

## **DRAFT Meeting Summary | June 6-7, 2011**

### **Altamont Scientific Review Committee**

Developed by the Center for Collaborative Policy  
Reviewed but not yet approved by the SRC

#### **All SRC Members Present:**

**Joanna Burger**

**Jim Estep**

**Sue Orloff**

**Julie Yee**

**(One seat vacant)**

## **Key Outcomes**

### **1. Draft Monitoring Report Incorporating 2009-10 Data (M73)**

The SRC reviewed the draft report and provided input for a final document. SRC members complimented the report as well done, but asked for several changes and some corrections. The SRC supported a Monitoring Team recommendation that data in the final report be analyzed by operating group, and reaffirmed its previous requests for incorporation and analysis of bird use data to provide information on annual population variability and context for 2006 data. Comments from the SRC and the public are due by close of business June 21, 2011 for the Monitoring Team to incorporate into a final report.

### **2. Hazardous Turbine Review**

The SRC developed a method to begin examination of the effectiveness of its Hazardous Turbine rankings. The SRC recommended that the County ask companies to provide up-to-date data on which turbines were removed due to attrition versus hazardous ranking: How many turbines, and their rankings, in each of two periods removed. The SRC will consider a subcommittee field visit next year to review turbines ranked 8.0 and scheduled for removal, to assess the risk of removal.

### **3. QAQC Study**

The SRC recognized the difficulty of making recommendations at this time about changes either to the methodology or field data collection of the QAQC Study, prior to a review of the QAQC Study. The Monitoring Team will produce the QAQC report by mid-July. SRC simulation development will continue based on discussion at the meeting. The issue will be considered at the next in-person meeting on July 21-22.

### **4. Other Studies**

An SRC subcommittee will develop a work plan and data sheets for a pilot burrowing owl behavioral study to occur in summer 2011. The Monitoring Team will select locations and observation points and confirm the proposal is within budget. One FTE is

available for the study. The SRC subcommittee and Monitoring Team will be in communication to coordinate development of the work plan and resource availability.

## Action Items & Meeting Follow-Up

Party	Due Date	Action
SRC	10 AM-Noon July 5	<b>Next Conference Call Meeting</b>
SRC	July 21-22	<b>In-Person Meeting (1.5 days)</b>
Monitoring Team	July 8	<b>QAQC Study report released</b>
SRC & public	COB June 21	<b>Comments due on draft bird fatality study (M73)</b>
CCP	June 10	Circulate to SRC M53, M61 and literature cited by Jesse Schwartz in development of QAQC study
Julie Yee		Continue honing QAQC simulations and communicating with the Monitoring Team on this
Monitoring Team	Immediately	Make effort to accomplish pre- and post-surveys in QAQC study
Sue Orloff & Jim Estep	Before July 1	In collaboration with Monitoring Team, develop work plan and data sheets for burrowing owl pilot behavior study. In designing, consider how study can be optimized to inform repowering.
Monitoring Team	Before July 1	In collaboration with SRC subcommittee, develop observation sites for burrowing owl pilot behavior study; confirm pilot study is within budget
SRC		Take ethics training
Alameda County		Ask Shawn Smallwood for bird use data
Monitoring Team	Mid-July (after completion of QAQC report)	Release final 05-09 bird fatality study
Monitoring Team		Correct/adjust the following tables in the draft monitoring report: <ul style="list-style-type: none"> <li>• Please renumber to M73</li> <li>• Figure 1-2: Make origin zero</li> <li>• Text discussing standard deviation as one half (3.4-3.5)</li> <li>• Make sure report describes how standard deviation is derived</li> <li>• Tables 3-3 &amp; 3-6: correct focal species being double counted</li> <li>• Figure 3-4: Correct track changes error that causes red tail hawk to differ significantly from adjusted and unadjusted, last row of numbers is not correct,</li> <li>• Table 3-9: correct estimation of Diablo Winds expansion is off by 10%</li> <li>• Figure 3-4 to 3-5: scale of standard deviation should be commensurate with expansion factor -</li> </ul>

