

State of Hawai'i  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Division of Forestry and Wildlife  
Honolulu, Hawai'i 96813

March 11, 2010

Chairperson and Members  
Board of Land and Natural Resources  
State of Hawai'i  
Honolulu, Hawai'i

Land Board Members:

**SUBJECT: AUTHORIZATION OF FUNDING FOR THE NATURE CONSERVANCY FOR \$123,531 DURING FY11-16 FOR KANEPUU PRESERVE CONTINUED ENROLLMENT IN THE NATURAL AREA PARTNERSHIP PROGRAM AND ACCEPTANCE AND APPROVAL OF THE KANEPUU PRESERVE LONG RANGE MANAGEMENT PLAN, TMK 4-9-02: 01, LANAI**

**SUMMARY:**

This submittal requests the Board to authorize matching funding for the management of Kanepuu Preserve as part of the Natural Area Partnership Program (NAPP). Although Natural Area Partnership agreements are made in perpetuity, funding is authorized on a six-year basis to allow for periodic State and public review. The current contract is scheduled to terminate at the end of this Fiscal Year, and The Nature Conservancy (TNC) has prepared a new six-year management plan for Fiscal Years 2011-2016. The Division of Forestry and Wildlife (DOFAW) recommends the authorization of matching funding, in the amount of \$123,531, to continue conservation management at Kanepuu Preserve for Fiscal Years 2011-2016.

**BACKGROUND:**

Chapter 195-6.5, HRS established the NAPP in 1991 and authorized the Department of Land and Natural Resources (DLNR) to provide state funds on a two-for-one basis with private funds for the management of private lands that are dedicated to conservation. The program seeks to protect, restore, or enhance significant native resources of the state. Kanepuu Preserve is an example of a partnership involving the private, non-profit, community and public sectors to protect one of the state's last major remnants of rare olopua/lama (*Nestegis/Diospyros*) dryland forest that once covered large portions of the lowlands on Maui, Molokai, Kahoolawe, and Lanai. The Long Range Management Plan (LRMP) (Attachment) provides a more detailed description of proposed activities and maps. TNC will be responsible for the actual implementation of the management plan.

The total budget for Fiscal Years 2011-2016 is \$185,296. Continuing as a Preserve under the NAPP, the State would provide 2:1 matching funding for the natural area protection efforts outlined in the FY11-16 LRMP. Total State funding requested for Fiscal Years 2011-2016 is \$123,531; TNC will provide the match of \$61,765.

Chapter 210 of Title 13, Hawaii Administrative Rules contain these provisions:  
HAR §13-210-15 (a) (1):

The partnership agreement is subject to continued state funding of the State's two-thirds share of the approved management plan budget. If in any fiscal year, either the State does not appropriate or the board does not approve the expenditure of funds sufficient to meet the State's full two-thirds share of the approved partnership agreement, the applicant may:

- (A) Elect to terminate without any payback or penalty conditions at the end of the last fiscal year for which any funds have been appropriated and approved. In this event, the State shall not require that the conservation easement remain in effect under section 195-6.5, HRS; or
- (B) Elect to renew for less funding than originally approved. In this event, the State shall require that the conservation easement remain in full effect. In this event, the managing partner shall revise the management plan and budget in the managing partner's reasonable discretion to accomplish significant management goals, which can reasonably be funded with the amount of state matching funds actually approved.

Kanepuu was approved for NAPP funding in 1992, 1997 and 2005. The renewal procedure included the preparation of a new 6-year long-range management plan, and public review via an Environmental Assessment process. All of the Kanepuu Preserve project area is zoned by the State as Conservation District, in the Limited Subzone. A Conservation District Use Permit (LA-2535) for ongoing management actions in Kanepuu Preserve was received in 1992; this permit covers ongoing management activities including protecting fencing, ungulate control, weed control, habitat restoration, and firebreak maintenance. For specific management actions that are not covered under CDUP LA-2535, a Site Plan Approval (SPA) process will be undertaken in advance of management actions. The Office of Conservation and Coastal Lands will provide the Site Plan Approval pursuant to HAR 13-5-23. The project area is not in a Special Management Area; therefore county permits are not needed at this time. Specific work related to threatened and/or endangered species will require appropriate permits from the State and Federal agencies.

The formation of Kanepuu Preserve (Attachment, Figure 1) was announced in January 1989; it was officially established in November 1991 when Dole Foods, Inc. finalized a perpetual conservation easement with TNC. This easement was later transferred to Castle & Cooke Resorts, LLC, the current landowner. The preserve is comprised of seven disjunct sections totaling 590.377 acres on the Island of Lanai.

## SUMMARY OF COMMENTS

A Draft EA was published in Office of Environmental Quality Control's *Environmental Notice* on December 8, 2009. The Division issued a Finding of No Significant Impact in the February 8, 2010 *OEQC Bulletin*. The following agencies and organizations were specifically contacted for their review and comment during the preparation of the EA:

### *Federal*

US Department of Agriculture/ Natural Resources Conservation Service  
US Department of the Interior/ Fish & Wildlife Service – Environmental Services  
US Department of the Interior/ US Geological Survey (USGS) – District Chief  
US Department of the Interior/ USGS – Biological Resource Division - Maui  
US Environmental Protection Agency

### *State*

Department of Accounting & General Services – Controller  
Department of Agriculture  
Department of Agriculture/ Resource Conservation Service – State Conservationist  
Department of Environmental Services  
Department of Hawaiian Home Lands – Chairman  
Department of Health – Environmental Planning Office  
Department of Land & Natural Resources – Shane DeMattos  
DLNR/ Aquatic Resources Division—Maui District  
DLNR/ Office of Conservation and Environmental Affairs  
DLNR/ Division of Forestry & Wildlife—Maui District – John Cumming  
DLNR/ Division of Forestry & Wildlife – Fern Duvall  
DLNR/ Division of Land Management—Maui District  
DLNR/ Division of Land Management – Lanai Branch  
DLNR/ Natural Area Reserves System – Randy Kennedy  
DLNR/ Natural Area Reserves System Commission – Dale Bonar  
DLNR/ Natural Area Reserves System – NARS Enhancement Coordinator, Emma Yuen  
DLNR/ State Historic Preservation Division  
Department of Transportation Services  
EPA/PICO – Manager  
NOAA – Pacific Islands Regional Office – Coral Reef Ecologist, Danielle Jayewardene  
Office of Environmental Quality Control – Director, Katherine Kealoha  
Office of Hawaiian Affairs – Chairperson, Haunani Apoliona  
Office of Planning  
Representative Mele Carroll  
Senator J. Kalani English  
University of Hawai'i at Manoa (UHM), Environmental Center

