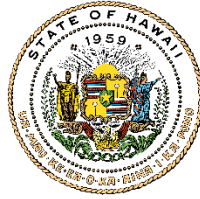


JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



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

DATE: February 28, 2023 / March 1, 2023
TIME: 9:00 AM HST
LOCATION: Administration Conference Room, 3rd Floor. Lihue Airport, 3901 Mokulele Loop Lihue, HI 96766. Kaua'i
Meeting Room at Lihue Public Library, 4344 Hardy St, Lihue, Kaua'i

Online via Zoom; and Livestream via YouTube recorded at
<https://youtu.be/r70g6O0rzzo?list=PLDK51TDqvJWPQCUo7GKosTzued9KAJN1b>

FINAL SUMMARY MINUTES

MEMBERS

Lainie Berry	Kawika Winter
Melissa Price	Robert Reed
Michelle Bogardus	Lisa Hadway Spain

STAFF

Myrna N. Giraldo Perez DOFAW	Kate Cullison DOFAW
Sheri Mann DOFAW Kaua'i	Linda Chow AG

OTHERS

Dawn Huff KIUC	Andre Raine ARC	Mark Travers ARC
Kyle Pius Hallux Restoration	David Sipe ICF	Torrey Edell ICF
Ellen Berryman ICF	John Brendon ICF	Molly Bache SOS
Amy Defreese USFWS		

02.28.2023/9:00 AM/00:00:03

ITEM 1 - Call to order, announcements.

Lainie Berry called the meeting to order. Requested ESRC members to introduce themselves. Made the following announcements:

- First hybrid ESRC meeting and housekeeping rules.
- KIUC presentation to show inaccessible sites for the public/committee members.
- Upcoming ESRC meetings scheduled for March 29th for review of wind projects and March 31st for the KSHCP annual review.

02.28.2023/9:10AM/00:09:50

ITEM 2. Presentation by Kaua'i Island Utility Cooperative (KIUC) HCP on Conservation Sites, Powerline Trail, Central Line Reconfiguration, and Streetlights.

Dawn Huff presented, on behalf of the KIUC, a presentation for mitigation conservation sites that are inaccessible to the committee members.

Questions and Comments from the ESRC Members:

Michelle: What is the height of the fence around Upper Limahuli? Is it high enough for deer?

- Dawn: It is a pig exclusion fence, not high enough for deer all around.

Kawika: Some of the place names were spelled wrong, Hanakāpī'ai has a diacritical kahakō over the p. Regarding Rick Berry's land, is that not happening anymore with this HCP?

- Dawn: We completed management on Upper Manoa at the end 2022 and we were not able to reach agreeable terms with Rick Berry to include Upper Manoa in the HCP. Upper Manoa will not be part of the HCP.
- Kawika: Any part of it whatsoever, or is this just not moving forward? I thought that KIUC was claiming mitigation actions of the land in the past, are you not counting any of those actions, or are you not counting those actions moving forward?
 - Dawn: Those actions were not part of the long-term HCP; they were part of the short-term HCP. We did do management actions during the implementation period, but it was ended in December 2022 and are not part of the proposed 50-year HCP.

Melissa: What is the relative strike rate of the powerline that goes across the middle of the island versus those you are most easily able to mitigate on the outside, and what portion of that is mitigated by the drone-added reflectors?

- Dawn: The strike rate for Powerline Trail is high. The LED estimated strike reduction for LED diverters is 90%. The full length of the line isn't completed yet, and once the full line is completed acoustic monitoring will occur to determine if the 90% has been reached or not.
- Mark: The LEDs in theory should be highly effective, and the birds are reacting as we hoped. They are not being attracted to the lights, we have three years of data, and they are reacting at further distances and are moving up and over. From a visual point of view, the LEDs are looking good. A third of the island's strike risk is along Powerline Trail.

Kawika: Mark and Andre, for clarification, acoustic monitoring couldn't be conducted at Powerline Trail because it was logistically impossible, correct? When you say it is high strike likelihood that is based on modeling?

- Mark: Actually, Powerline Trail is a great acoustic monitoring zone; I think what you are referring to was the initial installation of LED diverters which occurred in between our monitoring sites. Our historical data wasn't relevant to looking at change before and after, but that will change

now that LED diverters are being installed all along Powerline Trail. We will be able to monitor that as we have in the past 10 years.

Kawika: Will LED diverters be installed along all wires of Powerline Trail or just the top wire of the whole stretch?

- Dawn: Currently, we are just doing the top wires along the full length of Powerline Trail. There are some issues with the drone being unable to get between the wires to the lower layers. Collaborating with the contractors is occurring to find a solution at some point.

Kawika: Has the efficacy of top wire only been looked at versus all wires in other areas?

- Mark: In the preliminary studies of the top two wires there was a 56% reduction in strikes.
- Kawika: Versus 90% with all wires?
- Mark: 90% was the estimate from off-island data.
- Kawika: Could you point us to the HCP where this is written in more detail?
- Dawn: Chapters 4 and 5.

Sheri: Regarding Conservation Site 10, the numbers of Newell's Shearwater breeding pairs, are you sure you can get all those numbers in one site?

- Dawn: We are confident we can. We will know more about Site 10 in the September/October timeframe. When the survey information is in, we will know if we can do it all at one site.

Lisa: For Upper Limahuli you stated there is going to be a predator proof fence built there, which will be contained within the existing unit, and won't be part of Site 10? It will be contained within the existing data?

- Dawn: Correct. Upper Limahuli PF is not listed in this table, but there are seven breeding pairs around the fence line. That is covered in the detailed slide.

Lainie: Regarding the Honopū ungulate fence, is there a gap in the fence, or is it yet to be completed?

- Dawn: It is still under construction, close to being completed, but the gap you see is wing fences and steep terrain.

Melissa: It is concerning that there aren't any deer fencing, as a distribution study was recently conducted, and this area does have habitat that the deer like.

- Dawn: Unfortunately, our ungulate fencing is mostly pig height.
- Andre: Honopū does have deer fencing on portions of the ungulate fence.

Amy: For the Site Selection Criteria, regarding "remote location, distance from lights and powerlines" how long ago did you identify the nine conservation sites and have the distances decreased due to new developments in the area?

- Dawn: It has not changed since the sites were selected, and we do not expect it to change due to county zoning and county development plans.

Amy: When looking at the distance from lights and powerlines, was there any consideration of the flight paths of birds and if those flight paths crossed powerlines over the landscape?

- Dawn: Yes, there was consideration of that. We know these sites have less exposure.
- Andre: We have tracked Newell's Shearwater and Hawaiian Petrel from Upper Limahuli Preserve and North Bog using data loggers to assess their flight path. We found that Newell's Shearwater head out from their colonies in a broad arc, out to sea. When they come back in they hit the Nāpali Coast, fly up to Hanakāpī'ai, cross over at Upper Manoa and up to the colony. The birds avoid powerlines. When fledglings take flight, they are mostly drawn to the lights in Princeville and Hanalei, as they are the predominate light source in the area. North Bog, with the Hawaiian Petrels, most of the birds heading out follow a broad path. There were

two routes coming back in, one of which brought the birds over Wainiha Valley, and the other through Hanakāpī'ai Valley; however they were flying pretty high in those paths, well above the path of powerlines, for the most part.

Lisa: Can Sherri or Andre clarify if there are other conservation units in this area, or are these the only fenced units for all conservation purposes in the area? These units are 300 acres, and I imagine there are rare plants out there as well, and I wonder how management will work out with regards to what the State is responsible for versus what KIUC is responsible for. It would be helpful for us to get the bigger picture regarding conservation units and the land management happening around the island.

- Sheri: For the Hono O Nā Pali NAR we have ongoing vegetation management with a variety of other fences within the area. In Honopū, the project was funded entirely by a third party, with associated significant management goals, including invasive plant suppression and native plant restoration. With any KIUC related projects with DOFAW managed lands, we expect a vegetation management component, that hasn't been specified at this point. However, at the very least invasive species control/management is of the highest importance, to include but not limited to Australia Tree Fern and Albizia. An important component for vegetation management is Rapid 'Ōhi'a Death, which is not prevalent up in these areas yet. We are concerned about that and what it could do to the landscape-level vegetation matrix. In addition to the HCP, special use permits will be issued to KIUC to specify what Kaua'i DOFAW wants for vegetation control and management.