Party	Due Date	Action
		<p>Excel issue.</p> <ul style="list-style-type: none"> <li>• Table 1-1: Micons are 65, not 60</li> <li>• Appendix A: Vestas are 95, not 65</li> <li>• Last photo is Polenko, not Howden</li> </ul>
Monitoring Team		<p>For the draft monitoring report:</p> <ul style="list-style-type: none"> <li>• Incorporate an executive summary.</li> <li>• In the Methods section, add a narrative on filters and provide one summary table indicating the different steps of the filtering process. Move tables 2-3 to 2-8 to the Results section. For Table 2-3, define "other" and show raptors versus non-raptors.</li> <li>• Make sure tables and figures clearly describe whether a calendar year or bird year metric is being used (figures 1-2, 3-2)</li> <li>• Create a Figure 3-2b with each bird year represented as a separate line so the effect of 2006 can be separated out.</li> <li>• Explore and incorporate, if robust, 3-season winter shutdown analysis developed at June 6-7 meeting. Analysis was described as a series of tables on small and large raptor fatalities for all bird years, including only those fatalities with known dates of death and divided into a winter, summer and pre-/post-winter period, compared to Diablo Winds data, to help inform evaluation of the effectiveness of seasonal shutdown.</li> <li>• Eliminate Figure 3-8, as it does not communicate very much and would need to be plotted on a logarithmic scale to have comparable slopes.</li> <li>• Include a timeline graph showing when different management measures were implemented.</li> <li>• In the Conclusions section, the SRC recommended the following language changes: <ul style="list-style-type: none"> <li>• Item 2: change language to "no obvious evidence" or "no immediate evidence."</li> <li>• Item 3: remove the first "substantial" and "if not significantly."</li> </ul> </li> <li>• Design the report to be understandable if printed in black-and-white.</li> </ul>
Sue Orloff		Conduct weather analysis of 2006 bird year
Alameda County	ASAP	Ask wind companies for data on which turbines were removed because of hazardous ranking, vs. those removed through attrition

*[Table of Contents to be added]*

## Meeting Account

### Announcements & Updates

Sandra Rivera of Alameda County gave the following updates:

- Alameda County has not yet received a recommendation from environmental organizations to fill the seat vacated by Shawn Smallwood earlier this year.
- The Adaptive Management Plan was approved by the East County Board of Zoning Adjustments as proposed by Alameda County.
- SRC members who haven't yet done so need to complete their ethics training and submit the recertification to the County.
- In regards to the NCCP/HCP, work has been slow because of the resource agencies, with less participation by USFWS. The Conservation Plan schedule doesn't meet the needs of the Attorney General's Settlement Agreement. The County and the resource agencies have been exploring possible options; resource agencies say they could support an individual permitting process versus the HCP process. Companies are looking at whether they could get a Biological Opinion. So, the County will move quickly on the CUP EIR, and will be returning to the SRC on how it will be involved.

### Draft 05-10 Fatality Monitoring Report Presentation

#### Related Documents

[M73 2005-10 Draft Monitoring Report](#)

[M78 Monitoring Report June 2011 Presentation Slides](#)

[M79 Karas 2011 Seasonal Shutdown Review](#)

[M21 Monitoring Report](#)

[M55 New Baseline Memo](#)

#### Presentation on Draft Monitoring Report Incorporating 2009-10 Data (M73)

Doug Leslie of the Monitoring Team gave a PowerPoint presentation (see M78\_Monitoring Report June 2011 Presentation Slides) on the latest draft Monitoring Report, an update which incorporates data from the 2009-10 bird year into data from previous years 2005-2009 (bird years run from October to September). He apologized for the lateness of this document, which was distributed June 2. In this report, he said, the Monitoring Team, rather than analyzing by operating groups made up of particular types of turbines, used the "Smallwood method" of analyzing fatalities by strings divided by installed capacity. With the addition of the 2009-10 bird year data, an analysis of fatality trends by a three-year rolling average, as shown in Table 3-6 and Figure 3-6, shows an obvious decline for three of the four focal species, but not for American kestrels. The average annual fatalities of the four focal species combined have declined 16%. However, there are large variances. Also, both of the first two three-year averages contain data for the 2006 bird year, which had large numbers of fatalities.

#### SRC Comments

SRC Members made the following comments:

- The overall analytical method used, described by the Monitoring Team as the Smallwood method, might be different from that recommended by Smallwood, as it included an averaging of string mortality rates.
- The report is well done and an improvement over the last report.
- Because of the anomaly of the 2006 bird year, one might conclude that there has been a decline in fatalities. This is why it is important to contextualize with bird use information or data. Also, the text should include more discussion of the 2006 data issue (high mortality) and how it affected the results.

