

Meeting Summary | April 23-24, 2008

Altamont Scientific Review Committee

Developed by the Center for Collaborative Policy

Reviewed and Approved by the SRC 7/2/2008

Key Outcomes

Burrowing Owl Study Design Refined

The Scientific Review Committee refined its draft proposal for an Altamont Pass Wind Resource Area burrowing owl study (P90 SRC Burrowing Owl Study Plan), beginning with a pilot study. The SRC will determine how sampling will occur to measure abundance and, as part of the pilot, test thermal imaging camera equipment for the behavioral and predation study elements. The SRC will finalize the proposal at its May meeting after conducting the thermal imaging test and analyses to determine sample size. The aim of the burrowing owl 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.

Avian Monitoring Program: Scavenger and Searcher Detection Rate

The Monitoring Team will develop a study design and scope to conduct independent searches for carcasses at monitoring sites to improve the accuracy of adjustment factors for searcher detection error and scavenger removal of carcasses. At the previous SRC meetings, the SRC and the public discussed concerns about whether the existing adjustment factors might be leading to unrealistically high mortality estimates for some species, such as burrowing owls. Along with achieving a more refined estimate of Altamont avian mortality, the study has the potential to make a significant contribution to wind turbine/avian analysis outside the Altamont.

Bat Mortality

The SRC reviewed recent literature on bat mortality at wind energy facilities and had an initial discussion on bat mortality factors at the APWRA. Given a potential for possible bat mortality increases with repowering, the SRC identified a number of bat behavior, abundance and mortality questions the upcoming EIR could address if it considers repowering.

Action Items & Meeting Follow-Up

Party	Due Date	Action
Julie Yee	5/28	Provide references of adaptive sampling research
Jim Estep		Revise burrowing owl study design (P90)
Shawn Smallwood	done	EB parks permission: burrowing owl nesting location data (found by scientific study) – <i>permission granted</i>
Julie Yee	5/20	Discuss spatial variability with Lee Neher – examine variation of nest burrow counts to determine the size and number of plots
MT	5/18	ID known & unknown burrowing owl population areas (with EB parks & Karas data -- opportunistic burrowing owl/burrow locations)

Party	Due Date	Action
Alameda County & MT		Arrange for rental of thermal imaging device
MT	By 5/28	Conduct burrowing owl thermal imaging pilot/pre-study (Available SRC members to participate). SRC members are interested in field of view
Smallwood Estep	By 5/28	Explore mechanics & costs of telemetry for burrowing owl study
Shawn Smallwood		Refine abundance report (P88) to differentiate yearly from monthly variation (P88 Smallwood: Relative Abundance of Birds Offsite).
MT		Include decision-making trees in Monitoring Report (with #s)
MT		Develop study design & scope for Scavenger/Searcher Detection Study with Special Team, ongoing, QAQC, Cormack-Jolly-Seber approach
Alameda County MT		Discuss scope to develop power analysis for Scavenger/Searcher Detection Study, working with Julie Yee
MT		Include Scavenger/Searcher Detection Study separately in new scope of work
Alameda County		Follow-up on release of operating hours
MT	5/10	Monitoring Report released
MT	June-July	Final Monitoring Report
MT	July	Seasonal shutdown analysis
MT	July	American Kestrel Burrowing Owl Report
Facilitator		Add dates at top of all documents, to improve clarity for the public
Facilitator		Add dates of documents mentioned in meeting summaries
Facilitator		In P100, add most current document date after link
Facilitator		In P100, add links to R documents or add directions to webpage

Meeting Account

Housekeeping

Sandra Rivera of Alameda County reported on payments to SRC members for expenses and services. SRC members have not been paid for work done in 2008, nor have they been reimbursed on expenses. Rivera anticipates any outstanding payments will be paid by the next meeting in May.

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 by Jack Barclay

Jack Barclay of Albion Environmental discussed his census of burrowing owls on two properties in the Altamont in 2006 and 2007. His abstract will be posted on the SRC website. His study estimated minimum nesting success of 75% in 2006 and 51% in 2007 and minimum productivity of 3.59 young/pair in 2006 and 1.78 young/pair in 2007. Both areas and years combined yielded an average density of 5.4 pairs/km², which he suggests means that several hundred pairs of burrowing owls could be nesting in the 165 km² APWRA. Most observations were in March and April.

