Manuka NAR Fence Const.

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DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
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OFC. OF ENVIL. QUALITY CONTROL

November 3, 1997

Mr. Gary Gill, Director
Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, HI 96813

Dear Mr. Gill,

The Draft Environmental Assessment for construction of a fence in the Manuka Natural Area Reserve was published in the OEQC Bulletin of August 23, 1997. During the public comment period following, several government agencies and private organizations wrote in support of this action; their comments reflected the need for actions such as this to protect rare and fragile native terrestrial ecosystems. No responses were received recommending that we not proceed with project as planned.

We have determined that this project will not have significant negative effect on the environment and have issued a Finding of No Significant Impact. Please publish this notice in the next OEQC Environmental Notice.

Applicant: Department of Land and Natural Resources
Division of Forestry and Wildlife
Natural Area Reserves System

Approving Agency: Department of Land and Natural Resources

Project Description: Fence Construction, Olopua Unit, Manuka NAR
Ka'u, Hawaii, TMK: 9-1-1-2.

This project involves construction of approximately 1¾ mile of fence surrounding an area of approximately 150 acres in the Manuka Natural Area Reserve. The fence will enclose the majority of a kipuka containing a forest dominated by Olopua (Nestegis sandwichensis) a native tree related to the Olive. This particular kipuka contains the best remaining example of a type of forest that was once common throughout Hawaii, but has been largely displaced by human activity. The fence will prevent feral pigs from entering the kipuka, and increase the chance that on-going efforts to restore this rare native plant community will succeed.

Reasons Supporting Determination:

The intent of this project is to benefit native species in the project area. Creating a permanent barrier to exclude feral pigs from this area will remove one of the major threats to the survival of this native forest. Negative impacts resulting from this project include short term damage to vegetation and the dispersal of weeds along the fence corridor.

The open nature of the forest makes it possible to construct the fence without significant damage to living trees. Additionally, most of the path to be crossed by the fence has already been disturbed by pigs; understory vegetation here is primarily non-native. Continuing an on-going program to control non-native plants, and regular fence inspections will minimize the chance that new weed species will become established in this area.

Contact: Bryon Stevens
Natural Areas Specialist
P.O. Box 4849
Hilo, HI 96720
(808) 974-4221

Enclosed are four copies of the Environmental Assessment, comment letters received for the Draft EA, the response made to those comments, and a completed OEQC publication form.

Sincerely,

MICHAEL BUCK
DOFAW Administrator

Enclosures

1997-11-23-HI-FEA-Manuka Natural Area Reserve Fence Construction

ENVIRONMENTAL ASSESSMENT

for

FENCE CONSTRUCTION

OLOPUA UNIT, MANUKA NATURAL AREA RESERVE

In accordance with

CHAPTER 343, HAWAII REVISED STATUTES

Proposed by:

State Division of Forestry and Wildlife
Natural Area Reserves System

October 1997

Project Name Fence Construction, Olopua Unit,
Manuka Natural Area Reserve

Project Location Manuka, Ka'u, Hawai'i,
TMK: 9-1-1-2

Applicant State Of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
Natural Area Reserves System

Approving Agency State Department of Land and Natural Resources

Agencies Consulted

Federal: U.S. Department of Agriculture
Natural Resources Conservation Service

U.S. Department of Interior
Fish and Wildlife Service
National Park Service
USGS, Biological Resources Division

State: Department of Land and Natural Resources
Division of Conservation and Resource Enforcement
Division of Forestry and Wildlife
Land Division
Historic Preservation Division
Natural Area Reserve System Commission

County: Planning Department

Private: Bishop Museum
Conservation Council for Hawaii
Hawaii Audobon Society
Hawaiian Ocean View Estates Community Association
Native Hawaiian Advisory Commission
Native Hawaiian Legal Corporation
Pig Hunters of Hawaii
Sierra Club Legal Defense Fund
Sierra Club, Moku Loa Group
The Nature Conservancy of Hawaii

Project Description

Summary: The Division of Forestry and Wildlife (DOFAW) Natural Area Reserves System (NARS) proposes construction of a fence to enclose a portion of the above mentioned parcel, and implementation of a program to systematically control certain non-native weeds within the fenced area. Approximately 1¾ mile of fence will be constructed, enclosing an area of roughly 200 acres. The fence would surround the majority of a kipuka containing a forest dominated by Olopua (Nestegis sandwicensis) trees, and prevent the entry of feral pigs. The project area is located within the boundaries of the Manuka Natural Area Reserve. All project lands are State owned and within the Conservation District Subzone. Maps of the project area can be found in Appendix A.

Progression: This project would proceed as follows:

Phase I: The alignment of the fence is marked with plastic flagging, and this trail inspected for the presence of rare or endangered plants. If any are found, they will be marked to prevent damage by fence construction crews. If necessary, fence alignment will be shifted to avoid individual plants. No significant plant species were located near the alignment during a preliminary survey in February 1997.

Phase II: Woody vegetation is cleared from the fence corridor with hand and small power tools. The line cleared will be no more than six feet in width. Trees greater than six inches in diameter will not be cut. Minor soil disturbance, moving of rocks, etc. will also be necessary within this corridor.

Phase III: The actual installation of the fence. Materials will be flown in by helicopter sling. All site preparation and construction will be done with hand and small power tools. Construction will involve driving galvanized steel fence posts into the ground every 10 feet along the line, attaching one strand of barbed wire to the posts at ground level, and stretching 39 inch tall, galvanized hog wire between the posts. Where necessary, anchor posts will be used along the line, between posts, to ensure that there are no gaps between the bottom of the fence and the ground.

As fence construction nears completion, every effort will be made to ensure that no pigs remain within the enclosed area. Due to the small size of the area to be enclosed, and the open nature of the forest understory, this could be done by leaving one side of the unit open and driving animals towards this opening prior to completing the fence. Making a final sweep of the area with hunting dogs should ensure that all animals have been removed. Fence inspections will be made on a regular basis to ensure that the area remains pig free.

Management actions planned within this area after fence construction include control of several species of non-native weeds, and possibly outplanting rare native species. Because this forest is still relatively intact and weed free, weed control will be directed towards incipient populations of plants known to invade and disrupt native forests. Systematic control of christmas berry, two species of guava, and two of Passiflora was started in March of 1997, and slightly more than half the kipuka has been treated at this writing. Several small populations of Desmodium, Kalanchoe, Justica and Wedelia have been located and will be eradicated. Long term weed control will include regular sweeps through the entire area to prevent reinvasion by these species. Methods used include hand pulling or girdling and applying a systemic herbicide to the stems of woody plants and spraying grasses and other ground covers. See Appendix B for a list of weed species to be controlled.

