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DEPARTMENT OF HAWAIIAN HOMELANDS
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HONOLULU, HAWAII 96805

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OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

August 31, 2001

To: The Honorable Bruce S. Anderson, Director
Department of Health

Attn: Genevieve Salmonson, Director
Office of Environmental Quality Control

From: *Raynard C. Soon*
Raynard C. Soon, Chairman
Department of Hawaiian Home Lands

Subject: Finding of No Significant Impact (FONSI) for the Draft
Environmental Assessment for the Koa Salvage-
Reforestation and Gorse Containment, TMK 3-08-01: 02
por., 07 por., and 09 por., Humuula, Island of Hawaii

The Department of Hawaiian Home Lands has reviewed the comments received during the 30-day public comment period which began on June 8, 2001. At its regularly scheduled hearing on August 28, 2001, the Hawaiian Homes Commission determined that this project will not have significant environmental effects and issued a Finding of No Significant Impact (FONSI). Please publish this notice in the next issue of the Environmental Notice.

We have enclosed an Office of Environmental Quality Control Publication Form and four copies of the final Environmental Assessment.

If you have any questions, call Mike McElroy at 586-3823, or have your staff call Rebecca Alakai at 587-6423.

Enc.

SEP 23 2001

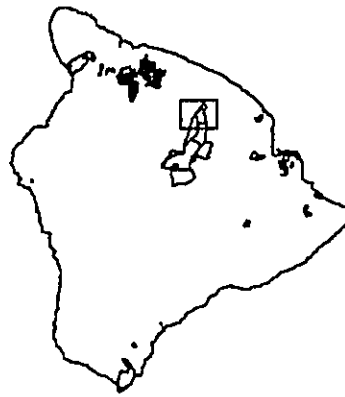
2001-09-23 - HI- FEA- Humuula **FILE COPY**



Final Environmental Assessment

Koa Salvage-
Reforestation and
Gorse Containment

Humu'ula, Island of Hawai'i



Prepared by:

State of Hawaii
Department of Hawaiian Home Lands
Land Management Division

EXECUTIVE SUMMARY

Project Name: Koa Salvage-Reforestation and Gorse Containment.

Location: Humuula is located on the eastern slopes of Mauna Kea near the Keanakolu Ranger Station, island of Hawaii. The project site is approximately 475 acres. TMK: 3-08-01: por. 02, por. 07, and por. 09.

Landowner: Department of Hawaiian Home Lands

Lessee: Parker Ranch, TMK: 3-08-01: por. 02 and por. 07.
Lessee: Freddy Nobriga Enterprises, Inc., TMK: 3-08-01: por. 09.

Proposing Agency: Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hi. 96805

Approving Agency: Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hi. 96805

Anticipated Determination: Finding of No Significant Impact

State Land Use Designation:

General Plan: Conservation (southwestern corner of 3-08-01: por 7)
Extensive Agriculture (3-08-01: por 2, rest of por. 7 and 9)
State Land Use: Conservation (southwestern corner of 3-08-01: por 7)
Agriculture (3-08-01: por 2, rest of por. 7 and 9)
County Zoning Ag-40a

Consulted Parties:

U.S. Department of the Interior, Fish and Wildlife Service
Hakalau Forest National Wildlife Refuge
Pacific Islands Ecoregion
U. S. Department of Agriculture, Natural Resources Conservation Service
U. S. Forest Service, Institute of Pacific Islands Forestry
Department of Agriculture
Department of Land and Natural Resources
Department of Business, Economic Development and Tourism
Department of Health
Department of Transportation
University of Hawaii, Manoa
Environmental Center
County of Hawaii, Planning Department
'Oiwi Lokahi O Ka Moku-puni O Keawe

Earth Justice Legal Defense Fund
Freddy Nobriga Enterprises, Inc.
Hawaii Agriculture Research Center
Hawaii Audubon Society
Hawaii Forest Industry Association
Kawaihae Hawaiian Homes Homeowners Community Association
Parker Ranch
Pig Hunters of Hawaii
Sierra Club - Moku Loa Group
The Hawaii Forestry and Communities Initiative
The Kamehameha Schools
The Nature Conservancy
Umikoa Ranch
Waimea Hawaiian Homesteaders' Association, Inc.
Winkler Wood Products

Final Environmental Assessment

Koa Salvage-Reforestation and Gorse Containment

Humuula, Island of Hawaii

August 9, 2001

Prepared by:

State of Hawaii
Department of Hawaiian Home Lands
Land Management Division

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1. INTRODUCTION AND SUMMARY

The proposed project sites are located on pasture lands adjacent to Keanakolu Road in Humuula, on the island of Hawaii. The proposed project consists of two parts described below:

The koa project proposes to salvage koa (*Acacia koa*) from pasture lands and reforest the 125 acre parcel with koa. Leave trees would remain based on their current health, diameter, and height in order to provide nesting, insect foraging habitat, and koa seed production onsite. The area will be fenced to control feral ungulates and the soil scarified to stimulate koa seedling growth from existing seed present in the soil. Salvage operations will be done in cutting blocks of 5 to 15 acres.

The gorse project proposes to plant a 250 foot wide perimeter of sugi (*Cryptomeria japonica*) trees to contain the leading edge of a gorse (*Ulex europaeus*) infestation. The perimeter totals about 320 acres. It is anticipated that sugi will shade the gorse sufficient to keep it from producing seeds. Gorse control currently consists of aerial spraying, ground spraying, and burning. Sugi will be planted in a continuous band around the subject area. Existing shade conditions in the forest along the makai side of the infestation should prevent gorse from becoming established. A koa perimeter will be planted along the border with the Hakalau Forest National Wildlife Refuge. Trial plantings of ten acres each of koa, mamane (*Sophora crysophylla*), and Douglas fir (*Pseudotsuga menziesii*) will be planted inside the perimeter to test species capable of growing at the 6,000 to 7,000 foot project elevation to further abate gorse growth. Funding for the gorse project will come from the koa project.

The expected impacts of the proposed project are reforestation and improved watershed, decreased herbicide use, forest-based economic opportunities, and contain gorse growth and expansion with a value-added land use. The koa and gorse projects would occur simultaneously.

1.1 Statement of Objectives

The objectives of the koa and gorse projects are:

- Salvage koa trees before they are further reduced in value by weather, rot, and age, leaving certain trees for wildlife habitat and on-site seed production;
- Promote forest-based economic opportunities in the community;
- Generate income to finance koa and gorse project site maintenance and start up costs;
- Improve the watershed;
- Provide a source of koa wood for various cultural activities;
- Investigate sustainable forestry;
- Contain and abate gorse growth and expansion with a value-added land use.

1.2 Koa Project

The koa project proposes to salvage koa and reforest about 125 acres of pasture from an existing 5,290 acre lease. The current stand consists of approximately 7 koa, 4 ohia, and 12 kolea trees

per acre. Only koa would be salvaged. Ohia (*Metrosideros polymorpha*) and kolea (*Myrsine lessertiana*) would not be harvested. After salvage operations, an average of 2.5 koa trees per acre would remain, or 35% of the koa overstory. Potential leave trees will be selected according to health, diameter, and height. Leave trees would remain to provide wildlife habitat, insect forage opportunities, and koa seed production onsite.

Salvaging will be done in cutting blocks of 5 to 15 acres. The project area will be fenced to control feral ungulates and the soil scarified to stimulate koa seedling growth from existing seed present in the soil. It is expected that a viable stand of koa saplings could become established within five years of project implementation. Natural regeneration will be monitored. If openings greater than 1/2 acre persist five years following salvage operations, planting of koa from local seed sources would occur. Herbicide treatments on banana poka (*Passiflora mollissima*), gorse, and competing grasses may be used.

Restoration of pasture to a diverse native forest would be an ongoing process. Research in Hawaii has shown that the exclusion of ungulates from native forest areas, in combination with viable and present seed sources, can result in the natural regeneration of several native species within a few years. Koa regeneration responds well when grass covered soils are disturbed. Native species other than koa are also expected to become established following the salvage operations. If necessary, supplemental planting could occur to augment forest recovery efforts. Implementation of the project will be conducted in a manner that complies with applicable law for activities such as site preparation and regeneration, soil erosion control, and use of fuels and chemicals.

Revenues derived from timber salvaging will be used to finance site maintenance for the koa and gorse projects, promote forest-based economic opportunities, investigate sustainable forestry, and contain and abate gorse growth.

1.3 Gorse Project

The gorse project proposes to plant a 250 foot wide perimeter of sugi trees to contain the leading edge of gorse. The core gorse infestation is about 4,800 acres. The perimeter plantings total about 320 acres. Sugi will be planted in a continuous band around the subject area. Existing shade conditions in the forest along the makai side of the infestation should prevent gorse from becoming established. A koa perimeter will be planted along the Hakalau Forest National Wildlife Refuge.

Gorse, classified as a noxious weed under Hawaii Administrative Rules chapter 68, is shade intolerant and reforestation can limit seed production and gorse regeneration. A pine planting on Maui has shown promising results in its ability to limit gorse growth and expansion. Existing fences will minimize the transportation of seeds by animals. Sugi, a non-invasive and frost tolerant tree species, is suitable for this high elevation site.

Trial plantings of ten acres each of koa, mamane (*Sophora crysophylla*), and Douglas fir (*Pseudotsuga menziesii*) will be planted inside the perimeter to test which species can grow at the 6,000 - 7,000 foot project elevation to further abate gorse growth and, in the case of the

native species to be planted, provide habitat restoration. Gorse control currently consists of aerial spraying, ground spraying, and burning. Spraying and burning has had limited success in controlling gorse. Several bio-control agents have established following release, but to date they have not stopped or noticeably slowed the expansion of the infestation.

Planting sugi is a value-added land use. Gorse has a life span of 20 - 30 years and the seed can remain viable in the soil for many years after that. It is anticipated that sugi will shade the gorse sufficient to keep it from producing seeds and that each year some portion of the seed bank will be removed. Each year that sugi impedes gorse growth and seed production results in decreased herbicide use.

The koa and gorse project status and information will be published in DHHL's annual report.

1.4 Department of Hawaiian Home Lands and Partners

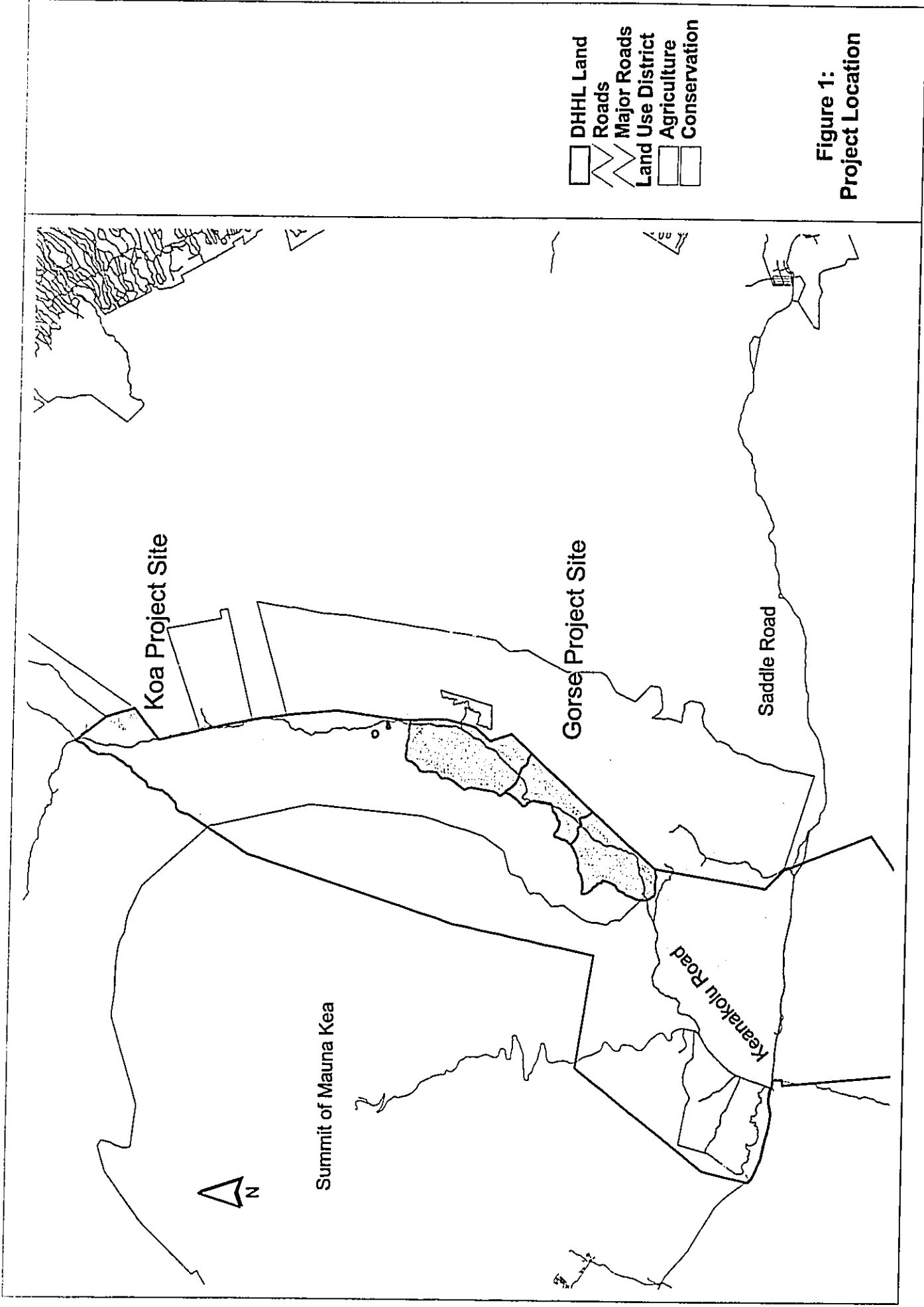
The Department of Hawaiian Home Lands (DHHL), in cooperation with the Hawaii Forestry and Communities Initiatives (HFCI), proposes a koa salvage and reforestation project (Koa Project) in Humuula, Hawaii. DHHL is responsible for administering the Hawaiian home lands' program and the Hawaiian Homes Commission Act of 1920. The Act reserved 203,500 acres of public lands for homesteading by native Hawaiians and created its governing body, the Hawaiian Homes Commission. HFCI is a statewide coalition of people and organizations interested in forestry-based economic development and diversification.







DHHL, in cooperation with Parker Ranch, HFCI, and the Hawaii Agriculture Research Center (HARC) proposes to contain and abate gorse growth through reforestation (Gorse Project). Parker Ranch is a corporation that is wholly owned by the Parker Ranch Foundation Trust. The purpose of the corporation is to own and operate the cattle ranch and related commercial operations in the South Kohala region. HARC specializes in horticultural and forest crop research including agronomy and plant nutrition, plant physiology, breeding, and control of diseases and pests through integrated pest management.

1.5 Project Site and Surrounding Area

The koa project site is located on Keanakolu Road on the northeast flank of Mauna Kea between the Keanakolu Ranger Station and the Douglas Historical Monument in Humuula, Hawaii. See Figure 1. The project is within the North Hilo district of Hawaii county. Elevation in the project area is between 5,400 and 5,800 feet. Average annual rainfall is 80 to 90 inches per year.

The landowner is the Department of Hawaiian Home Lands. The lease, set to expire August 2002, is held by Freddy Nobriga Enterprises, Inc., and used to pasture cattle. The koa project would remove about 125 acres of grazing land from the 5,290 acre lease. The project area is about 2.4% of the total lease. The Tax Map Key number for this area is (3) 3-08-01: por. 09. The parcel and adjacent area is zoned Agriculture. County zoning designates the land as Ag-40a. Access is provided via the Keanakolu/Mana Road. Four wheel drive ranch roads enter the project area and road segments provide adequate access for management activities.

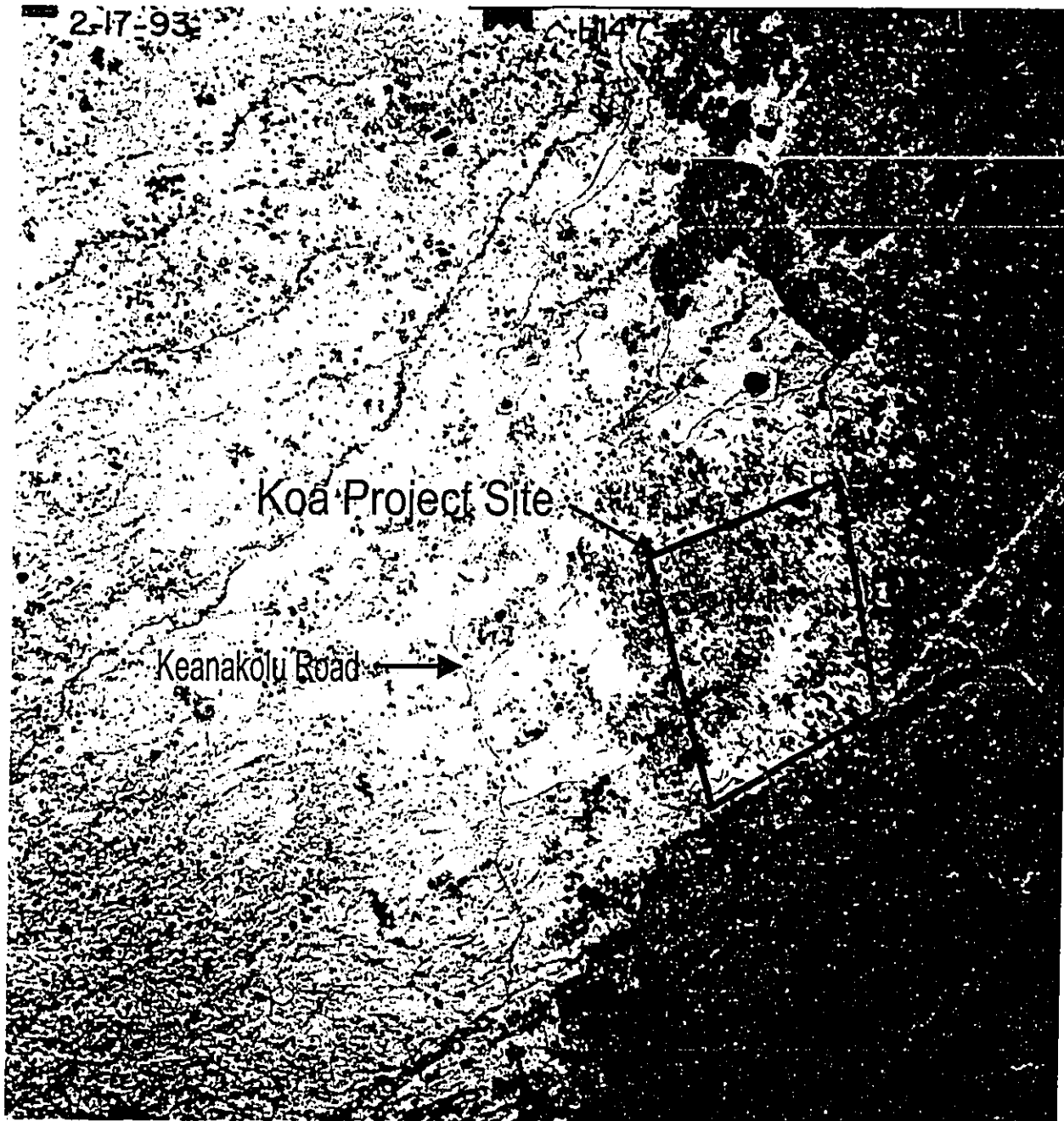


-  DHHIL Land
-  Roads
-  Major Roads
-  Land Use District
-  Agriculture
-  Conservation

**Figure 1:
Project Location**

The koa project area is bordered on the south by the Laupahoehoe Forest Reserve, to the east by the Waipunalei ahupuaa, and pasture lands to the north and west. See Figure 2. Historic logging, subsequent cattle grazing, and erosion have degraded and reduced the canopy and ground covers of the project area until only a remnant forest remains.

Figure 2: General Condition of the Koa Project Site.



The Laupahoehoe Forest Reserve is known to harbor several endangered plant and animal species. The Reserve contains banana poka and feral pigs (*Sus scrofa*) and is a State public hunting area. Other nearby areas are in private ownership, including Parker Ranch, Kamehameha Schools, and Umikoa Ranch. The dominant land use is cattle ranching and the landscape is open to wooded pasture. Some areas have recently been removed from active ranching and have young, native forests reestablishing themselves.

The koa project area is unhealthy and dying, and the ground is littered with wind thrown koa trees and broken branches. Many understory trees are dying as well, as evidenced by sparse crowns, cracked or peeling bark, or damaged tops from falling koa. The existing stand consists of approximately 7 koa, 4 ohia, and 12 kolea trees per acre, and non-native grasses, including kikuyu grass (*Pennisetum clandestinum*), velvet grass (*Holcus lanatus*), orchard grass (*Dactylis glomerata*), and sweet vernal (*Anthoxanthum odoratum*). See Figure 3. No threatened or endangered plants were observed during field visits to the site.

Figure 3: Photo of the Koa Project Site.



The gorse project site is located on Keanakolu Road about two miles past the Humuula sheep station and near Puu Loa. See Figure 1. The project is within the North Hilo district of Hawaii county. Elevation in the project area is 6,000 to 7,000 feet. Average annual rainfall is about 40 inches/year.

The landowner is the Department of Hawaiian Home Lands. The lease, set to expire August 2002, is held by Parker Ranch and is used to pasture cattle. The Tax Map Key number for this area is (3) 3-08-01: por. 02 and por. 07. The southwestern corner of 3-08-01: por. 7 is zoned Conservation, with the remaining portion zoned Agriculture. See Figure 1. TMK 3-08-01: por. 02 is in the Agricultural District. County zoning designates the land as Ag-40a. Access is provided via the Keanakolu/Mana Road. Map coverage for the project areas are identified by the U. S. Geological Survey "Keanakolu" Quadrangle.

Gorse is found on about 4,800 acres on the 27,340 acre lease. Gorse forms impenetrable thickets that excludes most vegetation with the exception of a few non-native grasses. Figure 4 shows gorse to the right and covering the hill in the background. Mauna Kea is in the distance. No threatened or endangered plants were observed during field visits to the site. A small grove of

sugi was planted in an adjacent area in the 1930's as part of the Civilian Conservation Corp's reforestation efforts.

Figure 4: Photo of the Gorse Project Site.



