

MINUTES
FOR THE MEETING OF THE
ENDANGERED SPECIES RECOVERY COMMITTEE
Hawaii Department of Land and Natural Resources

DATE: September 8, 2015
TIME: 9:00 am – 4:00 pm
PLACE: Conference Room 325, Hawaii State Capitol, 415 South
Beretania Street, Honolulu, HI 96813

The following were in attendance:

MEMBERS: Scott Fretz (DLNR-Division of Forestry and Wildlife), John Harrison (At-Large Member), Eric VanderWerf (At-Large Member), Jim Jacobi (US Geological Survey), Kim Burnett (UH Environment Center), Gordon Tribble (US Geological Survey), Sam `Ohu Gon (At-Large Member), David Tessler (US Fish and Wildlife Service).

STAFF: DOFAW: Afsheen A Siddiqi, Angela Amlin, John Vetter Fern Duvall
USFWS: Dawn Bruns, Michelle Bogardus, Jodi Charrier, John Sprague

COUNSEL: NONE

OTHERS: Mitchell Craig (SunEdison), Marie van VanZandt (Auwahi Wind)

ITEM 1. Call to order. Introductions of Committee members.

Chair Fretz welcomes the new ESRC members, Eric VanderWerf and Sam `Ohu Gon and called the meeting to order. Tessler (representing the USFWS at the ESRC) was stuck in traffic but on his way.

ITEM 2. Approval of Minutes:

Fretz begins the meeting by confirming the agenda, then moving to approval of the minutes for the March 30 and 31 ESRC meeting.

An ESRC member moved to approve the minutes and the motion was seconded the motion. March 30 and 31 ESRC meeting minutes approved unanimously.

Tessler arrived.

Fretz moved to approve the April 14 and 15th minutes of the Bat workshop. Inquiring if there were any comments changes or edits from the committee.

Jacobi commented that he appreciates the time that went to putting those together, and that they are a good representation of what was said. Harrison added that the notes are the sort of nonscientific documentation, grey literature things that will be enormously useful in the future, and hoped the minutes are archived and in a place where they are available.

Jacobi moved to approve, Burnett seconded the motion. ESRC members that did not attend the workshop abstained. April 14 and 15 ESRC meeting minutes approved unanimously.

ITEM 3: Approval of Hawaiian Hoary Bat White Paper Guidance Document

Siddiqi introduced the Hawaiian Hoary Bat White Paper Guidance Document. In the beginning of April staff began to develop a guidance document on bat mitigation and policy recommendations from the ESRC. DOFAW staff created a guidance document to serve as a resource for applicants to use regarding the take of the Hawaiian bat. Today we are seeking comments and approval on the guidance document, or amendments if needed. Everyone should have a copy of comments received from USFWS, Auwahi wind, and the panelists from the workshop. Siddiqi proposed to go through the document, recommendations, and subsequent edits.

Fretz agreed with the process, adding that the public can comment before the committee discusses the document. Then we will go through the document and have another opportunity for public comments at the end. Fretz asked if the rest of the ESRC agrees with this process. Jacobi responded, yes, acknowledging that the recommendations to be reviewed do not necessarily reflect consensus recommendations especially on mitigation credit. I want to make sure we are addressing that issue across the board. Fretz agreed with Jacobi; every member should have the opportunity to comment on any page at any point as we go through this.

Fretz asked the public if they have any comments on the guidance document or to the committee. VanZandt from Auwahi wind project stated that they have some concerns about the document which were relayed in a letter submitted to USFWS and DOFAW. The overall purpose of the letter is to request more time to address the comments and make edits as needed.

Siddiqi began the discussion with the first recommendation, regarding avoidance and mitigation measures for wind energy. As stated in the document “the ESRC recommends curtailment as part of every facilities mitigation strategy to the maximum extent practicable, DOFAW staff recommends a minimum cut-in speed of 5 meters per second (m/s). increasing up from there with adapted management measures”. One of the public comments received was that the language is vague, in terms of what the standard should be set at and what the credit would be given. Jacobi asked if this is a requirement or guideline; it partly impacts the permittee because

it allows a reduction in potential take so is there a benefit to implement it. Siddiqi responded that the entire document is written as a guidance document. We are recommending 5 m/s for every wind farm, although it is up to the applicant what is proposed.

Fretz pointed out that since this document is intended to be used when the ESRC reviews an HCP involving bat impacts by wind farms, it is reasonable to expect a discussion on curtailment. If any HCP wants to provide a discussion on why to not use curtailment they are free to do that. There is a recommendation here that curtailment is a useful tool and the committee will evaluate whether or not they think they need it. Gon added moreover there is specific language on the cut-in speeds. That is one thing we can check against if the conservation plan follows these recommendations or not.

Fretz asked, can anyone think of a case where you may not need a curtailment at all? Hypothetically if a proposed windfarm conducts bat surveys and finds very few bats, and so the expected take on their license is very low, they may determine that they don't need to curtail. Tribble commented that it would be on the applicant to provide a rationale for either not having curtailment or having a cut-in speed that is grossly different. Tessler pointed out that just about every operation curtails at 5 m/s or higher.

Craig added that if in the future deterrents work very well, then we would likely ask that no curtailment be applied. As far as the guidance aspect of this, would there be an established percentage reduction of requested take based on the curtailment practice (i.e. at 5 m/s or 5.5 m/s) or is it just simply required to curtail at a certain level. If an applicant doesn't curtail the estimated take, for example, would be higher than if you apply this curtailment. We are assuming there is a benefit of curtailment to the applicant, obviously we don't know what the benefit is, but we are suggesting there is one. This 5 m/s per sec curtailment is what you are recommending to do even if you don't know what you are going to get out of that? Jacobi responded, ultimately the estimate of take gives you the tiers and what to mitigate. This is a guidance document. The benefit of curtailment comes back to the applicant not as a credit, but by allowing a reduced projected take. Craig replied, I think the reduction comes into play when you are asking for more take, when you are estimating into the future based on what you have. Later today you will see we are actually going to ask for less take within our permit. Jacobi agreed that it would be a justification of the take levels.

Gon said it should be specifically stated in a logical fashion in this guidance in terms of an anticipated benefit to the applicant with adjusting the cut-in speed.

Jacobi questioned the wording that implies the recommendation comes from DOFAW rather than the committee. Fretz said recent edits have corrected the change of reference throughout the document to recommendations by the committee. Fretz continued, this document is the committee's recommendations to the board, and another thing I was going to bring up later is the

question of process. We may want to take this to the board specifically as an informational item and let them see it and do what they want with it.

Gon added that by having served on the board this kind of informational item is useful, if the key points that the board needs for decision making are clear. The board is used to hearing staff recommendations, and it is the board's duty to accept it or not. Once this document is completed and approved by this body then even when it does say DOFAW staff, the understanding is that the ESRC has reviewed this and concurs. Jacobi asked that the final document reflect a consensus within the committee.

Fretz referred back to the point of this discussion, is it explicit that curtailment can or may be used to adjust permitting of take levels? Amlin replied that we can make the recommendation explicit, but we would not suggest a specific percentage because it is up to the applicant to come up with the scientific justification. Gon agreed that it doesn't need to be specific to explain the concept logically to the decision-making body.

Craig added one more example when curtailment might not need to be applied, such as at a certain time of year there are no fatalities and very little activity. For example, you trade having no curtailment in winter and adding more curtailment in the summer so that the net loss of production of the wind farm is neutral. Jacobi replied that goes back to it not being a requirement but being guidance that effects how you calculate your estimated take.

Fretz asked isn't there a curtailment to be shut off at night proposed in a current draft HCP? Siddiqi replied I think we may have some small turbines that don't run at night and that is to completely avoid any take. None of the HCPs have this as a curtailment method. Amlin stated that my understanding is that they need to be running because there are issues with the power pull in the system, powering them down and back up cause's challenges. Craig responded that the only reason they need to turn is to circulate the lubrication. There is no need to produce power, if they are not producing power then wind farms pull power from the grid rather than sending power to it. There was an example in the east coast where a particular wind farm decided to turn off at night however this does not occur in Hawaii.

Fretz asked to Craig, so you have not considered it because the current type of curtailment being used works and you have analyzed the economics of it? Craig replied that even decreasing the wind by half a meter per second is significant; turning it off all together would probably make it difficult to make a profit.

Harrison stated that in terms of viewing this as a guidance document ultimately everything is going to come down to a decision at a later point that involves adaptive management, that is the context we should be taking this. Fretz added that the idea here is that curtailment will be introduced as a tool if take is higher than initially expected. But, initially expected is not defined here. Are we comfortable that it will be defined in an HCP? Jacobi responded yes, this is a document that says here is our best available knowledge right now and making recommendations

based on what we have. Ultimately it comes down to using the best information we have when we are evaluating a particular project.

Fretz asked if this paragraph should be amended, with the expectation of some pretty specific language in a HCP on what will trigger curtailment. If you leave it like this you may get a HCP that says if higher take is expected we will curtail, and you won't know what that means. Jacobi suggested that the first step is trying to minimize take right from the start, so curtailment should be right on the table when working on a project. Fretz added that the table is trying to express this type of information; I suggest something like the take per curtailment hour. Jacobi agreed that there is missing data that need to be clarified. Amlin stated that the footnote there was trying to clarify that curtailing a little bit does not reflect those things. Not all of the wind farms curtail every month, this is just in a time period when there was curtailment happening in that capacity. Also, Kawaihoa has tended to be the exception to the rule. We had originally tried to make a more complicated table showing all of that and it was messy so we simplified it. Fretz asked staff to work on it and make it better to understand.

Tessler stated, at the very least you need to have a note on that last line reflecting that difference. Clarifying that zero does not represent zero bats, or there was no time with any curtailment at this site. Siddiqi clarified that they don't curtail every month at Kawaihoa. There are months where they are not curtailing. It is a reflection that there is a take of bats when they are not curtailing. Amlin noted that having a curtailment plan in place doesn't mean that curtailment may be happening at each moment. Jacobi recommended removing this entire table unless it can be really clear. VanderWerf disagreed, and felt the table was instructive although clearly that last line needs to be clarified. Maybe take the zero out and put n/a- there if there is no data for that, or express the number in terms of take per turbine per hour. As of right now, it is hard to compare curtailment across projects. You don't know how many turbines they have, how much time is involved, and some metric that would be more comparable across projects. I think fatalities per turbine per hour might be one possibility. Fretz agreed I think there is a metric that can express it in an informative way. Jacobi added that the figure before that seemed to do that.

Craig offered to explain when there is curtailment but pointed out that there isn't long-term information. Kawaihoa is always curtailing except for 2 months (December/January) in winter. KWP 1 had no curtailment for almost 9 years, until in August of last year we began curtailing, then increased it to five and a half meters per second shortly after August. So KWP1 provides one year of curtailing data on a place where there had been no curtailment previously. KWP 2, has always had a curtailment of 5 m/s and has been increased to 5 m/s and at 5.5 m/s. Since curtailment has been applied to KWP 1, there have been no bats found. Granted we have only found about one a year there. Same is true for KWP 2 there hasn't been any take found after it was increased to 5.5 m/s. Similarly I think there have only been three bats taken at KWP 2. It is not statistically powerful. Tessler stated I think that adding that metric would be problematic, having a metric that would take that information and turn it into a count and give you a clear picture of what those differences are, it doesn't look like enough data to do that in a reliable way.

Craig added that Kahuku is the only place curtailment has been for a long time. The first year there was no curtailment, since curtailment has been added only one bat has fallen in the three year time.

Fretz stated that we are interested in learning more about the effectiveness of curtailment as a tool. There was a comment in here saying that there is data in the mainland for this, but in Hawaii the data is not adequate. Are we going in that direction where we can collect that data? Mitch responded, by default it has been collected because we are applying curtailment and getting results. As I said in certain places there is no comparable change. Jacobi added you don't want to take the positions to come up with a controlled test because based on other evidence it makes sense to curtail.

Fretz stated there won't be any specific guidance in the document, directing the applicants to curtail or collect data in a certain way but will collect information opportunistically. Jacobi responded the basic statement is that curtailment appears to have an impact by reducing take and should be encouraged in any take estimate. When a project is proposed we would look at why they would not curtail. There are good reasons to be considered such as during certain times of the year you are not intersecting with bats.

Duvall stated that when he looked at the White Paper he thought that the recommended methodologies for monitoring should be combined. Especially for a new applicant, the monitoring may help inform the decision to curtail. There might be a good way of combining mitigation and curtailment for the type of monitoring to occur for a site or a new project or continuing projects. That might be the best advice whether curtailment is advisable or not. When an applicant is designing a project they would have less risk if they felt that through their monitoring it is showing that it is not likely to take more bats than they are expecting. I think for Kawailoa, no one assumed there were bats in those numbers on Oahu, that might be affected. Our recommendation for this is cut-in speed and your curtailment should somehow be reflected in the monitoring protocols. It does not specifically state under the monitoring part that advises cuttings or curtailments. VanZandt agreed with Duvall, at Auwahi wind we had two years of no curtailment, and we had five bat fatalities. Now beginning in February we have started to curtail, with the curtailment we are continuing to monitor so that we can hopefully measure the effect of curtailment. If you are going to propose curtailment and that there will be a reduction in fatalities because of curtailment, it may be good to have monitoring to back up to what you are proposing. Amlin responded that there should already be monitoring in place. Marie suggested monitoring to a level where you can actually see a difference. If you only monitor a small amount you may not be able to detect the change that curtailment is having. Jacobi stated monitoring needs to be adequate whether you are doing curtailment or not. We need to make sure there is a robust monitor program initially to make you know what is happening in terms of baseline conditions and where it goes from there. It could be modified to some degree as what was done in various projects before I don't think it should be linked to curtailment. Duval stated that monitoring would advise curtailment as part of adaptive management.