### **SRC Recommendations on the draft Monitoring Report incorporating 2009-10 data:**

SRC members asked for the following changes or clarifications:

- Incorporate an executive summary.
- In the Methods section, add a narrative on filters and provide one summary table indicating the different steps of the filtering process. Move tables 2-3 to 2-8 to the Results section. For Table 2-3, define "other" and show raptors versus non-raptors.
- Make sure tables and figures clearly describe whether a calendar year or bird year metric is being used. Include a clear description of bird year (for example, does "2009 bird year" mean Oct 2009-Sep 2010, or Oct 2008-Sep 2009?).
- Create a Figure 3-2b with each bird year represented as a separate line so the effect of 2006 can be separated out.
- Further analysis should be done on 2008-09 bird year fatalities to examine the effect of winter shutdown to help inform an SRC recommendation on the effectiveness of this management measure. The analysis should be done for the four focal species separately.
- The SRC recommended eliminating Figure 3-8, as it does not communicate very much and would need to be plotted on a logarithmic scale to have comparable slopes.
- Include a timeline graph showing when different management measures were implemented and to what degree (a hand-drawn example was provided to the Monitoring Team).
- In the Conclusions section, the SRC recommended the following language changes:
  - Item 2: change language to "no obvious evidence" or "no immediate evidence" or equivalent language.
  - Item 3: remove the first "substantial" and "if not significantly."
- Design the report to be understandable if printed in black-and-white (e.g. all figures should be readable in black and white, with symbols used rather than color).
- Winter shutdown analysis: Develop a series of tables on small and large raptor fatalities for all bird years, including only those fatalities with known dates of death and divided into a winter, summer and pre-/post-winter period, compared to Diablo Winds data, to help inform evaluation of the effectiveness of seasonal shutdown. This approach will be explored by the Monitoring Team and incorporated into the final report.

SRC members raised questions about several of the tables and figures. The Monitoring Team will make corrections or provide descriptions to address these. Items discussed were:

- Chapter 2: What were the methods used to compute standard deviation? They appear to differ in different parts of the report. Monitoring Team members said they will include a description of how the standard deviations were derived.
- In Chapter 3, tables showing adjusted and unadjusted fatality rates and estimates will be corrected; errors leading to different curves for red-tailed hawk fatalities in Figures 3.3 and 3.4 will be corrected; and Table 3.9 will be corrected.

### **Winter Shutdown Analysis**

Sandra Rivera asked how the Monitoring Team can help the SRC develop its recommendation on whether seasonal shutdown is effective and should continue or not.

Doug Leslie said there is an issue in the seasonal shutdown analysis with backdating, as fatalities of unknown age are assigned a death date of 45 days, based on the average point within a 90-day range. He believes this backdating procedure is leading to a bias and might be one of the reasons that fatalities are shown as occurring during seasonal shutdown.

SRC Member Joanna Burger and Monitoring Team member Brian Karas developed a quick analysis of fatalities for three focal species (except burrowing owls) for all bird years in the current study and one year in the baseline period, separated into three seasons: Winter shutdown, summer, and a pre-/post-shutdown period (two months before, two months after), with Diablo Winds and Santa Clara turbines excluded. The results are shown in [M79\\_Karas 2011 Seasonal Shutdown Review](#). Brian Karas had also suggested refining such an analysis to include only those fatalities with known dates, to avoid uncertainty caused by backdating fatalities with unknown dates. SRC members suggested that Jesse Schwartz of the Monitoring Team evaluate the analysis and determine if it would be helpful including in the report as a way of determining if a winter shutdown signal exists.

### **Public Comment**

Jim Hopper of AES Jim Hopper of AES provided correct numbers for Table 1-1 for Micons, 65 rather than 60; and for Appendix A, where Vestas should be 95 rather than 65. He asked why the pre- and post-shutdown periods would be lumped together, as it would seem that this would not look at specifically the time period after shutdown when birds might be killed after habituating to the unmoving turbine blades. An SRC member said that both periods reflect times of changing conditions.

Renee Culver of NextEra asked, given the amount of variability that exists with a lot of the data, how can an analysis be done on a small amount of that data? An SRC member said that sometimes a smaller data set with less variability can show a signal that is not visible with a larger data set that has more variability. Such data would be directed at a specific question or to reduce a particular type of variability.

## **Other SRC Recommendations on Monitoring Report & Analysis**

### **1. Analysis by Operating Group**

The Monitoring Team asked for an SRC recommendation on what approach should be used to analyze the data. The SRC supported a Monitoring Team recommendation that data in the final report be analyzed by operating group.

