

Search Interval Summaries Supplemental to M39

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The Alameda County Avian Fatality Monitoring Team's memo was distributed to inform the Scientific Review Committee (SRC) about the differences in data quality between the baseline and current fatality monitoring periods. This information is very useful because the SRC needs to be aware of the limitations of comparing fatality rates between these periods in order to assess the effectiveness of mitigation measures implemented during the Avian Wildlife Protection Program. Comparisons should be possible, but each will have its limitations.

I have been working intensively with the monitoring data over the past week. In the process, I found errors that are being fixed as I prepare this little supplemental report to M39. Errors were inevitable in a data set of this size and complexity, so I am not pointing them out to criticize anybody involved. In fact, I found some errors amongst the data I gave the monitoring team (e.g., 7 incorrect fatality search dates), as well. Data errors typically show up when the analysis begins, so we've reached the time in this Program when error identification is peaking. I've kept the monitoring team apprised of the errors I've found, and they have been very responsive. I believe that the errors found to date should not matter very much to fatality rate estimates, but we are all trying to improve the data set. The majority of errors should be repaired within a few days.

Some of the errors I found also appear in the Figures in M39 because Jesse and Doug did not have the repaired data set. After omitting data from the KB study and the 2,548 turbines that were searched only twice in 2002-2003, there should be few if any search intervals shorter than ca. 20 days. Thus, the left-most frequency bars in M39's Figures are errors. Also, isolated searches should be omitted from comparison because they should not be used to estimate and compare fatality rates. Furthermore, only relatively contiguous searches at each string should contribute to fatality rate estimates, so I defined monitoring periods within the baseline and current studies. Period 0 represented isolated search dates, or 1 to 3 searches separated from other searches by more than a few months. Period 1 was the first contiguous monitoring period before encountering a gap of at least 4 months. Period 2 was the second contiguous monitoring period following a gap of at least 4 months. There was no Period 3 in any of the data, and Period 2 was very rare among turbine strings in the current study.

Compared to M39, I found the search intervals to be less variable over both the baseline and current studies (Figure 1). One reason for the difference is that I cleaned up the search date data (my cleanup remains provisional for 2009, as the monitoring team needs to fix these errors using hard copy data sheets). Another reason might be that I'm focusing on the searches that should be used to compare fatality rates. To complete the comparisons of fatality rates that should be made, I also compared the fatality search intervals at the NREL core turbine strings, which are those searched during both monitoring programs (Figure 2). I also compared the mean number

of searches and mean span of years within Period 1 of both the baseline and current studies (Figure 3).

The most important problem, which Doug and Jesse pointed out in M39, is the geographic limitations of the NREL core turbines (Figure 4). These turbines are located mostly in the central and eastern aspects of the APWRA, and some are in the south. Extrapolations of fatality rates from these turbines will not be entirely satisfactory, in some part due to the geographic clustering of certain turbine models.

Please also be aware that the baseline fatality rates will differ from previous estimates partly because the monitoring team has redefined some turbine strings. Some strings were redefined to group or separate turbines associated with wind walls. Some were redefined due to the fatality search logistics of the current program. These new string definitions were also the source of many of the data base errors discussed above.

Thanks to Doug and Jesse for producing M39, and thanks to the monitoring team for their patience and diligence while dealing with data base issues. Overall, the data base looks like it's coming along fine.

