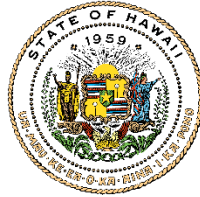


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**ENDANGERED SPECIES RECOVERY COMMITTEE (ESRC)
PUBLIC MEETING**

DATE: June 22, 2023 / June 23, 2023
TIME: 8:30 AM / 9:00 AM
LOCATION: DLNR – DOFAW Main Conference
Kalanimoku Building 1151 Punchbowl St, Room #325.,
Honolulu, Hawai'i
Online via Zoom
Online Livestream via YouTube recorded at
<https://www.youtube.com/watch?v=xg3Z4qV8adM/>
https://www.youtube.com/watch?v=x_Hr0BH2Abw

FINAL SUMMARY MINUTES

MEMBERS

Lainie Berry
Loyal Merhoff
Aaron Nadig
Jim Jacobi

Lisa Spain
Melissa Price
Kawika Winter

STAFF

Myrna N. Giraldo Pérez – DOFAW
Kinsley McEachern – DOFAW

Katherine Cullison – DOFAW
Lindsey Nietmann – DOFAW

OTHERS

Brad Rockwell- KIUC
Beth Amaro-KIUC
Dawn Huff-Joule Group
David Zippin- ICF

Ellen Berryman- ICF
John Brandon-ICF

Andre Rain- ARC
Marc Travers-ARC
Kyle Pias- Hallux

06.22.23/08:32 AM/ <https://youtu.be/xg3Z4qV8adM>

ITEM 1 - Call to order, announcements

Lainie Berry (DOFAW) called the meeting to order. ESRC members introduced themselves.

Katherine Cullison (DOFAW) inquired KIUC about the available dates via Doodle poll. She hopes to hear back from them soon and tomorrow the members can pick dates for the next meeting.

06.22.23/08:38 AM/ <https://youtu.be/xg3Z4qV8adM?t=417>

ITEM 2 - Status update and briefing by Lindsey Nietmann, Forest Bird Recovery Coordinator, regarding conservation activities for recovery of ‘Alalā

ESRC Discussion and Recommendations:

- Determine decline levels and/or tolerance levels.
- Determine success criteria for this project.
- Conduct a pre and post-project plant survey.
- Determine what food sources are the ‘alalā consuming and consider potential impacts it might cause due to food dispersal. For example, if the main source of food is the invasive Strawberry Guava, analyze the potential impacts.
- Consider the development of a Safe Harbor Agreement for private landowners (especially koa harvesting sites) that might be impacted by this project.
- Consider that individuals might be harder to capture than anticipated once released into the wild.

06.22.23/09:16 AM/ <https://youtu.be/xg3Z4qV8adM?t=2677>

ITEM 3 - Continued Presentations and ESRC Discussion of KIUC Draft HCP

ITEM 3.A.3 was accelerated before ITEM 3.A.1 in the agenda order because Aaron from USFWS, who was presenting ITEM 3.A.1 had technical difficulties with his microphone and significant time allotted did not resolve the issue. Then ITEM 3.A.2 went next since it was more closely related and finally ITEM 3.A.1 was presented. Then discussions and recommendations for all of 3A will proceed.

06.22.23/09:36/ <https://youtu.be/xg3Z4qV8adM?t=3851>

ITEM 3.A.3 - Overview of Conservation Strategy Approach for Covered Seabirds: KIUC will address questions specific to KIUC conservation sites

- a) Available breeding habitat
- b) Known breeding colonies (source populations)
- c) Reduced level of threats
- d) Reduce impacts of powerlines and light attraction
- e) Performance at conservation sites to date

Summary:

All 10 sites are in NW Kaua‘i, inland from the Nāpali Coast. Most of the sites were established between 2009-2016 and predator control and monitoring have been occurring since this time. The selection process for the conservation sites is based on knowledge and modeling on suitable breeding habitat.

Nine sites are selected to support Newell's Shearwater and seven sites are selected to support Hawaiian Petrels. Key features for suitable habitat are slope and native vegetation as well as wind for Hawaiian Petrel. Newell's Shearwater have larger breeding habitat that is dissimilar from Hawaiian Petrels. Steep cliffs are preferred for Newell's Shearwater whereas wet forests are preferred by Hawaiian Petrels. Both DOFAW and USFWS have provided guidance on KIUC's mitigation sites based on the Newell Shearwater 2016 Recommendation.

The prospect of doing management in the large valleys like Wainiha, Lumaha'i, and Hanalei in Kaua'i is quite daunting and inaccessible for research and long-term management. These valleys are quite different than the current areas being managed for discrete populations. The intention is to protect and enhance present colonies and use social attraction to pull in birds into new areas. Access has not been feasible in Robinson Preserve, nor is long-term management. Cooccurrence of locations of street lamps and radiance of all light sources and evidence of fall out of birds provide clear gaps across all the islands, thus limiting the conservation sites to where they are located.

Tracking research in 2016/2017 included the use of data loggers, which is GPS level data from breeding birds as they moved into the breeding colonies after foraging trips, come in on Nāpali coast, track in across the cliffs and then following a super highway into Upper Limahuli (Newell's Shearwaters) specifically into their burrows and their outbound tracks include more outward dispersal into sea from a high altitude for a couple of kilometers. By the time they reach sea level they are a couple of kilometers out already. Low threat level for Newell's in upper Limahuli particularly in comparison to birds on east and south side of island. Flight paths for Hawaiian Petrels include an inbound track of two routes following the Nāpali Coast into North Bog and the other group was coming in from the NE area and had flight paths that were much higher than powerlines. Outward bound tracks for petrels was similar to Newell's in Upper Limahuli. Considering location of these colonies, the majority of birds are not put into danger but the time of night and wind could put them in danger of powerlines but KIUC is actively minimizing with diverters. Kalaheo Kahili would have been a good study to use the data loggers on since they are a whole area of threats. Monitoring techniques including burrow monitoring, auditory surveys to identify distribution within management sites, and acoustic sensors which measure call rates a minimum of 250 meters or more apart, to measure health of the colony as a whole. Data has indicated annual increase of call rates each year for over a decade for both Newell and Hawaiian Petrel in addition to finding more burrows, prospecting birds, and prospecting burrows. Reproductive success rates are having dramatic increases as well, this is a much bigger change from years ago. Predations were occurring at a much larger rate and now rat predations and more predators are dropping down to an extremely low rate a year. Barn owl requires specialized techniques for removal but using multiple methods of predator control is reversing the fate of the listed species.

Past Questions and Answers:

- **What about flight paths?**

The directions birds are flying matters a great deal in the potential risk for powerline collision and the risk of light attraction.

- **Explanation of how short term HCP was successful –how many benefits to use in the interpretation of this current draft HCP. What did it get us, what did we learn specifically and how does it carry over to give us assurances that we are going to be successful.**

ESRC should have access to 2022 seabird monitoring and predator control annual reports. This is what came from the short term HCP. Was a USFWS not a DLNR HCP.