## 2. Importance of Bird Use Data

The SRC reaffirmed its previous requests for incorporation and analysis of bird use data to provide information on annual population variability, and to provide context for the 2006 bird year, in which fatalities were very high, which might be the result of an increase in population in the region that year. Former SRC member Shawn Smallwood has a contract with the CEC to collate and digitize the bird use data. Sandra Rivera said he is still working on digitizing bird behavior data, but bird use data should be ready to be provided.

### Next Steps:

- The SRC will conduct a weather analysis of the 2006 bird year.
- Comments from the SRC and the public are due by close of business June 21, 2011.
- The Monitoring Team will produce a final report after completion of the QAQC Report.

## 2011 Hazardous Turbine Review

### Related Documents

Paper maps of current turbine configurations to be provided by NextEra

[M74 HRT Strings of Interest Selection 2011](#)

[M75 Table 1 HRT Strings of Interest Status 1](#)

[M76 Table 2 HRT Strings of Interest Status 2](#)

[M77 Table 3 HRT Strings of Interest Status 3](#)

[S32 Exhibit G-1 Addendum Adaptive Management Plan Adopted 03-10-11](#)

[S33 East County Board of Zoning Adjustments Resolution 03-10-11](#)

**Background:** The SRC visited monitored turbine strings in 2007 (process described in [P67 SRC Selection of Dangerous Wind Turbines \(12/11/07\)](#)) and developed rankings for turbines they considered hazardous. The SRC produced its list of rankings (see [P68 SRC Hazardous Turbine Rating List](#) and [P69 SRC Hazardous Rating Scale 2/1/08](#)) as well as a set of guidelines to companies on relocation and removal of turbines ([P70 SRC Hazardous Turbine Relocation Guidelines](#)). In 2010, a subcommittee of the SRC conducted a second visit to view and rank previously unvisited turbines (see [P153 Smallwood & Estep Additional Hazard Ratings](#) and [M51 APWRA Hazardous Turbine Ratings](#)). The Adaptive Management Plan sets a schedule for removal of turbines of specific ranks.

Sandra Rivera said the purpose of the review is to meet the conditions of the approved Adaptive Management Plan, which calls for the SRC to consider conditions for turbines ranked 8.5 that must be removed or relocated on or before August 1. The SRC can look at specific conditions related to these turbines and make site-specific recommendations. The issue may be moot, because it appears that all those that need to be removed may have been. In 2012, turbines ranked 8.0 are scheduled to be removed.

Monitoring Team member Brian Karas and NextEra provided a set of tables and maps of data for hazardous-ranked turbine strings into specific time frames, 2005-07 and 2007-09, for the SRC to look at to review and validate the 2007 rankings and removals. The data set includes about a quarter of the Altamont. Three separate tables have been created: the first includes strings in which raw fatality concentrations decreased from the first period to the second period; the second shows strings in which raw fatality concentrations increased; and

the third, strings in which there was no or little change. Turbines shown to have been removed may have been removed because of the ranking or through attrition – data are not available on the reason for removal. SRC members can use the information to develop a list of strings they'd like more information on or might be appropriate for a subcommittee visit. One aspect the SRC has discussed is, if a turbine is removed, does another adjacent turbine become a hazardous turbine? Also noted was that the turbine relocation guidelines prepared by the SRC (P70) were developed to assist the companies with their removal/relocation efforts and by using this guidance, high risk situations should be avoided.

SRC members spent some time reviewing the table and asking clarifying questions.

Sandra Rivera indicated the SRC may want to evaluate how effective hazardous turbine removal has been. It may be possible to do this without going out into the field. One thing that is not on the table is to re-rank turbines. She would be concerned about a continually moving target.

### **Public Comment**

Joan Stewart of NextEra said she is interested in whether or not the ratings have been successful. The companies have made a huge effort to take turbines out at a huge cost. Before looking at new things, she would want to know if the removals have made a difference.

Jim Hopper of AES said that several of the strings on the list are Santa Clara turbines, which are not part of the CUPs. Sandra Rivera agreed, and said those strings should not be included.

### **HRT Analysis**

During a break, SRC Member Joanna Burger and Monitoring Team member Brian Karas developed a quick data analysis to highlight possible hazardous turbine rankings for SRC review, by analyzing whether there has been a change in mortality in strings in which there has been a reduction in turbines or megawatts. The approach they used:

- Remove Diablo Winds and Santa Clara turbines from the data set;
- Analyze the data to identify all strings with one or greater annual fatalities in Period 2 for the three focal species (minus burrowing owls);
- Compute the number of fatalities per turbine for Period 2;
- Compute the number of fatalities per megawatt (defined as Period 2 installed capacity) for Period 2;
- Bin the results as follows:
  1. Those higher than the mean in both categories - these are the most important to focus on
  2. Those higher than the mean in one of the two categories
  3. Those in neither category – these are less important.