Among the issues noted in response to SRC and audience questions:

- Because Altamont burrowing owls are not habituated to humans on foot, searchers remained in vehicles and observed from roads. In his experience, when somebody exited a vehicle, the owls would retreat or flush.
- Night vision equipment was not an effective tool to search for burrowing owls.
- Barclay was unable to comment on the effects of turbines on the species.
- Owl activity level increases at dusk and at night so owls are more difficult to detect because they are foraging away from nests.
- SRC members pointed out that burrowing owl density from the study may not be applicable to the entire APWRA and calculating an estimated number of breeding pairs from a small geographic area without analyzing topographic, distributional patterns, and other factors could potentially result in an overestimate of the population.

Burrowing Owl Study Design Discussion

Jim Estep gave an overview of the study design, [P90_SRC_Burrowing_Owl_Study_Plan](#).

The facilitator then asked members of the audience if they'd like to raise questions for the SRC to ponder in its discussion.

Public Questions

Jim Hopper of AES asked what information is available from existing studies, rather than redoing a field study.

Stan Moore of Fairfax Raptor Research said migratory versus local populations hasn't yet been addressed in the study.

Renee Culver of FPLE raised the following questions:

- How would the Altamont be characterized?
- Will estimations of low, medium and high densities be checked before fieldwork?
- What will looking at breeding populations in March through August actually produce?
- How would observers affect the behavior of predators?
- How could searchers get whole carcasses?

Discussion by SRC

Distribution and Abundance

The following points were raised:

- The Monitoring Team has 109 feather samples that could undergo stable isotope analysis to determine natal origin (i.e. from where the birds originated)
- The distribution and abundance study should be expanded to include migrating winter populations
- Julie Yee will look into adaptive sampling techniques
- Animal populations can be spatially dynamic, so may not be in the exact same place from one time period to another. Location shifts can be caused by parasite or predator loads, changes in prey availability or anticipated changes in prey availability, natural senescence of natal populations while emigrating young form new centers of activity, or a combination of these factors. Populations may have been affected by intense rodent control efforts in 1997-2002.
- Owls are more abundant in the eastern part of Altamont.
- Searches could be done first by vehicle and then by foot. Foot searches could identify burrow locations not visible from roadways.

Behavioral Study

The following points were raised:

- The key question is whether the owls are going to the turbines, and if so, why?
- It makes sense to combine the predation and behavior studies with two observers looking at the same site.

Predation Study

The following point was raised:

- There could be a ground study after thermal imaging to look for carcasses

Public Comments and Questions

Renee Culver of FPLE said observers and thermal imaging could alter behavior of skittish predators and birds. Brian Latta said vehicles could be used as blinds since predators and birds are accustomed to vehicles in the Altamont.

Jack Barclay said there is a lot of predation on burrowing owls, but the question is whether turbines are facilitating predation.

SRC Agreement on Burrowing Owl Study Design

The SRC agreed to two phases of research, beginning with a pilot study. The SRC agreed to:

Distribution & Abundance

- Expand the proposed study to include migrating winter populations
- For sampling, divide the APWRA into at least 4 geographic subsets, and then identify two areas in each subset, one representing areas with known burrowing owl presence and the second lacking information on burrowing owl presence. Random sampling would occur in each of the two areas within each geographic subset.

- Consider a margin of error of $\pm 10\%$ or $\pm 20\%$.
- Stable isotope analysis might be part of the study.

Behavior & Predation

- Have the Monitoring Team test a rented thermal imaging camera for use in night observation as part of the pilot study
- Configure the study to include two-observer teams viewing burrowing owl behavior and predators for four hours, starting two hours before sunset and extending two hours after sunset– it could be from one location, or the two observers could triangulate
- Focus on the peak mortality periods of July and January
- Use thermal imaging, if proven feasible during the pilot, to study owl behavior on ridges with and without turbines.
- Explore the possibility of telemetry to watch movement.
- SRC members prefer recording the thermal imaging data rather than using field notes so the entire SRC can look at it later.