New Questions and Answers:

- **Why would you limit yourself to areas that have to have both; they are two different species? Newell's have a bigger available breeding habitat area than the Hawaiian Petrels so why would you constrain your Newell's down to overlap with the Petrels? Why is this a strategy?**

The species we are most limited by is Newell's Shearwaters; we are most specifically trying to find available and manageable areas for the Newell's. The map shows available breeding habitat and is indicative of where they could be. In reality, the current distribution for the Newell's Shearwater is much more limited than the available breeding habitat of where they could be. Newell's Shearwater drive the story since they are not present across the island like they used to be. The habitat is not uniformly distributed around the island and the actual locations where the birds are found is even smaller still. What was used when these sites (distribution from audio surveys) were selected was more limited areas than the breeding habitats suggested. Private property does not allow for access to manage certain areas outside of the NW. Song meters give a bit more data but this is a pretty good idea of the concentration. Auditory surveys give good details where birds remain on the island, which is more heavily in the northwest corner. There are scattered additional populations in the South and Eastern part of the islands but they are remnant colonies implicated by other threats.

- **Relating to known bird distribution, doesn't your radar data show slightly different paths from the GPS transmitters flight path?**

The radar data includes targets going all over radar stations. Those include birds going in and out of Hanalei, Lumahai, and Wainiha areas. This GPS data of birds leaving the conservation site locations is specific to the Upper Limahuli area.

- **How much fall out do you get in that area based on previous slide?**

These are breeding adults and fall out is a traditionally a juvenile related issue. Fall out is most commonly in Princeville area and Hanalei. These birds that are falling out are birds coming out of Hanalei and Lumahuli. Relative to the other areas on the island these sites are most removed from the threats that the HCP is focused on. We are not saying that birds that go into upper Limahuli would never face powerline collisions or light attraction but relative to other areas on island these sites are most removed on island from urban threats that the HCP is focused on.

- **For the Hanalei and Wainiha populations are they breeding in that private land area?**

Yes, there are good populations of both species in Wainiha, Lumahai, and Hanalei. Both species are in there. Those two valleys, Wainiha and Lumahuli, are private land and are huge. The prospect of doing management in these large valleys is quite daunting since the birds are high up on the sides of the valleys very high up and inaccessible, quite different than areas where discrete populations are currently being managed. Hanalei is state land where Newell's and Hawaiian Petrels are, but it is a huge valley with convoluted terrain and dense vegetation, the concept of effective management is at such a larger and less effective scale than dealing with these smaller more manageable areas.

- **Are the areas that are fairly steep still susceptible to the same threats?**

From the predation point of view there is less of a threat. That is why they are still there and able to cling on. There is a small population of Newell's shearwaters on the cliffs there on Sleeping Giant. The steeper the terrain the less mammalian predators that can exist. Surveys in that area included 60-70 degree slopes covered with native trees but these treacherous areas on the Lumahai and Wainiha polygons are very hard to access – can take all day to work your way up those cliffs. The monitoring techniques and managing the burrows would be super challenging, as well as using good nature traps, cat trapping, and removing predators from a large landscape is super hard to tackle. And the powerline issue and light attraction issue adds on to that. It is agreed that having many eggs in one basket in NW is not ideal and a legitimate concern. The existing colonies that exist elsewhere: Kahelo, Kāhili, Sleeping Giant, include only a handful of birds in these steep, vast areas and exist along with higher threats of power lines and light attraction issues in the towns. They also exist closer to urban areas with higher density of predators, intense use by landowners, as well as Rapid 'Ōhi'a Death. Upper Limahuli has one landowner who is already protecting these areas, and is dedicated to the target and has a lower level of threats.

- **Zooming out to the bigger picture, a concern that was brought by ESRC is we are not just talking about conservation but more broadly an HCP- the number of animals projected over the course of HCP is not being mitigated for in this plan. The areas that have been selected have enormous plummets in the population estimates and these last remaining focal areas eventually dieout- the plus and minuses don't add up over the long term.**

There has been specific direction from the agencies to focus conservation sites in the NW corner of Kaua'i. KIUC went this direction with guidance from the agencies. The rationale of the conservation sites in the NW corner for Newell's was developed in conjunction with USFWS, DOFAW, and seabird experts and is based on the 2016 strategy. The focus was to concentrate there since birds are there, habitat is there, and threats are less. USFWS is directing any entity conservation of these protected seabird species to the NW corner.

- **What protects the maximum number of birds and makes up for losses? Eye is on the big picture- the end size of the enclosures was smaller in the final proposal than earlier proposed.**

Effectiveness of predator control at the sites where it has been ongoing for the last 10 years protects the maximum number of birds. There is a whole presentation on the predator control actions.

- **Relating to known bird populations since applicants are supposed to be using best available science- on the map it does not depict the colonies- figures the applicant is using are misleading and not allowing the ESRC to understand the whole picture. Cherry picking data to show where remaining colonies are is misleading.**

Those maps were auditory distribution maps and now we have a wider understanding of distribution through song meters and more auditory surveys but the overall picture is the same. Outside of private land areas where we can't access majority of birds, these are the areas where we know they are. Scattered colonies exist scattered in Kahelo Kāhili, Waimea Canyon They are on the cracks and crevices of cliff areas and management would include Barn owl control on tops of cliffs, but you still have issues of powerlines and lights of surrounding areas. We could produce a new map of current known distribution of species with acoustic sensors and auditory surveys. The distribution wouldn't change and management would be suggested for the same. We are being transparent with the data we are showing-

it is data that is available as of 2019- the picture of what was known when majority of conservation sites were selected.

- **Can you upload and share the PowerPoint for USFWS?**

No USFWS presentation today. NESH 2016 strategy is uploaded and available to public. ESRC members and USFWS can set up a meeting if there are questions.

- **What is the size of those conservation sites? What numbers are in those conservation sites?**

Annual monitoring reports indicate the size of the conservation sites. Estimate of population sizes were determined in each colonies by using habitat suitability models within each management sight coupled with auditory survey polygons to average nearest neighbor and create population distribution for nocturnal, rare and cryptic species. Size of management sites is a total of 2,216 acres. Estimates of Newell's Shearwater range from 1298 to 1640 and for Hawaiian Petrels they range from 2366 to 3981 breeding pairs of Hawaiian Petrels . These are not small populations of these species. Confident with population sizes at these stages, they are not marginal colonies for considering they are endangered species and rare.

- **Is North Bog going to be a social attraction site?**

There is no fence in North Bog. It is not a social attraction site.

- **You have four sites with fences?**

KIUC have or will take over management of Honapu and KIUC social attraction sites and KIUC will construct a new social attraction site at Upper Limahui and site 10.

- **The conservation areas are adjacent, but not containing the colonies? What are the contained population estimates?**

They were selected because they have large populations of either one or both of the species. They are also on the edge of large populations: source populations that can be drawn from as the populations increase in size. There are two figures showing distribution of species around the colonies in the annual report of the short term HCP. We are almost fully implementing what we agreed for over the long term.

ESRC Discussion and Recommendations:

- The conservation areas are adjacent, but not containing the colonies? What are the contained population estimates? Add to HCP this relevant info from the annual reports, summarize it in an appendix.

06.22.23/10:29 AM/ <https://youtu.be/xg3Z4qV8adM?t=7043>

ITEM 3.A.2 - Overview of Conservation Strategy Approach for Covered Seabirds: KIUC overview of how the proposed conservation plan will achieve cumulative net benefit

Summary:

Net Benefit or offset is more complicated than a snapshot of birds lost and birds produced like in typical HCPs. Complexities of impacts, age structure of the population, spatial distribution of the

metapopulation, makes offset harder to explain. Providing forecast of model: number of fledglings produced at all of the conservation sites combined is the forecast of model. With the powerline collision fall out mortality from the model, KIUC is not claiming that it means full offset. An adult or subadult lost is not the same as a fledgling produced. Spatial differences do matter and NW Kaua'i location focus matters a great deal for modeling exercise- birds where predation is lower have higher lifetime contribution in managed areas and have a greater influence on population than birds in unmanaged areas. Offset is also a function of time, there is a lag in benefits that are able to be produced because of the assumptions in the model and because the species are slow reproducing species. Differences of mortalities are different spatially and fledglings produced can't be compared to powerline mortalities which include breeding adults since you need adjustment for age structure. Minimization is only part of the equation for offset, if you have a drop in powerline mortalities, you need to account for not only birds that would be injured or die but birds that would have died and avoided the lines and then go on to reproduce. Thus the story is complicated and minimization is two fold and harder to quantify. Net benefit/ offsets considers Kaua'i island as a whole for both species.