1.6 Project Schedule and Cost

The following actions are anticipated:

Time Frame	Action	Estimated Cost (\$)
February, 2001 - June, 2001	Complete the draft EA for the Koa Salvage-Reforestation and Gorse Containment.	7,000
June, 2001 - September, 2002	Conduct/replicate species trials for overplanting gorse. Expand efforts after year one.	30,000
June, 2001 - August, 2001	Prepare and distribute Requests for Proposal (RFP) for the koa and gorse projects.	1,000
August, 2001 - September, 2001	Select RFP and approve Timber License.	26,000
September, 2001 - May, 2002	Implement the koa salvage-reforestation plan.	50,000
September, 2002 - September, 2005	Implement the gorse containment plan.	320,000

2. PROPOSED ACTION

2.1 Koa Project

2.1.1 Fence Area, Remove Cattle, and Salvage Koa

The koa project proposes to fence the area and remove the cattle following an intensive grazing cycle to reduce grass cover to a minimum. A partial harvest of overstory koa trees would be conducted to generate management funds. The soil would be scarified during harvest to begin the forest restoration process. Ohia would not be harvested.

Forest management activities will follow applicable laws regarding activities such as pre-harvest planning, road improvement and maintenance, soil erosion control practices, timber harvesting, site preparation and regeneration, fire management, and use of fuels and chemicals.

Each logging truck can carry about 8 - 15 logs. At this rate, about one (1) or less logging truck per day would be hauling logs, or about 40,000 board feet per month. Products may be hauled over Saddle Road or through Waimea toward processing facilities in Hamakua or Hilo. About 4 trees per acre would be harvested or about 500 trees total. The salvage operations would take between one and two months to transport logs. Soil scarification and reforestation would begin shortly thereafter.

2.1.2 Leave Trees

Leave trees would be selected based on their current health, diameter, and height. Leave trees would remain to provide nesting, insect foraging habitat, and koa seed production onsite. Specific conditions, if any, for leave trees within the cutting blocks will be specified in the Timber Land License.

Table 1 displays Mueller-Dombois' estimates for koa trees and snags in a natural, unmanaged forest. As described, "the density of koa, even in the emergent class with only about 24 individuals per hectare [9.7 trees per acre] is far below what one would expect of a productive *Acacia koa* forest." Table 1 data has been estimated from Mueller-Dombois' published graphs, converted to English units, and combined into three emergent size classes; 12" - 23" diameter breast height (dbh), 24" - 39" dbh (minimum cavity nesting size for native birds); >40" (optimal cavity nesting size).

Table 1: Approximate *Acacia koa* Trees and Snags per Acre, By Selected Size Classes, in a Natural, Unmanaged Forest; Keauhou Ranch, Hawaii Island.

Diameter Breast Height (inches)	Trees Per Acre	Snags Per Acre	Total Stems Per Acre
15.7 - 23.9	2.1	2.6	4.7
24.0 - 39.9	4.9	1.8	6.7
40.0+	2.7	0.8	3.5
Total	9.7	5.2	14.9

Table 2 displays stand characteristics of the koa overstory in the project site as a result of sampling done in April, 1996. The existing stand consists of approximately 7 koa, 4 ohia, and 12 kolea trees per acre.

Table 2: Sampling Results of *Acacia koa* at the Koa Project Site.

Diameter Breast Height (inches)	Average DBH	Trees per Acre	Dead per Acre	Dying per Acre	Unhealthy per Acre	Healthy per Acre
0.0 - 11.9	5.0	0.2	0.0	0.0	0.1	0.1
12.0 - 23.9	18.7	1.9	0.6	0.6	0.6	0.1
24.0 - 39.9	30.7	3.8	1.3	0.8	1.6	0.1
40.0+	48.1	1.3	0.5	0.5	0.3	0.0
All Trees	30.1	7.2	2.4	1.9	2.6	0.3

Dead. No visible sign of living branches.

Dying. Less than 25% of branches with foliage; branches drooping and/or broken; obvious rot.

Unhealthy. 25-50% of branches with foliage; some breaks; loose/damaged bark, suspected rot.

Healthy. More than 50% of branches with foliage; bark/foliage intact; tree erect, no breaks.

Based on Table 1's projections for snags in the greater than 24.0 dbh class (1.8 snags/acre), and the existing stand structure in the project area shown in Table 2 (7.2 trees/acre), an average of about 2.5 koa trees per acre would be left unharvested or about 35% of the overstory. The following tree classes would not be harvested:

- All unhealthy koa trees smaller than 12" dbh (average of 0.1 trees/acre).
- All dying koa trees from 24.0" to 39.9" dbh (average of 0.8 trees/acre).
- All koa trees greater than 40" dbh (average of 1.3 trees/acre).
- All healthy koa trees, any size class (average of 0.3 trees/acre).

Leaving all koa greater than 40" dbh (1.3 trees/acre) would ensure the maintenance of any existing optimal bird nesting sites, while allowing for future replacement from unhealthy and dying trees. Future replacement of optimal snags could be expected by leaving dying (0.8 trees/acre) and healthy (0.1 trees per acre) trees in the 24" to 39" dbh size classes. Finally, by leaving all healthy (0.3 trees/acre) trees, some semblance of age structure would compliment the expected new seedlings and saplings resulting from site disturbance.

Endangered species such as the akiapola'au (*Hemignathus munroi*), Hawaii creeper (*Oreomystis mana*), and Akepa (*Loxops coccineus coccineus*) rely respectively on koa for foraging substrate for insect larvae and on ohia trees for nesting sites. Minimum diameter size for nesting sites for the Akepa has been given as 24" dbh, although 40" dbh or greater is believed to be "ideal". Although ideal habitat for these species is closed canopy, diverse forest, the project site could offer some habitat while it is recovering.

2.1.3 Salvage Trees

All salvaging activities will be conducted according to a salvage and reforestation plan prepared by the logging contractor and approved by DHHL. Salvage operations will be done in cutting blocks of 5 to 15 acres. Of the 7 koa trees per acre on the site, about 4 trees per acre would be harvested. The remaining tree classes from Table 2 would be salvaged:

- All dead, dying, and unhealthy koa trees in the 12.0" - 23.9" dbh (1.8 trees/acre).
- All dead koa in the 24.0" - 39.9" dbh (1.3 trees/acre).
- All unhealthy koa in the 24.0" - 39.9" dbh (1.6 trees/acre).

No endangered and threatened plants or animals were observed in the koa project area. If species are found, the Division of Forestry and Wildlife will be notified and appropriate action taken.

2.1.4 Reforestation

Extensive research at Keauhou Ranch by Mueller-Dombois, et., al., provides insight as to how reforestation might occur.¹ Mueller-Dombois describes two emergent species, koa and ohia, as "species ready to take advantages of local disturbances in the forest." Koa, in particular, "seems to be dependent on disturbances of the canopy." Since the project site is degraded compared to Keauhou and management funds are limited, initial reforestation efforts would rely on soil scarification and natural succession to regenerate a diverse native forest. Some overstory component would be left behind to provide forest bird habitat and insect foraging opportunities for native species and to continue the process of koa seed production on site.

The area will be fenced to control feral ungulates and the soil scarified to stimulate koa seedling growth from existing seed present in the soil. All temporary roads, skid trails, and landings would be ripped to relieve compaction and encourage seedling establishment. It is expected that a viable stand of koa saplings could become established within five years of the project's implementation. Natural regeneration will be monitored. If openings greater than 1/2 acre persist five years following overstory removal, planting of koa from local seed sources would occur.

Fertilizer application is essential for satisfactory seedling survival and growth. During and after artificial planting, commercial fertilizer applications will be applied manually as needed. Natural koa regeneration will not be fertilized. Gorse control may be required in newly planted stands to reduce seedling mortality and competition. Spraying herbicide will be limited to manual applications in areas around seedlings. Chemical quantities will be carefully prescribed at levels to control the specific target populations. Only approved chemicals will be used in Humuula in accordance with the manufacturer's labels.

2.1.5 Long Term Forest Management

Banana poka may invade the new area as cattle are withdrawn and the site disturbed. Periodic control of banana poka may be required and appropriate control strategies employed. It is

estimated that herbicide treatment may be required annually to protect the regenerating forest. The area would also be monitored for gorse, although once the koa seedlings reached sufficient height to close the canopy, gorse may become less of a problem.

The koa reforestation area will be monitored for evidence of insect damage or disease. If problems arise, qualified entomologists or plant pathologists would be consulted to identify the problem and develop a solution or minimize the damage.

The use of fire in the koa project area for site preparation will not be considered. Maintenance of the road network within Humuula for timber management activities will improve access and facilitate containment of fire. During extreme drought conditions, DHHL will minimize forestry management activities to mitigate the increased risk.

2.2 Gorse Project

The project proposes to plant a 250 foot wide perimeter of sugi trees to contain the leading edge of gorse. The perimeter totals about 320 acres. Sugi will be planted in a continuous band around the subject area. The existing forest will serve as gorse control along the makai side of the infestation. Shade conditions in the existing forest should prevent gorse from becoming established. A koa perimeter will be planted along the lower elevation border with the Hakalau Forest National Wildlife Refuge. A 10 foot by 10 foot spacing of sugi equates to about 140,000 seedlings. Planting sugi is a value-added land use, it is a non-invasive tree species, and frost tolerant. Existing fences will minimize the transportation of seeds by animals. A pine planting on Maui has shown promising results in its ability to limit gorse growth and expansion. Removal of any free-standing trees will be avoided since the Hawaiian hawk (*Buteo solitarius*) may use these as hunting perches.

Gorse can grow up to ten feet tall and have a life span of 20 - 30 years. The seed can remain viable in the soil for many years until disturbed by fire or mechanical forces. Its natural range is western Europe. Gorse arrived in Hawaii in the 1920's and can be found on about 4,800 acres of Parker Ranch's 27,340 acre lease with the Department of Hawaiian Home Lands. The land affected by gorse has other uses such as ranching, homesteading, reforestation, wildlife habitat, hunting, native gathering, and recreation. It is anticipated that sugi will shade the gorse sufficient to keep it from producing seeds. Each year that sugi impedes gorse growth and seed production results in decreased herbicide use.

Once perimeters are established, interior plantings would occur as funding and time permits. Trial plantings of ten acres each of koa, mamane (*Sophora crsophylla*), and Douglas fir (*Pseudotsuga menziesii*) will be planted inside the perimeter to test which species can grow at the 6,000 to 7,000 foot project elevation to further abate gorse growth. While koa, mamane, and Douglas fir exist in adjacent lower elevation areas they are untested at controlling gorse growth and seed production at the higher elevation project site.

Gorse control currently consists of aerial spraying, ground spraying, and burning. Spraying and burning has had limited success in controlling gorse. Other bio-controls have had mixed results as the gorse continues to expand its range. Herbicides will be used in the site preparation of the

gorse project area. Applicable law will be followed for herbicide use and storage to protect both the worker and the environment. Use of fire may be used in site preparation.

2.3 Rationale for Proposed Action

2.3.1 Koa Project

Fencing the area, removing the cattle, and partially harvesting the koa is an action that will provide DHHL with an opportunity to generate income to finance the koa and gorse project site maintenance and start up costs. It will also provide an opportunity to investigate sustainable forestry while certain trees will be left for wildlife habitat and on-site seed production. The proposed project will promote economic opportunity in the community by providing jobs, provide a base source of koa wood for various cultural activities, and contain gorse growth and expansion with a value-added land use.

Removing cattle would allow existing trees to produce and maintain root shoots and basal sprouts, thereby increasing foliage and subsequent tree processes. The remaining mature trees would most likely continue its current decline, but at a decelerated rate. Compaction of soil on and around surface roots from cattle would cease, allowing additional root growth and reversing current trends of root dieback. Compaction from logging equipment, however, would occur on skid trails and landings. Understory trees would continue to die, both from old age and from damage as a result of logging. Damage from logging would be of shorter duration than Alternative 3.1.1, the No Action Alternative, assuming directional falling and predefined skids trails were used.

Wildlife habitat, especially for forest birds, would be maintained as nesting cavities and roosts remained, but at levels less than Alternative 3.1.2, Fence Area and Remove Cattle. Organic material on the ground would be less than Alternatives 3.1.1 and 3.1.2, but would still be sufficient for other native plant regeneration as sub-merchantable material (<12" diameter) remained on site and was scattered. Fire hazard would decrease substantially as large fuels were removed, grass cover was reduced, and a young, healthy forest established itself. The young forest would be similar to that described in Alternative 3.1.2 but more extensive as mature trees are removed from the site. Scarifying the soil via logging would reduce non-native grasses and should result in high densities of koa seedlings within a few months. Within five years, a stand of koa saplings is expected.

Impacts on ranching operations are discussed in Section 4.4, Economic Resources. Some economic loss would occur to the rancher, but no jobs are anticipated to be terminated. By harvesting 65% of the existing koa trees and snags, several processing jobs would be gained and the economic benefits previously described would be realized.

2.3.2 Gorse Project

The primary goal of the sugi perimeter is gorse containment and the secondary goal is abatement. Gorse is shade intolerant and reforestation can limit gorse habitat by shading out germinating seedlings until the seed bank is exhausted. Sugi was chosen for use in the perimeter because it is

considered a non-invasive tree species and it casts dense shade. Prior forestry trials throughout Hawaii suggest that sugi is non-invasive. A small grove of sugi was planted near Hakalau in the 1930's as part of the Civilian Conservation Corp. In seventy years, only a few sugi trees have taken root away from the original planting site. In another nearby sugi planting of similar age however several trees were observed a few hundred feet away. A fence will minimize the transportation of seeds by animals. A 250 foot wide perimeter was chosen to minimize seed transportation by birds.

The 6,000 - 7,000 foot elevation is in the upper range for koa. At this elevation, koa seedlings can suffer from frost mortality until they become established. Sugi is frost tolerant and a stand of sugi may serve as a shelter belt for future koa plantings. Sugi nearby could enable koa a better chance of surviving until the koa seedlings become established. A koa perimeter will be planted along the lower elevation border with the Hakalau Forest National Wildlife Refuge.

Trial plantings totaling ten acres each of koa, mamane, and Douglas fir will be planted inside the perimeter to test which species can grow at the 6,000 to 7,000 foot project elevation and further abate gorse growth. Koa is an important foraging substrate for the akiapola'au as well as for other native Hawaii creepers. Koa and native tree corridors that bridge between the lower elevation mixed koa/ohia forest and higher elevation mamane forests are crucial migration corridors between seasonal food sources for native forest birds. Mamane plantings, either along higher elevation buffers or within infested areas, will provide food resources for the endangered palila (*Loxioides bailleui*), increase suitable palila habitat, and improve year round palila foraging opportunities along an elevational gradient. While there are potential markets for mature Douglas fir, its ability to shade out gorse is untested in Hawaii.

Planting trees is a value-added land use. Gorse has a life span of 20 - 30 years while the seed can remain viable in the soil for many years after that. It is expected that sugi will shade the gorse sufficient to keep it from producing seeds and that each year of subsequent management some portion of the seed bank will be removed. Each year that sugi impedes gorse growth and seed production results in decreased herbicide use.

2.4 Permits and Approvals Required

The koa salvage and reforestation project was authorized by the Hawaiian Homes Commission at its regular meeting held February 15, 1994 in accordance with the following statutes:

1. Section 204(2), HHCA, 1920, as amended, allows DHHL to manage its lands according to Ch. 171, HRS.
2. Section 171-54, HRS. Land License. The board may issue land licenses affecting public lands for a period not exceeding twenty years. No land license shall be disposed of except at public auction as provided in this chapter; provided that the board may, after publication of notice in accordance with section 171-16(d), dispose of a land license by negotiation, without recourse to public auction, if it determines that the public interest will best be served thereby. The disposition of

a land license by negotiation shall be upon such terms and conditions as the board determines shall best served the public interest.

No permits are required for this project.

3. ALTERNATIVES TO THE PROPOSED ACTION

3.1 Koa Project

3.1.1 No Action Alternative

The No Action Alternative implies no deviation from the current land use. A lease assignment condition which allows for the "withdrawal of approximately 125 acres of land . . . for a koa reforestation project" would not be implemented. The lessee would be allowed to continue ranching in the proposed project area.

Site impacts from ranching would continue at current levels and non-native grasses would continue to flourish. Existing tree cover would be reduced as old age and rot took their toll on mature trees. Organic material on the ground would build up substantially as trees fell or were blown over, then decline gradually once the entire overstory was gone. Understory trees would continue to die as well, both from old age and from damage as a result of the overstory falling on them. Fire hazard would increase slightly with the increase in fuels from fallen trees and branches, but would become relatively low as grazing kept grass and shrub fuels to a minimum.

Cattle browsing on new tree seedlings, however, would result in insufficient regeneration to replace existing trees. Over a lengthy period of time, perhaps fifty years, the current stock of viable tree seeds found in the soil would disappear from iterative sprouting and grazing. With no overstory to replenish tree seeds, and with grazing and foraging animals eliminating any new seedlings, a transition would occur. The proposed project site would change from a dead and dying overstory of trees with a viable seed bank in the soil, to a pure grass pasture with little or no presence of tree seeds. The latter scenario would necessitate artificial planting if a forest was desired at some future date.

As tree cover disappeared, the site would be prone to greater variations in temperature and moisture extremes, such as frost or drought. It is anticipated that site productivity would gradually decline as a result. The loss of trees would also mean the loss of certain wildlife habitat, particularly forest bird habitat. The risk of colonizing invasive species, such as gorse, occupying the site would increase.

3.1.2 Fence Area and Remove Cattle

With this alternative, the lease assignment condition to withdraw about 125 acres of reforestation land would be implemented. The proposed project area would be fenced and cattle would be removed from within following an intensive grazing cycle to reduce grass cover to a minimum. Natural processes would be allowed to proceed with limited human intervention. Weed species such as banana poka and gorse would be monitored.

The existing mature forest would continue its current decline, but most likely at a reduced rate. Removing cattle would allow existing trees to produce and maintain root shoots and basal sprouts, thereby increasing foliage and subsequent tree processes. Compaction of soil on and around surface roots would cease, allowing additional root growth and reversing current trends of root dieback. Wildlife habitat, especially for forest birds, would be maintained as nesting cavities and roosts remained. Organic material on the ground would build up substantially as trees fell or were blown over, then decline gradually once the entire overstory was gone. Understory trees would continue to die, both from old age and from damage as a result of the overstory falling on them, but at a reduced rate from the No Action alternative. Sites for other native plant regeneration would increase with the increase in organic material. Fire hazard would increase substantially, however, with the increase in fuels from ungrazed grass and fallen trees.

A young forest would begin to grow as cattle grazing on seedlings was eliminated. With the presence of an existing seed bank, koa would reestablish itself throughout the parcel. As the koa attained sufficient height and density to shade out some grass species, conditions for other native plant growth would improve considerably. Other tree species such as ohia, kolea, mamane, and naio would appear. Understory plants might include natives such as ohelo (*Vaccinium calycinum*), native raspberry (*Rubus hawaiiensis*), kawau (*Ilex anomala*), and maile (*Alyxia oliviformis*).

The continuing presence of non-native grasses, however, would slow the natural restoration process. Research in the late 1970's at Keauhou, for example, showed that after 3 years of excluding cattle, an average of only 4 seedlings per acre could be found in and among the dense kikuyu grass. This is in contrast to scarified sites at the same location with koa stocking densities averaging 8,000 seedlings per acre at 6 months.

Given the proximity of banana poka in the area, slow establishment of koa could significantly increase the cost of re-establishing a native forest on the proposed project site. Banana poka can easily invade a formerly grazed area within 5 years, and would jeopardize any new seedlings that were not tall enough to withstand the initial competition of banana poka. Saplings and young trees, on the other hand, while still requiring protection from banana poka to survive, would require less periodic maintenance. Banana poka treatments may be required annually.

Although gorse is still not prevalent in the immediate vicinity, it is close enough to present a concern to future management efforts. Gorse is shade intolerant and can die out in denser shade. Under this alternative, the risk of a gorse invasion and subsequent control costs are highest as cattle are removed and overstory establishment is slowed by grass competition. Operating and maintenance costs would be funded from off-site sources.

Impacts on ranching operations are discussed in Section 4.4, Economic Resources. Some economic loss would occur to the rancher, but no jobs are anticipated to be terminated.

3.1.3 Fence Area, Remove Cattle, and Harvest All Koa

With this alternative, the lease assignment condition to withdraw reforestation land would be implemented. The proposed project area would be fenced and cattle would be removed following an intensive grazing cycle to reduce grass cover to a minimum and reduce fuel loading. A complete harvest of all overstory koa trees would then be conducted. The soil would be scarified to begin the forest restoration process. Ohia would not be harvested.

Following harvest, natural regeneration would be monitored to ensure complete reforestation of the project area. If openings greater than 1/2 acre persisted five years following overstory removal, plantings of koa from local seed sources would occur. Weed species would be managed. This would include elimination of banana poka and gorse.

By harvesting all of the remaining mature forest, its current use as habitat would cease. Removing cattle would allow maximum regeneration to occur, and compaction of soil would cease. Compaction from logging equipment, however, would occur on skid trails and landings. Understory trees would continue to die, both from old age and from damage as a result of logging. Logging damage would be more than Alternative 2.1.

Wildlife habitat, especially for forest birds, would not be maintained. Organic material on the ground would be less than Alternatives 3.1.1 and 3.1.2 and Alternative 2.1, but would still be sufficient for other native plant regeneration as sub-merchantable material (<12" diameter) remained on site and scattered. Fire hazard would decrease substantially as large fuels were removed, grass cover was reduced, and a young, healthy forest quickly established itself. The young forest would be similar to that described in Alternative 3.1.2. Scarifying the soil via logging would reduce non-native grasses and should result in high densities of koa seedlings within the few months. Within five years, a stand of saplings is expected.

Banana poka would invade the new area as described in Alternative 2.1, and similar maintenance would be required. Gorse would be less of a serious problem than Alternative 2.1, as a denser canopy of young koa seedlings and saplings would be expected.

Impacts on ranching operations have been discussed in Section 4.4, Economic Resources. Some economic loss would occur to the rancher, but no jobs are anticipated to be terminated. By harvesting 100% of the existing koa overstory, several processing jobs would be gained and the economic benefits previously described would be maximized.

3.2 Gorse Project

3.2.1 Burn and Spray Herbicide

The burn and spray herbicide alternative would consist of continued burning and aerial spraying of herbicide. Gorse would continue its expansion into the remaining 30,000 acres owned by DHHL. It could increase its density into the Hakalau Forest National Wildlife Refuge and adjacent State forest reserves, and expand its range into the Pohakuloa Training Area and down

the Wailuku River toward Hilo. Currently, Parker Ranch spends about \$100,000 annually on herbicide application. Herbicide application would remain the same or increase as needed.

3.2.2 No Action Alternative

The no action alternative would not include burning and aerial spraying of herbicide. Gorse would continue its expansion into the remaining 30,000 acres owned by DHHL at an unknown, but probably faster, rate. Gorse would continue to be a pest in the Hakalau Forest National Wildlife Refuge, adjacent State forest reserves, and expand into the Pohakuloa Training Area and down the Wailuku River toward Hilo. While costs to eradicate would initially decrease, costs to mitigate the problem at a later date would increase.

4. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES

4.1 Physical Site Characteristics

Elevation in the koa project area is between 5,400 - 5,800 feet. Average annual rainfall is 80 - 90 inches/year. Slopes average less than 20%. Elevation in the gorse project area is 6,000 - 7,000 feet. Average annual rainfall is about 40 inches/year. Slopes average less than 20%.

4.1.1 Soil

Existing Conditions. Geologically the stand is composed of well drained silt loams that formed in volcanic ash. Soils in the koa project site are classified as Hanipoe silt loam, 12 to 20 percent slopes (HDD) and Hanipoe very stony loam, 12 to 20 percent slopes (HCD).² HDD is described as a deep dark brown or reddish-brown soil with a slightly acidic surface layer and neutral subsoil layers. In places this soil can be very rocky or very stony. Permeability is moderately rapid, runoff is medium, and erosion hazard is moderate. Roots can penetrate beyond five feet, making windthrow less of a problem. HCD has similar physical characteristics to HDD, except it has shallower depths of 20 to 30 inches, and it occurs over a'a lava flows. Runoff is slow, erosion hazard is slight, and windthrow is moderate. About 85 acres are Hanipoe silt loams, and about 45 acres are Hanipoe very stony soils. A clear demarcation of the two is evidenced by a series of ridges running mauka-makai in the HCD portion of the stand. These represent the characteristic a'a flows which are subsurface and relatively deep (<50 feet). Woodland suitability for both soils is Group 10. Estimated growth potential is about 600 board feet per acre per year. Equipment limitations are slight, except in stonier sites where it is moderate.

Soils in the gorse project site are classified as Laumaia silt loam, 6 to 12 percent slopes (LAD), Laumaia extremely stony silt loam, 6 to 12 percent slopes (LUC), and Puu O'o silt loam, 6 to 12 percent slopes (PUC). LAD is described as a dark brown silt loam with a medium acidic surface layer and strongly acidic subsoil layer. The surface is extremely stony in places. Permeability is moderately rapid, runoff is medium, and the erosion hazard is moderate. LUC is similar to LAD except that the erosion hazard is slight and the runoff is slow. PUC is described as a dark reddish brown and dark gray silt loam with a strongly acidic surface and subsoil layer. Permeability is

moderately rapid, runoff is slow, and the erosion hazard is slight. The woodland suitability for LAD and LUC is Group 10, and PUC is Group 8.

Potential Impacts and Mitigation Measures. Impact on soils in the project area will be short term in nature, especially in the A and D horizons. Soil structure will be temporarily disrupted during logging and the scarification process as the new stand is established. As the forest reestablishes itself, soils will stabilize and improve over time. Management objectives for the long term productivity and sustainability of Humuula's potential forest resources require the protection of the soil onsite. Applicable law will be followed to minimize soil movement, erosion, and compaction during salvaging operations, road improvement and maintenance, and site preparation.

Salvage operations will require the construction of temporary skid trails and landings. Salvage operations have the potential to cause soil disturbance when trees are felled and logs are skidded to landings, decked, and later loaded onto trucks. Soil resources will be protected by the design and location of permanent roads if any, skid trails, and landings. Compaction would be mitigated by not harvesting during or immediately following heavy rains. After harvest of a given area, temporary roads, skid trails, and landings would be ripped to relieve compaction and encourage seedling establishment. Soils are expected to improve and erosion will decrease with the koa and gorse projects as the area becomes reforested.

Herbicides, fertilizers, and vehicle fuel and oil, may be stored in specified areas in Humuula. Any chemical spills will be removed according to applicable hazardous material handling procedures.

4.1.2 Water

Existing Conditions. There are no streams or wells in the koa project area. The headwaters of the Wailuku Stream are found in the gorse project area. The Wailuku Stream is considered intermittent at the project site.

Potential Impacts and Mitigation Measures. The koa project should have little or no significant impact on water quality. The major sources of water quality degradation from forest management activities are sediment, nutrients, herbicides, and debris. To minimize nonpoint source pollution from sediments, the required practices include avoiding disruption of natural drainage, preventing excessive soil displacement, providing drainage in case of slope instability, and providing culverts, dips, water bars, and cross drainage on roads and skid trails to minimize erosion. To minimize water quality degradation from nutrients and herbicides, practices include efficient and safe application of chemicals according to manufacturer's label. Chemicals will not be applied in rainy conditions to avoid or minimize chemical runoff. It is anticipated that reforestation will improve water percolation into the soil by catching fog drip and that soil erosion will decrease over time.

Site preparation may involve the use of herbicide. It is anticipated that planting sugi will reduce future herbicide use in order to contain the gorse. Applicable law will be followed regarding the selection, use and storage of chemicals for forest management activities. Herbicides and

pesticides will not be stored in the koa and gorse project areas. DHHL will report violations to the Occupational Safety and Health Administration regarding the improper use of chemicals in the project area.

4.2 Biological Resources

4.2.1 Flora

Existing Conditions. Cattle grazing and logging have reduced the canopy and understory covers to a remnant community. The koa project area consists of a sparse koa overstory with minor ohia components; an older, unhealthy kolea understory; and non-native grasses, including kikuyu grass, velvet grass, orchard grass, and sweet vernal. No threatened or endangered plants were observed during field visits to the site. The gorse project area consists of gorse and non-native grasses listed above with very scattered individuals or pockets such as koa and mamane trees.

The type of potential forest community common to the project area is a koa/ohia montane mesic forest.³ The community is normally described as a uneven canopy consisting of koa up to 105 feet tall, emergent above the ohia. "The understory is rich in native and shrub species, but the distinct hapu'u tree fern layer of the [montane wet forest] is absent. If subjected to grazing, alien grasses become ground cover dominants".

Table 3 displays the results from an inventory of tree species conducted in April, 1996. The current forest is unhealthy and dying, and the ground is littered with wind thrown koa trees and broken branches. Other standing trees are cracked and often infested with rot. Many understory trees are dying as evidenced by sparse crowns, cracked or peeling bark, or damaged tops from falling koa. An exception is in the lower, or eastern, half of the stand where most of the ohia are found. The ohia is less damaged and more healthy. This is probably due to its higher position in the canopy, better site conditions, and the more open nature of the forest. The area appears to have been logged before.

Table 3: Tree Species Characteristics at the Koa Project Site.

	koa	ohia	kolea	naio**	mamane**	pilo**	kopiko**
Ave. Tree/Acre	7	4	12	<1	<1	<1	<1
Ave. DBH (in)	29.3	17.5	10.7	8.9	7.0	8.4	20.4
Ave. Height (ft)	51	41	33	18	21	20	32
Percent Dead/Dying	60	6	18	0	67	25	0
Percent Unhealthy	36	14	74	100	33	75	100
Percent Healthy	4	80	8	0	0	0	0

Dead. No visible sign of living branches.

Dying. Less than 25% of branches with foliage; branches drooping and/or broken; obvious rot.

Unhealthy. 25-50% of branches with foliage; some breaks; loose/damaged bark, suspected rot.

Healthy. More than 50% of branches with foliage; bark/foliage intact; tree erect, no breaks.

** Small data sample, may be unreliable.

Non-native grass cover throughout the stand is dense and healthy. Pasture management appears good and there is little evidence of erosion except in a few areas of existing roads. This latter erosion is minimal.

Potential Impacts and Mitigation Measures. Understory damage from logging is a contributor to stand deterioration, loss of diversity and age structure, and introduction of insect and disease attack on weakened trees. Directional falling of crop trees is an important tool in controlling damage to remaining understory. Harvested trees should be felled to avoid pockets of understory trees, especially kolea. A Koa Salvage and Reforestation Plan, prepared by the logging contractor and approved by DHHL, would be required prior to entry. This plan would map landings, temporary roads, skid trails, and storage sites for needed materials. The plan would also outline the order in which areas would be harvested and the rate at which they were harvested.

In the event that koa did not reestablish itself in sufficient quantities throughout the proposed project area, supplemental planting would be required. Seed would be collected onsite or nearby, germinated and grown into dibble stock nursery seedlings and outplanted at appropriate stocking levels.

The response of koa to salvaging, fencing, soil scarification, and herbicide treatments on banana poka, gorse, or competing grasses will be monitored. Natural regeneration will be monitored. If openings greater than 1/2 acre persist five years following overstory removal, planting of koa from local seed sources would occur. Feral ungulates would be controlled as necessary to ensure regeneration of the native forest.

The proposed action would alter existing stand characteristics from a decadent, sparse overstory of koa and grass understory to a young, healthy, diverse koa/ohia forest. The relatively sparse overstory of dead and dying koa trees and predominant understory of kolea would be most affected. Harvesting and removing appropriate koa trees would remove some of the existing overstory of trees. The exception would be ohia which would not be harvested. The low numbers, small size, good health, and limited distribution of ohia in this stand do not warrant its removal. Concurrently, ohia would be avoided during koa harvest to minimize damage to the residual stand.

Understory vegetation would be temporarily impacted during koa removal. The tree species most affected would be kolea. During the course of koa removal, it is anticipated that some kolea trees would be damaged or destroyed. Other tree species in the stand are found in such low numbers that damage, if any, would most likely be avoided. Most understory impact would occur to the introduced, non-native grasses that carpet the forest floor. Understory trees would be avoided by directional falling and preplanned skid trails. Scarifying and disturbing grass cover during harvest would be encouraged to establish seed beds for koa and other native regeneration.

4.2.2 Fauna

Existing Conditions. Vertebrates. Several species of mammals and birds may be found in the vicinity of the project area. See Table 4. Twenty three species of birds have been documented as occurring in the vicinity of the project area.⁴ Fourteen of these are introduced and nine are native. Several species of endangered forest birds are associated with koa/ohia forest communities. They are the akiapola'au, the Hawaii Creeper, Akepa, and 'Io or Hawaiian Hawk. Of the four, only the hawk has been observed in the project area. No nests were found. The endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) may occur seasonally in the koa salvage area.

Larger mammals include domesticated cattle (*Bos taurus*) and feral pigs. Feral dogs (*Canis familiaris*) have been known to occur within the adjacent Laupahoehoe Forest Reserve. Other mammals that may be found in the project area include the Indian mongoose (*Herpestes auropunctatus*), the feral cat (*Felis catus*), and two species of rodents; the black or roof rat (*Rattus rattus*) and the European house mouse (*Mus domesticus*).

Invertebrates. While there is a general lack of biological information on the role of native and non-native invertebrates in nutrient cycling, food webs, and pollination, no detailed survey of the project area's insect fauna has been conducted. Invertebrates appear to be particularly sensitive to changes in the microclimate. Many insects have evolved specialized habitat and require one or a very few native plant species to complete their life cycle. Previous land uses such as logging and cattle ranching have probably contributed to a change in the invertebrate communities.

Potential Impacts and Mitigation Measures. Given the close proximity of other forested areas and the current condition of the project area, the koa project is expected to have minimal impact on the native bird populations. No nests were found in the project area. If any roosting trees or active nests of rare, threatened or endangered species are encountered, a no-harvest zone (250 foot radius) will be established around each site. The project could have a positive impact on the use of the area by the native birds. In the short term, koa salvage operations may decrease a portion of their insect forage supply, but in a few years standing dead and fallen trees may attract insects, replenishing the forage supply. Some native birds prefer nesting in larger ohia trees. Ohia will not be harvested. Koa reforestation, especially in higher elevation areas, may contribute to the survival and recovery of the akiapola'au. Koa is an important foraging substrate for the akiapola'au as well as for other native Hawaii creepers. Koa and native tree corridors that bridge between the lower elevation mixed koa/ohia forest and higher elevation mamane forests are crucial migration corridors between seasonal food sources for native forest birds.

Mamane plantings, either along higher elevation buffers or within infested areas, will provide food resources for the endangered palila (*Loxioides bailleui*), increase suitable palila habitat, and improve year round palila foraging opportunities along an elevational gradient. Project activities will be appropriately altered if endangered or threatened species' nests are observed during harvest. Buffers will be established around each nesting site. Harvesting activities will be minimized during nesting season.

Table 4: Animals Which May Be Found at the Koa Project Site.

Birds	
Native Birds	
Hawaiian Hawk (Io)	<i>Buteo solitarius</i>
Short-eared Owl (Pueo)	<i>Asio flammeus sandwichensis</i>
Elepaio	<i>Chasiempis sandwichensis</i>
Omao	<i>Mvadestes obscurus</i>
Common Amakihi	<i>Hemignathus virens</i>
Akiapola'au	<i>Hemignathus monroi</i>
Hawaii Creeper	<i>Oreomystis mana</i>
Apapane	<i>Himatione sanguinea</i>
Akepa	<i>Loxops coccineus coccineus</i>
Iiwi	<i>Vestiaria coccinea</i>
Alien Birds	
Erckels Francolin	<i>Francolinus erkelii</i>
Chukar	<i>Alectoris chukar</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Kalij Pheasant	<i>Lophura leucomelana</i>
Ring-necked Pheasant	<i>Phasianus colchicus</i>
Spotted Dove	<i>Streptopelia chinensis</i>
Japanese White-Eye	<i>Zosterops japonica</i>
Common Myna	<i>Acridotheres tristis</i>
Melodius Laughing-Thrush	<i>Garrulax canorus</i>
Red-Billed Leiothrix	<i>Leiothrix lutea</i>
Eurasian Skylark	<i>Alauda arvensis</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
House Finch	<i>Carpodacus mexicanus</i>
Nutmeg Mannikin	<i>Lonchura punctulata</i>
Other Animals	
Black Rat	<i>Rattus rattus</i>
Field Mouse	<i>Mus domesticus</i>
Feral Dog	<i>Canis familiaris</i>
Indian Mongoose	<i>Herpestes auropunctatus</i>
Feral Cat	<i>Felis catus</i>
Feral Pig	<i>Sus scrofa</i>
Feral Cow	<i>Bos taurus</i>
Hawaiian hoary bat	<i>Lasiurus cinereus semotus</i>

Hawaiian hoary bat breeding generally occurs below 4,000 feet from April to October. From November to April, bats tend to be found at 4,000 to 7,500 feet. The koa project area is between 5,400 – 5,800 feet. A bat survey would be conducted prior to harvesting activity to determine the time of least impact to bat habitat and activity.

Planting sugi is expected to have minimal impact on the native bird population. While the native bird population may not nest in sugi, they also don't nest in gorse so nesting sites will not be displaced. Fire may be used in the sugi planting area for site preparation. Herbicide use will be minimal to none as the sugi become established.

4.3 Cultural and Social Resources

4.3.1 Public Land Use

Existing Conditions. The project site is currently under lease and is closed to the public. Access to the site may be granted by DHHL on a case by case basis.

Potential Impacts and Mitigation Measures. The project will not change public uses of DHHL lands.

4.3.2 Education and Research

Existing Conditions. None.

Potential Impacts and Mitigation Measures. The koa project area may provide educational opportunities for organizations and institutions for the study of reforestation of koa/ohia forest communities at the higher elevations. Institutions and organizations such as the U.S. Fish and Wildlife Service, U.S. Forest Service and students of tropical forestry have used other State owned forests to conduct field research. Some of the research projects in lower elevation areas have included nutrient cycling, watershed quality of native forest plant communities, wood properties of native tree species, and the occurrence of ohia decline.

The gorse project area may provide educational opportunities for organizations and institutions to study reforestation as a method to control gorse and other noxious weeds.

4.3.3 Historical and Archeological Resources

Existing Conditions. Humuula is defined, in the Hawaiian dictionary, as red jasper stone, as used for adze. There is an adze quarry located near the summit of Mauna Kea and the area may have been traversed as a route to the quarry. The general area was used for collecting bird feathers, medicinal plants, and canoe logs.⁵ Nearby Hakalau translates as the "place of many perches". The proposed project area has no known pre-contact archaeological sites.

In more recent historic times, the general area has been used for wild cattle hunting and ranching. The David Douglas monument, testimony to the famous naturalist's demise in a Big Island bull pit in 1835, is about 2,000 feet southwest of the project area. Other historic evidence in the area, but outside of the project area, include old corrals, walls, and fences.

Potential Impacts and Mitigation Measures. There are no known historic or archaeological sites in the project area. If any evidence of historic and/or archaeological sites are found,

operations in the area will be halted and the State Historic and Preservation Division will be notified for further evaluation.

4.3.4 Sensitive and Significant Areas

Existing Conditions. The koa project site and its surroundings are not located in or nearby sensitive areas. Sensitive areas include flood plains, tsunami zones, beaches, streams, rivers, oceans, estuaries, anchialine ponds, fresh or coastal waters, erosion prone areas and geologically hazardous land. The headwaters of the Wailuku Stream are located in the gorse project site. The Wailuku Stream is considered intermittent in the project area.

Potential Impacts and Mitigation Measures. Applicable law will be followed regarding the application of herbicide as part of the gorse site preparation.

4.3.5 Cultural Practices and Features

Existing Conditions. Mauna Kea may be literally interpreted as "white mountain" because during the winters, the summit is covered in snow. Mauna Kea may also be translated as "Wakea's Mountain." Wakea, also written and pronounced as Akea and Kea, was the god-father of the island of Hawaii. The island child was born by Papa or Haumea, the goddess who gave birth to islands. The proposed project area was once heavily forested. Native Hawaiians viewed the mountain areas as the heavily forested zone (waoakua, forest of gods) where koa trees were cut for canoe hulls. Other traditional uses by pre-contact native Hawaiians were gathering medicinal plants and bird feathers.

By the early 1800's, large numbers of wild cattle were hunted in this area for meat and hides. By 1930, the area had been fenced and commercial ranching had begun. Historic logging, ranching, and erosion contributed to the alteration of forest cover to woodlands and savannas. Pig hunting is available to the public in the nearby Laupahoehoe Forest Reserve.

Potential Impacts and Mitigation Measures. The koa project could have a positive effect on native Hawaiian gathering and/or other traditional uses as the forest and understory grows back. Wood may be made available by DHHL for cultural practices on a case by case basis. Hunting opportunities should not be reduced under this proposal.

4.4 Economic Resources

Existing Conditions. In 1991, the forest industry in Hawaii contributed approximately \$29 million and 736 jobs to the State's economy and at the time koa was the main resource.⁶ The forest industry payroll exceeded \$21 million and the average salary was over \$14 per hour. The ratio of value to land area for koa forest land is one of the highest of all rural/agricultural land uses. The forest industry, koa in particular, has the potential to provide employment for the community and also provide a use for vacant and/or under-utilized agricultural lands in Hawaii.

Removing dead and dying koa overstory trees from the proposed project site would generate an estimated two to four direct forestry jobs over a period of about three years. Because Hawaii's

current forest industry extensively uses koa as a natural resource, and because that industry is value-adding, it is worth considering potential indirect jobs which could result from this project. Indirect jobs are difficult to estimate, but a 1985 study of Hawaii's forest industry reported that "for every \$1,000 increase in output in the forestry sector [general] employment will increase by 1.3 jobs".

The koa project would remove about 125 acres of grazing land from the 5,290 acre lease assigned to Freddy Nobriga Enterprises, Inc. The project area is about 2.4% of the total lease. Due to the minimal reduction in land area and therefore ranch operations, it is estimated that no jobs would be lost by implementing the project as proposed.

Potential economic loss from grazing rents to the Department of Hawaiian Home Lands can be calculated by reducing the annual lease rent by that lost to koa management. Annual lease rates less 2.4% imply that about \$589 in annual rent would be lost by DHHL. The lease expires August, 2002.

Potential Impacts and Mitigation Measures. The proposed project could have a positive impact to Hawaii's economy. Presently, the demand for koa exceeds the available supply. This has resulted in shortages and significant increases in koa prices. Koa stumpage (value in the forest) has increased from approximately \$0.40/board foot in 1986 to \$3.00/board foot in 1996, while finished koa lumber sells in the range of \$10-\$35/board foot - a higher value than most timber species. These high prices could make sustainable koa management a viable option for many landowners.

Approved rates of harvest would account for the current supply of koa needed by Hawaii's markets and would not exceed 20% of that supply in any one year.

4.5 Fire Potential and Safety Risks

Existing Conditions. Fire has been used in the area to control gorse. Though wildfires are rare, there is a potential for wildfires to occur. Road networks are currently maintained allowing quick and safe access to the area.

Trees that lean on adjacent trees may pose safety hazards. Strong winds in the area may knock over dead and dying trees causing them to fall.

Potential Impacts and Mitigation Measures. Operations within the koa project area will follow applicable law to insure the control and prevention of possible fire hazards, as well as, herbicide application and site preparation in the gorse project area. Fire breaks between the sugi, koa, mamane, fir and gorse will be used to minimize fire losses. Access to the project site may be limited during the salvage and reforestation activities.

4.6 Access Roads

Existing Conditions. Access is provided via the Keanakolu/Mana Road. Within the stand several existing road segments provide adequate access for management activities.

Potential Impacts and Mitigation Measures. The contracted logger will be required to maintain and restore any roads to their original condition as determined by DHHL the landowner. Temporary skid trails and landings will be permitted and scarified after salvaging is complete in each segment.

Each logging truck can carry about 8 - 15 logs. At this rate, about one (1) or less logging truck per day would be hauling logs, or about 40,000 board feet per month. Products may be hauled over Saddle Road or through Waimea toward processing facilities in Hamakua or Hilo. About 4 trees per acre would be harvested or about 500 trees total. The salvage operations would take between one and two months to transport logs. Soil scarification and reforestation would begin shortly thereafter.

5. RELATIONSHIP TO PLANS AND POLICIES

5.1 Hawaiian Homes Commission Act

In 1921, Congress passed the Hawaiian Homes Commission Act (HHCA) of 1920, 42 Stat. 108, as amended, which set aside certain lands within the Territory of Hawaii for the benefit of native Hawaiians. This project implements section 204(2), HHCA by developing tracts of land not under homestead lease as determined by section 207(a), HHCA.

5.2 Hawaii State Plan

The Hawaii State Plan, Chapter 226, HRS, serves as a guide for future development. In general, its goals are to achieve a strong economy, a desired physical environment, and physical, social, and economic well-being that nourishes a sense of community responsibility. The proposed project is consistent with the objectives and policies of the Hawaii State Plan in the following areas:

§226-6, HRS: Objectives and policies for the economy.

The koa and gorse projects will increase employment opportunities and will add to the growth of the forest industry on the island of Hawaii.

§226-7, HRS: Objectives and policies for the agriculture.

The koa and gorse projects are consistent with the state's objective to diversify the agricultural industry.

§226-10, HRS: Objectives and policies for the economy - potential growth activities.

The koa and gorse projects will add to diversification of the forest industry through employment opportunities in research, education, production and manufacturing.

§226-11, HRS: Objectives and policies for the physical environment - land based, shoreline, and marine resources.

The koa and gorse projects exercises a conservation ethic in the use of natural resources and serves to protect Hawaii's unique and fragile environmental resources.

§226-13, HRS: Objectives and policies for the physical environment - land, air, and water quality.

