

Napu'u HCP (Pu'u Wa'awa'a and Pu'u Anahulu) ESRC Site Visit Transcription
December 7, 2015

Call to order by Scott Fretz, DLNR-DOFAW

Introductions

ESRC

Scott Fretz
Kim Burnett
Gordon Tribble
Jim Jacobi
Sam Gon
David Tessler

DLNR DOFAW Pu'u Wa'awa'a Project Staff

Edith Adkins, project planner
Elliott Parsons, *Pu'u Wa'awa'a* coordinator
Kealaka'i Knoche (Field Crew Leader)
Ryan Belcher (Field Nursery Assistant)
Keni Wallace (Field Assistant)
Jupiter Crosson (Field Assistant)
Allen-Conrad Hurley (Intern)
Taylor Warner

DLNR-DOFAW

Kate Cullison
Glenn Metzler
Afsheen Siddiqi
Jim Cogswell
Lyman Perry
Kanalū Sproat
Maggie Sporck-Koehler

Pu'u Wa'awa'a Advisory Council

Ku'u lei Keakealani, former Pu'u Wa'awa'a Advisory Council member
Lehua Alapai, Pu'u Wa'awa'a Advisory Council
Hannah Springer, Pu'u Wa'awa'a Advisory Council
Bob Okawa, Pu'u Wa'awa'a Advisory Council
Frank Sayre, Pu'u Wa'awa'a Advisory Council

Others

Steve Hess, USGS
Amanda Uowolo, USFWS
Micaiah Sutter, USFS

Andrea Willow, USFS
Frank Singer, public
Kawika Devine, public
Joel Nakamoto, public
Kalani Pacheco, public
Genie Ng, public
Andrew Stevens, public
Bernard Hoopai, public
Grant Kew, public

Start of Tour

Scott F.

- Purpose of the site visit is for the ESRC to do the site visit and interact with staff.
- DOFAW is intending to operate a game management area that may involve take so requires an HCP. HCP is under consideration by the ESRC.
- Public testimony will be taken at this site visit. There are other opportunities for public input, including a public meeting coming up.

Edith A.

- Shows map of plan area.
- 13 plant species covered in HCP are in the Hauaina Conservation Unit.
- Start field tour in Hauaina Unit.
- Describes how the tour will proceed.

Scott F. opens the visit to Questions. No questions asked at this point.

Ku'ulei relates a local story and mo'olelo.

Hauaina Unit

Elliott P.

- Describes Hauaina outplant area that will be viewed.
- About 50 acres.
- Mitigation site under HCP.
- No T&E plants at this site before outplanting.

Jim J.

- What is the target or vision for this area.

Elliot P.

- There is a general strategy but will describe more at the site.

At the site:

- Fence built around 2008, free of game mammals (pigs, sheep & goats), 50 acres.
- This ahupua'a is about 40,000 acres and has 3 land designations.
- They locally source all of the seeds.
- As part of HCP process plants were surveyed over ~10 yr period
- Plants grown at Kamuela State tree nursery and Volcano rare plant nursery and on-site nursery.
- Aiming for 0 weed tolerance.
- Currently planting more common species to make the site more favorable for rare species.

Kealaka'i K.

- Every site is different.
- Work with other managers to develop best practices.
- 3 acre site here at Hauaina and also working at Kipuka Oweowe and Uhiuhi sites, total of 9 acres.
- Other outplanting areas outside Hauaina have more native remnant vegetation to start with.
- At Hauaina they started with thick fountain grass, the worst possible initial condition, then spray up to 3 times with herbicide to kill the grass.
- After weed-free then plants put in ground. Some areas up to 5 years old at Hauaina.
- Having good success.
- Watering – they use a gallon to 2 gallons at planting.
- From there they water again only if necessary.
- Pushing plants to their limits.
- They would water in an extreme drought.
- Last treated weeds 2 weeks ago, 3 weed sweeps since put in using roundup at 2%.

