

Meeting Summary | February 16-17, 2012

Altamont Scientific Review Committee

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

All SRC Members Present:

Joanna Burger
Jim Estep
Mike Morrison
Sue Orloff
Julie Yee

Key Outcomes

1. 2010-2011 Draft Fatality Study Action Items:

- The Monitoring Team will audit 2005 and other data issues to confirm results for the draft fatality study.
- A public data review period of 30 days to review and provide comments on the latest bird fatality data commenced on February 16, 2012.
- The Monitoring Team and CCP will post a link to the new bird use data on the SRC website.
- The Monitoring Team will issue the draft fatality study in mid April, 2012.
- The Monitoring Team will provide an analysis of QAQC Study data in a separate report.

SRC Direction on Confidence Interval Calculation in the Draft Fatality Study:

1. The goal is transparency
2. Provide a more complete description of the calculation of the confidence interval to show how standard deviation is derived
3. Provide a more complete confidence interval
 - Sampling variation: consider a bootstrapping approach
 - Uncertainty in detection probability: consider a simulation-based approach (Such as the Markov Chain Monte Carlo approach)
4. SRC member Julie Yee will serve as the SRC Analysis Subcommittee to work with the Monitoring Team on this issue and analysis

2. Bird Use Data Workshop

Questions the SRC wants to be answered/analyzed with the current digitized database:

Current Bird Use Data to be analyzed in the Draft Fatality Study to address following:

- How many **individual** birds per observation session (seasonal/yearly)

- *Number of all birds (seasonal/yearly), # of individual flying birds divided by session length*
- *Blob level use data: seasonal/yearly*

Current Behavioral Data (Shawn Smallwood) to be used to address following:

- *Incidence and type of risky behavior (presence in dangerous locations or occupying dangerous airspace)*
- *Avoidance behavior*
- *Perching behavior*
- *Behavioral rates*
- *Recommendation on optimal behavioral design including # of observation points*

SRC Comments Re Process for Tracking SRC Guidance to Monitoring Team Going Forward:

1. Regular feedback about how SRC recommendations are/are not being carried out
2. Need to improve QC of data sheets

3. QAQC Study

The SRC directed the Monitoring Team to complete the draft Annual Fatality Study first. The SRC Analysis Subcommittee will meet with the Monitoring Team to analyze small raptor data and develop recommendations for what adjustment factor curve to use. The SRC will hold a conference call meeting to consider the Analysis Subcommittee's recommendations, probably in late March 2012.

4. Pre-Repowering Monitoring

Outcome from bird use workshop:

SRC concurrence that bird use data should continue to be collected into the future. The Monitoring Team asked for SRC consideration of reducing the number of observation points from the current 77.

Discussion Highlights:

- SRC confirmation of its recommendation that developing methods for assuring comparability of data is paramount.
- One goal should be development of a threshold detection probability, including a design for improving detection of small raptors
- To assure comparability with repowered sites, consider:
 1. Inter-transect distance
 2. Search interval: approaches for comparability since search intervals will be changing
 - Ratio approaches/double sampling
 - Measure detection probability
 - Determine detection probability directly, using different estimator
 3. Search radius

- Discussion of Korner-Nievergelt estimator and its ability to address overadjustment bias in:
 - Comparability
 - Detection probability
 - Changes in search interval
- Established Bird Use and Behavior Subcommittee (Mike Morrison, Jim Estep) to consider redesign of bird use data collection and propose clear goals and objectives for use/behavior data collection
 - *Tasks:*
 1. Use: look at the current 77 observation points to see if that is being oversampled, look for ways to be more efficient to make funding available for behavior studies.
 2. Behavior: potential change in protocol

5. Burrowing Owl Study update and next steps

SRC Consensus:

- The SRC recommended that Shawn Smallwood complete winter burrowing owl nest surveys through the full bird year (March).
- The SRC recommended that Shawn Smallwood look for additional funding to extend nesting surveys through at least April.
- The SRC reaffirmed the importance of the burrowing owl behavior study and recommended that Shawn Smallwood look for additional funding for it.