The koa and gorse projects will improve the quality of Hawaii's land, air, and water resources by limiting the use of fire and herbicide to limit gorse expansion; minimize erosion and enhance water catchment through reforestation; and improve air quality through carbon sequestration.

§226-20, HRS: Objectives and policies for the socio-cultural advancement - health.

The koa and gorse projects will maintain environmentally healthful conditions by limiting the use of herbicides and fire by providing a natural barrier to contain gorse.

§226-21, HRS: Objectives and policies for the socio-cultural advancement - education.

The koa project will enhance understanding of Hawaii's cultural heritage through reforestation. The project will provide employment training programs and other related educational opportunities.

5.3 State Land Use Law

Chapter 205, HRS, relating to the Land Use Commission, establishes four major land use districts into which all lands of the State are placed. The districts are designated Urban, Rural, Agricultural, and Conservation. The southwestern corner of 3-08-01: por. 7 is zoned Conservation, with the remaining portion zoned Agriculture. TMK's 3-08-01: por. 02 and por. 9 are in the Agricultural District. Koa salvage and reforestation and other forestry activities are a permitted use within the Agricultural District. DHHL will seek an exemption from Conservation District rules pursuant to the HHCA, sec. 206.

5.4 Coastal Zone Management

The Hawaii Coastal Zone Management Program, Chapter 205A, HRS, establishes objectives and policies for the preservation, protection, and restoration of natural resources of Hawaii's coastal zone. The proposed project is consistent with the objectives and policies of the Coastal Zone Management Program in the following areas:

§205A-2(b)(4), HRS: Coastal Ecosystems

The koa and gorse projects protect coastal ecosystems, including reefs, by limiting the use of herbicides and minimizes soil erosion by reforestation.

§205A-2(b)(5), HRS: Economic Uses

Harvesting and reforestation is an appropriate economic use of the State's upland areas.

§205A-2(b)(8), HRS: Public Participation

Through the collaborative efforts of DHHL and its beneficiaries, HFCI, HARC, and Parker Ranch, the gorse project will provide for noxious weed control through reforestation.

§205A-2(b)(10), HRS: Marine Resources

The koa and gorse projects exercises a conservation ethic through reforestation which serves to protect marine and coastal resources by protecting the upland areas. The gorse project also encourages research and development of new, innovative ideas for exploring, using, or protecting marine and coastal resources.

5.5 State Environmental Policy

The State Environmental Policy, Chapter 344, HRS, generally promotes efforts to prevent or eliminate damage to the environment and enrich the understanding of the ecological systems and natural resources important to the people of Hawaii. The proposed project is consistent with the objectives of State Environmental Policy in the following areas:

§344-3(1), HRS: Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaii;

§344-3(2)(B), HRS: Creating opportunities for the residents of Hawaii to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments;

§344-3(2)(C), HRS: Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian; and

§344-3(2)(D), HRS: Establishing a commitment on the part of each person to protect and enhance Hawaii's environment and reduce the drain on nonrenewable resources.

The koa and gorse projects encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas; protect endangered species of indigenous plants and animals by improving their potential habitat; fosters the planting of native as well as other trees, shrubs, and flowering plants compatible to the enhancement of our environment; encourages industries compatible with our environment that also protect the environment; and encourage the reductions of environmental pollution which may degrade a community.

5.6 General Plan of the County of Hawaii

DHHL is not subject to the County General Plan. However, the County zoning designation is Agriculture. The General Plan Land Use Pattern Allocation Guide Map designation for the project area is Open. Forestry is a permitted use within the Agricultural and Open designations. DHHL does not propose any structures at this time.

6. DETERMINATION

This environmental assessment has examined the environmental and socio-economic impact associated with DHHL's proposal to (1) salvage and reforest a 125 acre parcel with koa; and (2) contain and abate gorse expansion onto adjacent Hawaiian Home Lands by planting a 250 foot wide sugi perimeter around the gorse infestation, and species trials consisting of ten acres each of koa, mamane, and Douglas fir to further abate gorse growth. Every phase of the proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short and long term effects of the action were considered.

Pursuant to Section 11-200-12, HAR, an action shall be determined to have a significant impact on the environment if it meets any one of the following criteria listed below. The expected determination of the project will be a **Finding of No Significant Impact**. Every phase of the proposed action, including the expected primary and secondary consequences, short and long term, and the cumulative effects were considered.

The analysis reports that the project should not result in significant environmental impacts to natural and cultural resources on the site or in the immediate area. Public infrastructure including roadways are adequate to serve the project and will not be significantly impacted by the project. The proposed project will enhance public view corridors and the visual character of the site and its immediate environs.

The subject property is situated within the State's Agricultural District and is County zoned for Agriculture. Therefore, the proposed project is in conformance with State and County land use plans and policies including chapter 205A, HRS, as well as the Hawaiian Homes Commission Act of 1920, as amended.

1. *The proposed project does not involve irrevocable commitment to loss or destruction of any natural or cultural resource.*

The proposed project is not expected to have any significant long term negative impact on native plant species in the area. Although both native and non-native plants may be damaged and/or killed during salvaging, site preparation for reforestation, road construction and maintenance, most will grow back naturally. Koa seedlings are expected to sprout after soil scarification. If openings greater than 1/2 acre persist five years following salvage operations, planting of koa from local seed sources would occur. Forestry operations may create a temporary disturbance in the area. Because operations will be implemented in a manner sensitive to the surrounding environment, the proposed project will have little to no impact on other resources or values in the project area and its nearby surroundings.

Forest disturbance will temporarily reduce the use of the area by animal species. Insect and bird populations will stabilize or improve as the disturbed areas reestablish themselves.

Applicable law will be followed to minimize soil erosion and compaction during salvaging, road construction and maintenance, site preparation and replanting. Soil resources will be protected by the design and location of roads, skid trails, and landings, and by not operating during periods of excessive rain. No permanent roads or skid trails will be built for this project, therefore there will be minimal impact on soil resources.

The proposed project will have little or no significant negative impact on water quality. To minimize nonpoint source pollution from sediments, the required practices include avoiding any disruption of natural drainage, preventing excessive soil displacement, providing drainage in case of slope instability, and providing culverts, dips, water bars, and cross drainage to minimize erosion. To minimize water quality degradation from nutrients and herbicides, practices include efficient and safe chemical use according to manufacturer's label.

Standing dead and fallen trees may attract insects, providing new forage opportunities (insects) for bird populations in the area, and could benefit birds such as the endangered akiapola'au.

There are no known historic or archaeological sites in the project area. If any evidence of historic and/or archaeological sites are found, then operations will be halted and findings will be reported to the State Historic Preservation Division.

2. *The proposed project does not curtail the range of beneficial uses of the environment.*

Opportunities for outdoor recreation activities will improve with the koa and gorse projects. Gathering plant material from the koa project area may also improve as the forest reestablishes itself. Access may be limited during salvaging operations. However, access limitations will be temporary and can be coordinated with DHHL lessee's.

There will be increased opportunities for field studies within the koa and gorse project sites.

3. *The proposed project does not conflict with 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.*

The proposed project will have minimal impact on the existing environment and at the same time improve the growth potential of koa resources. The restoration of Hawaii's native koa forests is one of many forest management goals of DHHL. The koa project serves to enhance the environmental quality of the area and provide cultural and economic opportunities for DHHL beneficiaries.

4. *The proposed project does not substantially affect the economic or social welfare of the community or state.*

An important goal of this project is to improve the economic and social welfare of DHHL beneficiaries. This project will provide valuable information for future koa stand management. The potential information that will be obtained could have significant benefits to the forest industry and community. Because koa is in high demand, new employment opportunities may be created for the management of sustainable koa forests.

The stumpage value of the koa to be salvaged depends on the wood products to be made from the resource. The value-added economic gain to the local economy will be many times that of the actual stumpage value. The koa resource will be utilized to manufacture locally desired wood products and be managed to provide employment and habitat for native wildlife.

5. *The proposed project does not substantially affect public health.*

To minimize water quality degradation from herbicide use in the gorse project area, contractor's will be required to adhere to manufacturer's label instructions. Safety and health laws and regulations regarding workers will be strictly enforced. DHHL will report violations to the Occupational Safety and Health Administration if chemicals are improperly used in the gorse or koa project areas. It is anticipated that as the sugi shades out the gorse and limits its growth, less herbicide will be used in the future.

6. *The proposed project does not involve substantial secondary impacts, such as population changes or effects on public facilities.*

The main secondary impact is the increased use of access roads in the area, but these impacts are temporary. The general public has limited access to the gorse and koa project areas.

7. *The proposed project does not involve a substantial degradation of environmental quality.*

Sound forest management of sustainable, long term productivity will insure that there will not be a significant degradation of the koa and gorse project areas. Koa salvaging will decrease the current density of biological resources, but the impact will be temporary and will lead to a healthier forest community.

8. *The proposed project does not have considerable cumulative adverse effects.*

Cumulative effects of the project are expected to be positive. A primary short term benefit of the koa project is the creation of logging and processing jobs. Other long range benefits will be forestry as a land use alternative and as forests increase the land's value for watershed, wildlife, recreation, aesthetics, and carbon sequestration.

9. *The proposed project does not substantially affect rare, threatened, or endangered species, or their habitat.*

There are no known threatened and endangered plant species presently growing in the koa or gorse project areas. If rare, threatened or endangered plant species are encountered with the koa or gorse project areas, DOFAW will be informed and the appropriate action taken.

Impacts on bird populations in the gorse project area is expected to be minimal. Impacts on bird populations in the koa project area is expected to be temporary and minimal. If any roosting trees or active nests of rare, threatened or endangered species are encountered, a no-harvest zone (250 foot radius) will be established around each site.

The endangered Hawaiian hoary bat may occur seasonally in the koa salvage area. Impacts to bat populations in the koa project area is expected to be temporary and minimal.

10. *The proposed project does not detrimentally affect air or water quality or ambient noise levels.*

There will be little or no significant impact on air quality in the koa and gorse project areas. There will be little or no significant impact on water quality in the koa and gorse project areas. To minimize nonpoint source pollution from sediments, the required practices include avoiding any disruption of natural drainage, preventing excessive soil displacement, providing drainage in case of slope instability, and providing culverts, dips, water bars, and cross drainage to minimize erosion. To minimize water quality degradation from nutrients and herbicides, practices include efficient and safe application of chemicals according to manufacturer's label. Chemicals will not be applied in rainy conditions to avoid or minimize chemical runoff. The proposed project is in a remote location. There should be no outside detection of noise during tree salvaging or scarification operations.

11. *The proposed project does not affect nor is likely to suffer damage by being located in an environmentally sensitive area such as a floodplain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.*

The proposed koa project area is not located in or near the above mentioned sensitive areas. The Wailuku Stream is located in the gorse project area. The application of herbicide may be used in site preparation for sugi planting. The manufacturer's label will be followed regarding use around bodies of water.

12. *The proposed project does not affect scenic vistas or viewplanes identified in county or state plans or studies.*

The project area is not identified as a scenic vista or viewplane. Visual impacts will be minimal due to the relatively remote location and small size of the proposed project area.

13. *The proposed project does not require substantial energy consumption.*

Petroleum fuels will be used in the koa and gorse project areas. Fuel consumption will be minimal.

REFERENCES

- ¹ Mueller-Dombois, D. 1981. Island Ecosystems - Biological Organization in Selected Hawaiian Communities.
- ² U. S. Department of Agriculture, Soil Conservation Service. 1973. Soil Survey of Island of Hawaii, State of Hawaii.
- ³ Wagner, W. L., et al. 1990. Manual of the Flowering Plants of Hawaii. University of Hawaii Press.
- ⁴ Scott, J. M., et al. 1986. Forest Bird Communities of the Hawaiian Islands: Their Dynamics, Ecology, and Conservation.
- ⁵ Maly, Kepa. 1997. Mauna Kea: A Report on Archival and Historical Documentary Research Ahupuaa of Humuula, Kaohe, Districts of Hilo and Hamakua, Island of Hawaii.
- ⁶ Yanagida J. F., et al. 1993. Hawaii's Forest: An Inventory and Analysis of Economic Potential. Report Submitted to the Governor's Agricultural Coordinating Committee.

Appendix A:

Public Comments and DHHL Responses
Regarding the Draft Environmental Assessment

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to
File

01-050/cpo

July 16, 2001

Mr. Raynard C. Soon, Chairman
Department of Hawaiian Homelands
P.O. Box 1879
Honolulu, Hawaii 96805

Dear Mr. Soon:

Subject: Draft Environmental Assessment, Koa Salvage/Reforestation

Thank you for allowing us to review and comment on the subject proposal. We have no comments to offer at this time.

Sincerely,

GARY GILL
Deputy Director
Environmental Health Administration

01 JUL 18 AIO :06

DEPT. OF HAWAIIAN
HOME LANDS

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



RAYNARD C. SOON
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

August 10, 2001

To: The Honorable Bruce S. Anderson, Director
Department of Health

Attn: Gary Gill, Deputy Director
Department of Health

From: *Raynard C. Soon*
Raynard C. Soon, Chairman
Hawaiian Homes Commission

Subject: Draft Environmental Assessment for the Koa Salvage-
Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated July 16, 2001, during the public comment phase of the subject project.

Your letter, along with this response, will be incorporated in the forthcoming Final Environmental Assessment. If needed, corrections or clarifications will be made in the document. We appreciate your interest and participation in this phase of the project. If you have any questions, please call me at 586-3801, or have your staff call Rebecca Alakai at 587-6423.

BENJAMIN J. CAYETANO
Governor



State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 South King Street
Honolulu, Hawaii 96814-2512

JAMES J. NAKATANI
Chairperson, Board of Agriculture

LETITIA N. UYEHARA
Deputy to the Chairperson


Mailing Address:
P.O. Box 22159
Honolulu, Hawaii 96823-2159

Fax: (808) 973-9613

July 6, 2001

To: Raynard C. Soon, Chairman
Department of Hawaiian Home Lands

Attention: Mike McElroy

From: James J. Nakatani, Chairman
Board of Agriculture 

Subject: Draft Environmental Assessment for Koa Salvage-Reforestation and
Gorse Containment Project

Thank you for the opportunity to review the subject document. We fully support this project. We are committing \$10,000 to fund seed acquisition and trials implementation in support of the Humuula Gorse Control Project. We understand that sugi plantings will use existing fences around the project area to prevent cattle from inadvertently moving gorse seeds to new areas.

Should you have any questions, please call Earl Yamamoto at 973-9466, or Larry Nakahara, Plant Pest Control Manager, at 973-9522.

c: Larry Nakahara

humuula.e01



BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



RAYNARD C. SOON
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

August 10, 2001

To: The Honorable James J. Nakatani, Director
Department of Agriculture

From: *Raynard C. Soon*
Raynard C. Soon, Chairman
Hawaiian Homes Commission

Subject: Draft Environmental Assessment for the Koa Salvage-
Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated July 6, 2001, during the public comment phase of the subject project. We offer the following responses in the respective order of your comments:

1. Funding. Thank you for the commitment of \$10,000 to fund seed acquisition and trials implementation in support of the gorse control project. Reforestation is an environmentally beneficial way to control the expansion of gorse and improve the watershed.
2. Transportation of seeds. The sugi perimeter will be planted along fence lines inside existing paddocks to prevent cattle from inadvertently moving gorse seeds to new areas.

Your letter, along with this response, will be incorporated in the forthcoming Final Environmental Assessment. If needed, corrections or clarifications will be made in the document. We appreciate your interest and participation in this phase of the project. If you have any questions, please call me at 586-3801, or have your staff call Rebecca Alakai at 587-6423.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

BENJAMIN J. CAVETANO
GOVERNOR
STATE OF HAWAII



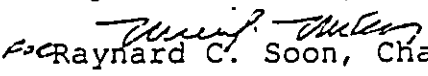
RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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DEPUTY TO THE CHAIRMAN

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August 10, 2001

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From: 
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Hawaiian Homes Commission

Subject: Draft Environmental Assessment for the Koa Salvage-
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BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

JUL 13 2001

BRIAN K. MINAII
DIRECTOR

DEPUTY DIRECTORS
GLENN M. OKIMOTO
JADINE Y. URASAKI

IN REPLY REFER TO:

HWY-PS
2.3436

TO: RAYNARD C. SOON, CHAIRMAN
DEPARTMENT OF HAWAIIAN HOME LANDS

FROM: BRIAN K. MINAII *Brian K. Minaii*
DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE KOA
SALVAGE-REFORESTATION AND GORSE CONTAINMENT,
HUMUJULA, HAWAII

Thank you for your transmittal requesting our comments regarding the subject project.

The proposed Koa salvage reforestation and Gorse containment project will not adversely impact our State highway facilities.

DEPT. OF HAWAIIAN
HOME LANDS
01 JUL 16 08 59

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



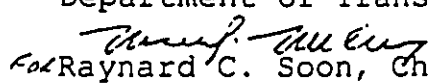
RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

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

August 10, 2001

To: The Honorable Brian K. Minaai, Director
Department of Transportation

From: 
Raynard C. Soon, Chairman
Hawaiian Homes Commission

Subject: Draft Environmental Assessment for the Koa Salvage-
Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated July 13, 2001, during the public comment phase of the subject project.

Your letter, along with this response, will be incorporated in the forthcoming Final Environmental Assessment. If needed, corrections or clarifications will be made in the document. We appreciate your interest and participation in this phase of the project. If you have any questions, please call me at 586-3801, or have your staff call Rebecca Alakai at 587-6423.



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

June 8, 2001

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

MEMORANDUM

LOG NO: 27652
DOC NO: 0106PM06

TO: Mike McElroy, Administrator
Department of Hawaiian Home Lands

FROM: Don Hibbard, Administrator ^{NN}
State Historic Preservation Division

SUBJECT: Gorse Removal Demonstration Project
Hawaiian Home Lands
Humuula, Hawaii Island

DEPT. OF HAWAIIAN
HOME LANDS
01 JUN 13 AM 109

Our staff has reviewed the proposed project, which would consist of planting a variety of native and non-native trees to inhibit the growth and expansion of gorse on DHHL lands located between the 6000 to 7000 foot elevation on the east slope of Mauna Kea along or near the Keanakolu/Mana Road. The project proposes a 250 foot wide buffer of sugi (*Cryptomeria japonica*) trees to enclose the leading edge of the gorse infestation. No trees would be planted along the existing forest boundary. The project area would thus encompass about 320 acres of perimeter plantings on three sides of the gorse infestation. The DHHL has determined that the proposed project will have minimal or no significant effect on the environment.

We believe that the project has the potential to adversely affect significant historic properties. Surveys undertaken in the Hakalau National Wildlife Refuge have identified a variety of different site types in this area. A recent survey undertaken by the Federal Highways Administration for improvements to a section of the Keanakolu Road have identified additional sites in this area. Thus, historic sites could well be in the project area.

We recommend that an archaeological inventory survey should be undertaken of the proposed project area to determine if significant historic sites are present. A report of this survey should be submitted to our office for review. Consultation should also be undertaken with Native Hawaiian organizations and individuals to satisfy the requirements of Section 106 of the National Historic Preservation Act of 1996 as amended.

If significant historic sites are present, then mitigation measures will need to be developed (e.g., avoidance measures).

PM:amk

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII




RAYNARD C. SOON
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

August 8, 2001

To: Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and Natural Resources

From: 
Mike McElroy, Administrator
Land Management Division

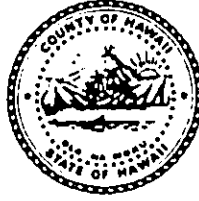
Subject: Draft Environmental Assessment for the Koa Salvage-Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated June 8, 2001, during the public comment phase of the subject project. We offer the following responses in the respective order of your comments.

1. Archaeological inventory survey. As part of the gorse project, a sugi perimeter will be planted along fence lines inside existing paddocks to prevent cattle from moving gorse seeds to new areas. An archaeological survey will be conducted before the subject action begins. A report of the survey will be submitted to your office for review.

Your letter, along with this response, will be incorporated in the forthcoming Final Environmental Assessment. If needed, corrections or clarifications have been made in the document. We appreciate your interest and participation in this phase of the project. If you have any questions, please call Rebecca Alakai of my staff at 587-6423.

Harry Kim
Mayor



Christopher J. Yuen
Director

Roy R. Takemoto
Deputy Director

County of Hawaii

PLANNING DEPARTMENT

25 Aupuni Street, Room 109 • Hilo, Hawaii 96720-4252
(808) 961-8288 • Fax (808) 961-8742

June 19, 2001

Mr. Mike McElroy
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hawaii 96805

DEPT OF HAWAIIAN
HOME LANDS
01 JUN 28 AIO 34

Dear Mr. McElroy:

**SUBJECT: Draft Environmental Assessment for the Koa Salvage-Reforestation
and Gorse Containment**

Thank you for the opportunity to comment on the Draft Environmental Assessment (DEA) for the Koa Salvage-Reforestation and Gorse Containment project. The land use designations for TMK 3-8-1: por. 2, por. 7 and por. 9 are as follows:

General Plan: Conservation (western corner of por. 7), Extensive Agriculture (por. 2, rest of por. 7, and por. 9)
State Land Use: Conservation (western corner of por. 7) and Agriculture (por. 2, rest of por. 7, and por. 9)
County Zoning: Ag-40a

The western portion of parcel 7 that composes the Gorse project site is in the State Land Use Conservation District. The Conservation District is under the regulatory jurisdiction of the State Department of Land and Natural Resources (DLNR).

The rest of the Gorse project site (por. 2 and por. 7) and the Koa Project site (por. 9) are consistent with its General Plan, State Land Use, and County Zoning agricultural designations.

Mr. Mike McElroy
Department of Hawaiian Home Lands
Page 2
June 19, 2001

Should you have any questions please call Norren Kato at (808) 961-8288.

Sincerely,



CHRISTOPHER J. YUEN
Planning Director

NK:pak
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BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

RAYNARD C. SORIN
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

August 8, 2001

The Honorable Christopher J. Yuen
Planning Director
County of Hawaii
25 Aupuni Street, Room 109
Hilo, Hawaii 96720

Dear Mr. Yuen:

Subject: Draft Environmental Assessment for the Koa Salvage-Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated June 19, 2001, during the public comment phase of the subject project. We offer the following responses in the respective order of your comments.

1. Land Use Designations. The Land Use Designation for the State land parcels that are involved in the proposed project will be corrected per your comments and a GIS field check of the proposed sugi perimeter. If the final boundaries of the subject action are in the Conservation District, the Department of Hawaiian Home Lands may exempt itself pursuant to Sec. 206, HHCA. The corrections will be reflected in the Final Environmental Assessment.

Your letter, along with this response, will be incorporated in the forthcoming Final Environmental Assessment. We appreciate your interest and participation in this phase of the project. If you have any questions, please call Rebecca Alakai of my staff at 587-6423.

Aloha,

A handwritten signature in cursive script, appearing to read "Mike McElroy".

