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WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

July 13, 1994

Dr. Bruce S. Anderson, Interim Director
Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, HI 96813

Dear Dr. Anderson,

Subject: Negative Declaration for Kamakou Preserve Natural Area Partnership, District of Moloka'i, County of Maui, State of Hawai'i; TMK: 5-4-03-26.

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed and responded to the comments during the 30-day public comment period which began on May 23, 1994. The agency has determined that this project will not have significant environmental effect and has issued a negative declaration. Please publish this notice in the July 23, 1994 OEQC Bulletin.

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

Please contact Betsy Gagné at 587-0063 if you have any questions.

Sincerely,

Michael G. Buck, Administrator
Division of Forestry and Wildlife

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1994-09-23-MO-FEA-Kamakou Preserve Natural Area Partnership

23 1994

FINAL ENVIRONMENTAL ASSESSMENT FOR KAMAKOU PRESERVE NATURAL AREA PARTNERSHIP

This document prepared pursuant to Chapter 343, HRS

July 13, 1994

Prepared by
The Nature Conservancy of Hawaii
Molokai Preserves Office
P.O. Box 220
Kualapuu, Hawaii 96757

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Attachment 1
Kamakou Preserve Brochure (with preserve rules)

I. SUMMARY

CHAPTER 343, HAWAII REVISED STATUTES (HRS)
ENVIRONMENTAL ASSESSMENT

Project Name: Kamakou Preserve Natural Area Partnership

Proposing Agency / Applicant:

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, Hawaii 96813

The Nature Conservancy of Hawaii
1116 Smith Street, Suite 201
Honolulu, Hawaii 96817

Approving Agency:

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife

Project Location:

Kamakou Preserve, 2,774 acres in the District of Molokai, County of Maui, State of Hawaii

Tax Map Key	Acreage
5-4-03-26	2,773.74

Agencies Consulted During EA Preparation:

Federal:
- US Department of Interior/Kalaupapa National Park
- US Department of Agriculture/ Soil Conservation Service—Maui District
- US Department of Agriculture/ Soil Conservation Service—Plant Materials Center
- US Department of Agriculture/Animal Damage Control
- US Fish & Wildlife Service

State:

- Aquatic and Wildlife Advisory Committee—Maui County
- Department of Agriculture
- Department of Agriculture—Molokai Irrigation System
- Department of Hawaiian Home Lands
- DLNR/Aquatic Resources Division—Maui District
- DLNR/ Division of Conservation and Resources Enforcement
- DLNR/ Division of Forestry & Wildlife—Maui District
- DLNR/ Division of Land Management—Maui District
- DLNR/ State Historic Preservation Division
- Na Ala Hele Molokai Advisory Council
- Office of Hawaiian Affairs
- UH Cooperative Extension Service

County:

- Planning Department—Maui County
- Maui County Council—Molokai Councilman
- Molokai Chamber of Commerce
- Molokai Planning Commission

Private:

- Billy Akutagawa
- Bobby Alcain
- Emmett Aluli
- Alu Like, Inc.
- Bruce Anglin
- Boy Scouts—Molokai
- James Brennan
- Judy Caparida
- Conservation Council for Hawaii
- Mike Donleavey
- Anna Goodhue
- Hawaii Audubon Society
- Adolf Helm
- Greg Helm
- Hui Malama O Moomomi
- Noelani Joy
- Yama Kaholoa'a
- Joyce Kainoa
- Rachel Kamakana
- Kawela Plantation Association
- Moses Kim
- Moana's Hula Halau
- Moanalua Gardens Foundation
- Molokai 4-H
- Molokai Cares
- Molokai Earth Preservation Org.
- Molokai Ranch, Ltd.
- Native Hawaiian Advisory Council
- Native Hawaiian Legal Corporation
- Natural Resources Defense Council
- Masashi "Cowboy" Otsuka
- Keali'i Pang
- Walter Ragsdale
- Ron Rapanot
- Walter Ritte
- John Sabas
- Eugene Santiago
- Sierra Club Legal Defense Fund
- Sierra Club/ Maui Group
- Claud Sutcliffe
- Sarah Sykes
- Kenneth Takase

II. Project Description

In 1982 the Conservancy purchased a permanent conservation easement over the area that is now Kamakou Preserve from Molokai Ranch, Limited. The primary goal of this project is to maintain the preserve's native ecosystems and protect the area's rare plants and animals. Previous management work was approved by, and conducted in accordance with, Conservation District Use Permit number SH-2028A.

Summary Description of the Affected Environment

Location

The 2,774-acre preserve is located in the east Molokai mountains and borders three other protected natural areas: state-owned Puu Alii Natural Area Reserve (NAR), Kalaupapa National Historical Park, and the Conservancy's Pelekunu Preserve (Figure 1). The Conservancy also cooperates with the state to undertake joint management projects in areas adjacent to Kamakou.

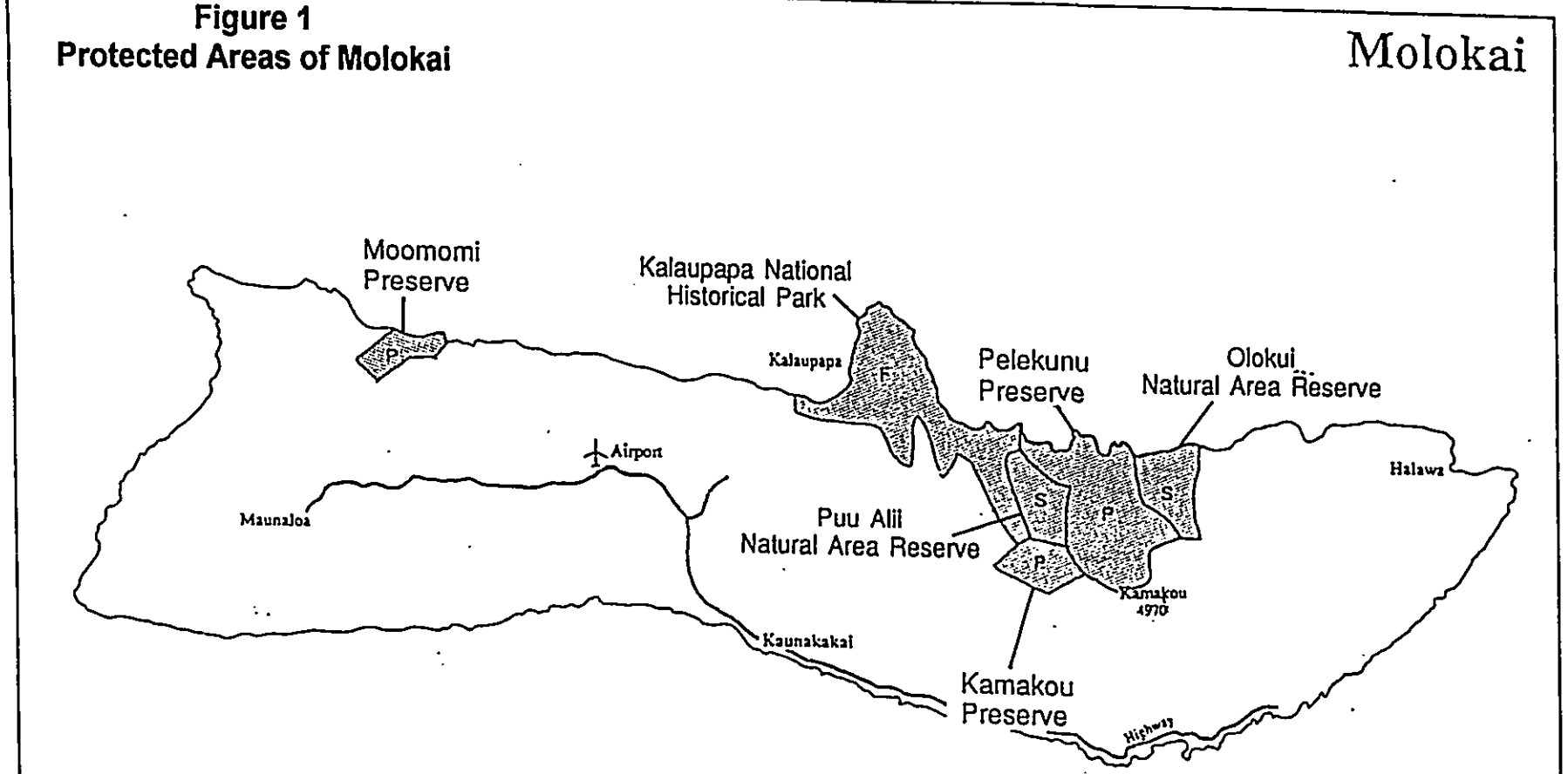
Native Natural Communities

Kamakou contains five vegetation zones, which contain ten natural community types, ranging from lowland mesic (moist) shrublands to montane wet forests (see Figure 2 and Appendix 1). There are two rare natural communities: the 'Ohi'a Mixed Montane Bog community and the Montane Wet Piping Cave (a subterranean community known only from Molokai).[1]

Kamakou Preserve also contains the upper reaches of three large streams (including Kawela, Kaunakakai, and Waikolu Streams) and numerous tributaries. The preserve's streams are classified as Hawaiian Intermittent Streams because they do not have continuous surface flow to the sea. At the elevation of the preserve they do not contain the suite of native diadromous animals (e.g., 'o'opu, 'opae, hihiwai) characteristic of perennial streams in Hawaii. Surface water in these streams is harvested by Molokai Ranch; the Conservancy does not have information on the status of these streams prior to stream diversion.

[1]The U.S. Fish and Wildlife Service has determined that the eastern portion of Kamakou Preserve contains palustrine systems, a category of wetlands. The Service defines wetlands as "lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water." Palustrine systems include "all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5‰."