Action Items & Meeting Follow-Up

Party	Due Date	Action
SRC	May 9 & 10, 2012	Next In-Person Meeting
SRC	Late March 2012	Tentative timeframe for conference call meeting on recommendations for QAQC data analysis approach in QAQC report
Monitoring Team & CCP	2/24/12	Ensure public has access to website to download all new fatality data
Monitoring Team	3/1/12	Post scavenger removal trial data to public and provide a link to bird use data for the SRC website
Public	3/16/12	Download and review latest fatality data from https://ecosystems.icfwebservices.com/#/WindData during 30-day review period.
Monitoring Team	March 2012	Audit 2005 & other data to finalize data for draft report
Monitoring Team/Analysis Subcommittee	Mid-March 2012	Meet to consider how to represent standard error in fatality report; as well as to analyze small raptor data and develop recommended approach to QAQC data

Party	Due Date	Action
(Julie Yee)		analysis/adjustment curve
Monitoring Team	4/15/12	In draft fatality report, show in one graph (overtime) number of removed turbines/fatalities/installed megawatts
Monitoring Team	4/15/12	In draft fatality report, provide confidence intervals and more complete description in text of how error is derived. The goal is complete transparency.
Monitoring Team	4/15/12	Bird use data/analysis to be covered in draft fatality report: <ul style="list-style-type: none"> ▪ Number of individual birds per observation session ▪ Number of birds, number of individual flying birds divided by session length ▪ Blob-level use data ▪ For all the above, show yearly and seasonal data for the four focal species
Monitoring Team	4/15/12	Release draft fatality report
Monitoring Team		Improve quality control of fatality data sheets
SRC/Monitoring Team	Ongoing	At meetings, periodically discuss status of implementation of SRC recommendations, with goal of achieving transparency
Monitoring Team		Study 77 observation points to identify optimal sample and potentially free funds for a burrowing owl behavior study or a method of measuring/achieving a certain level of detection probability.
Monitoring Team/Subcommittee on Bird Use & Behavior (Mike Morrison, Jim Estep)		Consider: <ul style="list-style-type: none"> ▪ Redesign of behavior and use data collection & protocol ▪ Behavior & use data, analysis and recommendations for priorities, goals and objectives going forward ▪ Observation points and necessary sample to achieve objectives
Shawn Smallwood		SRC suggests that current behavioral data be analyzed to provide information on: <ul style="list-style-type: none"> ▪ Incidence and type of risky behavior (presence in dangerous locations or occupying dangerous airspace) ▪ Avoidance behavior ▪ Perching behavior ▪ Behavior rates ▪ Recommendation on optimal behavioral design

Party	Due Date	Action
		including # of observation points
Monitoring Team/Shawn Smallwood	Spring 2012	Consider optimal use of contracted funds to identify amount of movement of burrowing owl nests from 2011 to 2012 nesting season
Shawn Smallwood	Spring 2012	Seek additional funding to extend burrowing owl distribution and abundance study through at least April 2012, and to undertake burrowing owl behavior study

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Meeting Account

Updates from Alameda County

Sandra Rivera of Alameda County gave the following updates:

Avian Bat Protection Plan:

- The production of the draft Avian Bat Protection Plan (ABPP) for the programmatic repowering EIR process has been delayed, and will be discussed by the SRC in June rather than in April.

In response to an SRC question about whether the County would be producing an Eagle Conservation Plan, Sandra Rivera said she has been in contact with the US Fish and Wildlife Service, and understands that if the ABPP fulfills FWS requirements, the County may not need a separate plan.

Discussion:

- An SRC member noted that an Eagle Conservation Plan would be an avenue to get incidental take permits for eagles for repowering projects.

- Monitoring Team Project Manager Doug Leslie said, in regard to a recent federal district court decision, the briefing he reviewed indicated that the decision was that the Migratory Bird Protection Treaty was not meant to criminalize killing birds incidental to otherwise lawful activity. However, that decision is contrary to decisions in some other federal district courts.