Elliott P.

- Formula for planting has been developing.
- Not a set species diversity being targeted yet.
- Much experimentation.
- Some monitoring plots and belt transects have been set up.
- Going for high diversity.
- Volunteers are guided by staff when planting.
- They use osmocote fertilizer in nursery but not any additional in the field.
- Try to use shading and wind protection to help sensitive plants succeed.
- Ma'o hau hele grows very fast at the site
- Silver oak is a invasive tree in the area and may release some toxins in soil.
- Kauila pointed out.
- Aalii is recruiting very well. Leaf shapes vary quite a bit.
- Hoawa (*P. hosmeri*) and wiliwili seen.
- Ecosystem engineers such as aweoweo seen.
- *Kokia dryarinoides* seen.

- Developing a database to help with cost estimates.
- 2-3 yr old area has had hundreds of volunteers and many hundreds of hours to establish.
- Crew size ranged from 2-7 over the last 3 years at this site.
- Work at Ka'ūpūlehu has shown that site maintenance after planting is critical otherwise weeds come back in.

Hannah S.: Stated ranch staffing level was 30-35 individuals when in operation, multiple times what is on the ground now for restoration.

Jim J.: Asks about budgeting levels and assurances of funding.

Edith A.: Responds that she feels budgeting estimates are currently over for some things and under for others. Estimates in flux.

Scott F.: Asks what funding sources are being considered.

Edith A.: Says they use Pittman Robertson funds and are going after grants.

Scott F.: Says the issue of funding assurances is still not resolved. State government can only budget for 2 years. Discussions with Attorney General ongoing.

Ku'ulei K.: Noted that four generations of her family have been there planting. Cultural connections are important for her and Hawaiian people.

Haplostachys haplostachya (Honohono) and *Stenogyne angustifolia* seen.

Forest Service Plots

Amanda O.

- Primary objective of USFS is to develop remote sensing.
- Using lidar data to develop 3D elevation map at 2.2 m resolution.
- Then develop habitat suitability model based on leeward position and downsloping topography.
- Critical because wind which can desiccate plants in this dry forest.
- Previously published work for PTA.
- High suitability sites were wetter and soil deeper and plants had higher nitrogen content (work done on common species).
- Collaborators – DOFAW, PTA, Carnegie Airborne Observatory.
- Funding from DoD.
- Working with 10 endangered plant species at Pu'u Wa'awa'a.
- Outplanted 2,790 plants at Pu'u Wa'awa'a.
- 10 research plots.
- Anything to target restoration actions is important.
- At high suitability (HS) site plants have been in 18 mos.
- Overall survivorship at Pu'u Wa'awa'a is 73% after 16 mos.
- 8 of 10 spp have flowered and produced seed.
- *Silene lanceolata* very successful. 231 individuals recruited.

- Germination of *Portulaca* starting.
- *Spermolepis* producing seeds.
- *Stenogyne* doing very well.
- *Neraudia* were doing well but turkeys have recently been impacting.

Edith A:

- *Silene* mitigation goal is 1900 plants.
- Forest service planting will go towards meeting criteria in HCP.

Amanda O.

- Weather data being collected.
- Normalized difference vegetation index (NDVI; measure of veg greenness) data being collected. Use to decide when to turn on irrigation. Also use soil moisture measures.
- Permit from FWS required irrigation lines. Only used irrigation once at Pu'u Wa'awa'a.
- Helped build greenhouse that HCP will be using.
- Taking photopoints and time lapse photography, also photochemical receptor index (PRI) sensors for light use efficiency and leaf moisture.
- In 2019 research would be end.
- *Portulaca* seeds have had some chew marks.
- Currently no mice or rodent controls.
- They are developing habitat suitability maps for Pu'u Wa'awa'a.
- Jim J. asks how data will be used for restoration work planned and answer was that they could prioritize restoration sites or species using suitability ratings but this has not been done to date.
- Low suitability site plants doing well also but high rainfall year. More differences between species than across the suitability sites. When soils dry out the HS sites may become more important. Site has *Portulaca*.
- Tool will help meet mitigation goals.
- Lidar data best for 3-D maps; tried WorldView imagery but have not had success.
- Costs tracked and will be reported.
- These test sites may not be that representative of areas they want to restore because so little was there to start.
- Will use ANOVA pairing to test results of suitability sites.