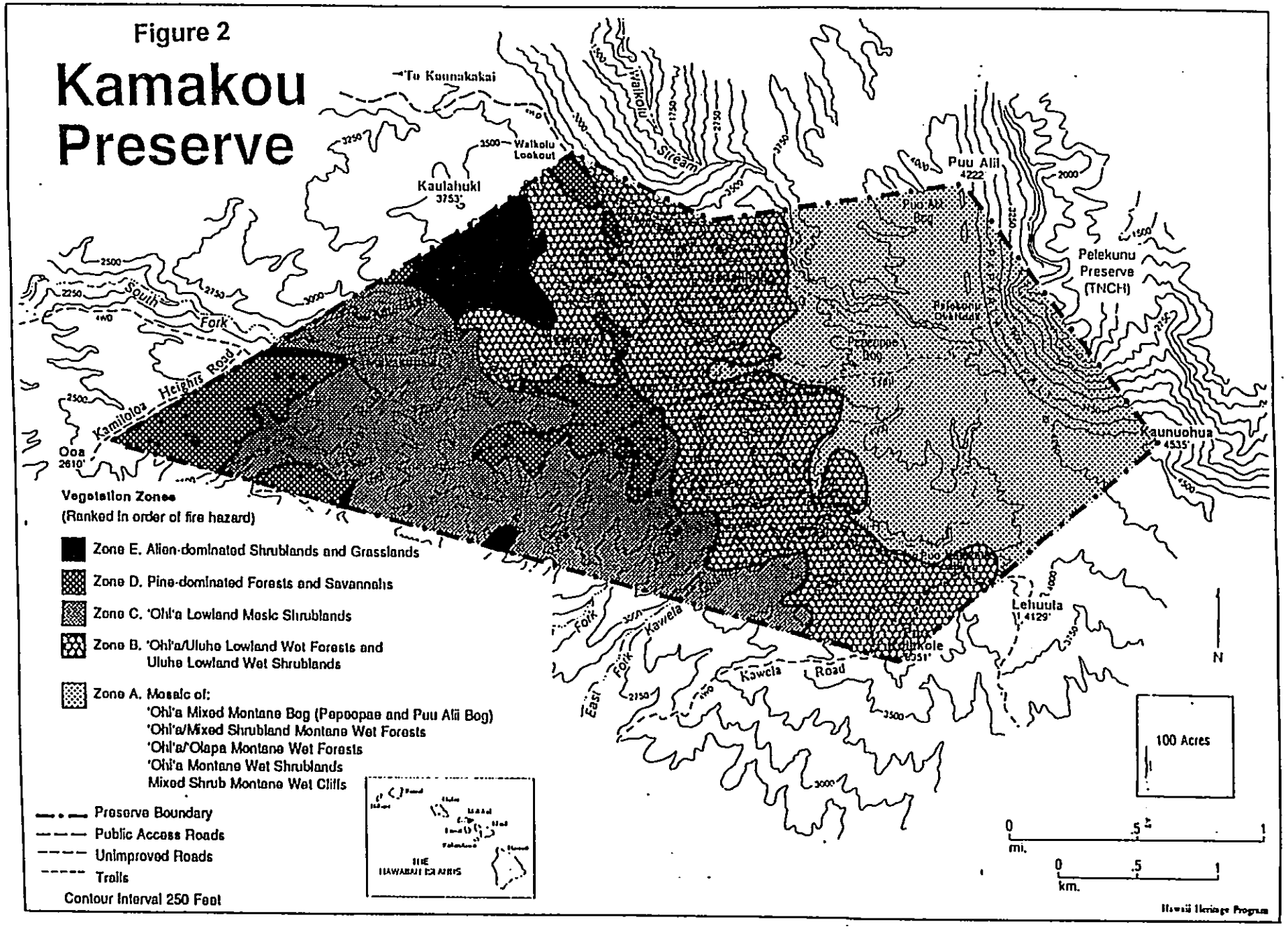
Figure 1
Protected Areas of Molokai



Map prepared: 90-12-05

Figure 2

Kamakou Preserve



Native Flora

Thirty-seven rare plants have been reported from within the preserve, 13 of which are listed endangered (Appendix 2).

Native Fauna

Vertebrates

Of the five native forest birds reported from Kamakou, only 'apapane (*Himatione sanguinea sanguinea*) and 'amakihi (*Hemignathus virens wilsoni*) are seen frequently. The kakawahie (Molokai creeper, *Paroreomyza flammea*) has not been seen on Molokai since 1963 and the 'i'iwi (*Vestiaria coccinea*) and oloma'o (Molokai thrush, *Myadestes lanaiensis rutha*) have not been seen in the preserve for at least 3 years. The koloa (Hawaiian duck, *Anas wyvilliana*), which is listed as endangered by state and federal authorities, was seen in Kamakou in 1992 (see Appendix 3). This was the first report of this species from Kamakou since the preserve was established in 1982. No native diadromous fishes are known from the preserve.

Invertebrates

Terrestrial arthropods include some of the most diverse taxonomic groups at Kamakou, and are known to perform important ecosystem functions. These functions include pollinating native plants and serving as a food resource for insect-eating forest birds. However, most of Kamakou's terrestrial invertebrate species have not been studied and are not well documented; work in this area needs to be conducted.

Kamakou's aquatic invertebrates, unfortunately, are also poorly understood. Dan Polhemus of the Bishop Museum has collected some aquatic insects from the preserve, including the dragonfly *Anax strenuus* and four damselflies (*Megalagrion amaurodytum*, *M. blackburni, M. calliphya,* and *M. hawaiiense*). In partnership with individuals and agencies with the proper expertise, we plan to improve both monitoring and research for the preserve's invertebrates in the coming years.

Although much more remains to be learned about the molluscan fauna, five species of rare native land snails have been reported in Kamakou Preserve (Appendix 4). Two of these have been the subject of long-term population dynamics and evolutionary research led by Dr. Michael Hadfield.

Historical/Archaeological and Cultural Sites

According to records at the State Historic Preservation Division (SHP), no archaeological surveys have been conducted at Kamakou Preserve, so the presence or absence of historical sites has not been determined. Although none have been encountered by those working in the area, there may be undetected agricultural features on the preserve flats, and associated temporary or permanent living sites.

Other features such as shrines and rock shelters might also occur in the preserve, though again, none are known.

The Conservancy consulted with SHP staff to ensure that the full scope of proposed activities was known to SHP. SHP concurs that the proposed project appears to involve minimal ground disturbance. However, SHP staff recommended that preserve staff contact them prior to any ground-disturbing management activities. In the long term, the proposed management activities should provide protection for historical resources by reducing disturbance from ungulates (hoofed animals) or vandalism.

Adjacent Natural Resources

Kamakou Preserve is adjacent to three other natural areas that are actively managed: state-owned Puu Alii Natural Area Reserve (NAR), Kalaupapa National Historical Park, and the Conservancy's Pelekunu Preserve (Figure 1). Together with Olokui NAR, which is west of Pelekunu, these protected areas form more than 22,000 acres of contiguous, native-dominated ecosystems that range from sea level to 4,970 feet in elevation.

To the east and the south, privately owned lands of Kamalo, Makolelau, and Kawela include extensions of the natural habitats occurring in the preserve. Lands to the west are DHHL and state-owned conservation lands with a mixture of native vegetation and planted non-native tree stands and non-native grasslands.

Four of the preserve's more common natural communities are also found in Olokui and/or Puu Alii NARs (Appendix 1). Twelve of Kamakou's 37 rare plants, and 3 of its 4 state or federally endangered bird species have also been reported in Olokui and/or Puu Alii NARs. Eight of Kamakou's rare plant taxa and two rare bird species have also been reported in Kalaupapa National Historical Park (Appendices 2 and 3).

Sensitive Habitats

The habitats and resources listed above and in the appendices are regarded as sensitive and are found both within and adjacent to Kamakou Preserve. The intent of all proposed management activities is to provide long-term protection to these habitats and resources. Potential negative effects of management activities such as introduction of new weeds along newly constructed fences, trails, or monitoring transects are recognized, and special precautions will be taken to minimize these risks. Management activities that affect adjacent sensitive habitats such as Puu Alii NAR and Kalaupapa National Historical Park will be coordinated with appropriate staff from these organizations to reduce any potential negative impacts.

General Description of the Action's Technical, Socio-Economic and Environmental Characteristics

Technical

Management Considerations

This project is long term, consisting of several different phases. The primary goal is to maintain native ecosystems and protect the habitat of rare plants and animals in the designated area. Management goals for 6 fiscal years are discussed below. (The Nature Conservancy has adopted a July 1–June 30 fiscal year.) To facilitate management, nine management units have been defined (see discussion on page 9). The Nature Conservancy of Hawaii will be responsible for the completion of the management work.

This section describes specific management strategies that will be undertaken to maintain and enhance the native ecosystems and species of Kamakou Preserve. These management strategies are shaped by the following considerations.

1. Prior to 1982 the Kamakou Preserve area was part of the state's Molokai Forest Reserve under a surrender agreement with the landowner, Molokai Ranch, Limited. In 1982 the Conservancy purchased a permanent conservation easement over the property from Molokai Ranch. This easement ensures the Conservancy's rights to manage the preserve for the benefit of native species and ecosystems, and to prohibit a wide range of potentially unsuitable activities by the landowner. The document also reserves certain rights for the landowner, including the right to enter and inspect, and to harvest surface water from the established water development systems, which may be expanded within clear limits described in the easement.

   The previous surrender agreement between the state and Molokai Ranch is still recognized, and Kamakou Preserve is still part of the state Molokai Forest Reserve. However, the Conservancy's management plans take precedence over other plans for the Kamakou Preserve area. The state Division of Forestry and Wildlife (DOFAW) provides wildfire suppression, road maintenance, use of Puu Kolekole cabin, and assistance with other projects in the preserve. Also, a Master Cooperative Agreement and Memorandum of Understanding between DOFAW and the Conservancy encourages sharing of staff, equipment, and expertise. Through a Memorandum of Understanding with the Department of Land and Natural Resources, the preserve's main access road is part of the Na Ala Hele trail and access system.

2. The preserve is open for public hunting where and when this is compatible with management programs. Hunting in the preserve must be conducted in accordance

with the regulations of the adjoining state Puu Alii NAR. At this time, the NAR and the preserve are open year-round to hunting of pigs, goats, and deer without a bag limit. Designated areas of the preserve are also open to the public for hiking and for educational and cultural activities. During times of extreme fire hazard, or if there are unsafe road conditions, portions or all of the preserve may be closed to the public. Notification of closure will be made via a sign posted on the forest access road near the Maunawainui Bridge where it joins the highway, and by announcements in local newspapers.

3. Access into many parts of the preserve is relatively good via a number of dirt roads and trails. Most were developed in the early 1900s as part of Molokai Ranch's water system and for the state's reforestation programs. Management facilities include the Puu Kolekole cabin and the old Civilian Conservation Corps barracks along the Maunahui Road (outside the preserve). The Conservancy leases the barracks from the state on a monthly revocable basis.

4. Kamakou Preserve shares boundaries with the state Puu Alii NAR, Kalaupapa National Historical Park, Department of Hawaiian Home Lands property, and the Conservancy's Pelekunu Preserve. Bishop Estate, the Anglin property, and Kawela Plantation also share boundaries with the preserve.

5. Our primary management focus is to prevent degradation of the native forest by reducing feral ungulate damage, limiting the spread of non-native, habitat-modifying plants, and preventing wildfire. We are also committed to improving community outreach and to enhancing access for people who want to use the preserve in ways that will not degrade its natural resources. We will focus on increasing access for educational and cultural activities that preserve traditional knowledge and promote conservation ethics.

Management Units

Kamakou is managed as nine units (Figure 3) encompassing five vegetation zones (Figure 2). The management units are defined by topographic boundaries, access routes, and similarity of natural community types.

