DRAFT

ENDANGERED SPECIES RECOVERY COMMITTEE

16 DECEMBER 2014 MEETING MINUTES

Hawaii Department of Land and Natural Resources
Kalanimoku Building; 1151 Punchbowl Street; Room 322B; Honolulu, HI 96813

MEMBERS:	Dr. Scott Fretz (DLNR), Dr. Jim Jacobi (USGS), Dr. Gordon Tribble (USGS, present but in audience), Kristi Young (USFWS), Dr. Patrick Hart (At-Large), Kimberly Burnett (UH-Hilo)
ABSENT:	Dr. John Harrison (At-Large)
STAFF:	DOFAW: John Medeiros, Stephanie Franklin, Jason Omick, Afsheen Siddiqi, Angela Amlin, John Vetter USFWS: Jodi Charrier, Diane Sether, Steve Miller.
COUNSEL:	None.
OTHERS:	Dan Purcell (Public), Sara Scheel (First Wind), Greg Spencer (HT Harvey), Marie VanZandt (Auwahi Wind), Reggie David (Rana Consulting), Jaap Eijzenga (SWCA), Dave Cowan (First Wind), Ling Ong (SWCA), Anne Widmer (SWCA).

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

Chair Fretz called the meeting to order at 9:00am. The Chair announced he has a meeting at 3:30pm and asked committee members if they want the meeting to stop at 3:30pm or continue in his absence. Dr. Hart has to leave at 5:00pm. The committee agreed to prioritize the agenda items to get priority items done before the meeting is over. The Chair recommended reviewing Items 2 and 3 first. Jacobi and Burnett suggest discussing the upcoming ESRC Bat Workshop and the date of the next meeting.

ITEM 2. Approval of Minutes: May 13, 2014 Endangered Species Recovery Committee Meeting.

Fretz asked for comments on the meeting minutes. Committee members indicated they would like more time for review, so the meeting minutes from May 13, 2014 were deferred to the next meeting so all can review and comment.

A member of the public commented that meeting minutes should be available by law 30 days after a meeting. Siddiqi stated draft minutes are available on DOFAW's website.

ITEM 3. Continuation of Item-4 from October 23 and 24, 2014 meeting: Request for recommendations from the Endangered Species Recovery Committee on all

current habitat conservation plans, safe harbor agreements, and incidental take licenses. Review and briefing from DOFAW staff: Status of the issuance of incidental take licenses for endangered, threatened, proposed, and candidate species for the period July 1, 2013 – June 30, 2014. Sixteen Incidental Take Licenses have been issued by the State of Hawaii since 2005 in conjunction with an approved Habitat Conservation Plan or Safe Harbor Agreement under Hawaii Revised Statute Chapter 195D. List of approved Habitat Conservation Plan and Safe Harbor Agreement (order may not reflect when plan/agreement will be discussed): Kaheawa Pastures Wind Energy Generation Facility Habitat Conservation Plan, (2006); Kaheawa Wind Power II Wind Energy Generation Facility Habitat Conservation Plan (2012); Kahuku Wind Power Habitat Conservation Plan, (2010); Kawailoa Wind Power Habitat Conservation Plan, (2012); Auwahi Wind Energy Habitat Conservation Plan, (2012); Habitat Conservation Plan for the Construction and Operation of the Lanaʻi Meteorological Towers, (2008); A Conservation Plan for Hawaiian Stilt at Cyanotech Aquaculture Facility, (2003); Habitat Conservation Plan for Construction of the Advanced Technology Solar Telescope (now known as Daniel K. Inouye Solar Telescope) at the Halekalā High Altitude Observatory Site, (2011); Kauaʻi Lagoons Habitat Conservation Plan, (2012); Round-leaved Chaff Flower (*Achyranthes splendens* var. *rotundata*) Habitat Conservation Plan, (2014); Habitat Conservation Plan for *Abutilon menziesii,* (2004); Safe Harbor Agreement for Puʻu o Hōkū Ranch, (2001); Programmatic Safe Harbor Agreement for Nēnē on the Island of Molokaʻi, (2003); Safe Harbor Agreement for the Introduction of Nēnē to Piʻiholo Ranch, (2004); Safe Harbor Agreement for the Reintroduction of Nēnē to Haleakalā Ranch, (2012); Safe Harbor Agreement and Habitat Management Plan for the Koloa Maoli or Hawaiian Duck (*Anas wyvilliana*) and the Nēnē or Hawaiian Goose (*Branta sandvicensis*) on Umikoa Ranch, (2001).

Fretz asked Siddiqi to update the committee where they left off in the last meeting on this agenda item. Siddiqi stated there are five ITLs to be reviewed: Lanai Met Towers, DKST, Kenai Industrial Park, Kauai Lagoons HCP, and Haleakalā Ranch Safe Harbor Agreement.

Fretz began the discussion on Sempra's transmission lines running from their wind turbine facility at Auwahi Wind Farm (Auwahi). Fretz stated that at the time the Auwahi HCP was written it was not seen to be practical to monitor the lines because monitoring methods at that time consisted of walking transects under lines. However, there are new tools being developed in preparation for the Kauai Seabird HCP that make monitoring these lines much more practical, and given what we've learned from strikes on Kauai, staff is talking to Sempra about this. Currently, monitoring at Auwahi's transmissions lines is incidental. Siddiqi stated that the HCP requires monitoring of the transmission line during construction and maintenance. Sempra placed bird diverters on the "higher-risk strike" line. Kauai Endangered Seabird Recovery Project (KESRP) uses song meters to monitor bird strikes. Fretz asked for comments from the committee.

Jacobi stated that it is important to figure out what portion of total take comes from the transmission line.

Fretz asked what Sempra's next steps are with respect to monitoring methodology. Siddiqi stated that DOFAW and Sempra are in discussion.

Hart asked VanZandt about the changing monitoring methodology from her perspective. VanZandt stated that Sempra is looking into putting song meters out to monitor transmission lines and is discussing options with DOFAW and USFWS. When the HCP was approved two years ago, the transmission line was assessed to have a low strike risk; however, new information on strike rates from the Kauai Seabird HCP may be applicable to Auwahi. Auwahi lines are different from those on Kauai, they are about 50 ft off the ground and radar surveys found low rates of activity near the transmission line. Bird strikes on Kauai are on transmission lines above large gulches and along flyways. Sempra, DOFAW, and USFWS are looking at where Auwahi should monitor, if there is risk and where it is – along the entire line, or just the 3 miles that were deemed high risk.

The committee discussed what they want to see with respect to an agency staff update on the conversation between Sempra, DOFAW, and USFWS. Jacobi suggested either DOFAW or the USFWS put together an assessment of seabird movements on Maui's west side. Fretz stated that DOFAW does not have the staff resources to do this now. DOFAW previously applied for, but did not receive, an HCP planning grant that would have helped provide resources to obtain these data. Jacobi stated a broad assessment of seabird movements would help tie in ESRC actions to State actions and help species recovery over a larger area than just the HCP/SHA site. Fretz stated that the DOFAW seabird team can look into this issue. Young clarified that the USFWS HCP planning grant money is to help prepare an HCP and needs to be connected to a potential HCP project.