The SRC will finalize the proposal at its May meeting after the thermal imaging test is conducted and analyses have been completed to determine sample sizes.

Next Steps

- Julie Yee will research adaptive sampling.
- Jim Estep will revise the burrowing owl study design using the comments.
- Shawn Smallwood will seek permission from the East Bay Regional Park District to use burrowing owl nesting location study data.
- Julie Yee and Lee Neher will discuss spatial variation of nests to determine the number and size of plots.
- The Monitoring Team will use East Bay Parks and its own data to identify areas of the Altamont with known burrowing owl populations, as opposed to areas with no information on burrowing owls.
- Alameda County and the Monitoring Team will arrange for rental of a thermal imaging device as part of the pilot study.
- The Monitoring Team will conduct the burrowing owl thermal imaging pilot/pre-study and report on the results in May. SRC members are interested in the camera's field of view and whether it will enable the observers to track moving birds.
- Shawn Smallwood and Jim Estep will explore the mechanics and costs of telemetry and report back in May.

Bats: Literature Review & Initial Conversation

The SRC reviewed recent literature on bat mortality at wind energy facilities and had an initial discussion on bat mortality factors at the APWRA.

Issues raised in the literature discussion:

- Most of the studies are about new generation turbines while most Altamont turbines are old.

- Shawn Smallwood and the Monitoring Team reported they have not found as many bats as reported in the studies, which are mostly from the East Coast.
- More bats were found at Diablo Winds, raising the possibility that bat problems could arise after repowering. SRC document P76 discusses this.
- The literature showed no association between bat fatalities and lit turbines.

Public Comments and Questions

Joe Szewczak of Humboldt State University provided information on his bat studies. He said 70-80% of bats are scavenged by the second day. Flight heights depend on activity, foraging versus migrating. Foraging bats are typically from ground-level to above-canopy. Tree roosters are seasonal migrants and not much is known about them. The purpose of preconstruction monitoring is to identify routes. One study showed that increasing the startup speed of turbines to 5 mps decreased bat mortality by 90%. One hypothesis is that turbine towers fit bats' search image; they seek a tall snag protruding above the horizon. Bats tend to venture higher with lighter winds and fly closer to the ground if winds are high. He said that California Bat Working Group had published some monitoring protocols for wind projects.

Brian Latta said the Monitoring Team has found 13 dead bats since July 2005.

John Moorman of enXco asked if echolocation helps bats identify turbines. Joe Szewczak said that it doesn't because the turbines are moving at unnatural speeds. This is also why bats are typically hit by cars.

Janice Gan of DFG raised the issue of a possible change in pressure behind turbines that affects the bats.

John Moorman said that the older turbines have a cut-in speed of 4-7 mps.

Joe Szewczak recommended that the SRC: (1) Do carcass surveys and consider adjusting the protocol to work for both birds and bats and (2) Conduct radar surveying

Bill Damon of AWI said bats are not part of the monitoring program focus. He can understand how it might be a consideration for the repowering EIR.

Joan Stewart of FPLE said she would like to have the SRC and Monitoring Team focus on what has already begun because so much is already underway.

SRC Discussion

Joanna Burger said the SRC is tasked to consider birds and has limited financing. The burrowing owl and American kestrel problems are huge and must be the first priority.

Shawn Smallwood said he has been recommending repowering since 2004 and doesn't want to recommend it if it could introduce a large amount of bat kills. He'd like to know what the potential magnitude of mortality might be due to repowering.

Sandra Rivera said bats are not on the Settlement Agreement list. This species, however, would be considered as part of the EIR.

One SRC member thought that the Conditional Use Permit tasks the SRC with identifying impacts to wildlife.

SRC members agreed that there is a potential for a relationship between bat mortality and repowering, and the issue should be evaluated in the EIR.

The SRC's role is to provide input and a technical evaluation of the scope of work for the EIR consultant, and that EIR-related task will take place at a later meeting. (An additional SRC role is to make recommendations for an EIR-related Mitigation Program).