Lainie: Regarding the Upper Limahuli Preserve PF map, the yellow line is not within the predator proof fence, so what defines the yellow line? What is that boundary?

- Dawn: The yellow line defines active management outside the fence.
- Kawika: Is that the property line?
- Dawn: No, the property line is the red line.
- Andre: The yellow line was roughly drawn based off where active monitoring of burrows occurs.

Kawika: Andre, with the short-term HCP in the Upper Limahuli area, were there artificial burrows placed in the center ridge going down to the proposed predator proof fence? Are there any up in that area?

- Andre: There were a small number of artificial nest boxes in the area we call NESH Ridge, in the center of Upper Limahuli. There were 7 nest boxes that went in experimentally, but the birds did not use those boxes as they did not like the design of the plastic ones. Wooden burrows were placed in the proposed Manoa site. These nest boxes have been placed in Pōhākea, Nihoku, and Honopū.
- Kawika: Are the second generation of nest boxes being proposed to be placed in the predator proof fence of Upper Limahuli with social attraction?
- Andre: Yes, exactly. Currently at Nihoku, three breeding pairs of u'au are using those nest boxes.

Kawika: I had a question about the relationship between the short-term HCP and the long-term HCP. There were a lot of minimization reflectors put in under the short-term HCP, and more are proposed under the long-term HCP, does the long-term HCP cover maintenance of all the reflectors that were put in?

- Dawn: Yes, throughout the long-term HCP we will be replacing both reflective diverters and LED diverters as needed, through the term of the permit.

Kawika: Going back to my question in the beginning regarding the top-wire only reflectors on Powerline Trail versus the all-wires on other sections on the island, I had asked where you could point me to read about that and was told Chapters 4 and 5, which wasn't entirely helpful,

but I think I found it in section 4.1. I didn't see any articulation on this top-wire only approach. I did see a percentage that I am assuming was used for calculation, there were no formulas listed or any modeling. I am concerned about which percent success you are using to calculate, is it one success rate across all wires? Or is there a more nuanced formula? And the reference was to Appendix 4B, but there was no indication if it was top-wire only or all-wires, so I am a bit concerned.

- Dawn: The estimated strike reduction is per span, not per line, and currently we are using the estimated strike reduction of 90% per span specific to LED diverters. After all the LED diverters are installed, we will have three years of monitoring to back check whether that estimated strike reduction is correct or not. At that point we will make an adjustment if an adjustment is needed.
- Kawika: Will that be covered in an adaptive management section? I am still concerned that 90% across the top-wire only along Powerline Trail is overly optimistic, and I am not sure it is wise to plan for that.
- Dawn: That is covered in adaptive management. There are specific triggers. The trigger is with the island-wide 65%, and there are triggers for not meeting that. There are two things that could happen during monitoring: we can be right on target for the estimated strike-reduction for the different types; or we could be too low or too high. As the data comes in over the three years, after the minimization has been implemented, we will be tracking that data. If we get an indication, we will be adjusting the minimization plan to account for falling short, if that is the case.
- Kawika: Okay, I will look more into this, it looks like it is chapter 6.

Melissa: First a comment, after doing a quick search, most of the publications regarding LED lights and seabirds are coming from lead author Raine, which is great to get the information out there; however, that raises a concern that as far as publications it's coming entirely out of this operation. The data you are citing for the 90% strike rate reduction, where is that coming from?

- Andre: That data was coming from South Africa on Bustards.
- Melissa: So, a completely different species, a completely different system. It is a bit problematic to use a high estimate like that when your initial estimate is 56% and you are basing off the 90% strike reduction from a very different system. I just wanted to put that out there.
- Dawn: Thank you for that comment, and I understand the concern. At the time, that paper was all we had to go on. Our goal is to focus on high-strike areas and monitoring. The first year of data, after all the LED diverters are installed will help guide us on whether we need to do additional minimization or if we are on target in the right direction.

Melissa: Are snares deployed in the partially effective pig exclusion fences?

- Andre: Regarding pig snares, the KIUC snaring efforts are in coordination with DOFAW's Native Ecosystems Protection and Management Program (NEPM) existing snaring efforts within the Hono O Nā Pali. The KIUC-operated snares are run at Pōhākea, Kahea, and some at Hanokoā. DOFAW-NEPM runs snares at a variety of other sites throughout the NAR.

Melissa: There were large confidence intervals in some of the estimates, and briefly what can be done to narrow the estimates of some of the birds at the site, given that big down and up we are expecting?

- David: It is difficult to get population estimates for nocturnal species that nest in remote habitats and are very secretive. I don't think an estimated difference between the low and the high for species is unusual. It was the best we could do with the best available data. The current monitoring regime we have, we auditory surveys done each year, over large areas, is relatively acceptable for creating that population estimate. We also used acoustic sensors to create population estimates in the past, but we found those created estimates that were more variable.

- Melissa: So, I'm hearing not really an option for tightening up the confidence intervals at this point.

Melissa: In several places, you had an increase in the call rate, but there was no breeding or insignificant breeding at the site, can you help me interpret what that means?

- Mark: Reproductive success comes from monitored burrows, and acoustic sensors come from calling birds. Several of those places have only a few burrows that are being monitored, mainly Newell's, but there are Newell's calling in the air, so we can get an increase in call rates, but can't get an increase in reproductive success because we haven't found the birds yet. It is particularly difficult in places like North Bog and Hana Koa where we know there are pockets of those burrows but are on cliff wall or 100-foot drops, making it impossible to find the birds, even though we can get them on the acoustic sensors. However, those birds are being impacted by management, through predator control efforts.
- Melissa: It is suggestive of an increase in reproductive rate at that site, but you just can't confirm because you can't confirm an increase in burrows?
- Mark: Correct. When you watch transiting birds, the birds are very quiet. They don't call when they are transiting, and they start picking up their calls when they near their colonies. You have a lot of calling in a colony but very little in transits.

Jim's question in the chat via Michelle: The management response by both species of seabirds is extremely impressive as an increase is seen with both call rates and nesting success. Over time as these populations will potentially increase to higher levels, do you expect an increase in take of the species, for both KIUC and other HCP participants e.g., Light attraction stresses effective minimization and avoidance methods.

- Dawn: Tomorrow's presentation we talk about how we model for potential increases in take with increases in population size. I will briefly say that, as a reminder, the conservation sites due to the flight path for the birds, have a smaller risk of powerline strike and light attraction. We do not expect dramatic increases in take for birds at the conservation sites.

Melissa: When you build a fence, there is a tradeoff between size and effectiveness. The smaller the fence, the smaller number of animals protected. I am wondering where you see the tradeoff here, could the fences be bigger? Is it just because of terrain that it was decided upon for the smaller fence?

- Dawn: At a high level, we don't really want to go much larger at Upper Limahuli. We do have concerns about predator eradication at larger sites. We also know, from the data, that management in open areas, without protection, is successful. There are stochastic events that occur with cat predation, but we also see quick recovery. Yes, it is a balancing act because we know management is successful in open areas, and we do have concerns about predator eradication in larger sites. With respect to Upper Limahuli and Site 10, we want to keep them small.
- Andre: Yes, some of the fences are really small, but these are species that can nest in really dense concentrations. We would expect these areas to have a much higher density, because they are smaller, than we would outside. Fences can be bigger, but the tradeoff is due to potential breaches in the fence and predator eradication.

Michelle: Can you talk about the relative reproductive success you expect to see in a predator proof fence versus in a predator control managed area, without a predator control fence?

- John: What we start with are predation rate estimates from the burrow modeling. We apply those to the open management areas. Inside the predator-proof fence, we set the terrestrial predators to zero. We keep barn owl predation rates, as they are assumed to be the same across the board, whether you are in a predator-proof fence or not. Reproductive success rates go up a little bit given that benefit.

- Andre: In an open managed area site, as you get more and more birds cats come in and they get removed; you have a greater chance of a cat killing more birds in a shorter amount of time. That is not going to happen in a predator-proof fence site. The additional benefit is that you are not going to get those catastrophic events that occur in an open management site in a predator-proof fence.
- Michelle: What I would assume is that in any given instance, the reproductive success rate within and outside of a predator-proof fence, could be the same, or close; however, the area outside of the predator-proof fence has a higher likelihood of stochastic events, and cats coming in could wipe out 11 burrows in a night, which we have seen before.
- Mark: No, inside the managed site, you are still going to have some kills, and that is factored into the model. In the control site you will have lower reproductive success rate, however, that rate is still higher in non-managed areas.
- Michelle: The labor outside the predator-proof fence, but still within the ungulate-proof fence, is more labor intensive?

