

Meeting Summary | May 9-10, 2012

Altamont Scientific Review Committee

Developed by the Center for Collaborative Policy
Reviewed and approved by the SRC

All SRC Members Present:

Joanna Burger
Jim Estep
Mike Morrison
Sue Orloff
Julie Yee

Key Outcomes

1. Draft Fatality Report

The SRC provided comments to the Monitoring Team on the draft 2010-11 Bird Year Fatality Report. Comments included:

Editorial Comments

- Figures and tables should be self-explanatory and have titles that clearly explain the data presented
- All summary tables need to be clearly explained

Content

Results:

- Provide explanation of any changes to the database that affect the numbers
- When results have changed from previous reports, provide explanation in the body of the report

Specific feedback/requests:

- Plot fatality curves by season
- As the 50% fatality reduction is approached, look where there are outliers or hot spots in the data to help determine future management actions.
- Burrowing owl results: What would Table 3-8 look like without the feather spot data?
- Table 3-11 on implications of repowering:
 - Need more information on newer turbines, not just Diablo Winds – add Buena Vista fatalities
 - Add impact assessment graph
 - Display differences on a temporal basis, across years and across months

Alameda County requested that the SRC provide written comments to the Monitoring Team on the report by May 23, 2012.

Presentation on Bird Use Data

ICF provided a series of slides demonstrating multiple regression analysis using the use data by species. Issues raised with the multiple regressions included:

- The need to consider topography rather than just spatial factors
- The need to account for changes in sampling sites

The Avian Use Subcommittee will meet in the next six weeks and work with the Monitoring Team to develop recommendations for use data methodology that will be most relevant to the draft fatality report.

2. QAQC Study

SRC Member Julie Yee presented results of a simulation that she developed to address the following questions:

1. Can we describe a carcass removal function?
2. Can we develop a detection function that incorporates imperfect searcher efficiency as a function of age of carcass?
3. Can we reliably estimate the number of fatalities that occur?

The SRC concluded that the results confirmed the model. Julie Yee will next apply the model and analytic method to the actual fatality database to provide more reliable fatality estimates.

The Analysis Subcommittee will meet with the Monitoring Team and carry out these analyses. The SRC will follow up with a July 12 conference call.

3. Proposed Solar Farms in Vicinity of the APWRA

County Planning Director Albert Lopez reported to the SRC that the County has been asked to approve a new large solar farm that is located in the vicinity of the APWRA. He requested SRC input so that the County could develop a policy that would help guide its decision-making on this and future solar farm projects.

SRC feedback included:

- Concern about proximity of the proposed project without any data on the effects of avian displacement
- Consider the baseline habitat and bird use
- Be prepared to practice due diligence by expanding avian monitoring into areas of solar farms

4. FloDesign Study

The SRC provided feedback on the revised FloDesign Study Work Plan and interactions with the current monitoring program.

The Monitoring Team and the FloDesign study team will coordinate from now until September 30 2012. On Oct 1, the new 2012-13 bird year, the new Detailed Implementation Plan will go into effect. FloDesign will pick up the cost of additional coordination time up to a reasonable point. The Monitoring Team will leave out carcasses. It was agreed that there would not need to be coordination between teams on non-native species. The Monitoring Team will be developing a new Detailed Implementation Plan that may exclude turbines/string/blobs being monitored concurrently in the FloDesign Study.

Action Items & Meeting Follow-Up

Party	Due Date	Action
SRC & MT	Sept. 13-14, 2012	Next In-Person Meeting
SRC & MT	June 27, July 12	<ul style="list-style-type: none"> • June 27 Topic: Avian use models to inform 50% fatality reduction metric. • July 12 Topic: QAQC/Detection Probability analysis
SRC	5/23/12	Submit written comments on draft fatality report to Monitoring Team
Monitoring Team/Avian Use Subcommittee	By 6/27/12	<p>Avian Use:</p> <p>Meet to prepare recommendations for SRC on June 27 on avian use models to inform 50% fatality reduction metric for MT use in final 2010-11 bird year fatality report.</p> <p>Issues raised in SRC discussion on multiple regressions included:</p> <ul style="list-style-type: none"> • The need to consider topography rather than just spatial factors • The need to account for changes in sampling sites
Monitoring Team/Analysis Subcommittee	By 7/12/12	<p>QAQC:</p> <p>Secure appropriately structured dataset from MT and take necessary steps to have recommendation for SRC on July 12 on detection probability curve for MT use in final 2010-11 bird year fatality report. SRC suggested runs: by seasons, by species.</p>
Monitoring Team		<p>SRC & public feedback for Final Bird Fatality Report:</p> <ul style="list-style-type: none"> • Figures and tables should be able to stand alone. Captions should be sufficiently detailed to make figures/tables self-explanatory; titles should clearly explain the data presented; X and Y axes should be clearly labeled. Information should be sufficient to inform non-involved readers. All summary tables need to be clearly explained. • Example: what is the difference between raptors versus non-raptors & avian fatalities on page 3-2? Ensure there is consistency in usage. Use "all birds" if that is what it is. • Be transparent about whether the data answers the question, and why or why not. • Be transparent about how 50% reduction is analyzed (including contribution from each species) <p>Content</p> <p>Results:</p> <ul style="list-style-type: none"> • Provide explanation of any changes to the database that affect the numbers • When results have changed from previous reports, provide explanation in the body of the report <p>Specific feedback/requests:</p> <ul style="list-style-type: none"> • Table 2-2: 09-10 row, last column, should say "operating," not