SRC Identification of Bat Issues for Environmental Impact Report

Given a potential for possible bat mortality increases with repowering, the SRC identified a number of bat behavior, abundance and mortality questions the upcoming EIR should address if it considers repowering. SRC members made the caveat that they have not conducted extensive bat research so the list of questions and issues should not be viewed as exhaustive.

The SRC identified the following bat issues for potential evaluation in the EIR:

- Population density & abundance and activity levels
- Seasonal & spatial distribution (migratory or other movement patterns)
 - Flight and feeding height data
 - Distribution across APWRA
- Are towers drawing bats?
 - What aspects: towers, locations, insects/foraging
- Bat species composition
- Mitigation measures
- Scavenging rates from under turbines

Monitoring Team Data Filters

The Monitoring Team presented two documents: [M25 Decision Tree for Cause of Death Filter](#), and [M26 Decision Tree for Altamont Bird Fatality Data Filtering](#), detailing step-by-step how the Monitoring Team filters bird fatality data. The purpose of these documents is to more effectively communicate how the data are filtered and to document that a single approach will be used for all data sets, including 2004 (baseline) and Monitoring Team mortality data.

The SRC approved the approach, with the proviso that numbers be incorporated into the documents for each decision step.

Update on Monitoring Team Work Plan

The Monitoring Team reporting schedule is as follows:

- The Monitoring Report is due for an internal review on April 25
- The Report is due to the SRC on May 10
- A separate seasonal shutdown report will probably be available in July
- The American kestrel burrowing owl study report will be available in July

Power Output Data

In response to a question, Sandra Rivera of Alameda County said the County has the power output data but is not ready to release them to the monitoring team or SRC. The County Counsel's Office is reviewing a confidentiality agreement and has not responded yet. Rivera did not know when it would be ready.

The SRC and the Monitoring Team agreed not to hold up the Monitoring Report for the power output data. However, they agreed that the data would be critical for the seasonal shutdown analysis that the Team will undertake in July. The data would allow the analysis to incorporate information for certain turbines on whether those turbines were operating when an avian fatality occurred nearby.

Prioritizing Research Areas and Study Design

Scavenger Removal and Searcher Detection Study

At previous SRC meetings, the SRC and the public discussed concerns about whether the existing adjustment factors might be leading to unrealistically high mortality estimates for some species, such as burrowing owls. Finding feather piles is easier than carcasses, and burrowing owls are usually found as feather piles. Because scavenger removal trials have used only carcasses, this disparity between the trials that were performed and what searchers actually find during routine fatality searches may have inflated mortality estimates for this species. One way to refine the scavenger removal and searcher detection rates for all species would be to vary the current procedure by having a second searcher trace the path of monitors searching for avian fatalities. One advantage would be that this approach would be real world -- standard scavenger removal trials involve the placement of whole carcasses, which are not always found under turbines.

The SRC proposal would be for a dedicated 1-2 person team doing surveys every 1-2 weeks prior to or after routine fatality searches by the monitoring team. It would be done for all species. This approach would remove the need to make separate estimates of searcher detection and scavenger removal rates, combining them into one detection rate. The study has the potential to significantly contribute to the science of wind turbine/avian mortality and could be applicable to wind farms everywhere.

Public Comments and Questions

Renee Culver of FPLE said the approach would not get at persistence on plot. Monitoring Team and SRC members said the protocol would be changed for those areas.

Janice Gan of DFG asked if the SRC was trying to remove the confounding factors between the searcher detection and scavenger removal rates. SRC members said yes, they hoped this study would remove the interaction as an issue.

Stan Moore suggested monitors could watch a carcass for 10 days to observe what happens to it. The SRC assured him this has been done already.

S. Townsend suggested remote time-lapse photography could be used. An SRC member remarked that this has been done at Vasco Caves Regional Preserve, but the approach should be more widely implemented.

SRC and Monitoring Team Discussion

Jesse Schwartz said the study would serve as an independent quality assurance / quality control (QAQC) effort to monitor the efficiencies of the monitoring process and calculate the probability of detection. The second set of searchers could be distributed on a stratified or random basis to sweep a small percentage of the monitoring sites.