In order to evaluate whether hazardous turbine removal has been effective, calculate the percentage change in fatalities per turbine and fatalities per megawatt from Period 1 to Period 2. Has there been a decrease?

A quick calculation by Brian Karas and Joanna Burger on June 6-7 produced the following results:

- Fatalities per turbine in Period 1 = 11.56; Period 2 = 9.52
- Fatalities per megawatt in Period 1 = 0.140; Period 2 = 0.124

Therefore, the data show a lower fatality rate after removals, indicating an effect from hazardous turbine ranking and removal.

One SRC member suggested that, in addition, a visual analysis of maps or GIS analysis using Gettis-Ord G could be undertaken to identify geographic concentrations of fatalities that would not be discernible from a numerical data analysis.

### **Postponement of Subcommittee Field Visit**

After confirming that all 8.5 turbines have been removed, Sandra Rivera said a field visit is no longer necessary at this time, as hazardous removal by the companies is ahead of schedule, and the SRC can wait until next year, prior to the time for 8.0 turbines to be removed, to arrange a visit.

Some SRC members gave other reasons for visiting the field to look at changing conditions.

- In one example, the SRC may have ranked four turbines in a notch, with two interior turbines ranked 9.0 and outside turbines ranked 8.0. The 9.0 turbines would now be removed, while the 8.0 turbines remain for the time being, potentially causing a risky situation. While the Adaptive Management Plan is not flexible, SRC members had been arguing for a more flexible approach, with the thought that companies could make site-specific assessments about risky situations using the SRC turbine relocation guidelines. For example, it might be the case that removing a turbine ranked 10 would create a more risky situation than if it remained.
- Another issue is whether fatalities caused by an end-row turbine that has now been removed may have been displaced to the closest remaining turbine. This is one issue that would need to be looked at to evaluate the effectiveness of hazardous turbine removal. One SRC member thought the suggested end-row turbine analysis would be daunting to accomplish, although interesting. This might be the type of issue to assess before removals occurred.

### **Public Comment**

Joan Stewart of NextEra said it would be a lot of work to try to identify end-row turbines. The company has already spent a lot of time trying to determine dates of removals.

Sandra Rivera suggested that it might be better if the SRC uses its own turbine removal and relocation guidelines to assess removals. The companies could provide the SRC with information and then the SRC could do the evaluation. The process could be similar to seeking a variance for a land-use plan.

### **SRC Discussion & Recommendation**

Other SRC members supported the Burger-Karas approach to analyzing the effectiveness of hazardous turbine rankings.

The SRC recommended that the County ask companies to provide up-to-date data on which turbines were removed due to attrition versus hazardous ranking: How many turbines, and their rankings, in each of two periods removed.

### Next Steps

- Alameda County will ask the wind companies for data on which turbines have been removed because of hazardous ranking, versus those that have been removed through attrition.
- In the summer of 2012, the SRC will consider a subcommittee field visit to review turbines ranked 8.0 and scheduled for removal, to assess the risk of removal.

## Meeting Summary Approval

### Related Documents

[P188 SRC Call Notes 10-26-10](#)

[P197 SRC Call Notes 1-20-11](#)

[P201 SRC Call Notes 2-3-11](#)

[P202 SRC Meeting Summary February 2011](#)

[P204 SRC Call Notes 3-16-11](#)

[P206 SRC Call Notes 4-4-11](#)

The SRC approved all the above meeting summaries without changes.

## QAQC Study Simulations

### Related Documents

[P207 Yee Simulations 5-30-11](#)

[M72 Detection Probability Simulation Call Notes 03-08-11](#)

[P199 Yee & Karas QAQC A Detection Probability Exercise](#)

SRC Member Julie Yee has been developing simulations to test the analytical outcomes that might arise from the QAQC Study. The goal of the day's discussion was to learn about her latest results at how her simulations will help in understanding what analytical outcomes the QAQC Study may provide.

Sandra Rivera said the purpose of today's discussion was to make sure everyone is on the same page about the approach being taken. Jesse Schwartz of the Monitoring Team said the simulations could evaluate the level of effort needed for quality control, and potentially hone down that level of effort.

Julie Yee said another goal is to have a decent adjustment factor, so that everyone can feel confident in the estimates. Her work looks at the uncontrollable variables that affect the data collection and analysis. Prior to the QAQC Study, fatality data was analyzed by applying Shawn Smallwood's adjustments for scavenger removal and searcher efficiency. This study could be framed as asking the question: is the Smallwood factor reasonably accurate when the rates of scavenger removal and searcher efficiency are heterogeneous?