APWRA-Related Contracts:

- Year-long contracts for the SRC, Monitoring Team and the facilitation team were approved by Alameda County Supervisors in December 2011.

Draft 2010-11 Bird Year Fatality Study

Related Documents

[M88 February 2012 Presentation Slides](#)

Presentation on Preliminary Bird Fatality Data

Monitoring Team Project Manager Doug Leslie said publication of the draft report has been delayed. The Monitoring Team has had issues with the fatality database, which reduced their confidence in the results. Data issues included some records being entered two times during the period of transition from paper to GPS data collection. The team would like more public review of the fatality records, especially those from 2005.

He gave a presentation on the preliminary fatality results (see [M88 February 2012 Presentation Slides](#)). Key points included:

- As in the previous year, the amount of turbine attrition exceeded the amount of hazardous turbine removals.
- The amount of installed capacity has decreased on the Altamont.
- Preliminary results indicate that the 50% reduction in overall avian fatalities has been achieved, analyzed either by the Settlement Agreement method or the three-year rolling average method.
- Looking at the individual focal species, preliminary results indicate that the goal of 50% was achieved for three species (red-tailed hawk, golden eagle and burrowing owl), but not for American kestrels.

SRC and Monitoring Team Discussion

SRC members raised the following questions and issues:

- Does the Monitoring Team have confidence in the 2005 bird year data? In response, Monitoring Team members said the data needs to be reviewed.
- Is there any search interval issue with 2006 data? In response, the Monitoring Team said the 2006 search interval was more typical of other years of the current study.
- Why did installed capacity increase in 2006? Monitoring Team members believe that might be when the Buena Vista project came on line.
- The data seem to show not much change from 2008 onward in adjusted fatalities for the four species combined, at the same time that there has been high turbine attrition. Possibly the worst hazardous turbines have been removed by 2008.

- It would be helpful to show in one graph the number of removed turbines, installed megawatts, and fatalities over time.

Public Comment

Mike Boyd of CARE asked, since this is APWRA-wide data, if there is a way to distinguish results on a per-company basis. He is concerned that non-settling parties are benefiting from NextEra's achievements. He is concerned that the goal hasn't yet been met for American kestrels. He can't tell to what extent results are influenced by non-compliance of non-settling parties. In response, Monitoring Team members and Sandra Rivera of Alameda County said that looking at fatality results separated by company would be a new approach. The SRC /Monitoring Team approach is to look at the data APWRA-wide. The data is regularly made available for download, and the public can crunch the data on its own, answering a variety of questions.

Stu Russell of Point Impact Analysis asked if any of the fatality results could be attributed to the removal of hazardous turbines. In response, Monitoring Team representatives said teasing out the influence of a particular management action has been a challenge because of overlapping influences, such as turbine attrition and the winter shutdown.

Shawn Smallwood said he thinks that analysis can be done.

Andrew Roth of AWI asked, if repowering is moving forward, isn't this all moot? In response, Sandra Rivera of Alameda County said the existing permit requirements are still active.

Mike Boyd of CARE said his issue is with the non-settling parties and compliance. This information could be relevant.

Andrew Roth of AWI said his company is in compliance with its permits.

In reference to some of the error bars in the graphics of the presentation slides, Shawn Smallwood said the error terms seem very small. The errors associated with the detection probability estimate are not included in these error terms, and the Monitoring Team needs to keep those errors in the term in the graphs so there is consistency in presentation of error across years. In response, Monitoring Team members said they are using this approach in displaying data for the three-year average (by displaying error as the standard deviation among annual fatality estimates) to help focus the data for consideration of management decisions.

SRC Discussion

SRC members said they would prefer if the fatality report shows how errors are derived, for complete transparency. If items like detection probability are not known, that can be stated.

SRC Direction on Confidence Interval Calculation in the Draft Fatality Study

1. The goal is complete transparency and ease of understanding.
2. Provide in the text a more complete description of the calculation of the confidence interval and standard deviation or standard error

3. Provide a more complete confidence interval that incorporates detection probability error. Examples:
 - For sampling variation, consider a bootstrapping approach
 - For uncertainty in detection probability, consider a simulation-based approach, such as the Markov Chain Monte Carlo Approach (MCMC)
4. SRC member Julie Yee will serve as the SRC Analysis Subcommittee to work with the Monitoring Team on this issue and the analytic approach.