Affected Environment

The Manuka Natural Area Reserve occupies 25,550 acres on the SW slope of Mauna Loa. Rainfall is generally less than 50 inches a year. The portion of the reserve where the project area is located is vegetated by a mosaic of different aged stands of 'Ohia (Metrosideros polymorpha) forest, most on a substrate of young (<2000 years) 'a'a lava lows. Several kipukas of older lava occur throughout the area, and they generally contain deeper soil and a more diverse assemblage of plant species than the younger flows surrounding.

Flora: The project area encompasses the majority of one of these kipukas. The forest is composed of large 'Ohia trees (100 feet tall and up to 6 feet in diameter) scattered amongst a closed understory dominated by Olopua (Nestegis sandwicensis) and 'Aulu (Pisonia sandwicensis) trees up to 30 feet tall. A large variety of other native plants are present. The forest understory is very open, and ground cover consists mainly of leaf litter, with patches of native and introduced grasses and ferns. See Appendix B for a complete list of plant species found within the kipuka.

This forest type was once common in Hawaii's leeward lowlands, but has been almost completely

displaced by agriculture, fire and invasion by non-native plant species. Remnants of this plant community exist elsewhere on Hawaii and the other islands, but the Olopua forests of Manuka are the most extensive and least disturbed example remaining in the State.

Fauna: Information about animals within the Manuka NAR is limited. See Appendix C for a list of vertebrate species recorded from the Reserve. 'Elepaio (Chasiempis sandwicensis) and 'Amakihi (Hemignathus virens)are very common in the tall forests in and around the project area. The endangered 'Alala or Hawaiian crow (Corvus hawaiiensis) was last observed in the vicinity in 1982. While it is unlikely that any persist in the area, the forests of Manuka remain important as potential habitat for the 'Alala.

According to the 1992 Draft Inventory Report for Manuka NAR, "a high diversity of native invertebrates was evident...along survey transects in the forested areas, representative native species included native crickets, spiders, flies, bees, wasps and planthoppers."

Feral pigs are common in the mauka portion of the NAR. The area where the most pig activity was observed is a group of several deep soil kipukas near the northwestern reserve boundary. The pigs probably move between the NAR and the adjacent macadamia orchard. The kipuka selected for this project is relatively close to a nature trail, and human activity and dogs may be scaring some pigs away. However, the large number of downed and hollowed out hapu'u fern trunks and areas of soil disturbance are evidence that some pigs remain in the area and continue to damage the native vegetation.

Significant & Sensitive Habitats: The entire project area can be considered a sensitive habitat, particularly for native forest birds, the Hawaiian bat, and various native invertebrates. Legally protected plants found within the kipuka include one Mehamehame (Flueggia neowawrae) tree, and a population of the vine Gouania vitifolia (no common name). Both these plants are listed as Endangered by the USFWS. The Gouania is especially significant as the plant had not been collected on Hawaii since the 1800's and was thought to be extinct. Several populations of ha'iwale (Cyrtandra menziesii), a USFWS Species of Concern, were found in collapsed lava tubes throughout the kipuka. Historic information suggests that other rare plant species may once have been present. If so, the project area could become a possible site for their reintroduction.

Archaeological Sites: No archaeological sites were seen by NARS staff along the proposed fence line, or within the kipuka. The State Historic Preservation Office has no record of sites in the area and considers it "doubtful that any exist." Other nearby kipukas show sign of intensive Hawaiian agriculture; rock walls, terracing, and invasion by introduced species in areas where natural vegetation was cleared. This kipuka was selected for management precisely because there has been minimal alteration of the environment by human activity.

Two distinct foot trails were seen to cross the surrounding 'a'a flows and enter this kipuka. In the course of survey work throughout this Reserve, we have seen evidence of a substantial network of trails connecting areas with arable soil. There is no evidence of these trails within the kipuka, only on the lava flows outside the area to be fenced.

Impacts Resulting from Project

Short Term Impacts: The primary environmental impacts from this project will be those associated with construction of the fence. Destruction of vegetation and ground disturbance will occur in a strip no more than 6 feet wide along the fence corridor. Noise and air pollution from small power tools and from an increase in human activity will be unavoidable over a period of 3 to 4 months. Helicopter flights will be necessary on two occasions; to deliver supplies at the beginning of the project and to remove tools and excess material at the end. This may disturb native birds or bats in the immediate vicinity.

Long Term Impacts: Although no major long-term negative effects are expected, the potential exists for introduction of new weed species , and spread of weeds into areas disturbed by fence construction. This is discussed under mitigation.

Positive long term impacts include regeneration of pig damaged vegetation within the fenced area. Years of pig activity within this kipuka have resulted in the destruction of much of the natural forest understory. Native tree seedlings, groundcover plants and tree ferns have been largely extirpated. The result has been an increase in sunlight reaching the forest floor, and drying out of the soils. These conditions have favored the establishment of non-native grasses and vines, which compete with and prevent the establishment of native plant seedlings. Long term studies of similar dry and mesic forest areas (particularly in Hawaii Volcanoes National Park) show that native plants can reestablish themselves and shade out non-native competitors if animal disturbance is removed. Olopua is a prolific seeding, fast growing tree that should rapidly reinhabit openings in the forest canopy.

Excluding pigs will also remove the primary vector by which seeds of the most invasive weeds are being spread. Four of the most severe plant threats are two species of guava and two of passion fruit, all of which are readily distributed in the droppings of pigs that have eaten the fallen fruit.

Socio-economic impacts: Proceeding with this project will result in the permanent removal of 200 acres from a public hunting area. This is not expected to have significant impact on hunting opportunities for several reasons. The project area represents less than 1 percent of the 25,550 acre Manuka NAR, the majority of which will remain open for hunting for the foreseeable future. Other portions of this NAR may be selected for similar management in the future, but large areas within the Reserve have been so degraded and altered by human and animal activity that minimal native vegetation remains. As a general rule, those areas within the reserve that have been most disturbed and invaded by non-native fruiting plants like guava, avocado, kukui, coffee, passionfruit, etc. (and are as a result least likely to be managed intensively for the protection of native species) contain the most pigs. There are few pigs within the project kipuka; it is unlikely that hunters use the area regularly.

Besides the Manuka NAR, hunting opportunities exist on large tracts of State land in the nearby South Kona and Ka'u Forest Reserves.

Positive social impacts from this project include restoration of a unique and aesthetically pleasing Hawaiian forest; available for nature appreciation, education and research, and preserving for posterity a remnant of our rapidly disappearing natural heritage.

Alternatives to Project

Several alternatives to this project have been identified and are discussed here.

Alternative #1: Proceed with the project as described. Build a fence around 200 acres of the kipuka to exclude pigs, and begin control of selected weedy plants.

This is the preferred alternative, as it the most feasible, and in keeping with the Natural Area Reserve Law (Chapter 195, HRS) which mandates that the Reserves "preserve in perpetuity specific land and water areas which support communities, as unmodified as possible, of the natural flora and fauna...."