Mike McElroy, Administrator
Land Management Division

WAIMEA HAWAIIAN HOMESTEADERS' ASSOCIATION, INC.
P. O. Box 6753
Kamuela, Hawaii 96743
July 10, 2001

M KANANI KAPUNIAI
Pu'ukapu-Pastoral '90+
Director- President

N DUKE KAPUNIAI
Puukapu Agricultural '85+
Director - Vice-President

DOREEN KAMA
Kuhio Village
Director - Secretary

IRENE TORREY
Kuhio Village
Director - Treasurer

TEDDY BELL
Puukapu-Pastoral >'90
Director

THELMA KANIHO
Pauahi
Director

KAINOA HODSON
Puukapu-Agricultural>'85
Director

A HOPPY BROWN
Pu'ukapu-Pastoral '90+
Director

NANCY HONDA
Pu'ukapu-Agricultural'85+
Director

LAN BANNISTER
Nienie
Director

MAXINE KAHAULELIO
Pu'u Pulehu
Director

LAN BANNISTER
Kamoku-Waikoloa
Director

Mike McElroy, Administrator
Land Management Division
Department of Hawaiian Home Lands
P. O. 1879
Honolulu, Hawaii 96805

RE: Draft Environmental Assessment for the Koa Salvage-
Reforestation and Gorse Containment, Humu'ula, Hawaii

Dear Mike:

Please accept our comments on the above-mentioned DEA.

At our meeting held on June 28th, the following two motions were entertained and voted upon:

"We do not accept the Environmental Assessment Draft as presented, at this time, until the following concerns are addressed:

- 1) Title of Land
- 2) Liability for lack of stewardship by Freddy Nobriga and Parker Ranch
- 3) Liability of Department of Hawaiian Home Lands for lack of enforcing general lease terms.
- 4) Time Frame should be revised"

"An EIS should replace the DEA."

Additional comments of concern:

- 1) Why should koa salvage money be used to correct a problem caused and allowed to continue and worsen by the general lessee and DHHL - both areas will not be available for homesteading. **Revenues shall be available** for homesteading planning, such as for 'Oiwi Lokahi O Ka Mokupuni, as **mandated** by the Hawaiian Homes Commission in 1997 and for related activities.

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DEPT. OF HAWAIIAN
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- 2) The DEA lacks an educational component. Although there has been ongoing training in related forestry skills, a component directly involving an institution which has included forestry in their curriculum **shall be added**; I recommend speaking with Ku Kahakalau, School Director for Kanu O Ka 'Aina 21st Century Public Charter School - Phone (808)887-8144 (for koa salvaging and reforestation, and for preparation for gorse containment)
- 3) "Isn't Parker Ranch legally responsible to return the land in the same condition they received it? (Not just since these lands were designated Hawaiian Home Lands, but from the inception of their lease with the State of Hawaii, under the DLNR.)"
- 4) When did the Hawaiian Homes Commission approve this plan? I refer specifically to the point of planning to use all the revenue from this resource to correct a problem caused and allowed to worsen by the general lessee.

We await your reply. Thank you for your assistance. We also appreciate having Rebecca Alakai attend our meeting and represent the Department on this subject.

Cordially,



M Kapuniai
President

By Facsimile:

is Mail

Phone: 890-2311 - 936-0157(Res)

Fax 885-4998

Email: kananik@softhome.net

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

August 8, 2001

Ms. Kanani Kapuniai, President
Waimea Hawaiian Homesteaders' Association, Inc.
P. O. Box 6753
Kamuela, Hawaii 96743

Dear Ms. Kapuniai:

Subject: Draft Environmental Assessment for the Koa Salvage-Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated July 10, 2001, during the public comment phase of the subject project. We offer the following in response to your comments.

1. Concern about property title. Under the provisions of Section 203(1) of the Hawaiian Homes Commission Act, 1920, certain lands were selected by the Hawaiian Homes Commission (HHC) from the lands of Humuula Mauka, in the District of North Hilo, Island of Hawaii. The subject area, identified by C.S.F. No. 5313, is held in trust by the Department of Hawaiian Home Lands. These lands were designated as "available lands" by the HHC on June 27, 1929.
2. Liability for lack of stewardship by Freddy Nobriga and Parker Ranch. Your concern regarding a "lack of stewardship" is assumed to mean the gorse problem on the subject parcels. General Lease No. 199, to Freddy Nobriga Enterprises, Inc., states that the lessee shall restore the premises to good order and condition satisfactory to the Lessor. DHHL expects that the premises will be returned in satisfactory condition when the lease expires in August, 2002.

General Lease Nos. 200-201, to Parker Ranch, similarly requires that the lessee restore the premises to good order and condition satisfactory to the Lessor. DHHL will ensure that conditions of the lease are met.

As you are well aware, there is no one-step or quick solution to the problem. Parker Ranch continues to apply herbicide and burn the gorse. Additionally, Parker Ranch, in cooperation with The Nature Conservancy, the Department of Agriculture, and the Hawaii Agriculture Research Center, U.S. Forest Service, as well as experts from New Zealand and Australia received a \$480,000 grant from the Department of Defense under its Biosystems Technology

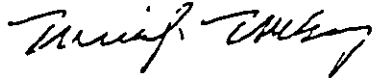
Program. Private contributions add another \$480,000. The grant is entitled, The Gorse Project: A New System for the Sustainable Management of Woody Legume Weeds. The purpose of the grant is to develop a rational, long-term integrated weed management plan for the infestation. Grant monies will include a coordinated effort of burning, spraying, and tree planting.

3. Liability of DHHL for lack of enforcement of general lease terms. This project represents an approach with significant promise of greatly retarding the spread of gorse. We believe that this demonstrates the Department's understanding of the grave nature of gorse infestation and the priority of efforts to combat it.
4. Time frame should be revised. The project schedule is based on budget cycles and the planting season. It is an estimated time frame and is intended for planning purposes only.
5. Environmental impact statement should be prepared. An environmental assessment (EA) is an informational document used to evaluate the possible environmental effects of a proposed action and to determine if an environmental impact statement (EIS) is required. After the draft EA has been finalized and public comments responded to, the approving agency (in this case, the Hawaiian Homes Commission) reviews the final EA and determines if any significant environmental impacts are anticipated. If no actions are deemed significant, then the approving agency issues a finding of no significant impact (FONSI). This determination allows the project to proceed. If the approving agency determines that the action may have a significant impact, an environmental impact statement (EIS) would then be prepared.
6. Use of koa salvage revenue. Koa salvage money will go toward reforestation, a value-added land use which also benefits DHHL by controlling the expansion of gorse onto additional homestead lands. Since DHHL is funding the reforestation program, we believe that koa salvage revenues should also go to the trust. Financial support for homestead planning, such as by 'Oiwi Lokahi O Ka Mokupuni, has been provided by DHHL through community development grant funding.
7. Lack of educational component. DHHL staff has been in contact with the Director for the Kanu O Ka 'Aina charter school. Discussions have centered on germinating seedlings, inviting speakers, and planting dibble stock as part of their curriculum.
8. Responsibilities of Parker Ranch. Please see (2), above.
9. HHC approval. The HHC approved a request for \$320,000 to purchase sugi seedlings during the fiscal 2002 budget cycle. Hearings were held in June, 2001. On February 15, 1994, the HHC authorized issuance of a license for harvesting and reforestation of 125 to 200 acres in the area comprising G.L. No. 199.

Ms. Kanani Kapuniai
August 8, 2001
Page 3

Your letter, along with this response, will be incorporated in the forthcoming Final Environmental Assessment. If needed, corrections or clarifications have been made in the document. We appreciate your interest and participation in this phase of the project. If you have any questions, please call Rebecca Alakai of my staff at 587-6423.

Aloha,



Mike McElroy, Administrator
Land Management Division



Hawai'i Forest Industry Association
P. O. Box 10216 • Hilo, Hawai'i 96721 hawaii-forest.org
(808) 933-9411 • FAX (808) 933-9140

4 July 2001

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DEPT. OF HAWAIIAN
HOME LANDS

Mr. Mike McElroy, Administrator
Land Management Division
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, HI 96805

Re: Draft EA, Koa Salvage-Reforestation and Gorse Containment

Dear Mr. McElroy:

The Hawai'i Forest Industry Association (HFIA) is pleased to have had an opportunity to review this Draft Environmental Assessment and wishes to commend the Department of Hawaiian Home Lands for a proactive approach to gorse control which also results in reforesting historically forested land. If successful, your project could result in the return of gorse-infested land to high-value productivity. The use of income from koa harvesting to support gorse control will be a good model for the public sector in sustainable forest management, one which we hope will be applied by other State agencies.

The project as described appears to encompass responsible forest practices and raises no undue concerns on our part. We hope that competent and experienced loggers from the private sector will be able to participate in your salvage operations, and that you will employ best management practices to minimize disturbances during harvesting. Your Draft EA states that applicable laws will be followed (e.g., on pages 8, 17 and 18). Responsible harvesting practices such as directional falling and the use of predefined skid trails are alluded to on page 12, and proper engineering to minimize impacts on soil are mentioned on page 17. We look forward to reviewing the Koa Salvage and Reforestation Plan you will require of your logging contractor (p. 19).

As stated on page 24, the current demand for koa exceeds the available supply. Your project could have a very positive effect on our industry and on the State's economy by providing koa for the local woodworking industry. We note that you refer to "koa needed by Hawaii's markets" on page 24, and hope this means that koa harvested by DHHL will not be exported, but will be made available to Hawaii's wood processing businesses.

I have a few questions which will clarify your project further. The EA states that 125 acres of koa will be salvage-harvested in segments of 5 to 15 acres. Your

Mr. Mike McElroy, page 2
4 July 2001

project cost and schedule table on page 7, however, shows that the implementation of the koa salvage-reforestation plan (which I presume means the harvesting) will only take place between September 2001 and May 2002. Do you expect to harvest the entire 125 acres in those eight months? Also, what is meant by "segments of 5 to 15 acres"—this is apparently not a per-year figure, since less than one year will be spent in the salvage operations.

Will the eight months of harvesting generate sufficient income for the entire gorse suppression experiment? Although your estimated costs are given in the table on page 7 as totaling \$434,000 over six years, and some stumpage and lumber prices are given on page 24, there is no indication of the total revenues expected from the salvage harvests. Since the area has been inventoried, I would have expected to see estimated values for the 125 acres of koa included in the EA, if only to demonstrate that revenues will be sufficient for the project.

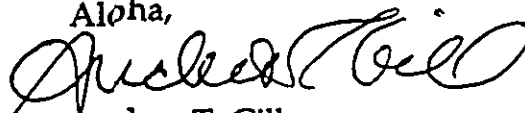
One concern which you will need to address, though possibly not in the EA, is security, given the prevalence of koa poaching. Providing security so that the koa from the 125 acres is not removed by unauthorized parties may be an additional cost item.

HFIA agrees that sugi, although an introduced species, is not aggressively invasive and that it does appear to have good potential to successfully provide shade control of gorse at your project location. Planting sugi along the perimeter of the gorse infestation is a reasonable approach for this experiment, and could lead to more plantings within the concentrated portions of the infestation if proven effective. The trial plantings of *Acacia koa* and other species is a good idea; the more tools we have for gorse abatement, the better.

I recently observed the koa regrowth near the Keanakolu Ranger Cabin and am encouraged by the apparent health and vigor of the young trees. This indicates good potential for success with your koa reforestation efforts.

HFIA supports your plans to leave certain classes of koa trees unharvested to preserve bird nesting sites, and is pleased at your consultation with the Hakalau Forest National Wildlife Refuge and other professionals. Thank you for the opportunity to comment. We wish you success in your project.

Aloha,



Andrea T. Gill
Executive Director

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



RAYNARD C. MOON
CHAIRMAN
HAWAIIAN HOME COMMISSION

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

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

August 8, 2001

Ms. Andrea Gill
Hawaii Forest Industry Association
P.O. Box 10216
Hilo, Hawaii 96721

Dear Ms. Gill:

Subject: Draft Environmental Assessment for the Koa Salvage-Reforestation and
Gorse Containment, Humuula, Hawaii

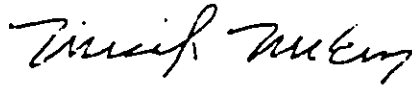
Thank you for your letter, dated July 4, 2001, during the public comment phase of the subject project. We offer the following responses in the respective order of your comments.

1. Roads. Roads in the subject area will be temporary and will be scarified upon completion of the project.
2. The koa market. It is anticipated that the koa will be sold at market rates to local buyers. However, DHHL has no control over the end use or market demand.
3. Estimated project schedule. The project schedule listed in section 1.6 is based in part on budget cycles and the planting season and is an estimate. The actual time of implementing the koa project will be based on the negotiated time of performance between DHHL and the logger. It is intended that the koa would be salvaged in 5 to 15 acre cutting blocks to minimize disturbances to large areas. Depending on the location of directional falling and skid trails, scarification would follow salvage operations in each block. These conditions will be part of the timber license and harvesting plan required of our logger and approved by DHHL.
4. Anticipated revenues and funding sources. In 1998, a timber inventory was conducted on DHHL's Humuula parcels. The information contained in the inventory is proprietary. In June 2001, the HHC approved a budget request for \$320,000 to fund the gorse project. It is anticipated that the funds are adequate to cover costs.

Hawaii Forest Industry Association
August 8, 2001
Page 2

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Assessment. We appreciate your interest and participation in this phase of the project. If you have any questions, please call Rebecca Alakai of my staff at 587-6423.

Aloha,



Mike McElroy, Administrator
Land Management Division



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Blvd, Rm 3122
Box 50088
Honolulu, HI 96850

DEPT. OF HAWAIIAN
HOME LANDS

'01 JUL 12 A9:05

In Reply Refer To: JTN

JUL 11 2001

Mike McElroy, Administrator
Land Management Division
State of Hawaii, Department of Hawaiian Homelands
P.O. Box 1879
Honolulu, HI 96805

Re: Draft Environmental Assessment, Koa Salvage-Reforestation and Gorse Containment,
Humuula, Island of Hawaii

Dear Mr. McElroy:

The U.S. Fish and Wildlife Service (Service) has reviewed the above-referenced draft Environmental Assessment (DEA) which was prepared by the Department of Hawaiian Home Lands (DHHL). The primary project purpose is to plant sugi (*Cryptomeria japonica*) and koa (*Acacia koa*) as a containment buffer around gorse (*Ulex europaeus*) that has infested lands currently used for pasture in Humuula, Island of Hawaii. Experimental plantings of native and non-native tree species within gorse-infested areas are also planned. Funding for a part of the gorse containment project will be from koa timber harvest on a separate 125-acre parcel owned by DHHL. This letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act of 1973 [16 U.S.C. 1531 *et seq.*; 87 Stat. 884], and other authorities mandating Service concern for environmental values. We offer the following comments for your consideration. Please see our letter of March 30, 2001, regarding the gorse removal demonstration project. The due date for comments on the DEA was extended from July 9, 2001 to July 10, 2001 (Linda Chin pers. com.).

The proposed action involves the planting of sugi and koa in a 250-foot-wide containment buffer around gorse infested areas in Humuula, Island of Hawaii. Gorse, an invasive shade intolerant shrub, has invaded the area above the Keanakolu road on the east slope of Mauna Kea, between the Mauna Kea summit road and the north boundary of the Hakalau Forest National Wildlife Refuge (HFNWR), reducing the value of much of this area for pasture and affecting multiple resource values including watershed, wildlife habitat, and threatened and endangered species habitat. Some funding for tree planting in gorse-infested areas would be provided by selective harvest of koa on a nearby 125-acre parcel owned by the DHHL. This parcel located near the Keanakolu Road and adjacent to the Laupahoehoe Forest Reserve is currently used for pasture.

The parcel would be scarified after logging to encourage koa regeneration. Revenues from the timber harvest would be used to promote forest-based economic opportunities, to investigate sustainable forestry, and contain and abate gorse growth by koa and non-native tree planting.

GENERAL COMMENTS

We would be better able to evaluate and comment on the appropriateness of specific measures suggested in the DEA if we had a more detailed long range land use plan for the entire project area. We recommend the DEA present a long-range vision for land use in the gorse containment area and describe how this project fits into that vision. For example, will the area be returned to grazing after gorse has been removed or is long-term silviculture the goal? Does the long-range plan provide for maintenance and recovery of endangered forest species such as those that once occurred on the project lands? Will the area continue to be managed by the DHHL or will it be subdivided into smaller parcels?

In general, we believe the DEA adequately describes the proposed action and some of the significant fish and wildlife resources that may occur at the proposed project site. The potential impacts of the planting of non-native trees in gorse infested areas, though mentioned, have not been adequately considered in the DEA. We agree it is important that gorse (*Ulex europaeus*) be contained and abated in the project area and believe the general methodology proposed for removing gorse (shading with trees) may accomplish the goal of containing and abating gorse and returning gorse infested areas to a more natural condition. However, we believe the preferred alternative (planting non-native trees) is likely to adversely impact fish and wildlife resources.

The DEA does not adequately address the threat sugi and other non-native trees pose to native species, and does not evaluate the potential costs of weed control should non-native trees become an invasive species problem. Alien trees are known to be invasive in native Hawaiian ecosystems and have the potential to cause wide-ranging adverse effects to ecosystems and watersheds. The invasion of alien tree species into native Hawaiian forests has resulted in changes in forest structure and composition with serious adverse effects on forest birds, native plants, and endangered plant habitats. For example, sugi grows under forest canopy and has been found to invade native ohia (*Metrosideros polymorpha*)/koa forests. Sugi has also invaded areas on the HFNWR after cattle grazing was eliminated.

The 250-foot-wide perimeter planted with sugi will extend greater than ten linear miles (the exact acreage and linear extent of the sugi planting is not stated in the DEA). Sugi, although apparently a slow invasive, if planted over this large acreage could spread over a large area. Although fencing proposed in the DEA will minimize transport of seeds by animals, the 250-foot-wide perimeter proposed to minimize seed transportation by birds will be ineffective. Therefore, there is the potential for seed dispersal over wide areas by avian species.

The DEA should address the potential spread of sugi or other non-native trees, especially into higher elevation mamane (*Sophora crysophylla*) forests. The DEA should also address the future

management of alien species proposed to be used in the project area (e.g., mechanical and/or chemical means for weed control), including costs of control efforts should sugi or non-native tree species spread into native-dominated forest communities and areas that are being restored to native vegetation.

The DEA does not address potential effects of non-native trees on soil. Little is known regarding what types of soil changes sugi may have in this area and how this may effect possible future plans for restoration with native Hawaiian species. Until these factors are better known, planting non-native tree species that may cause potential long-term or irreversible changes to soils and soil nutrient factors in areas that may later be considered for restoration to native trees and vegetation communities should be avoided. We recommend that the DEA address effects of sugi on soil nutrients and soil hydrology.

We recommend planting koa instead of non-native trees to achieve project objectives. Koa is faster growing than sugi and may serve as an effective containment buffer. Average koa growth rates at the highest elevations of the HFNWR are 22 inches per year. Close plantings of koa grow rapidly to a closed canopy in a few years. Historically koa extended above the upper boundary of the proposed gorse containment project area. In addition, scattered healthy patches of mature koa are growing up to 7,500 foot elevation in the gorse area. Koa grows very well in close association with gorse. Koa is well adapted to the area, and technologies for growing koa and for its successful out planting are currently available. The HFNWR has developed methods for the propagation and outplanting of koa at high elevations in areas where young koa trees are vulnerable to frost damage and has achieved high outplanting survival using these methods. Warm wet winters provide the best growth rate and survival of koa, however, very high survival rates could be expected using gorse as a frost buffer. In addition, the HFNWR has offered their assistance with koa planting which might include: providing propagation/outplanting expertise, seeds, space for growing/hardening seedlings, water for irrigation, some use of dozer equipment for preparing planting sites, assistance with organizing and recruiting volunteers for outplanting and seed collection, and fire control.

In addition, native trees provide a greater conservation benefit to native Hawaiian species. The Humuula area described in the DEA was once a koa/mamane forest that supported forest bird populations within a native mesic/dryland vegetation community. Today, reforestation of this area in koa and mamane is critical to the recovery of two endangered Hawaiian honeycreepers, the akiapolaau (*Hemignathus munroi*) and palila (*Loxioides bailleui*), that rely respectively on koa as foraging substrate for insect larvae and mamane for seed pods. These two avian species have been reduced to dangerously low numbers in large part through the loss of native forest habitat. Because of disease pressures at lower elevations, it is vitally important that the total habitat area of koa/mamane forest be increased at middle to higher elevations.

As described in the DEA, establishing native species forest corridors between upper elevation mamane forests and wet mid-elevation ohia/koa forests is important for the conservation of native forest birds. These corridors would assist elevational migrations of native forest birds. We

recommend that the planting of these corridors be included in the proposed project and evaluated in the DEA.

The DEA does not address wildfire management. Specifically, response of sugi to fire in the project area is not mentioned in the DEA. Gorse is fire-adapted and wildfire risk will remain high as long as gorse continues to grow over large areas. The U.S. Forest Service is presently conducting a koa, gorse control experiment along the Keanakolu Road above the HFNWR. The area of this experiment was burned accidentally in February 2000, at a time when the planted koa had reached five meters in height. Recent observation of the area shows that trunks of koa above ground are dead, but around each tree base are dozens of 0.5-1 meter koa saplings, and nearby are hundreds of root sprouts. Gorse that has grown back in this area will soon be over-topped by the koa. Following a burn, koa will grow back from root shoots. The robust regrowth of koa after fire in this area supports our recommendation for the use of koa (over sugi) for perimeter containment and interior abatement plantings, especially as fire will be a threat to tree plantings and there is no plan stated in the DEA for fire response or control.

According to the DEA, proceeds from the harvest of koa trees within a 125-acre parcel of pasture near the Keanakolu Road and adjacent to the Laupahoehoe Forest Reserve will be used to fund a portion of the gorse containment project. Koa would be reduced from seven to 2.5 trees per acre in this area. We do not believe that the koa salvage operation will serve any significant function toward native habitat restoration. Although the koa salvage operation is presented in part as a restoration opportunity, ecologically, older "decadent" koa trees are of great value to a forest as forage sites for insectivorous birds, by providing logs for forest regrowth, and shade for ferns and other native understory plants that compete with non-native grasses. Removing "decadent" trees and scarifying the soil would encourage the regeneration of single-age stands of koa. This management action would reduce the complexity of the existing forest structure in the near term and would reduce the potential future value of the area as wildlife habitat below what it would have been if the forest was allowed to regenerate naturally or to regenerate with certain types of additional management. Restoration of the 125-acre area would be better accomplished by fencing and removing cattle and feral ungulates, and soil scarification and/or planting of koa if necessary. We recommend elimination of koa harvesting from the proposed project.