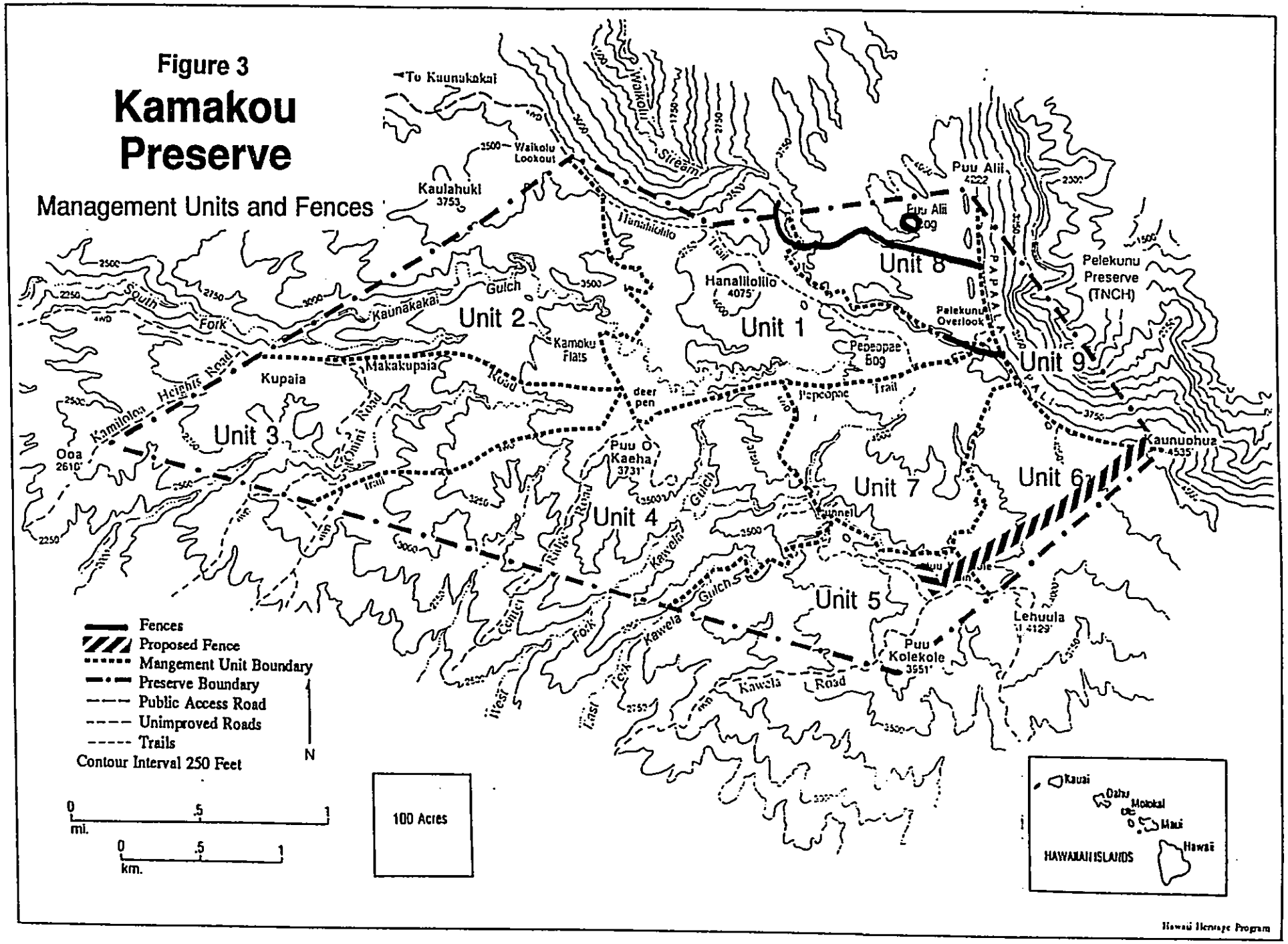
Unit 1

Unit 1 is composed largely of 'Ohi'a (*Metrosideros*)/Uluhe (*Dicranopteris*) Lowland Wet Forest. The main road, which forms part of this unit's lower boundary, provides access for management, public hunting, and hiking. The Pepeopae Boardwalk Trail, which crosses the rare Pepeopae ('Ohi'a Mixed Montane) Bog, also borders this unit. Management focuses on feral pig and weed control and on providing interpretive opportunities.

Figure 3

Kamakou Preserve

Management Units and Fences



Hawaii Heritage Program

Unit 2

Unit 2 is composed mainly of native mesic shrublands, with patches of non-native molasses grass (*Melinis minutiflora*) and introduced pine (*Pinus* spp.), eucalyptus (*Eucalyptus robusta*), and tropical ash (*Fraxinus uhdei*) plantations. The higher elevation portions of this unit range into 'Ohi'a/Uluhe Lowland Wet Forest. Fire is the major threat to this unit, especially its southwestern portion. In the past 6 years, two large fires originating near the town of Kaunakakai have threatened unit 2. Feral pigs and the continued spread of the non-native plants mentioned above also threaten the native communities of this unit.

Unit 3

Unit 3 is similar to unit 2, but with more extensive pine plantations. Fire is the main threat to this unit. Keeping pig populations from increasing, and preventing the spread of pine plantations are also priorities.

Unit 4

Unit 4's native and non-native vegetation is similar to that in units 2 and 3. Fire is the primary threat. Pigs are also a concern, as is a large goat population south of this unit in the Kawela gulch system. Public hunting in this unit appears to keep the large population of goats from moving up into the preserve, but we will continue to monitor goat intrusion into this unit. Weed control focuses on keeping pine plantations from spreading.

Unit 5

Unit 5, in the preserve's southeastern corner, contains 'Ohi'a Lowland Mesic Shrubland and 'Ohi'a/Uluhe Lowland Wet Forest. The unit is only accessible by the Puu Kolekole Trail. An old road that enters the unit from the south (through Kawela Plantation) is eroded and unusable. A number of research projects are being conducted in unit 5. An old DOFAW cabin provides shelter for research and management activities. Pigs are a major threat to this area; however, hunters can access it by the trail. Control of the weed New Zealand flax (*Phormium tenax*) and monitoring for recurrence of blackberry (*Rubus argutus*) are also priorities for this unit.

Unit 6

Unit 6, which contains primarily 'Ohi'a/'Olapa (*Cheirodendron*) Montane Wet Forest, is in the eastern part of Kamakou where access is difficult. The forests in this unit are relatively intact, and pig ingress from the east is the main threat. To address this problem, we proposed building a strategic fence along the southeastern boundary of the preserve in FY94. The fence would be almost 2 miles long, extending from Kaunuohua almost to Puu Kolekole. Due to permitting delays and the need to consult further with neighbors and other members of the community, this project has been

deferred to FY95. Funding for this fence has been secured through the EPA Nonpoint Source Pollution 319 program.

We have also created a system of flagged trails to help staff and public hunters access the higher elevations along the Pelekunu rim. Currently there are no serious habitat-modifying weeds in the unit.

Unit 7

Unit 7 is very similar to unit 6. The Pepeopae Boardwalk Trail provides access to part of this unit. Pigs are the main threat. A system of flagged trails facilitates staff and public hunting in the higher elevations. There are no serious habitat-modifying weeds in the unit.

Unit 8

Unit 8 contains the same types of forests as units 6 and 7. The Pepeopae Boardwalk Trail is the main access, and pigs are the primary threat. Two strategic fences in this unit help control pig movement between the Puu Alii NAR and unit 7, and a system of flagged trails helps hunters traverse the higher elevations along the Pelekunu rim. Unit 8 does not contain any known serious habitat-modifying weeds.

Unit 9

Unit 9 includes the near-vertical walls of Papaala Pali. A mosaic of native 'ohi'a- and mixed shrub-dominated natural communities occurs on these steep pali walls. The Pepeopae Boardwalk ends at the spectacular pali vista overlooking Pelekunu Valley. The unit is largely inaccessible. Ungulate and weed control in neighboring units (6, 7, and 8) and in the upper valley unit of Pelekunu Preserve helps protect unit 9.

Management Goals

The management programs that follow are listed in order of priority for the next 6 years of work. Each program goal is followed by a brief description of program strategies, and how we foresee these strategies changing over the next 6 years. A timetable is provided for each program.

Though each program is described separately, together they form an integrated management approach. Management priorities are focused on removing ungulates and habitat-modifying weeds. In addition, we have established a comprehensive network of management trails and monitoring stations throughout the preserve. This system will continue to be maintained and expanded where needed to support management activities.

The Conservancy does not currently monitor or directly manage aquatic communities or taxa in Kamakou. However, management targeted at the preserve's rare terrestrial

resources will indirectly benefit aquatic resources. For example, successful ungulate and weed control programs will decrease erosion and its subsequent siltation of streams. Controlling ungulates is also expected to improve water quality by lowering the potential for bacterial coliform and leptospirosis in the water. Finally, management that improves the health of native terrestrial communities will also promote a more stable water regime by reducing the potential for rapid runoff.

Non-Native Species Control Programs

Ungulate Control

Program Goal: To keep ungulate activity below 10 percent in the remote areas of the preserve (units 6–8), and below 25 percent in the lower, more accessible areas (units 1–5).

Public and staff hunting appear to have stabilized the numbers of pigs, goats, and axis deer in the preserve's more accessible lower elevations. However, this hunting pressure can drive pigs into the preserve's more remote units (6, 7, and 8) where, historically, hunting has been infrequent due to difficult access and rugged terrain. Units 6, 7, and 8 contain some of the most intact native forest in the preserve. These forests are habitat for rare native plants, animals, and natural communities and also comprise important watershed cover. After several years of open public hunting, we installed snares in the preserve's remote units in 1990–92 to control pig populations. Ungulate activity transect data indicate that the snaring program was successful, reducing the average level of feral pig activity from 30 percent to less than 10 percent.

However, to address the concerns of community hunters, in FY94 we started a test hunting program to evaluate the ability of organized hunting to replace snaring. In late FY93 we removed all snares and helped organize a Community Working Group to implement the test. Current monitoring methods are being used to measure the test's success. If hunters are able to keep pig activity levels at or lower than the levels achieved with snaring, the hunting program will continue in place of snares.

To improve our hunting capabilities, we will purchase tracking collars and receivers for hunting dogs used in remote areas of the preserve. This will allow staff and community hunters to quickly reach dogs that have found pigs, increasing hunting success and lessening the chances that dogs will be injured by pigs, or lost. This method has been successfully employed at Hawaii Volcanoes National Park (HAVO). Conservancy field staff will be trained in the use of this equipment (possibly by HAVO staff).

In past years, the Conservancy has maintained hunting dog teams of at least five dogs, but at present we do not have a dog team. If community hunters are successful at keeping feral pig populations at or below target levels, we will not need to re-establish our own hunting dog team. However, we have budgeted money in this plan to purchase, house, and care for hunting dogs in the event that this becomes necessary.

We will also consider the option of contracting one or more local hunters to carry out this work.