Alternative #2: Fence off a larger area, to include surrounding lava flows and other nearby kipukas.

This alternative was rejected for several reasons. The fence described above will be built only on the older and deeper soils at the perimeter of the kipuka. The surrounding terrain is extremely rough, and construction of a fence on this 'a'a lava would be difficult if not impossible without using heavy machinery to prepare the surface.

In addition, there is little evidence of animal activity on the rough lava surrounding the kipuka. Pig disturbance and weed infestation are largely confined to areas with deeper soil. Including the recent lava flows within the fence would be of little value. There are other small kipukas near the project area that could be included in a larger fence, but the vegetation in these areas is so disturbed that recovery is unlikely even with intensive weed control.

Alternative #3: Fence a smaller area within this kipuka, or a different kipuka entirely.

This kipuka is the least disturbed and most accessible example of this forest type in the reserve. When viewed in terms of cost-effectiveness and potential for recovery, it is important to enclose as much of this particular area as possible.

Alternative #4: No fence, just weed control and rely on public hunting to control pig numbers.

This would avoid the environmental impact associated with fence construction, and would allow continued use of the area for public hunting. Weed infestation could be reduced by a control program, but the long term presence of pigs would mean that seeds would continue to be brought into the area. In addition, the chance for native understory plant recovery is reduced. This would also reduce the value of the area as a site for the reintroduction of rare plants, as they would be vulnerable to pig damage.

Public hunting has reduced pig numbers to relatively low levels within the more accessible portions of the Manuka NAR. It is unlikely that hunting pressure in the project area will increase in the near future. Other nearby areas have higher numbers of animals, and offer better chance of hunting success.

Alternative #5: No fence, and control pigs with other measures, including snares, staff hunts, etc.

This method is incompatible with other public use of the area; the site is close to a heavily used nature trail, and snares would create the potential for injury to hikers and dogs. This would result in a reduction in numbers but not complete removal of pigs (see alternative #4.) In addition, these control measures would need to be continued in the long term, tying up resources that could be used elsewhere.

Alternative #6: No action.

Implies continued neglect of this area and acceptance of the inevitable degradation of this unique natural resource.

Mitigation Measures

As stated earlier, the major impacts from this project are vegetation related. Damage to living native plants will be restricted to within a few feet of the fence line, and no living trees greater than 6 inches diameter will be cut. No legally protected plant species were observed along the fence line, but an additional reconnaissance of the fence corridor will be made before work begins. Significant plants will be marked with flagging, and/or the fence alignment will be shifted to avoid damage. Weed introduction will be minimized by ensuring that all fence material, tools, boots, etc. are clean before being taken into the project area. Part of the long term control of weeds in the kipuka will include regular monitoring and control of newly introduced species of non-native plants along the fence line and access trail.

Disturbance to native forest birds will be reduced by scheduling helicopter operations to avoid the peak nesting season of February through July.

No archaeological sites have been seen within the area to be disturbed by the fence line. Should any be discovered during construction, work will be halted and the proper authorities notified.

No mitigation is planned to compensate for removing this area from continued public hunting. Were hunters to express interest, they could be provided with maps and other information to direct them to other areas within the reserve where large numbers of pigs can be found.

Expected Determination

No significant negative impact on the environment is expected from this project.

Findings and Reasons Supporting Expected Determination

The intent of this project is to benefit native species in the project area. Creating a permanent barrier to exclude pigs will remove a major threat to the continued survival of this unique plant community. Ample evidence exists to show that disturbance caused by feral pigs is a factor contributing to replacement of Hawaiian vegetation by introduced weeds. If pigs are removed before damage becomes too severe, native vegetation is able to recover naturally and the spread of weeds slowed or even reversed. Implementing a systematic weed control program will increase the probability of native vegetation recovery, and prevent the establishment of new noxious plant species. The short term damage to vegetation as a result of building the fence will be more than offset by the regeneration that will take place once pigs have been removed.

Environmental Assessment Prepared By:

Bryon Stevens
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(808) 974-4221
974-4226 fax

