PUEHUEHUNUI/KAUAULA BIOLOGICALLY IMPORTANT AREA PROPOSAL

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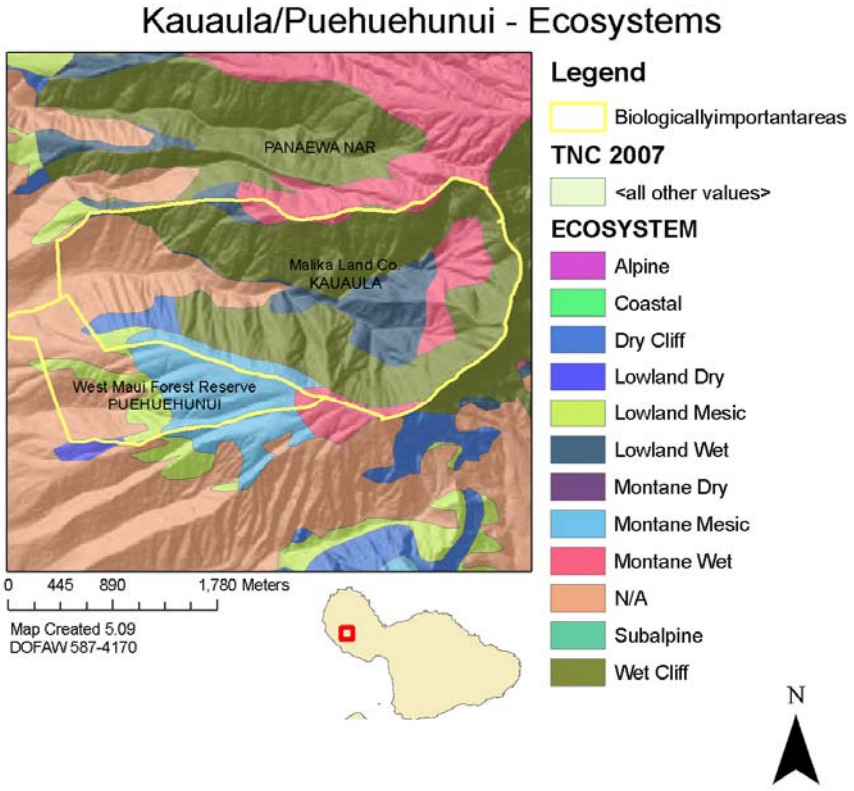
I INTRODUCTION (General)

This area encompasses approximately 1,700 acres of a privately owned valley and an adjacent Forest Reserve ridge/plateau in West Maui.



II BACKGROUND AND HISTORY

Past Land Use

Puehuehunui was designated part of the West Maui Forest Reserve by Governor's Proclamation, April 21, 1908. Historical ditches and diversions of an unknown date were constructed in Kauaula stream.

Kauaula is owned by Makila Land Co. These areas were included as part of the West Maui Mountains Watershed Partnership in 1998.

Present Land Use and Access

Access is through private land owned by Makila Land Co. To access Kauaula valley, owner notification and permission is needed to use a road that becomes 4WD and leads to the stream at a narrow point in the makai part of the valley. Waterfalls block access to the back of the valley, so the back is only accessible by helicopters. A hydroelectric plant originally constructed in 1914 and now operated by Makila Hydro LLC has provided power from Kauaula stream since 2006.

In Puehuehunui, access is again through private lands behind subdivisions developed by Makila Land Co. mauka of Laniupoko beach park. No trails are established, and the mauka plateau area is more readily accessible by helicopter as the area is steep and brushy. However, Makila Land Co. has proposed a trail along the ridge of Puehuehunui into the Forest Reserve.

Cultural/Recreational Uses
Insufficient information is currently known of the cultural significance of these remote areas.

Human use is limited as access is through private land. While Puehuehunui is part of Hunting Unit A, which allows year round, daily hunting of 2 pigs and 2 goats per day, there seems to be little or no use of this area due to very difficult access. There may be future demand for hiking trails or bike trails in this area, as a residential area is expanding makai of the areas (DOFAW, 2009).

Previous Studies
A survey of Kauaula and Puehuehunui was conducted by the Plant Extinction Prevention Program, which generated lists of the rare plants and PEP targets (Oppenheimer, et. al., 2007). These surveys demonstrated the outstanding richness and very rare plant species existing in these areas. Appendix 1 lists these rare plants of Puehuehunui.

Other reports of visits to Kauaula by various land managers and botanists have confirmed the incredible richness of this area, and it has been called the most diverse lowland valley in Maui (Oppenheimer, 2009).

IV JUSTIFICATION (Specifics)

Scientific Value
Of importance is the botanical richness of this area, especially the lowland wet valley and wet cliffs of Kauaula, and the unique mamane forest of Puehuehunui (Oppenheimer, 2009, Gon, 2008, and Brosius, 2009).