At the next meeting, DOFAW and USFWS will give an update on the issue including cost and updated methodology.

Amlin presented an update on the Daniel K. Inouye Solar Telescope (DKIST), a National Science Foundation (NSF) project. DKIST staff and consultants for NSF presented a project update in the July 2014 ESRC meeting, and submitted an annual report to the agencies. DOFAW is also currently receiving comments on the proposed wildlife sanctuary encompassing DKIST's mitigation area and the comment period closes on January 5, 2015. No take has occurred from project activities; only take from natural mortalities.

After the July meeting, DKIST changed their monitoring protocol along the conservation area fence line. There were safety issues and erosion issues, so DKIST staff now monitors once per month. The changes were addressed as adaptive management for DOFAW and a formal change for the USFWS (via letter sent to the applicant).

Hart asked whether the wildlife sanctuary was part of the original HCP. Fretz stated the wildlife sanctuary is unencumbered state land and the State wanted to change the designation of the land for conservation. The land designation change has to be approved by the Board of Land and Natural Resources (BLNR) and the State is currently requesting public comments. The wildlife sanctuary would be an alpine seabird sanctuary managed by the State. The wildlife sanctuary could be a mitigation site for other projects beyond DKIST.

Fretz asked for clarification on mortalities. Amlin stated that DKIST staff document take following standard downed wildlife protocols, and all carcasses are sent to Thierry Work of USGS for necropsy. Videos from game cams are sent to DOFAW and USFWS. Examples of natural mortality are predation and malnourished chicks. In one instance, staff thought a burrow collapsed on two birds, but found this did not occur after a review of video footage inside the burrow.

Fretz asked whether agency staff are talking with the applicant about ways to increase reproductive success. Amlin stated that DKIST is comparing data on reproductive success percentages from their mitigation site to two other sources: Haleakalā National Park and Auwahi Wind Farm petrel mitigation site. There will be a coordination meeting with the agencies and DKIST staff and consultants in early 2015. Low reproductive success may be an issue across the area. The control site (not fenced) has zero reproductive success. Another project may use the control site for mitigation and fence it. Currently, they are trapping mongoose and cats in the mitigation area. A rat trap grid was implemented earlier in 2014. Jacobi stated owl take is documented from Kauai and Mauna Loa. Amlin stated there is no documented take from barn owls that she is aware of but that DOFAW staff will follow up. Fretz stated the Park reported a 60 percent reproductive success rate in the 1990s.

Fretz asked if slowing the population decline in the conservation area but not increasing the population is considered a net benefit. Hart asked if the mortality observed were all chicks; Amlin clarified that both adults and chicks have died.

Fretz asked why other types of trapping are not done at the mitigation site. Amlin stated that DKIST has tried different types of trapping, but is not clear if DKIST has done spot lighting and shooting.

Jacobi asked what factors are leading to a low reproductive success. Amlin stated that this is somewhat unclear. Monitoring is difficult – current burrow scope styles are not useful as the burrows are deep and twisted. VanZandt added that it is hard to differentiate between non-breeders and a failed attempt to nest. The Auwahi Wind Farm mitigation site reproductive success rate is between 27 and 46 percent, depending if you consider no observed chick as a non-breeder or a failed attempt to nest. Reproductive success is not comparable with the Park because of the way it is measured. Auwahi is using cameras instead of toothpicks. DKIST also uses cameras. Using the toothpick method, as the Park does, and assessing one time per month can lead to overestimated numbers.

A member of the public suggested using thermosensers in burrows to look for heat signature of a bird in a burrow. VanZandt stated that Auwahi is confident in occupancy, just not confident in breeding.

Fretz asked about predator levels. VanZandt stated that there has been one year of intensive trapping and it is difficult to assess a decrease in predatory activity. They have trapped rats, mongoose, and a couple of cats. Jacobi suggested a predator control workshop in the future.

Jacobi asked who ensures methodology is consistent across projects. Fretz stated there are annual seabird meetings. Amlin stated that monitoring methods are similar between HCPs, and are based on the National Park's monitoring protocols. Jacobi stated that monitoring is important to understand bird and predator population responses across sites. The Park showed a consistent stable population of seabirds for 20 years. The Park is part of discussions, though they have not always shared data due to their analysis not being completed before the annual meetings. This topic will be included in the February 2015 ESRC meeting agenda. Jacobi asked for an update during the February meeting.

At a subsequent meeting, staff will provide the Park's reproductive success rate and monitoring methodology.

Amlin presented some background on Lanai Met Towers and stated that Lanai Met Towers was on the July 2014 ESRC meeting agenda and stated the intention to terminate the ITL at that time. Amlin stated that Lanai Met Towers is seeking early termination of the ITL license because all the met towers were removed by April 2014 and the land was sold to Pulama Lanai. Mitigation obligations at Lanaihale were completed in 2010, although monitoring continued until 2013 when DOFAW no longer had right-of-access to Lanaihale. No documented take occurred during the permit term. DOFAW did not submit an annual report because they are no longer allowed to access the site. Amlin has a site visit scheduled in January 2015; after which approval of early termination of the ITL will go before the BLNR. There are no additional met towers planned for this site with this company. USFWS has already closed out Lanai Met Tower's ITL. Amlin stated there are applicants who are interested in doing mitigation at Lanaihale and the land owner is open to discussing options.

Fretz asked if there is an obligation for Lanai Met Towers to do habitat management and predator control at the mitigation site. Amlin stated that the problem with Lanai Met Towers continuing mitigation activities comes with the Memorandum of Agreement that did not transfer when the land was sold. Fretz is not clear that the group has all the information on the MOA.

Fretz stated that Pulama Lanai told the ESRC they would continue mitigation work. He asked if this is what happened. David stated that staff from Pulama Lanai were at the mitigation site and said they were going to continue removing strawberry guava. Since the applicant has continued to work, and there was no take, Fretz recommended closing

out the ITL. David stated that he is not sure who continued to maintain the site, though when he visited the site it was being maintained.

MOTION: (Young)
To recommend early termination of the ITL and HCP for Lanai Met Towers to the Board of Land and Natural Resources.
APPROVED, four ayes, one abstention from USGS, and one absent. Motion passed.

Fretz called for a recess, and asked to reconvene at 10:10am.

Siddiqi provided background on the Kauai Lagoons HCP. The HCP was approved in 2012 and runs for 30 years for hotel, residential, and golf course improvements and operations. The ITL includes three species of seabirds and all listed Hawaiian waterbirds. Newell's shearwater (NESH) take was increased via a minor amendment to include fallout from existing facilities not originally covered in the ITL. Eijzenga asked if the permitted NESH take is all fledglings and Siddiqi confirmed.

