

Meeting Summary | July 8-9, 2008

Altamont Scientific Review Committee

Developed by the Center for Collaborative Policy

Reviewed by the SRC

Not yet approved by the SRC

Key Outcomes

Scavenger Removal and Searcher Detection (Data Quality Assurance/Quality Control) Study Recommended

The Scientific Review Committee recommended that Alameda County conduct a Data Quality Assurance/Quality Control Study to improve the estimates for scavenging and searching efficiency in calculating avian mortality in the APWRA Monitoring Program. The current analytical practice of using these correction factors in the science of avian mortality could be biasing mortality either high or low. In the study, a monitoring team would search for avian carcasses on a portion of the turbines in the monitoring program to determine the accuracy of current search methods. This modification in the protocol would start in October 2008 and run for one year. After the first six months, the study could be revisited to determine if it would be feasible to reduce the sample size.

Prioritizing Study Recommendations

The SRC reviewed potential study areas and gave highest priority to the Data Quality Assurance/Quality Control Study, a study to determine background avian mortality in the Altamont area, and a burrowing owl study incorporating thermal imaging observation of behavior and background mortality for the species. The SRC also began to define the details of a background mortality study that would estimate mortality that occurs naturally in the area; the results of which could reduce the estimate of the number of fatalities attributed to wind turbines.

Burrowing Owl Study Design

The SRC refined the burrowing owl study design on abundance, distribution, and behavior. The SRC agreed to incorporate a thermal imaging study of species behavior that looks at burrowing owls on ridges with turbine towers and ridges without towers, comparing behavior and activity in three bands (top, middle, and lower part of ridges). The study would gather information on potentially risky behavior of burrowing owls around turbines, as well as predation of the species, that might be contributing to the high estimates of burrowing owl mortality rates.

Action Items & Meeting Follow-Up

Party	Due Date	Action
MT	7/11/08	QAQC: revise proposal/scope, including cost savings from existing scavenger trials
MT		QAQC: modify sample size based on discussion
MT		QAQC: submit to County
MT		Include QAQC Study separately in new scope of work

Party	Due Date	Action
MT		Complete shared public database, make accessible
Alameda County	pending	Follow-up on release of operating hours data
Jim Estep	7/25/08	Revise burrowing owl study design (P90)
Alameda County	ASAP	Submit burrowing owl study design to CEC
Alameda County	8/15/08	Confirm if SRC budget includes July meeting
Alameda County	8/15/08	Send out memo and template to SRC for contracts
SRC	9/15/08	Modify and return contract templates to AC
Shawn Smallwood	TBD	Refine abundance report (P88) to differentiate yearly from monthly variation (P88 Smallwood: Relative Abundance of Birds Offsite).
Shawn Smallwood	ASAP	Revise P70 Relocation Guidelines based on input from earlier in-person meeting
MT	7/08	Include decision-making trees in Monitoring Report (with #s)
MT	7/08	Include in Report carcass distance from turbine base, is distribution different for similarly sized birds?
MT	Late July	Monitoring Report
MT	Fall	Develop scope for background mortality study
MT	August	Seasonal shutdown analysis
MT	August	American Kestrel Burrowing Owl Report
MT	August	Scavenging report
Brian Karas		Provide photo on vertical gap in wind wall (Patterson Pass, e.g.) for P70

Meeting Account

Announcements

Sandra Rivera of Alameda County reported on payments to SRC members for expenses and services. She said that all the SRC members have gotten paid, except for one recent invoice from Shawn Smallwood.

Rivera also discussed the Monitoring Team contract. The County is making arrangements to have ICF Jones & Stokes take over the contract, with BioResource Consultants as a subconsultant. Alameda County would like UC Santa Cruz to remain as part of the Team, but it has not accepted to extend the bridge contract. In response to a question, she said the decision on the part of UC Santa Cruz was because they had not been paid. There have been invoicing, payment, and delivery issues. Also, Ed West, who had been working as an employee of ICF Jones & Stokes, is now working on this project as a subcontractor. Kort Clayton of ICF Jones & Stokes has taken over the role of project manager.