In addition to hunting, we also use fences to protect fragile areas and to help control ungulate movement. To date, we have constructed three fences (Figure 3). The "Puu Alii" fence, built by TNC for the state NARs program under contract, extends from east to west across unit 8, south of Puu Alii Bog. Another fence encircles Puu Alii Bog. The third fence extends from the rim of Pelekunu Valley west toward Pepeopae Bog and is about 1,000 feet long.

To deter pig ingress from the east, we are considering building a strategic fence along the eastern preserve boundary. (Funding has already been secured for this project from the Environmental Protection Agency. See earlier discussion, page 11). As of this writing, we are working to obtain permits, and consulting with neighboring landowners, hunters, and other community members to develop a workable plan for this project.

Monitoring is another important aspect of our ungulate control program. We will continue to monitor ungulate damage on our 13 established transects quarterly. If the east boundary fence is built, we will also add a 14th transect near the upper end of the fence in FY95.

Ungulate Control Timeline

Year 1 (FY95)
* Continue combined staff/public ungulate control program.
* Purchase and train hunting dogs (if necessary).
* Install monitoring transect #12 (bringing total number of transects in preserve to 14) (if needed).
* Conduct quarterly pig activity surveys and analyze data to determine effectiveness of control programs.
* Repair existing fences as needed.
* Construct east boundary fence or implement suitable alternative.

Year 2 (FY96)
* Continue combined staff/public ungulate control program.
* Maintain hunting dog team (if necessary).
* Conduct quarterly pig activity surveys and analyze data to determine effectiveness of control programs.
* Repair existing fences as needed.

Years 3 & 4 (FY97 & 98)
* Continue combined staff/public ungulate control program.
* Maintain hunting dog team (if necessary).
* Conduct quarterly pig activity surveys and analyze data to determine effectiveness of control programs.

* Repair existing fences as needed.

Years 5 & 6 (FY99 & 2000)
* Continue combined staff/public ungulate control program.
* Maintain hunting dog team (if necessary).
* Conduct quarterly pig activity surveys and analyze data to determine effectiveness of control programs.
* Repair existing fences as needed.

Weed Control

Program Goal: Reduce the range of established habitat-modifying weeds, and eliminate populations of incipient weeds.

Habitat-modifying weeds are non-native plants that have demonstrated the ability to suppress regeneration of and/or displace native vegetation. Many weeds become established when an area is disturbed by ungulates, which may also carry and spread seeds. Fire also accelerates invasion by certain weed species. Elimination of ungulates and wildfire, therefore, are among the most effective means of controlling the introduction and spread of habitat-modifying weeds in the preserve. To complement these efforts, our weed control program focuses on limiting or eliminating habitat-modifying weeds that are already established in the preserve, and preventing new weed introductions.

We drafted a 3-year weed control plan in December of 1991 to guide and document our weed control priorities. The plan (prepared with the assistance of Tim Tunison of Hawaii Volcanoes National Park) established the top 20 priority weeds of the preserve (Appendix 5), and proposed a schedule for reducing the populations of each of 17 priority weeds by either 10 percent, 20 percent, or 100 percent (depending on the extent of the weed) by the end of 3 years. We will finish revising this plan in FY95, documenting our weed control goals for 5 more years (through FY99).

At Kamakou weeds are controlled manually (by pulling or cutting), chemically (using herbicide), or with a combination of manual and chemical control methods. Weekend volunteers provide much of the labor for manual weed removal. Herbicides are used only on serious weeds that cannot be controlled by other means, and field staff are trained in their safe application. We consult the state Department of Agriculture and University of Hawaii Cooperative Extension Service regarding the types of herbicides used and their proper application. Furthermore, we require all supervisory field staff to be certified in pesticide application through the State Department of Agriculture. A third way to control weeds is by using biological control agents. We are required to obtain approval from the Conservancy's national office to release state-approved control agents. We will collaborate with state and federal biological control programs to ensure that this technology is appropriately applied.

When dense stands of weeds are removed, native plants must somehow be restored to the area. In FY95, with technical assistance from the Stewardship Ecologist and other consultants, we will design field trials for the removal of localized white ginger (*Hedychium coronarium*) infestations and revegetation with native species. We hope to apply the results of these trials beginning in FY97. We will also start developing a plan in FY2000 to address the removal of pine, eucalyptus, and tropical ash plantations and their revegetation with native plants.

Staff and visitors follow strict procedures to prevent the inadvertent introduction of alien plants while visiting the preserve. Our alien species prevention protocol calls for inspecting all clothing and equipment for seeds and alien insects before they are taken into the preserve. However, this protocol is not enforced for unescorted preserve visitors, and is backed up by regular monitoring for new weed infestations.

Weed Control Timeline

Year 1 (FY95)
* Complete weed control plan and implement Year 1 activities.
* Develop removal trials and identify potential native plants for revegetating outlying populations of white ginger.
* Maintain alien species prevention protocol.
* Use volunteer groups in weed control (10 trips/year).

Year 2 (FY96)
* Perform Year 2 control and mapping tasks as outlined in revised weed control plan.
* Continue ginger removal/revegetation trials.
* Maintain alien species prevention protocol.
* Use volunteer groups in weed control (10 trips/year).

Years 3 & 4 (FY97 & 98)
* Perform Years 3/4 control and mapping tasks as outlined in revised weed control plan.
* Complete ginger removal and revegetation trials; if successful, begin removal and revegetation of outlying populations.
* Maintain alien species prevention protocol.
* Use volunteer groups in weed control (10 trips/year).

Years 5 & 6 (FY99 & 2000)
* Perform Year 5 control and mapping tasks as outlined in revised weed control plan, develop additional 5-year weed control plan, complete new "Year 1" tasks.
* Continue ginger removal and revegetation.
* Develop restoration plan for pine, eucalyptus, and tropical ash plantations (FY2000).
* Maintain alien species prevention protocol.
* Use volunteer groups in weed control (10 trips/year).

Resource Monitoring and Research

Program Goal: To track the biological and physical resources of the preserve, and evaluate changes in these resources to guide management programs.

Baseline resource monitoring differs from the monitoring of management treatments outlined previously in the Non-native Species Control program tasks. Its purpose is to help track important biological and physical resources over time to identify trends or changes. For population- and community-level monitoring, plots have been established. Information on plant species composition, distribution, abundance, and percentage cover for each species is collected from most plots every 3 years. Preserve-wide resource monitoring systems were begun in FY94, will be completed in FY95, and are scheduled for re-monitoring in FY97 and FY2000. We also take photos from fixed points along the Pepeopae Boardwalk every year to monitor vegetation changes. In addition to population- and community-level monitoring, landscape-scale changes can be tracked using aerial photos. As new photos become available, we will use them to supplement our monitoring program at Kamakou. Bird monitoring along the resource monitoring transects will be completed in FY95 and incorporated into resource monitoring in FY97 and FY2000.

The Conservancy encourages research that will help us better understand and, thereby, protect, the preserve's resources. Conservancy funding for research is limited but, wherever possible, we provide logistical assistance to approved research projects. The preserve has hosted a number of important research efforts. For example, Dr. Michael Hadfield (University of Hawaii) is studying the population dynamics of *Partulina* tree snails, Dr. Peter Vitousek (Stanford University) is studying nutrient recycling, Steve Perlman (National Tropical Botanical Garden) is collecting seeds of rare and endangered plant species for *ex situ* propagation, Dr. Kenneth Kaneshiro (University of Hawaii) collects *Drosophila* (fruit flies) for his evolutionary biology studies, and Dr. Rosemary Gillespie (University of Hawaii) conducts research on the preserve's spider fauna.

Monitoring and Research Timeline

Year 1 (FY95)
* Provide logistical assistance for approved research.
* Finish analysis of 1994 monitoring data and complete vegetation monitoring system.
* Complete bird monitoring along resource monitoring transects.
* Repeat annual monitoring at photo plots along Pepeopae Boardwalk.
* Support annual Molokai island-wide Audubon Christmas Bird Count.

Year 2 (FY96)
* Provide logistical assistance for approved research.
* Set schedule for resource monitoring for Year 3.
* Repeat annual monitoring of photo plots along Pepeopae Boardwalk.

* Support annual Molokai island-wide Audubon Christmas Bird Count.

Years 3 & 4 (FY97 & 98)
* Provide logistical assistance for approved research.
* Repeat annual monitoring of photo plots along Pepeopae Boardwalk.
* Support annual Molokai island-wide Audubon Christmas Bird Count.
* Complete resource monitoring (vegetation, birds, invertebrates, and threats) (FY97).

Years 5 & 6 (FY99 & 2000)
* Provide logistical assistance for approved research.
* Repeat annual monitoring of photo plots along Pepeopae Boardwalk.
* Support annual Molokai island-wide Audubon Christmas Bird Count.
* Complete resource monitoring (vegetation, birds, invertebrates, and threats) (FY2000).

Rare Species Protection

Program Goal: To prevent extinction of rare species in the preserve.

To date, 37 rare plant taxa, 4 bird species listed by the state or federal government as endangered, and 5 rare snail species have been reported from the preserve (Appendices 2, 3, and 5). The Conservancy uses data compiled by the Hawaii Heritage Program to identify rare taxa, and uses their definition of rare: "species that exist in fewer than 20 populations worldwide." Additional rare species reported from adjacent lands and similar habitats are likely to be found in Kamakou with future surveys.

Protecting ecosystems essential to the majority of the preserve's native plants and animals will continue to be our primary management strategy. Our ungulate and weed control and fire prevention programs are integral to the protection of these ecosystems. In addition, in FY97 and FY98 we will supplement our understanding of the types and ranges of rare plants and animals with surveys to locate other rare species and assess their status. We will also begin writing species-specific protection plans. In the 2 years following FY98, we will complete the plans and begin implementing them.

Rare Species Protection Timeline

Year 1 (FY95)
* Update information on preserve's rare species.

Year 2 (FY96)
* Formulate strategy for rare species survey.

Years 3 & 4 (FY97 & 98)
* Conduct surveys to assess condition of rare species populations.
* Begin writing species-specific protection plans.

Years 5 & 6 (FY99 & 2000)
* Complete species-specific plans; begin implementation.

Public Outreach Program

Program Goal: To build public understanding and support for the preserve within the Molokai community, and to enlist volunteer assistance for preserve management.

Field trips and slide shows promote education and enjoyment of Hawaii's natural areas within the Molokai community. Staff also lead interpretive hikes along the boardwalk through Pepeopae Bog to the Pelekunu overlook at least once per month. Volunteer groups donate more than 700 person-hours each year to perform labor-intensive weed control and other tasks. The Conservancy also participates in community Arbor and Earth Day activities promoting conservation of natural resources.

Every summer, a Molokai High School intern and workers from *Alu Like* and the state Summer Youth Employment program join the preserve staff. We also work with Molokai Earth Preservation Organization (MEPO), an environmental club of Molokai High School students. MEPO is developing a greenhouse to grow native plants; we help the students collect propagules (seeds and cuttings) of common native plants and take them on educational field trips. These opportunities expose Molokai youth to careers in conservation while they learn about Hawaii's natural areas and their need for protection.