Natural Communities and their Status

The Hawaii GAP analysis indicates that native communities in this area are wet cliff (in the back of Kauaula), and open and closed ohia forest (USDOI, 2006). The Ecoregional Plan from The Nature Conservancy characterized the area as having montane wet ecosystems at the back of Kauaula valley as well as on the top of the Puehuehunui area, and lowland wet areas in the base of the valley (See map on page 1). The slopes of Puehuehunui also made up of montane and lowland mesic, as well as tiny pockets of lowland dry ecosystems (TNC, 2006).

The lower portions of the Forest Reserve Puehuehunui piece below around 2600 feet elevation were considered “non-native” by that analysis, as well as in Kauaula valley below roughly 2200 feet elevation (TNC, 2006). In DOFAW’s management guidelines, Puehuehunui’s vegetation is considered “V2” – Relatively Intact Communities (DOFAW, 2001).

From reports of visits to these areas, staff and experts that have visited the area have indicated that there is a mamane forest at the plateau of Puehuehunui. The pali of Kauaula valley is largely dominated by lama. Additionally, the back of Kauaula valley is remarkably intact, although there is an incipient population of Pampas grass on the pali with an estimated 2,000 plants that needs treatment. In Kauaula, there also is a large palm grass infestation of the drainages. On the drier areas, silk oak threatens the lowland mesic slopes of Puehuhunui. Guinea grass and haole koa also impact the lower areas, especially

in the drainage of Kauaula valley and the north slope near Panaewa NAR.

Kauaula stream has very little native aquatic native species value (Parham, et. al., 2008).

Biological/Ecological Design

This Biologically Important Area represents an adjacent valley and plateau that have high levels of biodiversity and endangered plant species in the West Maui Mountains. Kauaula and Puehuehunui may be considered separate management units as very steep pali separates them.

Location and Size

Puehuehunui plateau, which is designated as a Forest Reserve (TMK 2-4-7-001:004) is 443 GIS acres. The area of interest in Kauaula valley (TMKs 2-4-6-025:001 and 2-4-7-001:024) is 1,264 GIS acres.

Threats (Human/Biological)

Besides the priority weed threats listed above, fire and incipient deer populations in West Maui mainly threaten the vegetation of this area.

Deer are coming to West Maui and will only get higher populations as their range expands. There have been reports of deer in Kapalua, and in the Sandalwood golf course (DOFAW, 2009). The back valley of Kauaula is considered protected from pigs by natural waterfall barriers.

The lower portion of Puehuehunui has burned regularly in the past, and there is a high fuel load in the lower sections. As the area becomes more developed downslope, the fire problem will only get worse (DOFAW, 2009). Kauaula is less threatened by fire as the winds often blow downslope in the valley (DOFAW, 2009).

Present Level of Protection

Puehuehunui is within a Forest Reserve and part of the primary DOFAW fire response area. It is within the Conservation district, Resource subzone.

DOFAW's management guidelines have designated appropriate use for the area as:

"Restricted" Forest products are not normally an objective in these areas. Harvesting would be considered only for compelling public benefit.

"Light Use Areas" These are areas where recreation would be limited to certain areas, or occasional use due to impacts on resources or programs. Trails would be the main recreational feature, and their use may be restricted

"Mixed Game and Other Uses" In these areas game management is an objective integrated with other uses. Habitat may be manipulated for game enhancement. Game populations are managed to acceptable levels using public hunting.

(DOFAW, 2001)

Kauaula is privately owned by Makila Land Co., and is also in the Conservation zone, Resource subzone. DOFAW has indicated that Makila Land Co. has been a cooperative landowner that is interested in conservation, and has provided access and commissioned botanical surveys (DOFAW, 2009). Both of these areas are within the West Maui

Mountains Watershed Partnership.

Long-term Ecological Viability and Environmental Consequences of No Action/Urgency
Long-term ecological viability is threatened by deer invasion of previously ungulate-free areas, fire, and invasive species such as silk oak, pampas grass, guinea grass, and haole koa. With no action, these invasives will continue to expand, and the long history of fire damage will re-occur, perhaps with more frequency as climates change and development and fuel loads increase.

Urgency of protecting this area is high as two of the major threats are incipient – deer and pampas grass. Constructing fences before deer are able to enter the area would save time in the long run to control their populations. Maui Invasive Species Council has been attempting to control the pampas grass aerially, as it is on a pali. Preventative measures to protect Puehuehunui from recurring fire is another relatively urgent management action, especially since it contains extremely rare plant species.

General protection and monitoring of the rarest plant species identified by the PEP program is also an urgent management need.