As of 2023 KIUC has been producing more fledglings than taken, due to the increase in conservation success at the managed sites and decline in powerline mortality. Reproductive value is greatest due to reduced threats from powerline collisions and light attraction and predator reduction in NW Kaua'i. Producing benefits faster- disagreements about whether it is enough. Produce the fastest benefits and reverse the metapopulation decline island wide are the goals. We see that midway through the permit term with Newell's Shearwaters there is positive growth with just the mitigation provided by the Kaua'i Seabird HCP accounted for by the model, no other conservation projects are considered in the model. Others will be doing conservation and for this purpose KIUC is not assuming those additional benefits. Even if powerline and street lights didn't exist there would be steep declines in populations of these species due to existing threats, without intervention at conservation sites. With that in mind, indicator of net benefit comes from shape of line with increase in both species later in permit term. This results in a shearwater increase and a stabilizing population of Hawaiian Petrels as well as a great number of individuals on the islands and breeding pairs. Supports a viable metapopulation that is more resilient to future threats and is growing by the end of the permit term. USFWS has helped KIUC to define net benefit and KIUC has been using their guidance in metrics and targets.

Past Questions and Answers:

- **What is the work you have done and the status of work on creating the 80/20 ratio?**

The work is ongoing and there is not a completed finding. It is very complicated. A lot of data is needed. Breeding data is tough- gonad can be sized up and down depending on time in breeding season and there is a difference in individual breeding times that influence brood patch/ gonads. During breeding season and differences between individuals in brooding patches shift and to determine the breeding status of dead individuals is very hard. We don't have that data with gonad and brooding patch fluctuation. Not enough data- Day and Cooper made major assumptions. John did a sensitivity test to see how the ratio impacts the model and the model is not sensitive to the particular ratio.

- **Concern from last meeting: Ratio of impacts depending on age and also ratio of impacts from size of breeding colony. Taking a bird from a smaller colony is going to have a larger impact than taking a bird from a larger colony. The relative impact of losing a breeding adult in a small colony would be different in a small 2 pair colony versus an 80 pair colony. If we lose the same number of breeding pairs in a smaller colony versus a larger colony, that seems much more impactful. What are your thoughts? 195 D cumulative benefit- a**

loss of breeding colonies scattered around island is counter intuitive to benefit. Loss of these breeding colonies is not being factored into the cumulative net benefit.

The size of the breeding colony and relative impact is factored into the model. Modeling 10 subpopulations. Each are made up of multiple breeding colonies. Sizes are all different. All conservation sites are subpopulations. 500 breeding pairs in Upper Limahuli. Those are taken into account in the model. Not all birds produce the same contribution to the metapopulation (all different breeding populations on island). We don't model at individual breeding colony level unless the conservation sites are considered a breeding colony. Colonies are almost functionally extinct. Conservation point of view is if the colony declines whether or not they are there is not having an impact on the metapopulation (overall numbers). Five pairs vs zero is very little ecosystem function. When we reduce the overall footprint across the island upon which these occur, we reduce the footprint for those to be bigger since the social attraction won't exist. These colonies would have covered the island and the dramatic declines impact the ability to recover these colonies spread out. Five disappear and the footprint is reduced over the island as well as the potential to restore these in the future. Letting a colony disappear is painful and hard to reconcile, ie. Kaheleo colony loss. The poles are tombstones. Tiny populations beset upon on all sides and you don't want to let any colonies go. From a realistic point of view, with the finite resources, implications, and landowner complications, powerline collisions, and the never ending array of predators which would require a very large predator control project. We need to focus on the metapopulation and not just a numbers game. Not using fledgling produced versus birds lost. About stabilizing and reversing the decline in the island wide metapopulation. Purple versus blue line is so important. KIUC understands that there is more to the impact than just the numbers and is trying to account for that.

- **These species provide a very large net environmental benefit since they play a large ecological role- both terrestrial and marine. Asked about cumulative net benefit and a clear and concise statement from KIUC for how you are thinking about this. KIUC is looking at cumulative net benefit as a numbers game is this correct? What are your metrics for benefits, other than bird numbers or increasing population? Metapopulation as your focus but ok to lose a bunch of colonies?**

No, this is not how KIUC looks at it. Standard to the HCP is net benefit and we are looking at the cumulative impacts of the take. We have 10 separate sites managed separately and are modeling each of them as a distinct subpopulation with their own growth rates and own management because of unique characteristics of sites. Strategy is to produce the benefits across as many different sites as is possible for that area. As we think about net benefit, they are described in Chapter 5 and we have biological objectives for each of the covered species with specific metrics. We are working with agencies to define and clarify but there are metrics KIUC has to meet at different times with an overall goal to contribute to a viable metapopulation on the island for both Newell's Shearwater and Hawaiian Petrel. We track reproductive success rates at each individual sites and cumulatively at each site combined. We track the effectiveness of predator control both from the colony perspective if population is increasing and decreasing, and at the management perspective, what is the rate of kill compared to detection, etc.

New Questions and Answers:

- **There is a difference of 7000 individuals between present day and end of permit period. What is the major cause of the 7000 individuals lost?**

The mortalities are powerlines, lights, and predation combined. Major cause is we are assuming that there is an ongoing 12% rate of decline outside of the conservation areas that we are modeling from

Hanalei to Kekaha (that is a steep rate of decline). That is the way we are modeling abundance where the majority of birds would have to be to explain the estimated number of powerline collisions. If that rate of decline is occurring, that is driving all the lines at the beginning. That is a conservative assumption of decline from 1993-present data based on one data set, the Hanalei radar site. We can look at other radar data from 2010- present which has a stable trend.

- **Can you state differences in the USFWS model and the KIUC model to better understand the differences in how that data is produced? What are the underlying assumptions that are different between models? These optimistic models don't make you feel good about outcomes in the end.**

Aaron (USFWS): Modeled using similar data- some outcome differences and we are exploring that. A conversation around models wouldn't be productive. KIUC is using their own PDM models. Clear in their assumptions and clear in their data they are using as USFWS does. These are conservation models that are conservative and are not KIUC's expectations. The 12% decline is worst case scenario bounded by available data. If there is an ongoing 12 % rate of decline can the conservation efforts overcome that and get a net benefit? We are seeing a flat line scenario not a decline with the radar data. The modeling is conservative- it shows a decline at first. Radar is more hopeful over last 10 years across the island. Radar data also corresponds to Save our Shearwater data that suggests that things might be more optimistic than what is being used in models so models are clearly conservative.

- **2010: Why was that period chosen? Is that when mitigation started?**

We used the last decade, (legacy from being a decade from initial analysis in 2020) it was a a great inflection point when the decline started slowing down.

- **When you look at the radar sites, do those radar sites cover the conservation areas?**

They do not – they cover from Wainiha all the way around to Kekaha – truck mounted radar and steep, vertical areas limit the use of truck radar systems. Acoustic monitoring is along Napali to management sites to look at changes over time when radar is logistically impossible.