Doug Leslie of the Monitoring Team noted that the Team has been asked how it's going to analyze the QAQC Study data, and that question hasn't been answered yet. There have been questions about the mark-recapture approach. The simulations will help understand how variables affect the data and will evaluate different models.

### **Simulation Overview**

Julie Yee said she hoped to hear from other SRC members their recommendations for how to move forward with the analysis, and whether they feel the simulation is realistic enough to use. She can correct for variability, but are there biases in her approach? She reviewed [M72 Detection Probability Simulation Call Notes 03-08-11](#) and [P207 Yee Simulations 5-30-11](#) with participants. She said she started with a very simple version of the simulation and is continuing to develop it to reflect the many variables involving QAQC. Among the items she has looked at is a separate detectability rate for supervisors, who personally plant carcasses and will look for them during a post-search. She will treat these searches differently from typical searches. She is also looking at both known and unknown carcasses.

She noted that there are three methods of analysis: an adjustment factors regression approach; a simplified adjustment factors approach; and a data augmentation approach. She is now attempting to simulate the third approach, but does not yet have results. This approach can incorporate variation on many levels, including spatial/temporal heterogeneity, and a memory effect, in which a carcass found once can more easily be found again because of the searchers' memory of it. It provides a more flexible framework for how things might vary. She is excited about this approach, but it is difficult.

### **SRC Discussion**

During discussion, the following points were raised by SRC members:

- It would be important for the simulations to account for annual variation.
- The simulation is based on greater spatial variation than temporal variation, but actually temporal variation could be greater.
- One suggestion was to do a number of variations in regards to one variable such as age, to try to identify the amount of variability caused by different factors. This SRC member would do a regression analysis.
- Other potential variables are grass height, typography, and breeding versus non-breeding season.
- It would be helpful to have a model with a carcass of known age.
- It would be helpful to look at the cumulative effect of multiple search intervals.

### **Current Approach to QAQC Study**

During discussion of the simulation, questions arose among SRC members about the current methods the Monitoring Team is using for the QAQC Study. An SRC member raised the question of why the Monitoring Team is not doing four searches (a pre-, first, second and post-) for each string selected for QAQC in each rotation.

One Monitoring Team member suggested that SRC members could propose a different approach to the QAQC study, which could then be simulated to test how it would work.

SRC members said it is important for the study to use known-age carcasses, otherwise a large unknown is added to the study. In response, Doug Leslie said the Team has identified two sources for fresh carcasses for the study, and permits have been obtained.

### **Public Comment**

Jim Hopper of AES said he is hearing some very exciting and important things. The latest report suggests we are getting close to 50%. If the 50% is not achieved by 2015, he has to remove 25% of his fleet, so this is a very important issue for him.

The Monitoring Team gave an overview of its QAQC data collection methods. The approach does not deviate from the final version of the monitoring plan (M53V2), although some aspects of the study were not covered by the plan, such as the issue of whether or not to leave carcasses in the field.

Monitoring Team members raised the following points:

- There is a large body of literature that discusses the fact that searcher efficiency varies to a great degree, based on a number of variables.
- The literature suggests that the actual fatality rate is more a function of searcher efficiency and other factors rather than variation in search interval.
- The problem is with small raptors, because the adjustment factor multiplies the number of carcasses found by three times. The assumption is that searchers are finding only 20% of the actual small raptor carcasses. This is likely to be wrong.
- Searches in which no carcasses are found provide useful information to the study.
- Conducting four searches at 100% of the strings selected for QAQC would require reducing the sample size.

### **QAQC Study Specifics**

The Monitoring Team outlined the following specifics about the QAQC study:

- There are 2.5 field teams every week with one field supervisor
- A key aspect of the study is that primary and secondary searches are blind, so this is a double-blind study. It is only blind within a single rotation.
- The time between primary and secondary search varies from one to three weeks
- 55% of the time, there is a fatality check, a third time around. A formal third search occurs a minimum of 5% of the time. 300 turbines are double-sampled in a rotation, and 150 get a third search. The study has not yet generated enough data to make a decision about whether it is worthwhile to do a third search.
- 50% of the time, there is a pre-search.
- 100 turbines receive four searches. With eight rotations per year, that equals 800 turbine-searches.
- The interval between a pre-search and a post-search varies up to three weeks.