Other points mentioned in the discussion:

- To understand the impact this method might have on the comparison with baseline estimates, an analysis could be done of inter-annual variability during the current monitoring program. If inter-annual variation in detection rates is relatively low, then the SRC can more safely assume the rates were essentially equal during the baseline period.
- To mark feather piles, Brian Latta said the Monitoring Team could explore using a florescent dust visible to black light that has been used in ocelot studies.
- Two approaches were discussed:
 - The same turbines could be searched each week until the Monitoring Team return visit one month later;
 - Randomly selected sets of turbines could be visited at periodic intervals by the Monitoring Team.
- As for clearing carcasses after discovery, the Monitoring Team could clear, the independent searcher could clear, or there could be no clearing.
- The results could be used either mathematically or through a statistical model to determine the percentage of birds found within a particular period, or the probability that the carcass would be there at each day. The equation could be included in the scope.
- Jesse Schwartz said the work could probably be done with 1 full-time employee-equivalent (FTE). This work could replace the scavenger trials, which are not directly correlated to detection probability.
- It was suggested that it might be possible the California Energy Commission might be willing to fund the study, because it has a research element. The scope of work will be developed separately to allow for that possibility.

- It might be helpful to clip a small amount of the feathers found so searchers could determine if they have found the same bird. Otherwise, the monitoring team would rely on GPS positions and photos, and possibly fluorescent powder.

SRC Agreement on Monitoring Protocols: Data Quality Assurance/Control (Scavenger Removal and Searcher Detection Rate Study)

The Monitoring Team will develop a study design and scope to conduct independent searches for carcasses at monitoring sites to improve the accuracy of adjustment factors for searcher detection error and scavenger removal of carcasses. Along with achieving a more refined estimate of Altamont avian mortality, the study has the potential to make a significant contribution to wind turbine/avian mortality analysis outside the Altamont.

Next Steps

- The Monitoring Team will undertake a power analysis to determine the sample size.
- The work would be defined as a separate study in the Monitoring Team's new scope of work.

Abundance Data

The SRC reviewed information Jim Estep collected on regional population data ([P82 Estep: Regional Raptor Population Data Summary 3-08](#)) and Shawn Smallwood provided on Central Valley raptor abundance ([P88 Smallwood: Relative Abundance of Birds Offsite](#), 4/4/08). The SRC discussed how abundance information could be used in analyzing APWRA raptor mortality.

Issues raised included:

- Jim Estep said he hesitated to draw much of a conclusion from his collected data, except that it shows a great yearly variation in abundance for raptor populations at the Marin Headlands, Contra Costa County and the Tracy area. He sees it as general background information. Local factors can influence local abundance; for instance, some areas in Yolo County (e.g., Yolo Bypass Wildlife Area) have seen an increase in burrowing owls because of land-use changes.
- SRC members agreed that if there's an overlap in abundance trends, it would be worth mentioning in the Monitoring Report.
- Joanna Burger suggested that the P88 analysis could be refined to separate out yearly variation from monthly variation. Shawn Smallwood said he will make that refinement.

Public Comments and Questions

Jim Hopper of AES said he sees a significant increase in red-tailed hawks, looking at Table 1 in P82 and Table 2 in P88. Maybe more birds are present and there's higher mortality. He questioned if the SRC was trying to discount that observation.

Bill Damon of AWI agreed and asked why the SRC is unable to draw conclusions from the abundance data. He said the trend appeared to be increasing.

In response, SRC members agreed that the data does suggest a recent increase in red-tailed hawk abundance from the areas sampled (e.g., fall migrants from the Marin Headlands); however, they also cautioned that while having regional data is helpful, the scientists must weigh the data and look at the limits of the data. For instance, some of the data has no error calculations associated with them. The data can be helpful, but the SRC hesitates to draw too much of a conclusion from those data.

Next Steps

The issue will be discussed further in May, when the Monitoring Team presents its latest report, which will include Altamont abundance data.