- **Would you expect to see any changes in radar data over time as you concentrate on conservation areas? For majority of radar strikes, the majority of those populations will go away ?**

We are concentrating management on the colonies but minimization is occurring throughout the radar area. Minimization is being highly effective in terms of reducing powerline strikes. The model is a conservative model and in the radar sites it is a stabilization and flat line at a lower level than used to be.

- **Evolution of KIUC over last 10, 15, 20 years: This one seems to model out at the projection of 6500 breeding pair NESH and a turn around and increase. Are the net benefits island wide? 10 year ago HCP evolution showed in 25 years out to 24,000 island wide population. Are the model changes due to ways in which you explain population and the former model assumptions were optimistic or not going to be able to get to original 13,000 breeding pairs due to conservation site limitations? Original expectations for this type of planning not doing a straight 1:1 and trying to produce a viable population... that is what they were looking at.**

Yes. Those were most likely models coming out of the planning solutions. These options are roundly dismissed by everyone. Those options are null and void. KIUC is now using models that are more aligned with USFWS. The changes are nuanced but the starting population used in the earlier models influenced the different outputs indicated. KIUC is doing massive powerline minimization and many more conservation sites with actions in new HCP than the previous one. In terms of the blue line (proposed HCP breeding pair abundance) KIUC is modeling a low rate of increase (2% maximum) and conservative rate of change that is presently occurring, so not getting up to starting breeding line abundance. Modeled population growth is slow under model assumptions.

- **What does the purple line mean? If there is no take then why is the decline so precipitous? Why did you do graph ‘unminimized take’? Why did you not do a ‘proposed mitigation only’?**

Purple is predation only, no take. Purple is a hypothetical situation without any powerline/ streetlight takes occurring. Red is predation plus unminimized take.

No take from covered activities. Useful to look at since it does show the dramatic effect of underlying predation happening around the island, without conservation sites.

We set powerline to 0, fallout to 0, and we model all the areas of having reproductive success relate without predator control, that is the rate of modeled decline and is higher for petrels as the relative vulnerability is higher for petrels. The predation difference is micro habitat- petrels are in the less steep areas and are susceptible to rats more than Newell’s, anecdotally.

Different birds lost than gained. The grey line is the minimized take and comparing grey vs red lines show the benefit of powerline minimization.

- **This is a conservative approach to modeling. Discussion in March raised great concern about ratio from juveniles to adults that was being used for the powerline strike mortality. If the ratio changes how does that impact how these curves look?**

The model results are not sensitive to the subadult: adult ratio. Reproductive value is the contribution of an individual of a given age to the population. Breeding value for breeding adult is 100% value. Once you are at 5 years old you are about 90% above breeding adults. For subadult values they are about 75-90% of the adults breeding value. Quick evolution change from sub adult to adult. This is based on the best available data and the 80/20 split is guidance from agencies.

- **Question on graphs and showing the declines. For the Newell’s what would the purple and the blue line look like if you had used the flat population trend that you saw from 2010 on?**

We have not done those runs so we can’t speak to those in detail. It would look much more optimistic. The net benefit would be a lot quicker in the term. We would have to change some assumptions to mimic the stable trend in 2010. We have done a model based estimate starting from the number of breeding pairs to sustain 12% decline given anthropogenic levels. We would have to relax some of the conservative assumptions to model a higher increase to get a stable trend and that would have implications for the conservation sites we are modeling. It would be challenging to get the model to mimic a stable trend. Doubling time is the number of years that it would take for abundance to double, given the particular assumed rate of increase. 2 % is 35 years for doubling. 2% is the assumed rate of increase in conservation sites based on available data. These small rates of increase over the long run can have large impacts.

ESRC discussion and recommendations:

- A useful number to have would be to know the estimates of the proportions of different impacts contributing to the loss of individuals from beginning of the permit term until the end of permit term (useful number to determine the difference our mitigation will make).
- Provide the underlying assumptions, and the difference between the assumptions in the FWS model and KIUC model.
- How does the 80/20 subadult/adult assumption (based on 1998 sample of 14 birds) affect impact analysis? What does the data show from UMP over the past many years?
- Analyze impact using flat trend from 2010 on? The HCP should describe the most likely impact and benefits, in addition to best and worst case scenarios to accurately present the impact.
- Provide an ESRC summary appendix on the outcomes of efforts under the Short term HCP, what was learned, and how it benefits the new HCP.
- Ensure Short Term HCP outcomes are portrayed in draft HCP.
- Better explain the impact of the loss of a breeding adult, relative value based on the source colony, both to that colony and to the metapopulation.
- Future agenda item: discuss the meaning and intent of net benefit.
 - Look at it on a project by project basis and investigate other ways to look at it beyond just going beyond the numbers needed to offset the take (area of coverage, number of colonies etc)
- At the end of this HCP we have less than half of the number of birds alive that are currently on the landscape. How is that net benefit? We need to not do just the minimum because minimum viable population is not enough.
- Add annual reports to ESRC archive website.
- “After all I have seen over the course of the day, I am still not seeing how proposed HCP is achieving net benefit as described in 195D, because if the ESRC does not see that, then we cannot recommend allowing the HCP to move forward.”
 - Make a clear and concise statement of how KIUC is tracking, interpreting, and achieving net benefit over the permit term and what the metrics are.

06.22.23/11:40 am/ <https://youtu.be/xg3Z4qV8adM?t=11330>

ITEM 3.A.1 - Overview of Conservation Strategy Approach for Covered Seabirds: USFWS 2016 Newell's Shearwater Landscape Strategy

Summary:

Aaron Nadig (USFWS) indicated that the USFWS 2016 NESH Landscape Strategy was posted and the idea is why the agencies are focusing on conservation in the NW corner of Kaua'i. We are focusing in the best available habitats where the birds are located where there are the least amount of threats.

Past Questions and Answers:

- **Why are the ten conservation sites only in NW Kaua'i?**
- **Why not include other parts of the island to have more geographic diversity in conservation sites? Why is the HCP not protecting breeding colonies elsewhere on Kaua'i ?**
- **Why not propose to reestablish colonies outside of NW Kaua'i that have been lost?**
- **How do bird flightpaths from these sites affect their likelihood of collisions?**
- **What benefits are we seeing at the conservation sites and is there a likelihood that the HCP will succeed?**

- **What was the role of USFWS and DOFAW in selecting these sites ?**

New Questions and Answers:

- **Is the NW Corner also good for non-listed birds like wedge-tailed shearwaters?**

No, they are more coastal species on offshore islets whereas Newell's and Hawaiian petrels are mountainous species.

- **Is the 2016 NESH strategy replacing the recovery plan? Does it include the recovery goals? The recovery goals in recovery plan are the actual strategy? That strategy meets recovery goals?**

The strategy can't replace the recovery plan. That would require a formal rule process to be published. It is a conservation strategy in the interim. It does not include the recovery goals. Yes the recovery goals are the public available strategy. That strategy requires revisions and in numerous five year reviews the species should be reconsidered for re classification to a different status. There is no new information to change 2016 strategy in last 7 years.

- **How does allowing other colonies throughout the island in the NW be extirpated influence the net benefit? Concern of DOFAW / USFWS strategy in a broader stroke strategy.**

Recovery actions outside of HCP would look to having birds in other place and not put eggs in all basket. Kaua'i strategy to focus on NESH strategy in NW corner. The rate of impact is so high. Highly dispersed much more issues, birds in one area not more bang for buck. How on earth would you increase the population size? How would the management actions look like in terms of light attraction in Sleeping Giant and Kapaha? It is not a realistic effort even with millions of dollars- certainly not going to increase to 100s of pairs, small tenuous populations clinging on.

