

## Meeting Notes

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**Date:** August 17, 2009

**Attendees:** Altamont Pass Wind Resource Area SRC Analysis Subcommittee

Jess Schwartz, ICFI

Brian Karas - BRC

Julie Yee – SRC Subcommittee

Shawn Smallwood - SRC Subcommittee

William Warren-Hicks – EcoStat Inc.

Renee Culver – Nextera Energy

**Subject:** Discussion of 48 hour search interval scavenging data

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The SRC subcommittee met to review the results of the 48 hour fatality condition monitoring data collected as part of the Kestrel-Burrowing Owl study in the APWRA. The subcommittee made recommendations for completing the analysis of data and the pertinent sections of the 48 Hour Search Interval report.

### EcoStat Data Analysis Issues:

Just prior to the meeting we were presented with a written discussion of statistical issues by Mr. Warren-Hicks via Ms. Culver. The subcommittee did not feel they had sufficient time to explore the document or its relevance to the scavenging data. The group spent approximately 30 minutes of the subcommittee addressing the following:

- 1) Mr. Warren-Hicks and the subcommittee reviewed the overall approach to using scavenging data in the estimation of fatalities in the APWRA. Mr. Warren-Hicks recommended that those directly involved or interested in the statistical and modeling elements of the analytical process convene in a workshop forum to review the approach that has been applied, and to consider alternative methods for analyzing and modeling fatalities in the system.
- 2) Mr. Warren-Hicks was provided with an opportunity to review any specific elements of his document titled "Data Analysis Issues – 4MT-SRCsub frm BWH Aug09.doc" relate directly to the scavenging data. Mr. Warren-Hicks expressed general concern regarding the elucidation of uncertainty in the data, and deferred further discussion to a future meeting/workshop to be proposed and convened at some future date.

### Scavenging Data Filtering:

- Records associated with first searches were filtered from the data as per the SRC request. This reduced the data set to 50 records including 9 fresh intact carcass, 19 partial carcasses, and 22 feather spots
- The group used a Netspoke video conference to conduct data analysis and run statistical software in real time. The group later agreed that the use of the web conference was extremely helpful, and urged the SRC coordinators to establish a similar system for future SRC conference calls: however, Mr. Smallwood did not have sufficient time to initialize his computer to use the system, and urged everyone to provide participants with sufficient time to set up the netspoke conferencing system or similar tool.
- Database is almost complete. Current Study Fatalities table to be integrated with Baseline data Fatalities table shortly and given to Shawn Smallwood for review.

### Survival Modeling:

- The group ran several survival models on the scavenging data in real time using “days observed” as the time to event metric. Several survival models were found to be significant including those based on “all data”, “fatality type” (intact carcass, partial carcass, and feather spot), and “bird group” (raptor vs. non-raptor).
- The impact of “species” on carcass survival was evaluated, however the results were mostly driven by American Kestrels, Burrowing Owls, and Western Meadowlark’s which dominated the dataset.
- Univariate survival, parametric survival, and Cox Proportional Hazards models were all fit to the data with similar results. Intact carcasses differed from other types of fatalities, however partial carcasses and feather spots did not differ from each other in their survival probabilities. The group recommended to aggregate partial carcasses and feather spots in the final analysis and report.

### Analysis and Reporting:

- The group discussed the application of individual scavenging rates to the APWRA data and agreed that this approach faces complications. It is unclear from the data in hand what proportion of fatalities detected as partial carcasses or feather spots might have originated as whole carcasses. The transition rates from whole carcasses to these other states (vs. remaining as a whole carcasses or being fully scavenging and removed from the search area) is unknown.
- The group agreed that these issues can neither be resolved nor dismissed. The subcommittee recommended that the final version of the report include a rigorous statistical examination of the data in hand, and could include examples of alternative methods for applying the results rather than concluding with one final recommendation. These alternatives will include those presented by Julie Yee (i.e. one final aggregate curve) as well as those discussed in the previous SRC calls (i.e. applying separate curves to a dataset based on some estimate of fatality state transition rates).