In FY94 we formed the Molokai Advisory Council (MAC), a group of local residents who advise the Conservancy on issues related to preserve management. They help educate us and the Molokai community about our mutual goals as they relate to preserve use and protection. Working with MAC this past year, we have determined that we need Molokai *kupuna* and *laau lapaau* (herbal medicine) practitioners to help us identify, protect, and enhance native natural resources that have traditional uses, and share their knowledge with the community. A MAC subcommittee is leading this effort. The Nature Conservancy recognizes the constitutional gathering rights of native Hawaiians and shares the desire of the Hawaiian community to perpetuate this link between people and the environment through responsible stewardship of natural resources.

Public Outreach Timeline

Year 1 (FY95)
* Select and fund 12th annual Molokai High School summer intern.
* Train and oversee *Alu Like* and other Summer Youth Program participants in management activities throughout the summer months.
* Support MEPO's native plant greenhouse by providing propagule collecting opportunities.
* Conduct monthly hikes and give educational slide shows for local schools/community groups.

* Maintain level of volunteer participation.
* Conduct minimum of three MAC meetings to discuss Molokai preserves issues, and continue to develop *kupuna* and *laau lapaau* practitioner involvement.

Year 2 (FY96)
* Select and fund 13th annual Molokai High School summer intern.
* Train and oversee *Alu Like* and other Summer Youth Program participants in management activities throughout the summer months.
* Support MEPO's native plant greenhouse by providing propagule collecting opportunities.
* Conduct monthly hikes and give educational slide shows for local schools/community groups.
* Maintain level of volunteer participation.
* Conduct minimum of three MAC meetings to discuss Molokai preserves issues, and continue to develop *kupuna* and *laau lapaau* practitioner involvement.

Years 3 & 4 (FY97 & 98)
* Select and fund 14th and 15th annual Molokai High School summer interns.
* Train and oversee *Alu Like* and other Summer Youth Program participants in management activities throughout the summer months.
* Support MEPO's native plant greenhouse by providing propagule collecting opportunities.
* Conduct monthly hikes and give educational slide shows for local schools/community groups.
* Maintain level of volunteer participation.
* Conduct minimum of three MAC meetings to discuss Molokai preserves issues, and continue to develop *kupuna* and *laau lapaau* practitioner involvement.

Years 5 & 6 (FY99 & 2000)
* Select and fund 16th and 17th annual Molokai High School summer interns.
* Train and oversee *Alu Like* and other Summer Youth Program participants in management activities throughout the summer months.
* Support MEPO's native plant greenhouse by providing propagule collecting opportunities.
* Conduct monthly hikes and give educational slide shows for local schools/community groups.
* Maintain level of volunteer participation.
* Conduct minimum of three MAC meetings to discuss Molokai preserves issues, and continue to develop *kupuna* and *laau lapaau* practitioner involvement.

Emergency and Safety Programs

Program Goal: To be trained and equipped to assist primary fire and rescue agencies during an emergency on or adjacent to the preserve.

To provide the safest possible environment for staff, interns, and volunteers, all staff are certified in first aid and CPR. Field staff also participate in training programs offered by cooperating state and federal agencies (e.g., fire training, helicopter safety, and hunter safety).

The dry, southern lowland region of Molokai has a history of brush fires caused by human activities. Since 1983 three fires have threatened the preserve's southern forests and shrublands. Wildfire presuppression and response plans are coordinated with the Molokai Fire Department (the lead emergency agency) and the Division of Forestry and Wildlife (DOFAW) Maui District manager. The Kamakou Wildfire Management Plan is reviewed annually with the lead emergency agency and updated as necessary.

Emergency and Safety Timeline

Year 1 (FY95)
* Update fire/emergency plans and training.

Year 2 (FY96)
* Update fire/emergency plans and training.

Years 3 & 4 (FY97 & 98)
* Update fire/emergency plans and training.

Years 5 & 6 (FY99 & 2000)
* Update fire/emergency plans and training.

Personnel, Equipment and Facilities

Program Goal: To provide administrative, logistical, and operational support for all of the Conservancy's field and community activities on Molokai.

The Conservancy currently has five full-time staff on Molokai: the Preserves Manager, Field Naturalist, Field Coordinator (currently a Stewardship Trainee), Field Technician, and Administrative Coordinator. We will hire another Field Technician in FY95. This staff manages three preserves, with about 60 percent of their time focused on Kamakou Preserve. Office/baseyard, equipment, and travel costs on Molokai are also split among the three preserves, with 60 percent charged to the Kamakou budget. Management in Kamakou requires four-wheel drive vehicles, and 80 percent of our vehicle costs are paid out of the Kamakou budget.

Technical and annual planning support are provided by the Honolulu office of The Nature Conservancy. In particular, the Science and Stewardship Editor, Stewardship Ecologist, and Environmental Educator will help prepare annual plans and reports, develop and implement monitoring and research programs, and establish interpretive and intern programs at the preserve. In addition, biologists from the Hawaii Heritage Program will occasionally help Molokai staff with rare species monitoring and other

stewardship projects. The Director of Science and Stewardship assists with planning and community outreach. In FY2000 we will update the preserve long range management plan.

Dirt roads provide the main access to Kamakou Preserve. Roads and trails are maintained to provide safe access to and within the preserve. Two preserve facilities are associated with Kamakou Preserve. The Kamakou barracks is a state-owned building in the Molokai Forest Reserve that is leased by the Conservancy to house volunteers. The Puu Kolekole cabin, inside the eastern boundary of the preserve, is also state-owned. The Conservancy uses this cabin for management activities in the eastern portion of the preserve.

Socio-economic

Three general types of socio-economic benefits will result from the proposed project: 1) watershed protection, 2) maintenance of biodiversity, and 3) public education and recreation. This project will also create conservation jobs on Molokai.

The forests of east Molokai serve as a stable domestic and agricultural water source for the island. Native vegetation is an essential component of this watershed system. Forest cover protects fragile mountain soils from erosion, and acts like an immense sponge that absorbs heavy rains. Water is gradually released into streams and groundwater aquifers, rather than running off the surface in torrents to the sea. Management activities will promote a more stable water regime both within and below the project area by reducing the potential for rapid runoff from disturbed or degraded areas within the watershed area.

Preservation of biodiversity has been recognized as a legitimate and necessary goal for society. This project provides multiple opportunities to protect and preserve natural ecosystems and endemic species.

Kamakou Preserve staff routinely give presentations to community and school groups on the importance of protecting natural areas in Hawaii, and Kamakou's important biota. Conservancy staff will also provide some hiking opportunities to the general public. In addition, volunteers are routinely used in many management projects. Community volunteers have gained hands-on conservation experience while learning about Hawaii's unique plants and animals.

Environmental

This project has benefitted, and will continue to benefit the environment, by maintaining and enhancing native ecosystems, preserving biological diversity, and promoting improved water quality.

At least 37 rare plants, 4 state or federally listed endangered birds, 5 rare snail species, and 2 rare natural communities reported from Kamakou Preserve are better protected

as a result of this project. By reducing the potential for rapid runoff from ungulate-damaged areas, a stable water regime will be promoted. In addition, the maintenance of a natural "viewshed" enhances the aesthetics of the area.

III. Summary of Major Impacts

Major Impacts — Positive

- Reduction of ungulate activity to a level that will promote and sustain measurable recovery of native vegetation in the preserve.
- Reduction of the range of habitat-modifying weeds and prevention of introduction of new problem weeds.
- Tracking of biological and physical resources in the preserve and evaluation of changes in these resources over time to identify new threats.
- Logistical and financial support to approved research projects will improve management understanding and protection of the preserve's resources as well as other natural areas in the state.
- Prevention of the extinction of rare species.
- Promotion of a more stable water regime both in and below the project area by reducing the potential for rapid runoff from disturbed or degraded areas within Kamakou through removal of feral animals and habitat-modifying weeds, and prevention of fire.
- Improved water quality (within and below the preserve) due to:
  1) decreased erosion and its subsequent siltation of streams and nearshore waters, and
  2) ungulate control, which lowers the potential for bacterial coliform and leptospirosis in the water.
- Preservation of a living component of Hawaiian culture.

Major Impacts — Negative

No major negative impacts are expected to result from the proposed activities. However, there are several *potential* negative impacts. One of these is the accidental introduction or spread of new weed species by managers or visitors on equipment, supplies, or transport vehicles. Because herbicides are sometimes used to control

habitat-modifying weeds in the preserve, there is a remote possibility of localized soil contamination. Another potential impact is related to the restoration of large areas currently dominated by alien plants (such as pine plantations). Our goal is to eventually remove these stands and replace them with native plants. In the course of such work, there is the potential for increased erosion and establishment of new alien plant pests after vegetation removal. Occasionally there will be an increase in noise levels when helicopters are used to access remote areas. The "prop wash" of low-flying helicopters also might disturb animals such as tree snails and birds.

There is also the potential for visitors to harm Kamakou's natural resources. As mentioned earlier in this assessment, the preserve is open to the public for hunting, hiking, and limited gathering of culturally important forest materials. With such an open access policy come risks. Visitors might harm Kamakou's resources in several ways. Potential detrimental activities include dumping trash, introducing weeds or alien invertebrates, starting fires, overcollecting, trampling rare plants, and planting marijuana or other illegal plants.

IV. Alternatives Considered

Although we (the Conservancy) considered a variety of alternatives involving lower levels of management, we decided that the actions outlined in this assessment are all necessary to assure the continued protection of rare species and valuable habitat. Slowing the pace of management could jeopardize progress made in controlling feral pigs and goats, weeds, and other serious threats. A no-action alternative would promote the loss of rare Hawaiian ecosystems, plants, and animals. Furthermore, erosion of fragile forest top soils would continue at an accelerated rate, degrading an important watershed area and nearshore reefs and fisheries.

V. Proposed Mitigation Measures

To prevent the accidental introduction or spread of weeds or alien invertebrates, staff and volunteers entering the preserve are required to clean their clothing, boots, equipment, and camping gear of soil and plant material and insects. Wherever possible, helicopter flights into the preserve will originate from weed-free areas such as wooden platforms or pavement, and all materials hauled in will be inspected and cleaned to remove soil, plant material, and insects. Helicopter landing sites and areas frequented by staff will be inspected for weeds. To prevent contamination of soil or water with herbicides, all field staff have been trained in the safe application of chemicals. Weed control staff are licensed by the state Department of Agriculture's pesticide branch, and herbicides are used selectively, and according to label instructions. With regard to the potential for increased erosion and establishment of new weeds during weed control/restoration work, our plans will be focused on preventing these effects. We will begin with small-scale removal trials. Helicopter use is limited to essential conservation-related projects, and landings are restricted to very limited designated

landing zones. Furthermore, to reduce noise and prop wash, we ask local helicopter pilots to fly higher than 1,000 feet above the forest canopy when travelling over the preserve. The Conservancy reports illegal helicopter landings and low-level overflights to the state Division of Conservation and Resources Enforcement.