Kawika: Going back to the powerline collision mitigation. Table 6.2 and for conservation measure #1 “implementing powerline collision minimization projects” there are nine triggers listed for adaptive management, but there is not one for meeting the 65% reduction rate. Did I misunderstand you, or did you forget to put that one in here?

- Dawn: I apologize, we misdirected you. It is in the compliance monitoring table. We are looking for the table to point you to now.
- Kawika: I am open to the possibility that I am not looking at the right table, none the less, it seems like it should be an adaptive management trigger if you don't meet that.
- Dawn: I had in my memory that the 65% was one of our triggers, the team is looking now.
- Ellen: What the trigger is, is that the anticipated take/strike levels are higher than anticipated. The reason for that is the minimization is not as effective as we would hope it would be. So, we don't have a 65% reduction per se, we use that 65% reduction to anticipate how many strikes we have from one year to the next. So, we will look at our anticipated number of strikes against the actual number of strikes, and if the actual number of strikes is exceeding the anticipated we will know we haven't minimized enough.
- Kawika: So, wouldn't that be a trigger? Which of the 9 listed in Table 6.2 would that be related to?
- David: Table 6.3, the first conservation measure.

02.28.2023/10:55 AM/2:53:02

ITEM 3. Presentation by Molly Bache, Program Coordinator of Save Our Shearwaters

Molly Bache presented, on behalf of Save Our Shearwaters (SOS), a program overview and photos of the facility.

Questions and Comments from the ESRC Members:

Lainie: What sort of numbers do you normally see each year?

- Molly: About 500. This last fall out season was a big one for us, we had 171 Newell's intakes alone. Over half of our birds come in during fallout season. But yearly around 500, and 50% of those are T&E species.

Melissa: Following an earlier chain of conversation, as we see mitigation efforts be effective, we expect numbers to grow. That is an extensive operation, do you feel what is written in the documents for the next 30 years will be adequate to handle the increase fallout with improved numbers, for the birds?

- Molly: I do. Dawn and I have talked about the triggers in place, as species counts increase, so I feel this is adequate. We are also trying to get more diverse funding, so a combination of those things will be adequate.

Lisa: You mentioned you band all the birds that come through, is that valuable? Do you see birds return to nest, and is there a percent of success of the birds that were banded?

- Molly: For listed seabirds, the resights are few and far between due to several things. They have several hurdles, as most of the birds we see are fledglings prior to going out to sea. And the fact that these birds' nest in such remote areas it is difficult to determine success percentages. Whenever we do get resights, it is very valuable information.
- Andre: In addition to what Molly said, we aren't really searching for band recovery, because band recovery is a poor way of assessing survival rates of these birds, as you are only looking at a small number of colonies. These colonies are being impacted less by light attraction and powerline collisions anyways; so that is why we did this tracking study of birds with SOS to look at survival of birds after they leave SOS's care. Certainly, their survival rate is lower if they hadn't been impacted by humans in the first place, but a significant amount was able to fly to sea. This clearly shows that SOS is an important component to the conservation of the species.

Lainie: You mentioned funding sources, could you expand on your funding sources in general? If there is need for future expansion, is that something SOS can take on?

- Molly: The largest portion of our funding is coming from the utility company. We are looking to increase the number of HT agreements we have with people that do rely on our services, which has been going well. Since we have expanded and brought on more staff members, it has given us the ability to apply for more conservation and rehabilitation grants. Our primary focus is trying to maintain relationships with those that provide funding.
- Dawn: Our goal is to fund SOS at a level that address KIUC's commitment, but we don't want to limit SOS to KIUC's goals, so we think we have found a good combination that will allow SOS to grow and meet other needs around the island, but also takes care of SOS's commitment through the HCP. We are trying to strike a balance.

02.28.2023/11:23 AM/3:22:34

Item 4: Recess

Recess until 1:30 pm where the members reconvened at Pā ula ula Historic Site to conduct a site visit.

03.1.2023/9:00 AM/0:00:04

ITEM 1 - Call to order, announcements.

Lainie Berry called the meeting to order. Requested ESRC members to introduce themselves. Made the following announcements:

- There will be a chance to schedule another meeting with KIUC once the other conservation site has been identified.

- Public comments will be heard before the ESRC members begin their discussion.
- Forest bird conservation efforts update: Lainie wanted to update the members on the conservation efforts for the endangered honeycreepers from expert solicitation. Expert solicitation from the U.S. Geological Service (USGS), U.S. Fish and Wildlife Service (USFWS), DLNR helped to create a document for recommendations to help address concerns of honeycreeper extinction.

03.01.2023/9:20 AM/0:20:25

ITEM 2- Summary and discussion of HRS chap.195D, the role and responsibilities of the ESRC

Kate Cullison, on behalf of DOFAW, is asking for suggestions for improvements of the ESRC meetings from the committee members.

Questions and Comments from the ESRC Members:

Jim: The virtual format makes it easier and more efficient for the committee members who are not always able to travel, and I would like to see that continue.

Melissa: For meeting effectiveness, for the ESRC annual reviews to allow the ESRC members to vote on whether a project is and has remained in compliance with the terms of the HCP, or if more information is needed. Have votes on the agenda for the review meetings.

Michelle: I feel like staff submittals are really valuable and to the extent that is possible to do them and provide them to the committee members in advanced is appreciated.

- Lisa: I second that, as it highlights the work done by the agencies and the applicants.

Melissa: Regarding the roles of the ESRC, number 5, if the agencies do consult with outside experts, or look at models to help make their decisions, those should be shared with the ESRC.

Jim: The committee is the Endangered Species Recovery Committee, and there's a lot of expertise on the committee that could lend their knowledge to other endangered species and endangered species recovery issues that are not solely focused on HCPs and SHAs. I would like to have another meeting to discuss this further.

03.01.2023/9:10AM/0:27:39

ITEM 3- Presentation by KIUC on the draft Habitat Conservation Plan

David Zippin presented, on behalf of KIUC, on the Kaua'i Island Utility Company draft Habitat Conservation Plan.

Questions and Comments from the Public:

Section 2: Background of the KIUC HCP

Dawn: I wanted to respond to a question from yesterday, regarding number of spans minimized, I have a count from 2015-2022, 1556 spans were minimized; between the years of 2020-2022 1542 spans were minimized, and an estimated 416 that will be minimized in 2023.

Lainie: Is there a total number of spans minimized across the island? A proportion?

- Dawn: Mark estimated 1700 yesterday, total that is being monitored. The total will take me a while to calculate, but I will get back to you.
- Mark: As of October 83%. 1400 spans more has happened since then, so the number is increasing all the time.

Melissa: Just a comment, yesterday a lot the mitigation was given in spans, and one of the things that came up was that the distance of a span is highly variable. Telling me the number of spans doesn't tell me much, regarding the amount that has been mitigated, because what if all the spans are very short? I do appreciate in the slide of Powerline Minimization you are giving distances regarding all spans. I would like to request this be done in the future as this is a much more meaningful metric to share, as opposed to number of spans.

- Mark: To be clear, the HCP presents it in terms of milage. Chapter 4.4.1, the section that is reference there, is in milage.

Melissa: To follow up from what Michelle had brought up yesterday on the site visit, miles is good. Finding a way to communicate the relative risk of the number of milage that has been mitigated versus the relative risk of the milage that hasn't been mitigated is also important, so presenting a compounded metric that shows us those variables would be extremely useful.

- Dawn: To broadly respond to that, the minimization program is focused on all high-risk areas, but I think it would be relatively easy for us to provide a map that shows what you are asking for. We tackled the high-risk areas, moved to the medium-risk areas, and are trying to address the low-risk strike count spans.
- Melissa: A useful way to provide the comparison then would be to present the percentages and milage for each risk group on a map similar to this one. I think that would be very useful.

Lainie: Regarding the funding KIUC has given to SOS, starting in 2003, there was a comment posed in the draft HCP. The draft implies that the funding that KIUC provides funds for all the covered seabird and waterbird rehabilitation costs, but in reality, it doesn't. SOS gets funding from the State and from grants as well, so I recommend that the section in the HCP is reworded to make it clear that the funding from KIUC doesn't cover all the endangered species that SOS rehabilitates.