### **SRC Discussion**

The SRC recognized the difficulty of making recommendations at this time about changes either to the methodology or field data collection of the QAQC Study, prior to a review of the QAQC Study. SRC members recommended that this be a priority item for an in-person meeting in July, so that they could make recommendations for the next bird year of

monitoring that starts in October. SRC members suggested that, given current constraints, the Monitoring Team should attempt to maximize four searches, especially with fresh birds.

### Next Steps

- The SRC will consider the QAQC study at an in-person meeting on July 21-22.
- The Monitoring Team will release its QAQC Study report by July 8, so it can be reviewed by the SRC and the public for the July 21-22 in-person meeting.
- CCP will circulate to the SRC previous QAQC documents M53 and M61, as well as literature cited by Jesse Schwartz in developing the QAQC study.
- Julie Yee will continue working on the simulations and will stay in communication with Doug Leslie, Jesse Schwartz and Brian Karas.
- The Monitoring Team will make an effort to accomplish pre- and post-surveys in the ongoing QAQC study.
- The SRC thanked Julie Yee for this useful analysis.

## Update on Other Studies

### NextEra Burrowing Owl Distribution and Abundance Study

Renee Culver and Joan Stewart of NextEra gave a brief update on the burrowing owl distribution and abundance study that Shawn Smallwood is undertaking for the company, with the aid of one Monitoring Team field worker. The study is on or ahead of schedule. Some of the data has been sent to Alameda County. Work has been going well with ICF.

An SRC member asked how many burrowing owls are being found. Brian Karas said he heard from Shawn Smallwood that the birds are highly nested, meaning that there are many places where he is not finding owls, and a few places that have high populations.

### Priorities for Future Studies – Burrowing Owl Behavior Pilot Study

Once a Monitoring Team field worker is no longer participating in the NextEra study, which is expected to end in early July, that one FTE will be available for other study work. The SRC in February had recommended, as part of a multipronged recommendation on burrowing owls, the third of three priorities: Undertaking the summer set of behavioral observations detailed in [P194 SRC Burrowing Owl Behavior Pilot Study Proposal](#) to assess the utility of techniques for later research.

Monitoring Team members mentioned that other worthy areas for study might be a winter distribution and abundance burrowing owl study, as burrowing owl fatalities occur in different places in winter.

SRC and Monitoring Team members agreed that the approach to the burrowing owl pilot study will be that they are trials conducted for one month to determine if the equipment used would support collecting behavioral data.

SRC and Monitoring Team members discussed whether the Diablo Winds repowering site would be a good location for one of the trials, as one of the goals is to inform repowering. Burrowing owl rates did not change after repowering at Diablo Winds. A study should take into account that repowered sites will have different protocols, such as a two-week search interval.

SRC members made the following points:

- Diablo Winds turbines are spread out, so would be difficult to see with a scope. An ideal location would contain a row of turbines, so the observer can see several turbines at once and have the opportunity to see more burrowing owl/turbine interaction.
- Another concern is that Diablo Winds is interspersed with repowered and older turbine types.
- The goal of this study is to watch both burrowing owl behavior and turbines.
- It will be years before a large percentage of the turbines are repowered, so learning more about the dynamics related to burrowing owl mortality could reduce the mortality at hundreds of existing turbines.

Sandra Rivera said that the EIRs for the repowering CUPs need to address burrowing owls. As the study is designed, it should focus on two goals, optimizing the study for repowering and for existing turbine types.

### **Public Comment**

Renee Culver of NextEra clarified that her company does not have a thermal imaging camera available for this study.

### **Next Steps**

- An SRC subcommittee of Sue Orloff & Jim Estep will develop a work plan and data sheets before July 1 for the burrowing owl pilot behavior study, for consideration at the July 5 SRC conference call meeting.
- In designing the study, Sandra Rivera asked that the SRC and the Monitoring Team consider how the study can be optimized to inform both repowering and existing turbine types.
- **Before July 1**, the Monitoring Team, in collaboration with the SRC subcommittee, will develop the observation sites for the burrowing owl pilot behavior study, using data collected to date by Shawn Smallwood's NextEra study.
- The Monitoring Team will confirm the budget for the pilot study, and that the study will fit within its budget and staffing resources.
- The SRC subcommittee and Monitoring Team will be in communication to coordinate development of the work plan and resource availability.