The State has actively removed Nēnē from Kauai Lagoons property pursuant to the 2011 Governor's Proclamation. Kauai Lagoons has provided mitigation funding of $85,000 to be utilized after the translocation project is completed for predator control work at a translocation site yet to be determined. Kauai Lagoons is not to encourage nesting or improve habitat to attract Nēnē, but if Nēnē do nest then Kauai Lagoons will implement predator control around the nest. Seabird mitigation under the Kauai Lagoons HCP is to provide $10,000 per year into a NFWF account; once the Kauai Seabird HCP is approved, Kauai Lagoons will provide mitigation funds towards the associated mitigation program.

Overall, the Nēnē population has declined at the site due to the translocation project. The HCP originally stated that the applicant should monitor every day during breeding, but due to the dramatic population reduction, the HCP was amended this year to state that Kauai Lagoons will consult with DOFAW every year to determine appropriate monitoring frequency.

Jacobi asked if the target is to have zero Nēnē at Kauai Lagoons, and how many are currently on the property. Siddiqi stated yes the target is zero, and there are about 40 birds. Fretz stated that DOFAW plans to remove 17 breeding pairs from Kauai Lagoons this year, which will be the fourth year of removing birds. DOFAW wants to start discussions with HDOT, Kauai Lagoons, and USDA to implement hazing operations to prevent nesting starting in April 2015.

Jacobi asked about the interaction between hazing and potential incidental take by Kauai Lagoons. Fretz stated that HDOT and their FAA partner will have a Section 7 consultation for all of their operations, including hazing, and this interaction will be a part of that consultation. Young stated that HDOT currently contracts with APHIS to conduct hazing. APHIS has a letter of agent for hazing and other operations. USFWS is moving towards a Section 7 consultation for hazing and other operations that would cover the

FAA at all airports in Hawaii within FAA's operation. On Kauai, the Section 7 consultation would cover areas outside the airport boundaries.

The committee confirmed with David that no other aspects of the Kauai Lagoons HCP have changed. Fretz asked about modifying the habitat so it is less attractive to Nēnē, which may impact waterbird habitat. David stated that habitat enhancements for Nene have not been maintained. Jacobi asked if this HCP needs be brought back to the drawing board to consider potential impacts to waterbirds. Fretz said that is a possibility, and that could be logical because there will be a second ITL permit process going on.

Fretz recommended HDOT and FAA obtain permits through a Section 7 consultation and State ITL to address Nēnē public safety issues around Kauai. DOFAW's agrees with the FWS approach of not limiting permitting just to airport grounds. All those activities need to be permitted under Section 7, and then there needs to be a parallel license issued by the state. One way to do that for Nēnē on Kauai is via the Kauai Nēnē HCP that staff is currently working on, and HDOT could be a participant in that HCP, although Kauai Lagoons has a lot of other species and activities to address.

Jacobi suggested revising the Kauai Lagoons HCP for waterbirds and seabirds. Nēnē should be included, but ensure there is no negative impact on waterbirds from making Kauai Lagoons unattractive for Nēnē.

Young stated that a lot of this will depend on where HDOT/FAA/APHIS negotiations go and how what they're going to be doing will interact with Kauai Lagoons. The long term issue for FWS is the Letter of Agent just covered APHIS to haze, there was no mitigation or ability to get at why they need to haze (i.e. creation of attractive nuisances on/near the airports). The Section 7 consultation will address the issue of why hazing has to occur, and what mitigation for the loss of habitat for Nene will entail. The Section 7 overlaps with the Kauai Lagoons HCP and the Kauai island-wide HCP, but addresses slightly different issues. Jacobi stated it would be interesting to compare issues on Kauai with other airports in the United Stated that are close to waterbird populations. Young stated that, until recently, Kauai airport was the only airport that had listed bird species impacts associated with airport operations. FWS is talking to other mainland offices because this is cutting edge, and is the first time FAA has come to the table and said we need to address it. There isn't any real research to rely on.

Hart asked if Kauai Lagoons knows about the Nēnē airport public safety issue. Fretz stated that the Governor's Proclamation was written into the Kauai Lagoons HCP and Kauai Lagoons agreed to cooperate with the State's efforts to move Nēnē from their property. Hart asked if Kauai Lagoons will remove waterbirds as a hazard to the airport too. David stated no. Young stated that the waterbirds stay near the water while the Nēnē approach the runway and fly across it.

Fretz stated that the ESRC will review issuing an ITL to the HDOT and FAA after the USFWS completes the Section 7 consultation. Young stated the State is also at the table for the Section 7 discussions, and that this will eventually roll into an HCP or whatever

vehicle the state plans to use for permitting. The consultation process is expected to be long because the USFWS is working with each airport and modifying the hazard management plans as they come up for annual renewal. USFWS is also talking to HDOT about mitigation actions. Young expects it will take a couple years to complete the Section 7 consultation. Fretz stopped this conversation because it was not part of this agenda item. He clarified that Kauai Lagoons completed mitigation for Nēnē by providing funding to DOFAW. If changes are made to the ITL to reduce take for Nēnē, Kauai Lagoons will not receive money back, they would just reduce expected future take.

Young asked if the habitat on Kauai Lagoons near the airport is changed to be less attractive to any waterbirds, does this change the HCP. Fretz stated yes, if it affects any of the other waterbirds. Siddiqi stated that they are only maintaining habitat for waterbirds, not for Nēnē, under their HCP. David stated Kauai Lagoons has removed cover used as nesting habitat for Nēnē and the golf course is currently maintained.

Jacobi asked Young if the Section 7 consultation will cover hazing of Nēnē and stilts. Young clarified that hazing would cover any listed species depending on where the airport is in the state. Jacobi asked if hazing would start for stilts on Kauai. David stated that the greatest number of stilts seen near the airport in the last ten years is about 12 birds. Young and David stated that stilts do not nest and feed on the airport property. Jacobi stated that agencies deemed Cyanotech (near the Kona airport) not viable habitat for stilts because of the proximity to the airport. He asked if the same issue might happen at Kauai Lagoons because it is within a 5 mile radius of the airport.

Fretz asked what agency staff communicated to the HDOT and FAA with respect to a State ITL in line with the Section 7 consultation. Siddiqi stated that DOFAW's initial understanding was the Section 7 consultation process would happen more quickly, and DOFAW was waiting for the Section 7 consultation to be completed before starting the State ITL process. Young stated that the process for the Section 7 consultation is more complicated now and will take more time. Fretz stated the two processes should run concurrently and the ESRC should be more involved.

Jacobi asked David if the agencies know Kauai Lagoons' concerns. David said that Kauai Lagoons has communicated with the State and FWS, and their concerns are on the table. They have also communicated with FAA and HDOT. The big issue is: hazing and the golf course, how do you make those two things compatible?

Fretz asked DOFAW staff to look into issuing a State ITL concurrently with the Section 7 consultation, including continuing to explore routing the Section 7 through the State process. Siddiqi stated staff needs to write the administrative rules for HRS §195D in order for that to occur.