- David: We can clarify that. The KIUC does fund most of their program, but you are correct, they do get other grants and have other sources of funding. However, the grants are often ear-marked for specific things and doesn't necessarily cover their day-to-day operations.
- Lainie: Yes, but the funding comes from DLNR.

Melissa: For the Early Implementation of KIUC HCP: Powerline Monitoring graph, is it hits per span? Similarly, we would be interested in hits per area as opposed to hits per span, as it does not provide the greatest meaning from a measurement perspective.

- David: There is meaning for KIUC, as this is how it applies their project.
- Dawn: It is also how it is monitored, so it is very meaningful to us. However, we do have the ability to translate this information into miles, so that you can see that.
- Lisa: It would be ideal if we could have both: milage and spans, if possible. I am also looking at the map that is in the appendix that is associated with this, and the legend has a different set of units. The maps should be the same but are different in the appendix and what you are showing

now, which I am assuming is from chapter six, are different. The appendix is for chapter six, and figure 18.

- Melissa: Are there some general rules, in those higher-risk areas that are remote, that the spans tend to be longer, so that means a higher number per area?
- David: A higher number per span would translate to a lower number per distance, yes.
- Melissa: Yes, Lisa, you are right; showing us both would be helpful.
- Dawn: There are some long spans along the highway, where it spans the valley. So, you can have both short spans and long spans in both remote and non-remote areas, but I understand why you are asking for both. It is easy to add that in.

Lainie: Now that we are at the end of the background section, I have a question about the detectors that are being used over the years. Are you able to account for the changes of detectors that have been used, to identify which ones were better, and if so, has that been factored into the rates that have been calculated?

- Mark: We are working hard to maintain consistency in equipment and technique, which is a challenge because the technology has advanced. We are continuing to maintain older equipment so that nothing has changed. We are trying very hard to keep consistency from pre-minimization and post-minimization. The scale in which we are monitoring visually is the span, and acoustically it is two neighboring spans, which is why the models all work on the span scale, and KIUC's minimization works on the span scale. Within a span we also monitor individual wire risk. Everything being done is in the span scale, but it can be converted into mileage after the fact.
- Robert: Another question on those techniques. The observer surveys are they thermal?
- Mark: we do some thermal, but it is mostly night vision with infrared.
- Robert: Okay, I assume the field of view is about the same regardless of the span width?
- Mark: No, the field of view expands with longer spans so we can see higher.
- Robert: I appreciate the issue with converting span to distance given that sampling.
- Mark: We have all the strike data on region and area. Those regions and areas have known, total lengths.
- Robert: For the ground detection of downed birds, would longer spans tend to decrease the likelihood of being able to get along the entire length underneath the spans?
- Mark: In some cases, span length is correlated with topography, and it is more the topography that determines whether we are able to search the entire length. Powerline Trail is virtually unsearchable.

Michelle: I wanted to reiterate that monitoring is done in span-by-span segments, and that the minimization is applied by span-by-span segments, that I do see a lot of value in that consistency and how it is documented across the way. I do understand Melissa's point of breaking the information down by distance or risk factor is helpful for the analysis, but for the purposes of actual minimization, having it consistently referred to it by a span-by-span approach makes sense with the monitoring data that we have.

Section 3: Effects on the Covered Seabirds

Melissa: In the HCP it states that collision detections will be done with acoustic sensors and visual surveys. In section 6.2.1.2, the take monitoring states actual take will be estimated using the same methods that were developed to predict take by the covered activities. I'm anticipating that over the next 50 years will have better methods of being able to detect take on the powerlines, with new technology. Are we limited by this language? Are we stuck using acoustic sensors and visual surveys forever to estimate take, or are we allowed to use new, emerging methods? If so, why is it written the way it is? I think we need flexibility.

- David: We also want flexibility and to be able to take advantage of new technology. I think the adaptive management program accounts for that and allows for that. As DOFAW and USFWS are part of that. We can look at the specific language that you cite, but I do believe the adaptive management program gives us that flexibility.
- Melissa: Given that is the intention, I would recommend striking that language from that particular section, as it can be interpreted differently by other people in the future.

Melissa: Take from powerlines, you have 121 collision events, do you have a breakdown by species for that number?

- David: Roughly 70/30 Newell's Shearwater/Hawaiian Petrel.
- Melissa: Did you see differences between the species in injury outcome?
- Mark: No, at least there wasn't sufficient information to see a difference in outcome. Hawaiian petrels are more likely to hit their wings as opposed to their heads. Headshots are the most likely injury to cause an immediate grounding. Potentially with more data, there is a small chance that the number, for Hawaiian petrel, will be slightly less catastrophic, but the information doesn't indicate a big difference.

Lainie: For the proportion of observed collision events, you are describing 53.3% of mortalities/injuries. What happened to the other 47.3%?

- Mark: Some birds would skim the wire, and just hit their keel, but there was no change in flight. As an observer it was difficult to tell if they even hit as there was no alteration in flight, but the sensors would pick it up.

Sheri: I am wondering if it possible to ascertain the productivity after a bird has had a strike. It may live, but can it reproduce? Was it impacted any other way? Maybe that is impossible to answer.

- Dawn: Mark you may be able to speak to your observations, but the question is now what we are wanting to say with these categories of observed events.
- Mark: We have tracked 10 powerline collision birds that have gone through SOS, so these were grounded, rehabilitated, and released. All these birds survived after release, maybe one or two died, but none of them ended up going back to their colony for that breeding season. Survival does happen, but there is a difference from those that hit and grounded as opposed that were not grounded.
- Lainie: Is the assumption that the birds that were injured were taken out of the breeding season for that year?
- Dawn: Yes.
- Lainie: The injured birds are not breeding for a year, but do they breed after that?
- John: In the model, to account for injury there is a proportional reduction of breeding success rate.
- Dawn: How we allocate impacts to chicks or eggs from the injury category will be spoken of later in the presentation.

Robert: What is the potential for the table of observed collision events being an underestimate? Are we missing fledgling collisions if these observations were 97% May through September?

- Andre: That accounts for observations, we still have acoustics continuing for the entire season. We haven't seen any major blip in October, for the acoustic monitoring.
- Robert: The 121 collision events are based on the visual?
- Andre: Yes, that is confirmed species with observation of the outcome.
- Dawn: I want to reiterate what was said earlier, I think the question about fledglings can be expanded upon. What you said earlier, Mark, was that there isn't a blip in October; so, when the

fledglings are flying out to sea, we aren't seeing an increase in the acoustic data that would indicate they are hitting in significant numbers. Also, we are expecting that the two- and three-year-olds are not coming back in any regularity. Once they are gone, there are a few years when there is no risk at all until these 2, 3, 4-year-olds are coming back.

- Lainie: Based off the table, since there is no change in the acoustic monitoring, the fledglings are not being impacted and are therefore not included in the table percentages?
- Andre: Yes. The strike pattern tends to increase in May, during the incubation period, and increases again during chick rearing. After that there is a steady decline into late chick rearing and fledging for Newell's.
- Lainie: Are the acoustic monitoring strike rates throughout the year included in the document?
- Mark: A lot of the data is found in the reports.
- Dawn: That is something we can add to the document, which is important for understanding fledgling versus adults.

Robert: Is there any reason to think that, based on the biology of the bird, the outcome of the strike will vary based on the location of the span? Birds by the coast fly faster than inland, or is that even across the spans? Do we have that data?

- Andre: Birds are approaching powerlines at different speeds across the island [**Sound cut off**].
- Robert: No regular geographic pattern to that, from the coastline to the center of the island.
- Andre: it is more of an inverse pattern [**Sound cut off**].

Myrna stated the answers to Robert's questions were not heard.

03.01.2023/9:43 AM/1:40:24
Break

Cont. Questions and Comments from the ESRC members:

Melissa: On the slide "Take limits are based on 80% reduction in the anticipated strikes that would occur from new powerlines in an unminimized condition..." I am confused on the use of unminimized condition, is it because of where it's placed?

- David: We measure strike reduction relative to the monitoring data we have. Data from 2011 and on, on unminimized lines. Those are lines with static wires, with multiple vertical levels, in locations where there is high risk, medium, risk, low risk across the island. Those are our comparison points. The percent reduction for future lines is relative to that condition.
- Melissa: Thank you for providing clarification that unminimized lines are a comparison point.