## **Future SRC Meetings**

Conference Call Meeting:

- **July 5, 2011**, 10 a.m.-Noon. **Topic:** Burrowing Owl Pilot Study finalizing:

In-Person Meeting

- **July 21-22, 2011. Topics:** QAQC Study, Final Annual Report

## **Documents Circulated at Meeting**

[M72 2009-10 Draft Monitoring Report](#)

[M74 HRT Strings of Interest Selection 2011](#)  
[M75 Table 1 HRT Strings of Interest Status 1](#)  
[M76 Table 2 HRT Strings of Interest Status 2](#)  
[M77 Table 3 HRT Strings of Interest Status 3](#)  
[M78 Monitoring Report June 2011 Presentation Slides](#)  
[M79 Karas 2011 Seasonal Shutdown Review](#)  
[P188 SRC Call Notes 10-26-10](#)  
[P197 SRC Call Notes 1-20-11](#)  
[P201 SRC Call Notes 2-3-11](#)  
[P202 SRC Meeting Summary February 2011](#)  
[P204 SRC Call Notes 3-16-11](#)  
[P206 SRC Call Notes 4-4-11](#)  
[P207 Yee Simulations 5-30-11](#)  
[M72 Detection Probability Simulation Call Notes 03-08-11](#)  
P100\_SRC Document List with Reference Numbers

## **SRC Meeting Participants**

### **SRC Members Days 1 & 2**

Joanna Burger  
Jim Estep  
Sue Orloff  
Julie Yee

### **Staff**

Sandra Rivera, Alameda County, Days 1-2  
Mary Selkirk, Facilitator, Days 1-2  
Ariel Ambruster, Associate Facilitator, Days 1-2

### **Monitoring Team**

Doug Leslie, Days 1-2  
Jesse Schwartz, Day 2  
Levin Nason, Day 1  
Brian Karas, Days 1-2

### **Others**

#### **(Meeting sign-in is optional)**

Renee Culver, NextEra, Days 1-2  
Kris Davis, Counsel for AES and enXco, Day 1  
Jim Hopper, AES/SeaWest, Day 1-2  
Nan Leuschel, Ralph Properties, Day 1  
Ryan McGraw, AWI, Day 1  
Joan Stewart, NextEra, Days 1-2

## List of SRC Agreements Developed June 6 & 7

(Compiled from this document)

### **SRC Recommendations on the draft Monitoring Report incorporating 2009-10 data:**

SRC members asked for the following changes or clarifications:

- Incorporate an executive summary.
- In the Methods section, add a narrative on filters and provide one summary table indicating the different steps of the filtering process. Move tables 2-3 to 2-8 to the Results section. For Table 2-3, define "other" and show raptors versus non-raptors.
- Make sure tables and figures clearly describe whether a calendar year or bird year metric is being used. Include a clear description of bird year.
- Create a Figure 3-2b with each bird year represented as a separate line so the effect of 2006 can be separated out.
- Further analysis should be done on 2008-09 bird year fatalities, as a year to begin with, to examine the effect of winter shutdown to help inform an SRC recommendation on the effectiveness of this management measure. The analysis should be done for the four focal species separately.
- The SRC recommended eliminating Figure 3-8, as it does not communicate very much and would need to be plotted on a logarithmic scale to have comparable slopes.
- Include a timeline graph showing when different management measures were implemented (a hand-drawn example was provided to the Monitoring Team).
- In the Conclusions section, the SRC recommended the following language changes:
  - Item 2: change language to "no obvious evidence" or "no immediate evidence."
  - Item 3: remove the first "substantial" and "if not significantly."
- Design the report to be understandable if printed in black-and-white.
- Winter shutdown analysis: Develop a series of tables on small and large raptor fatalities for all bird years, including only those fatalities with known dates of death and divided into a winter, summer and pre-/post-winter period, compared to Diablo Winds data, to help inform evaluation of the effectiveness of seasonal shutdown. This approach will be explored by the Monitoring Team and incorporated into the final report.

### **Other SRC Recommendations on Monitoring Report & Analysis**

#### **1. Analysis by Operating Group**

The Monitoring Team asked for an SRC recommendation on what approach should be used to analyze the data. The SRC supported a Monitoring Team recommendation that data in the final report be analyzed by operating group.

#### **2. Importance of Bird Use Data**

The SRC reaffirmed its previous requests for incorporation and analysis of bird use data to provide information on annual population variability, and to provide context for the 2006 bird year, in which fatalities were very high, which might be the result of an increase in population in the region that year. Former SRC member Shawn Smallwood has a contract

with the CEC to collate and digitize the bird use data. Sandra Rivera said he is still working on digitizing bird behavior data, but bird use data should be ready to be provided.