Party	Due Date	Action
		<p>"shut down."</p> <ul style="list-style-type: none"> • Table 3-2 & 3-4, page 3-2: total should be annual average, not a sum. • Figure 3-5: Plot fatality curves by season, winter data vs. summer data • Include a graphical representation of location of fatalities or depicting hot spots/outliers • Burrowing owl results: suggest showing Table 3-8 BUOW numbers without feather spot data • Table 3-6 & 3-7: Numbers don't seem to add up; troubleshoot data/numbers/calculations. May be an issue with MW values. • Table 3-8 should be before Table 3-10 • For average annual fatality rate, show MW • Data in Feb. report very different for golden eagle 2010 estimated fatalities – 17 vs. 55. Why such large differences? • Table 3-11 on implications of repowering: <ul style="list-style-type: none"> • Need more information on newer turbines, not just Diablo Winds – add Buena Vista fatalities • Provide context for data, such as difference between Diablo Winds and current repowered turbines • Add impact assessment graph • Plot change in fatality over time for DW and non-DW turbines. • Display differences on a temporal basis, across years and across months, so it is clear that DW are not shut down in winter • Show graphical differences • DW are 660 kw, not 750 kw turbines <p>SRC feedback for future:</p> <ul style="list-style-type: none"> • Thinking ahead, the analysis is potentially entering another phase. As the 50% fatality reduction is approached, look where there are outliers or hot spots that could skew data, to potentially help inform future management actions • Perhaps include recommendations for further research
Jesse Schwartz & Shawn Smallwood		Need to communicate on utilization data in order to resolve observation data issues before revision of draft fatality report
Monitoring Team & FloDesign Study Team	May-Sept. 2012	<p>FloDesign Study: The Monitoring Team and the FloDesign study team will coordinate from now until September 30 2012. FloDesign will pick up the cost of additional coordination time up to a reasonable point. The Monitoring Team will leave out carcasses. There is no need to coordinate between teams on non-native species.</p>

Party	Due Date	Action
Monitoring Team	July-Sept. 2012	FloDesign Study: In development of DIP for 2012-13 bird year, consider excluding turbines/string/blobs being monitored concurrently in the FloDesign Study

Table of Contents

Key Outcomes	1
Action Items & Meeting Follow-Up	3
Meeting Account	5
Draft 2010-11 Bird Year Fatality Study	5
QA/QC Study: Report from Subcommittee	9
Solar Farms in APWRA Vicinity	11
Meeting Summary Approval.....	13
FloDesign Revised Study Plan	13
SRC Work Plan for 2012.....	17
Future SRC Meetings	17
Documents Circulated at Meeting.....	18
SRC Meeting Participants.....	18
List of SRC Agreements Developed May 9 & 10	19

Meeting Account

Draft 2010-11 Bird Year Fatality Study

Related Documents

[M87 Draft 2010-11 Bird Year Monitoring Report](#)

[M90 May 2012 Presentation Slides](#)

Report Presentation

Monitoring Team Manager Doug Leslie gave a PowerPoint presentation on the draft report (see [M90 May 2012 Presentation Slides](#)). Key points included:

- There has been a significant decrease in installed capacity on the APWRA
- Bird use data has been incorporated into the report, as in figure 3-2. The green dashed line shows use data, which is the number of times an observer saw a bird. Observations show a consistent dip in December. More analysis of bird use is needed before any conclusions can be developed based on that data, as there are some potential biases, such as the changes in methods that occurred during the timeframe. Also, the approach of relating fatalities to use data might not be useful for burrowing owls, as their behavior patterns are different.
- Figure 3-4 shows trends in adjusted fatality rates for the four focal species, with a $\pm 80\%$ confidence interval, calculated with the Delta method. Figure 3-5 shows the data expanded to estimate APWRA-wide annual fatalities.
- There is a large amount of bias in burrowing owl fatality data, affected by the fact that the Diablo Winds area happens to have a large burrowing owl population.