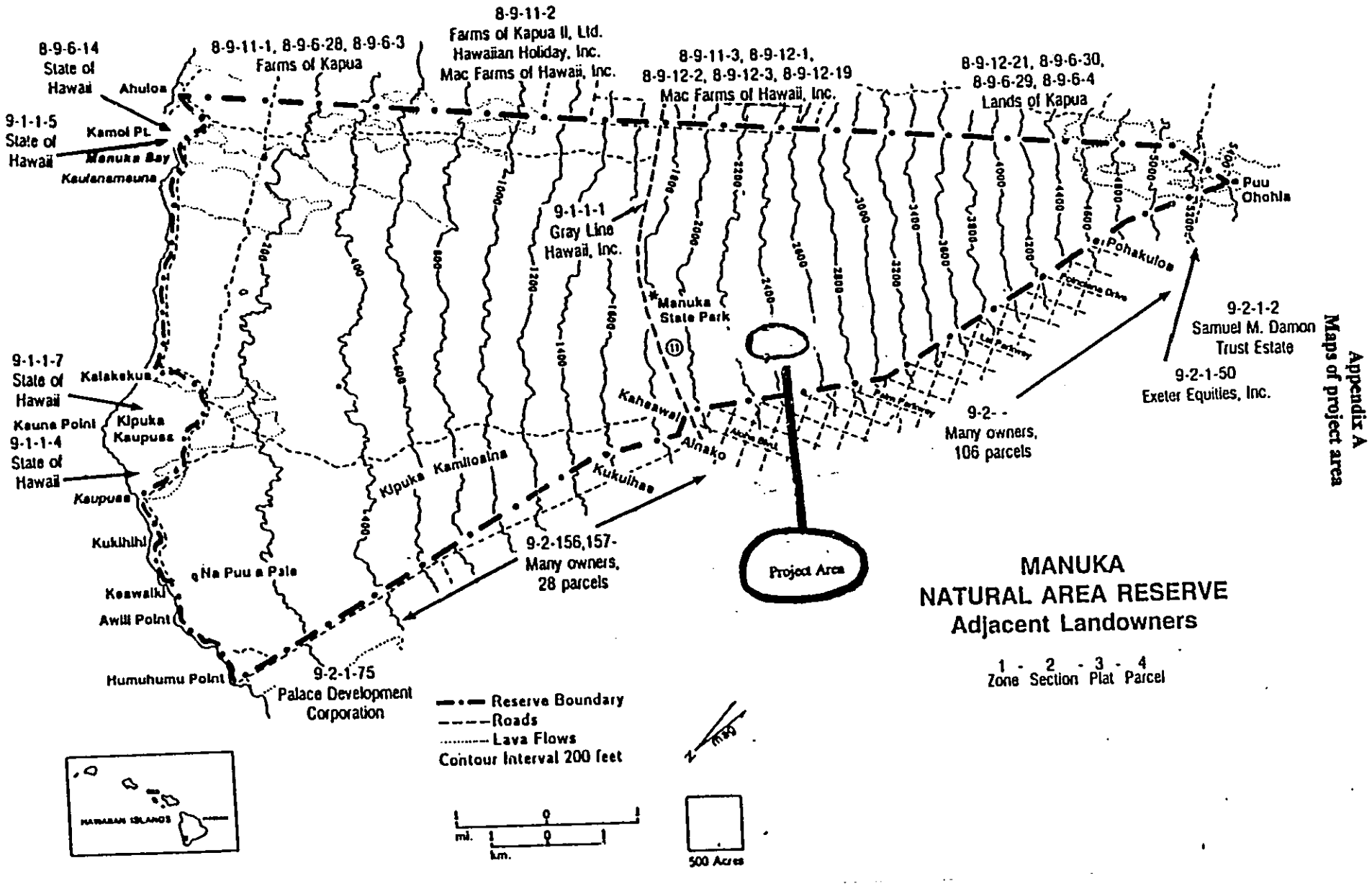
E-mail: narshi@interpac.net

Sources of Biological Information:

Hawaii Branch NARS surveys 1997

Manuka Natural Area Reserve Inventory Report , prepared by DLNR/DOFAW, 1992 Draft.

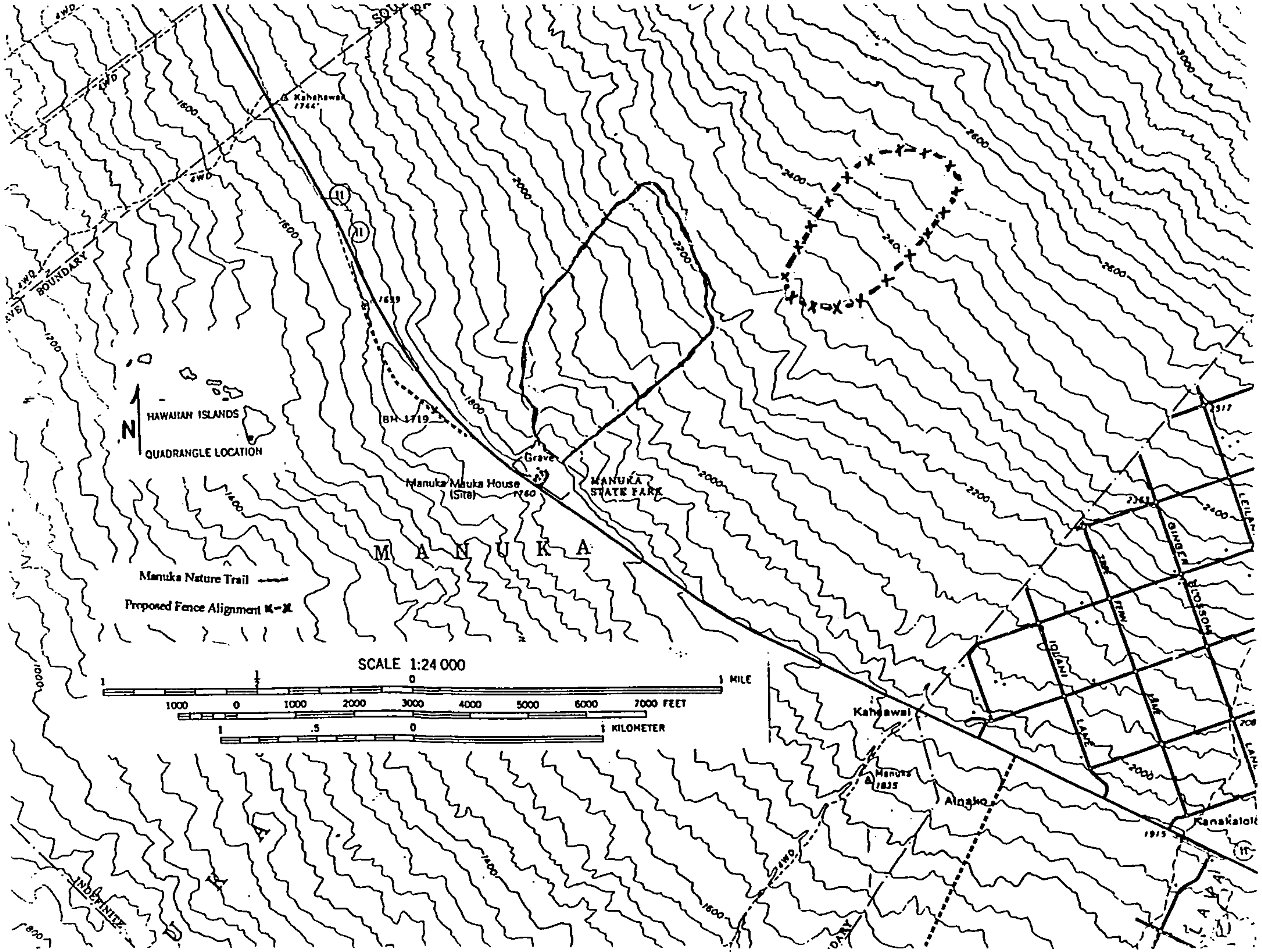
Manuka Natural Area Reserve Resource Information, prepared by the Nature Conservancy of Hawaii, 1989.



Appendix A
Maps of project area

MANUKA
NATURAL AREA RESERVE
Adjacent Landowners

1 - 2 - 3 - 4
Zone Section Plat Parcel



HAWAIIAN ISLANDS
QUADRANGLE LOCATION
N
Manuka Nature Trail
Proposed Fence Alignment X–X
SCALE 1:24 000
1 MILE
7000 FEET
1 KILOMETER
M A N U K A
Manuka Mauka House (Site)
Grave
MANUKA STATE PARK
BM 1719
Kahahawai
Kahawai
Manuka 1835
Alapko
Kanakaloli
BOUNDARY
INDEFINITE
IOLANI
LANE
FERN
GINGER
BLOSSOM
LEILANI

Appendix B
List of Plant Species Found in Project Area

Native Woody Plants Scientific name	Common name	
Metrosideros polymorpha	ʻohiʻa	
Nestegis sandwicensis	ʻolopua	
Psychotria hawaiiensis	kopiko	
Flueggia neowawrae	mehamehame	(Endangered)
Canthium odoratum	alaheʻe	
Diospyros sandwicensis	lama	
Pisonia sandwicensis	ʻaulu	
Melicope volcanica	alani	
Melicope sp.	"	
Wikstroemia sandwicensis	akia	
Pipturus albidus	mamaki	
Hedyotis terminalis	manono	
Hedyotis centranthoides	"	
Streblus pendulinis	aʻiaʻi	
Antidesma platyphylla	hame	
Claoxylon sandwicensis	poʻola	
Pittosporum terminaliodes	hoʻawa	
Coprosma menziesii	pilo	
Urera glabra	ʻopuhe	
Freycinetia arborescens	ʻieʻie	
Pouteria sandwicensis	ʻalaʻa	
Xylosma hawaiiense	maua	
Reynoldsia sandwicensis	ʻohe makai	
Sophora chrysophylla	mamane	
Embelia pacifica	kilioe	
Tetraplasandra hawaiiensis	ʻohe mauka	
Charpentiera obovata	papala	
Osteomeles phyllanthoides	ʻulei	
Cyrtandra menziesii	haʻiwale	(Species of Concern)
Gouania vitifolia		(Endangered)
Lipochaeta subcordata	nehe	