Monitoring Report Presentation & Discussion

Monitoring Team member Jesse Schwartz gave an "Altamont Progress Report" PowerPoint presentation (available on the SRC website at [M29 Altamont Progress Report July 2008 Presentation Slides](#)) that outlined the monitoring effort; estimated annual APWRA-wide avian fatalities; a comparison of the monitoring period fatalities to

baseline fatalities for a selected group of turbines, the NREL turbines; and an analysis of fatalities in relation to bird use from October 2005 to September 2007. The data show a correlation between trends in fatalities and bird use for red-tailed hawks and burrowing owls during the 2005-2007 period, with the number of fatalities increasing or decreasing as bird use numbers increase or decrease. There was no correlation for golden eagles, and data for American kestrels were not presented.

The Monitoring Team expects to have complete baseline fatality data soon to compare with the 2005-2007 data. The final report is expected at the end of July.

At this point, the monitoring team has no dataset of bird use for the baseline study, which they would like to use to compare with bird use in the 2005-2007 data. Shawn Smallwood, who conducted the baseline study, said he has some bird behavior data that he is working to prepare, but is concerned that it may be challenging to make the data comparable. Others expressed similar concerns.

SRC and Monitoring Team Discussion

Jesse Schwartz said the bird use correlations raise the questions of whether raw numeric objectives for mortality are appropriate, and whether the taxa should be looked at in terms of population size, viability, and growth rate. These are not mentioned in the settlement agreement, but given the density-dependent nature of the statistics, the question is, is habitat in the Altamont providing a net benefit versus the fatalities?

SRC members responded that it would be expensive and require a large amount of effort to gather information on species survival rate, and challenging, as the species are seasonal. Studies have been done on golden eagles and the experts disagree. SRC members said considering population viability would be beyond their scope. SRC members also pointed out that this topic was beyond the scope of the monitoring team's presentation.

Joanna Burger said it may be possible to build a case that biologically, the way to conduct the analysis is to base it on relative abundance and use. The goal is to decrease the slope of the line (showing increased mortality directly proportion to bird use in the PowerPoint slide). The wind companies cannot control abundance of birds. What would the curve look like in different years, with different management strategies? The slope would correct for absolute numbers. She would like to schedule a discussion on the slope and mortality analysis issue.

Brian Karas of the Monitoring Team said the slope may not change because the bird populations in the Altamont are not a closed system.

Public Comments and Questions

Bill Barnes of AES asked if intense measurement of a small area would be more valuable. Brian Karas of the Monitoring Team said that was possible to get at a tighter link between mortality and use. The fatalities are rare events, and it would depend on the variability of plots.

Status Report on Public Access to Database

Jesse Schwartz said the database is nearly ready. He recommended that the database be made public through a web-based data portal that is “read-only” but allows for queries, and analyses by anyone. People could download the data for their own use.

The SRC agreed. It was decided that data would include the date when last updated.

Next Steps in Monitoring & Analyses

The Monitoring Team reporting schedule is as follows:

- The Report is expected at the end of July
- The seasonal shutdown report will probably be available in August
- The American kestrel & burrowing owl study report will be available in August
- The scavenger study report will be available in August

Public Comments and Questions

Emre Ergas said the seasonal shutdown analysis is highly relevant to the discussions currently occurring among the Settling Parties, and asked if it could be produced first, before the Monitoring Report. SRC members said it is important for them to see the format and analysis of the Monitoring Report although they agreed the seasonal shutdown report could be more important. It was clarified that the order in which reports are produced is not the SRC's responsibility, as the Monitoring Team works for Alameda County. Sandra Rivera said both reports should be out in the next two months.

Emre Ergas said company officials don't feel they have been treated fairly because they have asked for the monitoring data for a year. Some SRC members are getting the data, reports are produced and the companies don't know if the database is the same. The companies will release the operating output data when they receive the monitoring data.

Shawn Smallwood answered that he has his own working database because he helped the Monitoring Team put the database together, as it includes his data, which is being used as the baseline. He was authorized by the SRC to work with the Monitoring Team to make sure the data are consistent.

SRC members answered that their intent is that the monitoring process be completely transparent. Generally, data are not released before the report is, because during the analysis phase, the data are reviewed and discrepancies in them may become apparent. Sandra Rivera said that both the finalization of the data and the report should be completed soon.

Panel Discussion with the SRC & Monitoring Team

The SRC and Monitoring Team assembled as a panel to answer audience questions about monitoring data and analyses.

