources  
State of Hawai'i

Prepared for:  
Division of Forestry and Wildlife  
Department of Land and Natural Resources  
State of Hawai'i

March, 1997

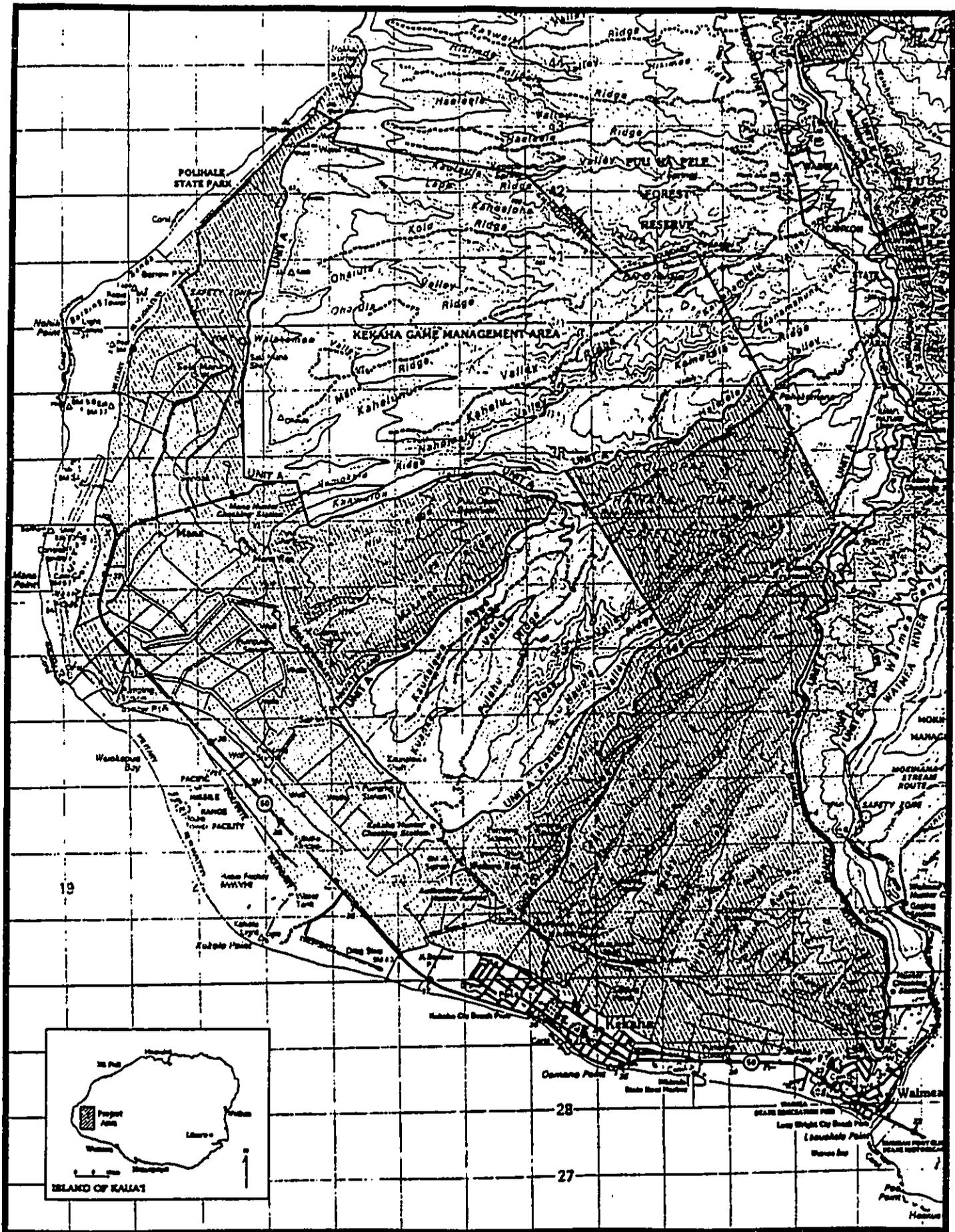


FIG. 1 - Location of the Kekaha Game Management Area, Makaha Point and Kekaha Quads (USGS, reduced scale).

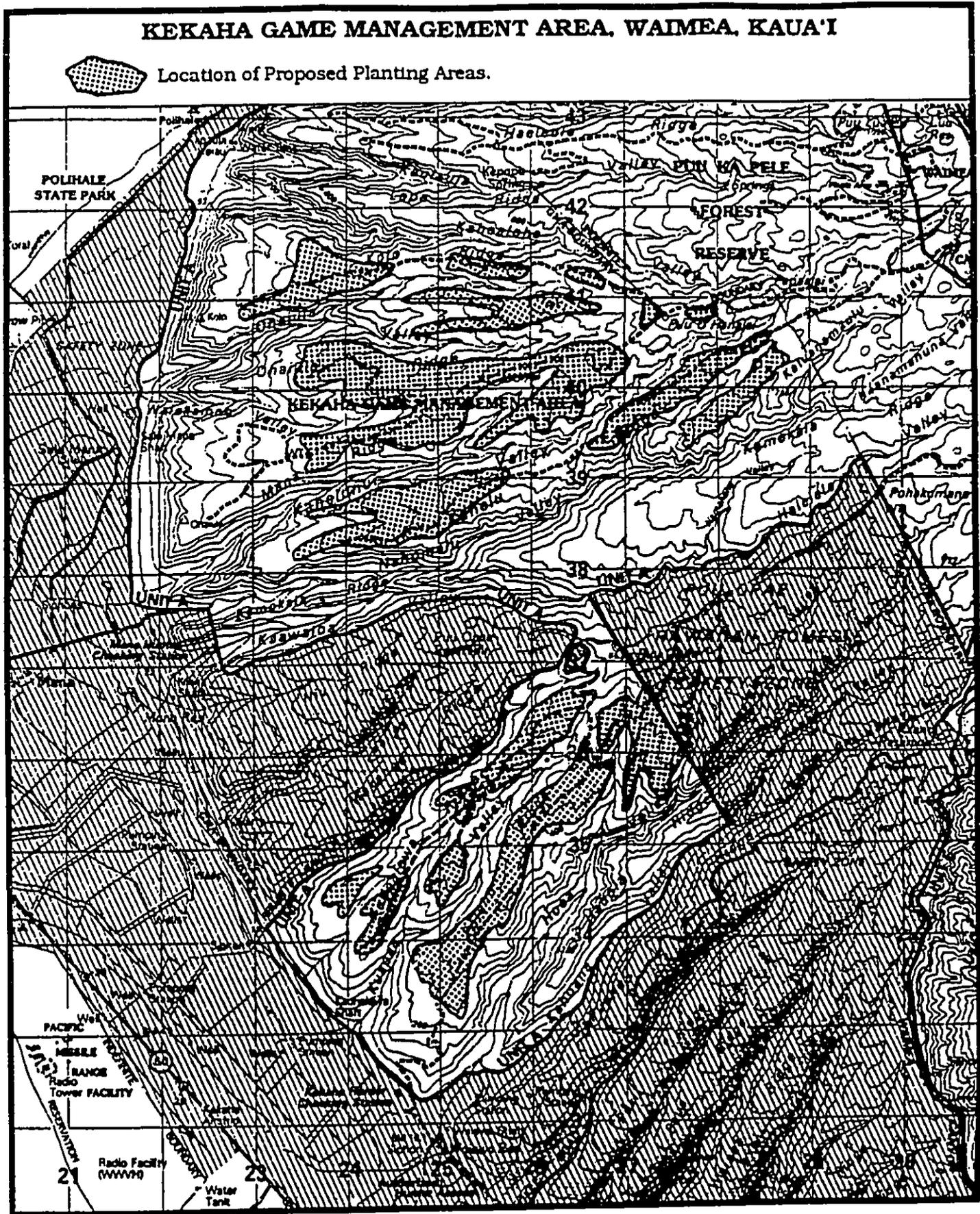


FIG. 2 - Detail of Kekaha Game Management Area showing the project locations.

## ENVIRONMENTAL SETTING

The elevations within the GMA range from 50 feet at the base of the slopes and the *makai* valley floors to 2,750 feet on the ridgetops. The soils are moderately poor and the rainfall is low in the area, averaging 27.4 inches annually. The poor soil, low rainfall, range fires, and past ranching activity have produced a highly degraded lowland dry shrub plant community on the ridgetops.

### Geology and Soils

This northeastern portion of Kaua'i consists of a broad coastal plain near sea level. Between 1 and 2 miles inland of the shoreline, the plain meets the foothills that rise gradually to elevations of 3,600 feet along the edge of the Waimea Canyon.

There are 2 prominent high points in the project area. Pu'u O Hanalei (2560 feet) at the convergence of 'Ōhai'ula Ridge and Mānā Ridge is covered by a shrubland that allows viewing from this point. Pu'u 'Ōpae (2144 feet) at the convergence of Kaunalewa Ridge and Pulehu Ridge is forested and on the edge of the project boundary.

The soils in the project area are part of the Makaweli-Wahiawa-Niu association. These upland soils tend to be well-drained and fine textured. The red silty clay loam is underlain by weathering basalt and the soil has developed in material weathered from igneous rock. However, surface rocks are minimal. This soil type is suitable for sugarcane, pasture, and wildlife habitat (Foote et al., 1972).

There is no surface water in the project area, including an absence of any perennial streams in the valleys. The construction of the ditch system at Kōke'e in the late 1800s and early 1900s has affected the surface water pattern of this upland area.