- Preliminary results indicate that the 50% reduction in fatalities has been achieved for all four focal species combined, analyzed either by the Settlement Agreement method or the three-year rolling average method.
- Looking at the individual focal species, a 50% fatality reduction was achieved for three species (red-tailed hawk, golden eagle and burrowing owl), but not for American kestrels. In September, the SRC will be asked to consider the various approaches to estimating fatality reduction and to reach a conclusion.

SRC and Monitoring Team Discussion

SRC and Monitoring Team members raised the following questions and issues:

- An intriguing question is the 2006 spike in fatalities, which continues to make interpretation difficult. In 2010, there was an uptick in fatalities for large raptors.
- It's possible that there are greater fatalities among migrant birds than resident birds. A graph separating winter and summer data might provide greater insight into this question.
- While red tail hawk fatalities show an overall magnitude of decrease, golden eagle fatalities are near 2005 levels. For whatever reason, 2008 seems to be the bottom, and now fatalities are trending flat or slightly up. More data are needed to interpret.
- During this period, there were fewer operating turbines, so the increase in fatalities is not expected. It might be interesting to graph the fatalities with the turbine attrition line.
- Perhaps there are hotspots which contribute a bias when blob-level data is expanded. Perhaps the analysis could be done by turbine type and bird use.
- Jesse Schwartz of the Monitoring Team said the landscape is well-sampled, so the expansion should not cause a bias.

SRC Feedback on Draft Report

SRC members gave specific feedback for the final report, which will be followed up with written comments. Feedback:

- Every figure and table should be able to stand alone, and be understood without reference to text. Captions should be sufficiently detailed to make figures/tables self-explanatory; titles and legends should clearly explain the data presented; X and Y axes should be clearly labeled. Information should be sufficient to inform non-involved readers. All summary tables need to be clearly explained.
- Doublecheck the numbers for consistency. Any discrepancies can raise questions about the database.
- In general, follow established guidelines on formatting from a journal such as the *Journal of Wildlife Management*
- What is the difference between raptors versus non-raptors & avian fatalities on page 3-2? Ensure there is consistency in usage. Use "all birds" if that is what it is.
- Be transparent about whether the data answers the question (and make the question clear), and why or why not.
- Be transparent about how 50% reduction is analyzed (including contribution from each species)
- Provide an explanation of any changes to the database that affect the numbers, analyses, or results

- When results have changed from previous reports, provide an explanation in the body of the report

Specific requests:

- Table 2-2: In the 2009-10 row, last column, should say "operating," not "shut down", or explain why four months show “shutdown” for a 3-month shutdown.
- Table 3.1-4 numbers and percentages from past years (2005-2009) are different from those in previous reports (e.g., September 2011). Perhaps need more detailed explanation to make this transparent.
- Table 3-2 through 3-4, page 3-2: total should be annual average, not a sum
- Figure 3-5: Plot fatality curves separately by season, winter data vs. summer data
- Include a graphical representation of location of fatalities or hot spots/outliers
- Consider showing Table 3-8 burrowing owl numbers without feather spot data
- Table 3-6 & 3-7: The numbers don't seem to add up; troubleshoot data/numbers/calculations. It might be an issue with MW values.
- Table 3-8 should be before Table 3-10. This was an issue with the page order in the hard copies. Electronic version presents the tables in order.
- Table 3-11 on implications of repowering:
 - Provide context for data, such as difference between Diablo Winds and new-generation repowered turbines
 - Add Buena Vista fatalities to provide information on newer turbines
 - Add an impact assessment graph
 - Plot change in fatality over time for Diablo Winds and non-Diablo Winds turbines
 - Display differences on a temporal basis, across years and across months, so it is clear that Diablo Winds turbines are not shut down in winter
 - Show graphical differences.

SRC Comments Regarding Future Approaches/Analyses:

- An SRC member suggested that if golden eagle and red tail hawk fatalities remained low, we could conclude that this is the effect of shutdowns. Hopefully 2011 will show the 2008 trend. 2008 seems to be forming a base of expectation going forward. It will be important to think about what that means going forward.
- The analysis needs to look at what outliers could skew the data, by looking at fine strata. It is important to consider whether outliers could lead to false conclusions. Look for reasons to isolate out certain strata of outliers, or try to determine the reason for outliers. Perhaps explore this with the field staff. It could lead to recommendations for potential management actions. As an example, previously, power lines were skewing the data, and that issue could be dealt with easily. Also, we want to keep identifying hotspots. Thinking ahead, the big-picture has been dealt with, and management will have to address smaller issues in an effort to continue to reduce fatalities. Perhaps we are entering another phase.
- Perhaps include recommendations for areas of further research
- We will need to see what the next bird year shows.

Public Questions & Comments

Stu Russell of Point Impact Analysis said he also found a problem with Table 3.1-4, which could possibly be caused by the addition of blobs to the whole. Some blobs have different numbers, and the issue seems to come in with megawatt values.