In response to a question about **searching intervals**, Brian Karas said the target is to monitor all turbines each month. The last survey interval was 35 days. Staff numbers

were low in 2005-06. That is no longer the case and the variance in surveying intervals is much lower.

One questioner asked why **mortality is called turbine-related** when a turbine is shutdown. Joanna Burger said that it is unknown if any birds might be killed when turbines are feathering. Another turbine-related issue is whether predators might perch on shutdown turbines and kill burrowing owls.

An audience member commented that **large raptors die when turbines are off**. Shawn Smallwood said that would be part of background mortality, and those numbers won't be known unless monitoring methods are changed. That's why the SRC is proposing the background mortality study, to be methodical in taking next steps in response to the mortality data. Brian Karas said that was why he highlighted those figures because he is suspicious of the mechanism of mortality.

One questioner asked if the **final report will be adjusted for abundance**. Jesse Schwartz said that hadn't been one of the tasks assigned to the monitoring report. Shawn Smallwood said it would be worthwhile; however, there are significant challenges with using the abundances from the bird use and behavior data from the baseline study to compare with recent bird use and behavior data.

In response to a question about whether the SRC intended to rate other Altamont turbines in terms of **hazard**, SRC members said they had agreed they would not go out unless the companies showed interest, and some SRC members were chagrined that their earlier recommendations on removal of hazardous turbines had not been accepted by the companies.

An audience member asked if it is roughly true that SRC members believe a **four month shutdown with the removal of turbines rated 8-10 or 7-10 might begin to approximate a 50% reduction**. If so, where would the classification of additional turbines fit in? SRC members said it would take much more time for SRC members to visit and rate the turbines, and thus a large monetary commitment from Alameda County. Some of these turbines are not currently being surveyed and therefore lack mortality data, so there are less data to arrive at ratings. The SRC felt that there are certainly other turbines that are just as hazardous as those already rated, but it would take more time to identify them. Shawn Smallwood said he believes the combination of a four-month shutdown and removal of hazardous turbines is the single best approach if the goal is to balance mortality reduction while maximizing power output. The SRC never said these steps would absolutely reach 50%, but removing turbines rated 8-10 would go a long way towards reaching that goal. Joanna Burger referred to Shawn Smallwood's analysis, [P103 Smallwood Assessment of SRC Recommendations to Relocate Rated Turbines](#). Although SRC members don't know for certain what would happen once the turbines are taken out, Shawn Smallwood said his opinion is that golden eagle mortality would be reduced 50%, and probably red-tailed hawks as well. Other management strategies are needed to cut mortality for burrowing owls and American kestrels. The SRC acknowledged that turbines selected for ranking did not target burrowing owl fatalities.

Someone asked if the SRC knows **which of the rated turbines were removed**, and which were relocated. SRC members said they do not know. A representative of FPLE said that information was provided to the Monitoring Team.

A questioner asked if Jesse Schwartz's t-test indicates that there's **no statistically significant difference in the number of fatalities**, except for burrowing owls. Jesse Schwartz said yes, it's fair to say that the measures taken to date haven't had significant effects on mortality. Joanna Burger said that can't be stated quite clearly as this point, because abundance had not been factored in. Ten people killed on the freeway in one year when 1 million people are driving is not the same as 10 people killed on the freeway while 5 million people are driving. That is the question the SRC is trying to get at. Julie Yee said there is no statistically significant difference based on that test. However she has concerns about using the t-test for that data, and she cautioned in general against interpreting a lack of statistical significance as meaning there is no difference in the numbers. It is possible there are differences but not enough power in that test.

An audience member asked if the SRC recommends **removal or relocation**. SRC members said the guidelines refer to relocation. P103 assesses both conditions.