### Vegetation Communities

The vegetation on the ridgetops is characterized as a degraded shrubland. In much of the GMA, this shrubland is a mix of native species, predominantly *a'ali'i* (*Dodonea eriocarpa*) and *pukiawe* (*Styphelia tameiameia*), and exotic introductions dominated by lantana (*Lantana camara*), silk oak (*Grevillea robusta*), molasses grass (*Melinis minutiflora*), *koa haole* (*Leucaena leucocephala*), and guava (*Psidium*). Other grasses and the black wattle (*Acacia decurrens*) are rapidly spreading throughout the project area. The growth of trees in the more *makai* portion of the ridgetops is stunted by the poor soil and the chemical composition of these soils.

Additional native species can be found on the ridges, including *ilima* (*Sida fallax*), *koko'olau* (*Bidens sandwicensis*), and *naupaka kuahiwi* (*Scaevola gaudichaudii*). A greater variety of native species is found on the slopes and valley bottoms, including *alahe'e* (*Canthium odoratum*), *akia* (*Wilkstromia uva ursi*), *Hawaiian koa* (*Acacia koa*), *'ōhi'a lehua* (*Metrosideros polymorpha*), *wiliwili* (*Erythrina sandwicensis*), and *'iliahi* (*Santalum ellipticum*).

## HISTORICAL OVERVIEW

Polihale, just north of the project area, is one of the most culturally significant areas on Kaua'i. Polihale Ridge is the leaping-off place for souls on their way to Po, the underworld, which is located offshore beneath the ocean. Polihale Heiau is located at the base of this cliff. Another *heiau* named 'Elekuna is located at Nohili. William Hyde Rice (1923) attributes the *heiau* and trails in the area to the *menehune*:

On the cliffs of Kauai are still seen many paths and roads which were built by them, and which are still called Ke-ala-pii-a-ka-menehune, the Trails-of-the-Menehune. These trails are still to be seen above Hanapepe, Makaweli, Mana, Napali, Milolii, Nualolo and Hanapu (sic). In the little hollows on the cliffs, they planted wild taro, yams, ferns, and bananas. No cliff was too steep for them to climb.

They also built many heiaus, including those at Elekuna, Polihale, and Kapa-ula, near Mana . . . All the stones for these heiaus were brought from Makaweli.

### Traditional Settlement-Subsistence Pattern

The project area is transitional between the coastal settlements and lowland agricultural zone on the Mānā Plain and the upland resource gathering zone of Kōke'e. Prior to the early 1900s, the Mānā Plain consisted of an extensive swamp and 3 large fishponds set behind the coastal dune system. Accounts indicate that the Hawaiians would paddle their canoes from Waimea to Mānā during periods of high water. This swamp was once teeming with fish and waterbirds and was also used for taro cultivation. In this case, the taro was grown on rafts which would fluctuate with the water levels during the rainy season. Additional farming areas could be found on the plain behind the dunes, along the base of the slopes, and in the valleys. Habitation was also situated *mauka* of the dune.

It appears likely that the upland area of Kōke'e and the Alaka'i Swamp were utilized in the pre-contact period as resource gathering zones, rather than areas of permanent habitation or agriculture. Several legends suggest this use. One attributes the road of sticks through the Alaka'i Swamp to the *menehune* (Rice, 1923). Another refers to Lahi (or Lauhaka), a young man who would eat only birds, and traveled to the top of Kilohana (a lookout at the edge of the Alaka'i Swamp) where the *Uwa'u* bird nested to satisfy his hunger (ibid). Pu'u Ka Pele is referred to as an area for gathering *koa* canoe logs and other building materials:

At one time the Menehune built two canoes of koa in the mountains near Puu-ka-Pele. As they were dragging them down to the lowlands, they were caught by a heavy rain-storm, and were forced to leave the canoes across the little valley. The storm covered the canoes with debris, and later, a road was built across them, over which all the materials to build the village of Waimea were hauled (ibid).

Further evidence for the gathering of canoe logs from the uplands comes from the narrative of the Dutch merchant Captain Jacobus Boelen, who visited Waimea in 1828. While his ship was being loaded with sandalwood, he spent some time exploring the region and included the following observation:

On that day we visited Quequaheva's [Kaikio'ewa's] shipyard, which consisted of large sheds where the largest and most beautiful canoes that can be found in the islands were made. We were assured that the island of Atooi [Kauai] had always been the principal workshop of the islands in these matters. Under one very neatly made roof I saw two of the largest double canoes I have ever seen . . . Long, narrow, and lightly built, although of a strong and heavy type of wood [*koa*], they have only a shallow draught. . . some of these vessels - especially those double canoes of the largest sort, which the highest chiefs use - are up to seventy or eighty feet long . . . (Broeze, 1988).

It is obvious from this description that *koa* trees of exceptional size were being harvested in the uplands, where they were partially worked to lessen their weight prior to transport to the coast.

Handy does not specifically mention Kōke'e and the uplands with respect to Hawaiian agriculture, although he states that "the upper gulches and forests in and above Waimea Canyon should be favorable localities for yams" (Handy, 1940: 171). He also mentions that boggy areas in the uplands were utilized for the cultivation of *olona*.

There are trails recorded which ran from the Nā Pali valleys to Kōke'e and Waimea Canyon. Bennett (1931) recorded several trails connecting different areas of the Nā Pali coast with the uplands. A network of upland and coastal trails is recorded in the following:

More anciently the old Hawaiians used a number of overland trails. The Kamaile trail descended into Nu'ulolo [Nu'alolo] Valley inland. There was a trail connecting Nu'ulolo with Honopu. A good trail overland connects Kalalau with Ha'ena. There is a trail from Koke'e in the mountains above Kekaha down into Kalalau. From Polihale travelers could go on foot, with a little swimming, to Miloli'i, and a trail connected Miloli'i with Nu'ulolo flats. Another trail connects Miloli'i with Koke'e. And there was the path (*ala*), said to have been built by King 'Ola, that led from Waimea Delta up the canyon to Koke'e, over the Alaka'i Swamp, where it was said to have been paved with sticks (*kipapa*), and thence down Maunahina ridge into Wainiha by way of Koke'e. (Handy and Handy, 1972)

This trail system suggests a connection between the north and south sides of the island, although whether the trails facilitated trade or simply travel between the two areas is not known. It can be assumed that the upland forests were utilized as resource gathering zones for such items as hardwoods, bird feathers, and medicinal plants, as well as freshwater resources such as 'o'opu and 'ōpae. Undoubtedly a substantial trail existed between the upper Waimea Canyon and Waimea Village to facilitate the transport of large canoe logs.

The mid-zone between the uplands and the coastal plain appears to be transitional in terms of environment, settlement, and subsistence. The area above Niu Ridge, near Pu'u 'Ōpae and Pu'u Moi, was said to be an area where trees were felled and worked into canoes (Handy and Handy, 1972: 411). Trails and temporary campsites would be expected in this area. This also suggests that the forests extended much further down the ridges and valleys in the past. However, it is uncertain if any agricultural planting, such as sweet potato and yam, was taking place on the *makai* ends of these ridges.

To summarize, Hamatt has divided the traditional Hawaiian settlement of the Kekaha regions into 5 zones from *mauka* to *makai* (Hamatt, 1996):

- Zone 1 Ridges above the cliffs used for dryland agriculture, forest gathering, and religious structures.
- Zone 2 Narrow valleys and slopes with intermittent streams, narrow alluvial terraces, and some permanent springs. These areas supported taro cultivation and permanent habitation. Steep slopes often contain burial caves.
- Zone 3 The swamp and marshlands which supported taro cultivation, fishponds, and water fowl.
- Zone 4 The *mauka* portion of the sand plain. This zone often used for burials and the planting of coconut trees.
- Zone 5 Shoreline area noted for fishing camps, canoe landings, salt pans, and a few *pu'uone* fishponds.

The project area falls into Zone 1. As a predictive model, the presence of dryland agricultural features (mounds, alignments, and terraces), temporary shelters, and *heiau* or *ko'a* might be expected in the project area.

#### Historic Land Use

The Reverend Hiram Bingham traveled from Waimea to Hanalei in 1821 along the old established route passing through Kōke'e. The trail consisted of a "narrow, winding, slippery foot-path, sometimes on sharp ridges, here ascending and there descending rugged steeps" (Bingham, 1981). He described the uplands as being uninhabited but mentioned several temporary shelters along the way which he attributed to sandalwood cutters and reported abundant sandalwood forests still in existence at that time. However, the sandalwood forests were all but depleted by the mid-1830s. Waimea was the sole port of export on Kaua'i for the wood, which came almost exclusively from the upland gulches of Waimea Canyon and Kōke'e (Joesting, 1984).

Kekaha Sugar began draining the water of the Mānā Plain in the late 1800s and by 1959, the entire plain was planted in sugarcane (Waimea Planter, 1959). To irrigate these fields, ditches and reservoirs were constructed to bring water down from the uplands. Beginning in the late 1800s and continuing into early this century, an irrigation system known as the Waimea Canyon-Kekaha Ditch tapped the upland streams to irrigate the cane lands on the west side of the island. The Kōke'e Ditch was constructed in 1923 by Kekaha Sugar to tap into the streams of the Kōke'e area (Wilcox, 1984). Plantation camps were constructed in the uplands to house the Japanese and Chinese workers who built and maintained the ditch system.

Ranching has been the other major impact on the area. After a major forest fire in the 1870s that burned all the vegetation up to the Nu'alolo Trail in Kōke'e, Vladimir Knudsen introduced cattle and horses to the upland Kōke'e area (Informant Hans Hanse, Garden Island, January 27, 1965). The beef was raised to provision the whaling vessels but with the decline of whaling, the cattle industry in Kōke'e had diminished greatly by 1900. The first house in Kōke'e was built by Mr. Archer in the early 1850s who travelled between his tobacco farms in Hanalei and Mānā (Damon, 1931: 292).