Next Steps

- The Monitoring Team will audit the 2005 and other data issues it has discovered, in order to resolve the data issues and confirm results for the draft fatality report.
- The Monitoring Team has made the data available for public review. A 30-day public review period will run from February 16 to **March 16**. The public is encouraged to review the data and provide comments to the Monitoring Team.
- In addition, the Monitoring Team will make the bird use data available through the SRC website.
- The Monitoring Team will release the draft fatality report on **April 15**.
- If an SRC recommendation on the analytical approach to the QAQC study data is available by then, the QAQC data could be folded into the report. Otherwise, the Monitoring Team will provide an analysis of QAQC Study data in a separate report.

The latest fatality data is available to download at:

1. <https://ecosystems.icfwebservices.com/#/WindData>
2. At upper right, choose “Altamont Pass Wind Resource Area”
3. Choose “report” on the left side of the screen, then click “download.”
The data is in Excel 07/10, and should work for older Excel software if a converter has been installed.

Draft 2010-11 Bird Year Fatality Study -- Bird Use Data Workshop

Related Documents

[M1 Altamont Pass Wind Resource Area Bird and Bat Mortality Monitoring Protocols, 7/11/2007](#)

[P231 Smallwood APWRA Bird Use Data 2005-2011](#)

[M88 February 2012 Presentation Slides](#)

Questions framing the bird use data discussion:

- What can the data tell us about fatality patterns?
- Can we learn about interannual variation?
- What should be the objectives going forward?
- Should the number of observation points be reduced?
- Should the Monitoring Team continue gathering behavior data?

Monitoring Team Presentation

Doug Leslie of the Monitoring Team showed a table (see last page of [M88 February 2012 Presentation Slides](#)) laying out the various methods employed over time by the Monitoring Team to gather data on bird use and behavior. The table indicates the variability in data collection methods over time.

He recommended that the SRC consider revising the protocol and sampling framework, including potentially reducing the number of observation points, as the current number of 77 observation points may not be needed for gathering bird use data.

Jesse Schwartz of the Monitoring Team and Shawn Smallwood, who had a contract with the Monitoring Team to digitize the bird use data, walked meeting participants through an Excel spreadsheet of the data, showing how the data are organized. Jesse Schwartz discussed potential approaches to analysis, given the discrepancies in data collection methods over different time periods. Despite the variability, he said he believes the data can be very useful for the four focal species, and that the variation washes out because of the number, 70,000, of records. Shawn Smallwood said there were about 9000 observation sessions through October 2011.

SRC Questions/Comments

SRC members raised the following issues in the discussion:

- An additional issue is the changes in Monitoring Team personnel and management over time, which can produce changes in how data are handled and create quality control issues.
- How should the analysis handle the first 10 minutes of observation periods, given that the recommended 10-minute waiting period before gathering data, so birds become accustomed to the presence of the observer, wasn't implemented?
- There is an issue related to communication between the SRC/Monitoring Team. In the future, the issue needs to be addressed so that time is used well and the SRC knows what's happening on the field. Any problems should be relayed to the SRC. Inform SRC when changes are made to sampling strategies and approved objectives are being changed or discontinued.
- There needs to be regular review of data sheets by Monitoring Team supervisors, perhaps after a week of data collection.
- The Monitoring Team needs to ensure continuity of data through time, and needs to make sure that the current discontinuity issue is resolved.
- Regarding behavior, the goal is to identify what percentage of time the bird is hovering, in the zone of risk, and engaging in other such dangerous behaviors.
- Since zone of risk changes with turbine type and height, this data should also be presented as heights (where possible)
- The data will need to be treated very carefully, because of the number of potential biases.
- There is a concern about potential bias in comparing data from 30-minute to those from 10-minute sessions.
- Has sufficient bird use data been collected, or should the Monitoring Team continue collecting bird use data? Bird use data plays an important role in providing to the public a contextual framework for fatality data. An uptick in fatalities, for example, might be

caused by high bird abundance. Data on this might underline the fact that, if there are more birds, scientists and managers can only do so much to prevent fatalities.