With respect to the potential for visitors to harm Kamakou by overcollecting, trampling rare plants, starting fires, etc., we have taken several steps to minimize or prevent such damage. For example, to prevent the damage that can result from hikers using muddy trails, the Conservancy erected boardwalks in wet areas that are used frequently. Staff and trained docents guide hikes and advise visitors how to minimize their impact on the preserve, and staff monitor areas that receive the most public use (trails and roads) for new infestations of weeds. We also require groups of eight or more people to notify the preserve manager before visiting the preserve, and all visitors are asked to register at the Visitor Check Station at the preserve entrance where they can obtain copies of the preserve rules (see Attachment 1). Fire and overnight camping within the preserve boundaries are prohibited. We also ask that visitors drive only on roads, and that they not litter. Staff are regularly present in the preserve to answer questions and enforce non-criminal violations of preserve rules. Enforcement of criminal activity such as poaching is the responsibility of the state Division of Conservation and Resources Enforcement. We also work with the public to foster a strong sense of community and, to date, the Molokai community has used Kamakou responsibly.

VI. Determination

No significant negative impacts to the environment are expected to result from the implementation of the proposed activities.

VII. Findings, and Reasons Supporting Determination

The proposed activities are expected to benefit rare species and native natural communities both in the project area and on adjacent lands. For example, ungulate control will protect rare plants and rare natural communities from browsing and other types of ungulate damage (including the spread of certain weeds). Active weed control in the project area will also help protect rare plants and natural communities, and will indirectly help rare and other native animals. Active management of Kamakou Preserve will also promote a more stable water regime both in and below the project area by reducing the potential for rapid runoff from disturbed or degraded areas.

The risk of significant negative impact is low. Through a rigorous cleaning and monitoring program, the introduction or spread of new weed species by humans is expected to be minimal. Management-related impacts on any historical resources in the area are expected to be negligible. Furthermore, the risk of herbicidal contamination is

low because 1) only small volumes of approved herbicides are used, 2) staff are well-trained in herbicidal application, and 3) all chemical use is in compliance with the state Department of Agriculture's pesticide branch.

VIII. List of Preparers

Ed Misaki, Preserves Manager
Molokai Preserves Office
P.O. Box 220
Kualapuu, Hawaii 96757
(808) 553-5236

As this project is a joint state—private partnership agreement, the environmental assessment was prepared in consultation with Peter Schuyler and Betsy Gagné, staff members in the Department of Land and Natural Resources/Division of Forestry and Wildlife/Natural Area Reserve System program. In addition, this environmental assessment incorporates many sections and figures from the Kamakou Preserve Long Range Management Plan (e.g., all maps, descriptions of resources, and proposed activities). The long range plan was prepared by The Nature Conservancy in January 1994 and submitted to the Natural Area Reserve System Commission in February 1994 for consideration as a Natural Area Partnership (NAP) project. The Commission approved the plan in April 1994 and recommends the project be approved by the Board of Land and Natural Resources pending the completion of this environmental assessment.

IX. APPENDICES

APPENDIX 1
NATIVE NATURAL COMMUNITIES KAMAKOU PRESERVE

NATURAL COMMUNITY	GLOBAL RANK(a)
Lowland	
'Ohi'a/Uluhe (*Metrosideros/Dicranopteris*) Lowland Wet Forest#*	G3
Uluhe (*Dicranopteris*) Lowland Wet Shrubland#*	G4
'Ohi'a (*Metrosideros*) Lowland Mesic Shrubland	G3
Montane	
'Ohi'a/'Olapa (*Metrosideros/Cheirodendron*) Montane Wet Forest#*	G3
'Ohi'a (*Metrosideros*) Mixed Montane Bog	G2
'Ohi'a (*Metrosideros*) Mixed Shrub Montane Wet Forest#*	G3
'Ohi'a (*Metrosideros*) Montane Wet Shrubland	G3
Mixed Shrub Montane Wet Cliffs	G3
Aquatic Community	
Hawaiian Intermittent Stream#*	G4
Subterranean Community	
Small-eyed Rock Centipede/Ground Beetle (*Lithobius/Carabid*) Montane Wet Piping Cave	G1

–Known also from Puu Alii NAR
* –Known also from Olokui NAR

(a) Key to Global Ranks as defined by Heritage Program:
- G1 – Critically imperilled globally (typically 1 to 5 current occurrences).
- G2 – Imperilled globally (typically 6 to 20 current occurrences).
- G3 – Restricted range (typically 21 to 100 current occurrences).
- G4 – Apparently secure globally (> 100 occurrences).

APPENDIX 2
RARE NATIVE PLANTS OF KAMAKOU PRESERVE

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK (a)	FEDERAL STATUS (b)
Adenophorus periens	-	G1	PE
Alectryon macrococcus var. *macrococcus*†	ʻala'alahue, mahoe	G2T2	LE
Asplenium hobdyi#	-	G1	-
Canavalia molokaiensis†	ʻawikiwiki, puakauhi	G1	LE
Clermontia oblongifolia ssp. *brevipes*	ʻoha, ʻoha wai	G1T1	LE
Cyanea mannii	ʻoha, haha, ʻoha wai	G1	LE
Cyanea procera	ʻoha, haha, ʻoha wai	G1	LE
*Cyanea solanacea**#	ʻoha, haha, ʻoha wai	G1	3C
*Cyanea solenocalyx**#	ʻoha, haha, ʻoha wai	G2	3C
*Cyrtandra halawensis**	haʻiwale, kanawao keʻokeʻo	G1	C2
*Cyrtandra hematos**	haʻiwale, kanawao keʻokeʻo	G1	C2
Cyrtandra macrocalyx	haʻiwale, kanawao keʻokeʻo	G1	C2
Dissochondrus biflorus	-	G2	-
Eurya sandwicensis#*	anini, wanini	G2	C2
Exocarpos gaudichaudii†	heau	G1	C2
Hedyotis mannii†	-	G1	LE
Huperzia sulcinervia^	-	G1	-
Joinvillea ascendens ssp. *ascendens**	ʻohe	G3G5T1	C2
Lobelia dunbarii ssp. *paniculata*	ʻoha, haha, ʻoha wai	G1T1	C2
Lobelia hypoleuca#†	ʻopelu, liua, moʻowahie	G1	-
Mariscus fauriei	-	G1	LE
Melicope hawaiensis	alani	G2	3C
Melicope mucronulata	alani	G1	LE
Melicope reflexa	alani	G1	LE
Nothocestrum latifolium	ʻaiea	G1	3C
Phyllostegia mannii#	-	G1	LE

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK (a)	FEDERAL STATUS (b)
Phyllostegia mollis	-	G1	LE
Phyllostegia stachyoides	-	G1	-
Plantago princeps var. *laxiflora**†	ale	G2T1	PE
Platanthera holochila	-	G1	C2
Ranunculus mauiensis#†	makou	G2	C2
Schiedea diffusa	-	G2	-
Schiedea sarmentosa	-	G1	C1
Sicyos cucumerinus	ʻanunu, kupala	G1	C2
Stenogyne bifida#	-	G1	LE
Vigna o-wahuensis	-	G1	PE
Zanthoxylum hawaiiense†	heaʻe, aʻe	G1	LE

Number of Rare Plants in Kamakou: 37
#=Known also from Puu Alii NAR
*=Known also from Olokui NAR
†=Known also from Kalaupapa National Historical Park
^*Huperzia*=*Lycopodium*. HHP uses Wagner & Wagner (1992) for nomenclature of Pteridophytes

(a)Key to Global Ranks as defined by Heritage Program:

G1 = Species critically imperilled globally (typically 1 to 5 current occurrences).
G2 = Species imperilled globally (typically 6 to 20 current occurrences).
G3G5 = Global rank uncertain, more information is needed to accurately rank this species.
T1 = Subspecies or variety critically imperilled globally.
T2 = Subspecies or variety imperilled globally.

(b) Federal Status:

LE = Taxa formally listed as endangered.
PE = Taxa already proposed to be listed as endangered.
C1 = Taxa for which the USFWS has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species.
C2 = Candidate taxa for which there is some evidence of vulnerability but for which there are not enough data to support listing proposals at this time.
3C = No longer candidates for listing: taxa that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat. If further research or changes in habitat indicate a significant decline in any of these taxa, they may be reevaluated for possible inclusion in categories 1 or 2.
. = No federal status. Recommended as rare by Hawaiian biologists and confirmed by Hawaii Heritage Program data.

APPENDIX 3
RARE NATIVE BIRDS OF KAMAKOU PRESERVE

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK (a)	FEDERAL STATUS (b)
Anas wyvilliana	Koloa maoli, Hawaiian duck	G1	LE
*Myadestes lanaiensis rutha**#†*	Oloma'o, Molokai thrush	G1T1	LE
Paroreomyza flammea#†	Kakawahie, Molokai creeper	GH	LE
Vestiaria coccinea‡#*	'I'iwi	G4	E,-

#=Known also from Puu Alii NAR
*=Known also from Olokui NAR
†=Known also from Kalaupapa National Historical Park

(a)Key to Global Ranks as defined by Heritage Program:
- G1 = Species critically imperilled globally (typically 1 to 5 current occurrences).
- G4 = Species apparently secure globally but may be rare locally.
- GH = Species known only from historical occurrences (no observations in the past 15 years).
- T1 = Subspecies or variety critically imperilled globally.

(b)Federal Status:
- LE = Taxa formally listed as endangered.
- E = Molokai population considered endangered by the state only.
- - = No federal status.

‡This species is not considered rare by HHP. It is included in this list because it is considered by the state of Hawaii to be endangered on Molokai.

APPENDIX 4
RARE LAND SNAILS OF KAMAKOU PRESERVE

SCIENTIFIC NAME	HERITAGE RANK (a)	FEDERAL STATUS (b)
*Partulina mighelsiana#**	G1	-
Partulina proxima#†	G1	-
Partulina redfieldii#	G1	-
*Partulina tessellata#**	G1	-
Perdicella helena	G1	C2

#=Known also from Puu Alii NAR
*=Known also from Olokui NAR
†=Known also from Kalaupapa National Historical Park.

(a)Key to Global Ranks as defined by Heritage Program:
G1 = Species critically imperilled globally (typically 1 to 5 current occurrences).

(b)Federal Status:
C2 = Candidate taxa for which there is some evidence of vulnerability but for which there are not enough data to support listing proposals at this time.
- = No federal status.

