MAUI NUI Biologically Important Areas Background Information
KAUAULA/PUEHUEHUNUI

Location	Target ecosystem	Natural Communities	Designation/Ownership
Valley and side ridge	Lwlnd wet/mesic/dry, Mon. wet/mesic, wet cliff	Native wet cliff vegetation, Open ohia forest, Closed ohia forest	Makila Land Co., West Maui Forest Reserve

Biological importance: Very diverse lowland wet forest in Kauaula valley, with lama forest and cliff veg on the pali. The most botanically rich valley in Maui. Critical habitat.
-Puehuehunui is a ridge south of Kauaula with a smaller ampitheater headed valley, and has a diverse mesic forest/mamane forest. 15 rare plant speices/3 PEP targets.

Threats: Deer incipient in West Maui. Pigs are in Puehuehunui.
Weeds: guinea grass, silk oak. Pampas grass and palm grass in back pali of Kauaula.
-Fires are common. A housing development below threatens more fire events.

Issues for conservation management: Deer reports in Kapalua – they are coming into West Maui. To control them, first fence south west Maui and work north.
-Not too much public use potential in Puehuehunui, except perhaps bikers.
-Kauaula has a landowner that is supportive of conservation.

KANAIO COAST

Location	Target ecosystem	Natural Communities	Designation/Ownership
South of Kanaio NAR to coastline	Coastal, some pockets of Lowland Dry	Native shrubland/sparse ohia, anchialine pools, coastal vegetation, aalii lowland shrubland	Unencumbered State land

Biological importance:
-Rich coral reef offshore.
-Anchialine pools.
-40 species of native coastal plants found, critical habitat.

Priority Threats:
-High intensity and widespread goat browsing.
-Kiawe and alien grasses.
-Human use: trash, offroad driving, fire.

Issues for conservation management:
-Very significant archaeological resources, which are being damaged by people.
-A coastal fence is possible, but difficult, and people may damage it if it blocks access.
-Army Natl Guard exclosure in southeast of the area for *Sesbania.* Former training area.
-Hoapili trail is popular for recreation.
-The area should be put in a forest reserve to become a public hunting area. There is more flexibility with a forest reserve than a GMA.
-A NAR may be appropriate for coastal area; could connect with AK with a land swap.
-Land division is usually opposed to subdividing TMKs.
-Motorcyclists and bikers damage some areas.
-Makai of Puu Pimoe there is unexploded ordnance. Could hire a UXO team.

KAHIKINUI

Location	Target ecosystem	Natural Communities	Designation
South slope Haleakala to around 3,600ft, east of Manawainui gulch	Subalpine, mon. mesic, dry cliff	Pukiawe/Ohelo Dry Subalpine Shrubland, Ohia Subalpine Dry Forest, Mamane Subalpine Dry Forest, Koa/Ohia Montane Mesic Forest, Olopua Montane Mesic Forest	Kahikinui Forest Reserve

Biological importance: Leeward koa forest or leeward midelevation areas in general not represented in NARS, rare plants in gullies, and critical habitat.
-Potential reintroduction site for Parrotbill, Alauahio, & Akohekohe. *Manduca* in vicinity. Nene observed, potential habitat for uau, opeapea, and beetles in koa forest.
-Koa forest type very reduced from original extent.

Priority Threats: Cattle, deer, pigs, goats (no hunting pressure). Weeds: bocconia, pasture grasses. Fire. Loss of genetic diversity.

Issues for conservation management: Existing fence in the southwest portion and Halealaka NP has fenced the north boundary.
-No public access and little possibility to get access in near future.
-Sustainable koa forestry is a goal for adjacent areas.
-There is funding from parrotbill habitat restoration, NARF/Watershed grants for fencing, and an EA is available for fencing area, although it is being revised now.
-There are potential recreational values, with more trails and cabins.
-There is current biological value – but 10 more years of ungulates may make it too late.
-Forest Reserve could have conservation value and management the highest priority in some areas, which would be codified in the management plan. Some didn't want the area divided into a forest reserve and a NAR, while others thought that would be appropriate.

HANAWI WEST/EAST

Location	Target ecosystem	Natural Communities	Designation
West and east of Hanawi NAR, including Waihoi bogs	Mon. mesic/wet, Lwlnd wet	West– Ohia Mon. Wet Forest, Ohia Subalpine Mesic-Dry Forest, Pukiawe Subalpine Dry Shrubland, Mxd Fern/Shrub Mon. Wet Cliff East —*Racomitirum* Mon. Bog, Mxd Sedge and Grass Mon. Bog, Ohia/Uluhe Mon. Wet Forest, Ohia Mixed Shrub Mon. Wet Forest	West – Koolau Forest Reserve, East – Hana Forest Reserve

Biological importance: Very important forest bird (Akohekohe, Parrotbill, Alauahio, & Uau) area, many rare plants and very intact forest. Recent survey found 18 T&E plants. Unique bog ecosystem, recovery and critical habitat.
-Hanawi stream and "big spring" further makai have extraordinary aquatic insect fauna and geology of a subterranean stream flow.

Priority Threats: Mammal predators, feral pigs and possibly cattle and deer. Weeds concentrated in Koolau Gap with *Clidemia*, Kahili Ginger, Strawberry guava, Palm grass, *Tibouchina* and mature African tulip trees. Pigs destroying Waihoi bogs.
Issues for conservation management: EMWP fenced 10 mi (4,250 ac) of Hanawi West with ongoing ungulate removal, fence maintenance, and weed control.