Lainie: The 65.3% reduction, is that considering all the measures put in place, plus the future ones that are planned? Or how is that calculated? At what point in time are you anticipating that 65.3%?

- David: The 65.3% reduction is January 1, 2024. It is once all the minimization projects are completed, by the end of this year.
- Lainie: Prior to January 1, 2024, it would be less than that but still some because you are doing minimization efforts.
- David: Yes, work is being done. There is a schedule in chapter 4, where all the minimization projects are to date by year, and what else is needed to be completed.

Michelle: This was brought up yesterday, the adaptive management triggers around this is not based on the level of efficacy in these reductions in estimated levels of take, it is based on the strikes? There are some pros and cons to that approach.

- Dawn: This will be talked about in the adaptive management section.

Melissa: Where I have concern is when there are big ranges of uncertainty with low populations of species. When we have a sample size of around 120 and we are estimating 53% result in take, we are assuming that the birds that strike and take off are fine. However, we don't have a lot of data, and I want to raise the need for some sort of assessment to examine birds at the nesting area to look at their feathers to get an estimate of the individuals you see at the colony were those individuals that collided with the line at the keel.

- Andre: The problem with that **[sound cut out]** at Upper Limahuli you won't find many individuals... **[sound cut out]**. In all the colonies, we have at least 30 colonies at the burrows, and you would see if a bird were exhibiting **[sound cut off]**. Again, this is less effective.
- Dawn: One of the things that we use to back-check this is the radar data, and the results of the radar data. We see stability. To some degree we have data sets that are checking each other.
- Andre: We have the long-term radar data **[sound cut out]** trend in the area **[sound cut out]**.
- Melissa: So, the field data needed to answer the question of the other 46% would be extremely difficult to gather. One other way to check it is hindcasting with modeling. We know there was a huge drop in the population from powerline collision. If you assume that only this percentage of the collision is resulting with some impact to the species with mortality or delayed mortality due to lack of waterproofing, does that produce the decline in we saw the species over time? This would be another way to check these assumptions.
- John: in many respects the type of modeling you are talking about is what we are doing for Hanalei and for the Waimea area. We are integrating the radar trend and collision estimate. Given the assumption about low productivity of the species we are estimating how many birds need to be there to sustain the rate of decline due to collisions.
- Melissa: That is the type of modeling I am suggesting, as it would be useful. I would like to see something that justifies 46%, assuming the birds that fly off will be fine. Theoretically speaking, I believe that can be done.
- John: I don't have too much more to add. We are doing our best with the data that we have to combine that information to get at plausible abundance.

Lainie: The indirect take calculation is assuming only 20% of the birds that were killed or injured had eggs or chicks. Can you tell us more about how the 20% was chosen, as that seems quite low.

- Andre: The 80/20 KIUC was told to use, based on best available data at the time, but none of us agree on that data set. It is based on brood patches, which is not a viable way to address the sub-adult/adult split, so Mark has been looking at an alternative data set. Originally, we suggested 50/50 as there is limited data available. The 80/20 data set is the only one that is published, and it is based on the incorrect way to break down the species. Mark has been looking at powerline collision birds to look at the gonads.
- Mark: Just like brood patch, gonads fluctuated across the season and would ramp up at the right moment but would decrease over time. Determining breeding status from both brood patch and gonads is difficult. We need a very large data set from each phase of the breeding period. We don't have that currently. Now, we have enough information to say brood patch is unreliable.
- Dawn: We did have very robust discussions with USFWS and DOFAW regarding the 50/50 based on Mark and Andre's recommendation, but the agencies were more comfortable using the 80/20. Based on the information we had, we just don't have other information to use.
- John: From the modeling, the point estimate for the sub-adult/adult split is based on a sample size of 14. It is not ideal but is the best available data that we have. Our model takes that small sample size into account when we are fitting the model to the two areas. The binomial goes down to 50%. The uncertainty is taking into account the sub-adult/adult split into the model. It's

not perfect but given the best available information we are trying to take into account the uncertainty with the small data set that we have.

- Lainie: That table (Table 5-2) shows mortality plus injury and shows the 20% of the two columns added together.
- John: That table is informed by the model. I am speaking to when the model results are seen, that is considering that estimate. Then that is applied again.
- Lainie: I don't think it is, the results are a flat 20% of the mortality or injury. I am talking about the table, not the model.
- Melissa: There was a comment made of the federal agency being in support of the 80/20, can we hear about that?
- Dawn: What I should have said was that there is a published paper for the 80/20 and that is where the 80/20 came from. Mark had started looking at carcasses, but we didn't have data that was ready. We chose the 80/20 because there was a published paper, which is probably how I should have described that.
- Melissa: Can a ratio of breeders to non-breeders at a colony be used, as it makes sense? It could be informed by that ratio.
- Andre: That is a question in and of itself, what is the ratio of sub-adults to adults or breeders to non-breeders? There is little information on the non-breeders out in the colonies. We are trying to work on that in terms of figuring out what call rates are telling us, particularly at social attraction sites. However, that is a big assumption. One thing to note is that we are hoping the gonad differentiation will be the way to move forward, but we have a small group of birds because a lot of the carcasses we had were used in a plastics study, and we can no longer use those carcasses. We have been using carcasses we have collected more recently, but that is a very small group of birds. We are not really getting all the information we were hoping to get from those carcasses. I do not think that will come anytime soon.
- Mark: Even if we had a big data set it, the gonads will be changing across the season. We can tell right away it will not be a clear-cut approach. We have discussed tracking a bird coming into the colony, documenting visitation rates, and potentially tagging them. This information will have to be determined from different directions to determine the sub-adult to adult ratios.
- Andre: it is possible that sub-adults are slightly more likely to hit powerlines based on behavior. They do a lot of circling and chasing. What breeders do, which is informed by tags and cameras, is that they come from the sea and go straight back to their burrows. The Newell's come to their burrows and stay with their chicks until two hours before dawn and then leave. The Hawaiian petrels are more in and out. They come in, feed their chicks for half an hour and then they leave again. Breeders only have the collision risk when they are coming to and from the burrows. What you see over Powerline Trail is birds circling, which are the non-breeders. They will circle for half an hour to an hour, over the same place. If they are circling in an area where a powerline is located their risk is a lot higher, as they are not paying attention to anything besides trying to pair off. It is possible in some areas the sub-adult might have a higher risk. However, the 80/20 split is not really based on anything apart from that published paper.
- Mark: In terms of how we know the sub-adult rate might be skewed, on Powerline Trail, during a full moon, we have an increase in strike rate, which is the opposite of our prediction. We didn't understand why that pattern existed for several years. At low elevation during a full moon, strike rates go down. It is always circling birds at Powerline Trail. To me it looks like young birds testing the route, trying to fly the route in all weather conditions. They move across the valley in a non-direct linear pathway which increases risk. That risk disappears at the end of the season, during the full moon.
- Michelle: This is one of many places in the document where we are making big assumptions based on limited data sets. I don't think anyone is comfortable with 80/20. I also think we need a clear justification on why we would do something different. If someone could provide more

information, the species experts, we can have solid justification as to going a different route. I am all ears. I think that is the goal of this committee and the agencies, specifically, to look at all available data to inform how we do this. Assuming though we are not going to have that pertinent information prior to issuance. The HCP itself must be ready to take on new information as it becomes available. This is a challenge, especially with an HCP that is this complex and has this many moving parts to it, and this many large assumptions. That monitoring and adaptive management must be robust enough to elucidate when new information becomes available, how does it shift and morph to adapt to that. That has been what I've paid the most attention to in this document because I am assuming we are going to learn more over the life of the permit term. I look at whether the document is flexible enough to deal with the new information as it becomes available. This is just one piece of that, but if we can get a better justification for something other than the 80/20 that is great and is always better. Right now, that is what we've got to go with.

- David: Thank you for those comments, Michelle, we agree. That is why we have spent a lot of time on the monitoring and adaptive management chapters, which we haven't even gotten to yet in the presentation. We will this afternoon. We believe it is very robust and certainly has more extensive triggers than in any other HCP that I have worked on.