SPECIFIC COMMENTS

Section 3.1.2, Fence Area and Remove Cattle, page 14. The Statement, the forest "would continue its current decline" if the area were fenced and cattle removed with no other management action is incorrect. The forest will restore itself if the area is fenced and cattle are removed. With some additional management the forest will regenerate as quickly or more quickly and as better habitat for wildlife. Furthermore, retaining the old growth trees will promote a more complex forest structure that likely will benefit a greater diversity of wildlife resources in the near term and higher quality forest habitat in the future.

Section 4.2.2, Fauna, Potential Impacts and Mitigation Measures, page 21. The Hawaiian hoary bat (*Lasiurus cinereus semotus*), a federally endangered species, could potentially be impacted by logging in this area. If take of the Hawaiian hoary bat occurs, DHHL may be liable under section 9 of the Endangered Species Act of 1973, as amended (Act). Section 9 of the Act prohibits "take" of federally listed species. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.

The Hawaiian hoary bat roosts in trees. During reproduction and mating, April to October, bats generally occur below 4,000 feet, while during the winter, November to April, they tend to be found at 4,000 to 7,500 feet (USFWS 1998; T. Cabrera, pers. comm. 2001). During the period juvenile bats are unable to fly (April to August), logging could result in taking the young bats and logging in the winter may result in take of foraging and roosting habitat. According to Theresa Cabrera, bat researcher at the University of Hawaii, surveys made at dusk of the Hawaiian hoary bat are most effective at detecting roosting sites. The presence of the Hawaiian hoary bat should be evaluated and provisions to address potential impacts included in the DEA. Such provisions may include, but are not limited to, no harvest below 4,000 feet in the summer or no harvest between 4,000 and 7,500 feet in the winter. If measures to avoid take of the Hawaiian hoary bat cannot be incorporated into this project, you may apply for an incidental take permit through section 10 of the Act. Information on the incidental take permit process is enclosed.

SUMMARY

The project as proposed could have significant unmitigated impacts on fish and wildlife resources and could result in take of the endangered Hawaiian hoary bat. We do not support the planting of non-native tree species that a) have minimal conservation value for native Hawaiian plants and animals, b) may be no more effective at gorse containment than planting koa, c) are invasive into native ecosystems, d) may increase management costs for natural resource managers, and e) potentially limit the future restoration potential of the affected area for native species.

Given these concerns regarding the invasive potential of sugi and other non-native trees and the known advantages of koa for tree planting in the Humuula area, we recommend a complete koa buffer be planted around the gorse infestation; success be evaluated; and means for improving outplanting success of koa be investigated. If the DEA is not revised to eliminate use of non-native trees, we recommend that the potential effects of sugi invasion and other non-native trees be thoroughly addressed in the DEA, including invasive characteristics and methods and costs for control.

We recommend DHHL eliminate the koa salvage portions of the project and work with our Conservation Partnerships Program to obtain funding assistance for the planting of koa trees. If koa salvage is not eliminated from the project, we recommend that bat surveys be conducted. If surveys show that bats are present, this project may result in take. If the proposed project is

changed to eliminate non-native species plantings and koa salvage on the 125 acres, the Service will concur with a finding of no significant impact.

We appreciate the opportunity to comment on the proposed project. If you have any questions or comments, please contact Fish and Wildlife Biologist Jay Nelson by telephone at (808) 541-3441 or by facsimile transmission at (808) 541-3470. Also feel free also to contact Fish and Wildlife Biologist Jack Jeffrey or Manager Richard Wass by telephone at (808) 933-6915.

Sincerely,



Paul Henson
Field Supervisor
Ecological Services

Enclosure

cc: Richard Wass

References:

U.S. Fish and Wildlife Service (USFWS). 1998. Recovery plan for the Hawaiian hoary bat. U.S. Fish and Wildlife Service, Portland, OR. 50 pp.

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

August 8, 2001

Mr. Paul Henson
Field Supervisor
U.S. Fish and Wildlife Service
300 Ala Moana Blvd., Room 3-122
Honolulu, Hawaii 96813

Dear Mr. Henson:

Subject: Draft Environmental Assessment for the Koa Salvage-Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated July 11, 2001, during the public comment phase of the subject project. We offer the following responses in the respective order of your comments.

1. Long term use of the 125 acre and 4,800 acre parcel. The use of the 125 acre parcel has been identified as koa reforestation for the purpose of investigating sustainable forestry, forest-based economic opportunities, and cultural activities as stated in the subject environmental assessment (EA). The use of the 320 acre sugi perimeter, 30 acres of koa, mamane and fir, is reforestation to control gorse expansion onto adjacent homestead land. The interior 4,450 acres are not part of the subject EA. Plantings within the interior may be the subject of a future EA based on species trials' research conducted as part of the subject EA. Long term plans for the parcel will incorporate the reforestation project.
2. Planting non-native trees to control gorse and its impact on fish and wildlife. The 320 acre sugi perimeter is intended to control gorse expansion onto adjacent homestead land. Sugi is expected to have minimal impact on the native bird population. Native birds do not nest in gorse, therefore, nesting sites will not be displaced. Sugi will be planted along fence lines inside existing paddocks. Native birds do not nest inside cattle paddocks. There are no fish on homestead land in Humuula.

Sugi and Douglas fir will not be planted along the makai side of the infestation adjacent to the existing forest. Consequently, sugi and fir becoming naturalized inside the existing forest as a result of root propagation is unlikely and wildlife utilizing the forest will not be impacted. There is very little evidence that non-native seeds are a main diet component of native birds. While a few sugi seedlings have become established outside of the sugi patches planted 70 years ago in the Hakalau Refuge, the impact of seed transportation by birds and subsequent germination appears minimal. Fencing will minimize transport of seeds by animals.

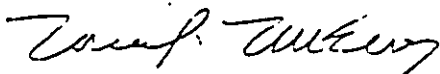
3. The cost of weed control should non-native trees become an invasive species problem. The classification of noxious weeds falls under the jurisdiction of the State Department of Agriculture. By rules established under section 4-68, Hawaii Administrative Rules (HAR), the designation criteria for noxious weeds shall meet *all* of the criteria in §4-68-4 through §4-68-8, HAR. The criteria include plant reproduction, growth characteristics, detrimental effects, control, distribution and spread. DHHL does not anticipate that sugi will be classified as a noxious weed according to the above mentioned criteria.
4. Sugi's ability to grow in the native forest. Your concerns regarding sugi's ability to establish itself in the native forest is noted. See comment no. 2.
5. Potential for seed dispersal by avian species. There is very little evidence that sugi seeds are a main diet component of native birds. Seed transportation and subsequent germination by birds appears minimal. See comment no. 2.
6. The potential spread of sugi or other non-native species into the higher elevation mamane forest. The mamane forest is located a least a mile from the proposed planting of sugi. See comment no. 2 regarding animal and bird propagation of seeds.
7. The future management of alien species. The non-native species proposed in the gorse project area are sugi and Douglas fir. The existing forest will serve as gorse control along the makai side of the infestation. Shade conditions in the existing forested areas should prevent gorse from becoming established. Koa will be planted along the border of the Hakalau Refuge. Therefore, spreading by root propagules into the native forest will be negligible. See comment no. 2 regarding animal and bird propagation of seeds.
8. The potential effects of non-native trees on soil. Sugi has been growing in the Hakalau Refuge for about 70 years. There is no evidence that sugi has had a negative impact on soils in the area. The proposed project area is highly degraded pasture. In general, reforestation has a positive effect on soils and watershed conditions.
9. Your recommendation to plant koa instead of sugi. If koa is used as a perimeter planting, DHHL is very concerned that the project will end up with 320 acres of dead koa seedlings from frost. Hakalau Refuge has experimented with different methods to reduce frost mortality, yet the mortality rate remains high. Using gorse as a frost buffer as suggested in your comment letter is an interesting possibility. Despite the fact that it is an unproven methodology for koa propagation, DHHL is in consultation with Hakalau staff to improve the viability of koa in its 10 acre species trials.
10. Koa and mamane as critical to native bird recovery. DHHL shares your concerns about the koa/mamane forest as critical to the recovery for native birds. However, frost mortality with mamane plantings in Hakalau has been close to 100%. Koa has seen somewhat better results. See also comment no. 9.

Mr. Paul Henson
August 8, 2001
Page 3

11. Forest corridors between upper elevation mamane and lower elevation koa. The project calls for 20 acres of koa and mamane. DHHL has been in consultation with the Hakalau Refuge on possible locations of elevational gradient plantings and methodologies to reduce the risk of frost mortality.
12. Wildfire management. Fire breaks between the sugi, koa, mamane, fir and gorse will be used to minimize fire losses.
13. Koa "leave" trees. Your concern regarding the removal of decadent trees and soil scarification would only encourage the regeneration of single age stands of koa is noted. The project will not harvest any healthy koa tree in any size class. Leaving all healthy koa trees will improve the complexity of the forest structure and compliment new seedlings with continued seed production beyond the saplings resulting from site disturbance. A percentage of unhealthy and dying trees would also remain to provide forage habitat.
14. The fence area and remove cattle management option. Your preference that the forest will restore itself with no other management action is noted. While the forest may restore itself by just fencing and cattle removal, koa also responds well to soil disturbance. There are so few healthy koa trees onsite, DHHL believes that forest restoration will happen quicker with soil scarification. See also comment no. 13.
15. Retain all old growth trees. The project proposes to leave all koa trees greater than 40" dbh.
16. The impacts of harvesting on the endangered bat. Per your comments, the impacts of salvaging activities on tree-roosting bats will be incorporated into section 4.2.2 of the final EA. Bat breeding generally occurs below 4,000 feet from April to October. During the winter, November to April, bats tend to be found at 4,000 to 7,500 feet. The koa project area is between 5,400 – 5,800 feet. It appears that the best time for harvesting would be from May to October given the project location. A bat survey will be conducted prior to harvesting activity to determine the time of least impact to bat habitat and activity. If bats are shown to be present in the project area, the Department of Land and Natural Resources will be contacted for possible mitigation measures.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Assessment. If needed, corrections or clarifications have been made in the document. We appreciate your interest and participation in this phase of the project. If you have any questions, please call Rebecca Alakai of my staff at 587-6423.

Aloha,



Mike McElroy, Administrator
Land Management Division



United States
Department of
Agriculture

Forest Service
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Station

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Of Pacific
Islands
Forestry

1151 Punchbowl Street
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(808) 522-8230
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File Code: 2200

Date: July 9, 2001

Mr. Mike McElroy, Administrator
Land Management Division
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu HI 96805

Dear Mr. McElroy:

Enclosed are Forest Service comments on the draft Environmental Assessment for the proposed Koa Salvage-Reforestation and Gorse Containment Projects, Humuula, Hawaii.

A key element needed to evaluate the EA may have been overlooked, namely, a discussion of long-term use of the 125-acre and 4,800-acre parcels. Is it the intent of the Department to resume grazing at some point if the land can be made to again support such use? Does the Department want to restore the land to native forest for wildlife habitat, recreation, and cultural uses? Are lands to be assigned to many small homesteaders or leased to a few individuals as has been done historically? Will the Department be more involved in management of the lands or will it again rely on homesteaders or lessees to make such decisions? Does the Department have the necessary skills in-house to rehabilitate and manage these parcels?

Salvaging koa from the 125-acre parcel is an acceptable means of accomplishing partial site preparation and stimulation of koa seed germination while at the same time generating revenues to cover additional costs of reforestation and rehabilitation. However, if DHHL fails to reforest the site as stipulated in the EA, it will have wrongly made a determination of No Significant Impact, and that kind of error will only reinforce public cynicism of the Department and government in general. The Department must be committed to making the reforestation project work and that should be emphasized in the EA, in part, by describing long-term plans (50-100 years) for use of the parcel. Also, the Department may want to reassure the public and its constituents that the gorse project is not a smokescreen for harvesting koa. Inclusion of anticipated revenues from the koa salvage project and a list of outside funds (if they exist) earmarked for both projects would help allay such fears.

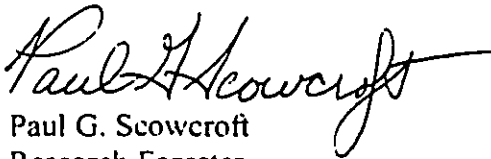
The gorse containment project has several flaws, which are described in our detailed comments. In addition to those comments, we are greatly concerned about the lack of discussion of control of the main gorse infestation. Perhaps the EA's author(s) believed that such discussion was not needed because the focus was on the perimeter planting of sugi. However, the three 10-acre trial plantings of koa, mamane, and Douglas fir were included and they have little relevance to the containment project. We recommend that the EA include a section that discusses the Departments intentions regarding control of the main infestation, including in-house capabilities, research and management partnerships.



alternative control strategies (including those used in other countries where gorse is a problem), potential costs and funding sources, and long-term land use, if gorse can be controlled.

Thank you for the opportunity to review the draft EA. We hope our comments are helpful.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul G. Scowcroft". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Paul G. Scowcroft
Research Forester

Enclosures (4)

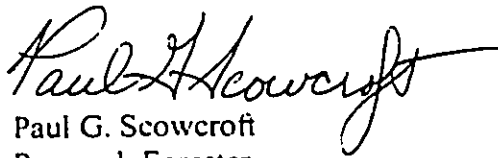
CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

alternative control strategies (including those used in other countries where gorse is a problem),
potential costs and funding sources, and long-term land use, if gorse can be controlled.

Thank you for the opportunity to review the draft EA. We hope our comments are helpful.

Sincerely,



Paul G. Scowcroft
Research Forester

Enclosures (4)

Forest Service Comments on the

Draft Environmental Assessment for the
Koa Salvage-Reforestation and Gorse Containment Project

Page 1, paragraph 2—The leave trees provide nesting and insect foraging habitat for native birds only if birds venture into the area from surrounding forests. Check with avian biologists, such as Dr. Lenny Freed (UH Manoa, 956-8655), Jack Jeffrey (Fish and Wildlife Service, Hilo, 933-6915), Thane Pratt (Biological Resources Division, Volcano National Park, 967-7396), and Paul Conry (Division of Forestry and Wildlife, 587-4176), to ask if they have data or can conjecture or know of published studies reporting on native bird use of abandoned pastures with tree densities similar to those projected to exist after the koa salvage operation.

Page 1, paragraph 3— The idea of quarantining the infestation by creating a containment field of *C. japonica* is appealing. Propagules (seeds and roots) are unlikely to breach such a barrier on their own. However, the plan ignores the fact that gorse occurs outside the quarantine area and it fails to address all the issues involved in assisted transport of propagules (by animals, humans, wind, and water).

Will sugi be planted in a continuous band around the entire infestation, including the portions at lowest elevation?

How much revenue from the koa salvage operation does DHHL anticipate receiving? Is the revenue adequate to cover the estimated costs for the koa and gorse projects as estimated on p. 7? If the salvage operation will not generate at least \$370,000, how will those costs be met—through outside funds?

Page 2, paragraph 1—Is the anticipated duration of the salvage operation 9-months as indicated in Section 1.6? If so, then include that information in this introductory section. The importance of banana poka and kikuyugrass control was demonstrated in a study conducted in the nearby Humuulu forest reserve (Scowcroft & Adee 1991).

Page 2, paragraph 2—DHHL is not dealing with ungulate-invaded native forest areas. Plant responses to ungulate exclusion in such areas are not necessarily applicable to alien grass-dominated pasture and woodlands. Having said that, my experience at Hakalau Refuge is that in wooded pasture at 5700 ft elevation, native plants recolonized in low to moderate numbers (Scowcroft 1992). Some species required decaying logs as seedbeds, others preferentially establish on the ground, and still others seemed to show no seedbed preference. Fruit bearing native plant species, such as olapa, pilo, kolea, kawau, akala, etc., are bird dispersed. As long as there are sufficient residual trees to attract them from neighboring forested areas, then they will disperse seed into the woodland areas, especially under perch sites. Otherwise dispersal will be greatly restricted and natural regeneration of the heavy seeded species will occur very slowly, if at all. Data from an ongoing and unpublished study at Hakalau refuge indicates that grassland show no signs of natural regeneration of forest species except at the interface between forest and grassland. At 5400-5800 ft elevation frost damage is a potential threat to native regeneration, especially species other than koa. The risk is greatest during El Niño winters, but also can occur during normal years.

Instead of only complying with "applicable law" concerning site preparation, etc., please comply with state Best Management Practices, which are not legally required but are recommended.

Page 2, paragraph 3—The extensive list of activities to be financed suggests that DHHL is anticipating large revenues from the koa salvage operation. My guess is that you are being overly optimistic. The revenues may cover the reforestation efforts on the 125-ac logging site, but little else. The EA indicates that implementation of the koa salvage-reforestation plan will cost an estimated \$50,000, but that does not consider the costs of follow up maintenance and reforestation efforts. If you expect the revenues to cover implementation costs for the koa and gorse project, but not maintenance costs (as indicated here) then please change the wording here to read, "... finance implementation of the koa and gorse projects ..."

Page 2, paragraph 4—Creation of a buffer zone of sugi to contain the leading edge of the gorse infestation is doomed to failure because gorse already occurs outside the delineated area, although its densities are far less than found in the main infestation. Figure 1 suggests that the buffer zone will completely surround the core infestation: is that true? The EA should clearly state how much of the perimeter will be planted with sugi (or koa). Also, although sugi is not invasive where cattle actively graze, it does spread by seed once grazing stops.

Page 2, paragraph 5—Douglas fir may abate gorse growth by creating dense shade, but please do not state that Douglas fir will be planted to provide habitat restoration. Habitat restoration cannot be accomplished using alien species because implicit in the term habitat restoration is the idea that a previous natural community will be recreated. A Douglas fir forest community is not natural in Hawaii, neither could a natural Douglas fir community such as is found in the Pacific Northwest ever be created here. There is no evidence that I know of that indicates that Hawaiian vertebrate and invertebrate animals or plants can use a Douglas fir forest or plantation as habitat.

If DHHL is interested in Douglas fir planting trials because the species may provide potential economic returns at a future date as well as adversely affect gorse, then that should be stated. Of course those economic returns cannot come from Christmas trees because they can't be grown in closed canopy stands and because they are harvested at a relatively young age, much before they could have an impact on gorse. Furthermore, shading by gorse would probably interfere with tree development and lower market value. More likely the potential economic value would be for large sawtimber size trees that take 70 to 100 years or more to grow. In the meantime habitat value for endemic/indigenous species would be zero and the risk of wildfire considerable.

Trial plantings of koa and mamane make far more sense than Douglas fir, especially so for koa. Data from grasslands at 6400 ft elevation in the Hakalau refuge indicate that closed canopy stands of koa, which were established by planting nursery stock, can reduce light levels to about 5% of full sun (Scowcroft & Jeffreys 1999). Anecdotal observations indicated that gorse flowering and biomass productivity were greatly reduced under those stands, and the etiolated bushes appeared to be more susceptible to herbicide damage. Evidence suggests that koa may create habitat suitable for establishment of other native plant species (Scowcroft et al. 2000). If koa is planted, it should be done after gorse is initially knocked back by herbicide, burning, and another round of herbicide to kill resprouts. It may also be desirable to crush the unburned stems of gorse with mechanized equipment to facilitate planting and seedling maintenance. If done

soon after burning, the mechanical ground disturbance may stimulate germination of additional gorse seeds not stimulated by the fire; both flushes of regeneration can then be herbicided before koa are planted.

Similar data for mamane are non-existent. However, plantings of mamane at the same elevation have consistently failed to establish (Scowcroft & Jeffreys 1999). Although mamane is a relatively frost tolerant species, it naturally occurs in open stands and grows relatively slowly. Seedlings probably have low tolerance for interspecific plant competition. Mamane canopies are typically sparse. The combined traits of slow growth, low stand densities and sparse canopies indicate that mamane is unlikely to abate gorse growth, even if it can be established.

This environmental assessment needs to recognize that spraying and burning have not been examined rigorously. The technique as practiced by the lessee has failed or, at best, has had limited success. I suggest that the failure or limited success is due to lack of timely follow-up application of herbicide as root and stem sprouts and seedlings emerge. Refuge personnel at Hakalau Forest National Wildlife Refuge have successfully used herbicides and fire to eradicate infestations within their boundaries. But they have had to revisit sites more than once to herbicide newly emerging plants. I stress that the technique needs to be carefully evaluated by controlled experiments to find out when regrowth is most susceptible to herbicide treatment and possibly to determine which herbicides are most effective. If fire stimulates germination of the soil seed bank, then the seed bank can be depleted much more rapidly by burning than by shading, provided the resulting gorse seedlings are chemically killed. Instead of funding trial plantings of Douglas fir, I suggest that DHHL fund rigorous studies to determine how herbicides and fire can be used to control gorse, perhaps in conjunction with planting of koa or mamane or both.

Change the last sentence of the paragraph to read, "Several bio-control agents have established following release, but to date they have not stopped or noticeably slowed the expansion of the infestation."

Page 2, paragraph 6—By value-added land use, do you mean that at some future time the sugi would have a market value that could be realized by selling the timber? Assume the sugi perimeter planting contains the gorse infestation and that gorse plants already outside are killed to prevent their spread. (Will they be?) Further assume that in 70 years the sugi will be harvested (stem diameters should be about 15 inches). What might be the value of 320 acres of sugi? Will there be any additional costs associated with increasing potential value of the sugi, such as pruning lower limbs to favor production of knot-free wood? More importantly, what will be the status of the gorse infestation? There is nothing in the EA that states what steps will be taken to reduce the infestation, except mention of three 10-ac trial plantings of koa, mamane, and Douglas fir. Is there an unstated plan to gradually expanded the initial planting inward until the entire 4,800-ac infestation is converted to closed canopy sugi forest? The last sentence of this paragraph makes sense only if the plan is to plant more sugi; otherwise there cannot be a continual reduction in the use of herbicides with each passing year, except within the sugi buffer zone itself.

P 3, paragraph 5—The Waipunalei ahupua'a borders the east side of the proposed project area, not Laupahoehoe. Have there been systematic surveys for threatened and endangered plants?

P 7. Table on estimated costs— Here are some thoughts about the cost of administering the salvage operation and the costs of reforestation on the 125-ac parcel. Were all of the following costs considered when estimating cost of the salvage-reforestation plan?

You must have someone representing DHHL overseeing the job to ensure that “the project will be conducted in a manner that complies with applicable law for activities such as site preparation and regeneration, soil erosion control, and use of fuels and chemicals,” and that will cost. You cannot depend on the logger to follow best management practices. You may need to have someone on site to verify that the logger does not remove more wood than he/she has paid for. You must have someone mark trees and logs that are to be left, and that individual should not be the logger or someone paid by the logger.

The EA provides no indication of volume of wood that will be offered for sale. That figure must be determined and included in the RFP.

Mechanically scarifying the 125 ac will require substantially more effort than is expended during the harvest operation. Is the logger expected to do it at his/her expense? Then there is the cost of collecting koa seed, growing nursery stock and planting it. I doubt that adequate regeneration of koa will be achieved from soil seed reserves. The same can be said for other species that need to be planted. And don't forget that three years after logging grasses will have reclaimed disturbed areas and planting spots will have to be prepared at considerable cost. Will you pay someone to monitor natural regeneration? Chemical control of competing plants will be costly and who is going to do it, a private contractor or DHHL personnel?