Monitoring Team members agreed there would be a bias in comparing observations with different survey radii and other techniques.

Public Comment

Renee Culver of NextEra made reference to the costs incurred by the six years of disconnect over bird use and behavior data collection, saying everyone owns that issue.

Discussion on Bird Behavior

Shawn Smallwood was asked to discuss behavior data (discussed in [P231 Smallwood APWRA Bird Use Data 2005-2011](#)). Because of the way data collection was designed, there could be biases caused by differences in airspace visible from different observation points, and caused by changes in the maximum survey radius. The data are indicator-level because of the potentially high miss rate due to the volume of airspace that was surveyed. He recommended that a reduced area be surveyed, and that data be recorded on images rather than contour maps. Among the issues that are not covered by current data is evening behavior, an issue in particular for burrowing owls.

Renee Culver of NextEra, in response to a question, said bird use and behavior would be part of repowered post-construction monitoring.

Doug Leslie said the Monitoring Team does not have funding to analyze behavior data. Shawn Smallwood said he has funding left to do that.

SRC members said a priority in analysis would be to link fatality data to locations where dangerous behavior occurs.

Discussion of Possible Methods for Analyzing Bird Use & Behavior Data

SRC members suggested it would be helpful to analyze existing data first, and then decide how to handle use and behavior in the future.

SRC members sought to identify what questions to ask, and what questions could be answered by the current data. Suggested questions and issues to capture included:

- Presence/absence in standardized interval
- Reflect interannual variation (curve may be the same but numbers different per year)
- What percentage of time birds are in dangerous area (use best years)
- How many individual birds per observation session
- How many birds, by year/season, current/future
- How much risky behavior
- How often are birds in dangerous locations or have dangerous occupations of space
- Avoidance behavior
- Perching
- Behavior rates
- Blob-level use data by year/season for the 4 focal species

Those issues that can be answered with current data include:

- How many individual birds per observation session
- How many birds, by year/season, current/future
- How often are birds in dangerous locations or have dangerous occupations of space
- Perching
- Blob-level use data by year/season for the 4 focal species

Those questions that can be at least partially addressed by current data include:

- How much risky behavior
- Behavior rates

Those questions the SRC would like to see addressed by the Monitoring Team in the next draft fatality report expected in April are:

- How many individual birds per observation session
- How many birds, by year/season, current/future
- Blob-level use data by year/season for the 4 focal species

SRC Recommendations on Bird Use & Behavior Data

Bird Use

There was SRC concurrence that bird use data should continue to be collected into the future, perhaps with a smaller sample.

The SRC identified the following questions that the Monitoring Team should address in the draft fatality study, which can be addressed with the current digitized database:

- How many individual birds per observation session, seasonal/yearly
- Number of all birds, number of individual flying birds divided by session length
- Blob-level use data: seasonal/yearly

Bird Behavior

The SRC identified the following types of behavioral data that could be analyzed by Shawn Smallwood:

- Incidence and type of risky behavior (presence in dangerous locations or occupying dangerous airspace). Also flight height above ground
- Avoidance behavior
- Perching behavior
- Behavioral rates
- Recommendation on optimal behavioral design including number of observation points

SRC Recommendations for Process for Tracking SRC Guidance to Monitoring Team Going Forward:

1. Regular feedback about how SRC recommendations are/are not being carried out
2. Need to improve quality control of data sheets

Next Steps on Bird Use & Behavior

- An SRC Bird Use & Behavior Subcommittee of Mike Morrison and Jim Estep will work with the Monitoring Team and Shawn Smallwood.
- Among the issues the Subcommittee will consider are the needed sample size for observation points; behavior data and analysis; and recommendations for future priorities, goals and objectives.