Kekaha Sugar has leased much of the mid-elevation area for the past 50+ years. During this time, the lessee has cleared areas of trees and planted grass in selected locations to promote pasture land. In the 1950s and 1960s, there were over 1,000 head of cattle in the Kekaha GMA. Currently, there are approximately 300-400 head of feral cattle on the rangeland (Telfer, pers. com.).

Aerial photographs from the 1950s indicate that roadways were bulldozed around the perimeter of many of the ridgetops for access. Sugarcane was cultivated on some of the ridgetops but apparently not on those ridges within the GMA. Instead, the GMA was used for pasture. Reforestation has occurred in the forest reserves but planting in the GMA has been limited to mostly grasses for pasture.

In 1978, DOFAW conducted work in the GMA to promote the wildlife habitat for game birds and black-tail deer. Herbicides were used to control the overgrowth of noxious shrubs, such as lantana and silk oak, on a 500 acre section of the GMA.

### PREVIOUS ARCHAEOLOGY

The only previous archaeological survey in the Kekaha GMA was conducted by McMahon in 1993 as part of DOFAW's Watershed Protection project (McMahon, 1993). This project involved the clearing of vegetation along the roadsides on the ridges in Pu'u Ka Pele and Nā Pali-Kona Forest Reserves and the Kekaha Game Management Area. In addition, the project entailed the clearing of strips within the Kekaha GMA similar to the current project proposal. The areas of overlap in the 1993 and 1997 surveys are Kolo Ridge, 'Ōhai'ula Ridge, Mānā Ridge, and Kahelu Ridge. No archaeological sites were located on these ridges during the 1993 survey (ibid: 14). The Pu'u 'Ōpae Ridge area was mentioned as part of the 1993 project area but was not surveyed. The only site located during this survey was at the *makai* end of Polihale Ridge Road. This site is a stone alignment of large basalt boulders, one to 2 courses high (site 50-30-05-499). It is suggested that this may have been a planting area for sweet potato because of the soil fill behind the stones (ibid: 13).

A monitoring phase with a selective survey on Kauhao Ridge, to the north of Polihale, was conducted in 1994 as a follow-up to the 1993 survey (Kawachi, 1994). Although areas with ti plants were examined, no sites were identified. Monitoring consisted of an orientation to DOFAW staff and contractors which outlined the cultural remains that might be encountered during the project. No archaeological finds were reported during this work.

Archaeological surveys in the uplands of Kaua'i have been limited in number and scope. As a result, few archaeological sites are recorded for the upper Kekaha, upper Waimea, and Kōke'e areas. These upland areas are generally regarded as a resource gathering zone rather than an area of permanent habitation which implies that few archaeological sites will be located. The previous archaeological surveys are summarized below and the location of the inventoried sites is shown in Figure 3.

The 1906 survey of *heiau* sites by Thomas Thrum identified 2 sites in Kōke'e:

**Ahuloulu Heiau:** Located at the base of Pu'u Ka Pele; this site consists of 3 platforms. The central platform is described as an enclosure measuring 12 by 30 feet with walls about 3 feet high but badly dilapidated. Thrum states that "no special significance seems to be attached to this so-called heiau".

**Ka-unu-aiea Shrine:** Small shrine in the dense *koa* forest of Miloli'i but there is no platform left to indicate its existence. Thrum states that this shrine is located on Kaunuohua Ridge and it may have been located in the area of the NASA tracking station. Thrum classifies the shrine as an *unu* for the shifting population of the forest belt. When Bennett recorded this site in 1928-29, he called it a *heiau* and described it as a small clearing containing a line of stones forming no outline or platform. He further added that the location is "in the forest above Halemanu".

Bennett recorded 2 additional sites at Pu'u Ka Pele, both being house site complexes (Bennett, 1931: 104). Three site numbers were given to the sites at Pu'u Ka Pele:

50-30-01-19: Ahuloulu Heiau. This heiau consists of a walled enclosure, the outside dimensions of which are 37 by 41 feet. The walls are 4 feet wide and badly broken. In front of this structure is a flat area about 50 by 50 feet without paving or boundaries. Back of the enclosure there is a paved platform 8 by 12 feet. This platform is backed by a large rock, the plugged-up holes in which indicate that it might have been used as a depository for umbilical cords.

50-30-01-20: House sites around the crater of Pu'ukapele. The remains of 7 house sites are indicated by stones in line forming a terrace with a flat space behind. Some of these house sites measure 30 by 20 feet.

50-30-01-21: House sites toward the sea from Pu'ukapele on the north side of the road. A series of house sites are located on top of a flat ridge, the edge of which is lined with stones for 50 feet or more.

50-30-01-22: Kaumauaiea Heiau.

Francis Ching fieldchecked the sites in 1974 in conjunction with the Statewide Inventory of Historic Places. He relocated sites 19 and 20 and although he suggested that site 21 was probably still present, he could not confirm this because of the dense vegetation. Subsequently, sites 19, 20, and 21 have been consolidated under site #19, the Pu'u Ka Pele Complex. The condition of the *heiau* site (#19) was evaluated during a fieldcheck in April, 1995 by State Parks Archaeologist Martha Yent. The site is covered by a dense growth of *lantana* and *koa haole*. The surrounding silk oak trees have laid a dense mat of leaves on the surface of the site.



FIG. 3 - Distribution of known archaeological sites in the uplands of Kekaha and Waimea.

Brief reconnaissance surveys in the Kōke`e area have been conducted by Ching (1978a, 1978b), Kikuchi (1982), Yent (1982), and Walker and Rosendahl (1990). However, these surveys did not locate any archaeological sites.

In 1993, a survey addressed 3 facilities in the Kōke`e and Waimea uplands (Dowden and Rosendahl, 1993). No sites were located at the Pacific Missile Range - Makaha Ridge Facility, the Halemanu section of the Pacific Missile Range - Kōke`e Facility, or at the Kōke`e Air Force Station and Former NASA site.

Two independent archaeological surveys were conducted in conjunction with the proposed concession facility at the Waimea Canyon Lookout. State Parks archaeologists recorded site #50-30-06-707 during a 1993 survey (Carpenter, 1993). This site consists of a single row of stones on 3 sides on a level area about 80 meters southwest of the men's restroom at the lookout. The site is probably a temporary habitation site related to the logging of wood for canoes. The other survey conducted at the lookout involved archaeological testing (Chaffee and Spear, 1993). No sites or subsurface cultural deposits were located during this survey.

In December 1993, an archaeological survey was conducted on the *makai* portion of Kahuama`a Flat for a plant sanctuary proposed by DOFAW (Carpenter and Yent, 1994). This survey area is on the *makai* side of the Kōke`e Park Road and approximately 1.25 miles northeast of the Army Camp project area. Much of the Kahuama`a survey area consists of extremely steep cliffs at the back of Kalalau Valley. The dense vegetation hampered a thorough survey of the flat portion on the rim of the valley. No archaeological sites were located during this survey.

A survey of the old Army Camp site at Kōke`e was conducted in October, 1994 (Yent, 1995a). This camp was built in the early 1940s on Kaunuohua Ridge and was dismantled in the 1950s. This camp site is approximately 1.5 miles northeast of the CCC camp site. The Army Camp consisted of 5 major buildings along a dirt roadway off the paved Kōke`e Road with an additional 4 outlying structures. One concrete building remains along with the concrete slabs from 2 other buildings. One of the wooden buildings was relocated and now houses the Kōke`e Natural History Museum. No subsurface archaeological deposits or features other than those associated with the camp were located during the survey.

A survey of the Kōke`e Civilian Conservation Corps (CCC) Camp was conducted in 1995 to assess the presence of archaeological resources in association with this historic camp built in 1935 (Yent, 1995b). No archaeological deposits or sites were located in the camp vicinity.

The archaeological surveys conducted to-date in Kōke`e and the uplands of Kekaha and Waimea tend to support the idea that this upland area was used largely as a resource gathering zone with limited habitation. The stone-lined platforms recorded at Pu`u Ka Pele and near the Waimea Canyon Lookout appear to be temporary habitation sites. Other historic activities, such as ranching, sugarcane cultivation, reforestation, and military use, may have also had an impact on the presence of sites in this upland area.

## SURVEY METHODOLOGY

The archaeological survey in the Kekaha GMA was conducted on February 5, 1997 by State Parks archaeologists Martha Yent and Alan Carpenter with the assistance of Tom Telfer, DOFAW Wildlife Biologist and project coordinator. The project area was accessed from the 4-WD roads off Kōke'e Road (Hwy. 550).

Papa'alai Road, off Kōke'e Road and across from the Pu'u Ka Pele Microwave Station, was used to access the northern project area: Pu'u O Hanalei, Kolo Ridge, 'Ōhai'ula Ridge, and Mānā Ridge. A lower, unpaved road off Kōke'e Road and through the Pu'u 'Ōpae Hawaiian Home Lands area, was used to access the southern project area: Kaunalewa Ridge and Pulehu Ridge. Survey areas are shown in Figure 4.

The survey involved a combination of observations made from the vehicle while driving the roadways, including the roadcuts for any evidence of subsurface deposits, and transects surveyed by foot across selected ridgetops. The general consistency in topography and vegetation indicated that a sampling of the project area would be indicative of site presence/absence and site type. In addition, known historic land use changes throughout the project area and the general lack of known sites from previous surveys suggested a low probability of sites in the project area.

Much of the ground surface in the project area is covered by a growth of grasses, silk oak, *a'ali'i*, and *pukiawe*. During the survey, the grasses were not especially thick and it was possible to observe the presence/absence of surface stones in most of the survey area.