Someone asked what the SRC's opinion would be on a **four-month seasonal shutdown from November through February that would include operating minimal numbers of turbines** for troubleshooting and preparation to restart (following an extended shut-down, each turbine must undergo maintenance and operational and safety testing. Conducting these activities during the shut-down period would reduce additional start-up lag time following the end of the shut-down period). What would the relative risk to birds be? Hypothetically, this would involve 40-50 turbines a day for 2 hours in the middle of each day. The operation would shift daily to different turbines. In February, it would shift to 300-400 turbines per day. It would not be a constant 2 hours – the turbines would be turned on and off. There would be windfarm personnel observing, possibly one-on-one, possibly one observing 200 turbines for potential fatalities. There would need to be wind for a cut-in speed. The goal is to test and fix turbines so they are ready to go in March when they would be restarted. SRC members said the risk is much less than having all of the turbines going for those two months. The relative risk would increase in February. However, it is difficult for the SRC to say what would be the effect, because birds habituate to non-operating turbines. SRC members suggested that there be an effort to synchronize searches with turbine operations to examine if the operations have an effect on mortality. Brian Karas of the Monitoring Team said the Team has a lot of information on how birds fly in various types of wind and temperatures that could potentially help with the operations. When deciding a seasonal shutdown strategy, they would want to look at seasonality and operations and use. Two species have a lot of mortality in winter.

Sandra Rivera of Alameda County clarified that the county has made the assumption that the hazardous ratings have replaced the **older tier classifications**. During SRC visits to the turbines, she heard discussion that the configuration of turbines has changed since those classifications were made.

Operating Hours Data

Emre Ergas of FPLE said as soon as monitoring data are made available to the public, the Monitoring Team can get operating data from the company. Some SRC members responded that this condition on the power output data is new and the SRC was unaware of it. Some SRC members expressed frustration, saying that the power output data have been requested for nearly two years, and the companies would benefit from the SRC's and monitoring team's use of these data. The SRC and the Monitoring Team have agreed that the power output data will be critical for the seasonal shutdown study. SRC members were concerned that data not be made public until the Monitoring Team is satisfied that all problems and errors have been corrected.

Updates from Alameda County and Other Announcements

Meeting Summaries

Facilitator Gina Bartlett asked for SRC input on a proposal to post audio tapes of SRC meetings on the website and produce less detailed meeting summaries to save time and speed the production of the summaries. Currently, SRC members review and provide comments on meeting summaries, and it can take multiple months to finalize a summary.

SRC members responded that they like the idea of a written historical record, and reviewing and clarifying the summaries helps them with their thought process.

Public Comments and Questions

Jay Houghton of AWI asked if SRC review of meeting summaries posed a problem with the Brown Act as far as serial meetings to reach a consensus. He asked that the audio files be posted on the website. Sandra Rivera said meeting summaries are considered administrative and the practice had been cleared through the County Council's Office.

Joan Stewart of FPLE said it could be months later before the public sees the meeting summaries. Gina Bartlett said she is looking into setting up an SRC wiki site that would speed up the review process.

SRC Budget

Sandra Rivera said the SRC so far has cost more than expected. The County wants to establish a budget for the SRC, which would be spelled out in contracts with each SRC member. She asked for SRC input on budget assumptions, which include:

- 5 two-day all-day meetings through October 2009
- 10 two-hour conference calls
- A 10% contingency of total hours, which could cover time spent developing separate analyses and reports

After discussion and input from the SRC, the budget was modified to include meeting preparation time and meeting summary review:

- 7 hours total for each conference call meeting
- 25 hours total for in-person meetings

Some SRC members expressed concern that their hours might not be sufficient for their assigned tasks, including time to review documents and reports. Sandra Rivera acknowledged the challenges and said the county would take those concerns into consideration.

Next Steps on SRC Budget

- The County will send out a memo with contract templates to the SRC members
- SRC members will modify and submit
- The County will confirm if the contract includes this meeting as one of the 5 in-person meetings

Environmental Impact Report

Sandra Rivera said that an EIR is required for one of the permits, and an EIS is required for the HCP, so preparation for the EIR is being delayed as the County considers whether and how the two documents can be combined.

Monitoring Team Attendance at SRC Meetings

Some SRC members asked for consistent presence of Monitoring Team members at SRC meetings, as only one member was present the second day. Sandra Rivera said she had allowed other Team members the second day to work on the scope offsite.

Scavenger Removal and Searcher Detection (Data Quality Assurance/Quality Control) Study

Background

At its April meeting, the SRC asked the Monitoring Team to develop a study design and scope to conduct independent carcass searches at a certain number of the monitored turbine sites to improve the accuracy of adjustment factors for searcher detection error and scavenger removal.

SRC and Monitoring Team Discussion

Jesse Schwartz of the Monitoring Team presented the study design and scope of the study, [P98 Data Quality Assurance and Control Methods Review](#) with budget, 7/7/08.