### *County*

County Council – Councilman, Sol  
Kahoolalahala

Department of Economic Development  
Department of Planning – Conservation  
Chair

Department of Parks & Recreation  
Department of Public Works  
Department of Water Supply – Director,  
Jeffrey Eng  
Fire Department – Fire Chief, Jeffrey  
Murray  
Maui Economic Development Agency –

Coordinator  
NRCS – Maui County Resource  
Conservationist, James Inos  
Office of the Mayor – Environmental  
Coordinator, Kuhea Paracuelles  
Planning Department

*Private*

Bob Hera  
Bob Hobdy  
Castle & Cooke Resorts, LLC – Brian  
Plunkett  
Conservation Council for Hawai‘i  
Cultural Resources Commission  
Earth Justice Legal Defense Fund  
Historic Hawai‘i Foundation  
Hui Malama Pono O Lanai  
Kahului Regional Library  
Lanai Archaeological Committee Center  
Lanai Community Association  
Lanai Culture and Heritage Center –  
Kepā Maly  
Lanai Public Library  
Maui Community College Library

Maui Invasive Species Committee –  
Teya Penniman  
Maui Nui Botanical Gardens – Lisa  
Raymond  
Native Hawaiian Plant Society  
Plant Extinction Prevention Program –  
Hank Oppenheimer  
Pono Pacific – John Leong  
Solomon Kaopuiki  
The Lanai Times – Barry Osman  
The Maui News – Editor  
Tri-Isle RC&D, Inc. – Stuart Funke-  
d'Egnuff  
West Maui Soil & Water Conservation  
District – Wesley Nohara

Comments received during pre-consultation:

*NOAA – Pacific Islands Regional Office – Coral Reef Ecologist, Danielle Jayewardene*  
Does not consider that there will be adverse impacts to marine benthic resources, e.g. coral reefs, from the proposed actions described in the LRMP for Kanepuu Preserve on Lanai. Feels that on the contrary, the proposed ungulate, invasive plant, and fire control in the Preserve, will potentially benefit the marine environment and NOAA trust resources by reducing soil erosion and thus sediment input to any stream in the area and thus nearshore marine environment. *TNC Response: Appreciated comments.*

*DLNR/ Division of Forestry & Wildlife – Fern Duvall*

Asked if plans could be better integrated to the LHWP area through contact to Lanaihale Project staff DOFAW-PCSU has in place, and Kepa Maly. Fully agreed that fencing and then removal and permanent exclusion of ungulates should be the primary management goal for Kanepuu Preserve, and that it makes little sense to do vegetation restoration work, especially for rare elements, if ungulates are still present inside the fences. Thought that the use of stainless steel should be installed at all units of Kanepuu Preserve. Suggested using cameras to detect if deer do enter Kanepuu Preserve from Polihua Road before fencing is proposed. If detected then fencing should occur along Polihua to prevent ingress. Agreed with the need for firebreaks.

Noted that at the end of December 2008 the endangered Blackburn's Sphinx moth (*Manduca blackburni* or Mabl) were discovered in good numbers on Indian Tree Tobacco (*Nicotiana glauca*) in Lanai for the first records ever. 'Aiea (*Nothocestrum latifolium*) is in distinct decline on Lanai and no one actually was able to determine if the moth larvae were on any of the remaining trees or in Kanepuu Preserve. Thought it may be worth planning for Mabl at Kanepuu Preserve through 'aiea outplanting once ungulates are removed. Commented that 'amakihi have not been seen since the early 1980's on Lanai. Noted that they have searched since 2006 on Lanaihale with no record. In addition, stated that 'elepaio was, to his knowledge, never recorded, even from pre-contact or subfossil finds, from any Maui County islands. *TNC Response: Agree that maintaining fences is a priority action and will incorporate information in the DEA for the moth, 'aiea, and bird sighting language. Appreciated suggestion to install deer cameras.*

#### *Department of Public Works*

Requested confirmation that Kanepuu Preserve is bisected by Keomuku Highway. If indeed the highway bisects the Preserve and is a County roadway, requested information on what restrictions of maintenance would be sought by TNC in management of the Preserve. *TNC Response: The Preserve is not bisected by Keomuku Hwy, as attached map illustrates.*

#### *Office of Conservation and Coastal Lands*

Confirmed the Preserve is in the Limited Subzone of the State Land Use Conservation District and has a CDUP SH-2028 for management of a statewide Natural Preserve System (1987) and CDUP LA-2535 for the installation of protective fencing (1991). Confirmed that the BLNR approved the 1998-2003 LRMP in 1997 and that DOFAW was the EA accepting authority with no corresponding CDUP number. Stated that either OCCL or DOFAW would be appropriate to process the EA and present to the board. *TNC Response: DOFAW will be accepting authority for EA.*

#### *Department of Planning – Maui County*

Cannot determine Land Use designations without a TMK, requested TMK numbers be included in the Draft EA as well as the State and Community Plan designations and the County Zoning. If Preserve occurs on State Agriculture land, a Land Use Commission Special Use Permit or a District Boundary Amendment/Zoning Change may be required. *TNC Response: Will incorporate additional information in DEA. The Preserve is not in State Agriculture Land.*

#### *State Historic Preservation Division*

Requested copy of Draft Environmental Assessment, and stated that it is not clear if any of the proposed management activities will be occurring within or near known or unknown historic properties which may be located within the preserve. Without more specific information, is unable to offer any substantive comments at this time. *TNC Response: Kanepu`u Preserve is not known to contain any historic sites or cultural remains within or adjacent to the Preserve. These details will be highlighted in the DEA and will send SHPD a copy.*

Comments Received on Draft Environmental Assessment: None

RECOMMENDATION That the Board:

1. continue approval of the activities identified in the Kanepuu Preserve FY 2011-2016 Long Range Management Plan;
2. authorize the continued funding for the Kanepuu Preserve as part of the Natural Area Partnership Program for Fiscal Years 2011-2016 in the amount requested (\$123,531);
3. authorize the Chairperson to negotiate and enter into a contract encumbering funds for a Kanepuu Natural Area Partnership Agreement with The Nature Conservancy for Fiscal Years 2011-2016 with the following conditions:
  - a. The long range management plan is accepted for a six-year period.
  - b. Funding is authorized for the full six-year period as described in the agreement, subject to annual availability of funding and annual budget procedures and approvals.