Native ferns, grasses, herbs etc. Scientific name	Common name
Asplenium nidus	ʻekaha, bird nest fern
Cibotium glaucum	hapuʻu pulu
Cibotium menziesii	hapuʻu iʻi
Pteris cretica	ʻoali
Pteris excelsa	waimakanui
Nephrolepis exaltata	ʻokupukupu
Cyrtomium caryotideum	kaʻapeʻape
Dryopteris unidentata	ʻakole
Diplazium sp.	hoʻiʻo
Grammitis hookeri	mahinalua
Tectaria gaudichaudii	ʻiwaʻiwa lau nui
Uncinia uncinata	
Carex wahuensis	

Native ferns, grasses, herbs continued

Scientific name		Common name
Korthalsella sp.		hulumoa
Ipomoea pes-caprae		koali
Peperomia sp.		ala'alawainui

Introduced Plants

Scientific name		Common name
Aleurites mollucana	*	kukui
Psidium guajava	*	common guava
Psidium cattleianum	*	strawberry guava
Cordyline fruticosa		ti
Schinus terebinthifolius	*	christmas berry
Buddleia asiatica		
Passiflora mollisima	*	banana poka
Passiflora ligularis	*	sweet granadilla
Senna pendula	*	
Senna occidentalis		coffee senna
Cecropia peltata	* #	trumpet tree
Pluchea symphythifolia		sourbush
Ageratina riparia		pamakani
Stachytarpheta jamaicensis		vervain
Senecio mikanoides	* #	german ivy
Desmodium intortum	*	
Desmodium trifolium	*	spanish clover
Sida acuta	*	
Kalanchoe pinnata	*	air plant
Rubus rosifolius		thimble berry
Rubus niveus	* #	
Wedelia triloba	* #	
Justica betonica	* #	shrimp plant
Asclepia curassivaca	*	milkweed
Hyptis pectinata	* #	
Bidens pilosa	* #	beggar tick
Solanum linnaeum	* #	apple of sodom
Monstera sp.	* #	
Adiantum hispidulum		five-finger maidenhair fern
Cyrtomium falcatum		bow fern
Thelypteris dentata		pai'i'iha, downy wood fern
Blechnum occidentale		
Nephrolepis multiflora		'okupukupu
Schizachrium condensatum	*	bushy beardgrass
Paspalum conjugatum		hilo grass
Melinis minutiflora	* #	molasses grass
Oplismenus hirtellus		hono hono

* Targeted for control
# Localized occurrence, not widespread

Appendix C
List of Vertebrate Species in Manuka NAR

The vertebrates listed have been reported from visual and audio identification in or near the reserve. The list includes information on rare birds and the Hawaiian bat, compiled from the literature. Bird taxonomy follows the "Checklist of the Birds of Hawaii" by Pyle (1988).

Status	Species	Common name	Source
BIRDS			
N	*Acridotheres tristis*	common myna	*
N	*Alectoris chukar*	chukar	x
E	*Asio flammeus sandwichensis*	pueo, short-eared owl	?
+E	*Buteo solitarius*	ʻio, Hawaiian hawk	*
N	*Cardinalis cardinalis*	northern cardinal	*
N	*Carpodacus mexicanus*	house finch	x
N	*Cettia diphone*	Japanese bush-warbler	*
E	*Chasiempis sandwichensis sandwichensis*	ʻelepaio	*
+E	*Corvus hawaiiensis*	ʻalala, Hawaiian crow	x
N	*Geopelia striata*	zebra dove	*
E	*Hemignathus virens virens*	ʻamakihi	*
E	*Himatione sanguinea sanguinea*	ʻapapane	*
N	*Leiothrix lutea*	red-billed leiothrix	x
N	*Lophura leucomelana*	kalij pheasant	*
N	*Meleagris gallopavo*	wild turkey	x
N	*Phasianus colchicus*	ring-necked pheasant	x
N	*Streptopelia chinensis*	spotted dove	*
N	*Tyto alba*	common barn-owl	x
E	*Vestiaria coccinea*	ʻiʻiwi	*
N	*Zosterops japonicus*	Japanese white-eye	*
MAMMALS			
N	*Capra hircus*	goat	*
+E	*Lasiurus cinereus semotus*	ʻopeʻapeʻa, Hawaiian hoary bat	*
N	*Sus scrofa*	pig	*
N	Rattus rattus	Rat	*
N	Herpestes auropunctatus	Mongoose	*

+ = Rare N = Non-native E = Endemic

x = Cited in literature * = Confirmed during NARS field study
? = Cited in literature; needs confirmation in reserve

Adapted from Manuka Natural Area Reserve Resource Information, prepared by The Nature Conservancy of Hawaii, 1989.

Appendix D
Comments Received from Reviewers of Draft Environmental Assessment

Stephen K. Yamashiro
Mayor

Virginia Goldstein
Director

Russell Kokubun
Deputy Director

County of Hawaii
PLANNING DEPARTMENT

25 Aupuni Street, Room 109 • Hilo, Hawaii 96720-4252
(808) 961-8288 • Fax (808) 961-9615

July 11, 1997

Mr. Byron Stevens, Natural Area Specialist
Division of Forestry and Wildlife
~~Department of Land~~ and Natural Resources
P.O. Box 4849
Hilo, HI 96720

Dear Mr. Stevens:

Draft Environmental Assessment for the Fence Construction
at Olopua Unit, Manuka Natural Area Reserve
TMK: 9-1-1: Portion of 2: Manuka, Ka'u, Hawaii

We are in receipt of the above described draft environmental assessment for the installation of approximately 2 miles of pig-resistant fencing which will enclose approximately 350 acres of a kipuka containing native Hawaiian forest. We have no objections to the proposed fence installation, but do have the following comments to offer:

1. The project site is situated within an area designated Conservation by the State Land Use Commission. The project site has not been zoned by the Hawaii County Zoning Code.

2. The project site is not situated within the County's Special Management Area (SMA).

Thank you for allowing our office the opportunity to comment. Please contact Daryn Arai of my staff at 961-8288 should you have any questions.