- **Where there be less minimization of powerline minimization when those colonies die off?**

Kaleheo Kāhili threats are being minimized and colonies are not being allowed to "slip away needlessly". There are steps to help the colonies in the south and east through minimization actions but not inside the colonies themselves or outside the colonies for businesses and such. The sites are not being abandoned completely. Predation is a key factor and eventually the colonies will blink out.

- **Why can't we consider other islands? Could we consider moving islands as considered for adaptive management?**

Recommended to do mitigation on island where take is happening for HCPs. Being considered for recovery plan but not for HCPs. We could write off southern regions and consider other areas.

- **Does NESH strategy include 5600 acres of land that is suitable for fencing?**

Yes, the size of the fence doesn't necessarily matter. The fence alone is not the answer. Effective predator control is key along with biology of birds and reproductive success in growing populations. If we can't do it with a fence it doesn't mean we can't do it, we need better predator control.

- **Is 90% LEDs the goal for powerline trail?**

We believe that with the LEDs on every layer you can achieve 90% LEDs for powerline trail.

ESRC Discussion and Recommendations:

- Aspiration for agencies to have a larger overall strategy should be larger than allowing 75% of population die off.
- Further discuss why other locations/islands for conservation are not considered.
- Unwise to write off all other areas on Kaua'i indefinitely and definitively (but maybe ok in short term given magnitude of problem) -not as expansive as a program that needs to happen (10 areas) but not as large of effort (too little way too late) -surprised to not have more aggressive effort to work in existing colonies in NW part, do more, bigger effort given magnitude of take.
- Tracking and monitoring is key to management.

06.22.23/01:04 PM/ <https://youtu.be/xg3Z4qV8adM?t=16369>

ITEM 3.B - Review of Predator Control Methods and Effectiveness

Summary:

Basic types of fencing: pig fencing, deer fence with 4 to 6 feet of extended mesh on top, cat fence or modified small mesh fence at least 8 feet tall, and a woven stainless steel mesh predator proof fence to exclude all terrestrial mammals, a complete fence, and a wing fence. All fences can be breached or damaged in different ways including human error, and the more complex habitat it is in. Monitoring of the fence and the surrounding environment is necessary, both inside and outside of the fence. Fences are not infallible and require just as much management as the on the ground predator control. Five conservation sites within Hono o Nāpali NAR are protected from cat and rats-under an ungulate wing fence, A-24 and snap traps. More traps more consistently is better for predator control for seabirds. On Average the A -24s are 40 m apart. Monitoring occurred using game cameras and KIUC modeled likelihood of daily presence. Cat movement least cost path models are employed as well as those that identify high probability movement routes. Traps and detection systems are the fence and the virtual barriers. Monitoring cameras help assess predator movement and see predator/ trap interactions. Transmitting cameras allow the staff to monitor when not on the site. With any new predator additions, the monitoring system allows for quick detection and rapid response. Data shows that staff experience does matter. Cat removal rates have increased over the years. Reproductive success rates and call rates have gone up and adult predation has gone down over time. This data is in the annual report and has been measured in a standardized way and is reviewed annually.

06.22.23/01:45 PM/ <https://youtu.be/xg3Z4qV8adM?t=18798>

Public Testimony

Mahesh Cleveland, Attorney (Earth Justice):

Wanted to address KIUC's illegal seabird take and failure to prepare or comply with HCP. After meeting with KIUC leadership in 2020, we made it clear to find them if they didn't take action they would find themselves back in court. Minimization efforts really were just a catchup to minimize take under short term HCP. After earnest effort to come into compliance, disheartened to see in this Long term HCP KIUC is resting on previous minimization and to do almost nothing to minimize take for the next half of century.

Minimization should occur first to the extent it practically can. Mitigation methods are designed to offset the remaining take after minimization, but KIUC must minimize take to maximum extent practicable then mitigate. Federal statutes do not interpret our state law requirements. State statute 195 D must increase recovery and provide reasonable justification that the HCP provides net environmental benefit.

The ESRC is designed to reflect on recovery potential of this HCP. Fundamentally incorrect and ignores Hawaii state statute. Requires the HCP itself to increase the likelihood of recovery. Can not be punted to future time or adaptive management . KIUC must advocate for the increase likelihood of recovery and net environmental benefit. Practical minimization measures can not be punted to the future according to state or federal law. HCP itself should address recovery through Chapter 195 D. KIUC has not agreed and is unwilling to underground lines and retrofit street lights. Needs to do more minimization methods. KIUC fails to provide reasonable certainty that the HCP will include net environmental benefits and increase likelihood of recovery. Concept of Best Available Data is not applicable to our laws and provides guidance to DOFAW/ESRC. Even if KIUC neglects to include data, ESRC can and must consider any other data other than KIUC provides. Model KIUC uses does not provide assurance that this HCP will work or increase recovery potential or provide net environmental benefits.

Why does KIUC's own model not comport to results modeled by USFWS's model and why isn't USFWS's model at least compared to the KIUC model? KIUC's model is formulated to give evidence of eventual net benefits but is devoid of reasonable certainty that could get results. Ignored USFWS modeling. KIUC should explain why it thinks USFWS is wrong in the HCP with their model. Recommend a robust monitoring program subject to third party evaluation and real life updates through an online portal for public so takes above the levels can be documented and quickly addressed. To comply with the applicable laws KIUC must provide further minimization measures, reasonable certainty that HCP will increase benefits to the covered seabird species, and a robust, objective and verifiable take monitoring program. We urge ESRC to not recommend HCP in this current form. The state and federal statutes state to ensure the cumulative effect of the HCP will have net environmental benefit and is not just limited to population numbers. Net environmental benefit is a cumulative concept based on the entire HCP. The suggestion is that there is a range of possibilities: confidence intervals for the model or comparing the model to other models that have already been done. Net environmental benefit means this plan will help with the recovery of birds. In 2060 they are predicting Newell's Shearwaters to turn around, absence of inclusion of relevant data to show this, there is a lack of meeting this legal requirement.

06.22.23/1:59 PM/ <https://youtu.be/xg3Z4qV8adM?t=19664>
ITEM 4 - Adjournment

06.23.2023/09:00 AM/ https://youtu.be/x_Hr0BH2Abw?t=2
ITEM 1 – Call to order, announcements

Summary:

Lainie Berry called the meeting to order. ESRC members introduced themselves.

Katherine Cullison asked the committee to do a doodle poll for future KIUC meetings. The idea was to schedule two more meetings and have them separated from each other assuming this was an iterative process.

ITEM 3.B - Review of Predator Control Methods and Effectiveness (Cont.)

Summary:

Newell's Shearwaters: without predator control KIUC is modeling a 3% decline, with predator control (1% rate of increase) and in predator proof fencing (1.8% increase).

Reproductive Success rate (track fledglings, eggs and chicks are subsumed) : before predator control - 55% and with predator control up and approximately 80%.

Hawaiian Petrels: Rate of decline is steeper since they are more vulnerable to predation

Predation in and outside of NARS fences: pigs are super intensive predators and create a devastating impact but once they are trapped they abandon the management area as a whole; haven't had a confirmed pig predation in 5-6 years

Upper Nāpali is wing/ ungulate fenced – have not detected a pig in the monitoring network since 2017 and NARS NEPM also maintains

All nine areas are considered pig free: functionally no pigs in these area other than Honapu since it is a new site with ungulate fencing just completed but it is an active pig controlled area and NARS is just completing management.