Points raised during the discussion include:

- Should the study use proxy species to also represent the four focal species? Different species could have different predation patterns and differing visibility. However the advantage of using proxies is that it increases the expected counts of fatalities per turbine, which leads to fewer numbers of turbines required to achieve a statistical precision. The SRC considered 500 turbines in the sample size with proxies (other species of similar size substituting for target raptors) or 800 turbines in the sample with no proxies for raptors.
- Depending on the outcome of the study, the new adjustment factors may be able to be applied retroactively in place of the previous adjustment factors

- There is a tension between obtaining reliable results from the study and cost factors. A higher confidence interval ensures that the data will have greater reliability, but requires a larger sample size that increases the cost of the study. To be consistent with scientific standards (generally 95% confidence) and because of criticism of methods in the past, SRC members feel more comfortable with at least a 90% confidence interval, with the study maximizing effort in the first six months.

Public Comments and Questions

A member of the audience asked why Julie Yee said we have 0% confidence in the current approach. Julie Yee said that Bill Warren Hicks, a consultant for FPLE, has said he will not accept the current approach to scavenger removal and searcher efficiency, arguing that the two factors confound each other.

Emre Ergas of FPLE asked if the study would provide a marginal benefit given the cost, given that the current approach has been published in several papers. One SRC member responded that the nature of science is building on what was done before. It's important to have confidence that the answer is right.

Bill Barnes of AES asked if searches could be done once a month rather than three times over two months.

In response to a question, SRC members said any new fatalities found would be kept separate from the regular monitoring search data in order to keep the monitoring data clean.

SRC Recommendation on QAQC Study

The Scientific Review Committee recommends that Alameda County conduct a Data Quality Assurance/Quality Control Study to improve the estimates for scavenging and searching efficiency in calculating avian mortality in the APWRA Monitoring Program. The current analytical practice of using these correction factors in the science of avian mortality could be biasing mortality either high or low. The study would add searches by a second team of avian carcasses on a portion of Monitoring Program turbines.

The QAQC study will move forward with the following parameters:

- To start in October 2008 and run for one year.
- Designed with a 90% confidence level
- $\pm 15\%$ margin of error
- There would be no proxies
- To include all bird species
- The study would be revisited after 6 months to determine feasibility of reducing the sample size
- Searches would occur at an average rate of once a month.

Next Steps on QAQC Study

- Monitoring Team will revise proposal and scope, including cost savings from existing scavenger trials

- Monitoring Team will modify the sample size, based on the discussion
- Monitoring Team will consider modifying housing costs, and reducing searches from a three times per two months to a two times per two-month cycle.
- Monitoring Team will submit proposal and scope to County on July 11
- The SRC recommendation on the QAQC study will be drawn from the Meeting Outcomes document

Finalize Burrowing Owl Study Design

Background

The SRC is drafting a design for a burrowing owl study it will recommend to Alameda County. The aim of the study would be to gather information on factors that may be causing a reported high number of burrowing owl fatalities and help craft measures to achieve the 50% mortality reduction goal for this species.

Presentation of Thermal Imaging Video

In May, the Monitoring Team tested the efficacy of thermal imaging equipment as a tool to learn about burrowing owl behavior and predation during dusk and nighttime hours. The question was whether the cameras would enable observers to locate and track moving birds. Brian Latta and Brian Karas of the Monitoring Team, Sue Orloff and Shawn Smallwood of the SRC and Renee Culver of FPLE were present during the testing. Meeting participants watched excerpts of the thermal videos.

Discussion of Telemetry

Shawn Smallwood and Jim Estep said they had looked into telemetry and determined that there would likely be insufficient precision in terms of bird locations relative to wind turbines. It would also require three field staff to triangulate locations, which would be costly. SRC members decided they were not in favor of using this technology.

Burrowing Owl Study Plan Revisions

To begin discussion, SRC members re-articulated the purpose of the study. Burrowing owl mortality estimates are quite high, leading SRC and Monitoring Team members to question if there are other causes of mortality aside from turbine-related collision, such as predation, and whether there is a bias in the scavenger removal adjustment term. Two of the key questions are, how are burrowing owls being killed, and what is the abundance of the species in the Altamont, i.e., is abundance affecting fatality numbers?

Julie Yee discussed adaptive sampling, and recommended that this approach be used in the abundance study. Rather than a simple random sample, when one plot with burrowing owls is found, researchers would then sample around that plot. It is not possible to predict sample size with this method based on currently available data.