Joan Stewart of NextEra said there was an error with Diablo Winds 660 kW turbines described as being 750 kW turbines. There are 31 of them. She is concerned that if the table gets too complicated, it will not show anything to a reader.

Shawn Smallwood said his analysis of old generation turbines versus Diablo Winds turbines is different. One thing to be careful about with Diablo Winds is that siting was based on bird behavior and burrowing owls.

Heather Beeler of US Fish and Wildlife Service said information on average annual fatality rates would be more helpful if it included megawatts. She agrees that it is important for the report to be transparent. Discuss if the question is answered, and why or why not.

Andrew Roth of AWI said the data in the February numbers is very different, from 17 golden eagles to 55 golden eagles for 2010 estimated fatalities. He was curious why there are such large differences.

Jim Hopper of AES SeaWest noted that he will have to remove 25% of his turbines if a 50% decline in mortality has not been reached by September. In response, SRC members affirmed that they agreed to a three-year rolling average as the method to estimate the 50% mortality reduction question, the results in the draft report of which indicate that there has been an overall 50% reduction.

Heather Beeler of the US Fish and Wildlife Service raised a question in regard to the 50% mortality decrease. She is looking at golden eagles. At Buena Vista, it was clear they met their mortality decrease mainly through burrowing owls. She asked for transparency in how the species numbers are being used to calculate the mortality reduction.

SRC Overall Report Card on Draft Fatality Report:

- The report is a huge improvement compared to four years ago. The report is much more clear, concise, and focused than previous efforts.
- Getting the report much earlier is appreciated, but it needs to be earlier still (at least two weeks prior to a formal discussion).
- The report showed responsiveness to comments the SRC had made in previous drafts, except for some additions to tables and figures.
- Data tables need additional review and clarity. A data dictionary is needed.

Bird Use & Behavior Data & Analysis

Jesse Schwartz of the Monitoring Team reviewed slides (see [M90 May 2012 Presentation Slides](#)) on a multivariate analysis of bird use data for the focal species to explore to what extent different attributes in the Altamont are driving the fatality rate, and to propose an approach to analyzing the bird use data. He noted there are still issues with the data that need to be resolved with Shawn Smallwood, who entered it. He needs the data in the next two months in order to perform the analysis for the final report.

SRC and Monitoring Team Discussion

SRC and Monitoring Team members raised the following questions and issues:

- The metric using time and area is preferred.
- Because areas sampled through time and methods have changed, the area covered could be beneficial to include in the analysis. Perhaps the first step of creating a digital elevation model could be used.
- It's difficult to use the model to inform repowering.
- A multivariate model puts all the data together in context and addresses whether there are any confounding variables. This analysis needs to look at more data points – there are only six data points and thus low degrees of freedom. One can get a good fit when the number of covariates approaches the number of data points, but the result is not as strong as it appears.
- Blob based analysis is a preferred approach.

Public Comment

Shawn Smallwood asked what is varying. There is no factoring in of terrain. You will get variation from visible volume of air space. He is developing that information. It needs to use a per-species calculation, as different species use air space differently.

Danielle Roach of the California Department of Fish and Game advised that the hotspot analysis be kept separate, in order to not skew the numbers by taking things out. She is concerned about injured birds being taken out, although she understands it is hard to identify which turbines to attribute an injury to. She asked why megawatt was originally chosen as a unit of analysis, rather than rotor swept area. Shawn Smallwood said they provided similar results, but megawatts worked better. A paper he wrote in 2003 recommended the use of megawatts.

Next Steps

- The Avian Use Subcommittee of Michael Morrison and Jim Estep will work with the Monitoring Team on use data models to reestablish goals and objectives for this effort and to explore the extent to which changes can be made in the sampling protocol that would better inform the 50% fatality reduction determination and to be more applicable with regard to future repowering efforts.
- The SRC will hold a conference call 11 a.m.-1 p.m. June 27, 2012 to discuss the Subcommittee recommendations.

QA/QC Study: Report from Subcommittee

Related Documents

[P240 Yee QA/QC Analytical Methods Update](#)

SRC Member Julie Yee, a member of the Analysis Subcommittee, presented an approach she has developed, based on discussions with the Monitoring Team, to analyze the QA/QC data. She is recommending the approach be used to develop an estimated detection function to indicate the probability of detection when accounting for the combined effect of carcass removals by scavengers and searcher efficiency. She showed a simulation using the approach (see [P240 Yee QA/QC Analytical Methods Update](#) for specifics on the simulation and analytical approach). The approach is designed to address the following questions:

1. Can we describe a carcass removal function?

2. Can we develop a detection function that incorporates imperfect searcher efficiency as a function of carcass age?
3. Can we reliably estimate the number of fatalities that occur?