VanderWerf asked, isn't there another recommendation about monitoring later on? It seems like that might be the place if you want to put something about monitoring to measure the efficiency of curtailment. Gon agreed, I like the Duvall's point, and so in this recommendation on curtailment there is already something that says curtailment protocol to be modified and addressed in an adaptive management protocol. An adaptive management protocol is going to involve monitoring. If we want to make it specific, we could do so by saying – see monitoring recommendations. Then in that section will be more specific.

Fretz asked VanZandt if she had anything else to add that deals with the curtailment issue. VanZandt replied that curtailment has been a good tool and is pretty supported in the mainland. Auwahi is using curtailment now through adaptive management, when we go forward with our amendment we will be using that tool as well. Craig added that evidence from the mainland suggests there is a limit to the effects of curtailment once you go past 5 m/s, 5.5 m/s; you can only go so high before the it stops having an effect.

Fretz asked if there any more discussion up to this point in the document. He has various edits to give to the staff such as adding language and clarifying things; not conceptual edits. He asked the rest of the committee to provide their own edits to staff.

Siddiqi continued to the next recommendation in the document referring to the bat deterrent technology that is being developed, and potentially some useful deterrents to deploy in the future that can be utilized at wind farms. Within our recommendations from the ESRC bat workshop, we have identified research on deterrence technologies as a potential mitigation credit. Comments from the USFWS and reflected in the guidance document, is that USFWS will not provide mitigation credit for deterrence research, that is something on which the agencies differ. Avoidance and mitigation measures cannot be substituted as mitigation for take. We have received comments from Auwahi that wanted to see a more consistent message between the agencies. Tessler clarified that this is a regulatory mandate, so the sentence "it is important to note however that the USFWS will not accept operational minimization etc." should be changed to reflect the fact that it is not a choice, it is a function of regulatory burden on our behalf. Instead of stating "the service will not accept" state something like "it is important to note that under the federal endangered species act and associated regulation measures, to avoid and minimize take, cannot be substituted as mitigation for take that is anticipated to occur under an incidental take license permit issued by the service". Fretz agreed, and added that the ESRC will not support that sort of credit at this present time unless something changes in the federal regulations in the interest of having a concurrent process. Tessler added that USFWS agrees that this sort of research is a priority; it is just that from a regulatory standpoint this isn't a way to be able to pay for it. We can send language specific for that.

Jacobi asked is it that the management steps of avoidance and minimization that doesn't get credit, or the research to figure out the methodologies to get that done? Tessler replied that the avoidance and mitigation because that gets credit obviously, but the research into the methods to

get there does not. It is explicit in the language that the action entity needs to undertake that on their own. As the action entity they are responsible for that, it is their take under the law. Fretz and Gon preferred that wording. Tessler agreed, adding that he would also have his staff review it. Fretz stated that one thing he added is that the ESRC encourages the agencies and applicants to pursue such research independently.

Bogardus stated that the USFWS gave some language to staff that indicated that this is a joint priority for both agencies. It is just a difference in federal regulations that allow us to work it into a project description. She added that once we have deterrence available that we know are effective and practical to implement then there are ways under the federal regulations that we can strongly encourage applicants to incorporate those, so they are required to minimize this take to the maximum extent practicable. I have sent this to staff as maybe that is worth while noting in this paragraph.

Jacobi asked about table 5 that depicts a flow chart of all the different research priorities. I presume that this would fit under reducing take. Maybe within the research priorities we need to identify potential sources of funding for it, whether it is mitigation credit or not. We need to have good framework in terms of what research is needed and its priority. The sooner we have those answers the more effective we can be in terms of helping to advise the project design.

Siddiqi continued to the next item; Avoidance and mitigation measures for tree trimming and harvesting. From the conclusion of the workshop we discussed the potential for developing avoidance and minimization measures for bat impacts by timber harvesting during the bat pupping season. At this point in time those are not available, so we continue to recommend guidance of no cutting of trees over fifteen meters between June 1 and September 15. Fretz recommended that the third paragraph elaborate more on the Hawaii Forestry Industry Association (HFIA) research initiative. Jacobi added that recommendations be based off of good peer-reviewed science.

Bogardus asked DOFAW staff, is it general guidance that bats are not likely to be in elevations greater than 1000 m? After going through the data of where pups and lactating females have been found there is variation in the data. If we can nail down some of the elevation aspects of this then we can add to the recommendations. Tessler added right now it is unclear what their elevation limit is. Bogardus noted that the 1000 meters is mentioned in the document.

Siddiqi moved on to the next section, monitoring protocol and new technology. For this recommendation we have identified new monitoring technology as a research endeavor but not a priority. We state that the ESRC would encourage this with the potential to receive mitigation credit. The USFWS commented that they do not give mitigation credit for research on monitoring wildlife, as this is considered mandatory. We left it open at the workshop to give credit for new technology that are being developed. Another comment is we need clarity in the language of what USFWS would support or not in regards to mitigation credit. Tessler said it is

not clear if the suggestion is that further research to improve monitoring, habitat, or bat activity research would receive credit. Our point was that there is post construction monitoring that is mandatory; you can't get credit for something that is mandatory. If it is an ESRC recommendation, then the language needs to be clear as to how to attain these credits and what portion of this research you will receive credit. Gon agreed. Amlin added, it is not the monitoring itself but the new technologies that could assist with that type of monitoring. New technologies that could detect more efficiently than humans or dogs, like setting up video cameras to see if they can detect collisions. Bruns added that one thing that might help throughout the document is mitigation is both minimization and compensatory mitigation. If you use the word compensatory it clarifies. You were talking about compensatory mitigation to offset the take, but it is also minimization by the job of monitoring. Amlin agreed we can make that more clear.

Burnett asked if this kind of research for credit is defined under the federal endangered species act? Tessler replied in general we do not give credit for research. Bats are an unusual situation here in Hawaii because we don't know how to grow a bat or what mitigation consists of. There is a difference between what is mandated, and what could be considered mitigation, research such as this may be mandatory. Fretz stated this goes back to what Duvall was talking about, the specifics about what is required for monitoring is lacking in here. Tessler suggested to clearly state the prerequisites for post construction monitoring. It would be valuable for an applicant to see this white paper and know what is expected of them. Amlin concluded that we need to expand that first paragraph explain in more detail.

Fretz stated we have always required some sort of quantitative analysis of the data collected. Bogardus referred to the history of this; we have attempted to do that over the years we have been hindered by three main things. First, the knowledge of post construction monitoring is constantly evolving. Second, each project differs by location, and difficulties such as the searching area and environmental factors. Third, while we can provide guidance, we cannot regulatory require certain things to be done. This is an applicant driven process. Tessler added we have a post construction monitoring requirement that is mandatory; we just don't tell them how to do it. Bogardus agreed, but we can give for site specifics of what an ideal situation for monitoring.

Fretz commented, we have always required in some form that they conduct monitoring in a manner that informs a take estimate that has statistical confidence. That would be some guidance that I think should be in here. Tessler added part of the issue here when reading this, is that it is in the action entity's best interest to get the best information to minimize the variation in the estimates of take. Jacobi added there are two different issues here; one is adequate monitoring plans and the research into new techniques. We need to ensure there is consistency in how the information is gathered.

Bruns asked how we can say that research helps the bats recovery and compensates for take? Jacobi replied it may help if we realize that we are underestimating the actual take. Fretz added

that this is an important question that Bruns raises, the way the data is analyzed and the better your methods, the narrower your confidence is going to be. Poor monitoring worsens the confidence and results in the higher take. Tessler added that this comment raises a larger issue, just getting better numbers of what is down doesn't actually help conserve bats. Jacobi added that it may change your mitigation strategy if you are under estimating. Bruns replied you are under estimating if you are doing a poor job of monitoring. We are assessing our take at really high levels.

Jacobi added that there is another component to monitoring; it is not just the take but the response to the mitigation management. We want to encourage the best use of the best mitigation technology. How do we pay for getting that information which is really critical and from what sources? Tessler stated that when change in bat mortality determines the level of your mitigation effort, it is an important metric. How to fund it and do so in a regulatory standpoint is the detail that needs to be worked out.

Fretz commented I don't find this very useful if I put myself in the position of an applicant, it is just suggesting this is a good idea and that we might provide credit for it. Jacobi replied from the standpoint of receiving this as a guidance document for a project, this will help with explaining the expectations and issues with the confidence intervals and how that would affect your take. It is shifting the emphasis to credit for research as opposed to what are the standards for adequate monitoring. Fretz agreed those are two different things. Staff needs to improve this section on what is required. What I am saying about the latter, this is giving the applicant very little guidance. We need to be more specific about what kinds of research would be useful.

Snetsinger mentioned that he does think more accurate monitoring has a potential, you can learn when fatalities are happening and be more precise such as time of day. Also, there are potential windows to understand when fatalities are occurring, this would increase sample size. I'd like to highlight the recommendation encouraging with canine assisted searches, I don't recall a presentation at the ESRC workshop and the detail is limited here, it needs more scientific support. Amlin responded, there was not a presentation specifically for canine searches it was mentioned and brought up during the general discussion. We left it intentionally vague, saying this is something that the ESRC would encourage if it could be adapted. Snetsinger felt that the information provided is very anecdotal and is not laid out in a simple way.

Gon suggested finding other studies on the mainland that indicate that canine assisted searches are more rigorous than current methods, and summarize that in this document. I think this would be the place to link this to the curtailment, monitor and search for better ways to monitor and reduce impacts. Fretz agreed the example with time of day/year is a good one that Snetsinger brought up.

Tribble commented that what we are talking about is whether or not the applicant should get compensatory mitigation credit for doing research that is above and beyond what was required in

the monitoring plan. There is a statistical rigor associated with that, so you have a degree of confidence of how many bats are being taken. If the applicant has a new way of improving that, then the question is should that be allowed as mitigation credit? Fretz replied that's what it said, and that's what went into the notes from the bat workshop. Applicants come to the committee early with a conceptual idea and see what the committee thinks.

Harrison questioned if the focus on the applicant is appropriate here. I think this is an industry problem, by providing incentives for research and new technologies that will be effective to reducing take for bats. Is that the right focus for this document? I would like to have some discussion on a mechanism that it would make it the advantage for all the applicants to make science that leads to new contributions. We should be looking at ways to incentivize a broader base for the research that needs to be done. In other work I've done, applicants see a problem that science is too expensive, we need to get around that and recognize that research needs to be done. Bruns stated that it seems like an appropriate place to say this is minimizing take to the maximum extent possible. We require that research be done to identify which turbines are the problems. It is a minimization side, rather than offsetting the take for mitigation. Fretz agreed with Harrison. We are going to talk about research, it not described as well in here as it could be.

Tessler commented on developing economies of scale in research and pulling sources to answer questions and response variables. Fretz asked how the committee chooses what projects to support and where does the money come from. In a manner that is not applicant specific but holistic. Jacobi agreed; let's get to that when we are on research framework.

Bogardus added that at staff level we need to pool our effort and have the conversation. Addressing the point in this paragraph, this is similar to deterrence research under federal endangered species act; compensatory mitigation is something that makes up for that take. So that the overall net loss is more or less zero. It is hard for us to walk the line saying that we will give compensatory mitigation credit to you for research. We are going forward with research to count as compensatory mitigation because we hope this research will lead to better refined answers for bats. We agree that this is a priority and we want to work with DOFAW for the recovery of this species, however we have difficulty doing it as compensatory mitigation. Jacobi agreed that is a valid point. I would go for research right now with bats, for Nene it is a different story. We need to be broad in that sense there. Bogardus replied that our ultimate goal is to figure what helps the bats so as to fully offset the take of bats under incidental take permits. As long as the research ties directly into that we are in good shape.

Tribble asked if a solution for this agenda item in this document would be to strike the last part of that paragraph in recommendations? To end the paragraph with "ESRC encourage research on new monitoring technology", then you are silent on the issue. VanderWerf added that this paragraph seems to look at two issues at once. First, continuing the current protocols, and second provide guidance for applicants in terms of what type of monitoring they need to do. This is not very detailed and it does not provide any information about that. Maybe split this into two

paragraphs, have the first deal with continuation of current protocols and the second paragraph on research and new technology. Gon agreed.

Duvall added that it appears in the recommendation that monitoring is at wind and energy sites. Maybe recognize that monitoring where there is tree removal, for whatever purpose, where bats may be pupping in place. It seems that research on tree removal and pups and understanding pupping habitat and monitoring is also valuable so we better understand the effect on bats from tree removal and not just focused on wind energy. We don't know a lot about their life history; if they are disturbed will they relocate their pups. Tree removal is also worth monitoring. Fretz agreed, at the workshop, we did not address estimating take for forestry and tree removal projects. Bruns added we have not assessed take to habitat lost. Removal of forest is not considered to be a limiting factor.