Melissa: Can someone help me to understand that for Table 5-2, when I look at the adaptive management for the required one. I know that we are going to get to this later, but this table is important. Metric 1 is maintaining a minimum of 1264 breeding pairs of Newell's shearwaters. Metric 2 is reaching a total 2371 breeding pairs of Newell's shearwaters, and around 3000 Hawaiian petrels. When I see these take numbers and then I look at the targets we are trying to reach, I just don't understand. Am I missing something? As far as we are looking at a take of 35000 and we are talking about 2000 that are there. Just help me understand the discrepancy.

- **[Answer not audible]**
- Myrna: Can David unmute himself?
- David: **[Answer not audible]**
- Lainie: Are you muted? I got several messages saying they can't hear you.
- David: The answer is a combination of time and space as to why you are seeing numbers that may not make sense relative to the benefits of the conservation site. It is because majority of the take that is occurring is not occurring at the conservation sites. It is occurring in the unmanaged parts of island. It is also occurring at the beginning of the permit term, not at the end, because the assumptions we use in the population model include assuming a rate of decline that is, we believe, very conservative. As a population is declining across the island, all else being equal, there is going to be less powerline strikes at the end of the permit term versus the beginning. That is part of what is not visible in this static table of the sum over 50 years. This will be talked about more and will be seen in some of the graphs that will be shown this afternoon.
- Melissa: What I am going to be listening for is we have 40 years of decline that has happened. The HCP has taken 10 years to be put in place, so when a species gets so low that they are in an extinction vortex, and you have these issues of low density and ongoing kills, the effort required is higher than if this HCP had been put in place 10 years ago. To prevent a species from going extinct, and I don't think the metric is prolonged. There is so much uncertainty in so many places. I am looking forward to the adaptive management section and the language that is in there. When the numbers get better it must have that built in. I realize that creates uncertainty for the applicant. However, when multiple species have been put in jeopardy due to these causes you have to have adequate mitigation in place to overcome the vortex that these actions started.
- David: We will come back to this a little later because I don't think we agree with some of the statements made, as the data doesn't support that.

Section 4. Conservation Strategy for the Covered Seabirds

Lainie: A question, stemming from yesterday, you have shown data with an increase in call rates and breeding success. Based on this table (Breeding Pairs of Newell's Shearwater and Hawaiian Petrel at the HCP Conservation sites in 2021) with the understanding that there is uncertainty in these numbers, but there are numbers on the table. Do you anticipate being able to show rates of increase in numbers of breeding pairs in the conservation sites? Or is there too much uncertainty in that?

- Andre: Do you mean an increase in population sizes in the breeding colonies?
- Lainie: Yes, so similar from the table from yesterday that showed the percentage increase in calling rates and breeding success since time zero. You have these figures here which is estimated breeding pairs per site, per species, but you didn't have similar percentages presented for actual breeding pairs because of the uncertainty. Will you be able to have those percentages moving forward, or is there too much uncertainty in these numbers?
- Andre: The breeding pairs in colonies are modeled. The increase in the population size is modeled. We do update these estimates yearly based off auditory surveys and nearest neighbor distances. There is a fair amount of variation between the min and max, but I anticipate that over time as we find more burrows and nearest neighbor distances are decreasing, auditory surveys are having more polygons and more distribution of birds, those estimates will increase as well. The increase in population size is considered in the model.
- Dawn: To add to that you can find this in appendix 6-A of the HCP. Those breeding pairs over time, based on the model.

03.01.2023/12:25 PM/3:17:16

Break

03.01.2023/12:25 PM/3:43:28

Cont. Questions and Comments from the ESRC Members:

Sheri: Conservation site 10 was most likely to be in the dotted lines of the north west side of the island, and the comments of the plan changing over time to take into account new science and new technology; have you all considered that for your sites, either adding another site to the existing 10, or outside of Kaua'i island (Lehua) or other areas where these birds show up.

- David: No, we haven't considered sites outside of Kaua'i. My impression has always been that there are enough conservation sites on the island to meet our needs. Regulatory limits will also come into play if we want to expand outside of our boundary lines, most likely requiring a formal amendment. However, it isn't off the table, those are the kinds of things we would want to consider in the future.

Michelle: I have to leave at 2 pm, but this is a big project, one I do not believe we will be able to get through in a single meeting, there is likely going to be multiple meetings regarding this

project prior to recommendations being made by this committee or permit decisions being made by the agencies.

- Lainie: I agree.

Section 5: Population Dynamics Model

Kawika: I'm worried about how you are talking about this. That the entire metapopulation of birds is in northwest Kaua'i. Can you confirm you are thinking of how these estimates are being applied across the entire island?

- John: This will become more obvious as I work through the slides and plots of the population trajectory by individual areas, but the short answer is no. We are modeling different trends in different areas. The large part of Kaua'i, the Hanalei to Kekaha, we are modeling a decline there, we are modeling increase based on acoustic call rates in the conservation site. Each area is essentially its own model.
- Kawika: Do you have a slide that shows how you are thinking of these subpopulations?
- John: Yes, we will get to that very shortly here where we talk about the available data.
- Kawika: Okay, I will wait. Thanks.

Kawika: Regarding the Modeled Subpopulation table, this is what I was concerned about. It looks like you are only considering subpopulations on the north and the west and leaving out populations on the south and the east. Can you clarify?

- John: Maybe it is a color issue. That whole large blue area on the map is what we call the Hanalei to Kekaha area. That has its own subpopulation model. Does that answer your question, Kawika?
- Kawika: Where is the Kahili population counted in?
- John: Andre said it is in the Hanalei to Kekaha group.
- Kawika: What about Kalaleha, assuming there's still a bird or two there? The Kalaleha, Anahola.
- Andre: The Anahola area, where there is still a small number of birds, is also part of the Hanalei to Kekaha area.
- Kawika: That is an extremely confusing label, is there a way you can change that?
- Andre: We did that because we divided the island by habitat type, like the Na Pali Coast, or management types, like those management areas up at the top. Or areas where there was different data availability. The Hanalei to Kekaha area is covered by radar and is also the area with the highest powerline strikes. It has specific monitoring types and powerline collision risks. When it came to trying to divide the island to create population estimates that is what we ended up with.
- Kawika: That makes me feel more comfortable, but I will stand to make the comment that the label is extremely problematic because Anahole is not Hanalei to Kekaha and neither is Kahili.
- David: Kawika we hear you and we can certainly improve the labeling of the maps, but we do want to make it clear that we modeled the entire island.
- Andre: Kawika you are right, the name is a bit misleading. The reason why it was called that was because it was the most northerly radar location in that section. It starts in Hanalei and goes east to south to Kekaha. It is the radar coverage area. Perhaps we can change Hanalei to Kekaha or something that makes more sense.
- Kawika: Please do. Thank you.
- Melissa: It might be useful to have color coding on the table. If you color code the row to the corresponding area on the map, it will help those not familiar with the island. Maybe also adding a separate figure for the one that is not island wide but does cover a big area. Pull that out to show a separate side-by-side figure.

- Andre: Initially it was a different color, and it was linked to the locations of the radar sites itself. So, it was originally an oddly shaped polygon as opposed to most of the island being shaded one color. That might have been a better representation as you could see the area that was involved in that larger site.

Kawika: I'm a little concerned about grouping everything in the Hanalei to Kekaha on the figure as one subpopulation, as there are several subpopulations within that area that have their own pressures. I'm concerned about how they all got combined into one grouping.

- Andre: I know it's a large area with multiple subpopulations scattered throughout that region, some of them large some of them small. The purpose of the model and how it was created was to apportion powerline strikes, light attraction, and predation levels to different parts of the island in different ways. It is trying to provide a way of changing population trajectories in different parts of the island due to different types of pressures. That large area, Hanalei to Kekaha, is the area which has high levels of powerline collisions, moderate levels of light attraction, high levels of predation, and is not managed. It is a data poor area because the only information we have of birds breeding in the area is from radar trends information because we don't have many surveys in there. Though it is a large area, and I don't want to cover every single population in there with a single brush, with this type of model it seemed appropriate to lump that large area into one because that is the area that is going to get hit hardest by most of the pressures that are coming to bear on the model. Additionally, when looking at the other areas, powerline collisions are almost non-existent due to location. It looks daunting in terms of size, and I will agree that the different populations within that area have slightly different stressors, but they are all getting hit harder than they would be in any of the other sites. That was the rationale of dividing the island in that way.
- Kawika: That does make sense, thank you for clarifying. The parameters used for these populations are by the pressures upon them, not by population dynamics and gene pools, which is usually what us ecologist normally think about. I'm not sure as labeling them as population as it might take thought processes in a different route, I'm not sure if there is another word you could use. However, this is starting to make sense to me now, thank you.
- Melissa: Maybe just say regional rather than population.
- John: Another reason we are partitioning the island in this way is due to the assumption of neo-fidelity. We assume that once the birds fledge, they will return to these sites, and we want to track trends of these different subpopulations within the metapopulation and the impacts of these pressures across the island.