## SURVEY RESULTS

### Pu'u O Hanalei

This *pu'u* represents a slight rise in the topography (2560 foot elevation) that offers a viewing of the larger project area. The *pu'u* has a relatively level area on the top that is now covered with a growth of molasses grass with scattered *a'ali'i*, silk oak, guava, and *pukiawe*. Open soil areas were evident with signs of recent pig rooting and erosional channels. A transect (270 degrees) was walked 50 meters apart and approximately 300 meters in length down the western face of the *pu'u*. No features or cultural materials were located.

### Kolo Ridge

At the 1600' elevation, a transect was taken on the south side of the road to check a concentration of surface boulders on a knoll. The rocks are weathered with surface depressions and ridges. However, there was no evidence of cultural use of this area, except for recent graffiti on several of the boulders. It should be noted that this boulder concentration is outside the project area.

At the end of the dirt road, a *makai* transect to the end of the ridge was surveyed. This area is marked by eroded gullies with exposed basalt boulders. The vegetation consists

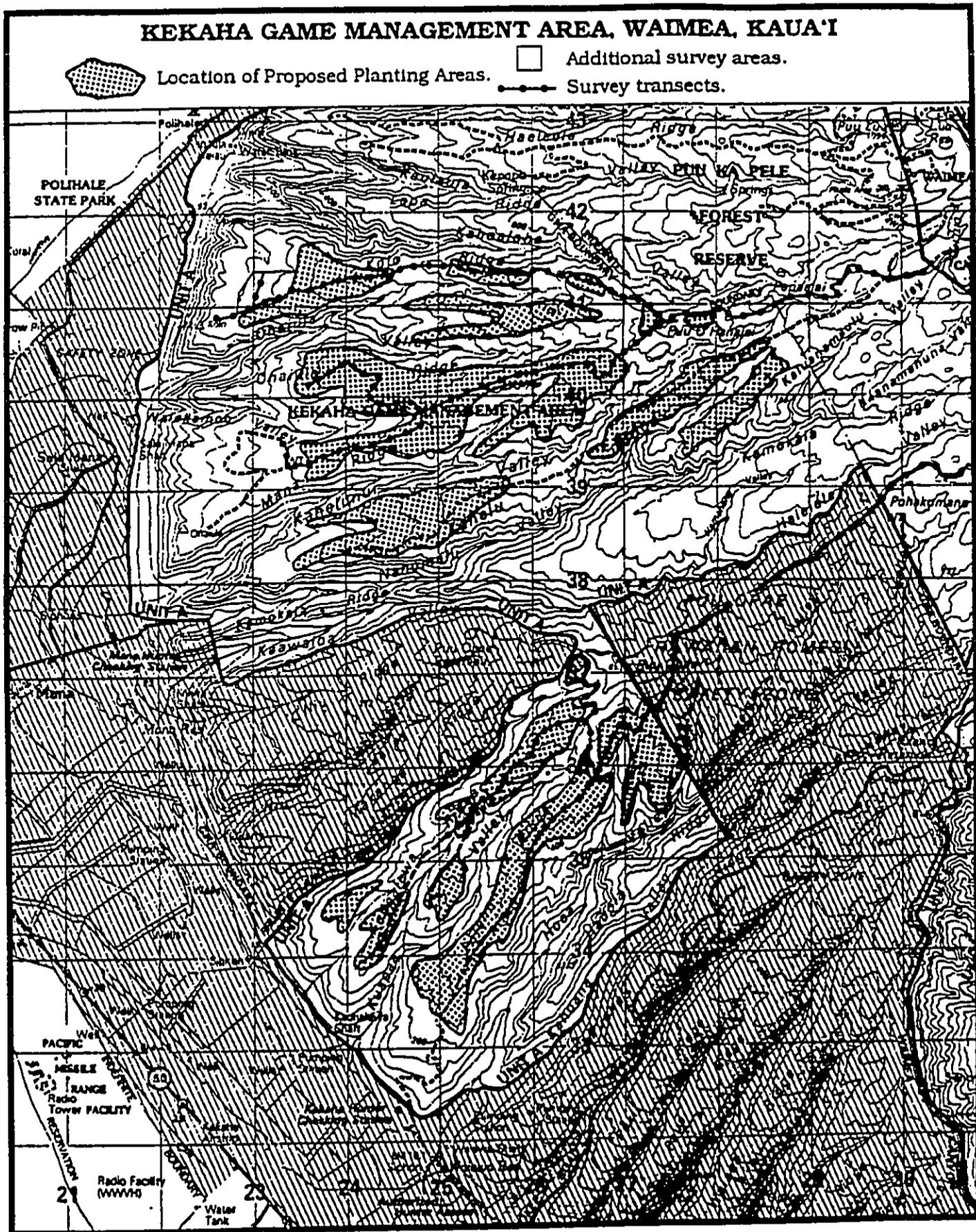


FIG. 4 - Survey routes taken within the Kekaha GMA.

of dense thickets of *koa haole*, *lantana*, and *a'ali'i*. The *makai* end of this ridge provided good views of Polihale and Nohili Point. No archaeological sites or cultural remains were recorded in this transect.

At the end of Kolo Ridge, on the north side of the road, are examples of the cleared strips conducted by DOFAW about a year ago as part of project proposed in 1993. These strips are 60-70 feet wide and located outside the current project area (Photo I). A survey transect was taken along the length of one of these strips to determine if there was any surface evidence of cultural deposits being disturbed by the clearing. No rocks or other cultural materials appear to have been disturbed during the prior bulldozing and clearing.

#### Ōhai'ula Ridge

A similar pattern consisting of a flat ridgetop with low-growing shrubland (grasses and *a'ali'i*) and scattered silk oak trees was noted on this ridge. Areas of erosion marked by exposed red soil were noted. One transect on the north side of the road and a second transect on the south side surveyed the *makai* portion of the ridge to the end of the road, a total of about 300m in length. No cultural remains were located.

#### Mānā Ridge

Similar pattern of topography and vegetation as noted on Kolo and Ōhai'ula Ridges. Surveyed a short distance, approximately 300m, *makai* of the watertank with no evidence of cultural remains.

#### Pu'u Ōpae

Generally, this southern portion of the project area is not as heavily used or maintained. The result is a thicker growth of shrubland vegetation, including *a'ali'i*, *pukiawe*, and silk oak. However, the area is also marked by thickets of *lantana*, *guava*, and *Java plum*. The removal of trees by Kekaha Sugar in the 1950s and possibly earlier, has minimized the tree growth in the level ridgetop areas, with the exception of the recently introduced and rapidly expanding *black wattle*.

#### Kaunalewa Ridge

A roadway survey was conducted in the *mauka* portion of the Kaunalewa Ridge project area. No cultural remains were located.

#### Pulehu Ridge

A north-south transect, about 200m in length, was surveyed on the ridgetop from the south side of the road to the slope overlooking Hōea Valley. This area consists of an *a'ali'i* shrubland with small *Java plum*, *guava*, and *silk oak* with heavily eroded areas (Photo II). The area was previously used as pasture by Kekaha Sugar and cattle are still found in the area. Patches of *bahia grass* were noted. Few rocks and no cultural remains were noted.

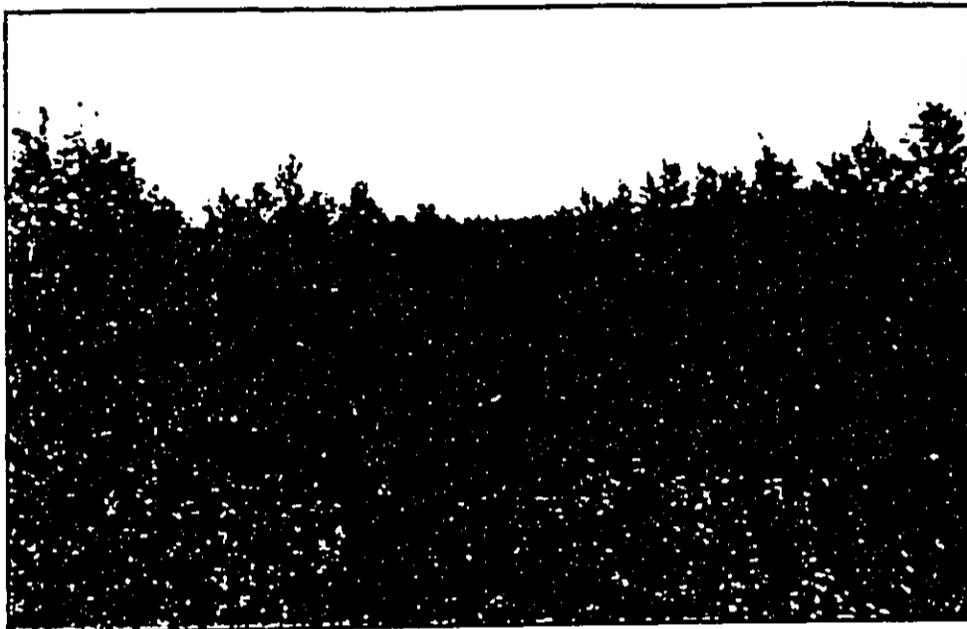


PHOTO I  
Previously cleared strip (60-70 feet wide) on Kolo Ridge.  
View toward the North.