Her approach assumes the presence of both naturally occurring carcasses and fresh carcasses placed by searchers. It is based on a Bayesian model. She incorporated information from the QA/QC study as well as removal trials conducted previously by SRC Member Sue Orloff and by the Monitoring Team in the American Kestrel and Burrowing Owl (KB) Study.

The results show that adding detection trial data shifts the estimate from an underestimate to a slight overestimate. This shift is within the estimation error represented by the credible intervals (like confidence intervals). More notably, the addition of detection trial data decreases the standard error (widths of credible intervals).

The simulations which examined her approach indicate the amount of bias and error that might be expected in the resulting fatality estimate when real data are analyzed. The method produces an estimate, an uncertainty term (posterior standard deviation) and a credible interval. Julie Yee recommended the approach, saying it seems to succeed in achieving a good estimate of fatalities.

Her next steps would be to expand the analysis to account for additional variables, and to develop seasonal estimates. She would like to perform the analysis on actual data, compare different survival models and assess her assumptions laid out in an earlier memo ([P236 Yee Altamont Detection Probability Estimate Using QAQC](#)).

SRC Comments and Questions

In discussion, SRC members and Monitoring Team members raised the following issues:

- Consider creating different carcass age categories
- Consider how to treat different species and potential hypotheses for different species
- Consider analysis by season to the extent possible, to reflect the impact of variables such as vegetation height and color, and topography
- Apply the QA/QC adjustment to data including 2011 bird year data, when possible.

SRC Direction

SRC members supported moving ahead with the analysis.

Next Steps:

- The Analysis Subcommittee, which includes Julie Yee and members of the Monitoring Team, will meet, and consider use of the following screens suggested by the SRC:
 - Hypotheses related to individual species, starting with burrowing owls
 - Seasonality
- The Monitoring Team will work with Julie Yee to prepare and complete the basic fatality data spreadsheets needed for the analysis
- Julie Yee will next apply the model and analytic method to the actual fatality database to provide more reliable fatality estimates

- The results will be discussed at an SRC conference call, 11 a.m.-1 p.m. on July 12, in order to finalize recommendations for analyses needed for the September SRC meeting.

Solar Farms in APWRA Vicinity

Related Documents

[P239 Alameda County Memo re APWRA Solar](#)

Albert Lopez, Alameda County Planning Director, said the County is developing an amendment to its general plan to discuss how it will address large-scale solar projects, and is interested in hearing the SRC's perspective on the issue of locating solar facilities near wind farms and how, if at all, they might affect avian fatalities. [P239 Alameda County Memo re APWRA Solar](#) includes a series of questions from the County to the SRC on the issue, as well as a letter from Rich Cimino of Ohlone Audubon Society. Two solar projects have been approved, and there is interest in developing larger scale projects in the Mountain House area. Most of this area is in alfalfa production, which provides high-value foraging habitat for many raptors. This area is 2-5 miles from the APWRA.

SRC Discussion on Solar Farms

In discussion, SRC members raised the following questions and potential issues to consider:

- The percentage of ground covered by a facility would make a difference. Some farms have more available bird habitat. It would be helpful to know how much habitat would be lost.
- Photovoltaic projects have between 8 and 12 feet of open space between solar panel rows. The land can't be farmed but can be maintained in grasses that support sheep grazing. Typical management is to maintain this type of grazing activity within the solar array to provide some habitat value to wildlife.
- A question is how the facility might change the microclimate. The solar array shades a substantial proportion of the field, which was previously open.
- There has been limited research on bird use of solar arrays, so the assumption generally is that bird use would decline following installation. This applies particularly to larger raptors, which are less likely to hunt within the vertical structure that the solar array creates.
- Because some bird species that occur in Central Valley agricultural landscapes find higher value foraging habitat in cultivated fields compared with grasslands, the foraging displacement caused by the installation of the facility may be more likely to shift use eastward into similar agricultural habitats rather than the hilly grasslands of the Altamont.
- However, there is no reason that they or succeeding generations might not go into the APWRA.
- This and other solar projects could contribute to a long-term cumulative effect of multiple land-use changes in and around the APWRA.
- Since turbines are monitored in the Mountain House area, current monitoring should be able to detect a change. Or, Alameda County could increase monitoring in the Mountain House area to look for a change in use. It would be important, for the APWRA, to make sure that changes due to solar installations could be detected.

- Can you hold the wind companies to the CUP requirements if there has been a change in the environment?
- Will this specific project produce a specific impact?
- Due diligence would be for the County to fund increased monitoring in that area. There needs to be an understanding about the rise and fall of deaths in the APWRA that are not turbine-related.
- Given the unknowns, proactively collect data now to see what the effects might be
- Consider whether the same number of panels could be supported in a reduced footprint
- One approach would be to develop in phases and monitor for any effects.