Jim Estep gave an overview of the latest version of the study design, [P90_SRC Burrowing Owl Study Plan](#). He said he would like to add a background mortality study specific to burrowing owls. It would be relatively inexpensive and could provide data

on non-turbine-related burrowing owl mortality that could be used to adjust the mortality estimates for this species.

Julie Yee discussed her sample and plot size determination, [P94 Yee Burrowing Owl Study Design Sample and Plot Size](#), 5/22/08. SRC members discussed the benefits of using smaller plots, which would require less area sampled, versus fewer larger plots, which would reduce travel time. They agreed on a decision rule to focus on subwatersheds, which could be combined with adjacent subwatersheds if too small.

As for frequency, SRC members decided to eliminate fall counts from the study design for cost reasons, but to maintain spring counts during the breeding season, and winter counts, when there are large numbers of fatalities.

SRC members reviewed the budget developed by the Monitoring Team for the thermal imaging portion of the burrowing owl study (M28_Use of Thermal Imaging Camera, 7/8/08). It was suggested that the Burrowing Owl Study Design budget be divided into separate components, including the thermal imaging study and population size study, so one portion of the study could go ahead without others.

Public Comments and Questions

Joan Stewart of FPLE asked, given the unknowns about winter populations and their locations, how the report would describe what has been missed (i.e. owls that remain underground). She is concerned a question will remain about high mortality and low population, if winter populations are not found. SRC members said that something is missed in every study.

Jack Barclay drew a diagram of a conceptual model of burrowing owl numbers, depicting changes in adult, juvenile and migrant populations over the course of the year, based on his 18-year observation of a burrowing owl colony outside the Altamont, and two years of observations in the Altamont.

Janice Gan of DFG suggested the survey protocol be adjusted for season, and dusk surveys be incorporated to maximize counts in winter.

Audience members asked what questions the study would try to answer, and, given its cost, whether it would get at those answers. Wouldn't the QAQC study provide answers? SRC members said the QAQC study would not answer how the birds are dying, and whether the high numbers of fatalities are related to abundance.

Sandra Rivera said the idea of compartmentalizing the Burrowing Owl Study Design budget is a good way to tackle the issue. The SRC is tasked with listening to everyone, but making decisions as a group based on the best science. Budgetary considerations will come in later as SRC recommendations are reviewed.

It was suggested that the feasibility of sites be determined before the cameras are rented.

SRC Recommendation Burrowing Owl Study: Thermal Imaging

The SRC agreed that the thermal imaging study would focus on burrowing owl behavior relative to turbines, and what predators are doing. It would incorporate an adaptive sampling search method and corresponding statistics. Specifics of the study:

- Study time to occur in winter, between Thanksgiving and January
- Simultaneously observe one site with towers and a comparable site without towers
- Divide ridgelines into 3 elevation areas: high, mid and low
- Observe each of the 3 areas for 2 hours, for a total of 6 hours
- Before the 6 hours of nighttime viewing, 1 hour of binocular viewing before dark, for a total of 7 hours of viewing
- Select areas of high burrowing owl density, with a variety of turbine types (lattice and tubular)
- Conduct viewing for 20 nights (a total of 40 sites)
- Study would encompass 4 pairs or replicates, each viewed 5 times
- Randomly select the 3 elevation areas, for viewing in random order, each night
- View on side of the slope with prevailing wind
- Measure wind speed
- Use a thermally contrasting marker – pin flag or plastic bag – to mark distance
- When fatality searches occur on these plots, they should include all segments

Next Steps on Burrowing Owl Study

- Jim Estep will revise P90 based on the basis of the discussion and recommendations.

Discuss Additional Research & Study – Background Mortality

Background

At its April meeting, the SRC began discussing a study that would look at areas in the Altamont without turbines, that are like areas with turbines, and the mortality there. The purpose would be to develop an estimate of mortality in non-turbine areas to reduce the mortality estimates in the monitoring program by background mortality. For this meeting, Shawn Smallwood and Lee Neher produced maps of Altamont ridgelines without turbines, [P102 Smallwood & Neher Wind Turbine-Free Ridgelines](#), 7/7/08.