APPENDIX 5
PRIORITY WEED SPECIES OF KAMAKOU PRESERVE

SCIENTIFIC NAME	COMMON NAME
Acacia mearnsii	black wattle
Acacia melanoxylon	blackwood acacia
Casuarina sp.	ironwood
Clidemia hirta	Koster's curse
Corynocarpis laevigatus	karaka nut
Eucalyptus robusta	eucalyptus
Eugenia jambos	rose apple
Fraxinus uhdei	tropical ash
Grevillea robusta	silk oak
Hedychium coronarium	white ginger
Lantana camara	lantana
Melaleuca quinquenervia	paperbark
Passiflora sp.	passion fruit
Phormium tenax	New Zealand flax
Pinus spp.	loblolly, slash, and Monterey pines
Psidium cattleianum	waiwi or strawberry guava
Psidium guajava	common guava
Rosa sp.	rose
Rubus argutus	Florida blackberry
Schinus terebinthifolius	Christmas berry

APPENDIX 6
RESPONSES TO COMMENTS ON THE KAMAKOU DRAFT ENVIRONMENTAL ASSESSMENT

Sarah E. Sykes
May 24, 1994

State of Hawai'i-DLNR
Division of Forestry and Wildlife
ATTN: Betsy Gagne
1151 Punchbowl Street, Room 325
Honolulu, Hawai'i 96813

Good morning!

In the interest of saving time and paper, I respond herein to both the Kamakou and Mo'omomi Preserves Natural Area Partnership proposals as published in the OEQC Bulletin of May 23, 1994.

Please incorporate by reference the recommendations and requested amendments as submitted to DLNR-DOFAW in my letters of March 31 (Mo'omomi), April 12 (Kamakou) and April 26 (Mo'omomi and Kamakou), 1994. All noted conflicts remain unless the proposals have already been changed to address expressed concerns.

Truly hope all areas of disagreement can be resolved before the plans receive final approval.

Thank you for the opportunity to comment.

Sincerely,

Sarah E. Sykes

P.O. Box 370 Kaunakakai, Hawai'i 96748 (808) 553-3831

APR 29 1994

Sarah E. Sykes

April 26, 1994

State of Hawai'i-DLNR
Division of Forestry and Wildlife
ATTN: Mike Buck
1151 Punchbowl Street
Honolulu, Hawai'i 96813

RE: Environmental Assessment Preparation Consultation Response to Long-Range Management Plan for Kamakou Preserve

Thank you for the opportunity to comment.

Page 2, A., second para. "Occasionally, portions of the preserve may be closed. . . ." Unresolved from the first draft on which I originally commented earlier in April, prior to the plan acceptance and recommendation for funding by the NARS Commission, still hope some set specific criteria can be published, posted, so that all concerned know all the rules all the time, and for what reason any closure is announced.

Page 5, 5. Appreciate the commitment to improving community outreach and enhancing access. Perhaps a formal, public Memorandum of Understanding under the umbrella of the newly-created Molokai Advisory Council might enhance community perceptions that access and hunting programs are institutionalized components of Kamakou management plans.

Page 9, 6. The proposed fence continues to be a sore point among island residents. Much two-way discussion, with all concerned invited to the discussion, must occur before consensus will be reached. While I personally have fewer problems accepting fencing than I have with snaring and aerial hunting as mechanisms for feral ungulate control, others who regularly hunt and gather in the mountains will need to be reasonably convinced there is a clear need for fencing. . . or, alternatively, TNCH will need to accept their rationale that such fencing is perhaps not appropriate.

Page 10, a. Wondering if it would be possible to reimburse volunteer hunters for direct and verifiable expenses related to keeping hunting dogs.

(con'd.)

P.O. Box 370 Kaunakakai, Hawai'i 96748 (808) 553-3831

since the one-year test program has passed with flying colors. TNCH has cut snaring expenses, so perhaps moneys previously spent there might be made available. TNCH does not maintain their own dogs any longer, and more than $10,000. is budgeted on Page 11 for hunting dog upkeep. Would prefer to see volunteer hunters at least somewhat reimbursed for their hard costs.

Page 17, Program 4, Public Outreach Program. Delighted with the establishment of a well-respected citizen panel as a Molokai Advisory Council to TNCH. Advocating for inclusive rather than exclusive planning and decision-making, perhaps it would help to announce in advance MAC meetings that they be open to the public. In this way, those who have a problem or complaint might have it quickly aired and resolved. Reporting meeting results in the local papers would also help keep the doors open.

The Nature Conservancy-Hawai'i has come a long way in improving their community relations, and thus their stewardship successes on Molokai. The 1995-2000 Long-Range Management Plan, Second Draft, is greatly improved from that submitted for 1992-1997.

Greatly appreciate DLNR-DOFAW distributing plan information throughout the Molokai community of concerned steward-users, soliciting their appropriate input. Mahalo nui!

Sincerely,

Sarah E. Sykes

P.O. Box 370 Kaunakakai, Hawai'i 96748 (808) 553-3831

Sarah E. Sykes
April 12, 1994

State of Hawai'i-DLNR
Division of Forestry and Wildlife
Natural Area Partnership Program
1151 Punchbowl Street
Honolulu, Hawai'i 96813

RE: LONG-RANGE MANAGEMENT PLAN FOR KAMAKOU PRESERVE

My apologies for submitting these comments so close to your decision-making meeting date, but I have been comparing the 1992-1997 plan with the new 1995-2000 plan.

Sad to note that 'though the preserve was established to protect the habitat of five endemic forest birds, only two remain with any certainty. Perhaps working more closely with the Molokai community as The Nature Conservancy-Hawai'i now does, both in hands-on preservation work such as hunting feral animals, as well as in educational activities, all will be rewarded with the re-establishment of diminishing species.

Page 2., A., second para. "Occasionally, portions of the preserve may be closed. . . ." Hope some set specific criteria can be published, posted, so that all know all the rules all the time, and for what reason any closure is announced.

Page 10, a. Wondering if it would be possible to reimburse volunteer hunters for direct and verifiable expenses related to keeping hunting dogs, since the one year test has basically passed with flying colors. TNCH has no snaring expenses, so perhaps moneys previously spent there might be made available. TNCH does not maintain their own dogs any longer, and more than $10,000. is budgeted on Page 11 for hunting dog upkeep. Would prefer to see volunteer hunters at least somewhat reimbursed for their hard costs.

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P.O. Box 370 Kaunakakai, Hawai'i 96748 (808) 553-3831

Sarah E. Sykes

Council to TNCH. Advocating for inclusive rather than exclusive planning and decision-making, perhaps it would help to announce in advance MAC meetings that they be open to the public. In this way, those who have a problem or complaint might have it quickly aired and resolved. Reporting meeting results in the local papers would also help keep the doors open.

The Nature Conservancy-Hawai'i has come a long way in improving their community relations, and thus their stewardship successes on Molokai. The 1995-2000 Long-Range Management Plan is greatly improved from that submitted for 1992-1997.

Thank you for the opportunity to comment.

Sincerely,

Sarah E. Sykes

P.O. Box 370 Kaunakakai, Hawai'i 96748 (808) 553-3831

The Nature Conservancy of Hawaii

• 1116 SMITH STREET • SUITE 201 • HONOLULU, HAWAII • 96817 • PH: (808) 537-4508 • FAX (808) 545-2019

July 13, 1994

Ms. Sarah Sykes
P.O. Box 370
Kaunakakai, Hawaii 96748

Dear Ms. Sykes:

We received your May 24 letter concerning the *Draft Kamakou Environmental Assessment* (published in the *OEQC Bulletin* May 23, 1994), which referenced two previous letters you sent to the Division of Forestry and Wildlife commenting on the Conservancy's management of Kamakou Preserve. I respond to each of your points below.

Letter dated April 12, 1994

Regarding notification of preserve closure (page 1, 3rd paragraph): The draft and final environmental assessments state that "all or portions of the preserve may be closed to the public during times of extreme fire hazard, or if there are unsafe road conditions. Notification of closure will be made via a sign posted on the forest access road near the Maunawainui Bridge where it joins the highway, and by announcements in local newspapers."

Regarding reimbursement of volunteer hunters (page 1, 4th paragraph): It is the Conservancy's policy to honor all agreements made with volunteers. The current Molokai Hunting Test agreement lays out clearly which costs will be covered by the Conservancy and which by the volunteer hunters, and the contributions made by these volunteers to the project so far have been very valuable. As we work with hunters and others involved in the Hunting Test project to refine this work for the long term, we are open to the idea of compensating hunters for certain expenses, or to the possible option of contracting hunters to perform a specified amount and kind of hunting in the preserve. This is a different agreement than the one we currently have for the Hunting Test. We have budgeted monies for the hunting portion of the ungulate control program with these options in mind. Please also note that the Molokai Hunting Test is not, as you stated, a one-year test program. It is an ongoing test that we agreed to run for at least one year to see if organized hunting could keep ungulate impacts in remote forest areas as low as they had been kept through snaring and aerial hunting. That program completes its first year this month. The community working group that directs it is now looking at the results of the first year and at ways to improve the effectiveness of the program in protecting the forest.

Regarding the idea of making Molokai Advisory Council meetings public (top of page 2): One of the chief purposes of the Council is to advise the Conservancy on how best to communicate plans and receive information from the Molokai community, and how to increase opportunities for community involvement in preserve lands in ways that enhance the protection of the preserve's natural values and perpetuation of conservation-oriented cultural traditions. The Conservancy is seeking this advice because we intend to do these things. Any formal statement of policy or plans for public access, hunting, or other provisions will be reflected in the preserve long-range management plan, which will undergo public review. Any concerns or ideas that are not adequately covered in that process can be brought to the attention of any Council or Conservancy staff member, with the suggestion that they be taken up by the Council. This is intended to provide any member of the community with a clear and open avenue to present their thoughts or get the information they need. For special projects or issues, we expect to hold open community meetings to air and resolve in advance any concerns and to improve planning for those projects and issues through the wisdom of the larger group. Such meetings will be called as advised by the Council.

Letter dated April 26, 1994

Regarding your suggestion of a public Memorandum of Understanding under the umbrella of the Molokai Advisory Council (page 1, 2nd paragraph): As described above, we will use the Molokai Advisory Council and the public review process for management plans to define our commitments as stewards of the preserve.

Regarding the proposed fence (page 1, 3rd paragraph): We agree that community input is important, and have initiated discussions with hunters, neighboring landowners, and other community members to develop the best management strategy for this part of the preserve.

Please contact me if you have further concerns about Conservancy management at Kamakou.

Sincerely,

Edwin T. Misaki
Director of Molokai Programs

cc
Alan Holt
Amy Lester
Peter Schuyler

University of Hawai'i at Mānoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2550 Campus Road • Honolulu, Hawai'i 96822
Telephone: (808) 956-7361 • Facsimile: (808) 956-3980

June 22, 1994
EA:0066

Ms. Betsy Gagne
Department of Land and Natural Resources
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

Dear Ms. Gagne:

Draft Environmental Assessment (EA)
Kamakou Preserve Natural Area Partnership
Kamakou, Molokai

The referenced document concerns a proposed long-term management agreement between the Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife and the Nature Conservancy of Hawaii to manage and protect the native biota living in the 2,774-acre Kamakou Preserve on Molokai, Maui County, Hawaii.