Respectfully submitted,



PAUL J. CONRY, Administrator  
Division of Forestry and Wildlife

APPROVED FOR SUBMITTAL:



LAURA H. THIELEN, Chairperson

Attachment: Kanepuu Preserve Long Range Management Plan

# Kānepu‘u Preserve Lāna‘i, Hawai‘i

**Long-Range Management Plan  
Fiscal Years 2011–2016**



Submitted to the  
**Department of Land & Natural Resources  
Natural Area Partnership Program**

Submitted by  
**The Nature Conservancy – Hawai‘i Operating Unit  
September 2009**

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## EXECUTIVE SUMMARY

Established in 1980, The Nature Conservancy of Hawai'i (TNCH) is a local affiliate of The Nature Conservancy (TNC), a leading international, nonprofit organization that preserves the plants, animals and natural communities representing the diversity of life on Earth by protecting the lands and waters they need to survive. TNCH has established a statewide system of preserves in Hawai'i totaling almost 32,000 acres. As a member of eight watershed partnerships, TNCH also works closely with public and private partners to help preserve nearly one and a half million acres statewide. TNCH has also extended its work from the forests to the reefs and is engaged in marine conservation in the nearshore waters of the main Hawaiian Islands.

The State of Hawai'i's Natural Area Partnership Program (NAPP) is an innovative program that aids private landowners, like the Conservancy, in the management of their native ecosystems. NAPP provides matching funds (\$2 state to \$1 private) for the management of qualified private lands that have been permanently dedicated to conservation. On Lāna'i, TNCH manages the Kānepu'u Preserve, which was first approved for NAPP funding in 1992.

In 1992, TNCH implemented the management programs described in our initial plan, *Kānepu'u Preserve FY1992-FY1997 Long-Range Management Plan*. Prior to that, specific management activities were conducted under Conservation District Use Permits numbers LA-11/14/91-2534 and 2535. In 1997, NAPP funding for a new 6-year period was reauthorized following a renewal procedure which included the preparation of an updated plan (*Kānepu'u Preserve FY1998-FY2003 Long-Range Management Plan*) and environmental assessment (*Final Environmental Assessment for Kānepu'u Preserve Natural Area Partnership, 1997*). NAPP funding was again reauthorized in 2005 for FY2005 through 2010 (*Kānepu'u Preserve FY2005-FY2010 Long-Range Management Plan*). Table 1, below, provides a summary of accomplishments under the last long-range management plan.

Table 1. Overview of Kānepu‘u Preserve Accomplishments by Programs, FY 2005 – FY 2009

<b>Program</b>	<b>Accomplishments</b>
<b>Ungulate Control</b>	<ul style="list-style-type: none"> <li>• 173 hunts conducted</li> <li>• 194 axis deer removed</li> <li>• 2 mouflon sheep removed</li> <li>• Implemented “work to hunt” program for volunteers assisting in weed removal to be allowed hunting privileges</li> <li>• 5 miles of fences maintained routinely</li> <li>• All fences in Kānepu‘u inspected on a quarterly basis in FY05, semi-monthly in FY06, and monthly from FY07 forward</li> <li>• .55 mile (890m) of fence installed and replaced between Kānepu‘u entrance and Lapaiki fence line (Figure 3)</li> <li>• Erosion control mitigation conducted along fenceline as necessary</li> </ul>
<b>Invasive Plant Control</b>	<ul style="list-style-type: none"> <li>• Lapaiki and Kānepu‘u iki exclosures in Kānepu‘u unit and portions of Kahue unit treated routinely for priority weeds including Christmasberry, lantana, bull thistle, guinea grass, and koa haole</li> <li>• MISC swept areas outside the preserve for fountain grass and ivy gourd in FY07-FY09 with minimal finds</li> </ul>
<b>Fire Control</b>	<ul style="list-style-type: none"> <li>• A 10-foot wide corridor on both sides of the fence was improved as a fuel break in FY06</li> <li>• Kānepu‘u and Kahue boundary fence mowed as needed</li> <li>• Fire hazard signage installed in FY07</li> </ul>
<b>Restoration, Research, and Monitoring</b>	<ul style="list-style-type: none"> <li>• 3 research projects supported, including one on <i>Hyposmocoma</i> moths, one on <i>Ptycta</i> bark licc, and one on ‘iliahi</li> </ul>

TNCH recently aligned its conservation priorities with its resources by focusing on those areas in the state with the highest conservation value and feasibility of success. Budgetary constraints have required that we continue a scaled-back management effort at Kānepu‘u. Management programs have been contracted out since FY2005. We have been actively seeking other entities to assist us with management of the preserve. In the mean time, TNCH will continue to carryout ungulate, weed, and fire control programs by partnering with a local contractor or grantee, and working with local community members. One local community member in particular, Bob Hera, and his team of volunteers contributed substantially to the progress described above. TNC Maui staff oversee and occasionally supplement management activities carried out by the contractor or grantee and local community members.

TNCH seeks reauthorization of NAPP funding for another 6-year period for the programs described within this *Kānepu‘u Preserve FY2011-FY2016 Long-Range Management Plan*. This plan maintains a scaled-back program.

Over the next six years our management efforts will focus on the following activities:

**Ungulate Control** – the primary management activity will continue to be the complete removal of all axis deer from the two best preserve units (Kahue and Kānepu‘u), along with the continued exclusion of mouflon sheep and cattle from all seven units. Due to the corrosive effect of sand, salt and prevailing winds on the island, a significant factor in the ongoing campaign to remove ungulates will be the need for fence maintenance around the seven preserve units.

**Weed Control** – Selective weed removal will occur primarily in areas within or surrounding high quality patches of native vegetation. Additionally, we will continue to assist MISC in its efforts to contain fountain grass and prevent its spread to other islands.

**Fire Control** – Due to the relatively dry climate of the preserve, it is imperative for management to be especially vigilant in preventing wildfires from damaging the remaining natural resources. We will continue to maintain fuel breaks by mowing along the fence line.

**Restoration, Monitoring, and Research** – When time allows, we plan to use contractors and volunteers to collect seeds of native species incidental to other preserve activities and work with cooperative nurseries to propagate off-site. Also, we plan to perform rare plant monitoring incidental to other preserve activities and provide limited assistance to researchers as staff time and budget permits.

**Community Outreach** – We plan to use current TNCH staff to build the capacity of any interested group to assist with the management of the preserve, and we will look for outside funding to continue project stewardship.

**Watershed Partnerships** – The Lāna‘i Forest Watershed Partnership (LFWP) was formed in 2001 to assist in protecting the island’s watersheds by leveraging efforts among conservation partners. As a member of this group, TNCH will continue to work with partners to promote stewardship activities in forest and watershed regions of Lāna‘i.

The State Department of Land and Natural Resources (DLNR), which administers the NAP program, is kept apprised of our progress in the preserve through written reports and an annual inspection. Operational plans are submitted annually (the Conservancy has adopted a July 1 – June 30 fiscal year). In addition, a semi-annual report is sent to DLNR each January. These documents are available upon request to others who are interested.