SRC Discussion of Background Mortality

Points raised during the discussion include:

- Because of the lack of data, there is little basis for a power analysis
- The study could use Monitoring Team plots for the comparison ridgelines with turbines
- The sampling should be conducted for one year
- Ridgelines without turbines would be randomly selected
- The same search interval of 30 days would be used
- The numbers would be used to develop APWRA-wide estimates

SRC members discussed how to choose a sample size, given the lack of data. It was suggested that 600 turbine sites be randomly selected. Sites without towers would be randomly selected at 25% of the sample, equal to the 600 turbine sites in size.

Public Comments and Questions

Bill Damon of AWI said some of the ridgelines without turbines shown on the map may not have land lease agreements that would allow access.

Jay Houghton of AWI asked if the scavenger removal and searcher detection rates would be the same. SRC members acknowledged that this was a good question; there would be no towers providing perches, so the habitat drawing birds or scavengers might not be the same.

Brian Karas said the roads on ridges with turbines make it easier to find fatalities.

Emre Ergas of FPLE said he favors diligence in the study.

SRC Discussion of QAQC for Background Mortality

SRC members discussed whether it would therefore be necessary to do a QAQC as part of the study. There was concern that it could be so prohibitively expensive that the study would not get done. For sites with turbines, the QAQC would be through the QAQC study. For sites without turbines, perhaps 25% or 150 sites could have QAQC.

SRC members agreed to a decision rule that plots that used to have turbines would be chosen for non-turbine sites.

It will be important to make sure the Monitoring Team is surveying valleys in the same proportion as in the non-turbine areas.

Facilitator Gina Bartlett suggested that SRC members think further about how to reach statistical significance as the proposal moves forward. The topic will be discussed again at the August conference call.

Prioritize Study Recommendations

Facilitator Gina Bartlett asked SRC members to prioritize the various studies that they are considering recommending to guide decision makers if funding is insufficient to pursue each one.

Points raised in discussion:

- Initially, SRC members expressed that all the studies are important.
- The QAQC study addresses how the whole program is running, affects all the species, and might help clarify uncertainties.
- The estimate of 1200-1400 burrowing owl fatalities a year will doom the effort to achieve a 50% reduction in mortality and raises questions about the scientific integrity of the whole project.
- A background mortality study might help to achieve the 50% reduction target.

Criteria for Prioritizing Research

SRC members identified the following factors as criteria in setting priorities:

- Accuracy of estimates – several SRC members underlined the importance of studies that would increase the accuracy of mortality estimates
- Addressing burrowing owl mortality numbers
- Background mortality
- Distinguishing cause of death from turbines from more general background mortality

Priorities of SRC

The following table lists the priorities identified by each SRC member:

Potential Study	See as Priority
Burrowing Owl	
Abundance/Distribution	Smallwood
Thermal Imaging	Yee, Burger, Smallwood, Orloff
Thermal Imaging with Background	Estep
Stable Isotope	
QAQC	Burger, Estep, Orloff, Smallwood, Yee
Background Mortality	Smallwood, Estep, Yee
Digitizing Behavior	

Public Comments and Questions

Monitoring Team Member Brian Karas said his priorities are the Background Mortality and QAQC studies.

Renee Culver of FPLE said it’s helpful with decision making when the SRC is very explicit about what the intentions of the study are, what kinds of data will be developed, how the analysis will occur and what will be learned.

SRC Meeting Summary Final Approval

The SRC reviewed, edited and approved the following meeting summary:

- [P93 SRC Meeting Summary 23-24 April 2008](#) -- approved with no changes

Compliance Reporting

Sandra Rivera confirmed that all of the turbines rated 9.5-10 have been removed except for two, as reported in the last compliance report at the April in-person meeting.

Revisit SRC Charter and Operating Agreements

The SRC reviewed its charter and agreed to minor corrections suggested at previous SRC meetings tying its work more closely to the Conditional Use Permits.

General Public Comment Period

Audience members asked about Shawn Smallwood's mortality data. Jay Houghton of AWI asked that the data provided to the public be transparent. In response, Shawn Smallwood said he is happy to share the data set he developed from the monitoring team's efforts. He already gave the monitoring team the data set he developed, which is in SPSS.

Renee Culver of FPLE asked if the public could get an individual packet of the data that went into each type of analysis. Sandra Rivera said it could be posted on the SRC site as an appendix to the report.