Fretz clarified that we talked about the HFIA, which is working on how to conclude no take, what we didn't go into is what if they conclude that they are going to have take and they want to thin a forest. We did not figure out how to compensate for this type of take. Amlin replied that if you can figure out how to avoid it then you can figure out where bats may be and when they might be there come up with some type of proxy. That is what Dave Johnston was suggesting was to categorize how much your take was going to be. Monitoring in that capacity is difficult in large tree removal projects. Fretz stated that this kind of monitoring going on here is for collisions. A downed tree is going to be a completely different kind of monitoring that is not covered here.

Duvall suggested to Bruns that the take here is assumed for pups too unless you can prove there are no pups there. I think there is a large amount of pups being taken during large tree removal. Bruns replied at the Hilo bat meeting, I gave them applications and they expressed interest in applying for an HCP which would enable us to get section 6 assistance.

Tribble stated that for the purpose of this document, restoration of 40 acres is considered to be sufficient to make a bat. Therefore if you remove 40 acres, are you removing a bat? Bruns replied this is eucalyptus and they are replanting it and within five growing years it is already a forest. Tribble replied we don't see a great affinity of bats for native forest for example.

Fretz stated then I would say no to the first part and no to the second part. You could add the forestry side to monitoring in the way that the paper is describing. The question is how do you monitor take in a forestry project that fits into this section. Bruns stated that we have not confirmed the efficacy.

Siddiqi added that I think we touched upon that in the other section. Fretz replied it is two different things, when you were describing the HFIA a project that could provide information to understand take, that is take estimation before you cut a tree down and after. Fretz asked the committee if they want the staff to go into this subject further. Tribble responded it is a needed step at some point. Tessler added this is a function of lack of information largely in terms of

forest elevation types, habitat types and so forth. Fretz referred to when he mentioned earlier about providing more detail on the HFIA approach, when you do that you can add this idea in there.

Fretz called for a short break.

Fretz resumed the meeting; we finished that last section and are now moving on to resource equivalency analysis.

Siddiqi continued the discussion of the white paper, for this item we discuss the potential use of the REA model here in Hawaii. The recommendations are that the REA model is not ready for use for the Hawaiian hoary bat, although as research continues the model could be useful in the future. Jacobi commented that this reflects the discussion we had at the workshop; can apply this REA model for other species? It is something to explore for Nene, or other species where we have more control over unknown variables. As a way to validate its utility and bring it to the table and not just use it when we have a hard issue like bats. Gon added maybe use this more specific to bats, because if you pulled this out of context you would say we are not using REA in Hawaii. Jacobi added that he thinks that REA has potential.

Tessler commented that is an issue the USFWS had with this model is discounting rates into the future and when dealing with endangered species you might actually have increasing rates in the future depending on population levels or existing habitat. We suggested language that we would like included that specifies there are some issues with the REA process that need to be considered with the use of endangered species. Jacobi stated that he thought it was clearer that the USFWS did not recommend using the discounting rates and therefore is not part of it. Fretz added that it could not be supported under the state law either, it is counter mitigated. Gon stated that the bottom line is that anyone looking for guidance will see that we are not going to use that. Tessler continued that the endangered species act prohibits consideration of economic effects and that needs to be clear. Gon agreed we can move on from this. Fretz commented that he had added a sentence that reflects the ESRC desire this is a potential tool we would like to see further developed. Jacobi encourages this model to be used on other species.

Gon brought up the 1000 meter (m) issue. Amlin replied we can change the language to say that it is thought to be a 1000 m. Tessler stated that the service does not recommend any elevation guidance, since it is arbitrary if not strongly supported by good data. Jacobi added to clarify that it is supported by data but not enough to come up with a clear demarcation line; it was a limited scope that it was based upon. Tribble commented that a couple years ago they were found higher elevations on Mauna Loa. Gon added that anecdotally they are known from higher elevations. Bruns stated that maybe you can change the language to say, up to at least 1500 m. Siddiqi asked the committee what wording they would like to see for this guidance. Should we state 1500 m with current available science, and mention that this number might change or should we remove it completely? VanderWerf suggested the wording Hawaiian hoary bat habitat is documented up

to 1500 m however the bats may occur higher. Tribble said it's important to note that most of the data suggests it is at lower elevations. The reason for this is it might not be realistic to reforest high elevation and expect it to produce good pupping habitat.

Gon asked if there is any indication of lower elevation pupping, given that bats don't necessarily need native forest habitat. Number five, best management practices, and net environmental benefit are a way to justify planting native. Tessler commented on number two, the value for definitive area, the service has used a variety of bat estimates overtime for mean foraging range might not reflect reality. Amlin replied that Frank had suggested 65 acres in the bat workshop and this 40 acres comes from throwing out one outlier. Frank Bonaccorso has reviewed this and did not have an issue. Fretz stated that is the median and not the mean. Tessler stated that his only concern is that even with that outlier, there are so few points to contextualize that outlier. Tribble mentioned that some of the data is at the bottom of page 13 and it is a small data set. Jacobi added the missing link is the lack of validation that if you grow 40 acres of forests that you will get a bat. Tessler stated that the language all depends on the ultimate purpose of this document. If this document is speaking as the guidelines by the ESRC, then the word "must" carries a different weight than if it is just general white paper. Jacobi agreed is this just a general summary of the various issues relating to bats, it would be very different if we were explicit of the monitoring methodology. This identifies the best practices we have right now, and also the missing pieces. This document is trying to develop a strategy to get the information needed to do mitigation.

Amlin clarified that the intention behind the document is that this would be the ESRC's guidance document, with the clear understanding that these things are evolving. We intentionally kept it short and simple. You have pointed out especially in the monitoring section that there are gaps. The intention is for this to be used by HCP applicants that these are the issues the ESRC is expecting you to address. Fretz added that yes this is guidance, but if there is something in here that is the law then state it is the law. That does not change it from being guidance. I think that is the case here, you must monitor the habitat management that you are doing; I think that is clear in the statute that it has to be done. Gon stated with that being the case this is useful to have it laid out like this.

Fretz suggested a few things to add here, one is the 40 or 60 acres of forest to restore to create habitat should be a research priority if you are having people do these projects. It needs to be experimentally designed as a research project that you can collect data and analyze to determine if you are having a desired effect. It is in our research list, and it is worth mentioning here too. You talk about the acoustic monitoring for the duration of the project, but you need to add "in a matter that will be statistically able to detect a change in occupancy". Amlin responded that our understanding is that we don't have those tools right now. Fretz replied you do have the tools to measure the change, you don't have the tools to say the number of bats you had in the beginning compared to the end result. You have the tools to say occupancy doubled. Jacobi stated that chirping does not mean bats numbers it means occupancy. Fretz continued I understand that it is

not ideal, because ideally you can count individuals. At the very least you need to know if you are making a difference. Jacobi added this would help us recognize a research need.

Gon asked Fretz what wording do you suggest for number eight, with regards to linking monitoring to research needs? Fretz replied given the lack of information on the limiting factors and threats, management or population projects implemented as mitigation should also be monitored as research projects and documented to see if whether they result in increases in bat occupancy. Jacobi referred back the intention of this document; the first contact with an applicant is with DOFAW or the USFWS, not the ESRC. This document ensures that we connect with the process, what the expectations are and when they do come to the ESRC they are prepared.

Craig had a comment for number three; to be generally conservative, if the average foraging distance for one bat is 3 km then something that is 3 km away is probably close. An example is that we have circumstances where we have captured bats and tracked with radio collars that show they have traveled further than this distance. I suggest this number be more conservative. Siddiqi replied that she had received Frank Bonaccorso comments regarding this; he also had wanted this to be more conservative and increase the distance. DOFAW recommends that we don't want mitigation projects nearby to turbines. Frank Bonaccorso had recommended 20 km. Jacobi replied to Siddiqi, you have to be careful as there may be projects developed right next to a Natural Area Reserve (NAR), for example. You do not want to preclude other management for this species or other species that may benefit when a project appears next to these protected or managed areas. Fretz agreed there are a lot of examples where agencies are already doing habitat management in an area and there is a long-term management plan there and then someone puts a windmill site there. We are not going to stop the previous management; we will continue to make bats in that area, we should try to redirect the wind turbines. Tessler added that it is problematic for a number of reasons, in terms of the amount of data that is available and the variance in that data. To come up with a number implies that is a safe distance for them as operators, I think that is disingenuous at the very least. This could be problematical from the legal stance, whether or not that meets what you want to address is a place for discussion. You could leave it as a general statement, and someone will want a definition of close proximity.

Fretz asked would you be okay with mentioning home range without defining home range? Tessler added that with the variability in the data, another issue is land management practices that the agencies are already undertaking. Fretz suggested what if we say don't mitigate on site; don't create bats on the site of the project. Bruns agreed. Amlin clarified that this is not meant to preclude any management practices that are occurring. This is simply saying where the mitigation funds going to restoration projects should be used. Fretz agreed and stated that the implications are so strong; you are effectively telling an applicant that you cannot do mitigation there while your agency is doing exactly that, specifically for bats. Vetter added that I see it slightly differently, because they are required to replace the take. If they are replacing their take right next to a wind farm then they are taking the same bats over and not really replacing them.

Whether the land manager wants to manage the land next to a bat population then, legally they are required to replace their take. The ESRC needs to provide guidance to make it more efficient proposals to get HCPs approved. Amlin asked if they could change the “should not” language? Fretz agreed with Vetter, although it is still hard to verbalize this because the idea is that you don’t want them to produce bats in an area where they will be struck.

Gon stated I don’t see this as a condemnation of restoration areas next to wind turbines. I would say mitigation projects should avoid close proximity to the impact area. Jacobi agreed. Gon continued that because there was a discussion on foraging distance and home ranges, I think people can do their homework and propose reasons behind their mitigation areas. Tessler added that if the agency is asked a question specifically about that then indicate that there is a range and we cannot put a dot on a map for you. VanderWerf suggested wording it as a range and have it on a site by site basis for both foraging range and suitable mitigation range.

Jacobi commented that on one hand, we are going to be very specific with number three and very general with number five and seven. Fretz mentioned that those should be more specific. VanderWerf added that number three should be more specific. Mitigation area should be from three to ten km from the turbines and this would have to be judged on a case by case basis. Three km comes from one study, it will not be accurate for all locations or all projects.

Bogardus urged the committee to address the fact that this may have implications on other species that we are permitting take for. You talk about home range or the core area for nene or seabirds or water birds and the locations of mitigation projects and proximity to areas where take is being permitted. We have small islands and are limited to locations where projects for mitigation are able to be conducted by our applicants. I am concerned about setting a distance from where take is occurring and distance to mitigation. Gon added that he would not recommend using home ranges. Tessler stated that “close proximity” allows for some flexibility for the regulators to speak with the applicants. Bogardus added as an example we have 3 projects where mitigation is on site, not for bats, in one location it could not be at another site. It is something that will continue to come up for the committee.

Fretz asked the committee if we want to defer this until we finish the other agenda items and then come back? The committee agreed. Fretz moved to agenda Item 4.

ITEM 4. Briefing and update from Division of Forestry and Wildlife (DOFAW) staff on the Draft Habitat Conservation Plan and Incidental Take License: North Kona Game Management Habitat Conservation Plan, Island of Hawai‘i.

Siddiqi introduced item four: The last review of this HCP Draft was at the ESRC meeting on March 31st. The consensus from that meeting was to release the draft for public review pending a meeting between DOFAW and USFWS on the biological opinion actions and section 7 consultation. After discussions with the USFWS, it was determined that at this point the state is pursuing a state HCP only for the endangered plants and the Blackburn's sphinx moth (BSM). In

terms of our section 7 consultation, we are going to move forward with the biological opinion for the BSM only. The State is not going to be using federal funding for game habitat enhancement in the project area at this time. DOFAW is looking to potentially use federal funds in the future and if we decide to do so, we will initiate consultation with USFWS at that time. At this point Adkins has worked on updating the modeling efforts for the take estimates and we are in the hopes to go to public review in October.