## RESOURCES SUMMARY

### *General Setting*

The formation of Kānepu‘u Preserve was announced in January 1989 and officially established in November 1991, when Castle and Cooke finalized a perpetual conservation easement with The Nature Conservancy of Hawai‘i. The preserve was created to protect and enhance the olopua/lama (*Nestegis/Diospyros*) dryland forest that once covered large portions of the lowlands on Maui, Moloka‘i, Kaho‘olawe, and Lāna‘i. Today, Kānepu‘u Preserve contains the last major remnant of this rare dryland forest community.

The climate at Kānepu‘u is relatively dry. Rainfall averages 71 cm (28 in) per year and falls primarily in the rainy season from November through March. Additional moisture comes in the form of fog that condenses on vegetation. Tradewinds are accelerated by funneling between the upwind islands of Moloka‘i and Maui. These strong and nearly constant winds increase evaporation of moisture, vegetation loss, and soil erosion in and around Kānepu‘u. In some places, over 6 feet of soil has been lost. These degraded areas usually have little vegetation and are therefore even more susceptible to additional erosion. Many of the eroded areas are characterized by a hard pan substrate that appears unsuitable for plant establishment. Other eroded areas are comprised of dunes of wind-blown soil that may shift with the season.

The preserve is comprised of seven disjunct sections that range from 13 to 368 acres in size and total 590 acres (Figure 1). Major threats to the preserve’s native vegetation are introduced game animals (axis deer and mouflon sheep), cattle, rapid soil erosion, wildfire, and a number of invasive alien (non-native) plants. Much of this area was protected from 1911 through 1935 by fencing and other efforts carried out by George Munro, the then ranch manager for the area. Subsequent ranchers removed these fences. From 1970 to 1989, dedicated volunteers and the Hui Mālama Pono O Lāna‘i built four small fenced exclosures that helped protect patches of native forest and associated rare plants. Without these efforts, the last remnants of this rare Hawaiian forest type would probably have been destroyed.

### *Flora and Fauna*

Two plant communities dominate Kānepu‘u Preserve: the native closed-canopy olopua/lama dryland forest and an alien shrubland. Some sections of the preserve are bordered by a windbreak of non-native trees. Areas of bare soil occur throughout the preserve.

The native forest canopy is dominated by lama (*Diospyros sandwicensis*) and olopua (*Nestegis sandwicensis*). The canopy also contains non-native Christmas berry (*Schinus terebinthifolius*) and up to 12 native species including ‘ohe makai (*Reynoldsia sandwicensis*), ‘ahakea (*Bobea sandwicensis*), ‘āla‘a (*Pouteria sandwicensis*), and ‘aiea (*Nothocestrum latifolium*). The understory has been severely damaged as a result of historical grazing and few native species remain. Common understory weeds include lantana (*Lantana camara*), scarlet sage (*Salvia coccinea*), corky passion vine (*Passiflora suberosa*), and several grasses including dallis grass (*Paspalum dilatatum*) and molasses grass (*Melinis minutiflora*). Figure 2 shows the current

natural communities of the Kānepu‘u Preserve.

Eleven rare plant taxa have been reported in Kānepu‘u Preserve; six of these are listed as federally endangered. However, two of these listed species, along with another with no federal status, are known only from historical records and have not been seen in Kānepu‘u Preserve since 1930 (Appendix 1). The four endangered plant species currently in the preserve are: the fragrantly flowered *Gardenia brighamii*, sandalwood or ‘iliahi (*Santalum freycinetianum* var. *lanaiense*), *Bonamia menziesii*, and the ma‘o hau hele (*Hibiscus brackenridgei*). The Lanai populations of *Gardenia brighamii* account for approximately 2/3 of all known *Gardenia brighamii* plants. It is believed that the ma‘o hau hele was planted in the preserve and may not have occurred there naturally.

Two native birds frequent Kānepu‘u Preserve: the pueo (short-eared owl, *Asio flammeus sandwichensis*) and the kōlea (Pacific golden-plover, *Pluvialis fulva*). Eleven non-native birds are also found in the preserve’s forest and open areas. At least ten different land snail taxa were identified in a subfossil sample found in the preserve.

Kānepu‘u Preserve’s arthropod fauna was sampled in 1992. According to collection records, 153 different insect species (some unidentified) were found. Nineteen spider taxa, two isopods, and one species of amphipod were also collected. Native taxa include a pyralid moth (genus *Scoparia*), mirids, drosophilids (fruit flies), yellow-faced bees (genus *Hylaeus*), and sphecid wasps. Two arthropods studies were conducted in Kānepu‘u Preserve in 2008 and 2009. Emilie Bess, a graduate student from the University of Illinois, conducted a study on bark lice (*Ptycta* spp.). Results thus far indicate 11 different morphospecies. Further investigation will determine if the species are new or previously described and their relationships with other Hawaiian *Ptycta*. Drs. Dan Rubinoff and Patrick Schmitz from the University of Hawaii conducted a study on the diversity of endemic flightless moths *Hypsomocoma* in the Hawaiian Islands. Determinations may reveal they found at least 5 new species in the Kānepu‘u area, all endemic to Lanai. A remarkable part of their catch trap was the endemic Sphinx moth *Hyles* sp., unusual for the dry forest habitat of Kānepu‘u; frozen samples for molecular analysis will confirm the species identity, contributing to a better understanding of biodiversity. In addition, in December 2008, the endangered Blackburn’s Sphinx moth (*Manduca blackburni*) was discovered for the first time on Lanai; it is currently unknown whether and to what extent it occurs in the Kānepu‘u area.

## MANAGEMENT

### *Management Considerations*

1. The lands surrounding the preserve support sustained-yield sport hunting of axis deer and mouflon sheep, and cattle grazing. The preserve has been fenced to prevent these animals from further damaging native vegetation. Preserve activities must be coordinated with surrounding neighbors, not only for safety reasons, but also to ensure good working relationships.
2. All units of the preserve are accessible by good-quality dirt roads, although four-wheel drive vehicles are needed during wet weather. Unit boundaries, fence lines, and firebreaks

are mostly accessible via tractors or other equipment. Access to the preserve is generally obtained through abandoned pineapple field roads, which may move over time. The preserve is easily accessible on foot. Mapped corridors that link the seven preserve units were established to satisfy county subdivision requirements and do not represent road access between units.