We have reviewed the Draft EA with the assistance of Karla McDermid, General Science; Clifford Smith, Botany; and Malia Akutagawa of the Environmental Center.

Our reviewers commend the parties to this proposed agreement for its efforts to facilitate community involvement in the preparation of this document, and in helping to execute the management plan (as la'au practitioners, hunters, student workers, and volunteers). Our reviewers were impressed with the document's thoroughness in covering the management strategies to be used in the protection of native plant and bird species of the Kamakou Preserve, as well as its honest approach to the possible negative impacts of the project and identifying ways to mitigate them.

The following are suggestions to increase the effectiveness of the Nature Conservancy's plan to manage Kamakou in an environmentally responsible manner.

Ungulate Control

It was mentioned that the Nature Conservancy is monitoring the competence of the hunting program as compared to snaring of feral pigs and goats in remote areas of the Preserve. To further improve the hunting program and pose a solution to some of the subsistence hunters' concerns of "wasting" the animal meat which could be used for home consumption, the applicant might want to determine the feasibility of setting up a hunting cabin halfway
up the trail for hunters to sleep overnight before and after making the hike into the high and remote regions. In this way, there may be less dependence on helicopters for depositing hunters, thereby avoiding the potential problem of noise pollution and "prop wash" which may negatively impact species such as birds, tree snails, and native insects.

Rare Species Protection

Measures proposed for minimizing erosion problems, enhancing water quality, controlling weed species, and revegetation of native plants were excellent. In addition to these measures, the Nature Conservancy might also address the following considerations:

Native Bird Species

The global ranks of our endemic bird species reveal near extinctions; this alarming problem requires an immediate response. If at all possible, the Nature Conservancy should take a more active role in determining the cause(s) of decimated bird populations, and devising and implementing a plan to revive their numbers (e.g., by conducting more studies and creating methods of predator control, disease control, and protecting species that belong to their food chain.)

Native Arthropods & Gastropods

A lack of knowledge of native insects, spiders, and snails on lower levels of the food web is potentially disastrous. Efforts to understand their life cycles and ecological significance, by way of conducting more studies and developing protective methods, need to be increased.

Visitors

With regards to the Nature Conservancy's efforts to prevent the infestation of alien species, overcollecting, injury to rare plants, etc., the brochure alone is insufficient to educate unescorted visitors. While staff and workers adhere to strict rules, has the

Nature Conservancy exerted similar requirements over the public? Is the Nature Conservancy monitoring the extent to which unescorted visitors affect the natural environment?

Summary

Overall, the Draft EA was well prepared and meets the requirements of Sections 11-200-9, 11-200-10, and 11-200-12 of the Hawaii Administrative Rules.

Thank you for the opportunity to review this Draft EA.

Sincerely,

John T. Harrison
Environmental Coordinator

cc: OEQC
Roger Fujioka
Karla McDermid
Clifford Smith
Malia Akutagawa

The Nature Conservancy of Hawaii

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July 13, 1994

Mr. John T. Harrison, Environmental Coordinator
Environmental Center
University of Hawai`i at Mānoa
Crawford 317
2580 Campus Road
Honolulu, Hawaii 96822

Dear Mr. Harrison:

Thank you for reviewing and commenting upon the *Draft Kamakou Environmental Assessment* (published in the *OEQC Bulletin* May 23, 1994). You raised several important points in your letter; these are discussed below.

In reference to the suggestion to build a cabin for hunters to reduce the use of helicopters in the preserve, helicopters are not used for ungulate control in Kamakou. Staff and volunteer hunters access the preserve by four-wheel drive roads, and utilize the existing cabin at Puu Kolekole.

The Conservancy shares the reviewers' concerns about Hawaii's rare forest birds; we agree that more work is needed to determine the cause(s) for their decline. For this reason, the Conservancy, in partnership with the U.S. Fish & Wildlife Service and the Department of Forestry and Wildlife, has supported studies of rare forest birds at Waikamoi Preserve on East Maui. We expect the combined efforts of these organizations to produce important results that will be applicable to forest bird management in other natural areas. Similar projects are needed for different species and in different regions to address current threats to Hawaii's rare forest birds.

We also seem to be in agreement regarding the need for more information on Kamakou's native arthropods and snails. The Conservancy is eager to develop a partnership with one or more agencies that have the expertise and resources to gather this information.

Your reviewers correctly point out that visitors pose a number of potential threats to the preserve's native natural resources. It is true that a brochure is not sufficient to educate visitors about their impacts; for this reason we have trained docents to expand the

Conservancy's capacity to escort and inform visitors. In this way, and through other educational programs mentioned in the environmental assessment, we are increasing awareness in the Molokai community. To answer the second question, "Is the Nature Conservancy monitoring the extent to which unescorted visitors affect the natural environment?", we monitor visitor impact formally via weed monitoring along trails and roads. Virtually all public traffic inside the preserve is restricted to these areas. Other impacts such as plant trampling and overcollection are monitored (but not quantified) during routine staff visits.

Once again, thank you for your interest in this project.

Sincerely,

Edwin T. Misaki
Director of Molokai Programs

cc
Alan Holt
Amy Lester
Peter Schuyler

PUBLIC USE OF KAMAKOU PRESERVE, MOLOKA'I

1. All visitors are asked to register at the Visitor Check Station at the Preserve entrance prior to entering and to sign out upon leaving. Large groups (8 or more) must notify the Preserve Manager by phone or mail prior to the day of the visit *(See #10 below)*.
2. **Hunting of pigs, goats, axis deer, and introduced game birds is permitted subject to rules available from the Preserve Manager. Hunters must check in and out at the Visitor Check Station.**
3. **Fires are absolutely prohibited.** However, campfires may be built in fireplaces at the State's Forest Reserve Waikolu Lookout Campground just outside the Preserve entrance.
4. Overnight camping is not permitted within the Preserve. For permission to camp at Waikolu Lookout Campground outside the Preserve, contact the Maui District Forester, 54 South High Street, 1st Floor, Wailuku, Maui, HI 96793.
5. All motorized vehicles are restricted to maintained roads. Four-wheel drive is required within the Preserve.
6. Pets, other than hunting dogs, are not allowed. Escaped *dogs and house cats are a major threat to native birds. If* you see a dog or cat please report it to the Preserve Manager.
7. Littering is prohibited. If you see litter, please carry it out.
8. Hikers are asked to stay on regular trails and roadways.
9. It is prohibited to: cut, remove, or damage any plant; collect souvenirs or specimens; disturb Hawaiian archaeological sites; collect, trap, kill, or otherwise molest any animal or bird life on the Preserve except as such activities are related to a scientific, educational, or cultural activity with the prior approval of The Nature Conservancy. The Conservancy respects and encourages the traditional use of the forest by Moloka'i residents. In order to preserve the pristine quality of Kamakou, we ask for your cooperation in gathering lei materials and other plant products outside the Preserve whenever possible. When the Preserve represents the only practical source of a needed item please contact our Preserve Manager prior to your visit. Gathering of plant materials will only be allowed for traditional, cultural, and non-commercial purposes, and must be carried out in a non-destructive manner.
10. For protection of wildlife or public safety, portions of the Preserve may be closed to the public. Notice of such closings will be posted at Kaunakakai Post Office, Kalamaula Hunter Check Station, and at the Preserve entrance. If you will be visiting the Preserve from the mainland or islands other than Moloka'i, contact the Manager for access information prior to your trip.

The Nature Conservancy of Hawaii

ATTACHMENT 1

KAMAKOU PRESERVE

Island of Moloka'i

The Nature Conservancy of Hawai'i

KAMAKOU PRESERVE

Like No Other Forest on Earth

From the lush rain forest near Molokai's summit to the dry forests and shrub lands at lower elevations is The Nature Conservancy of Hawaii's Kamakou Preserve.

Here, spread across 2,774 acres, you will find more than 250 kinds of Hawaiian plants—219 of which live nowhere else but in Hawai'i. They provide a home for countless native insects and together these plants and insects support Molokai's unique forest birds. The last known sightings of the extremely rare Moloka'i thrush and Moloka'i creeper were in this forest region. The vivid green *'amakihi* can still be seen, and the abundant *'apapane* sips nectar from the brilliant blossoms of the *'ōhi'a* while the Hawaiian owl, *pueo*, soars overhead on a forest hunt.

Most of Molokai's original forest has been lost or damaged. The rain forest of Kamakou supplies 60% of the water used on Moloka'i and is a magnificent natural treasure—a forest like no other on Earth.

Molokai Ranch Ltd., has owned the lands where the Preserve is located since the turn of the century. Kamakou Preserve became a reality in 1982 when the ranch conveyed rights to the Conservancy to protect and restore the area. The Conservancy, the ranch, and the State of Hawai'i work together to protect this precious part of Hawaii's heritage so these lands and wildlife might survive to enrich the lives of generations to come.

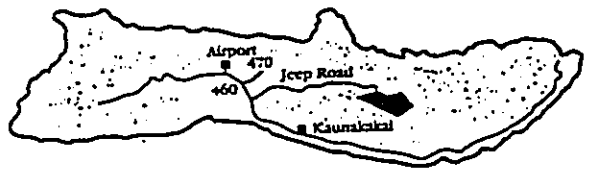
To Reach the Preserve:

You will need a four-wheel drive vehicle. From Highway 460, go east on the Forest Reserve jeep road, about a half-mile south of the junctions of Highways 460 and 470 (Kala'e Hwy.). A 45-minute drive along the jeep road will bring you to the Preserve entrance at Waikolu Lookout. The road is often impassable. Visitors should contact the Preserve Manager to check road conditions.

You Can Help, Too

The Nature Conservancy of Hawai'i establishes and manages preserves like Kamakou throughout Hawai'i. Our goal is to protect the finest remaining examples of native plants, animals, and natural communities in the Hawaiian Islands. We are private and nonprofit, part of an international organization devoted to the protection of natural areas that best preserve the diversity of life on Earth. We are funded entirely by membership dues, donations, foundation grants, and corporate gifts. We welcome your interest and invite you to join our efforts. As a donor of $25 or more, you become a member of both the Hawai'i and the international organizations. You also have the satisfaction of knowing that you are taking a personal part in protecting Hawaii's natural lands and wildlife for future generations.

MOLOKA'I



The Nature Conservancy of Hawai'i
1116 Smith / Honolulu, Hawai'i 96817
Telephone (808) 537-4508

Moloka'i Preserves:
P.O. Box 220/Kualapu'u, Moloka'i / Hawai'i 96757
Telephone (808) 555-5236

Headquarters: The Nature Conservancy
1815 N. Lynn Street / Arlington, Virginia 22209
Telephone (703) 841-5500

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