Past Questions and Answers:

- **How does the performance of predator control outside predator-proof fences compare with predator control inside those fences?**

Inside the fences the project is still at infancy for birds breeding (first and second years of fencing). Starting to attract the birds to breed in the sites, for example, Hanapu site has one bird utilizing a nest box. In Poakea they have two prospecting burrows. Many birds on ground and attracting birds nearby taking time to attract them for nesting. For the model we have removed all mammalian impacts but it does indicate Barn owl predation. Barn owl control is intensified where there is social attraction. Reproductive success rates are coming soon.

Cat depredation rates for 4/5 sites has been 0 in recent areas. North Bog has had some levels of cat predation but they are still low. For both cats and rat depredation the rate is hovering at 1-3% for monitoring of burrows on ground depending on site. The number of depredated burrows over total number of burrows is fractions of what is really there. Burrows are checked 7 times a year and follow process of burrows- number of chicks fledged from burrows and number fledged. Rats per hour are measured. First year, 25 % of chicks were predated in North Bog and now this number is down to zero. Considering the way things are going – we will have reproductive changes soon.

In the NARS every 50 meters has a burrow trap which helps reduce the predation rate. Monitoring shows the numbers by each species. Rats and cats predation rate is going down. Barn owls and feral honey bees take over burrows annually and have become an emerging threat.

Used average data from year zero before predator control began or when it was zero and with the fences and beyond.

- **The HCP previously proposed larger predator-proof fences. Why was the fence size substantially reduced? Will the conservation sites still produce the same benefits? At one point KIUC spoke about Upper Manoa and Limahuli joined together to 600 acre predator proof fence, to this 10 acre fence, how would that affect drastic drop off in numbers and how will projections be affected-same projections with vastly smaller fence? Will Upper Manoa be used as a site? What happened with feasibility of fencing larger area?**

A feasibility assessment was done. A fence was proposed for Upper Limahuli. When KIUC asked the fencing company Pono Pacific to replace the ungulate fence with a predator-proof fence, Pono Pacific said it was not feasible and so KIUC reassessed actions. Two recommendations out of the discussion was to look at cat proofing the existing ungulate fence and effectively trapping the cats. The predator proof fence location in the lower part was selected and that fence is in the draft HCP. It is very assuredly an important decision, very important to take a few birds and put a predator-proof fence around the area and do social attraction from surrounding areas. NGBT focuses their Barn owl hunts in this area too. Several hibiscus inside the area be a useful area for outplanting. Cat proofing in upper third area discussion is still on going and due diligence has to be done since Upper Limahuli is not completely fenced and must evaluate how feasible it is.

In essence, predator control given estimates that have been plugged into the model is really effective. A rate of increase from predator control alone of 1%, you get benefits from predator proof fence added but this bump up of 0.8% from predator control actions with no fence is not as much mathematically substantial as thought otherwise. We didn't see much of a difference at this site in particular. We don't have data from predator proof fences yet –we are making assumptions about predation and reproductive success rates there. In principle reproductive success rate could be at 100%, but it is not biologically feasible. At 80% reproductive success for Newell's Shearwater- how much more could the rates go up behind a predator proof fence? A little less than 1% difference in the rates of increase. Predator proof fence benefits include through social attraction dispersal from areas that don't have protection or predator control, which results in a greater rate of 1.8% for internal recruitment alone. Predator control is looking super effective, in essence there is not much farther we can go before we bump into the ceiling of maximum rate of increase.

Site 10 will have to mirror or have better than Upper Manoa's metrics to meet the objectives but Upper Manoa is not going to be a KIUC site.

In Upper Manoa, replacing the fence will not be feasible and so the team assessed the large site and assessed where was an ideal location for a predator proof fence and selected that particular site. There were topographical constraints that may limit the acreage and size at the site. Last visit was earlier this year when the visit occurred and a section was removed.

- **The HCP expectation that it can eradicate pigs without ungulate fencing is highly suspect and think that there should be more pig management across the landscape to help the NESH.**

Answered previously in minutes.

New Questions and Answers:

- **What is predator abundance inside the "trap fence" vs an actual predator exclusion fence?**

We use relative abundance as measured using our modeling cameras. We see about 1-5% of daily presence of rodents (Black Rats) versus 0 % in a fence and cats are much lower. Seeing max 40 individual cats max within the NAR. Individual sites we may see only a few cats and sometimes even zero cats. Daily presence for cats is usually 1% compared to 0 % in a fenced site.

- **What are predation rates inside the "trap fence" vs the actual predator exclusion fence?**

Variety of metrics to get predator rates. We are assuming 0% for modeling purposes within predator fenced sites besides Barn owl . And for the sites outside of the predator exclusion fences the percentage of predation rates is 3% (breeding adults) without predator control. With predator control outside the fence it is 0.003% and within the fence the predator rate is 0%. Barn owls stay constant inside or outside of the fences. Burrow depredation rate is about 3%. A small proportion of lost burrows are adults but majority are chicks. Appendix 5 E and Appendix 5 F have predation rates.

- **How can we have assurance that this level (or better) of predator control will be maintained into the future?**

KIUC's commitment is to maintain the fences and the predator control areas and any breaches within the fence. There is the monitoring program assurance, funding assurance, and a confident funding level.

- **Thoughts on whether if this level of effort was implemented in the southern colonies, would they persist into the future? Or are the power line mortalities high enough that they will decline to zero no matter the predator mitigation?**

Could the type of predator control in Hanakāpī'ai be as effective in the southern colonies? We just don't know and don't have an idea. We have 10 years of data in the NW colonies and don't have the data from the southern colonies. From a predator control efficacy we don't know if we can get the predation rate as low as what we have in the NW colonies. We would definitely reduce it from what it is now but don't know if it would be as effective. It is not an easy comparison. In the southern colonies there is ROD, powerline collision issues, light attraction issues, invasive plants etc, so many threats to consider.

- **The bump up between a predator control to a predator control with a fence is 0.8%. Isn't the 0.8 % difference a big deal and big difference? If you're calling in birds don't the predators go through main colony that doesn't have a fence? As population increases how do you expand network of predator control?**

The rate of increase is even higher with immigration going on. This difference is focused in on upper Limahuli and not looking at the birds across the island. KIUC is making conservative estimates, including the maximum rate of increase. Those conservative assumptions are also conservative around the benefits of predator proof fences. It is fair that we might underestimate the benefits from predator proof fences.

- **Don't the predators just go through the Limahuli site main colony to the social attraction sites that isn't fenced?**

Upper Limahuli has an extensive predator control program for Barn Owls and cats- social attraction shouldn't happen in an area where there is no predator control or weakened. This social attraction is

happening in an area where there is focused predator control. Moreover, where the speakers are being played this area at the predator-proof fence, it abuts the Hanakāpī'ai site and pulls them from a totally unprotected area as well.

- **As the population increases, how do you expand the network of predator control?**

Management sites stay the same and predator control remains throughout the same level throughout. Each management site contains predator control at the same level. The birds tend to dense rather than expand when their population increases. Current distribution is a function of the threats, so they are currently in a low density for the species. Fences add capacity and resiliency for management and gives us a buffer if there are lapses in people being able to respond as well as provides more time for the management to respond to new threats.

- **Would you still proceed with the predator proof fence inside the Limahuli fence that might be retrofitted as a cat proof fence? I have trouble accepting that a cat trap line would suffice compared to a fence for cats.**

It depends on what the teams comes up with with the best methods for closing the gaps. We put a predator exclusion fence in the draft HCP since at the time a cat proof fence was not going to be feasible with closing the gaps with trapping. We need to evaluate the pros and cons with the agencies before we proceed.