Siddiqi presented a Kauai Lagoons take graph including data from the project start up to July 2014 showing take of two coots, one koloa, and two NESH. Additionally, one Nēnē and one coot mortality have occurred since ITL issuance and staff are currently assessing whether those deaths are related to project operations. Jacobi appreciated the graphs

comparing actual take with permitted take in the annual review presentations to the committee. Hart asked how many coots are present at the site. David responded 400 to 500 coots. Siddiqi stated that Kauai Lagoons is allowed lethal take of coots under their ITL. David stated that the two NESH were released alive.

Siddiqi introduced the Kenai Industrial Park HCP. This HCP was approved in 2014. The ITL runs for 10 years and covers three individual *Achyranthes* plants and their seed banks. The applicant is to mitigate by planting 120 plants in Pearl Harbor National Wildlife Refuge. The applicant collected 123,000 seeds and germinated seedlings using 400 of those seeds. They submitted a planting plan to DOFAW, which was approved in 2014. The applicant has removed all plants and sold the property. The new owner of the property provided funding assurances for the HCP.

Fretz asked if the Bureau of Conveyances (BOC) placed the encumbrance on the deed for the property. Siddiqi stated not yet, but staff is working with the Attorney General on recording the document with the BOC.

Siddiqi showed a photo of the mitigation site. As of December 9, 2014, there were four plots with 30 plants in each plot. Jacobi clarified that no *Achyranthes* were present in the area where the plants were planted on the refuge, though *Achyranthes* does grow on other areas of the refuge. Siddiqi confirmed. Hart asked how big/old the plants are. Eijzenga stated that seeds were collected from the three plants for several years. He was not sure how old the plants were, but believes they have been growing for at least three months. Jacobi suggested doing a site survey of the property. Eijzenga stated the property has been cleared. Fretz stated that one of the concerns on the property was that the seeds were not germinating on site. Eijzenga stated that the plants at the mitigation site have just been planted and there is no reproduction yet but that the plants should reproduce within the first year.

Jacobi asked if anyone else is monitoring the other *Achyranthes* outplantings at the refuge to compare success at the mitigation site. Eijzenga stated that USFWS was monitoring other *Achyranthes* outplantings at the refuge, but he is not sure if they are continuing to monitor due to staff shortages. Jacobi expressed concern that the three plants from the property may not have enough genetic variability to create a successful population. Comparing measured success of the seedlings from these three plants to the other *Achyranthes* outplantings at the mitigation site would help answer this question. Young stated the next update to the committee will report the success of the mitigation project.

Siddiqi introduced the Haleakalā Ranch Safe Harbor Agreement (SHA). The ITL is for the re-introduction of Nēnē to Haleakalā Ranch and covers the applicant for 50 years. Baseline conditions was set at zero Nēnē. She showed a photo of the Nēnē pen, constructed in 2011, at Haleakalā Ranch. Nēnēhave successfully nested in the pen. Staff translocated 37 Nēnē, mostly from Kauai Lagoons, to Haleakalā Ranch. Approximately 40 Nēnē are currently in the pen. This site is a mitigation site for First Wind. Nēnē take has occurred due to issues with pen infrastructure and materials on site, but the State has resolved the issues. A total of 19 birds have fledged both inside and outside the pen.

Fretz asked if they were dispersing into the surrounding area. Franklin said yes, they have dispersed all over West Maui.

Jacobi asked about potential issues associated with bird hunting in the area of the Nēnē pen. Medeiros stated that DOFAW takes GPS coordinates of nests and coordinates with the private landowner of Haleakalā Ranch to exclude hunting from the nesting area. Fretz asked if hunting was a covered activity in the ITL. Siddiqi said yes. Fretz stated that hunting appears to be potentially compatible with the mitigation efforts as long as hunters know what Nēnē look like.

Jacobi asked if Kaheawa Wind Power (KWP) mitigation requirements are being met. Siddiqi stated that KWP is getting credit for Nēnē fledglings produced. She added that DOFAW had translocated more birds to the pen recently.

Fretz asked about plans for a new pen. Siddiqi clarified that a second pen is part of Tier 1 mitigation for KWP II.

Siddiqi updated the committee on the Cyanotech HCP mitigation obligaitons. Cyanotech spoke with Kamehameha Schools (KS), and KS acknowledged that the predator control project they've worked on since 2009 is considered mitigation credit for Cyanotech. KS also stated that they are still working on a mechanism to transfer funding from Cyanotech. This clarified questions the committee had at a previous meeting.

Fretz asked for questions or comments from the public on Item 3. Jacobi expressed his appreciation for going over each project individually and hopes to continue doing so every year. Fretz stated that agencies received most annual reports on time and reports are publically available on the ESRC website. Jacobi asked that future reports only include "staff recommendations" if there are recommendations of note for the HCP or SHA.

ITEM 4. Request for comments from the Endangered Species Recovery Committee on a Resource Equivalency Analysis (REA) model overview presented by SWCA Environmental Consultants. First Wind and SWCA Environmental Consultants presentation on a proposed approach to determine the amount of mitigation required to offset anticipated take levels of the Hawaiian Hoary Bat.

Amlin introduced the history of bat mitigation in Hawaii HCPs. Approved HCPs in Hawaii have used Dr. Frank Bonacorso's research to determine acreage required for Hawaiian hoary bat mitigation. His study provides information on Hawaiian hoary bat home range size on Hawaii Island. Agencies have extrapolated and used the following information from the study to determine mitigation requirements: one pair occupies 84 acres; bat lifespan is approximately 10 years. All wind farm related HCPs in Hawaii (except Kahuku which uses 13.3 acres) use these figures for determining bat mitigation at about 40 acres per pair. This year, the agencies re-evaluated these data and decided to use the median home range acreage instead. The median acreage for male home range is 20.3 acres, but since this only includes data from 50% of bats in the study, the figure was

doubled to be conservative. Since the female territory is considered to overlap with the males', this still translates to approximately 40 acres for a bat pair for the lifetime of the bat. Bat mitigation strategies, including acreage and costs, have varied significantly between applicants.

Jacobi asked for clarification of what acreage means for mitigation. Amlin clarified that the agency interpretation is 40 acres of habitat produces one pair of bats. Jacobi asked if the authors are comfortable with the interpretation of the study. Amlin stated that they are not comfortable with how their data has been translated into management actions.

Fretz clarified the question into two parts: how many acres equal one bat, and what are the criteria to show an applicant successfully completed their mitigation? Jacobi stated that bats use different habitat types for different functions and having the mosaic is important. Amlin stated Bonaccorso has said that males usually do not have overlapping ranges, while females do overlap ranges. Fretz stated that in bat mitigation, habitat is measured based on foraging, not reproduction. Hart stated that the authors of the study are not clear what bats are using the habitat for, which explains their discomfort in using the study for management actions. Young stated it is not clear that forest restoration produces more bats. Jacobi stated he hopes to discuss these questions more in the bat workshop.