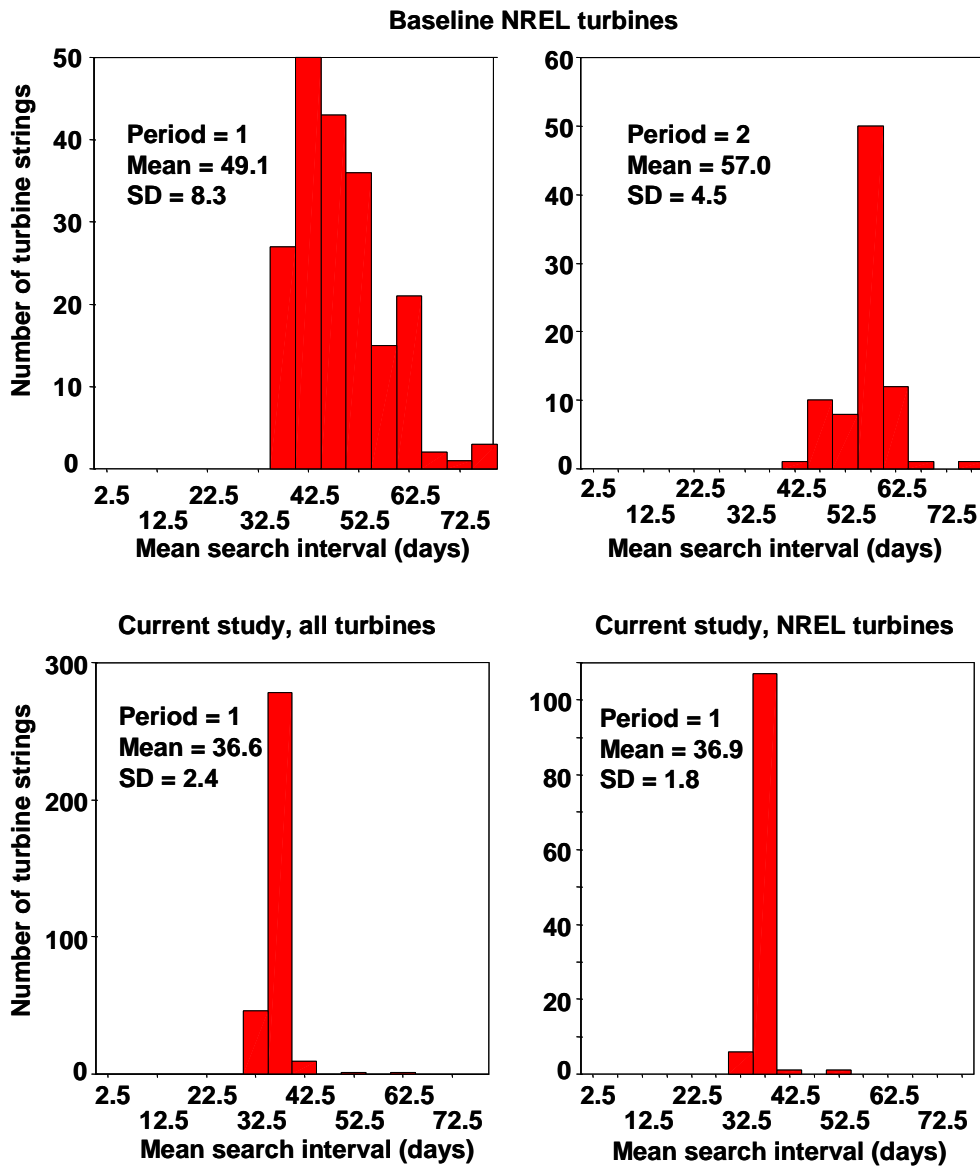


Figure 1. Frequency distributions of mean search intervals for Period 1 (top left) and Period 2 (top right) of the NREL baseline study, and for the current study among all turbines (bottom left) and limited to the turbines also searched during the NREL portion of the baseline (bottom right).

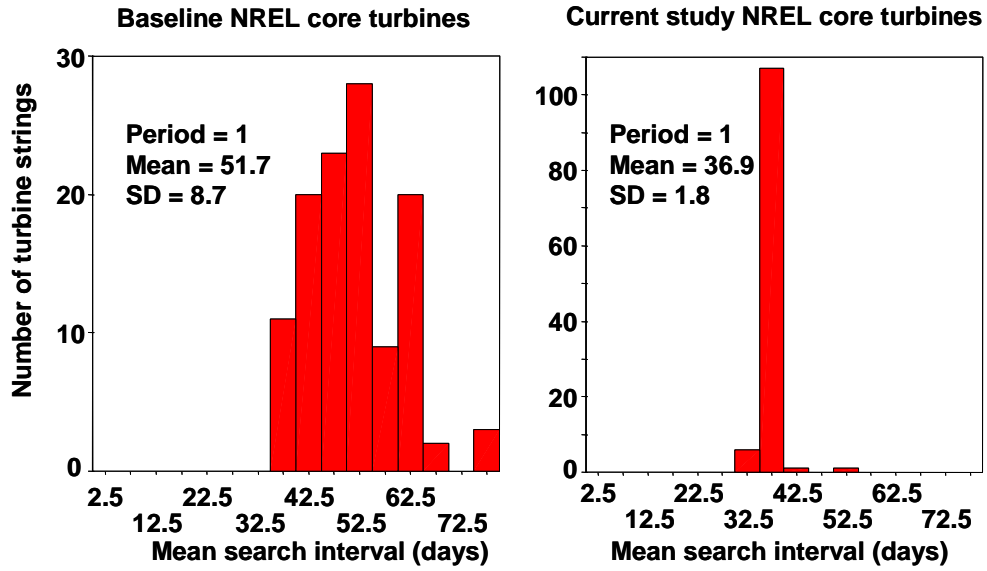


Figure 2. Frequency distributions of fatality search intervals among the NREL core turbine strings during the baseline and current studies.