Elliott P.: Suitable survival ranged from 30-90% at DOFAW Hauaina sites.

Greenhouse

Edith A.: Goal is to get plants as strong as possible for outplanting.

Ryan B.: greenhouse manager:

- Trying different methods to be more efficient and quicker.

- Type of container important depending on outplant site, e.g. dibble tubes for areas of thick kikuyu grass.
- Plants get gradually hardened, including time outside.
- Doing cuttings of some species.
- Growth both common and endangered, whatever is efficient.
- Mold has not been a problem.
- He pushes his plants as much as possible to harden them.

Edith A.: 15 covered species in HCP.

Edith A. and Elliott P.

- Honohono is difficult to get seed set. Low germination rates
- Between 3 nurseries they should be able to grow all 15 species.
- Making phenology calendars to better target collection.
- Species not covered but critical habitat designated – *Hibiscadelphus* and *Bonamia* some outplanting and *Hibiscadelphus* is propagating on its own. They can grow these if needed.
- Water is expensive. Adjusting to use less water where possible.
- Rely a lot on volunteers for greenhouse/outplanting work.
- Planting in 4 exclosures, 3 in lower area and 1 higher up that is very different.
- Phytosanitation – getting some ants from Waimea. Trying to stay organic if possible.
- Stresses that plants get sent out clean.
- Plants are not sent out until and unless healthy.

Elliott P.

- Previously had problems with plant quality and survival but hiring Ryan has been a big help.
- More greenhouses not planned at this point but it would be desired. Waimea can produce a lot of plants. Do not want to put too many plants out at one time.

Cone Site

Halapepe unit is ready to go in.

Arch survey done so ready to put in as soon as funded.

Kanalu S.

- Game management is the reason for the HCP.
- The only goal for game management under this HCP is to provide annual sustainable hunting for sheep and goats with populations of those species that will support archery, muzzle loader, and rifle hunting.
- Aerial surveys raw numbers – sheep 200-300, goats 700-800.
- Need to increase sheep for hunting.
- Wants to use augmentation – bring in animals removed from other areas.

- Wants to put collars on sheep and monitor for 3 yrs.
- Wants to improve quality of goats such as better forage, e.g. cover plots.
- Some experimentation done with planting kukui.
- Want to develop game management plan.
- Major hunters, maybe 5 - he wants to meet with on a regular basis such as monthly to develop the plan.
- Area being considered - about 104,000 acres.
- Do not want to increase goats mauka, only sheep which are more desirable game.
- Model is Lāna‘i which has successful hunting program.
- For Lāna‘i: 3500 apply, 1500 hunted for mouflon sheep; 4400 apply, 2500 hunted for deer.
- In Pu'u Wa'awa'a, its only been an archery hunt with animal control permit, not a season hunt; about 400 people applying but if expanding to rifle maybe 1000 would apply, however do not currently have the animals to support.
- Rifle hunting currently only at Mauna Kea and Kapapala.
- Water troughs used and current number may be sufficient. HCP allows more to be installed.
- If cover plot or planting they would develop the water source needed.
- Important to plan for the number of animals needed and this should be based on the expected number of hunters.
- Estimate of a year to develop the game management plan.

Edith A.

- HCP assumes all plants outside planned exclosures would be taken.
- What matters is whether using state funds or federal funds.
- Cattle use would not change on Pu'u Wa'awa'a aside from being excluded from exclosures and would overlap with hunting.
- Plan is to fence cone area within the next several years.
- Grassy areas are good outplanting sites.
- Grazing is good to keep the vegetation down to decrease fire risk.