Ong, an SWCA consultant for First Wind, introduced the topic. SWCA developed a model that assesses how much acreage would be required to mitigate for take of a Hawaiian hoary bat. Widmer introduced the model: Resource Equivalency Analysis (REA). The model uses the median of 21.4 acres for males and 23.0 for females calculated from the Bonaccorso study (space component of the model). REA comes from environmental economics. The purpose is to quantify acreage to offset predictable injury to bats. REA is a specialized Habitat Equivalency Analysis (HEA) that focuses on plants or animals through time. The National Oceanic and Atmospheric Administration (NOAA) used REAs after accidents to measure impacts and determine mitigation strategies. In the last five or six years, researchers and managers have used REAs to predict impacts over time to a given species and conduct mitigation planning up front. Widmer has experience using REAs as prediction models. Agencies are currently using REAs and the validity of the method has held up in court cases. The REA presented today is based on the USFWS REA model for bald eagle mitigation associated with wind farm operation. SWCA has experience using REAs for the past five years with other clients. Results from REAs are repeatable and take away the variability you see with mitigation.

Widmer outlined three aspects of REAs that make them different from other models: currency, replacement of resources with like resources, and economic discount. Currency for this model is number of "bat years" (years a bat lives). Replacement resources for this model are habitat protection and/or enhancement to gain bat years. This means habitat protection and/or enhancements can create bats or add years to a bat's life. The economic discount principle used in the model states that resources today have a greater value than resources in the future. Biologically, resources today are more "certain" than

future resources. This discount rate motivates early mitigation. The social discount rate applied in the model is 3 percent. Jacobi asked how this works for bat mitigation. Widmer stated most models use 3 percent. When mitigation and impact occur together, the social discount rate offsets itself.

Fretz and Jacobi asked for clarification between bat years and money. Fretz asked if this translates into bat years being part of the ITL. Widmer stated no, and SWCA will clarify this later in the presentation.

Young clarified that 3 percent equates to the perceived value of the environment based on public perception. She stated the social discount is probably higher in value in Hawaii because of the public tie to the environment. Burnett stated the social discount places a value on current bats. If the social discount were higher, it would translate into caring less about future generations of bats. Lower social discount, translates into a greater care about future generations of bats. Future benefits would not be that different from present benefits. With respect to investing, if money is spent on mitigation now this money cannot be spent elsewhere or left to grow in the bank.

Widmer explained two scenarios from the model: ignoring the discount rate, in the model, one property that produces four bats in one generation has the same value as another property half the size with half the carrying capacity that produces four bats in two generations.

Jacobi asked how acres managed related to bat production. Widmer demonstrated via the model. She entered in 36 bats killed in 12 years (3 bats per year). She calculated the age distribution using age-dependent survival rates. REAs also model foregone reproduction, but in this case it was left out because the assumption is that the reproductive potential of the animals killed would be the same as the potential of those benefiting from the mitigation projects. This is explained on the USFWS's website containing the REA for eagles.

Ong explained the data sources. The first is maximum life span. She looked for data from the following sources to be utilized in the model in order, Hawaiian hoary bat specific, mainland hoary bat specific, then closely related mainland tree-roosting species. The model uses a maximum life span of 12 years based on data for the mainland hoary bat and closely related species of bat (silver haired). The second data source is the juvenile to adult survival rate – agency guidance is 2.1 juveniles equal one adult bat, or a 48 percent survival rate. Jacobi requested a reference for where the agencies determined juvenile survival. The final data source was annual survival rate of adults. Capture-recapture data provided bat survival rates from the big brown bat (77 to 82 percent) and New Zealand long-tailed bat (40 percent with rat predation and 70 to 99 percent with no predation). She used a high annual adult survival rate of 85 percent to assume predation at the mitigation site.

Burnett asked if the 85 percent survival rate is for any habitat type. This survival rate is applied broadly for bats killed and bats produced through mitigation. Widmer explained

that a high survival rate is a conservative approach, and provides a benefit to bats by overestimating mitigation due. Ong explained that the values she presented earlier were reviewed by Dr. Bonaccorso and he initially had concerns with the survival rate, though he agreed the values were conservative for this REA. However, he stated that these values should not be used in a PVA. The survival rate applies to bats aged 2-12 years.

Widmer explained the REA assumes bats have a lifespan of 12 years. Hart asked if 45 percent survival rate is used for the first year. Widmer confirmed adding that 45 percent is also conservative.

Widmer explained how resource gain is computed. The example mitigation project is for forest improvement. We're assuming that the act of conserving and improving forest is going to secure bat years and the carrying capacity of that habitat has the potential to increase with that improvement project. Current mitigation guidance is to produce 40 acres of habitat per bat. The model assumes that 40 acres can support 1.6 bats in the first year of forest protection. By the third year of forest protection, management actions protect 2 bats. By the tenth year of forest protection, management actions protect 2.4 bats.

Jacobi asked what forest protection means. Ong clarified that forest protection includes mitigation actions such as ungulate removal, fencing, and weed control. Young stated that is assuming some existing habitat. Fretz stated the need for understanding more mitigation actions, including starting mitigation from a degraded habitat. Widmer stated the importance of developers understanding what options are available for mitigation. Fretz also pointed out the question of cost-effectiveness, stating it would be less expensive to start bat mitigation in a degraded habitat where bats were present vs. habitat with no bats.

Young said this is implicitly saying that you need less acreage over time to support bats.. Ong stated that management actions that improve the forest support more bats.

Fretz asked how, after 10 years of forest protection, the REA calculates 2.4 bats in 40 acres. Ong explains that it is assumed home range changes over time with habitat improvement.

Widmer explained how the duration of the mitigation is added to the REA. The model assumes conservation would be established in the third year and funding would be given in the first year. There is a two year lag between funding and conservation to allow for permitting, where the applicant is not receiving mitigation credit. This example is assuming forest conservation is maintained for 10 years.

Jacobi stated that he likes the format of the equation for the REA, but he does not understand how take from the left side of the equation returns acreage on the right side of the equation in the REA. He compared it to management of forest birds where growing forest means enhancements for forest bird recovery.

Fretz stated it would be important to verify the model by documenting how many bats are present with management actions. Current methods of bat detection measure relative changes in bat occupancy by percentage over time. He asked if there is a method to determine how many bats are in an area. Widmer and Ong reply it is very difficult. Activity detected does not directly relate to number of individuals present. Fretz asked if multiple detectors can be deployed to assess number of bats more accurately. Jacobi stated that building forest in one area may positively impact bats from another area that come to forage. Sampling seasonally is important too. Fretz asked if current methodology will measure results needed to confirm the model. Ong stated that the model has the flexibility to incorporate relative change. David asked if bats respond to forest quality. Tribble stated that the underlying assumption is that building forest provides bat habitat. Hart stated this discussion would be good as part of the bat workshop.

Widmer explained the results of the model. Every bat lost at the wind farm equates to 4.62 lost bat years. Thus, 12 years of theoretical wind farm operation in this example results in 142.25 present value bat years lost. With every acre of forest protected, 0.43 present value bat years are gained. Take of 36 bats results in 327.31 acres of forest protected, or 18.8 acres per pair of bats killed. She doubled checked the results and perceived them to be consistent with the current mitigation recommendation of 40 acres per bat.