Fencing and fence maintenance to exclude cattle are costly. If one cow gets in the area, tremendous damage to koa regeneration can occur before anyone knows about it (I'm not exaggerating), and even after cattle trespass is detected ranchers have been known to delay getting the animal out. That fence has to be in place before the logging starts (say so in paragraph 1, p. 8). There must be zero tolerance for cattle trespass once koa regeneration gets started. I recommend that the lease withdrawal document have a clause stipulating monetary penalties should Nobriga Enterprise cattle be found in the reforestation area. The penalty should be commensurate with the cost of countering the damage to koa regeneration.

An estimated \$26,000 will be spent in a 2-month period to “select RFP and approve timber license.” Yet the next line item, “implement the koa salvage-reforestation plan” is estimated to cost during a 9-month period only \$50,000. Are these figures correct?

The actions listed on p. 7 are initial efforts only. There will be costs well beyond those shown and I think they should be listed.

P 8, paragraph 2—Provide references to the applicable laws (or regulations). Without the references this feel-good statement means nothing. Not only does DHHL have to know the laws, but also you will have to give the information to the logger anyway so that he/she can conform harvest activities to them. Please specify best management practices, rather than only existing laws: even some of the BMPs are quite general and unquantified, so a consulting forester should recommend site-specific practices for DHHL to require of the logger.

P 8, paragraph 3—The Timber Land License should not specify conditions for leave trees other than to say that the logger will leave all marked trees and logs. The logger should not have discretion to pick and choose the material he/she will harvest.

P 8, paragraph 4—The only native cavity nesting bird species in the vicinity of the project area is the Akepa (*Loxops coccineus coccineus*) and I thought it only chose large ohia, not koa trees. If this is true, then the implied benefit of leaving big koa trees on site for cavity nest sites is non-existent. You might want to check with Dr. Lenny Freed for the most recent information on this (Freed et al. 1987).

P 9, bulleted list—If I correctly itemized the leave trees, then 1.8 of the 2.5 leave trees per acre will be either dead or dying. I have no problem with leaving such trees, but I don't think these count as habitat for endangered birds, except as perch sites for the 'lo (hawk) and Pueo (short-eared owl). To describe 2.5 trees per acre as a "semblance of habitat" (as done in paragraph 4, P 9) is generous, especially when 72% of the individuals are dead or dying, 16% are unhealthy and only 12% (38 trees on 125 ac) are healthy.

P 9, paragraph 4—Provide a reference(s) for the cited research finding even if that reference is personal communication. Did the author of this paragraph confuse cavity nesting requirement with non-cavity nesting requirement? The statement that the "minimum diameter size for nesting sites has been given as 24" . . ." seems to refer back to paragraph 4, P 8, which dealt with cavity nesters. Provide a citation(s) to support the idea that Akiapola'au and Hawaii Creeper, both of which are non-cavity nesters, rely on trees greater than 24" dbh for nest sites. Also, note that the common name for *Oreomystis mana* is Hawaii Creeper not Hawaiian Honeycreeper.

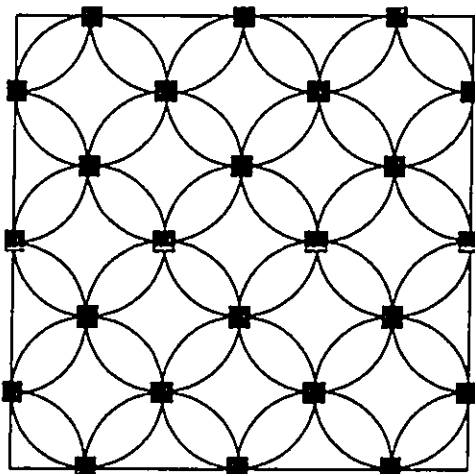
P 9, paragraph 5—The logging contractor **SHOULD NOT** prepare the salvage and reforestation plan if for no other reason than conflict of interest. DHHL should hire an independent forestry consultant to write the plan. There are such people on the Big Island.

P 10, paragraph 2—What might be the "appropriate action" if endangered species are found in the area? We suggest that DHHL (a) plan for a survey for T&ES before other actions begin, and (b) specify that DOFAW and F&WS recommendations will be followed to protect any endangered species that may be found during the survey or later. Also, if federal dollars are being used to fund either the koa or gorse projects, it may be appropriate and advisable to request a section 7 consultation from the US Fish and Wildlife Service.

P 10, paragraph 3—I suggest you change the wording of 3rd sentence as follows: ". . . *initial reforestation efforts* would rely on soil scarification . . ." The revision recognizes that scarification and natural succession may fail, in which case artificial reforestation would be used, as stated in the next paragraph. I encourage you to word the EA to assure readers that every effort will be made to reforest the site. Instead of saying, planting of koa from local seed sources *would* occur, say, planting of koa from local seed sources *will* occur.

Who will monitor natural regeneration? What kind of data will be collected and how often? Is the only purpose to determine size and number of areas without natural koa regeneration? How do you determine the boundaries of unstocked areas? Conceivably one could define an unstocked area as a 1/2-acre circle having four seedlings located one each at cardinal directions on its edge. Putting a number of such areas together (see below) would yield an area that was 100% unstocked, but with 6.3 trees per acre. Alternatively, if one centers a 1/2-acre circle on each seedling, then the same seedling distribution yields an area that is 100% stocked and still with 6.3 seedlings per acre. Its all in the definition.

Each circle represents a 1/2 acre unstocked area and filled symbols represent koa seedlings on the edges of each area.



In my opinion, there is no need to wait three years before identifying unstocked areas. One to two years is long enough to wait. Seedlings emergence in response to soil disturbance should be complete within 6 months of that disturbance (see your comment on P 12, paragraph 2). Other seedlings and root sprouts can be expected to emerge simply in response to removal of cattle, but these too should be visible within 1 year. By the end of two years grasses will have reclaimed disturbed areas and emergence of more koa will be minimal.

P 10, paragraph 5—The first and second sentences are contradictory. If fertilizer application is essential, then why does the second sentence make it seem optional? Furthermore, what kind of fertilizer is essential and at what rate and method of application (broadcast, dibbled in, etc.)? Hakalau Forest National Wildlife Refuge personnel have routinely fertilized koa seedlings at time of planting, so they should be able to give that information to DHHL. Is there a reference that can be cited to support the contention that fertilization of natural seedlings is essential for satisfactory survival and growth?

Instead of referring specifically to gorse control, perhaps it would be better to say control of competing alien plants may be required. Keep in mind that koa seedlings may be very sensitive the herbicides. Koa saplings in Hakalau refuge were damaged and killed when herbicide sprayed on nearby gorse drifted onto phyllodes. I suggest that potential herbicides be listed in this EA.

P 10, paragraph 6—Drop the first sentence, which begins, "Selecting the appropriate species . . ." It has nothing to do with the rest of the paragraph. Reword the 3rd sentence because I think it is intent of DHHL to control not maintain banana poka. Scowcroft & Adey 1991 may be cited to support the need for banana poka control. Why only monitor gorse? Instead every gorse plant within the 125-acre area should be killed. A closed canopy koa stand can be realized at 10 years provided trees are uniformly distributed and stand density is about 450 trees per acre. The greater the stand density, the sooner canopy closure will occur.

P 11, paragraph 1—Does gorse occur in nearby areas surrounding the 125-acre parcel? I thought the nearest gorse was several miles to the southeast and above Honohina on the Hakalau Refuge at the northernmost edge of the main infestation. Why not drop the 1st sentence?

P 11, paragraph 2—The statement that the makai side of the gorse infestation is the Hakalau Forest National Wildlife Refuge is only partially true. Judging from Figure 1, about 90% of the makai side of the infestation is non-Refuge lands. This statement makes me ask again, does DHHL intend to plant sugi along the makai side of the infestation that is not adjacent to the Refuge? If not, why not?

P 11, paragraph 4—Unless action is taken to reclaim the 4,800 acres infested by gorse, the perimeter planting of sugi will only serve as a poor attempt to do something substantive when in fact we have not a clue what to do. Remember, gorse is already found outside the main infestation on Mauna Kea. Before a single sugi seedling is planted, the perimeter has already been breached.

The qualifying phrase, "as funding and time permits," may be appropriate, but it also spotlights the fact that revenue from the koa salvage project will be insufficient to pay for gorse control on the 4,800 acres. And money is the key issue, not time. Will there be outside funds applied to control of the main gorse infestation? Briefly discuss plans for control over the larger area even though that is not the focus of this EA.

P 11, paragraph 5—Where may fire be used in site preparation—in the sugi buffer?

P 11, paragraph 6—The first sentence again indicates that DHHL expects revenues sufficient to both start up and maintain the koa and gorse projects. Please provide an estimate of revenues from the koa salvage operation so that readers may judge the legitimacy of the statement. I think you are grossly underestimating start up and maintenance costs. For example, corridors around access roads must be patrolled at least twice a year to locate and destroy gorse that establishes from seeds carried out of the quarantine area in mud stuck to vehicles and boots of gorse control workers and others. A strip of land outside the sugi perimeter must also be patrolled for gorse that establishes from seeds carried there by wind (violent winds are a yearly phenomenon); the same applies to ravines that exit the infested area. When found gorse plants will have to be killed. These patrol and eradication activities will cost money.

The comment about certain trees being left for wildlife habitat and on-site seed production may be misleading, as I previously pointed out. It is true that trees will be left, but it may be false to intimate that they will serve as native bird habitat. The trees are habitat only if native birds perceive them as such. With regard to seed production, 72% of the leave trees will be dead and dying. That leaves only 0.7 trees per acre that are capable of producing more than negligible amounts of seed.

How many jobs will be provided and for how long? Although the answer is found in paragraph 3, P 24, I suggest you put the information here too.

P 12, paragraph 1—Change the second sentence to read, "The remaining mature *trees* would . . ." My reason is that 2.5 trees per acre does not constitute a forest, mature or otherwise. Is there any published literature (Hawaii or elsewhere in the world) that you could site to support the

contention that root growth will increase and root dieback will decline after cattle grazing stops? Who says there are current trends of root dieback? Statements like these come across as pseudo-authoritative, but in fact may be just opinion.

Why should logging damage and kill understory trees? Aren't there so few individuals that loggers should be able to avoid them?

The last two sentences of the paragraph seems to indicate that understory trees will be killed quicker by logging than by doing nothing and that that makes the recommended action more desirable than doing nothing. Did I misread those sentences? If that is not what you intended, is there a way of rewording to avoid misunderstanding? Also, because Alternative 3.1.1 has not been discussed at this point in the document, I recommend you not refer to it. Instead simply say, "... than doing nothing, ..."

P 12, paragraph 2—Do not use the terms Alternative 3.1.1, Alternative 3.1.2 in this paragraph because they have not yet been described. Instead use descriptive phrases of those alternatives.

Is the logger going to scatter non-merchantable material over the 125-acre site as the wording in this paragraph suggests? Large wood debris serves as seedbeds for regeneration of native species only after it is well decomposed. That process takes many years. So, increasing the amount and distribution of "sub-merchantable material (<12" diameter)" on the site cannot be used to show that logging is doing something positive for native plant habitat in the short term.

Large fuels (logs and limbs) are low fire hazards and I doubt there will be less large downed woody debris after than before logging. Grass is the fuel of concern. Scarifying will temporarily reduce grass fuel loading in localized disturbed areas. If sufficiently dense stand of koa establish, then they will reduce grass fuel loading more permanently.

On P 10, paragraph 4, the EA states that a viable stand of koa saplings could become established in 5 years and in the present paragraph the time frame is 3 years. Please reconcile these statements.

P 12, paragraph 3—Instead of "... harvesting 65% of the existing koa overstory ..." I suggest you say, "... harvesting 65% of the existing koa trees and snags ..." The word overstory implies canopy area and snags have no canopy area and unhealthy and dying trees have reduced canopy area. Twenty dying and unhealthy trees do not make up 20% of the canopy area (overstory) for a stand of 100 trees.

P 12, paragraph 4— The last half of the 2nd sentence states that gorse seed will continue to germinate and seedlings will continue to die in the shade of sugi until the soil seed bank is exhausted. This is probably not true. More likely most gorse seed, like koa seed, will lie dormant until disturbed by fire or mechanical forces (e.g., pig rooting, bulldozing, treefall, etc.). So unless you find literature to support your statement, don't think that some fraction of the soil seed bank is withdrawn every year until it is exhausted.

Change the last part of the third sentence to read, "... and it casts dense shade." Specify whether the evidence of non-invasiveness is documented or anecdotal. The next several sentences suggest the evidence is anecdotal. I thought there was evidence that pines on Maui limited gorse growth (P 2, paragraph 4), but I don't remember hearing about evidence that sugi does the same thing. If such evidence exists, is it documented or anecdotal?

Although it is doubtless unintentional, this is the first mention of a fence being build in conjunction with the sugi perimeter. I think this needs to be emphasized in section 2.2. Animals

(including feral pigs) cannot be allowed to freely move across the barrier, and that means pig proof fencing such as used by Hakalau Forest National Wildlife Refuge. Refuge managers can give you an estimate on cost of such fencing. Fence maintenance is another cost that needs to be accounted for. Unlike sugi trees, which may survive with little help from man after they get established, the fence will require periodic repair. If the fence is breached, the sugi planting cannot contain the gorse infestation.

The last sentence of this paragraph should be deleted. It is clearly wrong. Birds can fly past a 250-foot wide tree plantation barrier.

P 12, paragraph 5—If you need a reference for frost damage to koa use Scowcroft & Jeffrey 1999. What is meant by sugi serving as a shelterbelt for koa? Koa cannot grow in the dense shade of sugi. Sugi may limit frost damage to koa seedlings by moderating night radiative cooling, but only if the sugi reduce the amount of night sky visible to the koa seedlings. That means that the koa would have to be next to but not under the sugi.

P 13, paragraph 1—The benefits of planted koa to Akiapola'au and of planted mamane to Palila are presented as if real when in fact they are potential only. Akiapola'au use stands of koa only after they have reached a point where there is an abundance of burrowing insect larvae. Typically they are associated with old growth koa forests (Scott et al. 1986). Anecdotal observations by a Kamehameha Schools biologist indicate that Akiapola'au are found in 20-year old second-growth koa forest in the Keauhou koa reforestation area. These stands have an abundance of snags and dying trees to support burrowing insect larvae. So koa planted in the gorse infestation area may eventually be suitable habitat for Akiapola'au, but that won't happen for at least 20 years and then only if birds from down slope forested areas venture into the planted area and what earthly reason would they have for visiting a 10 acre planting. Similarly, there is a waiting period for mamane plantings to become suitable for use by Palila and my guess is that there will have to be lots more mamane than 10 acres worth. Although this paragraph has elements of truth, its unqualified assertions are misleading.

P 14, paragraph 4—Would weed species be monitored, but not controlled?

P 14, paragraph 6—In this paragraph koa is forecast to shade out grass species, yet in paragraph 1, P 15, non-native grasses would persist. Please correct the contradiction.

P 15, paragraph 1—The referenced data from Keauhou showed that koa regeneration was very sparse after cattle were removed and kikuyugrass persisted. This real world observation contrasts with the rosy prognostications in the previous paragraph. Seems to me that you could eliminate the previous paragraph as fiction and strengthen your case for alternative 3.1.3 by so doing.

P 15, paragraph 2—Use the following reference to bolster the argument in this paragraph: Scowcroft & Adee 1991.

P 15, paragraph 7—I don't see how logging damage would be less than Alternatives 3.1.1 and 3.1.2. Neither of those alternatives involves logging.

P 16, paragraph 1—Change the 1st sentence to read, “Forest bird habitat would be temporarily destroyed.” Habitat for other wildlife would probably be temporarily enhanced. See my comments elsewhere that address other statements in this paragraph.

P 16, paragraph 2—I was under the impression that soil scarification would be equal for both Alternatives 2.1 and 3.1.3. This paragraph suggests I was wrong. If you plan on creating a closed-canopy stand of koa within 30 years, then scarification will have to be done over most of the 125-acre area regardless of logging alternative. Otherwise regeneration will be limited to skid trails, landings, and small areas around harvest trees, which collectively may comprise a small fraction of the total area.

P 16, paragraph 4—This sounds like a bogus scare tactic. Will gorse be allowed to infiltrate Hakalau Forest National Wildlife Refuge? NO! Will gorse get into adjacent forest reserves? Possibly, but shade conditions in forested areas will prevent it from becoming a problem. After all, forest shade is the very reason that sugi is being proposed as a containment tool. Even the preferred alternative, 2.2, will not prevent seeds from reaching the forest reserves in runoff. Will gorse expand its range down the Wailuku River toward Hilo? Certainly, but it will do so even under the recommended alternative, 2.2. There is nothing to prevent seeds from being carried downhill in runoff. None of the alternatives indicate that drainages exiting the infestation area will be patrolled for gorse, nor is there allowance for eradication of plants found along drainages. Will gorse spread to the Pohakuloa Training Area? Probably, but that is likely under all alternatives. There is a large healthy population of gorse next to the Saddle Road less than a mile from the Mauna Kea summit road. Seeds from that population are as likely or perhaps more likely to get to PTA than are seeds from DHHL lands.

Because the Parker Ranch lease is soon to expire, it will no longer be spending \$100,000 per year on herbicide application. Who would pick up the slack, DHHL?

P 17, paragraph 3—What are the applicable laws regarding soil movement, erosion, and compaction, road improvement and maintenance, and site preparation?

P 17, paragraph 4—Who will do the engineering design of roads, skid trails and landings in the koa salvage area? Surely you don't intend to rely on the engineering skills of the logger. Putting such information in the EA demonstrates that DHHL is prepared to comply with the sweeping assurances given in the EA regarding proper engineering design, best management practices, hazardous materials handling, and herbicide selection, use, and storage. Those assurances are not just words to salve consciences of those of us that review the EA.

P 18, paragraph 6—Mueller-Dombois & Krajina (1968) classified the area of windward Mauna Kea between 1600 m and 2000 m asl as *Acacia-Metrosideros-Dryopteris* forest. They classified the upper portion of this area (c. 1850 to 2000 m asl) as a transition zone between the seasonally dry grassland community with its scattered *A. koa* and *S. chrysophylla* trees above and the mesic more closed canopy *Acacia-Metrosideros-Dryopteris* forest below. In the transition zone, *S. chrysophylla*, *Vaccinium* spp., *M. sandwicensis*, and *Styphelia tameiameia* become more common with increasing elevation, and *M. polymorpha*, *C. trigynum*, *M. lessertiana*, *Coprosma rhynchocarpa*, and mesic forest ferns and shrubs become less abundant.

P 19, paragraph 3—I hope I make this point clear: **DO NOT** let the logging contractor prepare the Koa Salvage and Reforestation Plan. Hire an independent consulting forester to do that job.

P 20, paragraph 2—The young, healthy, diverse koa-ohia forest pictured may develop, but not for at least 25 years.

P 22, paragraph at top continuing from previous page—The unequivocal statement about native birds preferring large ohia trees as nest sites needs documentation (published research citation). Citations are also needed for last and second to last sentences.

P 22, paragraph 1—The 1st sentence implies that mamane will be planted along higher elevation buffers, but nowhere else in the EA is this mentioned. Where are these higher elevation buffers? Are these plantings synonymous with the 10-ac trial planting of mamane? If the mamane plantings are to improve foraging opportunities for Palila along an elevational gradient, then the plantings need to be done on an elevational gradient and not in a single 10-ac block.

The last three sentences deal with a different subject than the first sentence and should be made a separate paragraph. Who will be looking for nesting activity? Can you rely on the logger upon to spot nesting activity and cease his/her activities? Can you trust the logger to not cut a tree that has an active nest (e.g., the endangered I'o) if no one in position of authority is around? [Of course no one would know, right?] Perhaps it would be advisable to include a table showing possible months of nesting activity for the native birds known to occupy adjacent forest areas. One mitigation measure would be to partner with the Division of Forestry and Wildlife to have one of their wildlife biologists survey the koa salvage area before and during harvesting.

P 24, paragraph 7—This sentence is unclear. What is the rate of harvest (volume per year) that will be approved? Is the amount of wood that will be harvested from the 125-ac site estimated to equal 20% of the annual volume of koa harvested state-wide? To make such a statement means that you have inventory data to back it up. Such data needs to be included in the EA.

P 25, paragraph 5—Will the logger be required to maintain and restore the Mana road to its original condition as implied in this paragraph? The original conditions of the various roads covered by this mitigation will need to be documented before the logger first access the property. The EA should indicate how documentation will be done.

P 25, paragraph 6—This paragraph has nothing to do with potential impacts and mitigation measures. It belongs in section 2.1.1.

P 29, paragraph 6—On P 21 you state, “fallen trees may attract insects.” so you may want to say here “standing dead and fallen trees may attract insects.”

P 29, paragraph 9—Although it is probably correct to say that opportunities for gathering plant materials **may** improve as a result of the recommended actions, there are some conditions that must be met for the possibility to exist. The perimeter planting of sugi will do nothing to improve such opportunities because almost nothing can grow in the dense shade of sugi. Is sugi plant material collected by anyone? Gathering plant materials will not improve in the gorse infestation area unless the gorse is eliminated and there is nothing in this EA that indicates how that will be

done and in what time frame. In the koa reforestation area other native plants are not likely to be present in sufficient numbers to allow collection for at least 25 years and then only if the reforestation efforts are successful.

The statements regarding access for gathering plant material should harmonize with statements regarding public access (section 4.3.1). Does DHHL plan to again lease the lands surrounding the two project areas once the current leases expires in 2002?

P 29, paragraph 10—How would biologists and others go about getting permission to do field studies in the project areas? Will DHHL actively solicit involvement by researchers? Will the Department fund research of mutual interest?

P 30, paragraph 2—If the second sentence is not just a feel-good statement, then include a reference to the document that lists the forest management goals of DHHL. What are the "management criteria of the koa project?" You've told us what they are based on, but not what they are.

P 30, paragraph 4—"The project will provide valuable information for future koa stand management" only if thoroughly documented. Who is going to do that? The information that needs to be collected can be specified now. At least describe the mechanism that will be used to document the projects.

P 30, paragraph 5—Is the 1st sentence the excuse for not estimating revenues from the koa salvage project? Will you have to wait until the products are made before getting paid? Will you have to track how much of the volume is used to make bowls, furniture, picture frames, pens, ukuleles, etc. and then charge the logger accordingly? I don't see how this makes any sense.

P 30, paragraph 7—Will DHHL conduct unannounced periodic inspections to check for OSHA violations? If not, then don't imply it will. If so, then include such a statement in the EA.