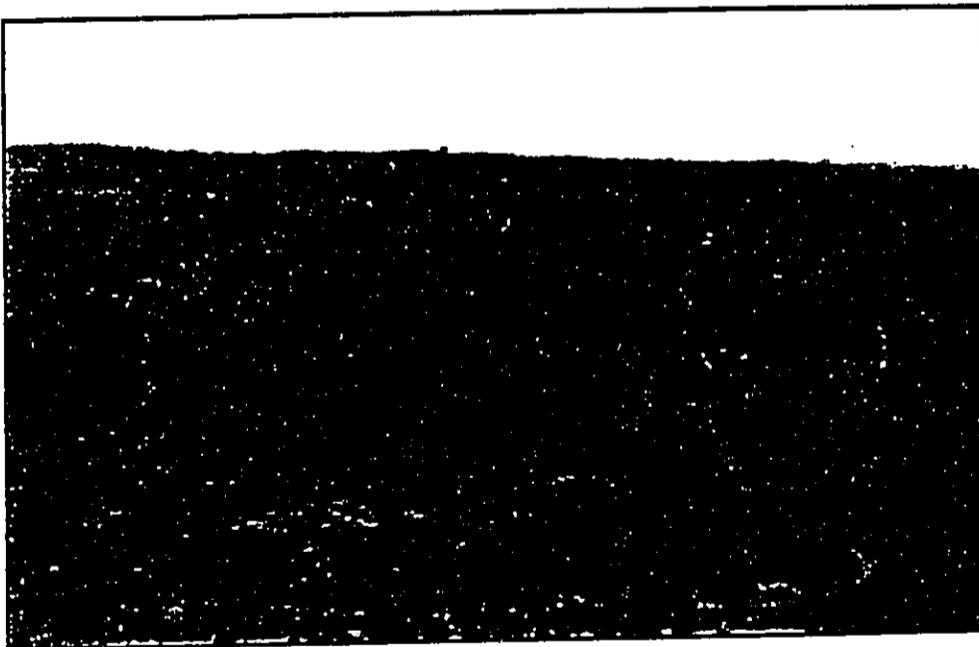


PHOTO II  
General topography and vegetation pattern on Pulehu Ridge,  
including gully and slope erosion.

### SUMMARY AND RECOMMENDATIONS

The archaeological reconnaissance surveys conducted in the Kekaha GMA in 1993 and 1997 did not locate any archaeological sites or cultural remains. It is believed that historic land use and modifications for pasture are responsible, in part, for this lack of sites. Any trails through the project area have probably been destroyed by these historic modifications. Natural environmental conditions, including low rainfall and few rocks, may also help account for the general lack of sites. Historical records and the traditional settlement-subsistence pattern developed for the *mauka* Kekaha area indicate that this upland area was probably used intermittently for resource gathering but not permanent habitation. There is some suggestion that the *makai* ridgetops were used for dryland cultivation but no evidence of this activity was seen during this survey.

No further archaeological work is recommended for this project. The monitoring conducted for DOFAW's earlier project in the Kekaha GMA and adjacent forest reserve did not locate any additional surface sites or subsurface cultural deposits (Kawachi, 1994). However, the DOFAW project staff and contractors shall be required to stop work in the area and immediately report any archaeological findings to the State Historic Preservation Division on Kaua'i. These archaeological finds might include charcoal, bone, shell, or stone features.

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- Yent, Martha  
 1982 Archaeological Reconnaissance: Proposed Kokee Hydropower Project, Kōke'e State Park, Waimea Canyon State Park, and Upper Kekaha, Waimea District, West Kaua'i. Report prepared for the Dept. of Land and Natural Resources, Division of Water and Land Development by the Division of State Parks, Honolulu.
- 1994 Archaeological Reconnaissance Survey: Kukui Facility Radio Communication Upgrade, Kōke'e Air Force Station, Waimea Canyon State Park, Waimea, Kaua'i (TMK: 1-2-01: 9). Report prepared for Dept. of Public Works, County of Kaua'i by the Dept. of Land and Natural Resources, Division of State Parks, Honolulu.
- 1995a Archaeological Survey: Former Army Camp Site, Kōke'e State Park, Waimea, Kaua'i (TMK: 1-4-01). Reported prepared for Dept. of Land and Natural Resources, Division of Forestry and Wildlife by the Division of State Parks, Honolulu.
- 1995b Archaeological Survey: Civilian Conservation Corps (CCC) Camp, Kōke'e State Park, Waimea, Kaua'i (TMK: 1-4-01: 13). Prepared for Kōke'e Natural History Museum and the Division of State Parks, Honolulu.

APPENDIX E

COMMENTS RECEIVED ON THE PROPOSED PROJECT

Federal: U.S. Fish and Wildlife Service, USDI  
Natural Resources Conservation Service, USDA\*

State: Department of Land and Natural Resources,  
Division of Land Management  
Division of Historic Preservation  
Division of Aquatic Resources\*  
State Parks Division\*

Department of Hawaiian Home Lands

Others: Hawaii Audobon Society  
Garden Island Bird Dog Club  
Kauai Aquatic Life and Wildlife Advisory Committee  
Kauai Hunting Association  
Amfac Sugar Kauai, Inc.\*  
National Tropical Botanical Garden\*  
West Kauai Soil and Water Conservation District\*

\* = No Comments Received

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



**STATE OF HAWAII**  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
**DIVISION OF LAND MANAGEMENT**  
LAND DIVISION  
LHus. HI 96786-1875

DIV. OF FORESTRY & WILDLIFE MANAGEMENT

DATE RECD	FILE REFERENCE
APR 1 1997	
REVIEWS	
REMARKS	
APPROVAL	
DATE	
BY	
INFO:	
COM & RECOM.	
APP AGRICULTURE DEVELOPMENT PROGRAM	
DRAFT	
CONSERVATION AND ENVIRONMENT AFFAIRS	
CONSERVATION AND RESOURCES ENFORCEMENT	
CONVEYANCES	
FORESTRY AND WILDLIFE	
LAND MANAGEMENT	
STATE PARKS	
WATER AND LAND DEVELOPMENT	

April 4, 1997

KD-97:1318

**MEMORANDUM**

To: Thomas Kaiakapu,  
Wildlife Biologist

From: Sam Lee, *SL*  
Kauai District Land Agent

Subject: Draft Environmental Assessment for a Proposed Wildlife Habitat Improvement Project in the Kekaha Game Management Area, Kauai

We have had the opportunity to review the above referenced DEA. The intent of the project is to control noxious non-native plants from degrading upland game bird habitats.

We concur that such a project would not have adverse environmental impacts, given the number of acres to be treated in any given year. Such a project would not adversely impact lands or programs managed by our Division.

Thank you for the opportunity to review and comment.

cc: Dean Uchida, Land Division Administrator  
Lynn McCrory, Kauai Land Board Member

ML:ml

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII

COPY



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE HISTORIC PRESERVATION DIVISION  
33 SOUTH KING STREET, 6TH FLOOR  
HONOLULU, HAWAII 96813

April 10, 1997

MICHAEL D. WILSON, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

Gilbert Coloma-Agaran

- AQUACULTURE DEVELOPMENT PROGRAM
- AQUATIC RESOURCES CONSERVATION AND ENVIRONMENTAL AFFAIRS
- CONSERVATION AND RESOURCES ENFORCEMENT CONVEYANCES
- FORESTRY AND WILDLIFE HISTORIC PRESERVATION DIVISION
- LAND MANAGEMENT STATE PARKS
- WATER AND LAND DEVELOPMENT

LOG NO: 19265 ✓  
DOC NO: 9703NM27

MEMORANDUM

TO: Ralston Nagata, Administrator  
Division of State Parks

FROM: Don Hibbard, Administrator  
Historic Preservation Division *[Signature]*

SUBJECT: Historic Preservation Review -- Archaeological Reconnaissance Survey:  
Kekaha Game Management Area, Waimea, Kaua'i (Yent, 1997)  
TMK: 1-2-02:

Thank you for submitting the above document for our review. We have reviewed your report and believe it is an adequate archaeological survey report. No significant historic sites were found. Therefore, we believe that this project will have "no effect" on significant historic sites.

If you have any questions please call Nancy McMahon at 742-7033.

NM:els

cc: ~~Tom Telfer~~ DOFAW

DIV. OF FORESTRY & WILDLIFE-KAUAI

DATE RECEIVED		FILE REFERENCE	
APR 17	1997		
PETTEYS		INFO:	
KAWAKAMI		COM & RECOM.	
KOGA		APP ACTION	
KYONO		DRAFT REPLY	
NISHIHARA		POST BUL. BD.	
PARKS		SEE ME	
QUERA		XEROX	
T. Telfer	HT	FILED	
U. S. U.	TR		



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Pacific Islands Ecoregion  
300 Ala Moana Blvd, Room 3108  
P.O. Box 50088  
Honolulu, HI 96850

phone: 808-541-3441; fax: 808-541-3470

DIV. OF FORESTRY AND WILDLIFE

DATE FILED	APR 23 1997	FILE NUMBER	
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*W. Lewis*

In Reply Refer To: Kekaha GMA (MMB)

Mr. Edwin Petteys  
District Forester  
Division of Forestry and Wildlife  
Department of Land & Natural Resources  
3060 Eiwa Street, Room 306  
Lihue, HI 96766

APR 22 1997

Dear Ed,

Thank you for the opportunity to comment on the draft environmental assessment (EA) for the Wildlife Habitat Improvement Project, Kekaha Game Management Area (GMA), Kekaha, Kauai. The Fish and Wildlife Service (Service) would like to offer the following comments on the draft EA.

Since the proposed project includes bulldozing and discing of 60-foot wide strips, there is a possibility of erosion, particularly if the time between clearing and planting is extensive. It is unclear from the draft EA how long the project is expected to take. Erosion is a concern for the native plants, some of which are relatively uncommon, found on the steep slopes directly below the areas to be cleared. The EA is unclear as to what precautions will be taken to prevent erosional damage to these native plants, such as completing the project in the shortest time possible and close to the time when the seeds are expected to germinate so that the ground is bare for a minimum amount of time.