Sincerely,

Russell Kokubun

for VIRGINIA GOLDSTEIN
Planning Director

DSA:pak
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United States
Department of
Agriculture

Natural
Resources
Conservation
Service

P.O. Box 50004
Honolulu, HI
96850

Our People...Our Islands...In Harmony

July 14, 1997

Mr. Byron Stevens
Natural Area Specialist
Department of Land and Natural Resources
Division of Forestry and Wildlife
P.O. Box 4849
Hilo, Hawaii 96720

Dear Mr. Stevens:

Subject: Draft Environmental Assessment (DEA) - Construction of Fence in the Manuka Natural Area Reserve, Ka'u, Hawaii

We have reviewed the above mentioned document and have no comments to offer at this time.

We thank you for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

United States Department of the Interior

FISH AND WILDLIFE SERVICE

PACIFIC ISLANDS ECOREGION
300 ALA MOANA BOULEVARD, ROOM 3108
BOX 50088
HONOLULU, HAWAII 96850
PHONE: (808) 541-3441 FAX: (808) 541-3470

In Reply Refer To: CMC

JUL 24 1997

Bryon Stevens
Department of Land and Natural Resources
Division of Forestry and Wildlife
P.O. Box 4849
Hilo, Hawaii 96720

Re: Draft Environmental Assessment for Fence Construction at Manuka Natural Area Reserve, Hawai'i

Dear Mr. Stevens:

The U.S. Fish and Wildlife Service (Service) has reviewed the referenced Draft Environmental Assessment (DEA) for the proposed construction of a fence to enclose a 350 acre kipuka in the Olopua Unit of the Manuka Natural Area Reserve, Hawai'i. The goal of the proposed project is to protect an area of unique biological significance by preventing the entry of pigs into a selected parcel dominated by olopua *(Nestegis sandwicensis)* trees. The lead agency is the Natural Area Reserves System (NARS) of the State Division of Forestry and Wildlife. The Service offers the following comments for your consideration.

The Service applauds NARS for the development of proactive measures designed to protect Hawai'i's natural resources. We support the selected alternative and do not anticipate significant adverse impacts to fish and wildlife resources, including threatened and endangered species provided that the project sponsor adheres to the mitigative measures specified in the DEA.

While the DEA adequately describes the flora, fauna, and habitats that exist at the proposed project site, it would be very helpful to include a paragraph outlining management plans for the parcel following fence completion. A brief description of specific actions and strategies in the "Project Description" section would suffice.

Additionally, the following editorial comments may prove helpful when finalizing the Environmental Assessment.

a. The specific epithet "*sandwichensis*" should be spelled *sandwicensis*; "*Flueggia neowawrae*" is spelled *Flueggia neowawraea*; "*Korthasella*" is spelled *Korthalsella*; "*Pluchea symythifolia*" is spelled *Pluchea symphytifolia*; and "*Melinis minutifolia*" is spelled *Melinis minutiflora.*

b. "*Psychotria sandwichensis*" is not included in the Manual of the Flowering Plants of Hawai'i, could this refer to *Psychotria hawaiiensis*?

c. *Asplenium nidus* is an indigenous species.

d. Please include the name of the snail discovered in 1996. The names of any other invertebrate taxa occurring in the area should be included, if known.

e. *Cyrtandra menziesii* is a Species of Concern. This should be taken into consideration when planning the fence route and future management.

f. The placement of the 'okina should be double checked for all Hawaiian words. For example, "i'ei'e" should be spelled 'ie'ie.

The Service appreciates the opportunity to comment on the proposed project. If you have questions regarding these comments, please contact Fish and Wildlife Biologist Christina Crooker at (808) 541-3441.

Sincerely,

Brooks Harper

Brooks Harper
Field Supervisor
Ecological Services

United States Department of the Interior

NATIONAL PARK SERVICE
Hawaii Volcanoes National Park
P.O. Box 52
Hawaii 96718-0052

IN REPLY REFER TO:

L7617(HAVO)

Mr. Bryon Stevens
Natural Area Specialist
Division of Forestry and Wildlife
P.O. Box 4849
Hilo, Hawaii 96720

Dear Bryon:

Your proposal to fence and remove pigs from mesic forest stand in Manuka Natural Area Reserve is well thought out and appropriate. I concur with your preferred alternative and recommend quick implementation of the project. I am curious, however, about the management context for the project; in other words, how does this project fit in with other management of the NAR?

Sincerely,

Tim Tunison
Chief of Resources Management

BISHOP MUSEUM

CELEBRATING A
CENTURY OF DISCOVERY

3 August 1997

Bryon Stevens
Natural Area Specialist
DLNR, Div. of Forestry and Wildlife
P.O. Box 4849
Hilo, Hawaii, 96720

Dear Mr. Stevens:

Thank you for your letter of 23 June and for the opportunity to comment on the proposal to fence a portion of the Manuka NAR. By introduction, I am a professional entomologist with expertise in the native Hawaiian ~~insect fauna~~. During the past 25 years, I have visited the NAR several times both on my own and on a small contract a few years ago to survey the caves within the NAR. I am familiar with the damage that feral pigs can do to the native forests in Hawaii and agree that the proposed fenced is warranted.

Manuka NAR still supports a diverse variety of native arthroped species, which are worthy of protective management. The loss of native plant species through the action of ungulates, including pigs, is one of the most severe threats to the integrity of Hawaiian forests. In addition, pig rooting disrupts leaf litter and soil habitats thereby limiting regeneration by native plants and nutrient cycling by native arthropods. Fencing the proposed area appears to be a viable strategy for short-term management of the most vulnerable resources at Manuka. The lessons learned as the fenced area is monitored should be used to change management strategy both within and outside the fenced area. That is, in the longer term, the area will undergo succession, and change. Additional areas outside the fence will need to be included eventually to assure a viable patchwork of communities in all natural stages of succession. Otherwise, there may be no replacement as senescence degrades the original community.

I have two further suggestions or recommendations. The fence should also be designed to exclude mouflon. These wild sheep are invading forests adjacent to Manuka and may be capable of jumping fences designed to exclude pigs. Once the fence is constructed, dogs can be trained to walk the outside fence line to monitor for the presence of ungulates. Use of dogs may significantly reduce the costs of monitoring for pigs in the area.

Thank you again for the opportunity to comment. I wish you all success in building and maintaining the fence and protecting the spectacular native biota for future generations. These comments are my own personal professional opinions and are not to be taken as the position of the Bishop Museum.