3. The Lāna‘i community and other members of the public were involved at Kānepe‘u before it was a TNC preserve. As such, interpretive opportunities for the community and the public will continue as feasible.
4. A central challenge of conservation in Hawai‘i is to integrate stewardship of native resources with community development, planning, corporate/landowner needs, and the priorities of the grass-roots community. Because of the history of community grass-roots involvement at Kānepe‘u, we initiated a capacity building effort in 1998 with the Hui Mālama Pono O Lāna‘i and other interested groups. The goal was to increase their organization effectiveness and develop a solid fundraising track record so that eventually they could become the managers of Kānepe‘u Preserve. To date, no community group has demonstrated the financial, administrative, and management capacity to manage Kānepe‘u Preserve. TNCH continues to believe that a community-based organization will provide the best solution for long-term management of the preserve. Should a suitable group present itself during the course of this six-year plan, TNCH and/or the new group will update the plan to reflect the desired arrangement of that group in the protection of Kānepe‘u .
5. Due to past deforestation and grazing by animals, massive wind and rain erosion remains a major threat to our fences. Erosion problems caused by heavy rains are often the focus of fence maintenance efforts.
6. We have learned that once the galvanizing on the 12.5 gauge fence wire becomes noticeably corroded, the wire fails quickly (within about 6 months). Salt spray, carried 3 miles inland and up to Kānepe‘u Preserve's 1,700-foot elevation, seems to be the largest corrosive factor, as well as the constant sandblasting from adjacent eroded mineral soils. Professional fence builders and natural area managers surmise that the dry environs of Kānepe‘u, exacerbated by drought, have allowed salt spray to stick to the wire rather than being washed clean by rains. Only where a tall shrub, tree, or fence post protects wire from the salt spray is corrosion minimal or non-existent. The corrosion appears accelerated where the fence is downwind from an unvegetated area; this is probably due to soil particles constantly battering the fence. While we considered re-vegetation as part of the fence protection program, it appears that only tall vegetation will protect the fence however, this poses other problems to fence maintenance.
7. In 1992, TNC completed installation of a 6'3" tall deer fence around each of the seven patches of forest to prevent further damage by grazing animals. From 1996 through 2001, various sections of fence were replaced due to severe corrosion from harsh environmental conditions. In 2002 and 2003, the fences around the two most biologically important units (Kahue and Kānepe‘u) were upgraded to stainless steel wire in an attempt to fend off corrosion problems. TNCH may decide to replace the fencing for the other units at a later

date.

8. Over the past ten years, we have noted the increasing presence of native tree seedlings of many species (previously deer had eaten seedlings). Moreover, mature trees, formerly stripped of leaves and branches to the height a deer can reach, are now re-sprouting from the base.
9. A short, 750-meter self-guided trail was established in the Kānepu‘u unit in 1997 to allow for unguided visitation along the main (unpaved) Polihua Road. This trail has since been determined inadequate in its initial goal of improving community understanding of the preserve’s resources, due to its location away from native-dominated ecosystems. A new interpretive trail will be developed in the future that will encourage local and visitor education on native plants and invasive weeds.

### ***Management Areas/Units***

The preserve is divided into seven units. Kahue unit has the highest diversity of rare plants and is important for both restoration and interpretation. Kānepu‘u unit has the largest patches of native forest; interpretation potential here is also great because of its location along a public road. ‘Ahakea unit has rare plants and patches of native forest. The three Paoma‘i units contain nice patches of forest, but these are quite small. The Mahana unit is the most distant unit and is also biologically the lowest priority for management and restoration. See Figure 1.

### ***Management Programs***

For each program listed in the following section, we identify a major goal and discuss the management methods and/or any management issues. Activities and costs for FY2011–FY2016 are also listed.

#### ***Program 1: Non-native Species Control***

##### **A. Ungulate Control**

**Program Goal:** Control axis deer in the Kahue and Kānepu‘u fenced units; continue to exclude mouflon sheep and cattle in all units. (There are no feral pigs or goats on the island of Lāna‘i.)

The two most biologically important units (Kahue and Kānepu‘u) are entirely surrounded with stainless steel wire fencing; while the other the five units are surrounded by aging galvanized and Bezinal fencing. Management activities continue to focus on the removal of axis deer from both the Kahue and Kānepu‘u units. Mouflon sheep have occasionally been found and removed in some units.

In FY08, a short section (~ .5 mi) of 6’, Bezinal-coated deer-proof fence was installed from the main Kānepu‘u gate to the Lapaiki fence line in order to increase the effectiveness of ungulate removal (Figure 3). Over the next six-year period, monitoring will determine the need for additional fencing to facilitate deer removal. Additional fencing may be needed in order to break

the largest unit (Kānepu‘u) into more manageable units. If deemed necessary and funding becomes available, additional 6’ deer-proof fencing may be installed in order to enclose native-dominated ecosystems and to facilitate deer removal adjacent to those areas (Figure 3).

### Activities

Years 1-6 (FY2011-16):

- Inspect and maintain fences at Kānepu‘u & Kahue units monthly. Inspect fencelines periodically for any weather-induced soil erosion which may require mitigation.
- Repair fences where damaged in other selected units as time permits.
- Conduct periodic hunts in Kānepu‘u & Kahue units, with the goal of complete removal of all animals from native-dominated areas.
- Install new fencing, as deemed necessary, to break up existing units into smaller units to facilitate deer removal from native-dominated ecosystems.

### **B. Weed Control**

Program Goal: Assist other groups (e.g., Invasive Species Committees) with regional initiatives for incipient weed control; encourage volunteer groups to remove weeds within or surrounding high quality patches of native vegetation.

A number of non-native plants are well established in the preserve. We will continue to encourage volunteer groups (e.g., high-school groups, trail and mountain clubs, hunters) to hand-pull and mechanically control weeds in high quality patches of native vegetation. We will also continue to assist MISC in its efforts to control fountain grass (*Pennisetum setaceum*) and prevent its spread to other islands.

### Activities

Years 1-6 (FY2011-16):

- Conduct priority weed control in high quality patches of native vegetation on a monthly basis.
- Support MISC with removal of potentially harmful incipient weeds currently found outside the preserve that could potentially impact Kānepu‘u.
- Work with Invasive Species Committees to develop regional initiatives for incipient weeds.
- Develop a replacement short, interpretive trail to help educate volunteers on weed and native plant identification.

### **C. Small Mammal Control**

This program has been suspended due to the elimination of on-island preserve staff and our subsequent inability to check bait stations as frequently as needed to run an effective control program. However, Hank Oppenheimer, Maui County coordinator for the Plant Extinction Prevention Program (PEPP), maintains small exclosures with rat traps around some *Gardenia* seedlings and notes a significant positive impact of doing so.

Years 1-6 (FY2011-16):

- Set rat traps around key rare species as time allows.

**The non-native species control program represents an estimated 80% of the overall effort and budget in this long-range management plan.**

### ***Program 2: Fire Control***

Program Goal: Attempt to mitigate fires in the preserve.

Wildfire is a major threat and has diminished the extent of native vegetation in the preserve in the past. Vehicle traffic along roads passing through or near the preserve is the primary source of ignition. Nevertheless, the Conservancy is required to accommodate public access through the preserve along these or suitable alternate roads. A 15-20 foot wide swath of cleared vegetation along the fence line of each preserve unit will be maintained as a fuel break for fire prevention where feasible.