The draft EA states that some common native plants will be affected to some degree, but that the rare plants will not be affected by the proposed project. One of the rare species, *Erythrina sandwicensis* (wiliwili), occurs as a forest that overlaps slightly with the planting area along Pulehu Ridge (see attached map). In addition to flagging and avoiding individual rare plants in other locations, the Service recommends that this small area of wiliwili forest not be included as part of the proposed clearing and planting area. Other individual rare plants should be avoided by at least 20 feet, to assure that impacts are minimized. If the Division of Forestry and Wildlife wishes to remove all of noxious weeds around these plants, it should be done by hand rather than with a bulldozer.

Two nene (*Branta sandwicensis*), an endangered species, were reported in the area in 1995, according to the draft EA. The contractor should be made aware of the possibility that nene may

be in the area during the proposed activities. If none are observed, all activities should stop until the none have left the area. Bats, another endangered species, are also known from the area. If all activities are conducted during daylight hours, it is unlikely that this proposed project will have any affect on the bats.

The Service appreciates the opportunity to comment on the proposed game management actions. If you have any questions regarding these comments, please call me or Marie Bruegmann at 808-541-3441.

Sincerely,

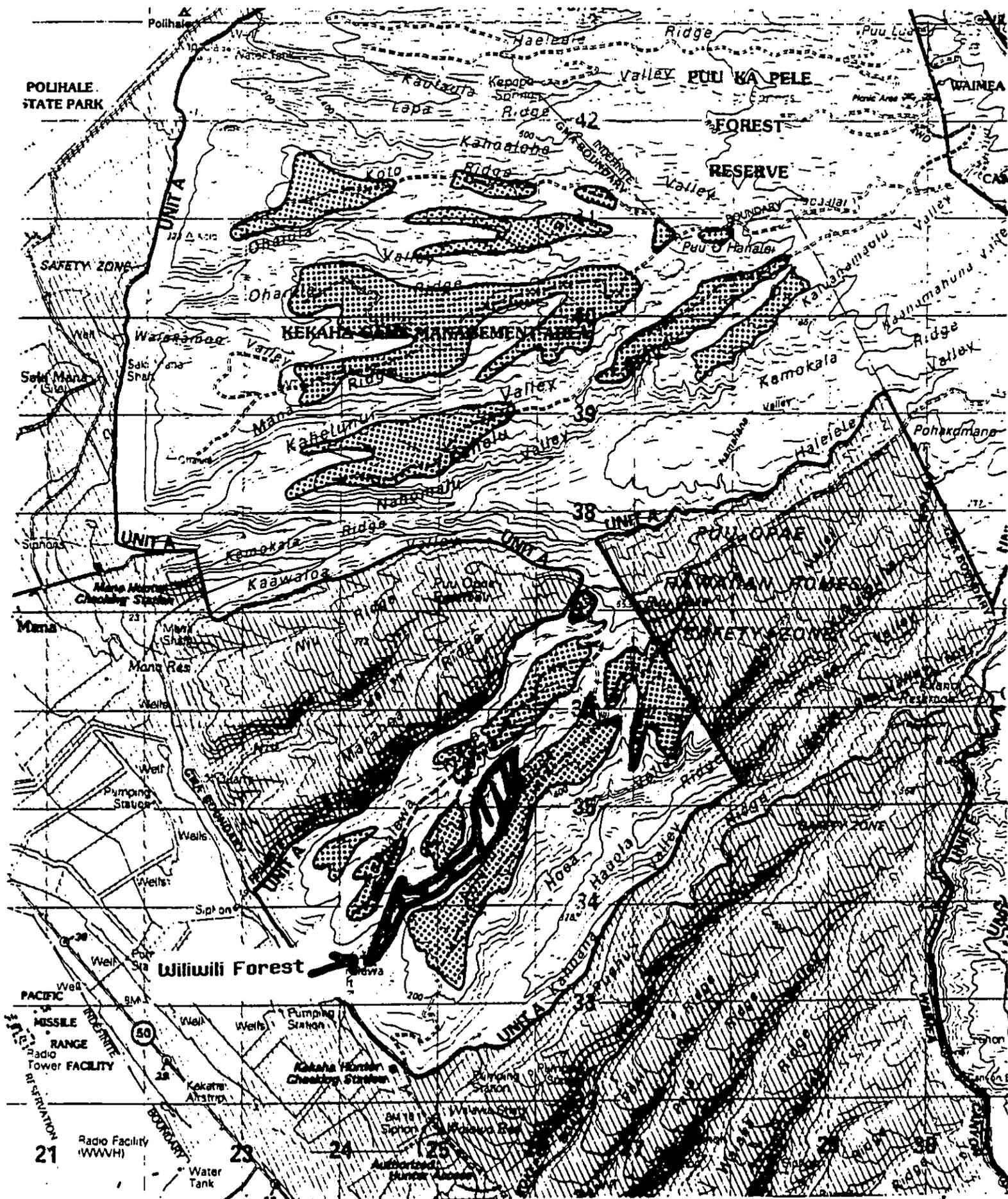
  
for Brooks Harper  
Field Supervisor  
Ecological Services

Enclosure

LOCATION OF PROPOSED PLANTING AREAS



KEKAHA GAME MANAGEMENT AREA, KAUAI, HAWAII





For the Protection of Hawaii's Native Wildlife

## HAWAII AUDUBON SOCIETY

850 RICHARDS ST., SUITE 505 • HONOLULU, HI 96813-4709  
TELEPHONE/FAX (808) 528-1432

DIV. OF FORESTRY & WILDLIFE

April 22, 1997

Mr. Thomas Kaiakapu, Wildlife Biologist  
Department of Land And Natural Resources  
Division of Forestry and Wildlife  
Kauai District

APR 22 1997		FILE REFERENCE
PETEYS		INFO:
KAWAKAMI		COM & RECOM.
MOGA		APP ACTION
KYONO		DRAFT REPLY
MAHARA		POST BUL BD.
		SEE ME
		VENIX

Dear Mr. Kaiakapu,

I am responding to your request for comments on the Draft Environmental Assessment for the Kekaha Game Management Area. In general, the Hawaii Audubon Society supports the plan's fire prevention efforts through contour plantings of bahia and bermuda grass. However, we do have a few concerns regarding the presence of any nesting pueo, the timing of any fertilizer applications, and a monitoring schedule following habitat improvements.

As pueo numbers on Kauai and elsewhere appear to be declining due to habitat loss and prey competition, we are concerned that clearing, planting, and mowing work might disrupt the nesting success of pueo in project areas. We strongly recommend that field surveys for pueo nests be undertaken by qualified personnel prior to habitat improvement efforts. Since pueo probably nest throughout the year, we cannot recommend a best time to clear, plant and mow. However, if nesting behaviors or active nests are detected, we recommend that other project areas be worked until the chicks have fledged. If this option is unfeasible, it may be necessary to haze pueo (and any foraging nene) from project areas before nesting begins. The use of modified marine surveillance radar may be of some use in determining the presence of pueo (or any roosting Hawaiian Hoary bats) given the signature of their flight patterns.

It is unclear whether fertilizers would be used to assist in re-vegetation efforts. As planting will be done in the wet season, we recommend applying any fertilizers in the the dry season to avoid nutrient loading of nearby waterways. Also, we trust that re-planting work will commence immediately after clearing work to mitigate against soil losses.

Lastly, we hope that a monitoring program be established (if not already in place), to track the population levels of game birds in response to habitat improvements. If no or a negative correlation is detected, other limiting factors (such as the number of water troughs) may be at work. A monitoring program would also provide opportunities to monitor population levels of pueo, as well as the use of any newly re-vegetated areas by nene.

Thank you for this opportunity to participate in the environmental review process. If you have any questions, please feel free to call our office at (808)528-1432.

Daniel K. Sailer  
Conservation Chair, Hawaii Audubon Society

ltr\_dlnr.001

BENJAMIN J. CAVETANO  
GOVERNOR  
STATE OF HAWAII



KALI WATSON  
CHAIRMAN  
HAWAIIAN HOMES COMMISSION

JOBIE M. K. M. YAMAGUCHI  
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS  
P. O. BOX 1879  
HONOLULU, HAWAII 96805

April 22, 1997

Mr. Thomas Kaiakapu  
Wildlife Biologist  
Division of Forestry & Wildlife, DLNR  
3060 Eiwa Street, Room 306  
Lihue, Hawaii 96766

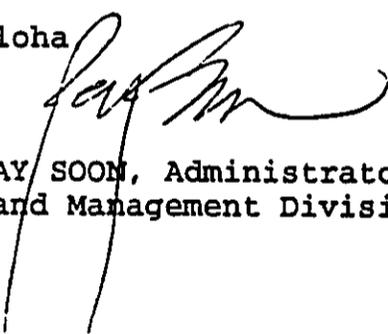
Dear Mr. Kaiakapu:

Subject: Proposed Wildlife Habitat Improvement Project

The Department of Hawaiian Home Lands has reviewed your draft environmental assessment for a proposed wildlife habitat improvement project in the Kekaha Game Management Area and fully supports the project as proposed in the draft environmental assessment.

The department requests to be kept apprised of the project's timetable and progress. If we can be of any assistance or if you have any questions, please call Norbert Cordeiro, Land Agent, Land Management Branch, at 586-3894.