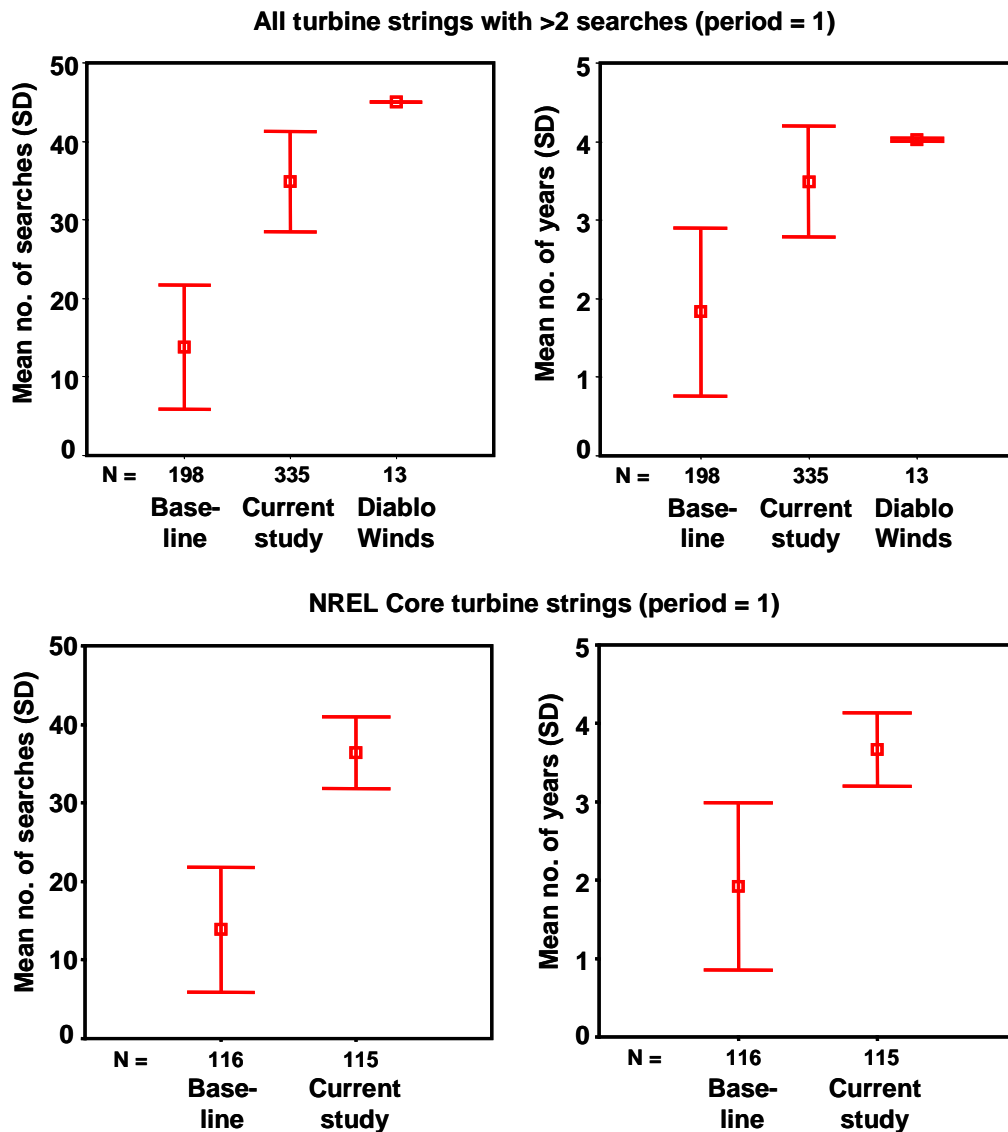


Figure 3. Mean number of searches and spans of time (years) between baseline and current studies for all turbines (top graphs) and for only the NREL core turbines (bottom graphs).