Adkins stated that she will give a brief update, come back to the new model results and take estimates, and then discuss the avoidance and mitigation based on those results. The HCP is required game mammal management activities are impacting endangered species in the Plan Area. Game mammal management and hunting are the covered activities. Most recovery plans list the cause for decline of native plants as impacts from game mammals. Game mammal management activities lead to the take of endangered species. Our plan area is comprised of Pu'u Wa'awa'a forest reserve and Pu'u Anahulu Game Management Area. The forest bird sanctuary is included in the plan area however no active game management occurs in the sanctuary so plants within that unit are not considered take. In 2003 to 2007 there was game mammal tracking study done to determine the home range of the species. Home range was calculated for each of the game species and the largest home range was selected to create a buffer around the Plan Area (Area of Impact). This home range added an additional buffer of 2.25 km around the Plan Area. There is no buffer on the boundary with Pohakuloa Training Area because this side is completely fenced. The buffer goes all the way down to the shoreline. Moving on to estimating plant population densities and take, HCP planning started in 2003, with first round of plant surveys done from 2003 to 2007. These data were incorporated into a plant model by Jonathon Price. More surveys were completed in 2011 based on model results predicting areas which are most likely to harbor rare species. We also found data from a helicopter flight track that had been done in the initial surveys. Based on the combined data from all surveys, there are 15 Covered Species in the Plan Area. Two other species were also found in the forest bird sanctuary and will not be included in the covered species because there is no game mammal management in the sanctuary. This is a large area 104,000 acres, it is impossible to comprehensively survey the entire area. We surveyed areas that were hotspots, or where plants were known to occur in the past, random transects, or guided searches. We had a lot of gaps in our data set, and the plant modeling is a way to estimate the number of individuals that occur outside of survey areas based on survey data, plant range, and habitat type. The first step was to define habitat types that occur in the plan area, this is based on substrate age and moisture. We determined that within our plan area a total of 36 habitat types. Habitat type and range maps were created by Jonathan Price for each of the covered species. Buffers were created around the surveys tracks dependent on plant life form. For herbaceous plants, we assumed you could see a plant from about 50 meters, so that put a 100 meter buffer around that track. For woody plants, we doubled the number to 100 meters in either direction, and for the helicopter track, we doubled the number again to assume you could see a woody plant from 200 meters away. Total area surveyed is 14 % for herbaceous species, and 29 % for the woody species. More specific details can be found within the HCP.

New tables for estimated plant numbers and take were then displayed to the ESRC. I will go through each column and species one by one. I want to first say that for *Asplenium peruvianum* and *Portulaca sclerocarpa* it was not possible to do this model. *Asplenium* occurs in lava tubes and cave openings, this habitat type has not been well mapped, and for *Portulaca* we only have one plant data point that was found last year. For these reasons we could not extrapolate for those two species.

For *Chrysodracon* we surveyed 36 to 37 percent of the habitat type which worked out to be 58 km², this species is found in seven of the different habitats with the known number of plants totaling 305 individuals. Based on that there is an estimate density of 5.2 individuals for every km², the estimated take area for this species is 76.8 km², this gives us a projected or estimated value of take for this area 307 plants. Just to clarify the terminology the “take of estimated plants” are unknown estimated outside of the surveyed areas, the “take of the known plants” are individuals that we know are there and are located outside of planned fences. Then we get a total number of 397 plants for that individual species. For *Chrysodracon* and *Colubrina*, in 2003 and 2007 surveys, they surveyed a particular area and counted a number of plants. When we returned in 2011 we resurveyed that entire area comprehensively. In this area we cannot detect what was there prior versus what is there now. We feel confident in the values that we have now, and we are using that as the most updated value for the survey area in the model is the 2011 data.

Jacobi asked if there is reason to believe a change in populations over that period of time for any of the species? Adkins responded that we have certainly lost some during the drought, as of right now it is impossible to get a number on the percent of individuals lost because they picked up a few hundred more individuals during the second survey. We tried to overlay but because of issues with GPS and accuracy, there is no way to say definitively what is an old point versus a new plant find. They did not tag individuals in 2003 to 2007. We are going with the best available information we have at this time.

Gordon asked if there had been animals in this area throughout this time? Adkins responded yes. This area is harsh as lava and is difficult to hike on. This might explain why this population is still surviving because it is somewhat protected by the harsh conditions. There are animals in the area however it is difficult for them to access the trees.

Jacobi asked is the loss of plants from the habitat changing and not the animals impacting them? Adkins replied in this area I think it would be more along the lines of drought. Jacobi asked is this generalizable across the larger area of where *Chrysodracon* is in? Adkins replied I don't know how to get a handle on that. Jacobi stated that the larger plants are probably impacted less by animals, the younger ones growing up are more susceptible. That would be your change is a demographic change. Adkins agreed. Jacobi asked if you recorded different sizes? Adkins replied yes. Jacobi responded I would be interested to see what that population structure looks like; I imagine it is skewed to the large trees. Tessler stated that the survey is going to be skewed as to the more mature plants. Jacobi agreed and added because of detection. Adkins stated that the

other issue we had with *Chrysodracon* is the banana moth attacking them, specifically affecting the older trees. We don't fully know what the ramification of that is yet.

Adkins moved on to the next covered species. *Colubrina*, similar to *Chrysodracon* in habitat type, 40 % of the habitat was surveyed, a total take estimate of 835 this is because they occur in this one habitat at such high densities and a habitat that is large and mostly un-surveyed this makes the estimated values quite high. The next species, *Haplostachys*, only 9% of this habitat was surveyed. I want to point out that because of this buffer we created in our action area *Haplostachys* only occurs in this small area of light green on the map. On our state land within the plan boundary we have very little of this habitat type. We included the Keamuku flow as part of our take area; this is all within that habitat type. We have no survey data on this species because it is not our land. Because of this the estimated value for *Haplostachys* is 804 individuals out in that area. Jonathan Price has mentioned there is potential survey data from the saddle road surveys that may be able to incorporate into the model.

Fretz asked if this is PTA land. What is PTA doing with the land with *Haplostachys* habitat? Adkins replied, I don't think they are including this area in any of their fenced units or management. Fretz replied that may be one of the new parcels they opened for hunting.

Adkins continued to *Hibiscus brackenridgei* and the habitat surveyed for this species was about 50%. Our estimated value of un-surveyed area is 58 individuals. The population that we have is 65 individuals are fully fenced so none of them are subject to take. The population has fluctuated over time.

Jacobi asked if the 58 is the estimated take out side of the fence? Adkins replied that the 58 is a take that is the estimated value outside of the fence. Our total take is 58 individuals. The next species is *Kokia drynarioides*, percent of habitat surveyed is 92 % and zero estimated individuals in the take area. *Mezoneuron kawaiense* about 30% of the habitat was surveyed and the estimated take is 107 individuals, take of known individuals is about 37. The total take estimate is 144 individuals.

Adkins continued on to *Neraudia ovata*, 25 % of the habitat was surveyed and the estimated take is 28 individuals, we have one individual occurring outside a proposed fence, making the total take 29 for this species. For *Nothocestrum breviflorum*, 40 % of habitat was surveyed, known individuals 202, we only have 65 outside fences. *Portulaca* we have no information for, and I will talk more about how we are handling these species we don't have a lot of information for. *Silene lanceolata*, is a herbaceous species and the buffer for the survey was much smaller, we surveyed only 18 % of habitat and therefore the take estimate is much higher. We estimate 1600 individuals and a total take estimate of 1800 individuals. For *Solanum incompletum* we have 88% of the habitat surveyed and a take estimate of about 87 individuals. All of our known individuals are fenced and will be incorporated into larger units. *Stenogyne angustifolia* we had 46 % of the habitat surveyed, and 285 estimate, we are fencing about 50% of our plants and the

total take is 325 individuals. *Zanthoxylum dipetalum*, we have surveyed about 50% of the known habitat, we originally had 13 plants, now we have 11 plants after the drought, we estimate number of individuals outside our protected area is 11, giving us a total take of 19. Lastly, *Zanthoxylum hawaiiense* we have 43% of habitat surveyed, and we estimate to have 176 individuals and are total take is 228 individuals.

Jacobi asked if since your last presentation in March, are you still using the 10 by 10 meter square methodology? Adkins replied no we are not, that is one of the biggest changes to this model since the last time. We had to resurvey an area within the Kauila unit, because there was no way to determine the number of individuals. By using the ten meter detection, if a plant fell into a ten meter square it was considered a single plant detection. There were issues with this methodology when I last presented it, because there was a level of error I could not calculate. Therefore, we removed the old Kauila data and overlaid the new data and got rid of the detection criteria and went back to the number of individuals. The take estimate for some of our species has gone way up for herbaceous species (*Haplostachys haplostachya*, *Hibiscus Brackenridgei*, and *Silene lanceolata*).

Jacobi asked if it is the number of individuals within the survey area opposed to a block within the survey area? Adkins replied that yes that is correct. There were a lot of questions about the ten meter detection method. Jacobi asked what is a date on the take? Adkins replied that what I have written into the HCP, fenced units will be resurveyed for Covered Species as the units are put in place. If the numbers have gone down, those individuals lost since the surveys will be added to the take estimate. Jacobi asked if is regardless of how they might have been taken? Adkins replied that we have no idea, for example if there were 20 and now there are 15, five will go into the take. In terms of recruitment we don't see a lot even in managed units; we would add another mitigation population for each species based on the recovery plan and mitigation criteria.

Tessler asked in terms of percent of habitat surveyed, is that derived from a modeled distribution of what it might be? Adkins replied that it is based on the values of where we know it occurs and where it historically occurred. Jacobi added that it is based upon range models that Jon Price, myself and others were involved in so that we have a model showing potential historical range. Tessler replied that is what I was trying to understand is if it was potential habitat that is unoccupied now but might be occupied in the future. Adkins added that it is incorporated within the model. Tessler asked for the take estimates, how did you come up with take? Is it based on a net change, or expected number of animals by species? Adkins replied that anything that is outside of a fence is considered take. The number of animals is not a factor. Jacobi stated that even if it dies of old age or drought. Tessler stated that is ungulate density independent. Jacobi added that it is potentially an overestimate in terms of what take is you are being conservative. Adkins replied in that sense yes, it may be that the tree holds on for a hundred years because it is protected by a lava tube. If it is outside of the fence it is gone. With the state HCP habitat does not come in as much as does the number of individuals.

Tessler asked about the species in the forest bird sanctuary that are not considered covered species. I am wondering if there is any game mammal management occurring within the average home range that was calculated? If that is the case you may have to consider those plants. Adkins replied that the unit is fenced and there is no mammal management in that unit.

VanderWerf added a comment that would make the species take table easier to interpret is to add a column of un-surveyed plants. Adkins replied that the column is there. VanderWerf asked how many plants are there that have not been surveyed? Adkins responded that is the estimated take. VanderWerf added a comment that some of these species the total take is higher than the known plants. I recognize that some of these are herbaceous species, so that there could be a lot of plants in the future. However, *Zanthoxylum* is a tree and you are expecting to lose eight of the known 13 plants. I am concerned that there is going to be not many of these plants left. Adkins replied that for *Zanthoxylum* those have been individually fenced for many years. The reason I am calling it take is because we do not consider the individual fences protection in terms of it becoming a functioning community. Unfortunately these plants are not within any proposed fence units because of the habitat is so degraded. It is basically an individual plant in a sea of fountain grass. We cannot take them into a fence without taking in a large acreage of bad habitat. We are only fencing 3 individuals within large fences. Fretz added that in cases where you have a plant in an individual fence to prolong its life for a while or to obtain the genetic material. Small fences are the best to conservation measure to take, and a bigger unit is not any better. Adkins added that the amount of work to manage a large unit around individual plants in that habitat is not feasible. Our fenced units are protecting some of the best habitat. These plants are hanging around in the worst remaining habitat.

VanderWerf asked if there is restoration going on elsewhere? Adkins replied we are not doing off of site mitigation because our area is large, approximately the size of Molokai. We feel that we have enough units spread out across the landscape. I have not gotten to the mitigation yet, but I will go into more detail then. Fretz asked to see the map that shows the units because that would inform his question. VanderWerf added that by looking at the table by itself, you are expecting to lose more than half of the known plants for some of these species. Adkins replied I handed out a table that shows the percentage of the population that is being affected. Looking at the plants that are known, the known ones we are fencing and the known ones considered take. VanderWerf replied that that is a good approach. The un-surveyed take is an overestimate which is conservative. Although even some of the surveyed take to me is alarming for some of them for these species.

Adkins asked which species in particular? VanderWerf stated *Mezoneuron* you are only protecting a quarter of the known plants. It does not leave you with very many left. Adkins stated that *Mezoneuron* plants being protected are going into avoidance and mitigation of known individuals. All of those take estimates go into mitigation values, mitigating in our planned fences. In terms of avoiding the take of known plants that is what is planned. VanderWerf agreed and asked if there is out-planting going on in these planned units?

Jacobi added that many of your species are trees or tall shrubs and many have survived, the take is not because of animals impacting those they are eventually going to die. The take is happening where the plant is trying to reproduce. You are addressing that through your mitigation. Fretz asked Jacobi are you talking about considering the take of seed banks? Jacobi responded, no, when the rain comes and they grow up and the animals eat them, that is take. Tessler asked are you saying the take is underestimated, because you are not collecting seeds or propagules? Fretz replied it is undetected take because some species live and die in between surveys. Jacobi added that some could die from other reasons; we also know that with animal populations there are only a few species they don't eat and young things are what they do eat. Edith stated one thing to think about is it is not just game species keeping these species from recruiting; there are so many factors such as weeds and drought in general. Even in an ideal situation when we have a whole unit weeded out, we are still rarely seeing recruitment. Jacobi replied I understand there are drought and other factors as well. There is a lot of take going on out there. You are overestimating that everything outside of the fence is going to be taken and you respond in your mitigation to offset that. Adkins responded if our mitigation is to create a reproductive and functioning individual, then isn't that one individual replacing that one outside that is lost?. There is going to be sometime before that happens, it can be ten to twenty years. The only way I've been able to handle this is add another mitigation population because I don't know how to quantify this. Jacobi mentioned a study between fenced and unfenced and recruitment. Adkins responded yes, I don't think there was much recruitment though; it was just that if they were not fenced they were eaten.