Widmer summarized that bat years are the key element to understanding the equation. Acreage per bat varies by what is put into the model – proposed mitigation, timing of the injury, and duration of mitigation. Demographic data changes the output of the model – lifespan and survivorship. In addition, by reducing the mitigation project duration, the acreage per bat is 37 acres with the social discount rate and 42 acres without the social discount rate.

Widmer explained larger contiguous conservation properties are preferred to reduce fragmentation and choice of conservation properties should be done collaboratively with management agencies. Jacobi adds this should take place within the context of recovery goals.

Widmer explained the model presented. The inputs are a maximum lifespan of 12 years and adult survivorship is 48 percent for the first year and 85 percent each year thereafter. She determined the age class's survival rate into the 12th year. According to these data, about 80 percent of the bats die by the age 6. She extrapolated that the average lifespan of a Hawaiian hoary bat is between 5 and 6 years old. Widmer presented an example of a cohort of 100 bats to look at the assumed age distribution of mortality (percent mortality that occurs at each age group per year) assuming each age group is equally vulnerable to strike. She assumed 40 acres supports one pair of bats after 3 years. She used the 3 percent social discount rate. Following one bat year through time, she added up how many future bat years were lost with a single year of take. These data produce 15 bat years lost for 3 bats in one year, with no discount rate, and 13.87 bat years lost for 3 bats with the discount rate. Young asked if the model factors in loss from reproduction.

Widmer stated no, and Jacobi clarified that the reproduction value is assumed equal on both sides of the equation.

Widmer proceeded to run the model through each permit year using 13.87 bat years. She double checked whether the discount rate had been applied in two places in the model (a question previously raised by agency staff) and stated that the model as it is contains the correct calculations, and only applies the discount once. In the example, funding would be provided up front and the mitigation project would last for 10 years. The total acres to be mitigated would be 327.31 acres, approximately 9 acres per bat produced, with the 3 percent social discount. Without the discount rate, the total acres to be mitigated would be 344 acres.

Fretz stated that it is ambitious for credit to be realized within the three years of starting the mitigation project. Widmer stated this takes into account the inherent value of creating a conservation area. Widmer attempted to lengthen the lag time for the mitigation project to have an impact in the model to demonstrate how the results would change. Cowan stated that REAs are an accepted system, but the inputs for Hawaiian hoary bats remain in question. Currently we are looking at best available science, and we have time constraints on expectations of mitigation.

Jacobi asked if, economically, 40 acres makes sense to use in the model. He continued, and asked if it would be better to change the output of the model from acreage to research. Cowan stated that they are also in favor of research as a mitigation option. Ong stated that a benefit of the model is identification of clear gaps in information. Jacobi stated the left side of the equation, demographic information on the species, makes sense. The right side of the equation could be changed to other mitigation actions besides acreage.

Fretz stated the model output makes sense, though acreage may vary depending on the quality of forest. The model could be tested in Kahikinui. Managers have 2 years of baseline occupancy data and multiple fenced units. Jacobi questioned whether a difference would be seen reforesting a degraded area in Kahikinui because bat detections from foraging bats would be present in the degraded area. Vetter stated that baseline information is important as when running the model with more bats to from the start, requires less mitigation actions.

Miller is not certain the model captures the value of the bat. He suggested having people familiar with modeling population dynamics review the model. He stated this model lacks values basedon individuals as they age through timeand these data may not be available for bats.

Fretz stated this model can be discussed more in the bat workshop.

Fretz called for a recess, and asked to reconvene at 1:15pm.

ITEM 6. Request for comments from the Endangered Species Recovery Committee on desired goals and outcomes for an ESRC bat workshop.

The committee reviewed Item 6 after Item 4 in the interest of time and determining Item 6 to be a high priority item.

Siddiqi stated the bat workshop is to be 2 days. She requested the committee provide input on expected outcomes for the agenda and suggestions for people to invite.

Jacobi asked about the take estimation from Dr. Huso and if this issue is wrapped up. He lists other issues: mitigation, monitoring of response to mitigation, and research needed to fill in the gaps.

Fretz asked about the relationship between Huso's latest model and searcher efficiency. Sether stated the new iterations of the model allow the application of absence. If a carcass is found in the second search and not the first, it is not input into the model because the model accounts for unobserved take. Comes down to the certainty of take occurring.

Fretz stated there is an issue with how take is detected. Carcass searches are expensive and difficult in many areas and lead to low searcher efficiency. Alternative approaches are good to review. Amlin stated video and infrared camera studies at Hawaii wind farms have been performed. Research has been conducted at mainland windfarms experimenting with vibration detectors and GoPro cameras on blades of the turbine. Wind facilities in Hawaii have experimented with dogs and found that they increased overall searcher efficiency. Jacobi has concern with the variability between searchers for finding bats. Sether stated that variability is accounted for in the model. A ballistics model is used to estimate searcher efficiency in unsafe or rough areas to search.

Burnett stated it would be helpful to determine adjusted take with current models in the workshop.

Fretz stated guidance should be a product of the workshop. The agenda should cover all issues discussed in previous meetings to produce a white paper guidance document. He listed several topics: take, adjusted take, and mitigation (plus related issues). Burnett added how to predict take for new HCPs and Jacobi that all discussions in the workshop should take place in the context of bat recovery.

Jacobi stated that the REA model can help identify data gaps and prioritize research needs. He asked if research is appropriate for HCP and SHA mitigation and followed up by stating that this is a legal question. Young stated mitigation has to provide a net benefit for the species, and that the agencies have used research for mitigation. She suggested coming up with priorities to fill information gaps for all the variables in the REA model discussed under Item 4. Jacobi suggested having each agency make a priority list of what information they need before the workshop starts. Siddiqi suggested an agency panel to present the research priorities. Jacobi stated a panel could be useful

following a discussion by the committee that reviews each issue, and determines how to address each issue.

Fretz stated the search for experts to address the committee will not be limited to Hawaii. They will look into flying and teleconference options. Amlin stated voting members and presenters of the workshop have to be connected to the meeting the entire time it is held, even if communicating via teleconference. Meeting agendas have to be posted where the person is connecting from and the communication technology has to be operating the entire meeting. She will do more research into how to accomplish this.

Jacobi suggested adding types of items the committee recommends to be included into an HCP or SHA. If an applicant is doing management, the committee would recommend making sure predator control is measurable and correct monitoring techniques are utilized.

Siddiqi asked the committee to provide feedback on the types of mitigation already approved in current HCPs. The committee agreed to look at other types of mitigation.

Burnett suggested putting topics in question form. She suggested having a larger themed question to help frame what kind of guidance the committee receives from presenters.

Jacobi suggested defining what net benefit is and how mitigation achieves net benefit, and having experts address limiting factors for presence of bats.

Cowan suggested discussing whether bats should still be listed under the ESA and HRS 195D.

Jacobi recommends agency staff put together an agenda. Amlin stated they started a draft agenda and will incorporate the committee's input.