Melissa: Regarding the Modeled Subpopulations of Newell's Shearwaters on Kaua'i, does the model assume that, that the increase in detections translate into breeding birds, and that is why you are getting that uphill trajectory, given that there increases in acoustic detections, but you feel less confident of on the ground numbers due to the difficulty in confirming breeding? Additionally, there is currently a large proportion of non-breeding juveniles due to the on-going recovery of the species, so is that considered in the model?

- John: Upper Limahuli, for example, that starts with a 1% rate of increase. There is a social attraction site up in Upper Limahuli that comes online, and you will see that line bending up. The 1% rate of increase is consistent with the acoustic call rates of being greater than zero. We don't know what that rate really is, we are assuming it is 1%. Keep in mind that the acoustic call rate data goes back to 2014 for Upper Limahuli. We have eight years of data, and if the birds become mature at six years of age, that is recruitment into the breeding population. We assume that continues under continued predator control in the future, at a 1% rate of increase.
- Andre: Two things to what you were saying Melissa. Firstly, the call rates don't drive the models. They are used to show the constant call rates annually, as well as population increases, but the

models show the 1% increase. Secondly, what the call rates relate to, most of the birds calling in the air are non-breeders, as breeders go straight to the burrows. With Newell's the breeders do a lot of calling in the morning, not the evening. A few years ago, we did a regression analysis, taking call rates from our Song Meters, and we counted burrows within a 250-meter radius, a 100-meter radius, and a 50-meter radius and looked at the relationship between call rate and number of breeders. There is a strong significant relationship between an increase in call rates and an increasing number of burrows for both species around the Song Meters, at different radii. What could be happening is that the large presence of breeding birds is attracting non-breeders, as this is such a social species.

Michelle: I must apologize; I must head home. It was great to be here for this meeting. Thank you DOFAW for hosting, thank you KIUC for really detailed presentations as to where the HCP is now. I would like to thank those who are part of the KIUC organization for being here today, it matters to us to have you participate. We appreciate your time and participation. This is not just an HPC it is a big deal, and it is something that has been a big investment of your time and our time for the last 10 years. It represents the survival for these species. There is still a lot left to do, and there are some concerns that the agencies have and the ESRC has. However, we are a long way and in better shape than where we were 10 years ago. Thank you for your hard work.

Lisa: To clarify, the trend lines you see in Upper Limahuli, Pōhākea, and Honopū, those are all the ones with the small predator-proof fences within them. I assume site 10 is modeled to have a predator-proof fence within it?

- John: Yes, site 10 is being modeled to have a predator-proof fence within it.

Melissa: Is your model showing that there is likely be a 1% rate of growth yearly, after putting all the information in, or is it assuming that if there is a 1% rate of growth this is what we see?

- John: We take any available data we have, on the vital rates, we plug in fledgling survival rate, (20-30% survival rates to breeding age, determined from our study and other studies on seabirds), and the maximum rate of growth is calculated. Predation rates are then applied, which is how we get the 1%.

Robert: At the end of 50 years with the given conservation sites, which a portion of them are predator protected, are we likely to run into site carrying capacities at multiple sites? Are we going to be able to get to these numbers if they try to establish themselves in areas where all the calls are coming from?

- John: There are some thoughts in the appendices that break down the population sizes for the conservation sites even further. Using Upper Limahuli as an example, there are plots in the appendices that show breeding pairs over time within the predator proof fence itself, and the number of breeding pairs in the open management area outside of the fence. We modeled carrying capacity in the predator exclusion fences only. We are assuming a low rate of increase, 1%, and the predator control measures have been in place for 10 years. It will take longer than 50 years to reach carrying capacity. However, prior to the predator control, there was a -3% decrease in population, which accounts for not reaching carrying capacity within the 50 years. Carrying capacity was not calculated for the open managed areas.
- Andre: For the social attraction sites, the carrying capacity calculations were based on 1.5 meters between burrows, and when they hit carrying capacity within the models, the birds move outside of the social attraction sites to create burrows. We took all suitable habitat within the area and applied nearest neighbor distances of 1.5 meters, and we considered Newell's and Hawaiian petrels not breeding on top of each other, and carrying capacity isn't reached in 50 years.

Melissa: There was some conversations yesterday of these fences being built to a smaller size than originally proposed; based off the model, and I am asking for your guestimate, if that was at the original size fence, how much faster would we get above that 2500 line for the breeding pair abundance graph of the Hawaiian petrel all conservation sites combined, with and without an HCP?

- John: We did model at the larger fence and the smaller fence to look at that number. The short answer is that there was not a significant difference in the model because the predation rate estimates for breeding adults, were before and after dedicated predator control. After dedicated predator control the rate is about 3 in 1000, which is close to zero. Michelle had a question yesterday on how we model within the predator exclusion fence because we do not have data on the survival rates, but we assume the terrestrial predator rates go to zero. If you are nearly at zero for predator control, and you take that to zero for the fence, you don't see a big difference between predator control and the fate of birds behind the predator proof fence, in the model.
- Dawn: I would add that the predation rates John mentioned came from the site in 2011. It does include stochastic cat events, as it has happened at multiple sites over the years.
- David: To give you a reference you can look in Appendix 5-E. Table 5-E-6, for Newell's shearwaters.
- Melissa: To me if you are looking at cost effectiveness of conservation actions, why would you build a predator proof fence if there is a small increase in the gain?
- Dawn: We are proposing to build two fences because we need the predator exclusion fences to do the social attraction. Those two go together.
- Andre: To add, yes, we wouldn't do social attraction outside of the fence. Also, if something like the pandemic were to happen again and we couldn't get to the mountains for eight months, we know we have those sites that are protected from all the mainland predators. If new predators were to arrive, as biosecurity is poor, there is the possibility of something new coming along, those are the bastion populations of high density where they are heavily managed and protected. Inside those fences your costs go down due to less predator control. There are many benefits of predator proof fences, not just the constraints and conservativeness of the models.
- Melissa: To check my frame of reference we have tried exclusion fences here on O'ahu where we have mongoose, but you don't have mongoose on Kaua'i, which may be the major difference.

03.01.2023/2:30 PM/5:22:09

Break

03.01.2023/2:40 PM/5:35:52

ITEM 4: Public Comments

Lainie: A question from the email from anonymous "Were bats observed on thermal cameras and was there any interaction?"

- Andre: On powerlines? We see lots of bats, and they hunt around the wires. No negative interactions with the wires themselves.

Mahesh Cleveland: I'm an attorney from Earth Justice in Honolulu. We sent in some written comments. I am glad to hear that the ESRC isn't going to be making a recommendation on this today and will provide other opportunities to engage in this. I think after spending so much time talking about the science, I wanted to bring us back to the legal requirements of HCPs under HRS 195-D and some ways in which the HCP needs to be revised to address these requirements. Firstly, the requirement to minimize take to the maximum amount practicable.

After listening to you all about both minimization and mitigation measures, maximum extent practicable doesn't appear to be what's happening in this HCP as far as minimizing the take that happens, particularly in part of the powerlines, but the streetlights as well. In our comments we mentioned that since KIUC acquired the utility company 20 years ago, they've been on notice. They've known about the take, they've known about the recommendations to minimize take by powerlines, including underground routing, which has been on the table since the mid 90's from KIUC's predecessor. What is practicable has to be informed by 1) the long term of the HCP, which is 50 years, my understanding was that it was chosen as opposed to 30 years as it was the only way to get these theoretical net benefits, over the long-term, with these mitigation measures. However, in the adaptive management tables, as an adaptive management measure they've proposed further minimization to further minimize powerline take, and further minimization for streetlights. The question is that if it is practicable to assume KIUC implement further minimization in the future the law requires that they do this now. The adaptive management isn't meant to be a catchall to make up for the minimization. The minimization is required to take place first, and after establishing all the ways to minimize take, and there are more methods available that are not being utilized or suggestions that are being ignored; legally speaking it must be done now and not pushed to adaptive management. Adaptive management is for things that come up that you necessarily can't predict. 2) There is major uncertainty about the projections. Sometime in the 2060s Newell's shearwaters start trending upwards and not downwards. One of the other legal requirements, not noted by KIUC, is that the HCP needs to provide the information necessary for DOFAW to ascertain with reasonable certainty, the effects of the plan. This is a 50-year plan and we have not heard any discussion of certainty. What we have heard is justification for uncertainty. These are just requirements of the statute that holds DOFAW, and informed by the ESRC, to ensure there is likelihood of not just survival, but recovery of the species. KIUC needs to do more to meet the burden of starting this HCP with only a handful of birds, compared to the population sizes 30 years ago, to show net environmental benefit over the long-term with reasonable certainty. I think the easiest way to deal with the uncertainty in the long-term trends is to maximize minimization of take now, as the law requires, in the plan and not push it off to some point in the future. There is more to talk about, but I wanted to put this out there now and make myself available to anyone who might have any questions. Mahalo.