Aloha

  
RAY SOON, Administrator  
Land Management Division

DIV. OF FORESTRY & WILDLIFE

DATE REC'D APR 23 1997		FILE REFERENCE	
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BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE HISTORIC PRESERVATION DIVISION  
33 SOUTH KING STREET, 6TH FLOOR  
HONOLULU, HAWAII 96813

APR 28 1997

MICHAEL D. WILSON, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES  
GILBERT COLOMA-AGARAN  
INFO  
CON & RECOM  
APP ALIEN ACQUISITION DEVELOPMENT PROGRAM  
DRAFT REPLY  
AQUATIC RESOURCES  
CONSERVATION AND  
RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
DIVISION  
LAND DIVISION  
STATE PARKS  
WATER AND LAND DEVELOPMENT

April 23, 1997

**MEMORANDUM**

LOG NO: 19255 ✓  
DOC NO: 9704NM07

TO: Thomas Kaiakapu, Biologist  
Division of Forestry and Wildlife

FROM: Don Hibbard, Administrator  
Historic Preservation Division 

SUBJECT: **Historic Preservation Review -- EA for Proposed Wildlife Habitat Improvement Project and Archaeological Reconnaissance Survey: Kekaha Game Management Area, Waimea, Kaua'i (Yent, 1997)**  
TMK: 1-2-02:

Thank you for submitting the above document for our review. We have reviewed the archaeological report previously with State Parks and have included this document for your information. No significant historic sites were found. Therefore, we believe that this project will have "no effect" on significant historic sites.

If you have any questions please call Nancy McMahon at 742-7033.

NM:amk

Attachment: Doc# 9703NM27.doc

May 7, 1997

Department of Land and Natural Resources  
Division of Forestry and Wildlife  
3060 Eiwa Street  
Lihue, HI 96716

Dear Thomas C. Telfer.

The Kauai Aquatic Life and Wildlife Advisory Committee has reviewed the plans for the Pahia grass planting project in Unit A on Kauai. The committee supports this project.

Unit A is designated as a Game Management Area and projects like these help to provide hunting opportunities not just for the hunters of Kauai but for the State.

Thank you for allowing us to review and comment on this project.

Sincerely,

Clayton Sakahashi  
KALAWAC Chairman.

## Kauai Hunting Association

P.O. Box M  
Hanapepe, HI 96716

May 8, 1997

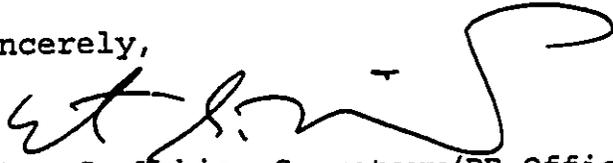
Department Of Land And Natural Resources  
Division Of Forestry And Wildlife  
3060 Eiwa Street, Room 306  
Lihue, HI 96766

Mr. Kaiakapu,

The Kauai Hunting Association commends your office for your efforts towards improving gamebird hunting on Kauai. On behalf of the KHA, I would like to extend full support of your proposal sent to us with your letter dated March 27, 1997. It should have a positive impact on gamebird hunting as well as indirect benefits for mammal hunting.

Thank you for consulting with our organization, and best of luck with the project.

Sincerely,



Elton S. Ushio, Secretary/PR Officer

## GARDEN ISLE BIRD DOG CLUB

Region 18, AFTCA

3180 Alohi St.  
Lihue, HI 96766  
(808) 245-3000

May 9, 1997

Thomas Kaiakapu  
Department Of Land And Natural Resources  
Division Of Forestry And Wildlife  
3060 Eiwa Street, Room 306  
Lihue, HI 96766

Mr. Kaiakapu,

Thank you for involving the GIBDC in the review of your proposed plans for gamebird management. Our organization feels that your plans should greatly benefit upland bird hunting on Kauai, especially when combined with the volunteer efforts currently under way. As such, we express our support of your proposal, and pledge to fully involve our members in assisting the DLNR.

As always, please feel free to contact our organization, should you need any assistance involving the gamebird program.

Sincerely,



Eric Honma, President

APPENDIX F

RESPONSE TO COMMENTS ON THE PROPOSED PROJECT

Federal: U.S. Fish and Wildlife Service, USDI

Others: Hawaii Audobon Society



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
KAUAI DISTRICT  
3080 EIWA STREET, ROOM 308  
LIHUE, KAUAI, HAWAII 96766-1875

April 28, 1997

IN REPLY REFER TO

Mr. Brooks Harper  
USFWS-USDI  
Pacific Islands Ecoregion  
300 Ala Moana Blvd, Rm 3108  
P.O. Box 50088  
Honolulu, HI. 96850

Dear Mr Harper,

Thank you for your comments on the draft environmental assessment for the Wildlife Habitat Improvement Project, Kekaha Game Management Area on the island of Kauai. Your concerns for the proposed project are addressed below:

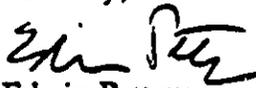
**Soil erosion:** As we have done with our experimental plots, we plan to minimize soil loss by treating only areas which are level to gently sloping. We have experienced little to no soil erosion problem to date. Removed vegetation will be piled on the down slope of each cleared strip to create a small berm along the contour of the terrain. We will also conduct the planting operations soon after each strip is cleared to ensure rapid grass establishment. To accomplish this, all clearing and planting will be planned closely together to complete each annual increment in a short period of time. This will also minimize the impact on the habitat, wildlife and hunters.

**Wiliwili (*Erythrina sandwicensis*):** There may have been some minor differences in the map we supplied with that of the botanist. We have no intentions of clearing any areas occupied by wiliwili trees. We are well aware of their locations and they will be protected.

**Nene (*Branta sandwicensis*):** We concur with your recommendation to minimize the impact on nene, if they should visit the project area.

The Division of the Forestry and Wildlife appreciates your comments on the proposed EA. If you have any further comments, please feel free to call me or Thomas Kaiakapu at (808) 274-3433. Thank you.

Sincerely,

  
Edwin Petreys,  
District Manager



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
KAUAI DISTRICT  
3060 EIWA STREET, ROOM 306  
LIHUE, KAUAI, HAWAII 96766-1875

IN REPLY REFER TO

April 28, 1997

Mr. Daniel K. Sailer  
Conservation Chair  
Hawaii Audubon Society  
750 Richards St. Suite 505  
Honolulu, HI. 96813-4709

Dear Mr. Sailer:

Thank you for your comments on the draft environmental assessment for the Wildlife Habitat Improvement Project, Kekaha Game Management Area on the island of Kauai. Your concerns for the proposed project are addressed below:

**Pue'o (Assio flammeus):** We concur that field surveys for pue'o activity within the project area should be implemented prior to the clearing for habitat development.

**Fertilizers:** We have not used fertilizers at any of our experimental plots because we've experienced excellent germination and establishment. Therefore, fertilizing was not necessary. If however, we find the need to use fertilizers in some areas to accelerate establishment, we concur with your recommendation that it be done during the dry season.

**Monitoring:** Game bird surveys are annually conducted prior to the game bird hunting season with ten to fourteen surveyors. On our survey form, there is a column for reporting other species seen during the survey. Observations of pue'o and nene (Branta sandvicensis) will be noted during future surveys.

The Division of Forestry and Wildlife appreciates your comments on the proposed EA. If you have any further comments, please feel free to call me at (808) 274-3433. Thank you.

Sincerely,

Thomas Kaiakapu  
Wildlife Biologist

APPENDIX G

COMMENTS RECEIVED ON THE DRAFT ENVIRONMENTAL ASSESSMENT

State:       Office of Environmental Quality Control  
              Office of Hawaiian Affairs

BENJAMIN J. CAYETANO  
GOVERNOR

DIV. OF FORESTRY & WILDLIFE-KAUAI



GARY GILL  
DIRECTOR

DATE RECD	FILE REFERENCE
AUG 5 1997	
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KAWAKAMI	INFO
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KYONO	APP ACTION
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PAPKE	POST BUL RD
RIVERA	SEE ME
TELFER	XEROX
KAIKAPU	Date Due
ECKART	

STATE OF HAWAII

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET  
SUITE 702  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 586-4186  
FACSIMILE (808) 586-4186

July 22, 1997

Mr. Michael Wilson, Chair  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Subject: Draft Environmental Assessment for the Kekaha Wildlife  
Habitat Improvement Project, Kauai

This is in response to the review of the subject document. We have  
the following questions and comments.

1. The purpose of this project is to improve degraded game bird habitat on portions of the Kekaha Game Management Area that have been invaded by a number of noxious non-native weeds. What is the cause of the infestations? What will be done to prevent non-native weeds from overgrowing the area again?
2. Presently, there are 300-400 head of feral cattle on the rangeland. Rangeland cattle grazing may be a factor in removing desirable plants and promoting the noxious weeds. What plans exist, if any, to separate the cattle from the replanted areas?
3. Please list all the federal, state and county permits and approvals that would be required for this project.
4. Please justify the finding of no significant impact determination based on the criteria set forth in section 11-200-12 of the EIS rules.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Gary Gill  
Director

PHONE (808) 594-1888

FAX (808) 594-1865



STATE OF HAWAII  
OFFICE OF HAWAIIAN AFFAIRS  
711 KAPI'OLANI BOULEVARD, SUITE 500  
HONOLULU, HAWAII 96813

DIV. OF FORESTRY & WILDLIFE-KAUAI

DATE RECD 1997		FILE REFERENCE
PETTEYS		
KAWAKAMI		INFO
KOGA		COM & RECOM
KYONO		APP ACTION
NISHIMURA		DRAFT REPLY
PAPKE		POST BUL BD
RIVERA		SEE ME
TELFER	7/14	XEROX
KAIKAPU	STB	Date Due
ECKART		

July 14, 1997

Mr. Thomas C. Telfer  
Kauai District Wildlife Manager  
Department of Land and Natural Resources  
3060 Ewia St.; Room 306  
Lihue, HI 96766-1875

**Subject:** Draft Environmental Assessment (DEA) for Wildlife  
Habitat Improvement Project, Kekaha Game  
Management Area, Island of Kauai.