Fretz discussed a project by H.T. Harvey who were addressing take during a timber harvest project. Amlin stated they have that project as a possible discussion topic on the draft agenda. Fretz clarified that H.T. Harvey concludes take is not likely in the timber harvest project. The issue is whether or not the project needs more data (increased variance) to make this conclusion. Siddiqi added it is also identifying the types of habitats where bats are likely found.

Jacobi liked the idea of bringing modelers to the bat workshop as presenters. Miller suggested including the model from Item 4 in the workshop. Jacobi stated he spoke with Marcos Gorresen of USGS about the model and he said the model makes sense, but they just do not have the demographic data to fill it. Models for the mainland hoary bat cannot be used as a proxy for the Hawaiian hoary bat because there is not enough information about Hawaiian hoary bats to know the comparison is sound, though the two species are closely related.

Fretz stated that the committee must produce guidance from the bat workshop. Jacobi suggested the product (guidance document) should have a lifespan for renewal or triggers for changes. Cowan stated adaptive provisions in the HCPs allow for changes in mitigation from new guidance. Jacobi stated the capacity to revise mitigation should be based on the recovery context.

Siddiqi stated that staff will draft an agenda and list of questions from this discussion. Jacobi asked that when she sends out the draft agenda for review to remind committee members to state who they would like to see present at the bat workshop.

Young asked about scheduling for the next meeting. Siddiqi suggested not meeting in January. There are a few projects ready for review by the committee in February. Young clarified that the committee can provide feedback on the draft agenda for the bat workshop via email.

Jacobi suggested adding guidance determined from the bat workshop as an agenda item for the meeting following the workshop so that the committee can vote on the product.

Burnett asked if there is similar guidance for other species. Fretz stated no, but the guidance from the workshop on plants is pending. Amlin stated the committee is reviewing and commenting on the minutes.

Miller suggested reviewing mainland bat workshops for ideas for this bat workshop. Amlin stated there was a bat workshop in New York and she can try to track down an agenda.

Cowan asked if population status will be discussed – specifically the ability of the population to withstand the take that occurs.

Fretz asked for questions or comments from the public. There were none.

ITEM 5. **Request for comments from the Endangered Species Recovery Committee on First Wind Facilities Interim Monitoring Protocols.** First Wind proposal for interim monitoring protocols under four approved Habitat Conservation Plans: Kaheawa Pastures Wind Energy Generation Facility Habitat Conservation Plan, Maui; Kaheawa Wind Power II Wind Energy Generation Facility Habitat Conservation Plan, Maui; Kahuku Wind Power Habitat Conservation Plan, O‘ahu; Kawailoa Wind Power Habitat Conservation Plan, O‘ahu.

The committee discussed Item 5 after Item 6.

Amlin introduced Item 5. She stated that each windfarm HCP has implemented intense searcher efficiency and monitoring protocols to develop baseline data. As the projects progress with time, the HCPs outline periods of less intensive monitoring (interim phase) followed again by intensive monitoring. Intensive monitoring is expensive for windfarm

operators. Three out of the four First Wind HCPs specify that a regular rapid assessment (RRA) method should be used in the interim monitoring phase. HCPs provide vague guidance for what the RRA method actually entails. She compared HCPs in Hawaii to five HCPs on the mainland that include monitoring for bats. All vary – some do not have interim monitoring, some have intensive monitoring every two years, and some do weekly searches every year of the trial. Essentially, there is no set precedent.

Amlin stated that First Wind suggested conducting monthly searches at a radius of 30 m along with incidental reporting at Kahuku and Kawailoa Wind Farms. At KWP I and II, First Wind would conduct monthly searches on graded pads and roads, a radius of about 20 m, and include incidental reporting. Pending discussion with the agencies, First Wind would conduct SEEF and CARE trials to assess the RRA method as suggested in the HCP. During the interim monitoring period, First Wind would conduct minimal vegetation control. During intensive monitoring, First Wind would continue intensive vegetation control.

Amlin asked the committee to help determine how the RRA method monitoring data can be used. Cowan suggested these data would indicate stochastic events, not a mathematical estimate of take. First Wind did see variation from year to year doing the first round of intensive monitoring. He stated that future intensive monitoring would be conducted every five years to evaluate projected take.

Young asked if intensive monitoring rounds will be statistically significant. Cowan stated that First Wind went back and forth between conducting interim monitoring and asking the agencies to allow First Wind to discontinue monitoring for the interim years.

Jacobi asked to clarify what is meant by stochastic events, and questioned whether interim monitoring would detect dramatic changes in data. Cowan clarified a stochastic event could be a cloudy night with either a large number of a species covered by the ITL or a previously undetected species passing though the project site. Though not statistically significant, this type of event would require First Wind to discuss options with agencies.

Hart asked for clarification as to why the RRAs are in HCPs. Cowan stated RRAs are in HCPs because no one was comfortable removing monitoring after the intensive monitoring period.

Fretz asked for clarification on what is requested from the committee. Amlin clarified they request guidance for how to conduct interim monitoring and how to use those data.

Fretz asked if the committee is in agreement that monitoring is done every five years. Hart stated this is written in the HCP. Jacobi stated monitoring every year is important because of annual variability.

Fretz suggested the use of interim monitoring data should depend on variance. Jacobi asked if there is a way to compare intensive and interim monitoring data. A large

variance means staff would have to be conservative in approaching how to use those data. Jacobi felt it would not be useful to collect data that cannot be used in a meaningful way.

Amlin stated the main concern in interim monitoring is monitoring for bats. Large bird carcasses are found more easily because they have high carcass retention. Looking once per month for bats would yield much more uncertainty as far as the total adjusted take.

Cowan expressed concern that data collected in interim monitoring is data that cannot be analyzed. He stated the calculated rate of take projected out from the first round of intensive monitoring is padded to account for uncertainty. He is unclear how much to pad the projected rate of take. He is concerned with the benefit to the species.

The committee stated it finds data from the five-year intensive monitoring periods useful.

Fretz asked if interim monitoring yielded important information. Amlin clarified that all First Wind projects have conducted intensive monitoring only. Kahuku Wind Farm will be conducting interim monitoring soon, while the other First Wind sites will conduct interim monitoring next year.

Fretz asked the staff what they think interim monitoring would yield. Jacobi stated the monitors have less probability of seeing stochastic events, like a different species or a flock, because they are not sampling as frequently as in intensive monitoring. He suggested continuing an intensive search on a smaller number of randomly selected turbines during the interim monitoring period. Cowan stated there is large variability in the intensive monitoring. He understood take at wind farms is small relative to the overall population and monitoring is expensive and difficult. Between the four First Wind wind farms, there will be 18 years of intensive monitoring. Adaptive provisions were built into the HCPs to allow for changes with new information. From the years of intensive monitoring, it is known that Kawailoa has higher bat take than the other wind farms, KWP I is the only wind farm to have petrel take, no wind farms have taken Newell's shearwater, and KWP I and II have Nēnē take. Fretz stated First Wind conducted intensive monitoring for a short time speaking ecologically and take variability could occur for many reasons. He asked if the intensive monitoring at KWP I that has occurred for the past eight years has a small variance. Cowan stated variation comes from three sources: actual bat take, searcher efficiency and carcass retention, and changes in the estimator equation. He stated the last three years have been the most consistent. He stated that take is a rare event leading to variability.