Future Meetings

Conference Call

- 8/14/08, 10 a.m.--12 p.m., Next Steps on Background Mortality

In-Person

- October 16-17, 2008

Documents Circulated at Meeting

[M25 Decision Tree for Cause of Death Filter](#), 7/8/08

[M26 Decision Tree for Altamont Bird Fatality Data Filtering](#), 7/8/08

[M27 Decision Tree for Back-Dating Records](#), 7/8/08

[P103 Smallwood Assessment of SRC Recommendations to Relocate Rated Turbines](#), 7/3/08

[P98 Data Quality Assurance and Control Methods Review](#) with budget, 7/7/08

[P90 SRC Burrowing Owl Study Plan](#), 7/8/08

[P94 Yee Burrowing Owl Study Design Sample and Plot Size](#), 5/22/08

M28_Use of Thermal Imaging Camera, 7/8/08

[P102 Smallwood & Neher Wind Turbine-Free Ridgelines](#), 7/7/08

P1_SRC Charter - Final: 12/05/06 w/ modifications 5-08

[P93 SRC Meeting Summary 23-24 April 2008](#), 6/26/08

P100

SRC Meeting Participants

SRC Members Days 1 & 2

Joanna Burger
Jim Estep
Sue Orloff
Shawn Smallwood
Julie Yee

Staff

Gina Bartlett, Facilitator, Days 1-2
Sandi Rivera, Alameda County, Days 1-2
Ariel Ambruster, Facilitator Assistant, Days 1-2

Monitoring Team

Brian Karas, BRC, Days 1-2
Jesse Schwartz, ICF Jones & Stokes, Day 1
Kort Clayton, ICF Jones & Stokes, Day 1
Dail Miller, ICF Jones & Stokes, Day 1

Others

(Meeting Sign-in is optional)

Bill Barnes, AES Wind Generation
Jack Barclay, Albion Environmental
Renee Culver, FPLE and AIC
Bill Damon, AWI
Emre Ergas, FPLE
Kathryn Gaffney, ICF Jones & Stokes
Janice Gan, DFG
Jay Houghton, AWI
Danielle Le Fer, ICF Jones & Stokes
Nanette Leuschel, Ralph Prop II
Elizabeth Murdoch, Golden Gate Audubon
John Opris, enXco
Joan Stewart, FPLE and AIC
David Zippin, ICF Jones & Stokes

Appendix: List of SRC Agreements Developed July 8 & 9

(Compiled from this document)

SRC Recommendation on QAQC Study

The Scientific Review Committee recommends that Alameda County conduct a Data Quality Assurance/Quality Control Study to improve the estimates for scavenging and searching efficiency in calculating avian mortality in the APWRA Monitoring Program. The current analytical practice of using these correction factors in the science of avian mortality could be biasing mortality either high or low. The study would add searches by a second team of avian carcasses on a portion of Monitoring Program turbines.

The QAQC study will move forward with the following parameters:

- To start in October 2008 and run for one year.
- Designed with a 90% confidence level
- $\pm 15\%$ margin of error
- There would be no proxies
- To include all bird species
- The study would be revisited after 6 months to determine feasibility of reducing the sample size
- Searches would occur at an average rate of once a month.

SRC Recommendation Burrowing Owl Study: Thermal Imaging

The SRC agreed that the thermal imaging study would focus on burrowing owl behavior relative to turbines, and what predators are doing. It would incorporate an adaptive sampling search method and corresponding statistics. Specifics of the study:

- Study time to occur in winter, between Thanksgiving and January
- Simultaneously observe one site with towers and a comparable site without a towers
- Divide ridgelines into 3 elevation areas: high, mid and low
- Observe each of the 3 areas for 2 hours, for a total of 6 hours
- Before the 6 hours of nighttime viewing, 1 hour of binocular viewing before dark, for a total of 7 hours of viewing
- Select areas of high burrowing owl density, with a variety of turbine types (lattice and tubular)
- Conduct viewing for 20 nights (a total of 40 sites)
- Study would encompass 4 pairs or replicates, each viewed 5 times
- Randomly select the 3 elevation areas, for viewing in random order, each night
- View on side of the slope with prevailing wind
- Measure wind speed
- Use a thermally contrasting marker – pin flag or plastic bag – to mark distance
- When fatality searches occur on these plots, they should include all segments