- **As for parcing out the credits for areas where actions are being done by permittees and others? Are the fenced credits being parsed out in the modeling?**

There is no specific credit metrics for building or maintaining fences. The credits are tied to maintaining no or low predation rates and high levels of reproductive success. KIUC is only claiming the benefits for the conservation sites that they are funding. Some sites have already been fenced but KIUC is taking over replacement, repair, and management of many fences. KIUC is not proposing to take over the ungulate fencing in the NAR. KIUC has been funding the predator control in Limahuli since 2011.

- **Given that the numbers are expected to decline for the metapopulation (by ~7000) over the next few decades before ticking up, in the annual reports to the ESRC what are the metrics that will show us this is “working” in the meantime? What are the short-term metrics for annual, 5-year and 10-year success? How will we know this is “working” before it is too late to change course if it is not working?**

Will address these in the adaptive management section.

- **What is the timeline for adaptive management if the metrics are below expectations, resulting in reduced projections by the end of the HCP? In other words, what are the adaptive management triggers for the short-term? To the extent possible, these should be worked out now given that this has taken decades to get set up, and we may not have that kind of time in a decade since numbers are predicted to keep declining.**

Will address these in the adaptive management section.

ESRC Discussions and Recommendations:

- For the draft HCP, it is challenging to understand unit name and status of fence control. Is there a representation in the HCP in a map form of this to see and know?
 - (KIUC): We will look at the HCP and make it more clear and add more photos and illustrations of pig fence versus ungulate fence and wing fence. We could add shp file from NARS to see where the physical barriers are. This is referencing Chapter 4, Figure 4.6 in the draft HCP, paired with Tables 4-4 and 4-5 –size of sites and fencing proposed at each site.
- Loyal (ESRC): discusses that 2016 NESH Recovery Plan does not preclude conservation actions in other areas of the island. HCP has identified these areas as high priority sites for conservation.
- Aaron (USFWS)- There is modeling evidence that USFWS has conducted that points to NW corners being most ideal combining most suitable habitat with least lighting impacts. And USFWS did recommend that KIUC focus in this area. But USFWS is looking at other areas outside of the NW corner for protection of other colonies.
 - KIUC states multiple viewpoints support NW area of island are the most suitable habitats.
 - KIUC states that there is extensive minimization being done throughout the southern part of the island through the end of 2023. Regarding the southern portion of the island – the mortalities that we showed that are expected in the model are largely due to predation.

06.23.2023/ 10:44 AM/ https://youtu.be/x_Hr0BH2Abw?t=6242

ITEM 3.C - HCP Conservation Actions

Past Questions and Answers:

- **How do we know that the powerline strike reduction actions will work?**

KIUC will have installed 116.5 miles of bird flight diverters and will have removed 71.6 miles of static wires by the end of 2023. Static wire removal makes the biggest difference. KIUC has been monitoring these actions since 2011 using acoustic meters and locating downed birds. Powerline monitoring will be maintained throughout the HCP. Minimization will have three years of monitoring to confirm rate of strike reduction. Strike reduction actions will reduce collisions by at least 65% island wide. Approximately 40% decline in seabird collisions following minimization of spans (compared to average collisions pre-minimization, 2013-2019).

- **KIUC should be making their operations across the island more compatible with the covered species.**
- **KIUC requests that all new streetlights and powerlines be covered by the HCP. DOFAW should have approval / disapproval authority of each of these new streetlights and powerlines.**

KIUC will reduce collisions on new wires by at least 80% compared to existing, unmodified lines. These new lines have improved construction and this is combined with bird flight diverters. KIUC has no authority or control over streetlight siting but KIUC operates the streetlights. KIUC takes ownership over these lights and thus they will be included in the HCP. Minimization and avoidance has been considered with the new lines. KIUC has provided estimates of lengths of new lines and identified any new streetlights. The take would be to offset any future impacts from new lines.

New Questions and Answers:

- **Why is it not practical to think about Southern populations persisting in the future?**

The 90% reduction in take is greater where static lines are removed and reflector diverters are installed. Some of the southern areas can't have all the minimization added and will not be 90% reduction since LEDs can not be used. The island wide reduction in take is 65%. Mitigation will be focused primarily in NW area but minimization will occur island wide.

- **We are we not seeing management for all range of species?**

NW corners have smaller predators and smaller threats so predator reduction is higher than in human subsidized predator areas. The areas we are concerned about include higher densities where they can be managed more effectively. In the steeper southern areas the minimization is helping as well.

ESRC Discussion and Recommendations:

Loyal (ESRC) believes future actions of the powerlines and street lights should have different approval and should be a different and separate HCP. Indicates we don't have control over location for future lines and lights and that is not acceptable for this HCP.

Kawika (ESRC): States that Earthjustice says KIUC does not meet HRS 195D. to minimize first to the fullest extent with practical measures like undergrounding and reconfiguration. Concerned that KIUC is not doing any minimization after 2023.

(KIUC) says it is a package deal the HCP and the minimization and mitigation are coupled together. Underground is not always practical and many miles of lines are being reconfigured to move lines from a vertical profile to a horizontal profile. KIUC is also taking down static lines. It is better and faster in terms of reducing strikes to do minimization as opposed to reconfiguring all lines. All new lines will be minimized and minimization will continue after 2023 if the targets are not met. Table 6.3 is to be referenced.

06.23.2023/11:29 AM/ https://youtu.be/x_Hr0BH2Abw?t=8937

ITEM 3.D - Monitoring and Adaptive Management Program

Past Questions and Answers

- **How will the adaptive management program work for this HCP?**

There is compliance monitoring to make sure KIUC is doing what the HCP requires and effectiveness monitoring to ensure the conservation measures are working as intended. Adaptive management operates within the bounds of the HCP and requires input from DOFAW and USFWS. For each metric of success there is an adaptive management trigger. There are 30 triggers and adaptive management responses to ensure compliance and to ensure effectiveness of conservation measures.

- **Why is powerline monitoring occurring only ever 5 years? Annual monitoring of powerlines is needed for the entire 50 years.**

Annual monitoring is reported for reproductive success, grounding rates, powerline strikes and more metrics. There will be a 5-year rolling average measured against management triggers on an annual basis based on the modeled take (population dynamics model). The five year average smooths out interannual variation.

- **What happens if the 10 conservation areas are no longer producing the required number of breeding pairs? What actions will be taken?**

There will be weekly, monthly and annual coordination meetings with the agencies. Specific responses to triggers would be tailored to address the cause to the extent known and develop appropriate response and implement the response. Potential responses to adaptive management triggers to ensure commitments are met may include predator control, invasive plant species control, increasing the number of conservation sites and incorporating new appropriate technologies as they evolve.

New Questions and Answers:

- **Do you foresee consulting the ESRC on adaptive management?**

Lainie (DOFAW): There will be the review of the annual reports and if anything triggered a major or minor amendment, we the agencies would take it to the ESRC for comments and feedback. This is based in the statute.

- **What is the timing for adaptive management documents to be provided to the ESRC moving forward?**

Can put on the September agenda after July meetings when we have the draft. We bring this as a presentation and bring it forward to show the comments and how KIUC has addressed them.

ESRC Discussion and Recommendations:

- **Triggers for adaptive management are very generic. Is it meeting or not meeting the requirements?**

Many ways in which to respond. If we want to ensure that predation is maintained at 3% or below must require that rate to be written in the HCP so that if consultant is changed then the expectations are still the same.