#### **Activities**

Years 1-6 (FY2011-16):

- Maintain fuel breaks along fence line, as needed, to accommodate mower.

**The fire control program represents an estimated 10% of the overall effort and budget in this long-range management plan.**

### ***Program 3: Restoration, Research and Monitoring***

#### **A. Restoration**

This program has been reduced due to the elimination of on-island TNC staff. Restoration activities will focus on the Lapaiki area in Kānepu‘u unit. We plan to use contractors and volunteers to collect seeds incidental to other preserve activities and work with cooperative nurseries to propagate off-site. Once seeds are propagated they will be outplanted in Lapaiki and other units. The irrigation system will be restored via installation of two water tanks at Kahue and two water tanks to feed Kānepu‘u iki in Kānepu‘u if permission can be gained to use an existing water line. Tanks have been donated and range in size from 400 to 1,000 gallons. No construction or physical improvements will be necessary.

#### **Activities:**

Years 1-6 (FY2011-16):

- Improve irrigation system to supply water for restoration activities.

#### **B. Research and Resource Monitoring**

This program has been reduced due to the elimination of on-island TNC staff. No major activities or expenditures are proposed. We plan to use Maui staff to perform rare plant monitoring

incidental to other preserve activities and provide logistical assistance to researchers as staff time and budget permits. In addition, PEPP maintains small exclosures around *Gardenia* seedlings, conducting small-scale rat and weed control. We will continue to support PEPP in such efforts.

**The restoration, research and monitoring program represents an estimated 10% of the overall effort and budget in this long range management plan.**

***Program 4: Community Outreach***

This program has been reduced due to the elimination of on-island TNC staff. No major activities or expenditures are proposed. As time allows we will continue to build the capacity of qualified and interested groups to assist with the management of the preserve.

**The community outreach program represents less than 1% of the overall effort and budget in this long-range management plan.**

***Program 5: Watershed Partnerships***

On October 11, 2001 a Memorandum of Agreement was signed, bringing together the following entities into a Lāna‘i Forest and Watershed Partnership: Castle & Cooke Resorts LLC (formerly known as Lāna‘i Company Inc.), Hui Mālama Pono O Lāna‘i, Maui County Board of Water Supply, State of Hawai‘i Department of Land and Natural Resources Division of Forestry and Wildlife, U.S. Fish and Wildlife Service, The Nature Conservancy, the United States Department of Agriculture Natural Resources Conservation Service, Moloka‘i-Lāna‘i Soil and Water Conservation District, Lāna‘i Water Advisory Committee, State of Hawai‘i Commission on Water Resource Management, and Maui County. TNC will participate in partnership meetings and assist when feasible.

**The watershed partnerships program represents less than 1% of the overall effort and budget in this long-range management plan.**

## **BUDGET SUMMARY**

The following table summarizes the six-year budget for the Kānepu‘u NAPP Project. Through the NAPP program, the state pays two-thirds of the management costs outlined in this long-range plan and TNC funds (from private and other government sources) the remaining third.

### **Personnel:**

This NAPP request will cover a portion of the costs of the Maui Island Program staff that will have responsibilities in implementing the management plan. Other part-time, short-term, or year-to-year personnel may be hired periodically as the budget allows and project needs warrant.

The Nature Conservancy’s currently negotiated fringe benefit rate will accrue on all salary/wage costs.

Technical and annual planning support is also provided by the Honolulu office of the Conservancy. In particular, the Conservation Programs Director, Science Manager, Senior Scientist, and other island resource staff help prepare annual plans and reports, develop and implement monitoring and research programs, and establish interpretive and intern programs at the preserve. As budget and needs allow, these support staff members may charge a small portion of their time to this project.

### **Supplies:**

A supplies budget of \$650 has been budgeted in the first year and a 3% inflation increase added each year thereafter to cover various project-related supplies and expenses. Funds will be allocated towards vehicles, equipment and materials based on availability and need.

### **Travel:**

A travel budget of \$623 has been budgeted in the first year and a 3% inflation increase added each year thereafter to cover travel expenses of Maui staff to and from Lāna‘i.

### **Subawards/Subcontracts:**

The Nature Conservancy (TNC) will continue to carry out ungulate, weed, and fire control through use of a local subawardee/subcontractor. Funds may also be allocated for LRMP renewal and professional/contractual costs based on availability and need.

### **Overhead:**

An overhead charge is included to recognize the administrative support provided by TNCH; although TNCH’s current negotiated rate with the federal government is 23%, a maximum of 10% is allowable by the NAP Program. TNCH will absorb the 13% in indirect differential, as well as any future increases to or other changes in the overhead rate.

The following table summarizes the 6-year budget for Kānepu‘u Preserve. Through the NAP program, the State of Hawai‘i will fund two-thirds of the costs outlined in this long-range management plan. Recognizing that the NAPP budget is not expected to increase significantly in

the coming years, we have not included routine, annual increases for most of the program activities described above. In addition, little provision has been made for possible future inflation or general cost increases. If significant cost increases occur over the course of this plan, we may need to work with DLNR to revise goals or seek additional NAPP funds through an amended plan.

## BUDGET TABLE

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	Total
Labor and Fringe	9,000	9,270	9,548	9,835	10,130	10,433	58,216
Supplies	650	670	690	710	732	754	4,206
Subcontracts	17,000	17,000	17,000	17,000	17,000	17,000	102,000
Travel	623	642	660	681	701	722	4,029
<b>Subtotal</b>	<b>27,273</b>	<b>27,582</b>	<b>27,898</b>	<b>28,226</b>	<b>28,563</b>	<b>28,909</b>	<b>168,451</b>
Overhead (10%)	2,727	2,758	2,790	2,823	2,856	2,891	16,845
<b>TOTAL</b>	<b>30,000</b>	<b>30,340</b>	<b>30,688</b>	<b>31,049</b>	<b>31,419</b>	<b>31,800</b>	<b>185,296</b>

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	Total
Kānepu'u Budget	30,000	30,340	30,688	31,049	31,419	31,800	185,296
TNC Match (1/3)	\$10,000	\$10,113	\$10,229	\$10,350	\$10,473	\$10,600	\$61,765
<b>NAPP Request (2/3)</b>	<b>\$20,000</b>	<b>\$20,227</b>	<b>\$20,459</b>	<b>\$20,699</b>	<b>\$20,946</b>	<b>\$21,200</b>	<b>\$123,531</b>

## ENVIRONMENTAL REVIEW COMPLIANCE

All actions being proposed for reauthorization in this long-range management plan are substantially similar to, and relevant to, the actions previously considered in the *Final Environmental Assessment of Kānepu‘u* for which we received a "Finding of No Significant Impact" in 1997. Pursuant to Hawai‘i Administrative Rule 11-200-13 (*Consideration of previous determination and accepted statements*), all environmental review obligations under the Hawai‘i Revised Statutes (Ch. 343) have been fulfilled. Pursuant to HAR 13-210-11, all updated plans are required to undergo environmental review during the NAPP renewal process.