V. RECOMMENDATIONS

Based on past recommendations and discussions, below are lists of various recommendations and issues they seek to address. These recommendations do not represent the positions of the agencies/organizations listed, only suggestions from various staff or members.

Threats Requiring Management
Protect rare plants with the Plant Extinction Prevention Program and other programs positioned to monitor and protect rare plant populations.

Surveys are ongoing, conducted by PEP and other botanists.

Control pampas grass populations.

Potential partners are MISC and WMMWP.

Construct pig fences.

WMMWP has proposed fence lines in their 1999 management plan with the goal to prevent pigs in areas above 2800 feet elevation (WMMWP, 1999).

Build deer fences.

High priority areas to begin building fences would be the southern part of West Maui, as that is where the deer are coming from, but this would be another area to protect as their range eventually expands. WMMWP has indicated interest in constructing collaborative ungulate fences (DOFAW, 2009).

Focus management efforts on highest quality native areas for invasive species.

While such areas like Panaewa NAR have silk oak and guinea grass problems in the makai portions of the Reserve, management has focused on controlling these in the higher quality native areas, and not targeting the makai portions for

management.

Clear a road underneath the Puehuehunui area to create a firebreak and fire control access. Perhaps also create irrigation infrastructure downslope.

The FWS and DOFAW are planning to clear a road by Panaewa NAR to prevent fires. DOFAW is also working with Kamehameha Schools to build roads in West Maui. KS is also putting in irrigation and pipelines in their proposed agriculture areas which could help with fire suppression (DOFAW, 2009).

DOFAW planning and management efforts should concentrate on the Forest Reserve piece of land.

Kauaula has a supportive landowner, and this area is not within DOFAW's jurisdiction. Watershed Partnerships are meant to coordinate between the landowners (DOFAW, 2009).

Administrative

Keep area as a Forest Reserve.

Continue fire suppression activities.

Make Forest Reserve section a NAR.

Represent mamane forest, which is not represented in the West Maui NARs, as well as many of the rare plants and PEP targets. However, ecosystems in the West Maui mountains are already some of the best represented in the NARS.

Pursue acquisition of private land for NAR designation.

This is one of the most botanically rich lowland valleys, and the West Maui NARs are not as well represented with wet cliff ecosystems. This could more permanently dedicate the area to conservation, as membership in the WMMWP is not permanent. Landownership is not permanent.

Pursue a conservation easement for private land and possibly a NAPP agreement.

This would help to prevent development of the area and incompatible use of valley, and also provide more funding for management of an intact area. Other types of private land management programs are also possibilities. A NAPP agreement needs at least a conservation easement, or ownership by a conservation entity.

VII. BIBLIOGRAPHY/REFERENCES

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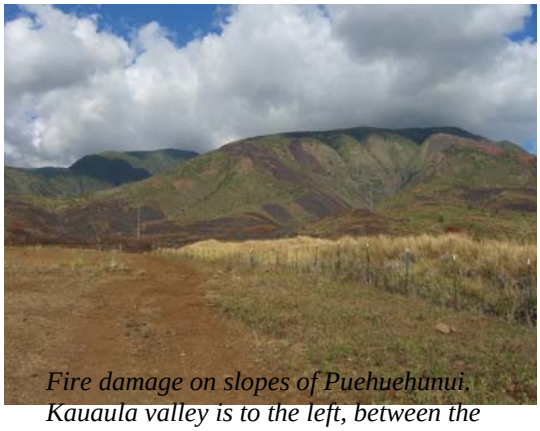
Cyanea magnicalyx. USF&WS: E; PEP target; Single-island endemic
Ranunculus mauiensis. USF&WS: C
Santalum freycinetianum var. lanaiense. USF&WS: E
Exocarpus gaudichaudii. USF&WS: SOC
Diplazium molokaiense. USF&WS: E; PEP target
Phyllostegia stachyoides. USF&WS: C; PEP target
Ctenitis squamigera. USF&WS: E
Clermontia arborescens subsp. arborescens. USF&WS: SOC; Single-island endemic
Stenogyne calycosa. USF&WS: SOC; Single-island endemic
Remya mauiensis. USF&WS: E; Single-island endemic
Dissochondrus biflorus. USF&WS: SOC
Melicope hawaiensis. USF&WS: SOC
Liparis hawaiensis. USF&WS: SOC
Lysimachia lydgatei. USF&WS: E; Single-island endemic
Alphitonia ponderosa. USF&WS: SOC
(Oppenheimer and Wood, 2007)
Hedyotis mannii. USF&WS: E
(DOFAW, 2009).



Fire damage on slopes of Puehuehunui. Kauaula valley is to the left, between the slopes of the West Maui NAR, Panewa section. Photo: Makila Land Co.