Tessler asked if there is consideration in the development of the fenced areas for size and structure with respect to the life history characteristics of these plants? In some cases when they are outplanted in areas depending on their method of pollination or other life history characteristics of the species they may affect how they will survive. Whether or not the outplanting in these areas is successful is a large part on the life history of the taxa. Adkins responded that we have taken in the consideration; in terms of where the fenced units are going it is mainly where the plants are. Some of these units have been planned by the PWW management plan to protect the best remaining canopy and community structure. In terms of where we outplant our mitigation populations I have not identified specific locations where each species is definitely going to be planted. I have a range of available units for each species. Gon commented that I do like the fact that the estimated take is large so mitigation is large. Adkins added that we are hoping that these are overestimates for some of these species. In terms of fencing in these table columns depicts the: numbers of known plants, model estimation, take of known plants, avoidance and mitigation exclosures.

Tribble asked if these are all within the mapped area? Adkins replied yes, these occur within Puu Waawaa and Puu Anahulu. Current units we have about 4,100 acres already fenced or about 4% of plan area and there are dozens of individual plant fences. Individual fences are placed around *Zanthoxylum*, *Aiea*, *Halapepe*, and *Solanum* throughout the area. Proposed fenced units are

currently 1,200 acres from the PWW Management Plan and in addition to those another 3,400 acres totaling about 4.5%, roughly about 9,000 total acres fenced in the plan area. Looking at the mitigation goals for each species, for *Asplenium* and *Portulaca* where we cannot use the model for what we have done is look at recovery plan and the species stabilization criteria for those species. Mitigation goal for these species is three populations of 50 plants each for *Portulaca* and *Asplenium*. We are creating one additional population for each species for net benefit and one additional population for species recruitment loss mitigation. That has been my way for handling that difficult question. For all species where the take estimate is smaller than the species stabilization criteria, we rely on those values for their mitigation. For example *Neraudia* the take estimate is 29 individuals, this will not benefit the species to replace those individuals, and instead we are going for 300 for mitigation and an additional 2 populations of 100 for a total of 500 plants for that species. For species that we have a take estimate, we use both the known take and the estimated take to come up with the take estimate so that there is a minimum of three populations to equal the take estimate and two additional populations to follow the species stabilization criteria. Some of our goals are high, but I don't think there is anything here that we are unable to do. This past two years have been wet and we have had a lot of success with our out-plantings.

Jacobi asked how do you define out-planting success? Adkins responded that the overall success would be mature and reproducing individuals.

Gon stated that the one standing out here is *Uhiuhi*, is that because of disease or what are the challenges with success? Adkins replied we are trying to figure that out, *Waikoloa* has amazing success and for some reason at *Puu Waawaa* we have had a lot of issues with pests. Elliott Parsons added that there are black twig borers, a lot of issues with sucking insects like aphids and mealy bugs. It could be mycorrhizae issues; it could take specific mycorrhizae associations to do well.

Gon asked if you have looked at the *Waikoloa* populations and what accounts for their success? Parsons replied that *Waikoloa* is a different habitat type, the lava flows are from *Mauna Kea*, there is a lot more sun, and it could be that less soil is better. Gon replied or it could be fewer pests in a harsher environment. Parsons agreed, the harsh environment could mean a lesser pest load.

Duvall asked if you have considered if the species are monoecious or dioecious? And then for your out-planting sometimes you have really productive out-plants opposed to those that aren't; it may be related to the genetics. Adkins replied for the genetics we are tracking where the plants are coming from, a goal of mine is to create a map of where we have collected and where we need to collect from. A goal of the HCP is to have genetic representation. Duvall responded the take of a monoecious plant where you are taking all of the females or all the males. Adkins replied that is taken into account with the species stabilization criteria. For *Zanthoxylum* and *Neraudia* we have that concern. This has been taken into account for mitigation.

Tessler asked if on your table total plants for mitigation at the end is the total number of adult reproducing plants at what point in time? Adkins replied that this is a 25 year plan, for some species we may see success within a couple of years and for others it could take 15 or more years. Those are not outplanting goals, they are overall mitigation goals. It could take to 10 to 20 times that amount of plants to achieve that goal. Tessler added that he wanted to clarify.

Tribble asked are you going to have the resources to maintain those fences and to track the propagation of propagules and successful generations? Adkins responded that monitoring is built into the plan as well. Gon commented that there must be a lot of fire mitigation. Adkins replied yes, that is one of the biggest things that we do at this point in time. Every road on the map there acts as a fire break. Around each of our units we are putting in firebreaks. Gon replied some of us can remember the 1985 and 1986 fires that took out huge amount of the Pu‘u Wa‘awa‘a forest. Jacobi added that we can remember what it looked like back in the 1970s.

Jacobi asked for the population estimates, if you are using the HPPRC guidelines version 1? Adkins responded yes and what is in the recovery plans and the five year reviews for each of those species.

Jacobi asked, now that there is no federal nexus, has FWS approved of the guidelines of version 2? This is important to understand if other plant HCPs come to the ESRC. Adkins replied that for the state rules the HCP must be in sync with the recovery plan for each of the species, and the stabilization values comes from the recovery plans. We are using those as a guideline and also the best available information at this time. Tessler stated that Adkins said there is currently no federal nexus because of the way funds will be allocated. That is not off the table in the future. Fretz stated that during discussion between the administrator of DOFAW and the field supervisor of the FWS at that time, regarding critical habitat it was concluded that the federal side is going to take a long time. The state could be in compliance with both state and federal law by finishing this HCP for the plants and consulting on the BSM. The plan is to get a finished state HCP and get compliance on the moth now, then go back and pursue the section 7 for the plants. The other thing the field supervisor told me is that there are new rules coming out for critical habitat that could influence the way FWS is going to comment on this. DOFAW does intend to reinstate the consultation in the future.

Jacobi asked does that change the role of the ESRC relative to this project? Fretz replied I think it is both; the ESRC is to advise the board on something that is compliant with state law with regards to these plants as it was before. The committee should anticipate something that might be required under the federal side.

Tribble asked when do you expect to consult? Fretz stated that what they told us was that there are plants that do not exist here and are not in the HCP, but there is critical habitat in the area.

Jacobi stated that they used to be there and is not there now? Tessler stated that there is critical habitat designated in the area for plants that are not there. Fretz added that there are plants that

don't exist there currently but there is critically habitat there. The other issue is interpreting critical habitat in the absence of these new rules that are coming, adverse modification of critical habitat. What does this mean; we got indication that there was no advice forth coming. The committee could recommend that we wait on the state side for the federal side to play out.

Tribble asked what is the timeline on that? Bogardus replied that the new regulations for adverse modification of for critical habitat were supposed to be published in August. Whether this would change the way we access critical habitat for this project I am unsure. The drafts regulations were published several months ago. We can look at those as an indication of what is to come. Just as Fretz said there is critical habitat units within Puu Waawaa that are not within fenced units. When we look at something under a section 7 consultation we would have to assess the impact to each individual unit for the proposed action, which is game mammal management. There requires more information than in the current draft of the state HCP. We are going to work with DOFAW so we have sufficient information when they do pursue a section 7 consultation with us. Additionally, under section 7, we have to assess the impacts to species that have been extirpated. It is not just the species within the HCP, it is an additional 3 or 4 species that were once there. The state has determined to use federal funds only for certain activities and we are doing a biological opinion to access those activities.

Fretz stated to clarify that the division wants get in compliance under the state law and feels that this plan does meet the requirements of the law and thus is bringing it to the committee and asking for the process for approval to proceed. Jacobi added that this is a very important area in terms of diversity. As a follow up there are many other areas throughout the state where game mammals are managed for hunting. Are there other projects similar to this? Fretz replied that what is unique to this is that someone in 2002 decided to pursue a HCP, there are not a lot places where this type of management is actively trying to increase the survival and reproductive success of game mammals that is not common in areas where there are endangered plants. Tessler added it seems adverse modification of critical habitat in designated areas that are unfenced could be problematic in services evaluation to move forward. The state deciding to not use funds for those activities obviated the federal nexus on those activities and if the decided to use those funds in the future it would lead to potential problems in that consultation.

VanderWerf asked whether the funding for fencing and propagation of plants is all from the state? Adkins replied not necessarily because it is a state HCP it is grant and state funding. Jacobi stated that the state is responsible for making this plan happen.

Rounds asked if completing this HCP will help in getting funding for these actions? Fretz replied that he is unsure. He added that this also serves as a management plan and far better than the current one that exists. Tessler asked does being in compliance help move forward? Bogardus asked if there is funding going toward implementation of the plan will it ensure it keeps pace? If you receive a 100,000 in a given year and that is all, will it ensure the mitigation will keep up game mammal management? Fretz stated that you are talking about a compliance issue. All

HCPs are subject to annual review by the committee and can be revoked for cause. You are describing a situation where the state is no longer in compliance. Bruns added that it could be proposed in the HCP that if the level of mitigation and outplanting is this fast than the guzzlers would be funded that year. Parsons stated that say it takes a couple of months longer to get a fence in and a couple more trees die those are added to the take estimate. Adkins added it is covered because if one year we do not get a fence in we are still held to adding that take level. Jacobi stated that wouldn't change your last column. Adkins added it could, if that mitigation value the total plants going in would increase. The kauila unit for example; when the fence goes in we will resurvey and the plants that have been lost will go into the take and change the mitigation goal. Tessler stated that is unclear, is there an algorithm or something that goes from your take to that output. Adkins replied that we recognize that by only replacing number of individuals lost is not adequate for that species. Instead of that we are using the recovery plan and the species stabilization; therefore we follow those criteria to create the number of individuals and populations. Jacobi stated that if your take estimate changes you mitigation response is what we are trying to see. Adkins with some species it is difficult. For instance with Halapepe if we lose 50 individuals that we planned to fence we are going to add those to the total take estimate. This would increase our mitigation.

Fretz stated a time check, how much more did you intend to share? Adkins replied I am finished unless you wanted to see plant points.

Fretz asked to the committee if they want to take a break, or if there are any questions?

Gon asked this was a briefing and update was there an update? Fretz replied, no, the committee approved that this go out to review, unless the committee wants to change that advice. Fretz there are no comments and this was informational to let you know that the concurrency with the FWS changed. My understanding is that the committee does not need to do anything and the state can proceed with the advice from last time to put this out for public comment.

BREAK

ITEM 5. SunEdison Major Amendment Request: Kaheawa Wind Power II Wind Energy Generation Facility (HCP approved 2011) is requesting a major amendment for an increase in incidental take authorization for the Hawaiian hoary bat or 'Ōpe'ape'a and the Hawaiian goose or Nēnē.

Chair Fretz reconvened the meeting.

Siddiqi introduced Item 5, Kaheawa Wind Power II (KWP 2) on Maui, in operation since 2012, the wind HCP has 17 years left on the permit. They are currently seeking a major amendment requesting increase levels of take for the Hawaiian hoary bat and the Nene. KWP 2 has exceeded

the take levels of the Hawaiian hoary bat; 18 bats are estimated to have been taken and they request to increase the take and add two more tiers. For Nene they have not yet exceeded the number of take, but they anticipate the take to increase and are requesting an additional two tiers as well. SunEdison has put together an amendment package that you have seen and reviewed, DOFAW has provided comments and they are within this revised document. DOFAW is supporting this amendment but has some concerns in regards to the cumulative effect of this to the Hawaiian Hoary bat, due to the unknowns in population size and the effects this may cause, and the efficacy of the mitigation. Craig is seeking comment from the committee on the proposal and it seeking to release this amendment for public review this month.

Craig summarized what has changed, essentially we are increasing Hawaiian hoary bat and nene take for KWP 2. We projected the estimated take to help define our upper estimated take level. In order to allow for incremental mitigation as well as the potential to reduce take in the future with deterrence, instead of adding the rest of the take for the twenty years we have added two tiers. We have added two tiers, one new amendment to permit is that when the current tier is at 75% that the planning for the next tiers mitigation at least by then be underway. In the past with bats the take has been exhausted faster than the pace of mitigation. This strategy is an effort by both agencies to get mitigation planned and underway before the tier option is exhausted. The reduced monitoring effort in general was approved by the ESRC and we have details and implementation for this change in monitoring. Lastly, some language clarity for the loss of productivity and indirect take was added, essentially loss of productivity associated with delayed mitigation. Where you have a take one year, and are unable to replace this animal then you are accruing more take though the loss of productivity. The difference is that the accrued lost productivity does not change the permitted take, only direct take affects the numbers of permitted take. Accrued loss of productivity is mitigated for.