Dear Mr. Telfer:

Thank you for the opportunity to review the Draft Environmental Assessment (DEA) for Wildlife Habitat Improvement Project, Kekaha Game Management Area, Island of Kauai. The State intends to improve degraded land on portions of the Kekaha Game Management Area

The Office of Hawaiian Affairs (OHA) concurs with the State analysis of the degraded condition of portions of rangeland in the Kekaha Game Management Area due to continuous cattle overgrazing and weed infestation. These adverse impacts are certainly affecting exotic introductions of plant species as well as game bird habitats and indigenous flora and fauna species. OHA also concurs with the State on the need to address these adverse impacts.

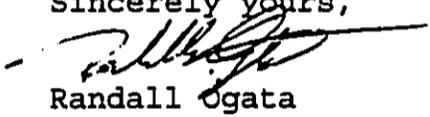
But OHA has serious concerns on the rationale used to target rangeland improvement. Rangeland improvement in this case, mechanical weed eradication followed by pasture establishment, is proposed only in flat to gentle sloping areas where cattle grazing primarily takes place. OHA finds this selective improvement quite disturbing taking into account that steep rangelands which are home to native species and indigenous habitats, are also degraded and in need of urgent improvement.

Letter to Mr. Telfer  
Page two

Furthermore, OHA is concerned that public funds will be used to improve rangelands that will primarily benefit private cattle activities. Although characterized as wildlife habitat improvement, the project appears to actually be improving feed grounds for domestic animals. In summary, the proposed improvement project is as follows: The State proposes state-funded improvements on ceded lands currently leased to Amfac Sugar for cattle pasturage.

Please contact Lynn Lee, Acting Officer of the Land and Natural Resources Division, or Luis A. Manrique, should you have any questions on this matter.

Sincerely yours,

  
Randall Ogata  
Administrator

LM:lm

cc Trustee Clayton Hee, Board Chair  
Trustee Abraham Aiona, Board Vice-Chair  
Trustee Rowena Akana, Land & Sovereignty Chair  
Trustee Haunani Apoliona  
Trustee Billie Beamer  
Trustee Frenchy DeSoto  
Trustee Moses Keale  
Trustee Colette Machado  
Trustee Hannah Springer  
CAC, Island of Kauai

APPENDIX H

RESPONSE TO COMMENTS ON THE DRAFT ENVIROMENTAL ASSESSMENT

State:      Office of Enviromental Quality Control  
              Office of Hawaiian Affairs



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
KAUAI DISTRICT  
3060 EIWA STREET, ROOM 306  
LIHUE, KAUAI, HAWAII 96766-1875

July 25, 1997

IN REPLY REFER TO

Mr. Randall Ogata  
Administrator  
Office of Hawaiian Affairs  
711 Kapiolani Blvd. Suite 500  
Honolulu, HI 96813

Dear Mr. Ogata:

Thank you for your comments on the draft environmental assessment for the Wildlife Habitat Improvement Project, Kekaha Game Management Area on the Island of Kauai. Your concerns for the proposed project are addressed below:

The proposed project is designed to improve game animal habitat on open rangeland that is highly altered because of past agricultural use. Our intent is not to improve pasture for cattle, but to open up overgrown weed infested shrublands so that game birds and mammals can better utilize the habitat. Game birds such as pheasants and francolin prefer open areas intermingled with shrub cover. They cannot utilize habitat that consists of solid overgrowth of noxious shrubs and grasses. Hunters likewise cannot work their bird dogs in badly overgrown areas, and oftentimes cannot even penetrate the overgrown brush to gain access to the valleys where they hunt pigs and black-tailed deer.

Our intent on the other hand is not to re-habilitate indigenous flora and fauna on the ridge tops because they are far too degraded to achieve that goal. We will not be treating the steep slopes and valley bottoms, because that is where most of the remaining indigenous plants still exist, and we do not want to accelerate erosion.

Furthermore, the existing overgrowth of undesirable shrubs and unpalatable grasses now pose a high risk of uncontrollable wildfires. By creating these bahia grass pasture strips, we plan to create fuel breaks that will serve to lessen the chances of a catastrophic fire.

The bahia grass that we propose to plant is not a particularly attractive forage grass for cattle. It grows no higher than 6 to 8 inches and does not produce abundant forage. It is attractive for game management because it forms a dense carpet that tends

Mr. Randall Ogata  
July 25, 1997

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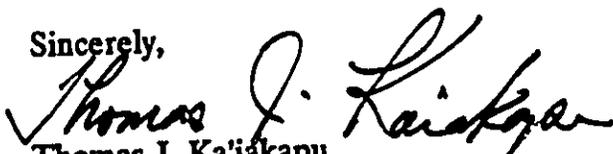
to keep weed shrubs and grasses out, and permits game as well as hunters to move freely about.

With respect to your concern for the use of public funds to improve the rangelands for the benefit of private cattle production: At present, Amfac Sugar holds a temporarily extended lease to the area. Amfac has maintained cattle on the land in the past, but recently has begun to remove their animals. It is our understanding that they do not intend to continue grazing these lands. The Division of Forestry and Wildlife has been the main user of these mauka lands for the past two decades by virtue of a cooperative agreement with Amfac Sugar, which we hope to continue. We feel that some grazing is necessary in this area to keep the overgrowth of grasses under control (both for game management values and for fire protection). However most of the fencing was destroyed by Hurricane Iniki, and cattle management in the area has never proven to be economical or productive.

The majority of funding to be used on our project is derived from Pittman-Robertson Federal Aid to Wildlife Restoration funds, and the State Wildlife Revolving Fund, both of which are derived from taxes on hunting equipment, hunting licenses and wildlife stamp revenues. Little if any State general funds will be used. The project is designed primarily to benefit game birds and mammals and the hunters which will harvest them.

The Division of Forestry and Wildlife appreciates your comments on the proposed draft E.A.. If you have any further comments or concerns, please feel free to call me at (808) 274-3433.

Sincerely,

  
Thomas J. Ka'iakapu  
Wildlife Biologist



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
KAUAI DISTRICT

3060 EIWA STREET, ROOM 306  
LIHUE, KAUAI, HAWAII 96766-1875

August 12, 1997

IN REPLY REFER TO

Mr. Gary Gill, Director  
Office of Environmental Quality  
235 South Beretania St., Suite 702  
Honolulu, HI. 96813

Dear Mr. Gill,

Thank you for your comments on the draft environmental assessment for the Wildlife Habitat Improvement Project, Kekaha Game Management Area on the island of Kauai. Your questions on the proposed project are answered below:

1. **What is the cause of the infestations?** In the last century, hundreds of non-native plants and animals were intentionally and unintentional brought to the islands. It did not take long for some of the alien weeds to disperse and establish in the hunting area. Most of the non-native plants found in the Kekaha GMA are the aggressive type such as lantana (*Lantana camara*), molasses grass (*Melinis minutiflora*), koa haole (*Leucaena leucocephala*) and silky oak (*Grevillea robusta*) and found throughout much of the lowland areas of Kauai. Natural disasters such as Hurricane Iwa in 1982 and Hurricane Iniki in 1992 struck Kauai with such devastating force that it allowed new weed species to disperse into the hunting area. Some of these plants include the bushy beard grass (*Schizachyrium condensatum*), thatching grass (*Hyparrhenia rufa*) and hyptis (*Hyptis pectinata*). All three species are spreading rapidly in the GMA.

Cattle overgrazing during the territorial and early statehood years probably made matters worse by allowing more aggressive weeds to get established. Cattle numbers were highest during the 1950's and 1960's where an estimated 1200 head of cattle roamed the Kekaha rangelands.

**What will be done to prevent non-native weeds from overgrowing the area again?** Once the area is treated, occasional mowing will be required to allow the bahia and bermuda grasses to become established. Once established, it will form a dense mat that tends to keep weedy shrubs and grasses from re-establishing. Game mammals and game birds will greatly benefit from the improved habitat.

2. **What plans exist, if any, to separate the cattle from the replanted areas?** We have not experienced any major problems with cattle during the experimental years because the cattle numbers are presently very low. Amfac Sugar has maintained cattle on the land in the past, but has recently begun removing their animals. It is our understanding that they do not intend to

Mr. Gary Gill

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continue grazing these lands.

3. **Please list all federal, state and county permits and approvals that would be required for this project.**

Federal: none  
State: Board of Land and Natural Resources approval  
County: none

4. **Please justify the finding of no significant impact determination based on the criteria set forth in section 11-200-12 of the EIS rules.**

We find the proposed project will have no significant impact on the environment because:

1. No cultural or natural resource will be irrevocably lost or destroyed.
2. It would not curtail the range of beneficial uses of the environment.
3. It does not conflict the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.
4. It does not substantially affect the economic or social welfare of the community or state.
5. It does not substantially affect public health.
6. It does not involve substantial secondary impacts, such as population changes or effects on public facilities.
7. It does not involve substantial degradation of environmental quality.
8. It does not have considerable cumulative effect upon the environment nor does it involve a commitment for larger actions.
9. It does not substantially affect rare, threatened, or endangered species or its habitat.
10. It does not detrimentally affect air or water quality or ambient noise levels.
11. It does not affect nor will it likely to suffer damage by being located in an environmentally sensitive area.
12. It does not substantially affect scenic vistas and viewplanes identified in county and state plans or studies.
13. It does not require substantial energy consumption.

Please consider this a finding of no significant impact, and re-publish the May 1997 draft as the final draft in the O.E.Q.C. Bulletin as prescribed. Please contact me at 274-3433 if you have additional questions.

Sincerely,



Thomas J. Ka'iakapu  
Wildlife Biologist

cc: M. Wilson, Chairperson  
E. Petteys, Kauai District Manager