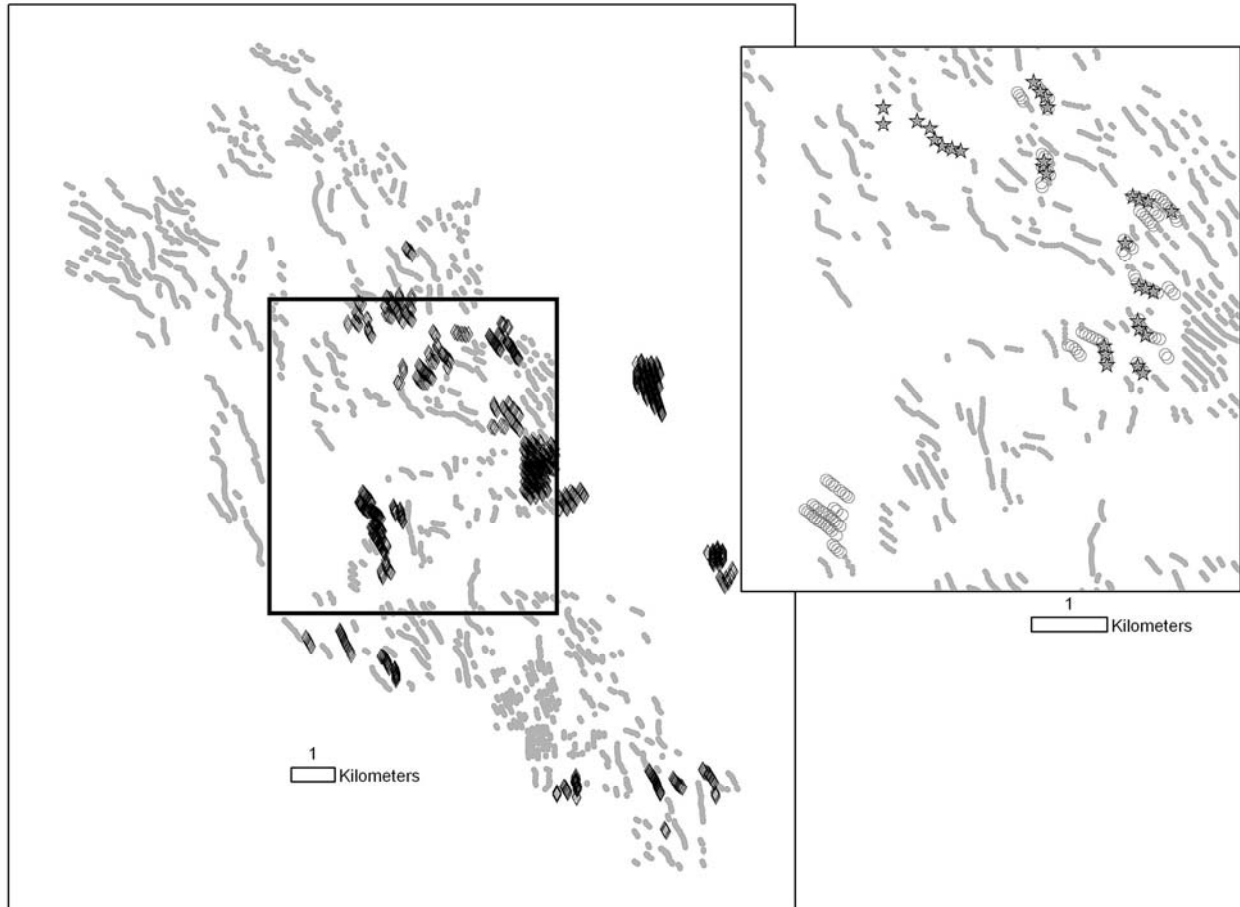


Figure 4. The arrangement of wind turbines in the APWRA, where open diamonds in the left panel represent the 899 wind turbines that were mutually searched for fatalities during the 1998-2002 and 2005-2009 monitoring periods and gray circles represent all other turbines in the APWRA. The insert at the right is from the box in the left panel, and depicts the replaced Flowind vertical axis turbines (open circles) and the Vestas 660 KW turbines in the Diablo Winds repowering project (stars).