Albert Lopez asked for SRC perspectives on a buffer between the APWRA and any new solar installations. Would that be effective, and how large would it need to be?

SRC members gave the following responses:

- Keep solar on the valley floor, and out of the grassland foothills
- There needs to be an adequate buffer area that does not draw birds into the Altamont.
- Include alfalfa fields in the buffer
- Consider the potential negative impacts of an agricultural corridor, if it is not wide enough, or is an attractive nuisance
- In considering a buffer, look at what the use is in the foothills now, and whether there is a change over time
- Easements or mitigation could include enhancement of agricultural land between the solar installation and the hills.

Public Comment

Heather Beeler of USFWS said her agency has a concern about power tower installations. The agency would have a concern about evaporation ponds associated with a project that could potentially be toxic.

In response to this and other related public comments, Albert Lopez clarified that the proposed project is photovoltaic and not a thermal project that would require a tower power. It would utilize 12-foot-high balloon-like parabolas.

Shawn Smallwood said a 1978 study of a desert power tower project, which appears not to be the type of project under consideration here, showed 30% thermal injury as birds would fly between mirrors.

Heather Beeler of USFWS said some apparatus can be highly reflective and birds can mistake them for water. It would be important to look at how raptors are using the site now in order to identify the impact. Within a year, there will be reports on solar-related avian mortality. FWS did develop a protocol for mortality monitoring.

Rich Cimino of the Ohlone Audubon Society said the project vicinity attracts the state-threatened Swainson's hawk, and large foraging groups have been seen when alfalfa fields are flooded. Other species in the area include golden eagles and northern rough-legged hawks.

What he has heard so far has been encouraging. His biggest concern is keeping raptors healthy and outside the turbine area. His organization's objective is not to impact repowering. If it works here, it can work in the rest of the country. The last thing we need is to throw remnant birds into the APWRA. We need to keep irrigated agriculture because it is performing as an ecosystem – perhaps it could be purchased with outside funding.

Danielle Roach of the California Department of Fish and Game said that alfalfa is the number one preferred forage habitat. Her department would want compensating habitat in perpetuity within Alameda County.

Meeting Summary Approval

Related Documents

[P237 DRAFT SRC Call Notes 4-12-12](#)

SRC members approved P237, the April 12, 2012, conference call notes, with one punctuation correction.

FloDesign Revised Study Plan

Related Documents

[P238 Smallwood FloDesign Draft Study Design April 2012](#)

[P241 CEC PIER 2012 Grant Notification](#)

The FloDesign study has been expanded, after receiving a grant from the California Energy Commission PIER program. In addition, FloDesign has acquired AES SeaWest facilities in the Altamont, and is therefore now a settling party and subject to the CUPs. This item is to discuss the expanded study and the interaction of the study with concurrent monitoring programs, including the Alameda County Monitoring Program and activities by the wind companies. Renee Culver of NextEra held a preliminary meeting on how to integrate current monitoring with the FloDesign study, and efforts are underway to develop a memorandum of agreement (MOA) among FloDesign, NextEra and Alameda County. Facilitator Mary Selkirk and Sandra Rivera of Alameda County met with Shawn Smallwood, who is conducting the FloDesign study, and Monitoring Team Project Director Doug Leslie to discuss the matter earlier in the week.

When the SRC considered the study in September, it was a small, discrete research project, run as a test rather than a project requiring a conditional use permit. Now, there will be a new conditional use permit and the project will need to go through CEQA review.

The SRC is being asked to consider how the study logistics would work, and to provide recommendations.

John Howe of FloDesign said his company heard from the SRC in September that they have a strong interest in avian behavior, and that the study, while interesting, would not achieve statistically significant conclusions. FloDesign acquired 403 AES SeaWest turbines. This would be considered a short-term project, and the company is scoping out plans for eventual repowering.

He passed around a small replica of a FloDesign turbine. The turbines produce three times more energy for the rotor area than conventional turbines, as more force gets drawn into the rotor area. Towers would be 120 feet high at the hub and 150 feet high at the top of the shroud. The objective of the offset turbine design is to make it self-yawing, so that it actively turns in response to the wind. Maintenance would occur via portable cranes rather than ladders. Turbines are designed to achieve 100 kW at a wind speed of 11 miles per hour, so they could be placed closer to urban areas and the existing grid.

The goal of the study is to include the minimum number of turbines necessary to achieve a statistically significant result.

Shawn Smallwood said the year-round study will be a Before-After, Control-Impact design looking at behavior and fatalities (study specifics described in [P238 Smallwood FloDesign Draft Study Design April 2012](#)). In early April, the study had people on the ground searching for birds in order to test the study design and protocol and work out bugs. The study will provide more than one year of information before the new turbines go up in early 2014.