More detail on bat take and mitigation: the permitted level of bat take was 11 bats, we are requesting an additional 69 bats, adding two new tiers, three and four the upper limit of those being 40 and 80 bats. One large mitigation project we propose as part of the amendment is in the West Maui Watershed Partnership in a 1,600 acre parcel which includes: completing fencing, ungulate eradication, forest restoration and monitoring, insect assessment, and invasive plant eradication. We also want to discuss research projects that could be conducted as mitigation. For research to be done as part of this proposal and others we are still determining the priorities. I want to make it clear that part of this proposal is to do bat acoustic monitoring before and after, insect assessment and habitat characterization that could be important to assessing the effects of the restoration. For the Nene, existing take is 27 adults and three fledglings; additional take is for 18 more Nene of either adult or fledglings, and additional two tiers upper limits 40 and 48. We propose two things for mitigation: add to an existing pen for predator free environments, or to fund a technician to do predator control at a yet to be determined location.

Jacobi asked what the proposed mitigation is related to different steps at the tiers? Craig replied that I attempted to split the bat mitigation into two different tiers. So fencing, ungulate

eradication, and some aspect of forest restoration; the additional tier would be doing it for another 15 to 20 years. It is not easy for a project like this to have distinct processes because they essentially all need to happen simultaneously. We may start the project and go for a period of time until we exceed the permit and continue for the rest of the time period.

Craig continued that for the reduced fatality monitoring it used to be once a week circles around the turbines from about 75 meters. In the areas that are easy to search we have reduced searches to the graded paths and the roads that enter into the turbine paths or along the string on turbines within a seven meter area. We figure what the portion of the actual carcass distribution that it represents, since large birds are expected to fall within a certain distance. So briefly, we have created a distribution that shows this area we are searching represents 20 % of the Nene carcass distributed will be found. Through this process it is expected that five observed Nene per year are expected over the remaining 17 years based on our assumption of what has already occurred. For bats the area searched is about 37% in these areas we would expect to find 37% of all bats taken and in this case we expect 7 observed carcasses over the remaining 17 years.

Tessler asked about the estimated numbers for Nene. Craig replied that for Nene it is a total of 48 including what has already occurred. What has been observed at KWP 2, both Nene and Bats and no sea birds observed taken. It is essentially one bat or one Nene a year, if you reduce that area you expect less than one observed per year. It is a very small number we are working on here, but you can see you are searching a much larger area and a very small number is actually found. For bats it is seven out of 17 so it may be one out of every other year or so is expected to be found. If you add curtailment and want to see the change in fatalities you are dealing with small numbers at this site so it is hard to measure the effects of curtailment on take. We have made an assumption for adding an additional .5 m/s curtailment a year ago, what this does is reduce the take by 15%. This is based on differences found in mainland studies between 4.5 m/s and 5.5 m/s. Lastly, for the loss of productivity and indirect take, I think of it as indirect take is the loss of immediate productivity. The term loss of productivity is essentially loss of future productivity. This deals with delayed mitigation, that take is not reduced, but it does add to that mitigation obligation for that take. I added in a clarification in Appendix 5 of the HCP that was not clear how we are going to multiply any loss of productivity and how that was going to accrue. It does occur in the KWP 1 HCP which is older and less sophisticated than our later HCPs, it does say clearly that it is a 10 percent add on for every accrued loss of productivity per Nene per year. Essentially you have the adult you took, indirect take, loss of productivity the following year; add those all up and multiply by 10 that adds up the next year. Every year you don't have mitigation you accrued you multiply by 10 percent, it starts to increase rapidly. The idea is an incentive to do early mitigation. We recognize that you could take one adult and you did not mitigate for it for 20 years you would end up exhausting your entire permit. The edited version you don't have essentially clarify the language for loss of productivity, including tier clarification and adding in language to Appendix 5 from KWP 1 HCP to the KWP 2 HCP to be really clear on what the accrual multiplier was going to be. Any future change in monitoring

deemed necessary could be decided by the agencies and us without returning to the ESRC for clarification. The only change that I could imagine would be more of what we are doing now. Lastly, what I said about when you reach the 75% point of your tier, planning or mitigation should be underway. Craig stated to the committee that we could go through the HCP by the changes or whatever way is easiest.

Fretz opened up for any public comments to provide to the committee on this HCP? There was no public comment.

Fretz suggested going through the HCP by section. VanderWerf requested for Craig to describe in more detail how you derived each number for the different tiers, and what the different numbers represent. Craig answered by taking the estimated take and cutting it in half. Fretz commented that you said earlier that the lower tier depends on a development of a deterrent. Craig replied we were originally going to say this is how much more take we have. So essentially increasing the limit is one tier.

Craig said that would be 80 for bats. We decided because it works better for us and future changes that we divide that amount in two, so now we have step wise mitigation so it is conceivable that we don't reach the higher tier. If we are successful with deterrent we may not exceed the third tier therefore, the fourth tier is additional take in the permit. With the HCP there is always the baseline tier, with the idea that the baseline is what you expect for the next 20 years.

VanderWerf questioned that the increase in number is not linear; the difference between three and four is smaller. Is that because of you expect deterrents? Craig replied in this case we already have existing take limits, for example Nene, we have 30 and we are asking for 18 more. It is essentially dividing it in two. Other than trying to create a step there is no other reason for that particular number. Whereas with the bats we have 11, I am assuming we are going to get up to 40 bats or 75 % of that which we are about half way through now. I am preparing the mitigation for the next 40 bats. It is conceivable that there should be another tier between three and four of a smaller amount. There is no science other than dividing it into portions.

Jacobi commented that there has to be some logic between the numbers and the mitigation to replace the take. Craig responded that the talk about cost per bat idea would define how much any tier is worth. So we know when we reach 40, we have another 40 bats that we need to mitigate for.

Fretz stated that the rate of bat take being requested is getting alarmingly high. There is so much we don't know about mitigation. It raises the question if we are really creating a net benefit for such high levels of take. What did you consider to have the take become lower? Craig replied we don't have anything new. We don't yet know what deterrents will do; there is a strong suggestion that they will have some value.

Fretz asked are you referring to curtailment or other deterrents? Craig replied other deterrents; curtailment is simply not running so you don't kill them. We increased curtailment by .5 m/s a year ago and have not killed any bats since.

Fretz asked if the way that you are searching is intensive, could more searching change the confidence interval in your statistics so it lowered your estimated take in the long-term? Craig replied if you are not finding bats that are falling, doing more intense searches can help you find what occurs, to be surer of what is on the ground. If what we found is close to what actually occurred then the only thing to really do is narrow the confidence interval. Having more search periods, using dogs to find carcasses, and more intensive searches and then your confidence interval will be reduced. Anything you can do to increase the search efficiency can cut that estimate in half, assuming what you found on the ground was all that ever was there.

Tessler asked if the detection rates change with time, are you more likely to find carcasses when they are fresher or when they are old? Craig replied that information comes from the scavenger trials, where we put out a surrogate and in five days it is gone for whatever reason that contributes to your carcass retention time which is part of the estimation process.

Fretz commented that we should be conscious of the entire take that is being requested and all of the wind farms on all of the islands. I am interested in the cumulative impact, and ask if staff could add up this number for the total take. Amlin stated that we have estimate but none of them have been publicly written. Siddiqi stated that I think it makes sense to discuss existing permits. Fretz agreed let's start with KWP 1 and KWP 2 if we add up their pending requests. A total of 130 on the West Maui Mountains. Craig added that is for the 20 years so half of that has already passed for KWP 1. Fretz stated that we are in the range of 130 bats in the West Maui Mountains over the term, the other wind farms are in the same range as KWP 1 and KWP 2 bringing it up to 200 bats. Amlin stated that KWP 1 is asking for an additional 30. Fretz stated that the reason I am concerned is that we don't know if we are accomplishing effective mitigation. VanderWerf stated that we don't know how many bats there actually are. Tessler added or what do to mitigate for them. A question I have about the mitigation framework you propose is roughly 1600 acres from 300 to 5,200 feet, there is a limit of the efficacy of that mitigation of the general benefit specifically for bats.

Jacobi questioned Tessler if he is talking about pupping? Tessler replied yes, they could be using it for migration to higher and lower elevations. I don't know how this mitigation works out proportionally, it is hard to know when you are asking for 80 bats that the mitigation actually works as mitigation. Fretz added that it was also hard to know what was going on in that mitigation proposal. Although 1600 acres is being fenced, in the description is sounded like 200 acres was going to be managed and then a portion of that area was to become covered canopy. So from my calculations it sounded like we are only getting 50 acres of actual bat roosting habitat. Craig replied that what you are saying is partially true; growing trees seems to be what everyone sees as bat mitigation. There are other places where bats go to forage other than forests.

We are removing invasive species in the area and removing ungulates that can kill existing trees. We are not saying we are reforesting 1600 acres.

Gon stated that you are arguably improving the quality of 1600 acres. Craig replied that is the concept, the amendment does not rely on accepting the proposal that is an example of proposed mitigation.

Fretz stated that I can see the direction the bat guidance is going to place a lot of importance on the research and you identified both management and research. 38 bats X 50,000 is 1.95 million and this was tagged for habitat management. We need to discuss the importance of research and how we direct money for research versus management. What dollars are you proposing for bat research? Craig replied we have not discussed the research to a degree where everyone agreed on what we are going to pay and what the research is going to be. Fretz replied that the idea that some of the money goes to research and some to habitat. Craig stated if you add up the total amount of bats and multiply by 50 it come out to be 3.45 million, for tier four. There is an additional 69 bats, 40 bats are in tier four, and 29 bats are in tier three. This is a proposal, the fencing and ungulate eradication, the fencing is \$700,000, ungulate eradication is tens of thousands of dollars. You could put that toward a restoration project and the rest toward a research project. Kahikinui is an existing restoration project that money could go towards. Fretz stated that with Kahikinui there was baseline monitoring done for two years. What are the plans for future years? Is it every five years and you are responsible for monitoring? Craig replied that we could do that for our next research as our tier three research, if limited in funding and needs to be done every year instead of every fifth year.

Fretz asked what is written in the HCP? Amlin answered that it is written every five years there will be three months of monitoring. There was funding that was blocked out for this, the funding is not enough to cover this, in the HCP it says that the agencies will work with SunEdison to bring the cost down. Fretz stated that this is a site that is above 1000 m, although a lot of restoration has been done by both the applicant and on the agency side. Two years of bat monitoring done, so even though it is above a 1000m it would be important to continue that monitoring to see the end result.

Jacobi asked if you have results from the first monitoring? Amlin replied that the results were shared after the first two summers. One summer showed a really definitive peak, and the next summer did not show the peak. Frank wanted to do one more summer. Fretz stated that there was a methodology and a set of stations set up, they measured bats and found bats, it was different at different times of the year. There was a real anomaly that occurred during one year. Duvall added that I think what may have happened was that the first year was really dry with the drought in that area, the insects and moisture were higher on the mountain. Than with all the rain and vegetation has increased, it could be that they are foraging lower on the mountain and therefore less bats up high. Jacobi suggested that this shows the inherent variation with

monitoring, how do you separate that out, the response and habitat management; it is going to be a challenge. You are getting this type of fluctuation without any type of habitat management.

Tribble asked when the turbines at Auwahi came online? Craig replied 2012. Tribble stated there were three years of monitoring, after the summer which had the high bat numbers the turbines near the coast came online. It could be the ungulates or the presence of the turbines in the makai section of that watershed. We have a migratory species that no one can see.

Tribble asked with the proposed 1600 acres management project would that happen in tier 3, or would tier 4 have to kick in to begin that project? Craig replied we are in tier three currently, I tried to divide this 17 year proposal in to two parts. To begin with the fencing and ungulate eradication is a part of that, then within this parcel we would do bat monitoring that is more intensive than what is the minimal requirement at Kahikinui. The complexity of this is that it is a dry area in some places and where you can grow trees is to be determined. We may do experimental plots to see what areas are more favorable.

Jacobi asked if you did not come into this area with a mitigation plan; the site already had money for the fence but not the planting? Fretz stated that the fence was originally meant to put a deer barrier along that area. This fence has been part of the plan and the first half of it is funded. Craig pointed out where the 1600 acres is located; he stated that our fence will complete the unit.

Gon asked if the original fencing was part of the West Maui mountains watershed partnership? Craig added that we are able to do whatever is needed at the time. Fretz stated that I don't have a problem with the applicant funding something that happens to be on DOFAWs list. Craig stated that I am suggesting this is highly flexible and if we come up with a number for cost per bat we know how much money we are working with.

Jacobi asked Craig, are you comfortable of cost per bat? Craig stated that we are comfortable with it for numerous reasons; one being that having a fixed amount is valuable. Tessler stated that one thing he has issues with is that if you have a fixed cost per bat, and you look at mitigation through the course of an HCP those costs are not fixed and are going up. If you have expended your resources for the mitigation and you have not completed your proposed projects, but you are done because you have spent your money and have therefore mitigated. I don't feel comfortable with that as a regulator to say that you have mitigated because you have spent that much money. Amlin replied that we tried to make it clear in the white paper that there are still measures of success that accompany that funding. It is not just that you pay 50k and you walk away. If it is research we have to see the data and the report, if it is a project than it needs to be completed. Fretz stated that there is an issue with that because at this point the management plan submitted is very vague. It does not have measures of success; it is written that at a later time it will be given to the committee to be reviewed. There has to be enough detail so that the public can understand what is being proposed, that is part of the law is the public review. Jacobi suggested there seems to be two issues. The first is the number of bats taken as a cumulative

across all of the different projects. If this number is approved then what is the appropriate mitigation for this amount of take. The second part, one pathway to a solution is 50k per bat is not a permanent solution. Fretz stated that it seems to me that the research is more important at this point than the habitat management. For example a habitat management project that serves as a research project and is monitored to see if it is successful. Just as important is other research to determine the population size, or to detect if this take is at a level that the population can withstand, and also research on deterrence with take. Jacobi suggested that part of the challenge we have not worked out yet is where does the money go to, and who manages this money. Fretz stated that the committee could put together the list of research projects that are needed in sufficient detail that the staff could then solicit RFPs and then those come back to the committee.