Background Mortality

One SRC member said it would be helpful to identify ridgelines outside of turbine areas and examine how much mortality is found in these areas. It could help parse out the large number of fatalities defined as "unknown: possibly turbine related." Ridges within the Vasco Caves Regional Preserve could be used, along with data from other parts of the APWRA.

Areas without turbines include:

- Vasco Caves
- Site 300
- 2 sites near Gateway

One member said it will be important to consider the language of the Settlement Agreement, and whether the charge is reducing overall mortality by 50% or turbine-related mortality by 50%.

Another member suggested finding valley areas without turbines nearby, as it could potentially be confounding to consider only ridgelines. Other SRC members agreed the areas would need to be comparable to turbine-related areas.

Brian Karas of the Monitoring Team said the Team could look at the differing topography of search areas and develop a systematic approach.

Public Comments and Questions

Joan Stewart of FPLE asked how cause of death would be determined. SRC members said that while mortalities found away from turbines could be turbine-related, the background mortality study would assume these mortalities to be non-turbine-related. Joan Stewart said at the moment, everything is attributed to turbines. One SRC member responded that that is why it is important to do such a study.

Next Steps

The SRC will discuss the study idea further in May.

SRC Meeting Summary Final Approval

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

- P73 _SRC Meeting Notes 12-21-07 Conference Call -- approved with 2 changes
- P78 _SRC Meeting Summary 12-14 February 2008 -- approved with 2 changes

The finalized meeting notes and summary are posted on the SRC website.

Behavior Data

Sandra Rivera was asked about the progress of digitizing the behavior data collected during the first two years of the monitoring program. She said budget is an issue, and the County contractor is currently busy. She will continue working on this issue.

Compliance Reporting

Sandra Rivera of Alameda County reviewed with the SRC a new summary document of compliance with G1 and G2 conditions, P92_ Alameda County APWRA Compliance Reporting 4/23/2008, which includes only updated information from the previous compliance report. The document will be posted on the SRC website.

In regards to removing derelict and non-operating turbines, Rivera says there have been inconsistencies because of differences in definitions. Discussions are occurring through the mediation process and are not final yet.

Under Exhibit G2, the requirement to undertake a trial blade painting program, AWI has requested an exemption from winter shutdown because of the blade painting study. Alameda County wants the study undertaken, but has taken no position on the exemption.

SRC members expressed concern with the number of turbines and towers that they rated as hazardous which are still standing or operating, and the impact that that could have on avian mortality.

Rivera said it would be helpful to assess empty tower sites for whether they would be suitable relocation sites.

Public Comments and Questions

Joan Stewart of FPLE asked if there would be any evaluation of whether removing hazardous turbines has been effective. She is concerned about incremental removals over time.

The SRC was firm about removing turbines rated 8-10. One possibility would be, after a year, to look at mortality clusters near the risky locations of 8-10, to see if they are still mortality hotspots. Brian Karas of the Monitoring Team said that could be done.

Joan Stewart said she is using the relocation guidelines the SRC drafted. She is caught in an ongoing turbine-moving process, which is why some empty towers have been left.

Another audience member asked for the SRC's overall position on mortality, as Shawn Smallwood has said there has been no change in mortality in the last two years while Joanna Burger said that we can't know the mortality. Joanna Burger responded that Shawn Smallwood is talking about the absolute numbers of fatalities. She is talking about the mortality rate, which is a different number; it is the absolute number of fatalities divided by the known population.

Feedback on Website & Listserv

Facilitator Gina Bartlett asked participants for feedback on whether the website and listserv were meeting their needs for information about the SRC and its process. The following feedback was provided:

- Several audience members said they access website documents from P100, so would appreciate that that document and the web links be updated regularly.
- Audience members asked if dates could be placed on document titles on the website. Because of technical issues, that can't be done, but Bartlett said the date will be placed at the top of the document with its P number. In the meeting summary, the date of the document will be added.
- It was also asked that the most current date of each document be placed on P100 (the document list) after the link.
- A concern was expressed that all versions of documents are not posted on the web. Bartlett, Rivera and SRC members said there is an interest in balancing transparency with avoiding confusion. Alameda County has public copies available of every version of each document. In one case, the SRC was concerned about an initial working draft of the Monitoring Report that analyzed data without first filtering it and was concerned that this report might be misleading. In that case, the Monitoring Team and the County decided not to keep that document posted on the website. However, it continues to be available from Alameda County upon request. Two audience members expressed concern that this limited access. Bartlett will investigate ways to address these concerns.
- If members of the public have an old hard copy, and a newer version is put on the web, they may not know they have an old version. Bartlett said any postings of updated documents are now announced on the listserv.
- Consider adding information to website so visitors can easily see that a document is new.
- Consider adding links in P100 to Research Library documents, or add wording directing the reader to the appropriate webpage for viewing.
- Post old compliance reports, as these have been routinely missing from the website.

Bartlett and participants identified documents, including compliance reports that have not been posted yet on the web and agreed they will be obtained and posted.

Documents Circulated at Meeting

[P90 SRC Burrowing Owl Study Plan](#), 4/7/08

P91_Barclay Burrowing Owl Abstract

[M25 Decision Tree for Cause of Death Filter](#), 4/8/08

[M26 Decision Tree for Altamont Bird Fatality Data Filtering](#), 4/8/08
[P73 SRC Meeting Notes 12-21-07 Conference Call](#), 3/31/08
[P78 SRC Meeting Summary Feb 2008](#), 4/7/08
[P82 Estep: Regional Raptor Population Data Summary 3-08](#)
[P88 Smallwood: Relative Abundance of Birds Offsite](#), 4/4/08
P92_ Alameda County APWRA Compliance Reporting, 4/23/08
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
Brian Latta, UCSC, Days 1-2
Jesse Schwartz, Jones & Stokes, Day 1

Others

(Meeting Sign-in is optional)

Jack Barclay, Albion Environmental
Renee Culver, FPLE and AIC
Bill Damon, AWI
Janice Gan, DFG
Jim Hopper, AES Wind Generation
Jay Houghten, AWI
Nan Leuschel, Ralph Prop II
Stan Moore, Fairfax Raptor Research
John Moorman, enXco
John Opris, enXco
Joan Stewart, FPLE and AIC
J. Szewczak, Humboldt State University
S. Townsend
Steve Zikman, Pepperdine University Extern with CCP

Appendix: List of SRC Agreements Developed April 23 & 24

(Compiled from this document)

SRC Agreement on Burrowing Owl Study Design

The SRC agreed to two phases of research, beginning with a pilot study. The SRC agreed to:

Distribution & Abundance

- Expand the proposed study to include migrating winter populations
- For sampling, divide the APWRA into at least 4 geographic subsets, and then identify two areas in each subset, one representing areas with known burrowing owl populations and the second those areas lacking information on burrowing owl populations. Random sampling would occur in each of the two areas within each geographic subset.
- Consider a margin of error of $\pm 10\%$ or $\pm 20\%$.
- Stable isotope analysis will be part of the study.

Behavior & Predation

- Have the Monitoring Team test a rented thermal imaging camera for use in night observation as part of the pilot study
- Configure the study to include two-observer teams viewing burrowing owl behavior and predators for two hours, starting two hours before sunset – it could be from one location, or the two observers could triangulate
- Focus on the peak mortality periods of July and January
- Use thermal imaging, if proven feasible during the pilot, to study owl behavior on both ridges with turbines and ridges without turbines.
- Explore the possibility of telemetry to watch movement.
- SRC members prefer recording versus fieldnotes so they can look at it later

The SRC will finalize the proposal at its May meeting after the thermal imaging test is conducted and analyses have been completed to determine sample sizes.

SRC Agreement on Monitoring Protocols: Data Quality Assurance/Control (Scavenger Removal and Searcher Detection Rate Study)

The Monitoring Team will develop a study design and scope to conduct independent searches for carcasses at monitoring sites to improve the accuracy of adjustment factors for searcher detection error and scavenger removal of carcasses. Along with achieving a more refined estimate of Altamont avian mortality, the study has the potential to make a significant contribution to wind turbine/avian analysis outside the Altamont.