Annual Compliance Monitor Report

Related Documents

[P233 Karas 2011 Compliance Report](#)

Brian Karas, Alameda County APWRA Compliance Monitor, reviewed [P233 Karas 2011 Compliance Report](#).

Public Comment

Shawn Smallwood asked why the report did not include compliance data for AWI. Sandra Rivera of Alameda County said the report only covered compliance of Settling Party wind companies.

Meeting Summary Approval

Related Documents

[P226 SRC Meeting Summary September 2011](#)

[P230 SRC Call Notes 12-13-11](#)

SRC members approved P230, the December 13, 2011 conference call notes. Consideration of P226, the September 2011 meeting summary, was postponed to the next meeting as pages were missing from copies of the summary.

QAQC Study Update

Jesse Schwartz of the Monitoring Team gave an update on QAQC Study data collection, which the SRC had agreed to continue into the winter. He showed a spreadsheet of the initial data. The Monitoring Team implemented SRC recommendations, shrinking the number of locations, leaving carcasses in the field and keeping the double-blind component of the study. The carcasses that were left out, obtained with the help of SRC member Sue Orloff, were fresh and whole, and had been euthanized by carbon dioxide, a non-chemical method that should not have left any residue to reduce the interest of scavengers or harm them. The placements were in winter, however, and that would be looked at in the analysis. The next step is to compare the data from these latest carcasses with Sue Orloff's earlier data (Orloff and Flannery 1992). Altogether there are 140 samples, and within that, 35-40 small fresh raptor samples.

SRC Discussion on QAQC Study Data

In discussion, SRC members raised the following points:

- Is distance from searcher/carcass more significant than search interval? Think about possibly fewer searches and shorter inter-observer distance.

- There is a seasonal difference to think about in getting to a certain detection probability. There could be a simple protocol for searchers, when arriving at a string, to adapt to seasonal differences.

Jesse Schwartz of the Monitoring Team said he could see a benefit in that recommendation of a small raptor protocol nested in a system of monitoring.

Public Comment

Jim Hopper of AES/SeaWest, referencing the spreadsheet of QAQC results, asked where the first four records were taken from. Brian Karas of the Monitoring Team said they were from the Santa Clara turbines. Jim Hopper said the terrain there is very steep, almost straight down, and it's not surprising that searchers missed carcasses there.

Shawn Smallwood said the data looks good, but because this was a winter trial, one would expect a very low removal rate.

Next Steps

- The SRC agreed that the Monitoring Team would complete the draft Annual Fatality Study first. The QAQC Study report would be separate.
- The SRC Analysis Subcommittee will meet with the Monitoring Team to analyze small raptor data and develop recommendations for what adjustment factor curve to use.
- The SRC will hold a conference call meeting to consider the Analysis Subcommittee's recommendations, tentatively in late March 2012.
- The Monitoring Team will post scavenger data for the public by March 1.

Consideration of 2012 & 2013 Pre-Repowering Monitoring: Comparability, Other Studies

Related Documents

[P234 Yee Simulations Using K-N Method](#)

[M89 Memo on Future Monitoring](#)

R66_A new method to determine bird and bat fatality at wind energy turbines from carcass searches

R67 California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development

Doug Leslie, Monitoring Team Project Manager, summarized his straw-man suggestions for addressing comparability with future repowered monitoring in [M89 Memo on Future Monitoring](#):

1. Implement a smaller search interval at a small subset of turbines, while continuing the current searches in a double-blind fashion, and compare differences; or
2. Gradually reduce the search interval at old-generation turbines as repowering progresses.