Answers to SRC Questions and Comments on Study

Shawn Smallwood and John Howe gave the following information in response to SRC questions:

- There would probably not be different turbine heights in the same row
- The vortex would change wind speed in front of the turbine, although it would be different from a jet engine, which has suction. The design reduces resistance so more of the mass flow goes into the turbine. A key question for the study will be looking at whether birds and bats are drawn in to the turbine.
- There are Northern Power Systems 100 kW turbines in the area for comparability, although they are not at the same height
- The study will look at night behavior
- The study's definition of behavior is how birds respond to turbines, slope, and each other
- The study design has a species-based priority system of golden eagles first, red-tailed hawks second, etc.
- Variation at the site is not indicative of the entire APWRA, as there is not as much high terrain.
- Turbines ranked 9 and 10 on the SRC's hazardous rankings have been removed from the study site. Not many turbines were removed at SeaWest, except one entire row.
- The study defines a cluster as a short row or a single turbine
- The study design was based on fatality data, not topographic characteristics. But in the field, it's clear that the topographic issues are reflective of the SRC recommendations.
- There are many burrowing owl colonies in the area.
- Study authors think a hand-held voice recorder would be less disruptive to bird activity than quick body actions.

SRC Comments on FloDesign Study

SRC members raised the following issues in regard to the study:

- It might be beneficial to add up the number of turbine addresses and see if the control and experiment turbines are equal, and look at topography as well.
- The study might consider using light camo cloth to camouflage observers.

Sandra Rivera of Alameda County asked, since Alameda County and the SRC have discretion in their review, how changes would affect the grant. Shawn Smallwood said the fact that this study responds to SRC recommendations is viewed favorably by the CEC.

SRC Input on FloDesign Study

The SRC made the following recommendations for the study:

- It will be important to follow SRC guidelines on maintaining minimum gaps in order to avoid creating dangerous situations.
- Recommend you use decision rules so that when high-priority species enter, the observer switches, and notes that the previous observation is aborted
- Describe in the study plan the process for analyzing data
- Perform reliability studies with your crew on the same bird, to determine the distance at which they would observe an individual. Be clear about reliability of observation of avoidance behavior
- Provide a regular report to the SRC on bird data.

Coordination between FloDesign Study and Monitoring Program

There are 99 turbines that would be searched by both the Monitoring Program and the FloDesign study. The goal of the FloDesign study is to conduct two searches per week. The SRC is being asked to consider the logistical and analytical implications of this. The SRC is also being asked to consider a request by Shawn Smallwood that the Monitoring Team leave carcasses on the ground rather than pick them up.

Monitoring Team Manager Doug Leslie said his only concern is that the study not impact the Monitoring Team scope, time and budget, as there are no additional funds for additional work. Monitoring Team members provided additional information:

- One possibility is to remove the involved turbines from monitoring, but they are a large proportion of the turbine type represented in the monitoring sample
- The FloDesign study is using a different search interval; the Monitoring Program unit is an entire string, while the FloDesign study is using smaller units; and the FloDesign study is focused on high fatality turbines, so data wouldn't be comparable
- Additional carcasses in the field incur lost time, as a searcher has to determine if carcass data need to be recorded. However, not having to pick up a carcass is also a cost-saving.
- A large percentage of the fatalities found are pigeons
- The need to coordinate multiple data streams could impact work accomplished by the search team lead
- The SeaWest turbines are not in one blob, but potentially up to five blobs
- Leaving out carcasses is not an issue, but the concern is about mission creep.

SRC Discussion

In discussion, SRC members raised the following points:

- Perhaps grant money could support the Monitoring Team's costs for consultation

- Would leaving birds in the field incur a cost to the Monitoring Program or impact workload? Perhaps there is a way to clearly identify carcasses left in the field in order to save time
- There could be some advantage leaving carcasses in the field as it would be an ad hoc detection trial, and could provide information for the Monitoring Program detection function
- There could be value if the two studies can use each other's data
- If there is a good detection probability estimate, the difference in search intervals should not be an issue, and the Monitoring Program should be able to utilize the FloDesign study data. The focus should be on developing a methodology.
- Fewer points of contact and coordination would be helpful, as would be one dataset.

Monitoring Team Member Jesse Schwartz said there eventually could be a comparison, except there isn't sufficient understanding at this point of the unknowns. The Monitoring Team could develop an approach in the next three months and remove the overlapping strings in the next bird year.

Sandra Rivera of Alameda County said, if 50% mortality reduction is met, it's unclear what level of monitoring there might be in the next bird year. Also, the monitoring program is paid for by all companies, and all companies may not be willing to pay for time spent coordinating with FloDesign.