Jacobi discussed an example from the Palila monitoring project at Mauna Kea. There have been 35 years of annual monitoring of Palila, with monitoring occurring twice per year to document breeding and non-breeding periods. Researchers looking to analyze population trends randomly chose a temporal starting point, and then ran a model that sampled the data in five year increments. The resulting population trend varied widely depending on the temporal starting point. However, after 35 years, researchers have a good picture of overall trends. He stated the question for First Wind is whether the eight years of monitoring at KWP I have produced a reasonable trend. The statement about

effects on the overall population is more pertinent to a Section 7 consultation than this forum. This meeting is for discussing the take and mitigation.

Jacobi and Hart suggested seeing the data from the intensive monitoring to give First Wind better feedback.

Fretz asked Cowan if he would agree to do more mitigation if the committee says do not do interim monitoring. Cowan stated, if First Wind continues to do intensive monitoring every five years and no interim monitoring, they would certainly increase mitigation actions, and he would expect that the mitigation would offset the potential take.

Sether stated that at mainland wind farms, during interim years with no surveys, wind farms are unlikely to find anything (zero for observed take), and researchers use a low g value (overall probably of detection) for the model. Sether has compared two methods. She ran First Wind's KWP I data, and then replicated the eight year intensive monitoring data over 20 years. She used the 80 percent credibility level of estimated take that First Wind has not exceeded. Next, she ran the model without replication and instead putting in zero observed take and low g value of 0.001. The result between the two methods is a difference of 20 to 30 bats. Jacobi asked for the permitted take for the entire term of the ITL. Sether stated the results of the model exceed the permitted take for the entire term of the ITL. She clarified that this model was not used to predict take when agencies and First Wind first agreed on the ITL. When she ran the same models with a different wind farm's data from two to three years of monitoring, the results between the two models differ by approximately 40 bats.

Hart asked to clarify the g value. Sether stated that the g value takes into account the searcher efficiency, carcass retention, sampling interval, and size of the search area. She stated that g values work better for bats than Nēnē because Nene are large and fall further outside the search area.

Hart asked if multiplying the bat take per year out for the entire term of the project is similar to the model. Sether provided an example: if there is a year with exceptionally high take, with sound SEEF and CARE values, the model would use a low g, and the result would likely be more conservative. She stated that SEEF and CARE values are sound at First Wind's wind farms.

Jacobi asked if Sether took into account that the last three years of the intensive monitoring at KWP I were more consistent when calculating the model. Cowan stated that he believes the last three years of intensive monitoring are more consistent than the other five years.

Jacobi expressed apprehension about pulling resources from monitoring to support mitigation because the committee is still debating which mitigation actions show bat production. Hart stated that he is open to considering the option with more information.

Charrier asked the committee to provide feedback for how staff should proceed now, while the committee reviews more information.

Cowan stated that mitigation is not related to counting bats. Asking the permittee to count harder does not address the problem.

Fretz asked that First Wind put forth alternatives in front of the committee at a later meeting. One alternative is to search the turbines every year. A second alternative is to sample a subset of turbines every year. A third alternative is to sample every turbine every five years. A fourth alternative is to sample a subset of turbines every five years. RRA (or interim monitoring) can be performed or not in alternatives 2 to 4. Fretz asked if staff is asking for a decision or a recommendation from the committee. Amlin stated that the language in the HCP says this issue is to be reviewed by DOFAW, USFWS, and the ESRC. She stated the committee would help the agencies by providing advice for how to proceed in the meantime. This is not a voting item on the agenda. Fretz stated the language in the HCP should be interpreted as the committee will provide clear guidance to the agencies.

Jacobi stated he would like to see the intensive monitoring results to provide guidance. Without those data, he does not have a clear picture of any trends.

Fretz asked when First Wind will start interim monitoring at the Kahuku Wind Farm. Pierce stated that staff are preparing to begin interim monitoring now. The other wind farm sites will begin interim monitoring in a few months.

Fretz proposed that the committee have First Wind proceed with interim monitoring, and the committee would revisit this issue based on the alternatives presented at the next ESRC meeting. Jacobi stated that he would abstain from voting until more information is available. He stated that the information would answer questions on if the eight years of intensive monitoring give sound information to allow intensive monitoring only every five years. He wants to see the analysis run.

Sether proposed she capture images of take estimates and model data from their meeting with First Wind on December 23 and bring to the next ESRC meeting. Hart liked this idea and also asked, if interim monitoring did not occur and more mitigation did, how much money would be involved and where would it go? Cowan stated that more mitigation would be added to existing mitigation projects for all species.

Young suggested that First Wind present where they are with the models at the ESRC meeting in February. Jacobi suggested First Wind potentially draft a report or write paper for the committee to review. It was recommended, upon First Wind's approval, these data be reviewed by the model developers. Jacobi stated, at the next meeting, it would be helpful if First Wind would clarify the analyses so that the committee could provide recommendations on interim and intensive monitoring phases. Young stated the main reason to conduct interim monitoring would be to catch rare events. Rare events would have to be defined. Fretz stated another alternative would be to do interim

monitoring for the first quarter of the 20-year ITL for rare events. Young stated that at the meeting in February, staff would make a recommendation to the ESRC for one of the alternatives Fretz mentioned.

Cowan summarized that the evaluation of alternatives for monitoring is a risk or uncertainty assessment, and can risk be ameliorated through mitigation. Jacobi added that this should be evaluated relative to the permitted take. Cowan stated that the agencies and First Wind are currently working on the ITL amendments in progress.

Fretz called for a recommendation from the committee on whether First Wind should perform interim monitoring between now and February 2015. The January 2015 ESRC meeting has conflicts and may be cancelled. He clarified that the committee may recommend First Wind conduct intensive monitoring, so First Wind should consider appropriate staffing issues from now until the February 2015 recommendation.

Purcell expressed thoughts on how the committee handled this decision. He stated that it was appropriate not to vote because this was a non-voting item. He stated that he previously attended a Legacy Land Conservation Commission meeting and Land Division staff stated there was no proof wind turbines kill bats. He asked about the use of cameras for monitoring bat take. Fretz stated that camera monitoring is on the bat workshop agenda, and that researchers have conducted experiments. Jacobi added that USGS is conducting tests on camera monitoring across the nation.

Fretz asked for any more questions or comments from the public. There were none.

ITEM 7. Announcements. Set/confirm next meeting dates.

Fretz stated that there were conflicts with the January 2015 meeting date. Burnett will miss the February meeting due to conflicts but will ask about a replacement. Siddiqi mentioned there is a site visit planned for the ESRC in February. The committee agreed to meet February 17 and February 24 for a meeting and site visit.

ITEM 8. Adjournment.

The Meeting adjourned at 3:20PM.