In terms of performance, KIUC tied it to the performance of the colonies. It is in KIUC's best interest to keep up predator control to increase reproductive rates. What matters is chick fledgling success and adult survival- in the interim these metrics are key, and these percentages need to be ensured into the future. Reproductive success rate and acoustic call rates will be monitored annually at each site and cumulatively.

Multiple (ESRC) members: asking for and urging to have more input and hear from DOFAW and USFWS as they are biologists and should weigh in with their agency opinions. Effectiveness triggers should have been tied to compliance triggers.

Loyal (ESRC): When I look at the document the things that are going to be done are vague. Table 6.3 has more specificity and measures. Compliance is required to be done but triggers can be addressing adaptive management and agencies can discuss with the licensees and permittees and make these flexible. KIUC is not held to the adaptive management since it is not listed in the compliance.

Loyal: So KIUC including these measures in the compliance section is imperative to keeping a successful HCP. Having these mitigation aspects have very clear markers keeps them on track to meet these metrics or not.

Aaron (USFWS): More flexibility with adaptive management versus compliance.

Lainie (DOFAW): different process dealing with adaptive management versus compliance.

KIUC: Take and effectiveness monitoring depend on one another but take limits are mandatory.

Loyal (ESRC): It is important when these triggers occur. Don't want to wait 35 years to determine that you aren't meeting your metrics. Interim compliance measures are essential.

Aaron (USFWS): Bulk of USFWS comments had to do with triggers that are identifying changes that have to be made and the timing to address them.

Melissa (ESRC): Would appreciate more specificity in the compliance measures. My adaptive management questions have been addressed. The second question will be monitored. When you fall below 10,000 individuals you worry about stochasticity. Dropping to 7,000 individuals could have other factors to trigger an extinction vortex. Trigger has been met and how to implement should very clearly be laid out.

To be scheduled for September meeting: readdress compliance and adaptive management issues.

Lunch

06.23.2023/12:42 PM/ https://youtu.be/x_Hr0BH2Abw?t=13323

Kawika Winters motions to conduct an Executive Session to consult with the AG to gain clarification of Chapt. 195D-4 Section G

Jim seconds the motion

Lainie calls the vote and the vote is unanimous

06.23.2023/1:08 PM/ https://youtu.be/x_Hr0BH2Abw?t=14888

ITEM 3.E - Conservation site benefits as projected by KIUC Population Dynamics Model

Past Questions and Answers

- **Are all breeding colonies outside of the Hono O Nāpali Reserve (NW Kauai) treated as one population? If so why?**

The simple answer is no. Each of the areas, individual conservation sites, and fenced sites are modeled as sub populations. A new figure was produced that highlights sub population more clearly. KIUC is taking into account areas outside of Hono O Nāpali Reserve. The areas are divided the way they are since they have unique threats and stressors. Kaua 'i can not be treated as a metapopulation because there has been different data collected and there exists different trends and different stressors. The dying colonies that are most impacted by light will be most benefited by minimization methods.

- **Why is a 50- year permit term justified and reasonable?**

We are modeling a really low rate of increase, low rate of potential recovery, and low rate of resistance to anthropogenic factors like predation. If you start at zero birds and have a 2% doubling rate that can take a long time to increase. Conservative assumptions play a role in modeling population growth over a long time period. We see an inflection point at 2055 and a demonstrated increase in about 2065 and 2066. We want to be confident that we can produce a growing metapopulation and comparing the HCP to if no take was occurring or no conservation was occurring at all. We don't see this until later in the permit term.

New Questions and Answers:

- **To clarify your model accounts for 6 populations?**

KIUC: Yes, each conservation site is treated as their own population.

- **Are colony actions only taking place at conservation sites?**

KIUC: Yes, correct.

- **In terms of adaptive management do you see the benefits now?**

KIUC: Yes we are seeing those right now with minimization. We need to let the benefits accrue island wide and over the long term. The 7000 is for the breeding pair abundance. This is what is being monitored and easier to digest.

- **When you are doing modeling for the HCP is it island wide or for the 10 conservation parts? What are you modeling outside of the conservation sites?**

Re running this island wide model for the HCP. DOFAW intends to continue the radar trend monitoring. KIUC will have actual estimates to look at how well past models were performing.

ESRC Discussion and Recommendations:

- Kawika (ESRC): Is there a state of commitment to continue modeling?
 - KIUC: Yes to comply with reporting requirements KIUC must track the information moving forward.
- Consider adaptive management triggers being utilized in the models.
- KIUC has a model that will predict how many breeding pairs at conservation sites. Data will be compared to model and that will be the trigger for adaptive management. The triggers are based on the data that has been collected.
- Is there a line item for modeling?
 - (KIUC): Yes going forward in permit term there is modeling being funded
- Does this particular graph show the last 10 years?
- Is 2019 the start point of your model?
 - From 2013-2019 there is an average that is used and this provides recent data and the breeding pairs from the conservation site were around the same time (unminimized strikes)
- Would be good to have a map of the polygons to be overlaid with the map of the colonies for visualization.

- Have adaptive management triggers being deviation from this model.

06.23.2023/ 01:40 PM/ https://youtu.be/x_Hr0BH2Abw?t=16804

ITEM 3.F - Monitoring and tracking of Powerline Impacts and Minimization

Past Questions and Answers

- **Why are we using total powerline strikes as the metric of impact to seabirds? The most important metrics are mortality and lost productivity- isn't that what should be reduced?**

Due to time constraints question was skipped.

- **How will the HCP address any future changes in knowledge related to the proportion of strikes resulting in actual mortality or lost reproduction?**

(KIUC): We have certain assumptions in the model and in determination of how many strikes result in actual mortality and injury. If we have data that comes up that indicates these proportions that are different than anticipated the HCP allows for the numbers to be changed with consultation and concurrence with agencies. The proportion breakdown is based on the data of watching birds for 6000 hours. Every year the powerline monitoring team gives the cumulative and yearly results. We have the flexibility to update our assumptions with coordination with the agencies. There will be fluctuation each year. Best landscape level monitoring is the acoustic models. KIUC estimates mortality using injuries and collision rate using acoustic monitors since we can't measure mortality directly. Immense amount of effort to get the observations. Minimization will reduce the rate of immediate grounding as birds will sense the lines sooner and be able to have reduced level of collision. In terms of tracking to see if we are in compliance with the take limits, we use collisions but still looking at best available data to determine what the impact of those collisions are on those species. To get island wide monitoring at the landscape level, acoustic is only tool available. To get data that is not provided you fill in with visual observations. We have in the HCP estimated the outcome of what those collisions mean for the birds and those mortalities are indicated yet this is not feasible for a measurement of take since they would fluctuate and be variable.

New Questions and Answers:

- **For the HCP what is the authorized take?**

Unit of take is collisions.

ESRC Discussion and Recommendations:

- Outcome of collisions should be the biologically relevant metric for tracking.
- Take estimate should be based on outcome of collision, aka what you predict your mortality is going to be for the fatal measurement, using what is closest to the biological measurement. Take estimate should come from the observations which will change over time. If you find a way to make the strikes much less impactful your take is going to be lower. That should be monitored.
- Next KIUC dates for 2 meetings: One meeting in September and one in October.
- Will updated tables be available for ESRC? Revised table to come in September.

06.23.2023/ 01:58 PM/ https://youtu.be/x_Hr0BH2Abw?t=17920

ITEM 4: Adjournment