SRC Discussion:

SRC members raised the following issues and questions in discussion:

- It has been more difficult making comparisons than had been expected, because of the amount of variation and multiple variables at play in the Altamont. How to change methodology and make sure it's comparable?
- Can we make comparisons using the current monitoring approach?
- How to catch small bird fatalities to keep high detection probability? This is critical, so that the detection probability is high enough that we know the data are sufficient and accurate. This is one of the most important items to consider here. One approach is a possible seasonal adjustment of the transects.
- Develop a threshold detection probability, a comparability index using current & changed search interval or search distance.
- Inter-transect distance and search interval both need to be considered.
 - As an example: 80% have the same search interval, and a subset of turbines has an intense search interval, i.e., a one-day search interval.
- The idea of two search intervals at the same sites might work, but there would need to be sufficient sites in order to achieve confidence.
- Need to calculate appropriate detection probabilities for each season.
- The issue of search radius size needs to be considered.
- The issue of inter-observer interval needs to be considered

Public Comment

Jim Hopper of AES/SeaWest referred to the Monitoring Team's preliminary information that the 50% reduction in fatalities has been reached. If so, the wind companies need to understand what their obligation is under the current conditional use permits.

Renee Culver of NextEra said there is a distinct desire to compare what is happening now with what is going to happen in the future, with the understanding that the approach now is not optimal.

Yee Presentation on Korner Nievergelt Estimator

SRC Member Julie Yee gave a presentation on a new estimator published by F. Korner-Nievergelt and others in the journal *Wildlife Biology* in 2011 (DOI: 10.2981/10-121; hereafter the Korner-Nievergelt or K-N estimator discussed in R66_A new method to determine bird and bat fatality at wind energy turbines from carcass searches) and presented additional simulations using the K-N program for search intervals, carcass removal rates, and searcher efficiency rates that are characteristic of the Altamont ([P234 Yee Simulations Using K-N Method](#)).

The approach could address and help achieve comparability, despite variations in detection probability and changes in search interval, she said. The estimator is also a way to address overadjustment bias in fatality estimating. The estimator currently being used at the Altamont over-adjusts for detections found after the search interval. The K-N method has an estimate for this type of "bleed through." It could help to lower bias.

Julie Yee said that with the lower search interval, there could be much higher bias resulting from over-adjustments, giving the impression that mortality has increased, when it hasn't.

SRC & Monitoring Team Discussion on K-N Method

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

- Jesse Schwartz of the Monitoring Team said one issue with this approach is that the Altamont is very patchy, and that patchiness is not reflected in the approach. It could be helpful for considering future monitoring.
- It's a real concern that the error of bleed through will increase with shorter search intervals.
- A problem is a decrease in carcass removals would also lead to bleedthrough.

Monitoring Team members concluded from the discussion that there are probably two approaches to consider more closely: the double sampling approach, and/or measuring detection probability using a different estimator.

Key Points for Monitoring Team Consideration Going Forward:

- The SRC confirmed its recommendation that developing methods for assuring comparability of data is paramount.
- One goal should be development of a threshold detection probability, including a design for improving detection of small raptors.
- Search radius needs to be considered
- To assure comparability with repowered sites, consider:
 - Inter-transect distance
 - Search interval changes
 - Ratio approaches/double sampling
 - Measure detection probability
 - Determine detection probability directly, using different estimator

Update on the Burrowing Owl Study

Related Documents

[P232. Smallwood et al Winter Owl Survey Update](#)

Doug Leslie of the Monitoring Team said he extended the term of the burrowing owl distribution and abundance study to a full bird year.

Shawn Smallwood gave an update on the surveys. He undertook work for NextEra from April through July 2011, and started working in August under ICF, so a full year would end at the end of March. 78 nests were found in plots. Now, the owls are spreading out and starting to establish nests and exhibit nesting behavior. He predicts they will return to some of the higher-density natal areas, but predicts there will be some shifting, and is interested in what that change will be. The reason to continue this study is to identify how much the owls move each year (especially from one breeding season to the next). One option would be a smaller sample.

SRC Discussion

SRC members raised the following issues and questions:

- Are surveyors seeing a difference in activity patterns? In response, Shawn Smallwood said they hadn't been looking for that, but have found a line of burrows used that are

higher up from occupied burrows at the bottom of the slope. He didn't remember seeing that during the nesting season and it could be from different activities.

- Collecting feathers for isotope studies could help identify where winter birds are coming from.
- A question is whether behavior is different between winter shutdown and turn on.