Aloha,

Francis Howarth

Francis G. Howarth

Entomologist

The State Museum of Natural and Cultural History
1525 Bernice Street • Honolulu, Hawai'i • 96817-0916
Telephone: (808) 847-3511 • Fax: (808) 841-8968

Sunrise, Mt. McKinley Ansel Adams

SIERRA CLUB LEGAL DEFENSE FUND, INC.
Earthjustice
The Law Firm for the Environmental Movement
223 South King Street, 4th Fl., Honolulu, HI 96813 (808) 599-2436 FAX (808) 521-6841

August 1, 1997

Via Facsimile Transmittal (808) 974-4226

Bryon Stevens
Natural Areas Specialist
P.O. Box 4849
Hilo, Hawai'i 96720

Re: Comments on Draft Environmental Assessment - Manukā NAR

Dear Bryon:

Earthjustice Legal Defense Fund (previously Sierra Club Legal Defense Fund) appreciates the opportunity to comment on the March 1997 Draft Environmental Assessment (EA) for weed control and fence construction in the Manukā Natural Area Reserve (NAR) on the Big Island of Hawai'i, by the Division of Forestry and Wildlife (DOFAW), Hawai'i Department of Land and Natural Resources (DLNR). We commend DOFAW for taking the initiative to protect and manage the NAR, which includes rare and unique native Hawaiian ecosystems, plants, and animals, including endangered species. We support Alternative #1 in the draft EA for the following reasons:

(1) Alternative #1 will assist in protecting:

(a) native Hawaiian forest dominated by 'ōhi'a, olopua, and āulu trees;
(b) the endangered mēhamehame and *Gouania vitifolia;*
(c) habitat for the endangered 'ōpe'ape'a (Hawaiian hoary bat);
(d) habitat for the 'elepaio, which was relatively common in the recent past and which may be listed as threatened or endangered in the near future;
(e) potential habitat for the critically endangered 'alalā
(f) native invertebrates and their habitat, many of which may be declining or are threatened with extinction; and
(g) watershed cover, which helps prevent erosion into nearshore waters and fishing grounds.

(2) Alternative #1 is consistent with the State's mandatory duty to:

(a) carry out programs for the conservation, management, and protection of indigenous aquatic life, wildlife, and land plants and their associated ecosystems;
(b) give priority to the conservation and protection of those endangered aquatic life, wildlife, and land plants and their associated ecosystems, whose extinction within the state would imperil or terminate their existence in the world; and
(c) coordinate with the Natural Area Reserves Commission all programs for the conservation, management, enhancement, and protection of indigenous, threatened, and endangered plants and animals.

Haw. Rev. Stat. §§ 195D-5(a), (d), (e).

(3) Alternative #1 is consistent with the legislature's finding that Hawai'i's unique natural resources should be protected and preserved for the enjoyment of future generations, and to provide base lines against which changes that are being made in the environment can be measured. The legislature also found that Hawai'i's system of preserves, sanctuaries, and refuges must be strengthened and that additional areas of land and shoreline suitable for preservation should be set aside and administered solely and specifically for these purposes. Haw. Rev. Stat. § 195-1 (emphasis added).

(4) Alternative #1 is consistent with the federal Endangered Species Act. which requires the State to "establish and maintain an active program for the conservation[1] of endangered species and threatened species" in order to receive federal funding from the U.S. Fish and Wildlife Service under Section 6 of the Act. U.S.C. § 1535(c).

(5) Alternative #1 is consistent with Priority #1 recovery actions listed in the U.S. Fish and Wildlife Service's Recovery Plans for the endangered mēhamehame and *Gouania vitifolia*, which include:

(a) constructing and maintaining fences to prevent destruction by introduced ungulates, such as pigs, goats, and sheep;
(b) removing ungulates within fenced areas; and
(c) implementing alien plant control.

(6) Alternative #1 is consistent with Priority #1 recovery actions listed in the U.S. Fish and Wildlife Service's Recovery Plan for the critically endangered 'alalā, which include:

(a) identifying key habitat areas at Hualalai, Central Kona. South Kona, and Ka'ū;
(b) fencing key habitat areas;
(c) controlling feral grazing animals; and
(d) controlling mosquitoes.

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[1] The term "conservation" means to use and the use of all methods and procedures that are necessary to bring any threatened or endangered species to the point at which the measures in the federal act are no longer necessary. U.S.C. § 1532(3).

(7) Alternative #1 is consistent with DLNR's Action Plan for Threatened and Endangered Wildlife (Threatened and Endangered Species Plan for Wildlife, Plants & Invertebrates 1988), which directs DLNR to:

(a) protect, manage, develop, and maintain existing and future habitats to improve condition, long-range viability;
(b) control noxious animals (herbivores) damaging to habitat; and
(c) control noxious plants (exotics) damaging to habitat.

(8) Alternative #1 is consistent with the Natural Area Working Group's (NAWG's) guiding principle that some areas on the Big Island should be managed for few or no pigs/ungulates so that native Hawaiian ecosystems can thrive, and other areas should be managed for game animals so that hunting is enhanced. Given the critically endangered status of *Gouania vitifolia* and the 'alalā, and the fact that the proposed fenced area is relatively intact and supports a large population of 'elepaio, this area must be managed for native ecosystems.

The draft EA indicates that care and appropriate actions will be taken throughout all phases of the project, including minimizing impacts to native vegetation, birds, and the hoary bat durin fence construction. Furthermore, we believe the benefits of fencing and eliminating ungulates and weeds in sensitive native areas far outweigh any potential short-term, negative impacts associated with fencing.

Our only concern with the proposal is that a mere 350 acres (less than 2 percent of the 25,550-acre NAR) will be fenced and protected from ungulates and weeds. Do any unique, threatened, or endangered species or ecosystems occur outside the proposed fenced area at Manukā NAR? If so, how does DOFAW intend to reconcile the incompatibility of managing game and feral animals in sensitive native areas, and how can DOFAW justify any unauthorized taking of listed species and habitat destruction that would likely occur?

On a related matter, we were extremely disappointed to hear that approximately 1.5 miles of fence at the Pu'u Maka'ala NAR was recently vandalized. Our understanding is that the purpose of the fence at Pu'u Maka'ala is to exclude feral pigs from sensitive native areas, consequently, we recommend that any expenses associated with reconstructing this fence be covered by DOFAW's budget for game management on the Big Island. In addition, this is a request for all information and documents currently available to the public on this matter, and for all information and documents that become available to the public upon completion of the Department's investigation.

Mahalo nui loa for the opportunity to comment on the draft EA for the Manukā NAR, and for coordinating this important project.

Sincerely,

Marjorie Ziegler

cc: Mike Wilson
NAWG members via Bill Stormont

MOKU · LOA · GROUP
SIERRA CLUB · HAWAI'I CHAPTER

COMMENTS SUPPORTING FENCE CONSTRUCTION IN THE OLOPUA UNIT OF THE MANUKA NATURAL AREA RESERVE

Submitted by Sally Wang, Conservation Chair, Moku Loa Group, Hawai'i Chapter, Sierra Club, September 1997

The Moku Loa Group applauds the proposal to construct a fence to enclose and protect some 350 acres which encompass the "majority" of a kipuka containing the most extensive and least disturbed olopua forest remaining in the state. This unique area represents a last chance to preserve a once common historic ecosystem and an invaluable resource. The value lies not only in the endangered mehamehame tree, the native vine Gouania vitifolia, and other rare plants; not only in the olopua and ohia trees, but also in the total interacting native ecosystem which can support the 'elepaio, 'amakihi, and even the 'alala, as well as native insects and perhaps snails. This historic ecosystem may be used as a resource for research, education and propagation of diverse biologic treasures.