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August 8, 2001

Mr. Paul Scowcroft
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Dear Mr. Scowcroft:

Subject: Draft Environmental Assessment for the Koa Salvage-Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated July 9, 2001, during the public comment phase of the subject project. We offer the following responses in the respective order of your comments.

1. Long term use of the 125 acre and 4,800 acre parcel. The use of the 125 acre parcel has been identified as koa reforestation for the purpose of investigating sustainable forestry, forest-based economic opportunities, and cultural activities as stated in the subject environmental assessment (EA). The use of the 320 acre sugi perimeter, 30 acres of koa, mamane and fir, is reforestation to control gorse expansion onto adjacent homestead land. The interior 4,450 acres are not part of the subject EA. Plantings within the interior may be the subject of a future EA based on species trials' research conducted as part of the subject EA. Long term plans for the parcel will incorporate the reforestation project.
2. Lease provisions of the project area. The gorse project area is currently under general lease to Parker Ranch. DHHL is negotiating with the lessee regarding a possible lease extension of the gorse area.
3. Reforestation provisions of the 125 acre koa project. We agree with your assessment (letter dated July 9, 2001, p. 1) that koa salvage is an acceptable means of accomplishing site preparation and stimulation of koa seed germination while at the same time generating revenues for reforestation. Soil scarification would follow salvage operations in each cutting block. These conditions will be part of the timber license and harvesting plan required of our logger and approved by DHHL. Long term plans for the parcel will incorporate the reforestation project.

4. Anticipated revenues and funding sources. In 1998, a timber inventory was conducted on DHHL's Humuula parcel. The information contained in the inventory is proprietary. Revenue from the koa salvage operation will be determined by market rates of koa sales. It is anticipated that the funds are adequate to cover costs. In June 2001, the HHC approved a budget request for \$320,000 to fund the gorse containment project. Other State funding and in-kind matches are from the State Department of Agriculture for seed acquisition and trials implementation (\$10,000), the State Department of Forestry and Wildlife will grow project seedlings at the Waimea State Tree Nursery, the Hawaii Agriculture Research Center will manage the approximate 15,000 seedlings of species trials, design trials, acquire seeds, site preparation, tree maintenance, nursery supervision and training (\$12,900), and the Hawaii Forestry and Communities Initiative will provide overall project coordination for the purpose of technology transfer and training (\$2,900).
5. Control of the main gorse infestation. The 320 acre sugi perimeter is intended to control gorse expansion onto adjacent homestead land. While there is no proven track record of koa, mamane, and Douglas fir to control gorse, we are testing their ability to do so as an alternative to sugi. Per Forest Service's own research, closed canopy stands of koa, established by planting nursery stock, can reduce light levels under the canopy (Scowcroft and Jeffrey 1999). Hakalau Refuge staff is experimenting with planting koa in the gorse. We are hopeful that our koa, mamane, and fir plantings within the gorse will be consistent with Forest Service observations that gorse flowering and biomass productivity were reduced under the koa and appeared more susceptible to herbicide damage. New Zealand and Australia, where gorse is also prevalent, use a variety of tree species to shade-out gorse. Plantings within the interior may be the subject of a future EA based on species trials' research conducted as part of the subject EA. Research and management partnerships are listed in comment no. 4.
6. The occurrence of gorse outside of the project area. We agree with your comment (p. 1) that quarantining the infestation by creating a containment field of sugi is appealing for the reason that propagules of gorse (seeds and roots) are unlikely to breach a sugi barrier. While patches of gorse are found outside of the project area, the existing practice of spraying and/or burning will continue to be used to combat the infestation. Hakalau Refuge has had some success with its gorse control efforts. The sugi will be planted inside existing paddocks to minimize seed transportation by animals. Assisted transportation of gorse seeds by wind and water from the project site or adjacent landowners is beyond the scope of the subject EA.
7. Sugi perimeter. It is intended that sugi will be planted in a continuous band around the subject area, with the existing forest to serve as gorse control along the makai side of the infestation. Koa will be planted along the border of the Hakalau Refuge. Per Forest Service comments (letter dated July 9, 2001, p. 10) shade conditions in the existing forested areas should prevent gorse from becoming established.

8. Anticipated revenues and funding sources. See comment no. 4.
9. Duration of the salvage operation. The koa salvage operation is a small scale project. The project schedule listed in section 1.6 is based in part on budget cycles, the planting season, and other seasonal conditions relevant to harvesting. The time frame is an estimate. The actual time and season of implementing the koa project will be based on the negotiated time of performance between DHHL and the logger. These conditions will be part of the timber license and harvesting plan required of our logger and approved by DHHL.
10. Plant responses to ungulate exclusion. DHHL is cautiously optimistic that soil scarification in the koa project area will be consistent with Forest Service experience at nearby Hakalau which showed that native plants recolonized in low to moderate numbers following ungulate exclusion (Scowcroft 1992). In that study, approximately 4,000 seedlings germinated after 4 years in a 16-ha enclosure following ungulate exclusion. Native species included ohia, ohelo, olapa, kawau, pukiawe, koa, kolea, and tree fern. The subject koa project site currently consists of 7 koa, 4 ohia, and 12 kolea trees per acre.
11. Compliance with best management practices. Best management practices (BMP) are intended to act as guidelines for maintaining water quality during and after koa salvaging. The Contractee will be required to follow site specific practices in the subject area. These conditions will be part of the timber license and harvesting plan required of our logger and approved by DHHL. Further, it is required by law that all pesticides be used in adherence to label directions and regulations concerning storage, transportation, mixing, application, and disposal. The State Department of Agriculture inspects, regulates, and enforces pesticide use.
12. Follow up maintenance and reforestation efforts. Forest Service concerns regarding maintenance costs are noted. Revenues will go toward site maintenance.
13. Sugi buffer zone. See comment no. 6 regarding Hakalau's successful efforts regarding gorse control. See comment no. 7 regarding perimeter plantings. DHHL is in consultation with Hakalau Refuge staff regarding the proposed koa buffer along its border.
14. Invasive potential of sugi once grazing stops. The existing sugi groves located in the Hakalau Refuge have been there for 70 years. Since cattle have been excluded from grazing, the existing groves have not appreciably expanded their range.
15. Douglas fir and habitat restoration. While reforestation generally has a positive effect on watershed conditions and soil rehabilitation in degraded pasture land, per your

comment, Douglas fir will be restated in the final EA in the context of gorse control and not habitat restoration.

16. Douglas fir and trade off values. Thank you for pointing out the numerous tradeoffs that went into the decision to use Douglas fir in species trials to control gorse. DHHL shares the Forest Service's interest that Douglas fir may have an economic return at some future date as well as adversely affect gorse. It is anticipated that once gorse is eliminated, DHHL could realize an economic return on its investment.
17. Trial plantings of koa and mamane. Trial plantings of koa and mamane are an integral part of research for gorse control. DHHL is committed to giving reforestation an opportunity by letting mother nature tell us which species has the most reasonable chance for success. DHHL has been in consultation with Hakalau Forest staff regarding their experiences with planting methods to minimize frost mortality of native species.
18. Bio-control agents. Per Forest Service comments, the last sentence of the final EA p. 2, par. 5 has been changed to read, "Several bio-control agents have established following release, but to date they have not stopped or noticeably slowed the expansion of the infestation."
19. The potential value of sugi. The value of 320 acres of sugi at harvest time will be based on market rates at the time of sale at some unknown date in the future. In addition to the research, education, and stewardship potential, DHHL believes that 320 acres of sugi will be worth more than 320 acres of gorse and offer more choices for decision makers of the future than we have today.
20. Possible steps to reduce the infestation. Sugi, koa, mamane, and the Douglas fir species trials are an integral part of research for gorse control. DHHL is committed to giving reforestation an opportunity by letting mother nature tell us which species has the most reasonable chance for success. DHHL would like to contribute to the body of knowledge as it concerns gorse control and reforestation in the upper elevations.

The interior 4,450 acres are not part of the subject EA. Possible future plantings within the interior may be the subject of a future EA based on species trials research conducted as part of the subject EA.
21. Surveys of endangered plants. The project area has been a cattle grazing area for about 100 years. No threatened or endangered plants were observed during field visits to the site.
22. Costs on administering the salvage and reforestation operation. Thank you for your thoughts on the koa project administration. A sale administrator would represent DHHL on the koa project. The volume of wood and scarification will be specified in the timber

license and harvesting plan approved by DHHL. Departmental staff will monitor natural regeneration. There is an existing fence to exclude cattle. Nobriga Enterprises, Inc. will not be allowed to graze cattle after their lease expires. The costs to select the RFP and implement the koa salvage-reforestation plan are estimates.

23. Applicable laws or regulations. See comment no. 11.
24. Timber land license. The timber license and harvesting plan, required of the logger and approved by DHHL will specify conditions for leave trees.
25. Leaving koa trees onsite. There were a number of trade-offs that went into deciding which trees were to be left behind. Depending on the species and size, the choice of leave trees were based on the nesting preferences of native birds, perch sites, forage habitat, and/or onsite seed production. While it may not be the most profitable rate of return for DHHL's revenue goals, it is the most reasonable decision based on the competing objectives of the project.
26. Itemized leave trees. DHHL agrees with the Forest Service that leaving dead or dying trees provide perch sites for the 'Io and Pueo. Included in the 2.5 trees per acre leave trees are all healthy koa trees in any size class. Leaving all old growth trees will improve the complexity of the forest structure and compliment new seedlings with continued seed production beyond the saplings resulting from site disturbance. A percentage of unhealthy and dying trees would also remain to provide forage habitat.
27. Cavity nesting birds. See comment no. 25. Hawaiian Honeycreeper has been changed to Hawaii Creeper per your comment.
28. Salvage and reforestation plan. See comment no. 24.
29. Action to be taken if endangered species are found in the area. No endangered and threatened plants or animals were observed in the koa project area. If species are found, the Division of Forestry and Wildlife will be notified and appropriate action taken. No federal dollars are used to fund the koa or gorse projects. As such, a section 7 consultation with the US Fish and Wildlife Service is not required.
30. Editorial changes. Per your comments, the wording of p. 10 par. 3 has been changed to read, "initial reforestation efforts."
31. Monitoring of the project site. DHHL staff will monitor forest regeneration. DHHL believes that 5 years is reasonable to evaluate koa emergence in a highly degraded upland pasture. Forest Service research showed that koa emergence took about 4 years following ungulate removal and required decaying logs to assist germination (Scowcroft 1992). The timeline needed for evaluation remains as written.

32. Fertilizer and herbicide application. Fertilizer application is important for satisfactory seedling survival and growth during and after planting. Natural koa regeneration will not be fertilized. Herbicide will be limited to manual applications in areas around seedlings. Chemical quantities will be carefully prescribed at levels to control the specific target populations. Only approved chemicals will be used in Humuula in accordance with the manufacturer's labels.
33. Editorial comments. Per your comments, "Selecting the appropriate species . . ." has been deleted from p. 10, par. 6, and "maintenance" was replaced with "control." The statement regarding "gorse will be monitored" remains as written. The nearest infestation is several miles to the southeast. "Fire has been used . . ." on p. 11, par. 1 has been deleted.
34. Existing forest boundary for gorse control. See comment no. 7.
35. Gorse control. See comment no. 5 regarding reforestation as a method to control gorse. See comment no. 1 regarding possible future actions on the interior portions of the gorse infestation.
36. Fire to be used to assist site preparation. Fire may be used in the gorse containment area to remove gorse before the sugi is planted and/or to clear a path for a fire break, if needed.
37. Anticipated revenues. See comment no. 4.
38. Bird perception. Forest Service comments that "leave trees are habitat only if birds perceive them as such" is puzzling. While koa and ohia are important habitat, birds' perception of their habitat is beyond the scope of the EA.
39. Koa seed sources. All healthy koa trees in any size class would not be harvested in the project area. While this is only a few trees per acre, this is not the only source of seed.
40. Editorial changes. Per Forest Service comments, "forest" was changed to "trees" on p. 12, par. 1. Root dieback from cattle grazing is a common phenomena. The sentence remains as written. While logging and/or directional falling have been known to kill or damage understory trees, complete avoidance is virtually impossible. Page. 12, par. 1 refers to possible sources of understory mortality, not the rate of mortality. The paragraph remains as written.
41. Editorial changes. Per Forest Service comments, descriptive phrases were added to Alternative 3.1.1 and 3.1.2.

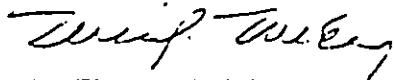
42. Sub-merchantable material. Page 12, par. 3 does not suggest that the logger will scatter sub-merchantable material. Large woody debris is already scattered onsite.
43. Editorial changes. Per Forest Service comments, inconsistencies regarding three or five years to establish a viable stand of koa has been corrected. The corrections read "five years."
44. Canopy area to be harvested. Thank you for calling it to our attention that less than 65% of the overstory will be harvested. Page 12, par. 3 has been reworded per your comments.
45. Gorse seed production. DHHL will continue to control gorse mechanically in the sugi stand until such time as the sugi shades out gorse seed production.
46. Editorial changes. Per your comments, "superior shade qualities" has been changed to read, "casts dense shade." Page 12, par. 4. References to prior forestry trials suggesting that sugi can limit gorse growth was deleted. The prior forestry trials established sugi's ability to grow in Hawaii and may suggest that it's non-invasive. One observation that sugi is non-invasive is that if birds or animals were transporting seeds, the forest would be thick with sugi. It is not. Native birds do not eat sugi seeds. Since cattle have stopped grazing in the Hakalau Refuge, sugi has not appreciably expanded its range and the Forest Service has no plans to cut down its own sugi groves. Lastly, the State Department of Agriculture maintains a list of invasive species in Hawaii. Sugi is not on the list. If the Forest Service has evidence, citation(s), or a definition of invasive species that it would like to share, please contact the DOA.
47. The sugi perimeter and fencing. Per your comments, a statement that DHHL will use existing fences was added to section 2.2.
48. 250 foot wide sugi perimeter. Native birds don't eat gorse seeds. A 250 foot wide border was chosen to minimize assisted seed transportation.
49. Sugi as a shelterbelt for koa. DHHL agrees with the Forest Service observation that sugi may limit frost damage to koa seedlings by moderating radiative cooling. DHHL is in consultation with Hakalau regarding other methodologies to reduce koa mortality.
50. Akiapola'au and Palila habitat. Forest Service concerns that it will take 20 years for the koa and mamane to become suitable habitat and then only if the birds visit the stand is noted. Forest Service's inquiry into "what earthly reason would [native birds] have for visiting a 10 acre planting" is puzzling. Having an additional upper elevation food source and habitat out of range of avian malaria and pox may prove very valuable indeed. In addition, the knowledge gained by the planting trials will serve to further upper elevation native forest regeneration.

51. Monitoring of weed species. The nearest gorse infestation is several miles to the southeast and will be monitored, as will banana poka. Control measures may be taken as stated on page 15 of the EA.
52. Grasses in the project area. Per your comments, the grasses mentioned on p. 14, par. 6 refer to *some* grasses while the p. 15, par. 1 refer to non-native grasses.
53. Editorial changes. Per your comments, references to alternatives 3.1.1 and 3.1.2 were deleted from p. 15, par. 7. Page 16, par. 1 remains as written.
54. Continued burning and spraying of herbicide. DHHL shares Forest Service concerns that gorse could continue its expansion into new locations even with continued burning and spraying. DHHL has an enforceable lease with Parker Ranch.
55. Roads in the project area. No permanent roads will be created in the subject area. All new roads will be temporary. Mana Road is owned by DHHL. Skid trails, landings, and road maintenance will be part of the timber license and harvesting plan required of our logger and approved by DHHL.
56. Mamane plantings. DHHL is in consultation with Hakalau staff regarding possible locations for mamane plantings within the gorse as part of species trials.
57. Nesting activity. A sale administrator would represent DHHL on the koa project.
58. Duration of harvest and inventory data. See comments no. 4 and 9.
59. Mana road. The logger will be required to maintain and restore any roads to their original condition as determined by DHHL the landowner.
60. Editorial changes. Per your comments, p. 25, par. 6 has been moved to section 2.1.1. Page 29, par. 6 now reads, "standing dead *and fallen trees* may attract insects." Page 29, par. 9 was clarified to read, "koa project area."
61. Lease provisions. See comment no. 2.
62. Field studies. If biologists or others' are interested in conducting field studies on DHHL land, they may contact the Land Management Division at DHHL.
63. Estimated revenues. See comment no. 4. DHHL has no control over the end use or market demand of koa.
64. Periodic inspections. A sale administrator would represent DHHL on the koa project.

Mr. Paul Scowcroft
August 8, 2001
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Your letter, along with this response, will be incorporated in the forthcoming Final Environmental Assessment. If needed, corrections or clarifications have been made in the document. We appreciate your interest and participation in this phase of the project. If you have any questions, please call Rebecca Alakai of my staff at 587-6423.

Aloha,



Mike McElroy, Administrator
Land Management Division

DEPT. OF HAWAIIAN
HOME LANDS

'01 JUL 10 AIO 55

Theresa Menard
University of Hawaii
Department of Zoology
2538 The Mall
Honolulu, Hawaii 96822

July 6, 2001

Mike McElroy
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hawaii 96805

cc: Genevieve Salmonsonn (OEQC)
Paul Henson (USFWS)

**Re: Draft Environmental Assessment for Humu`ula Koa Salvage-Reforestation
& Gorse Control**

Dear Mr. McElroy,

I have reviewed the draft environmental assessment (EA) for the Humu`ula koa salvage-reforestation and gorse control project, North Hilo District, island of Hawaii. The Department of Hawaiian Home Lands (DHHL) is both the applicant and approving authority for the project. The proposed project involves a koa forestry operation on approximately 125 acres between 5400 and 5800 feet, as well as a gorse control project on 320 acres between 6000 and 7000 feet. A finding of no significant impact (FONSI) is anticipated.

Based on my knowledge of the endangered Hawaiian hoary bat, the bat is likely to occur in your koa salvaging area. While conducting bat research for my thesis, I observed bats flying in the Maulua Section of Hakalau Forest National Wildlife Refuge which is just a couple miles south of your site.

Given that bats are likely to occur at the site, information needs to be provided in the EA regarding (1) the potential impacts of koa salvaging on bats and (2) appropriate ways to mitigate or avoid these impacts.

I offer the following comments on impacts and mitigation for your consideration. Incorporation of these ideas into your final EA will make it a stronger document in terms of complying with the Office of Environmental Quality Control's requirements for EAs and in obtaining a federal permit for the incidental take of endangered species from the US Fish and Wildlife Service.

Deficiency #1: The EA ignores impacts of harvesting on the endangered bat.

The section on "Potential Impacts and Mitigation Measures" (p. 20) fails to describe the impacts of salvaging activities on tree-roosting bats. According to the US Fish and Wildlife Service (2000), actions that may result in direct impacts to tree-roosting bats include:

"commercial timber-harvesting activities, timber-salvaging activities, development and management of recreation sites, road construction and reconstruction, trail construction, fuel wood harvesting, wildlife and fishery habitat management, special uses, forest pest management, prescribed burning, wildland fire suppression, felling of snags to address public safety, and forest product permits."

The USFWS (1997) has identified the following types of impacts that tree-roosting bats face in timber areas on the mainland:

DIRECT IMPACTS

- Direct mortality or injury to individuals or small family groups of roosting bats when intentional felling of trees that harbor undetected roosts during timber harvest or site preparation
- Direct effects from harvesting large tracts, forcing roosting bats to abandon traditionally used sites (Lower reproductive success or lower survival of young may also result with forced abandonment of lactating females.)
- Direct mortality resulting from prescribed burning due to the actual roost tree being incinerated or death caused by smoke inhalation

INDIRECT IMPACTS

- Removal of trees which have the potential to serve as roosts
- Reduction of tree density and overstory canopy resulting in the loss or alteration of roosting or foraging habitat
- Alteration of insect species composition leading to a reduction in the availability of insects on which bats feed, thereby causing bats to search for alternate foraging habitat.

Deficiency #2: The EA proposes no mitigation for impacts to bats.

No mitigation is proposed to protect roosting bats.

In the unlikely event that a bat were found in a tree, appropriate mitigation might be to establish a "no-harvest activity buffer zone" around that tree. For endangered tree-roosting bats on the mainland, a ¼ mile buffer is required in some national forests harboring the Indiana bat (USFWS 1997). Within this buffer, no logging, road construction, or pesticide use is permitted. For maternity roosts the buffer is 2 miles around each roost. But this mitigation is for areas where endangered bats are at the edge of their range—which is not the situation on the Big Island.

Because you are proposing to harvest in the core of this endangered bat's habitat, at a minimum, I recommend a policy of no logging from October to May, as bat activity is quite high during this period at high elevation sites on windward Mauna Kea.

If I can be of further assistance or if you have additional questions about the bat, please do not hesitate to contact me (808 732-4014).

Sincerely,



Theresa Menard
Graduate Student
Ecology, Evolution &
Conservation Biology Program

Literature Cited

US Fish and Wildlife Service. 1997. *Biological Opinion on the Effects of Management Activities Conducted by the George Washington and Jefferson National Forests on the Indiana Bat*. Chesapeake Bay Field Office, Annapolis, Md. (<http://www.fs.fed.us/gwjnl/indianabatbo.html>).

US Fish and Wildlife Service. 2000. *Biological Opinion on the Effects of Implementing the Nantahala and Pisgah National Forests Land and Resource Management Plan, Amendment Five, on the Indiana Bat (Myotis sodalis)*. Asheville Field Office, Asheville, North Carolina. (<http://www.cs.unca.edu/nfsnc/nepa/final.ib-bo3.pdf>)

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August 8, 2001

Ms. Theresa Menard
University of Hawaii
Department of Zoology
2538 The Mall
Honolulu, Hawaii 96822

Dear Ms. Menard:

Subject: Draft Environmental Assessment for the Koa Salvage-Reforestation and Gorse Containment, Humuula, Hawaii

Thank you for your letter, dated July 6, 2001, during the public comment phase of the subject project. We offer the following responses in the respective order of your comments.

1. The EA ignores the impacts of harvesting on the endangered bat. Per your comments, the impacts of salvaging activities on tree-roosting bats will be incorporated into section 4.2.2 of the final EA. If bats are shown to be present in the project area, mitigation measures would be established.
2. The EA proposes no mitigation for impacts to bats. According to the Fish and Wildlife Service, bat breeding generally occurs below 4,000 feet from April to October. From November to April, bats tend to be found at 4,000 to 7,500 feet. The koa project area is between 5,400 – 5,800 feet. Your comment that no logging should occur between October and May is noted. A bat survey would be conducted prior to harvesting activity to determine the time of least impact to bat habitat and activity.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Assessment. If needed, corrections or clarifications have been made in the document. We appreciate your interest and participation in this phase of the project. If you have any questions, please call Rebecca Alakai of my staff at 587-6423.

Aloha,

A handwritten signature in black ink, appearing to read "Mike McElroy".

Mike McElroy, Administrator
Land Management Division