Doug Leslie said there is no additional money, other than what has already been set aside in the existing Monitoring Team contract. For the next bird year, there could be savings from reducing the number of observation points, which could potentially be available for burrowing owls, but a higher priority, based on the SRC's previous discussion, would likely be measuring detection probability. Once the Bird Use and Behavior Subcommittee has developed a recommendation on the observation points for SRC consideration, the issue could be considered.

Public Comment

Renee Culver of NextEra asked if burrowing owls had been found at Buena Vista. In response, Shawn Smallwood said very few nests were found. An SRC member said that burrowing owls were in that area in prior years.

SRC Agreement on Burrowing Owl Studies

- The goal of the current distribution and abundance work is to identify how much burrowing owl nest movement occurs this year versus last year
- The SRC recommended that Shawn Smallwood complete winter burrowing owl nest surveys through the full bird year (March).
- The SRC recommended that Shawn Smallwood look for additional funding to extend nesting surveys through at least April.
- The SRC reaffirmed the importance of the burrowing owl behavior study and recommended that Shawn Smallwood look for additional funding for it.

Future SRC Meetings

In-Person Meetings

- **May 9 & 10, 2012**

Topics:

- Draft 2010-11 Bird Year Fatality Study
- QAQC
- Future work plan
- FloDesign Study
- Subcommittee items

Conference Call Meetings

- **Tentative meeting in late March 2012**

Topic:

- Recommendations for QAQC data analysis approach in QAQC report

Documents Circulated at Meeting

P100_SRC Document List with Reference Numbers

[P226 SRC Meeting Summary September 2011](#)

[P230 SRC Call Notes 12-13-11](#)

[P231 Smallwood APWRA Bird Use Data 2005-2011](#)

[P232 Smallwood et al Winter Owl Survey Update](#)

[P233 Karas 2011 Compliance Report](#)

[P234 Yee Simulations Using K-N Method](#)

[M1 Altamont Pass Wind Resource Area Bird and Bat Mortality Monitoring Protocols, 7/11/2007](#)

[M88 February 2012 Presentation Slides](#)

[M89 Memo on Future Monitoring](#)

R66_A new method to determine bird and bat fatality at wind energy turbines from carcass searches.

R67 California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development

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

Monitoring Team

Doug Leslie, Days 1-2

Jesse Schwartz, Days 1-2

Brian Karas, Days 1-2

Others

(Meeting sign-in is optional)

Janine Bird, SJSU, Day 1

Chris Brungardt, Day 1

Renee Culver, NextEra, Days 1-2

Chris Dugan, TRA Environmental,
Days 1-2

Jim Hopper, AES/SeaWest, Days 1-2

Liz Leyvas, ICF, Day 2

Mike Lynes, Golden Gate Audubon,
Day 2

Travis Poitras, ICF, 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, Day 2

List of SRC Agreements Developed February 16 & 17

(Compiled from this document)

SRC Direction on Confidence Interval Calculation in the Draft Fatality Study

1. The goal is complete transparency
2. Provide in the text a more complete description of the calculation of the confidence interval to show how standard deviation is derived
3. Provide a more complete confidence interval. Examples:
 - For sampling variation, consider a bootstrapping approach
 - For uncertainty in detection probability, consider a simulation-based approach, such as the Markov Chain Monte Carlo Approach (MCMC)
4. SRC member Julie Yee will serve as the SRC Analysis Subcommittee to work with the Monitoring Team on this issue and the analytic approach.

SRC Recommendations for Process for Tracking SRC Guidance to Monitoring Team Going Forward:

1. Regular feedback about how SRC recommendations are/are not being carried out
2. Need to improve quality control of data sheets

SRC Agreement on Burrowing Owl Studies

- The goal of the current distribution and abundance work is to identify how much burrowing owl nest movement occurs this year versus last year
- The SRC recommended that Shawn Smallwood complete winter burrowing owl nest surveys through the full bird year (March).
- The SRC recommended that Shawn Smallwood look for additional funding to extend nesting surveys through at least April.
- The SRC reaffirmed the importance of the burrowing owl behavior study and recommended that Shawn Smallwood look for additional funding for it.