A buffer between the fence and the kipuka would seem most prudent. Unfortunately, financial resources for this extended fencing are not now available. Short of a fenced-in buffer zone, we urge continuing and careful maintenance of the borders to assure they are kept free of exotics. Enlarging the fenced area should be kept as a future option.

P.O. BOX 1137 · HILO, HAWAI'I · 96721

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

July 8, 1997

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

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WATER AND LAND DEVELOPMENT

MEMORANDUM

LOG NO: 19746 ✓
DOC NO: 9707PM04

TO: Byron Stevens
Natural Area Reserves System Commission

FROM: Don Hibbard, Adminstrator and
Deputy State Historic Preservation Office

SUBJECT: Draft Environmental Assessment for Fence Construction, Olopua Unit,
Manuka Natural Area Reserve
Manuka, Ka`u, Hawaii Island
TMK: 9-1-1:2

Thank you for your letter of June 23, 1997, and the copy of the Draft EA for the proposed project for our review and comment. We have no record of historic sites in this particular area. It is doubtful that any exist because the project area is located quite far inland at a fairly high elevation (c. 2300-2500 feet)on a geological substrate less than 2000 years old. Historic sites are also unlikely to occur because the project area is a linear corridor only 6 feet wide. Based on available evidence, we believe that the proposed fencing project will have "no effect" on significant historic sites. If evidence of an archaeological site or any human activity older than 50 years is found during the project our office should be immediately notified.

PM:jk

Appendix E
Response to Comments

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
P.O. BOX 4849
HILO, HAWAII 96720
(808) 974-4221
FAX (808) 974-4226

27 September 1997

Aloha,

Earlier this year you responded to a request for comments on the Draft Environmental Assessment for a fence construction project proposed in the Manuka Natural Area Reserve in Ka'u, Hawaii.

The final version of the EA will be published shortly, and we would like to thank you for taking time to review the Draft.

Several reviewers had questions about the management of this NAR, and expressed concern that only a small portion of the entire NAR had been selected for intensive management activities.

Rather than sending a different response to each individual reviewer, it seemed appropriate to summarize the comments received and respond to each major concern in turn. We apologize for this "form letter" response, and hope that it answers the majority of your questions.

- Comment: "... a mere 350 acres (less than 2 percent or the 25,550 acre NAR) will be fenced and protected from ungulates and weeds."

Response: Further survey of the project area since writing the Draft EA has revealed that the area to be enclosed will be slightly less than 200 acres.

Most of the Manuka NAR is comprised of an early successional stage of Ohia forest on rough lava of less than 500 years age. Pig disturbance of this rugged, rocky terrain is minimal, and does not appear to be an immediate threat to the health of the forest. In addition, many species of non-native plants do not readily colonize recent lava flows, but remain confined to kipuka with deeper soil. Those weeds that do invade the younger substrate are generally spread by wind or birds; a pig proof fence would not prevent this, nor would control of these plants be feasible.

In short, most of the NAR is too rocky for pigs or weeds. Most of the few areas in the Reserve that do have soil have been so disturbed that the present vegetation assemblage can in no way be considered "natural". This kipuka is a rare exception, and as such has a higher priority for protection than the rest of the Reserve.

Please keep in mind that this Assessment was not meant to serve as a management plan for the entire NAR. Our intent was not to write a lengthy document to store in the filing cabinet, where it could gather dust with management plans written in the past. Rather, we hoped to outline a specific action that would be feasible with the present (very limited) resources of the Natural Areas program. Perhaps, someday, funding and staffing of this program will be at a level where we can consider active management of all lands within the NAR system. You are encouraged to lobby our lawmakers toward that end.

- Comment: "Do any unique, threatened or endangered species or ecosystems occur outside the proposed fenced area at Manuka NAR?"

Response: Yes. As stated in the Draft EA, "Other portions of this NAR may be selected for similar management in the future." Conservation of native Hawaiian ecosystems is a developing science. The outcome of this small project will guide any future management activity.

- Comment: "...how does DOFAW intend to reconcile the incompatibility of managing game and feral animals in sensitive native areas, and how can DOFAW justify any unauthorized taking of listed species and habitat destruction that would likely occur?"

Response: This intent of this project is not to reconcile or justify anything. A solution to the conflict between game management and native species protection should not be expected any time soon. Thankfully, most of the Manuka NAR is far less "sensitive" to the short term effects of feral animals than other lands in the NAR (and Forest Reserve) system. Until such time as the staff and funding for this program are increased, expect to see continued "management by benign neglect" of the NAR system. Be thankful that we are able to attempt protection of this unique area, small as it is.

- Comment: "...how does this project fit in with other management of the NAR?"

Response: On-going activities in the Manuka NAR include reduction of the fire threat to the dry forests below Highway 11 by control of fountain grass, removal of garbage from the heavily used coastal area, and maintenance of the nature trail at the wayside park. Control of banana poka and German ivy in some small Koa forest kipukas near the upper boundary of the Reserve may be possible in the future.

- Comment: "Additional areas...will need to be included eventually to assure a viable patchwork of communities in all natural stages of succession."

Response: Agreed. The mosaic of different aged forests within the NAR provides a fascinating example of plant succession. On a lighter note, we still have a few centuries before enough soil develops for pig disturbance to become a concern. Perhaps Mauna Loa will erupt soon and cover the entire NAR, ending the need for further management.

- Comment: "The fence should be designed to exclude mouflon."

Response: We have seen no evidence of sheep or goats near the project area. Goats seem to be restricted to the dry forests and lava fields below 1000' elevation. Sheep inhabit the upper portion of the NAR, but roaming dogs and frequent gunfire coming from Hawaiian Ocean View Estates subdivision make it doubtful that a large population will ever develop.

- Comment: "Build the fence on lava flows outside the kipuka to avoid damage to plants/soils in the kipuka proper."

Response: Not feasible without the use of heavy machinery to level out the lava flow, as stated in Alternative #2 in the Draft EA. The open nature of the forest in the kipuka makes it unlikely that many trees will need to be cut. Also, in many places the wall of the surrounding 'a'a flow has concentrated pig activity at the perimeter of the kipuka, forming a convenient corridor of pre-existing soil disturbance for the fence alignment to folow.

Thank you again for taking the time to review the Draft EA. Any further comments or questions please refer to:

Bryon Stevens
Natural Areas Specialist

P.S. Non-native plant control within this kipuka began in early 1997 and the results have been encouraging. A large portion of this difficult work is being performed by volunteers. Anyone interested doing more towards protecting native ecosystems than merely pushing paper around is heartily encouraged to take part.