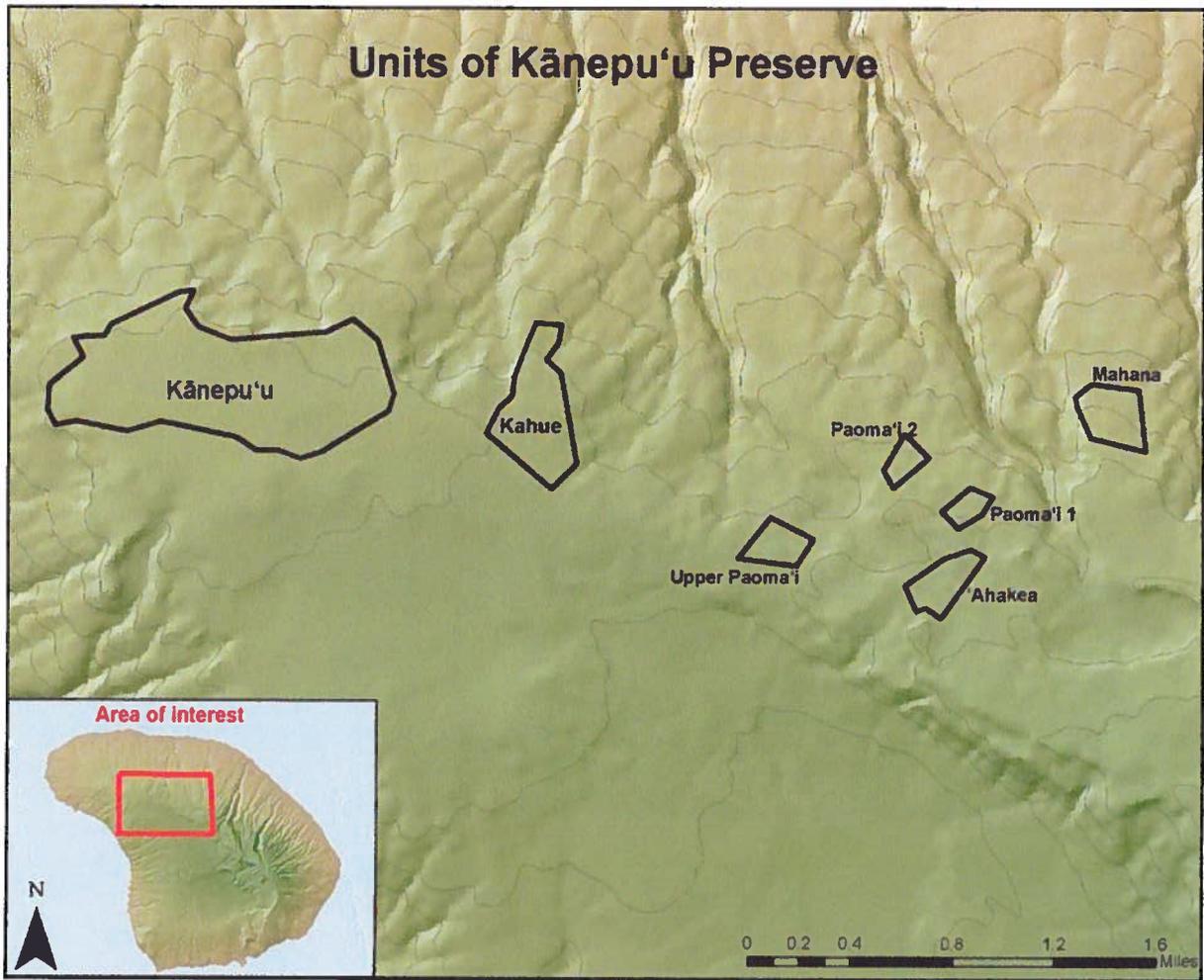


Figure 1. Kānepu'u Preserve units

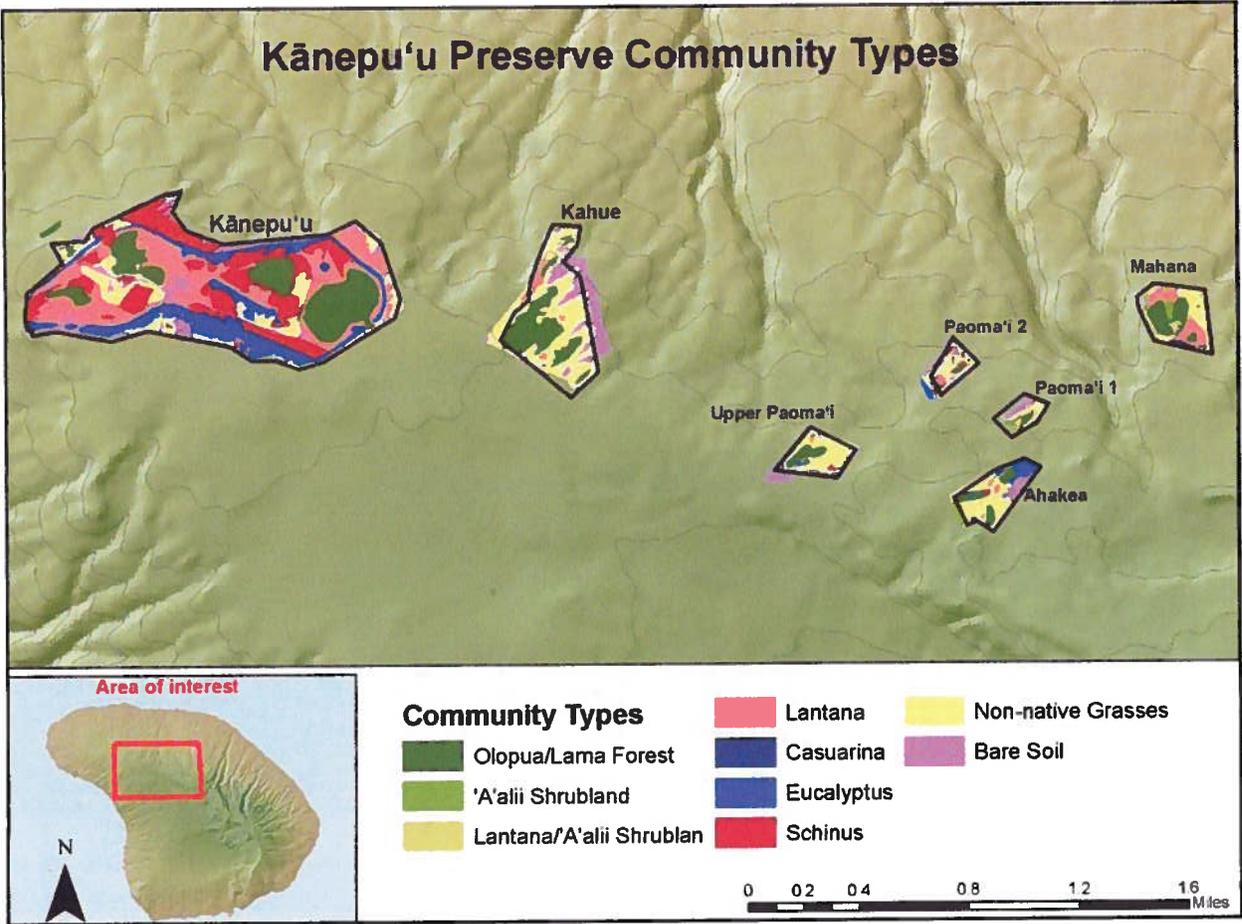


Figure 2. Kānepu‘u Preserve community types

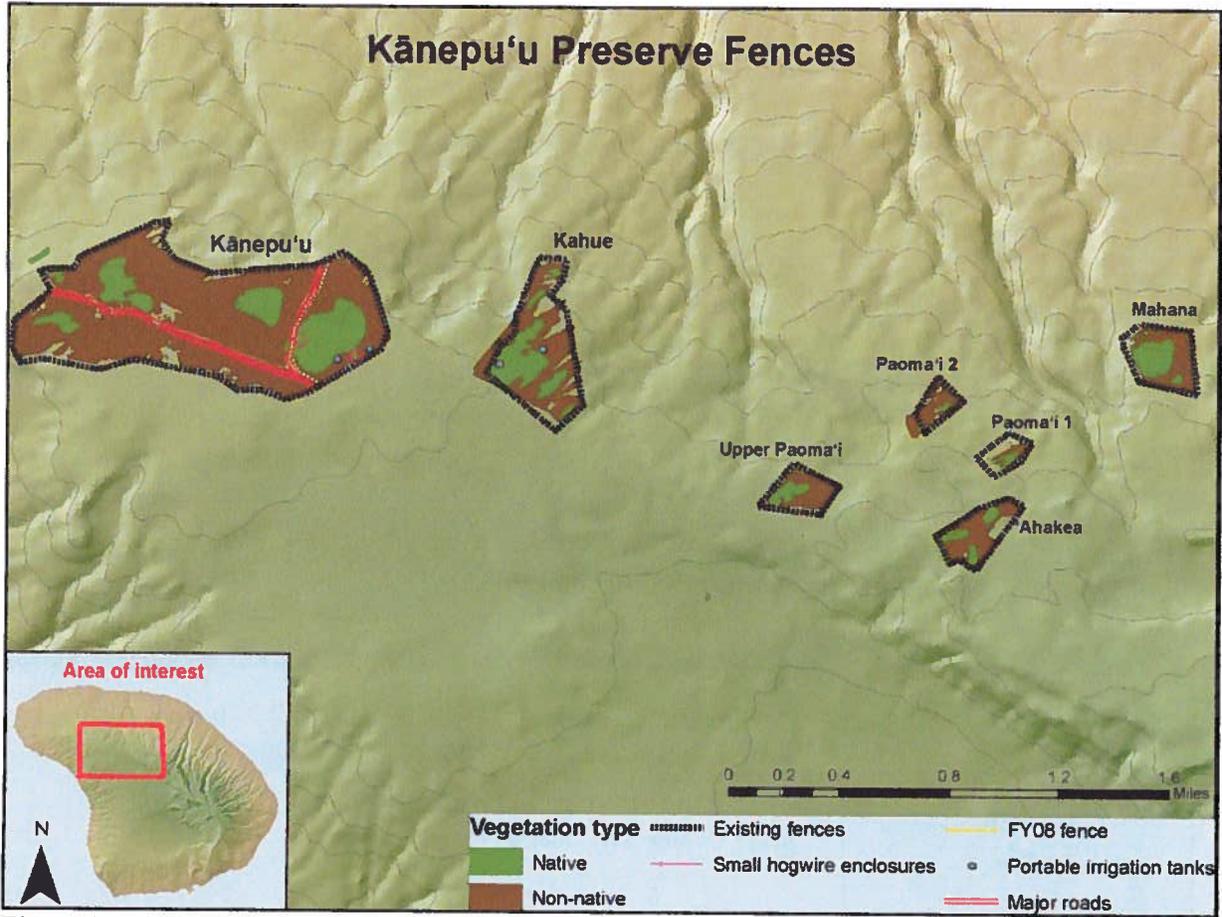


Figure 3. Kānepu'u Preserve fences

**APPENDIX 1  
RARE PLANTS OF KĀNEPU‘U PRESERVE**

SCIENTIFIC NAME	COMMON NAME	HERITAGE RANK (a)	FEDERAL STATUS (b)
<i>Bidens micrantha</i> ssp. <i>kalealaha</i> *	Ko‘oko‘olau	G3T1	LE
<i>Bobea sandwicensis</i>	‘Ahakea	G1	SOC
<i>Bonamia menziesii</i>		G1	LE
<i>Gardenia brighamii</i>	Nā‘ū	G1	LE
<i>Haplostachys munroi</i> *		GH	SOC
<i>Hibiscus brackenridgei</i> ssp. <i>brackenridgei</i> <sup>1</sup>	Ma‘o hau hele	G1T1	LE
<i>Nesoluma polynesianum</i>	Keahi	G2	SOC
<i>Nothocestrum latifolium</i>	‘Aiea	G1	C
<i>Reynoldsia sandwicensis</i>	‘Ohe	G2	SOC
<i>Santalum freycinetianum</i> var. <i>lanaiense</i>	‘Iliahi	G3T1	LE
<i>Vigna owahuensis</i> *		G1	LE

\* Plants known historically from preserve

<sup>1</sup> Planted in the preserve; not historically known from area

(a) NatureServe Rank:

G1=Species critically imperiled globally (typically 1–5 current occurrences)

G2=Species imperiled globally (typically 6–20 current occurrences)

G3=Species vulnerable globally (typically 21–100 current occurrences)

GH=Species possible extinct

T1=Subspecies or variety critically imperiled globally

T2=Subspecies or variety imperiled globally (typically 6–20 current occurrences)

(b) Federal Status:

LE=Listed endangered

SOC=Species of concern

C=Candidate