- NARS crews are fencing a lower section in Hanawi NAR, skirting top of Kuhiwa.
-Hanawi East – EMWP proposal to fence area, including Waihoi bogs. Forestry has received funding to actively work on the ground with EMWP.
-A request made to remove areas from NAR nomination, as Forestry has been involved in fencing proposal for past year. If in the future, Forestry does not have the manpower or funding to do fence inspection and maintenance, then NARS personnel could possibly go up there to assist. However, the Forestry Program must take primary responsibility for this work since they have expressed willingness and now have the newly acquired ability/capacity to do so. Sufficient time must be allowed for the Forestry Program's newly built capacity to develop and unfold over time. If over time there is shown an unwillingness or inability to do so- if it is more an issue of Forestry failing to proactively manage and protect these mauka conservation units (rather than a budget issue), then the NAR proposals may go back on the table.
- NARS and FRs should work together. No imminent human use threat. Forestry is dedicated to do the bog fence and the bigger Waihoi valley fence, but does that protect it into the long-term? It might be more efficient to have NARS maintain the fence in the long term, since they already have a crew out there in Hanawi.
-This project is going to affect the whole state as far as showing what Forestry can do and how NARS and Forestry work together.

WAILAU BACK PALI AND SOUTH SLOPE

Location	Target ecosystem	Natural Communities	Designation/Ownership
Very back of Wailau valley and south slope east of Kamakou	Lwlnd wet, lwlnd mesic, mon wet, wet cliff	Open ohia, native wet cliff vegetation	Molokai Forest Reserve, Private landowners

Biological importance: Very high habitat quality, and adjacent to Olokui. High aquatic resources, even in headwater areas. 4 species of snails found there, and surveys planned for endangered seabirds. Lowland wet not well represented in Molokai NARS. Lowland mesic/dry areas on South slope not represented, and very reduced in extent.

Threats: Pigs, goats, deer. In Wailau, animals could use ridges in this area to access Olokui and Pelekunu. *Clidemia* infestation. In South slope, goat impact mostly below 3,500 ft, and very large fires have occurred occasionally, facilitating molasses grass.

Issues for conservation management: No aerial shooting in the back of Wailau, but it is important to control there to protect Olokui. There are 5 areas for strategic fencing.
-TNC and Forestry have done 3 *Clidemia* biocontrol releases there.
-Management plan for Molokai Forest Reserve is being evaluated by DOFAW. Larger scale fences could be put into that plan. More surveys and info are needed to inform plan.
-Should expand shooting range, but could keep area a Forest Reserve.
-However, NARS has less justification and support to shoot if they are not in a NAR. Public perception of NARS is very shaky if they are shooting outside NARS.
-Fencing could happen if it stays with Forestry. However, NAR needs lowland wet representation and a way to institutionalize conservation management.

-For South slope, all management needs to be on a larger scale than the existing Forest Reserve slices, since fires are a problem. A boundary fence wouldn't help if animals come in from the sides.

COAST EAST OF WAILAU

Location	**Target ecosystem**	**Natural Communities**	**Ownership**
From Wailau to Puahaunui	Coastal, wet and mesic coastal cliff	Same	Puu O Hoku Ranch

Biological importance: Very high coastal species biodiversity on land shelves and cliffs. Wet/mesic coastal cliff a rare ecosystem. Coastal contiguity with lowland ecosystem.

Threats: Many goats. Towards east, area becomes weedier, and more goat damaged.

Issues for conservation management: Aerial shooting is only management option.
-A new management plan being developed for Puu O Hoku Ranch.
-NAPP is a vehicle for encouraging private land management. This is a good area to keep in mind for grant opportunities.

LANAIHALE

Location	Target ecosystem	Natural Communities	Designation/Ownership
Summit area 2,100 – 3,370	Mon wet/mesic, Lwlnd wet/mesic/wet cliff	Ohia, uluhe, aalii, pukiawe, lama, & mamane –dominated forest	Castle & Cooke

Biological importance: Rare snails, opeapea and 2nd largest known Uau breeding population, Newell's shearwaters may also breed there. Only existing Lanai type forest for montane wet, mesic, lowland wet/wet cliff/mesic. Many rare plants and PEP targets.

Threats: Deer, mouflon sheep main ungulate threats. Priority weeds are Formosan koa and strawberry guava. Fire. Small mammal predators.

Issues for conservation management: Existing Forest Stewardship plan with fencing, reforestation, deer and weed control.
-Fencing in increments; 10 miles have been completed. Animals are not out yet.
-There was Section 6 money to put up exclosures. The LIP and Private Stewardship grants made the fence.
-Conservation easement or acquisition are options; DOFAW has acquisition expertise and Maui County Dept of Water Supply may be interested in an agreement.
-Currently, the landowner sees the animal control as secondary to the invasive control.
-There is fire history in that area – 3 large fires. Need to protect reef from sediment.
-There is interest in using the area commercially: ziplines and nearby developments.
-There have been instances of fence cutting. More DOCARE needed in Lanai.
-Need money for long term maintenance of area, and more positions to map vegetation.
-Past management has demonstrated the costs of mechanical removal of invasives.