Jacobi asked does the money go into the state pot? Fretz replied it seems like the money is going to be pooled. Bogardus stated to Fretz that there has been a lot done on this recently so maybe the staff could do a quick briefing.

Gon asked if this goes back to whether this group accepts the proposed amendment? Jacobi added it defers the decision of what to do with that money until it is worked out. Fretz stated the applicant is asking to go to public review as it is written, or does the committee want to see certain changes before it goes out to public review. If the committee thinks there is going to be a lot of changes it is better to let the applicant know now.

Tribble asked do we have to approve the entire package? Right now I hear Craig asking for the dialog and that moving forward they are already in tier three and this is their best estimate for tier four. Craig replied that the most immediate decision is that we have exceeded our permit so we need to have more take authorized. Either you permit this amount knowing that things may change this amount with deterrence, or permit half of the amount or we may be back in ten years asking for more.

Jacobi stated that stepping away as committee member and looking at this as a member of the public looking at this proposal as it is written right now. I would say that managing those 1600 acres is a great thing to do for conservation as a whole. Not thinking how we need to link that proposal and bats. One thing we could do for the public review is increasing the amount to tier two, three, and four as we talked about and the money will go to various kinds of actions that may include research and management. Then the public would be able to comment useful ideas. Fretz agreed that is a good point that enables you to move forward but decreases the likelihood that you would have to go out for public review again.

Jacobi asked if it needs to come back to the committee before the public review, or is this enough of a discussion? Fretz stated that if we convey to the applicant that they need to be real smart about how they modify this to reduce the likelihood that have another public review then we can turn that over to them. Jacobi replied and that they would not have to come back to the ESRC makes sense to me. Gon stated that would be his preference as well. In my mind the key research

questions include learning more about what makes habitat that creates bats, deterrent options could be perused, and habitat improvement options. Craig stated that the options for doing restoration are limitless; this is just an example of one. Fretz suggested there are a couple more places where you should add more detail in; one of them is the Nene mitigation. You said either fencing a new pen on Maui or Molokai and that seems uncertain to me because I do not know of any places where these pens could go currently. It does not have to be an issue now, but is the committee going to be comfortable when this comes back and to recommend that the board approve this when there is no solid agreement with any land owner. Charrier stated that it seems you are putting a greater amount of workload with every detail. For every decision that you want to come back further delays our ability to get things implemented. HCPs have a good mechanism of adaptive management built in and a lot of these details have been worked out in the past on the agency and staff level. This generally works smoothly so I think it would be good to figure out what needs to be corrected at the ESRC level. Fretz replied that is exactly my point, how do you feel about the adaptive management for the take of sea birds from these two projects. We went through a long process of adaptive management to get the mitigation of endangered sea birds from these two wind projects, has that been successful? Charrier replied that we have predator control and fences.

Fretz asked do we have seabirds, and if so how many? Craig replied that we have three different burrows that have steady activity. We will look soon to see if there has been reproduction or not. We have footage of petrels and Hawaiian sheerwater birds moving in and out of the burrows. Charrier stated we have a lot coming in the door: more HCPs, a lot more proposals and amendments. I am thinking about the workload and process and trying to get things done. Fretz replied I appreciate your optimism in the applicants and agencies to work together. Tribble stated that this is our best estimate of what it will look like in tier 4. Gon stated that as a new member of this committee and from going through four different chairs of the DLNR that when you go through the items, stick to the items that are essential to the decision making instead of going off into hypothetical questions that are the consequences of this decision. If it was my decision I would say let us bring it to a motion and make a decision based on the merits of the proposal. I am leaning toward taking this forward with some modifications; I would have not gotten to this point without some of these questions and discussions.

Fretz stated that this does not require a motion.

Harrison stated it seems that in my mind that the big issue around this question is we don't know what we are dealing with the bats. We don't know what their population size is, their reproductive biology, and their full ranges. At this point we have a set price for a bat and we are asking a question of how we are going to allocate those funds most effectively. The point of issue is in my mind I would like to see the research is I don't know what the expectation of that research is. If we put all of the three million dollars into research will we get the answers to the questions we have. What are the chances we get the answers that are beneficial to the bat. I hear what you are saying Gon and I respect your experience. I don't feel like I can say conclusively

it's a good thing to go one way or another, the big question in my mind is: are we ever going to know enough to manage these animals. If we can't get a handle on that then it is hard for us to make decisions in our capacity as members of an advisory council.

Craig asked what we should do about exceeding the permit? Bruns stated that isn't the proposal to front load the research during the next five years. Harrison asked what if they use up all of the money in five years.

Fretz commented that Harrison has a good point that the law says that the applicant has to submit a HCP that demonstrates how there is going to be a net recovery benefit, and he is not seeing that in this HCP. I don't think that anyone on the committee disagrees with that, we are in an area of uncertainty. Craig stated that he understands there is a lot of uncertainty. Fretz noted that Harrison and others who have expressed those concerns are hitting on a real legal issue. Charrier stated that during the bat workshop we went over priorities, and went to our agencies and have gotten agreement for the 50k for research. In light of all the uncertainty the next step to address those priorities for research dollars given the sunshine clause of eight to ten years realizing those will take years to take the research and turn them into management. Tessler added that part of the issue is we did not conclude the white paper discussion and that would have been useful. That would have aided this discussion and analysis. Fretz stated that a big change in the last two or three years is the amount of bats that are being taken and being requested to take is higher than anybody thought. I want us to find that middle ground, that allows us to move forward and the projects to be permitted at some level that keeps them operating.

Tessler asked would it be useful for the have the HCP and the research questions just tiered off of the white paper. Jacobi stated it is reasonable to move ahead with this in that way. In that we specify that research is going to be a big part for the bats.

Gon asked are we going to pull away from land based mitigation then? Jacobi stated where we do have land based mitigation going on, let's get more staff there to monitor what is going on and see if we can detect any response. I would not say we should pull away from any existing ones, but let's see if we can gain anything more from our work. Tessler commented for the 1600 acres do we do before surveys and monitor changes in vegetation composition or bat detections through time and see if it makes a difference to bats and where. Fretz stated that maybe we should scale the 1600 back. If you look at the small amount that is being managed, we are spending a lot of money on fence that could go into planting. Jacobi stated that if you don't have the fence or the ungulates controlled then you are going to be more limited. Fretz clarified for a smaller fence, for 1600 acres to go and find a total of 200 acres in patches with corridors maybe that can be compressed.

VanderWerf asked is that a question for the researchers? Tessler stated the public sees the connection with the fences and sees it as a great project. VanderWerf stated that I don't think there is one best answer right now, we don't know enough. We want to know if the mitigation is

actually helping bats. I hope we can soon get data to answer these questions. In the mean time I would not do all mitigation or all research at this point but do some of both. Perfect is the enemy of good, you can agonize over every detail forever and try to make it perfect and never actually finish it. I understand that you want to make it the best that it can, but there comes a point when you need to move forward with something. Craig stated that the research part of it, with the very best intentions and efforts we are going to spend 3 million and end up with no better answer. At least what you are suggesting is to make that process as rigorous as possible and that is something we are attempting to do. Fretz clarified that what I meant was the law does not require us to officially approve, but what you can get from us is a consensus to go ahead. Jacobi added with the recommendation to put out more options in research and land based mitigation.

Fretz asked if there are any further comments from the committee on this item or if there were any questions and comments from the public?

Duvall stated that I have heard from the public on a couple of occasions, they ask if so many bats have been killed how many bats are left. So I would think focus research on population estimates, so when research does happen it is prioritized so we can know as quickly as possible about populations. Fretz replied I think that is our next topic.

Break

Chair Fretz reconvened the meeting with Item 3.

ITEM 3. Approval of Hawaiian Hoary Bat White Paper Guidance Document.

Fretz stated that we are going to resume where we left off on the bats, I wanted to bring up an issue for number seven, and habitat improvement for bats must be measured over an established baseline condition. This raised the question for me about what is habitat and what are we measuring and what the appropriate measure is. If you restore a pasture to a forest, that is probably beneficial, or say you go to existing forest and fence and remove pigs is that good? What is the measure here, it is not in the document are we going to leave it this vague? Jacobi commented that obviously we need more expertise. One of my questions is how are bats utilizing the habitat, are they using it for foraging or seasonally for example. I think there are things we can measure like insect activity and relate it to a bat connecting to that habitat. Fretz stated that it sounds like you are suggesting we use a wide range of habitat proposals. Jacobi replied I think we will need to in order to understand the basics of the linkage. Fretz stated that there is a proposal coming to fence an area that is already forested, but the management is to remove ungulates and the understory will presumably recover. Fretz asked if the committee accepts this? The idea would be to monitor the bats before and after. If they are there now an index will be obtained and repeated. Jacobi stated that there are other habitat sites that are not covered within the network of HCPs. That have those conditions that may be suitable for research to understand how the bats are relating to a habitat that is managed and a similar habitat which is unmanaged within proximity so the conditions are alike. Amlin stated that to address your question on

baseline conditions, we did not put a lot of specifics, envisioning that there will be a lot of different habitats where these projects will take place. From a wetland, pasture, or high elevation site they are all going to look very different.

Tribble asked Fretz if he is looking at direct versus indirect measurement. We can look at relative measures of bat activity now through acoustics, but there may be technological improvements down the line that may be better. Fretz apologized, what I am getting at is best noted in number 5: restoration efforts should focus on restoring native habitats. What does restoring native habitats mean? Is it, highly degraded at first and now you are improving canopy cover? Or is it, relatively intact now and you removed ungulates? What does it mean, what is the guidance? Some of the members accept a wide range as long as research is done to find out what works best. Tribble suggested that a native forest is not necessarily the best habitat for bats. They need trees and bugs. VanderWerf stated that they need trees but they also need foraging. Another aspect of habitat improvement could mean increasing food abundance. The abundance of bats is so variable that it does not seem that habitat limits them. Perhaps in some places it is food it could be any number of things. I think that limiting it to just restoring native forest is not the best approach.

Tribble questioned the value of putting number five on this list if we cannot demonstrate a clear nexus. Gon stated you said best management practices? Amlin stated that we recommend this because of the greater environmental benefit to plant native species. Jacobi added that they also forage over areas that are not forested and that are an important foraging habitat. It is not one or the other. It should be restoring appropriate habitats: which include foraging habitat and roosting habitat. That gets into the problem if we get fixated on mitigation is some kind of forest, is that really what the answer is? I have asked Frank this same question; do you think we have fewer bats because we have fewer forests? Amlin stated that we are not defining a specific habitat. We are saying, if you are restoring X habitat, and you have a choice of what to grow if you can grow native or nonnative, we suggest to go native. Jacobi agreed. Gon stated what is missing here is the multidimensionality of the bat niche. We don't talk about foraging, the roosting, or the other parts. VanderWerf suggested you could expand on number seven. Amlin stated we have to explore what those habitats look like as a research question. We have not made specific recommendations because we do not know what they look like.

Fretz asked to the committee to move on to the subject of land acquisition? Gon stated that I have heard more than one piece of feedback with regards to number one, there are all kinds of conservation districts and all kinds of quality and that there is no reason to exclude all just because it is in conservation to exclude it from mitigation efforts. I think there is a lot of conservation districts that have beat up lands that could very well use improvement in habitat. I would not completely remove those lands for acquisition. Jacobi commented that unless this makes the assumption that the state is going to be managing those lands. Gon agreed, or that the applicant has to purchase the land, conservation district can be privately owned. Duvall commented that with regards to on Lanai is would all be in the conservation district, that would

mean if you are mitigating for bats on Lanai you could do it if you were not allowed in a conservation zone. Amilin stated that you could mitigate by not using land acquisition. Not buying parcels as mitigation you could still do reforestation. This is saying acquiring because under conservation it is not under the immediate threat of being developed.

Gon questioned, but is development the only threat to bat habitat? I don't think so. Fretz agreed the threat could be an invasive plant. Gon stated I suggest that we don't necessarily exclude land acquisition though. Fretz stated that you wrote this with the view that it was acquisition alone. Gon is talking about acquisition followed by management. Siddiqi stated yes that would be different, in number four we would want the acquisition to be quality bat habitat. Fretz replied that you are trying to avoid something that doesn't constitute any change in status quo. There could be conservation lands in which bat habitat is threatened. Gon commented that our status quo in our archipelago is a steady decline in habitat quality for many native species. So I don't know about maintaining status quo. Fretz restated the status quo being a decline. Amilin suggested that perhaps it should read as: it must be accompanied by some management. Gon agreed with that as an additional guidance.