Scott F.: Exclosures amount to 8-9 percent of total area.

Edith A: *Zanthoxalum dipetalum* has only 10 individuals and only 4 will be in large fenced exclosures. The remainder will be individually fenced. Reason is it would be too costly and time-consuming to include these isolated trees in a larger exclosure.

Discussion of what ungulates the land can support. Want to stay under carrying capacity. One reason there are currently not more animals - dog issues and poaching issues.

Bob O. Discussion of hunting.

- Much difference in carrying capacity in different areas.
- Hunting more pleasant where more animals and terrain is interesting.
- His day of successful hunt is not seeing another person.

- In Pu'u Wa'awa'a Forest Reserve is more desirable area to hunt than Pu'u Anahulu Game Management Area – more variation in terrain and habitat.
- More hunting pressure in Pu'u Anahulu. Pu'u Wa'awa'a is much more limited and archery only.
- Opportunity is sometimes more important than killing an animal.

Kanalu S.

- Pu'u Wa'awa'a will require rule change to allow more hunting and Kanalu is considering combining Pu'u Anahulu and Pu'u Wa'awa'a as a hunting unit.
- Quite a few hunters are subsistence hunters.

Scott F.: Tie rule change to management plan.

Bob O.: Questions if it is truly subsistence hunting but instead just hunting to use food. Hunting can be a cultural act.

Ku'ulei relates a local story and mo'olelo.

Isolated Tree Species Stops

Edith A.: At A'e (*Zanthoxylum dipetalum* var. *tomentosum*) tree stop a single tree is fenced. Very few left in the wild (10). These isolated rare trees will not be in a large planned enclosure because habitat around them is primarily invasives. During the last drought they watered trees. They have collected seeds from all individuals and are propagating. Air layering has not been successful. Target is 250 reproducing individuals after 25 yrs.

Jim J.: The area around this tree would have been a mixed closed canopy forest with much diversity, possibly 10-15 tree species.

Sam G.: Joseph Rock reporting this area was one of the richest botanical regions in Hawai'i.

Hannah S.

- There were lightning strikes in the area. Ranchers were the fire wardens. Fountain grass and various waves of invasive plants have come in.
- Fountain grass was introduced to Hawai'i as an ornamental.

Edith A.: Stopped at an isolated 'Aiea tree; not doing that well. Tree will be fenced.

New Henahena Unit

At top of eastern Henahena line. Forest Bird Sanctuary above.

Edith A.: This fence will enclose almost 750 acres. Primary function is to protect 'Aiea, which is host for Blackburn sphinx moth. Has 'ōhi'a overstory in areas. Wildlife sanctuary was set aside in 80s, fully fenced in 2005. Fire here in the 90s. Fire break along border. Henahena Unit set to go in end of year. Waiting for SHPD approval. 6 ft fence with skirting. Have over 200 miles of roads in HCP Plan Area. All roads act as fuel breaks. There is a fire plan written for the region by Three Mountain Alliance.

Kealaka'i K.: Fuel breaks a challenge. Tried to make at least ATV accessible. 2/3 can drive with a truck. They want to achieve at least a 50 ft fire break. To create they weed whack and then up to 3 sprays. Roads are kept outside the fenced units.

New 'Aiea Unit

Edith A.: Waihou near here is already fenced. Individual 'Aiea already fenced. Botanical, wildlife, archeological surveys all done and fencing contracts in place (for here as well as Henahena). Fence here should hopefully go in the next year or 2. Bird hunting will still be allowed in fenced areas and habitat for them will be improved.

Wrap Up

No questions for the ESRC or staff.

Jim J., Sam G., Express appreciation. Good to see successes, promises, and challenges.

2 bats noted flying over reservoir.

Public comment

Hannah S.: The trip was of great benefit for the advisory council.