Public Comment

Loan Tran of NextEra reported that NextEra has the contract to provide reporting and wildlife response for the AIC companies on a monthly and yearly basis, and holds the master data. They are concerned that it will take additional staff time to determine if carcasses are duplicates. The power companies have crews out every day, and put tape on carcasses. Rock pigeons must be reported. Coordination is also required with the burrowing owl study. It's possible the number of overlapping turbines is larger, possibly 128. It would be helpful if the extra time could be charged to FloDesign.

Joan Stewart of NextEra said there are only eight hours in a day for existing staff to accomplish tasks. NextEra, Alameda County and FloDesign are working on a memorandum of agreement. NextEra can do the work, but wants it organized and wants agreement ahead of time on what communication there is going to be. The concern is the extra communication that ends up having to happen about unexpected issues and the need for clarification.

John Howe said FloDesign would consider providing funding to offset others' costs. The company would want the amount to be reasonably bounded.

The SRC considered various options and their impact on Monitoring Program data quality, use of resources and costs. Options considered included removing overlapping turbines or blobs from the current bird year monitoring, or coordinating and sharing data.

SRC Recommendation on Coordination between Monitoring Program and FloDesign Study

After considering multiple options, the SRC recommended the following:

- The FloDesign study search high fatality strings, and share information on fatality rates with the Monitoring Team on a timely basis
- The Monitoring Program and FloDesign coordinate until 9/30/12
- The Monitoring Team redesigns its Detailed Implementation Plan for the 2012-13 bird year to exclude FloDesign turbines, to the extent possible without impacting the sample. The Monitoring Team could choose other strings to balance the FloDesign data.
- The Monitoring Team leave carcasses in the field through September 2012
- There be no coordination between the two studies on non-native species
- The Analysis Subcommittee consider the feasibility of this approach
- This approach be treated as a trial run. If it is not working out, further discussion should occur.

Next Steps

- Shawn Smallwood will come back to the SRC with a detection study design and information on how the data will be analyzed
- Eventually, when FloDesign turbines are put in, the SRC will review and provide a recommendation to Alameda County

SRC Work Plan for 2012

Related Documents

[P99 SRC Work Plan and Milestones](#)

The SRC reviewed its work plan for the remainder of 2012 (see [P99 SRC Work Plan and Milestones](#)). For 2013, the SRC will likely hold fewer meetings.

Future SRC Meetings

In-Person Meetings

- **September 13 & 14, 2012**

Topics:

- Final 2010-11 Bird Year Fatality Study
- 50% Avian Fatality Reduction Consideration
- FloDesign Study

Conference Call Meetings

- **June 27, 2012, 11 a.m.-1 p.m. Topic:** Avian use models to inform 50% fatality reduction metric
- **July 12, 2012, 11 a.m.-1 p.m. Topic:** QAQC/Detection Probability analysis

Documents Circulated at Meeting

P100_SRC Document List with Reference Numbers

[M87 Draft 2010-11 Bird Year Monitoring Report](#)

[M90 May 2012 Presentation Slides](#)

[P240 Yee QA/QC Analytical Methods Update](#)

[P239 Alameda County Memo re APWRA Solar](#)

[P237 DRAFT SRC Call Notes 4-12-12](#)

[P238 Smallwood FloDesign Draft Study Design April 2012](#)

[P241 CEC PIER 2012 Grant Notification](#)

[P99 SRC Work Plan and Milestones](#)

SRC Meeting Participants

SRC Members Days 1 & 2

Joanna Burger

Jim Estep

Mike Morrison

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

Albert Lopez, Alameda County, Day 1

Liz McElligott, Alameda County, Day 1

William Fleishhacker, Alameda County,
Day 1

Monitoring Team

Doug Leslie, Days 1-2

Jesse Schwartz, Days 1-2

Brian Karas, Days 1-2

Chris Brungardt, Days 1-2

Others

(Meeting sign-in is optional)

Heather Beeler, USFWS, Days 1-2

Andrew Bell, FloDesign, Day 2

Rich Cimino, Ohlone Audubon, Day 1

Chris Dreiman, enXco, Days 1-2

Chris Dugan, TRA Environmental, Day 1

Jeff Everett, USFWS, Days 1-2

Jim Hopper, AES Wind Generation, Days
1-2

John Howe, FloDesign, Day 2

Liz Leyvas, ICF, Day 2

Mike Lynes, Golden Gate Audubon, Day 1

Travis Poitras, ICF, Days 1-2

Danielle Roach, CDFG, Days 1-2

Andrew Roth, AWI, Days 1-2

Stu Russell, Point Impact Analysis, Days 1-
2

Jesse Sirotkin, AWI, Days 1-2

Shawn Smallwood, Days 1-2

Joan Stewart, NextEra, Days 1-2

Loan Tran, NextEra, Days 1-2

List of SRC Agreements Developed May 9 & 10

(Compiled from this document)

SRC Recommendation on Coordination between Monitoring Program and FloDesign Study

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