Fretz stated that they are two different things; there is case where you should acquire something because it is currently bat habitat and there is a threat to this habitat, and then there is another type of acquisition where it is a conservation district. The conservation districts are still threatened with the loss of habitat. Tessler added that it looks like the way it was written was intended to put better habitat into conservation banking to increase that lands utility to bats. VanderWerf suggested what if you changed it to say that the land must be under threat for future development or lack of management.

Tessler asked do you want it to say that it is under a threat? VanderWerf added that Gon had a good point, there is a famous paper from New Zealand that titles where protection is not enough, that applies to Hawaii too. That protecting land from development is not enough. Gon stated how to do we reflect that, there is the change in land use from the potential bat habitat to absolutely not bat habitat. Harrison suggested that for number one, the word the bothers me the most is the word "must". Why not say: we might prioritize things that need to be focused on, we do not want to exclude conservation land because it presently seems that it is not going down super hill fast. I disagree with that whole premise. Gon agreed that is essentially what I am saying. Conservation district does not guarantee any type of stability. Craig stated that doesn't the possibility of future management increase if the land is preserved or acquired. Gon replied that certainly the addition of lands to the conservation district or acquisition protected for a clear purpose of biodiversity enhancement. That is number one right, you want to acquire or give it some type of designation like a conservation unit that enables the on the ground management. Vetter stated that part of this came from the mainland and the Indiana bat, as part of the requirement for acquisition was that you needed to provide and show a net benefit of just buying that land. In that case you would need to buy land that is already full of bats. Fretz replied there are two different things. Vetter continued that there is another option for land acquisition with management that follows, maybe

it would be broken into two. Fretz stated that in one case you have existing habitat and it is going to be destroyed so you prevent it from being destroyed. In the second case, you have land that is under threat of habitat loss or degradation; you purchase it with the idea of halting that loss and turning it around. Gon agreed.

Vetter asked if that land has to have bats on it? Fretz replied no. Vetter stated then you could be using your mitigation money with no net benefit potentially. Fretz replied you are right there is uncertainty involved. Amlin stated the only remaining question would be is if we were to put a minimum acreage and it would be good to get your input on acreage. This was something that was brought up but no number was presented. Gon stated that Fretz had pointed out if you look at the West Maui Mountains and access if bats don't like cliffs than you won't find continuous bat habitat. You may find two acres that are close enough to each other where you could do something. I might be happy with 200 acres. Fretz added or even less if you happen to know it is a really good spot. VanderWerf added or if it is next to an area that supports bats. Gon stated within that corridor it seems to be the deforested area between the two may be where they love to eat insects on the way to roost. Fretz added that he liked the idea of some kind of minimum acreage so that not just anything is proposed. Craig commented on the acreage subject, we have a lot of detectors at Kawaihoa and there are places that are a hundred feet apart that are radically different in activity.

Gon inquired what size in general acreage? Craig replied we have a detector that is measuring eight out of every ten nights there is bats present, where the other detector 200 feet away is detecting one bat out of every ten nights. My point is that there may be very small areas that are prone to be active. Tessler stated that being volant species having the area be consistently contiguous might not be completely important. Amlin agreed that has been brought up before. Maybe we should put in it should be at least this size or adjacent to a habitat with bats. Fretz stated it is supposed to provide the appropriate compensatory bat habitat.

VanZandt asked if the land acquisition is still in the context of native habitat? I think of the example of mac nut fields, what if a field was under threat to be cut down and you can demonstrate that this land can support bats and you acquire that land. Fretz stated that this section is silent on what kind of habitat.

Marie asked does it defer to the previous section of native habitat or is choosing land with bat numbers suggested? Harrison stated that I like Craig's idea of putting a bat detector and the bat detection program as a criterion before purchasing the land. How much do bat detectors cost? Craig replied the whole set up is a couple thousand or less.

Harrison asked how many would you require covering an area of two hundred acres? It seems like the criterion is to make sure that the habitat is suitable to the bats before you purchase the land as part of a bat mitigation program. If there is a preliminary amount of work that could be done to establish that definitively that sound like it ought to be in there. Fretz stated that I am

inclined to move on from this topic, I don't think we are getting anywhere. Amlin stated that I had an idea perhaps we tried too hard to get the specifics in this section and we could make it much more general. I suggest saying something like, land acquisition is something to be considered, and it will be reviewed on a case by case basis. Fretz agreed and added it must provide significant benefit; we can come back to this later.

Siddiqi asked if they wanted to discuss the \$50k per bat idea? Fretz then asked to the committee if they wanted to discuss this subject?

The committee did not feel a need to discuss this topic in detail. Snetsinger commented, I don't think that it used all of the information; it stopped at tier one funding when there was tier two funding that is research only. So it seemed to be limited in scope in what data set was used as a tool to develop it. Fretz replied I think it is a good compromise though. Habitat management that we think is our best guess for bats right now is 50k is a pretty good ballpark for that and it may even be low. Jacobi stated that it is a starting point and it is something we can use and refine as we get more information.

Fretz stated that research as mitigation is the next topic. Siddiqi stated that research was the priority for research as mitigation question that we have laid out. There are five main research questions. Comment we received from the USFWS was to see the priorities on other islands besides Hawaii Island. Fretz stated that he has technical comments on this section that I will give you to assess. For one being clearer about what these surveys are doing, meaning we would like to document the distribution and trends on these islands. There is a difference between documenting relative abundance and absolute abundance, because absolute abundance is not feasible right now. We are looking in to document those relative trends over the years. Also, understanding habitat selection and limiting factors are two different things that seemed to be pushed into one paragraph here under number two. Jacobi commented you don't just mean habitat selection but habitat use too. Amlin stated that we have this within two and three. That prey presence or absence could be a limiting factor, that these three types of habitat are possible for being a limiting factor. We can make it clear that those are not the only ones. Fretz replied what I mean is you are not addressing the question of habitat is a limiting factor. You can do that by finding unoccupied suitable habitat. Define suitable habitat and then determine if the bats are distributed throughout. Tribble commented that the approach sounds good, but when talking with Bonaccorso they look at the use patterns on the Big Island and what they found is they use a large area. Their habitat patches are small relative to the pattern of the bats. Tracking bat specific habitat types is not easy; they fly through a mosaic of terrains. Tessler stated that the temporal definition of their movement patterns is not well defined. Where they are spending time from doing telemetry studies and resource selection studies we don't have the data to define what habitats are really being used. Siddiqi stated that I think that is what this is getting at here, where the habitats are being used and what habitat. Fretz stated how do we get this list of research needs to work. These ideas are going to get worked on and have more detail when these projects are going to be commissioned. They are as paragraphs now but they will be expanded into a

research proposal defining the goals and objectives of the project. It depends on how far we want to go in this document.

Amlin commented that we envisioned this document as being guidance and so it is general in that aspect. As Bogardus mentioned earlier we have met with agency staff and others involved coming together and creating a synthesis for standard protocol for doing some of these surveys. So whoever receives this job is using the same guidelines in a consistent manner so that all the data is comparable. I heard earlier about the suggestion of staff or the ESRC taking these proposals and I suggest that the ESRC reviewing these proposals is a big thing to ask. With mitigation being the responsibility of the applicant it is their responsibility to put out notices for RFPs. Staff is happy to help with guidance and meetings, but at our current capacity and staff head count it would be really difficult for staff to be in charge of procurement and managing money. We do have the mechanisms to do it which is the endangered species trust fund; however I foresee this being a huge task. Because we are running out of time I wanted to put that out there.

Gon asked with the knowledge you have what is your solution? Amlin replied that my solution is this document should provide the overall main questions you want answered and it is the responsibility of the applicant to go out and seek the answers. Fretz stated that would be great if things could be done sequentially when applicants don't have to be pooled. If we have to pool more than one applicant than it is more complicated. Amlin stated when it comes to that we can have applicants work together or maybe it would be something that comes through us. We can work on the mechanics of how this should happen because I am sure that some of these will be pooled resources.

Fretz asked were these listed in the priority? Amlin replied that is the order in which you summarized them at the end of the meeting. Gon commented that two and three for example are basically the same. Fretz stated that the committee may have opinions on the order of priority. Amlin stated we could remove the numbers and put bullets. Fretz stated that the time is upon us when we ask the applicants to provide these proposals you are describing. Craig commented that we are doing that as you speak. Fretz replied it was not attached to the HCP you just gave us. Craig stated this has been done in the last two weeks, what you have been given was written a month and a half ago. There has not been this meeting where we are deciding priority.

Fretz asked to the board, where do you want to go with this? Where it stands now is that staff is saying they are going to recommend that applicants pull together research proposals compete with cost and specific research objectives that are going to come to the committee as amendments or HCPs.

Harrison stated that it has been my experience that competing interests sometimes are less inclined to be cooperative and these sorts of pooled resource endeavors and the ultimate endpoint

benefits from having an objective third party. Fretz stated maybe there is a middle ground here so the committee can step in at some point.

Craig asked is that where you want it to go? For you to see what proposals gets funded or not? Fretz replied you are misunderstanding me. What I am saying is that we review it at that level of detail. I am saying that you do a RFP and we said give us a proposal to understand habitat selection in the bats. I am not talking about that level of detail where we go and figure out methods, I am talking about at a higher level directing. Charrier commented I just want to put for the record; we have a group working with the research group. We have three consultants: two federal agencies and a wildlife agency coordinating and everyone at the table is willing, there are competitive interests obviously.

Tribble asked are you guiding this process? Fretz stated that it sounds like you are saying the staff and the applicants are working together and you are confident that you have the best approach and you do not expect when you bring it to the committee to get into depth on it? Charrier replied I just wanted to let you know what is happening as of now, stakeholder coordination is happening and it is working as of now.

Gon asked have you reviewed this specific section? Does it provide the guidance that is necessary? Charrier stated that it does fit the requests coming in from bat experts. Gon stated that the only one that was unclear to me was question number five. Amlin replied that is what Jacobi and Fretz have been reiterating is we have a project going on say at Kahikinui and there has been all this work done there and add more monitoring there to go above and beyond what is required. Targeting research projects at existing restoration sites. Fretz stated that Jacobi had a good example when we discussed fencing a wet forest and removing ungulates if someone proposing that as bat mitigation it is being done all over the place. If that is being entertained as being something that we be beneficial to creating more bats, why don't we set up a monitoring project at somewhere that this is already being done. Someone is already doing the fencing and ungulate removal is being done. Gon agreed, what you are doing is to benefit the bats. Jacobi added that some of those projects are already well along. Gon stated that existing projects is what I didn't understand.

Craig stated that since you mentioned it, the KWP 2 amendment, do you really want anything more specific in proposals for an amendment? Jacobi replied that I think there is two parts to that, one is going out to public comment, and when it comes back for the final approval I think it needs to be much more specific. Craig stated and that will happen after public review. Fretz stated that I would echo that there are two parts, you have to provide the public with something that is informative they are to understand what you are doing. Jacobi stated that you would not want to say as far as mitigation we will do possibly some research, management, and something else. That is not enough detail. Fretz commented to go back to the original question; the committee has the responsibility to make the ultimate recommendation to the board. I know the committee is fine delegating things to the staff and the committee approves of this process.

Tribble asked Jacobi, you are the grandfather to what degree has the ESRC had an oversight role in monitoring? Jacobi replied that it has evolved, early on before there was the privacy issue we were working one on one with the applicants. It is much more challenging now because we do not see the HCP until it is well developed. Ultimately we want to make sure that for research projects they do fit into high priority and the results of the study are useful. Fretz agreed the committee needs to be able to judge that the project is going to achieve the goals. To make sure the money is used in the best way. This is new; this is a situation where we are recommending a complex series of research questions of get done. Tessler stated that it seems to me that the organic process that you have worked out with the cooperators functions. What if you are asking questions across broad scales and you have individual cooperators that are each doing a small project and it might be at some point the applicant's pool together their research funds. Jacobi stated that there is a mechanism but you don't want to use it for every project that would overwhelm the system. Tessler stated I am thinking of population size. Jacobi replied exactly. Tessler stated and having people ask that across small geographies is really complicated. Pool resources across a spatially meaningful scale would be really useful to us and the conservation of bats. Gon stated that the fifth one is a good place to do that, utilizing different projects. To answer questions more broadly of how bats are across the archipelago.

VanderWerf added that one advantage is four of the projects are all managed one person who has access to all of the funds. Craig stated that there are a lot of things that can happen here. Jacobi stated that getting back to the issue of how involved the committee gets. I think the bat workshop was a great way to get the committee, expert, staff, and applicant involved in the discussion. Fretz stated that the committee is inherently a technical committee. Jacobi stated with that being said, we focused most of the workshop and our discussion today on bats. Fretz stated that we are not finalizing this today. I am going to inquire and brief the chair to see if she wants to take this to the board. I suggest to the applicants, to start utilizing this document. Gon stated I think we are getting close to a yes with amendments needed. Amlin stated that if there are any more comments you can scan them and send them to us and we can incorporate them. Fretz asked if there are any last comments or questions. There were none.

Meeting Adjourned