- David: I appreciate the comments, and the letter sent in advanced. You mentioned several times about the need to minimize first and mitigate afterwards. That is a real misconception about how the Endangered Species Act works. Certainly, minimization and mitigation are both required. There is nothing in the regulations that state you must do one first before the other. There are plenty of examples where it can be far more effective to mitigate than it is to minimize the take that is occurring. Here we are doing both, and certainly minimization is a very important part of the conservation strategy. KIUC has demonstrated the commitment to minimizing as they have been implementing these measures now, for many years, and will continue to maintain them and apply them to the new powerlines and streetlights. You mentioned as well to the maximum extent practicable standard, and I did want to clarify what that means. Which is that how the Federal Government defines that standard, as there is no guidance from the State per se, the HCP handbook defines maximum extent practicable is met when the applicant can fully offset the impacts of the taking. We believe that we have done that and have gone beyond that to meet the State standard, which of course goes beyond that to provide a net benefit to the species. You also mentioned reasonable certainty standards, we do agree with that and believe strongly that because we are using available data on Kaua'i does represent the best available data and provides us with reasonable certainty in the outcomes. As John explained before, in the modeling, as selecting what we believe are conservative functions for the key parameters, provides a safety net of outcomes, combined with the adaptive management program that we designed. You did say recovery, which may not have

been what you meant. HCPs are not meant to recover species, that is the job of recovery plans. Certainly, we are intending to contribute to recovery, which is built into the biological objectives, but that is not the job of the KIUC HCP.

- Mahesh: The requirement to minimize and mitigate to the maximum extent practicable is for the HCP overall, and they run in parallel. The HCP proposes the maximum practicable minimization and mitigation. My point is that the HCP doesn't cover the maximum practicable extent of the minimization because KIUC recognizes that future minimization efforts could occur, which was my main point. I will leave it at that as I know you folks are short on time unless you would like me to comment on anything specific.

Cont. Questions and Comments from the ESRC Members:

Melissa: There is a 50-year timeframe, and it is possible mongoose could become established within that time frame. As mentioned before, with the smaller fences, if mongoose were to get to Kaua'i how would that change the trajectory of the graph Newell's shearwater- Population Dynamics Model: Overall (Conservation Sites and Unmanaged Areas) Effects of Take and Net Effects.

- John: I'm not even sure if that is a modeling question. I have to admit I am not as familiar with HCPs and how changed circumstances effect the HCP in future.
- Melissa: In a more straightforward way, if predation was higher than the purple line shows, if you had a new introduction that resulted in much higher predation from a different cause how would that affect the assumed benefit of the predator control?
- John: The slopes of all the lines would be increased in a negative direction. It is a little tricky to answer without having done the analysis, what the blue line would do.
- Melissa: Generalities would suffice. I assume this would fall under adaptive management.
- Dawn: Yes, new predators at the site is part of the adaptive management plan, and we would be implementing control measures if new predators show up at the site.

Section 7: Cost Funding and Implementation

Melissa: It was pointed out yesterday that the diverters were able to be placed with drones, but it wasn't figured out how to remove them, is the assumption built into the upcoming cost versus the already spent cost that the issue would be figured out by then, and it would be cheap to swap out the diverters? Is that the assumption?

- David: We do have a cost assumption built in for the maintenance and replacement of the diverters, I don't know if we assume that the replacement would occur by drone, but according to Mark it does seem likely. This isn't in the cost estimate table at this point because it is such a rapidly evolving field of the project.

Lisa: It was mentioned earlier that if mongoose were to arrive at the conservation sites, measures would be put into place to deal with them there, but if mongoose show up on island, even if they haven't made it up the mountain, would it be within the realm of this HCP for KIUC to commit resources to eradicate mongoose before they get to the conservation sites?

- David: We don't have the ability to do that even if we wanted to. Because of landowner access we don't control those areas, so all we are able to commit to is predator control at the ten conservation sites.

- Dawn: What we would be doing is actively tracking that type of thing. We meet with the team once a week and with the agencies once a month. If there was an occurrence on the island, someone on this team will hear about it and start preparing for it. Even though we wouldn't be able to control eradication efforts outside of the conservation sites, we could prepare ourselves and be ready should they expand into the areas we do have control over.
- Lisa: What I foresee is that there would be a working group on the island to band together to work on this issue, I wonder if there would be a way, and maybe this is a Michelle question, to build in language that states you are actively involved in and monitoring these kinds of threats and opportunities as they arrive. In the next 50 years, this is one of the most blatantly obvious issues that could happen.
- David: You make a good point, and I would hope that it would be the responsibility of DOFAW and USFWS, to do that early warning system to mobilize all the conservation partners to act. It is certainly in KIUC's interest to address a problem as best they can and are able to do so because the performances of their conservation sites are at stake. Ultimately, for an island-wide basis that would fall to the State and Federal government.
- Dawn: Lisa, are you looking for language that just indicates we are working for them on a regular basis, and this is the kind of thing we are identifying early on?
- Lisa: In terms of funding expense, watching other invasive species threats come in. Spending a small amount of money upfront as opposed to spending more after sitting and waiting for it to show up at your conservation units. I recognize that it isn't KIUC's responsibility, but it would be good to know that you are part of a team with a strong interest in ensuring these threats are dealt with early.
- Dawn: We have the team in place, and we have the means to monitor the happenings and occurrences. We could think of including language that captures that interactive correspondence/collaboration that already occurs.

Melissa: Regarding the budget slide, I am curious about the annual HCP administrative cost breakdown, I assume those are salaries for 3-4 people, it seems like a large budget, but it is a big project. Do you know, just roughly, the breakdown of those costs?

- David: Off the top of my head, I do not know. It is more people than you think and a smaller share of people's FTE, and it's not just salaries, it includes benefits. There are GIS staff and staff for budgeting/funding, administration. All the details are in the appendix including our assumptions of what that cost would entail, and we welcome your feedback as it sounds like you have a lot of good experience.

Section 6: Effects and Conservation Strategy for Green Sea Turtle

Lainie: In areas with multiple light sources, is there a way to distinguish which light contributes to the take, or is considered in a general landscape?

- David: That is something we have considered; we are not distinguishing the light sources. If the nest falls under the 29 light sources from various entities, KIUC will be shielding the nest no matter what, and it will vary over time depending on other lights in the areas. Right now, we are not quantifying those contributions at those areas. It is tricky and you must measure in a way that is meaningful to hatchlings, right at the surface of the beach and other locations where a nest may occur, which could be highly variable at the surface.

10.30.2023/3:41 PM/[6:31:15](#)

ITEM 5: Discussion, Comments, and Recommendations for the ESRC

Melissa: For closing, can you provide a timeline for when the final conservation site will be identified so, we know when we can schedule the next meeting? And since some of the public comments and discussion time for the committee were cut short.

- Lainie: Yes, can you give us a timeline of the sections not covered?
- David: The only section we didn't cover was waterbirds, and that is only about 10 or 15 slides, and that is about an hour at most. We won't need much time for this group, and for convenience, it could be done virtually. Dawn, can you answer the question.
- Dawn: The surveys are occurring throughout this year, and we have a deadline of selecting by December 2023. We have the metrics we need to get from site 10. We will choose the site to meet or exceed the metrics.

10.30.2023/3:45 PM/6:36:08

ITEM 6. Adjournment

Lainie moved to adjourn:

- Robert voted yes.
- Melissa voted yes.
- Lisa voted yes.